COPPERTON COUNCIL MEETING AGENDA
August 20, 2025

Bingham Canyon Lions Club
8725 Hillcrest St.
Copperton, Utah 84006

****AMENDED AGENDA****

Wednesday, August 20, 2025 – 6:30 PM

The public is encouraged to attend

PUBLIC NOTICE IS HEREBY GIVEN that the Copperton Council will hold a meeting on the **20th day of August 2025** at the Bingham Canyon Lions Club, 8725 Hillcrest St., Copperton, Utah as follows:

***** Portions of the meetings may be closed for reasons allowed by statute. Motions relating to any of the items listed below, including final action, may be taken.***

1. **REGULAR MEETING**
   a. Call to Order
   b. Determine Quorum
   c. Pledge of Allegiance

2. **COMMUNITY INPUT**
   a. Recognize Visiting Officials
   b. Unified Fire Authority (UFA) – ***Chief Nathan Bogenschutz***
      i) Second Quarter Report
   c. Unified Police Department (UPD) – ***Lt. Christopher Benedict***
      i) Introducing Detective Lechuga

3. **WORKSHOP DISCUSSION**
   a. Workshop Discussion on Town Council Emergency Communications – ***Madison Warner, Emergency Municipal Planner***

4. **CONSENT AGENDA** (Discussion/Motion)
   a. Approve Council Meeting Minutes
      i) July 16, 2025
   b. Fiscal Items - ***Mayor Sean Clayton***
      i) Approval of expenditures

5. **PRESENTATION ITEMS**
   a. Hazard Mitigation Plan – ***Madison Warner, Emergency Municipal Planner***

6. **COUNCIL BUSINESS** (Discussion/Motion)
   a. Discussion Regarding Recent Dust Concerns in Copperton – ***Ryan Perry, Rio Tinto***
   b. Dump Voucher Program – ***Council Member Tessa Stitzer***
   c. Bingham Cemetery Board – ***Council Member Tessa Stitzer***
   d. Discussion Regarding **Ordinance 2025-O-05**, Restating Titles 1 (General Provisions) and 2 (Administration) of the Copperton Municipal Code to Comply with H.B. 35 – ***Nathan Bracken, Legal Counsel***

e. UPAHEAD – Emergency Text and Council Messaging Policy Updates – ***Council Member Tessa Stitzer***

7. **COMMITTEE/BOARD UPDATES** (Discussion/Motion)
   a. Legal Updates – ***Nathan Bracken, Attorney***
   b. Bingham Cemetery Board – ***Council Member Stitzer***
   c. Copperton Community Council – ***Council Member Stitzer***
   d. Planning Commission – ***Council Member Severson***

8. **COPPERTON COUNCIL REPORTS** (Discussion/Motion)
   a. Mayor Clayton
      i) Greater Salt Lake Municipal Services District (GSLMSD)
      ii) Council of Governments (COG)
   b. Council Member McCalmon
      i) Unified Police Department (UPD)
      ii) Salt Lake Valley Law Enforcement Service Area (SLVLESA)
   c. Council Member Bailey
      i) Unified Fire Authority (UFA)
      ii) Unified Fire Service Area (UFSA)
   d. Deputy Mayor Stitzer
      i) Wasatch Front Waste and Recycle (WFWRD)
   e. Council Member Severson
      i) Salt Lake County Animal Services

9. **OTHER ANNOUNCEMENTS** (Discussion/Motion)
   a. Public Comment

Please state your name and address for the record. Limit comments to 3 minutes per person.

   b. Announcements

10. **CLOSED SESSIONS IF NEEDED AS ALLOWED PURSUANT TO UTAH CODE §52-4-205**
   a. Discuss the character, professional competence, or physical or mental health of an individual (§ 52-4-205(1)(a))
   b. Discuss pending or reasonably imminent litigation (§ 52-4-205(1)(c))
   c. Discuss the purchase, exchange, or lease of real property (§ 52-4-205(1)(d))
   d. Discuss the deployment of security personnel, devices, or systems (§ 52-4-205(1)(f))

11. **ADJOURN**

ZOOM:
Topic: Copperton Council Meeting
Time: August 20, 2025 06:30 PM Mountain Time (US and Canada)
Join Zoom Meeting
https://us06web.zoom.us/j/84322772340?pwd=ZMv3eokajbvjBTabbbXjf1FnmLrIFW.1
Meeting ID: 843 2277 2340
Passcode: Copperton

Posted: ***August 18, 2025***

COPPERTON TOWN COUNCIL MEETING

JULY 16, 2025, 6:30 PM
BINGHAM CANYON LIONS CLUB
8725 HILLCREST STREET, COPPERTON, UTAH 84006

COPPERTON TOWN COUNCIL MEETING MINUTES

****DRAFT MINUTES – UNAPPROVED****

JUNE 18, 2025

DRAFT

Council Members Present:
Sean Clayton, Mayor
Tessa Stitzer, Mayor Pro Tempore
Kathleen Bailey, Council Member
Linda McCalmon, Council Member
Kevin Severson, Council Member

Council Members Excused: None

Staff Present:
Nathan Bracken, Legal Counsel (Via Zoom)
Diana Baun, Town Clerk
Dan Torres, Economic Development Manager
Chief Nathan Bogenschutz, UFA
Lt. Chris Benedict, UPD
Sgt. George Jeknavorian, UPD

Others Present:

1. **REGULAR COUNCIL MEETING**

Mayor Clayton, presiding, called the meeting to order at 6:30 PM and noted a quorum was present.

The Pledge of Allegiance was recited.

2. **COMMUNITY INPUT**

   a. **Recognize Visiting Officials** – None

   b. **Unified Fire Authority (UFA)**

Captain Jackson reported on behalf of Chief Bogenschutz, who had been excused due to deployment to New Mexico for flood response. Captain Jackson stated that Station 115 handled 12 calls for service in June. Mayor Sean Clayton expressed appreciation to the responders for extinguishing a recent field fire. Council Member Kathleen Bailey asked how many trucks responded to the fire. Captain Jackson stated that Station 115 sent both its engine and brush truck, and that additional brush trucks responded from West Jordan, South Jordan, and Kennecott. In response to a later question from Kathleen Bailey about the fire's cause, Captain Jackson stated that the origin was unknown, noting only that it appeared to have started beneath a power pole and might have involved a spark.

Council Member Kevin Severson asked whether Station 115 had responded to a vehicle-into-building collision near a Domino's in Herriman. Captain Jackson confirmed that the station's rehab unit responded to that incident and added that, since then, the unit had also responded to several gas leaks and other vehicles-into-buildings incidents, with the department taking greater safety precautions than it had the prior month. Council Member Severson also described being nearby at the time of the Domino's crash.

d. Unified Police Department (UPD)

Lieutenant Chris Benedict reported in place of Chief Craig, who was out of town. He introduced Sgt. George Jeknavorian as the successor to Sergeant Harry Holt, who had transferred to Millcreek, and stated that George Jeknavorian had assisted with Fourth of July planning, was still covering patrol, and would officially transfer to the COP unit on the 27th of the month. He added that Sergeant Borders was absent due to an out-of-county firefighter callout.

Sgt. George Jeknavorian stated that he lived in West Jordan, had served as a police officer with the county and the Unified Police Department for 19 years primarily in patrol, and was available to the council for any needs or suggestions as he transitioned into the new position.

Council Member Tessa Stitzer stated that they had an extended conversation with George Jeknavorian earlier and expressed that the discussion had gone well.

Lieutenant Chris Benedict stated that call statistics (Attachment A) for the prior month were affected by a cell tower outage that misrouted 911 hang-ups to Copperton, which made the report show 100 calls for service. He clarified that actual activity involved approximately 19 calls for service generating nine long-form cases and 10 short-form information reports, which he characterized as slightly down from typical levels. He stated that public order incidents—including suspicious circumstances, welfare checks, and neighbor disputes—numbered five and were consistent with seasonal patterns, and he noted that firework complaints could be included in that category. He stated that he was working to compile canine and shared service statistics for a year-to-date update at the next meeting in order to demonstrate recent major cases and the effectiveness of the UPD shared services model.

Council Member Kathleen Bailey asked what constituted a "morals offense," and Lieutenant Chris Benedict stated that the category could include things like public indecency.

DRAFT

Mayor Clayton moved the order of the agenda around slightly, inviting the representatives from Wasatch Front Waste and Recycling District to give their presentation scheduled for later in the meeting at this time. Those notes are under Item 5A in the minutes.

3. WORKSHOP DISCUSSION

a. Workshop Discussion on Bingham Cemetery Board

Council Member Tessa Stitzer opened an informal discussion regarding the Copperton Cemetery Board, noting that the board still consisted of the same three members who had served since the board's creation in 2016–2017. She stated that the three members—herself, Jerry, and Tammy—had worked well together to maintain records, maps, events, and burials, and that she and Jerry performed most of the interments. She said none of the current members intended to step down, but the ordinance establishing the board contained three-year term limits, which she suggested should be reconsidered. She noted that interments required specific training and experience, which made open applications difficult when a seat became vacant, and that the ordinance was amended in 2019 to require a council member to chair the board for oversight. She recommended eliminating term limits and appointing members as needed.

Mayor Sean Clayton asked why term limits were necessary, stating that the work was specialized and difficult to learn. He suggested removing the term limit and potentially removing the requirement that a council member chair the board, though he supported continuing oversight through liaison or point-of-contact arrangements. Council Member Kathleen Bailey stated that the council now had more understanding of cemetery operations than when the ordinance was created.

Nathan Bracken advised caution against eliminating terms altogether, recommending that the council retain term lengths but remove restrictions on the number of terms a member could serve. He compared the board to a planning commission, noting that terms allowed for periodic reassessment and continuity. He also advised that the board adopt rules of order and comply with open meeting requirements. He explained that sensitive discussions related to burials could be conducted in closed session under the law. Mayor Sean Clayton asked whether the board's role could be restructured so that it would not fall under open-meeting requirements, but Nathan Bracken said the board still qualified as a public body. Council Member Kathleen Bailey supported keeping terms, saying they allowed for orderly rotation when needed.

Council Member Tessa Stitzer raised concerns about complying with the Open and Public Meetings Act when most board meetings involved private family arrangements for burials. Nathan Bracken said closed sessions could be used for such matters, though Council Member Tessa Stitzer noted the difficulty of calling frequent closed sessions on short notice. Mayor Sean Clayton suggested the board function as staff or contractors rather than as an advisory body, but Nathan Bracken said the board still held authority to make decisions. The council discussed whether cemetery revenues were tax-based or fee-based, and Nathan Bracken agreed that since revenues came from fees, there might be an argument that the board was not a public body, but further clarification was needed.

DRAFT

Council Member Tessa Stitzer explained that Copperton's situation differed from other towns that hired sextons or contractors, and that equipment rentals for burials were increasingly expensive and hard to secure. She said recent rentals cost over $1,000 each time, sometimes nearly the full amount charged for an interment, leaving little margin. She and Jerry often operated rented equipment themselves or even dug by hand. She said the board was considering grant funding to purchase equipment and reduce long-term rental costs. She also raised concerns about insurance coverage for volunteers operating heavy machinery, though Mayor Sean Clayton stated they were covered under the town's volunteer policy.

The council discussed raising cemetery fees, which had not changed since 2019. Council Member Tessa Stitzer presented options for 15, 20, and 25 percent increases, stating the current plot fee was $500 and that a 25 percent increase would raise it to $625. She emphasized that the greater expense was interment costs, not the plots themselves. Council Member Kevin Severson and Council Member Kathleen Bailey noted that the fee increase would help cover expenses, and Council Member Linda McCalmon said the board needed to ensure the increase covered costs adequately.

Mayor Sean Clayton suggested charging different rates for residents and non-residents, similar to Riverton Cemetery, where residents paid $1,200 and non-residents paid $3,000, but Council Member Tessa Stitzer and Jerry said residency distinctions were difficult to manage given long-time residents who had moved away. Council Member Kathleen Bailey also pointed out that Copperton residents did not pay property taxes to support the cemetery, unlike Riverton.

The discussion turned to whether board members such as Jerry should receive compensation. Jerry said he and Tammy had invested substantial unpaid time in cemetery work, often six hours or more for a single grave, and suggested compensation could take the form of grave plots rather than money. Council Member Kathleen Bailey supported compensation, and Mayor Sean Clayton suggested the possibility of contracting the work as a business arrangement, which would allow fair pay and the use of owned equipment.

Council Member Tessa Stitzer raised the possibility of contracting out annual cemetery clean-up since volunteer turnout had dwindled, noting only five volunteers had come the previous year. She said rentals and supplies for cleanup days often cost over $1,000, with most costs borne by the board. Mayor Sean Clayton questioned whether such cleanups were required by contract, concluding they were not, though Council Member Tessa Stitzer emphasized the importance of keeping the cemetery presentable for families.

The council also discussed how burial payments were currently handled, with Council Member Tessa Stitzer personally receiving checks and forwarding them for deposit, and she asked for a more formalized system through the Municipal Services District. The council agreed to plan further meetings to review fee increases, ordinance amendments, and possible changes to board structure, with Council Member Tessa Stitzer committing to draft notes for council review.

Mayor Sean Clayton summarized that the council had discussed several options, including fee increases, possible compensation for board members, contracting services, or even selling the

DRAFT

cemetery. Council Member Tessa Stitzer provided background on how Copperton inherited the cemetery from the Jordan School District when it could no longer maintain it. She said the cemetery originated as part of Bingham Canyon, transferred to the school district after the city dissolved in the 1970s, and then to Copperton upon incorporation. She concluded by expressing appreciation for Jerry and Tammy's work on the board. The mayor and council agreed the discussion provided useful direction for potential ordinance and fee changes at the next meeting.

4. CONSENT AGENDA

a. Approve Council Meeting Minutes

i) June 18, 2025

Council Member Stitzer moved to approve the June 18, 2025 Council Meeting Minutes as published. Council Member McCalmon seconded the motion; vote was 5-0, unanimous in favor.

b. Fiscal Items - Mayor Clayton

i) Approval of expenditures

Mayor Clayton asked for approval of $1638.00 in legal fees in June, as well as Insurance costs of $1638.00.

Council Member Bailey moved to approve the expenditures listed above as stated. Council Member Stitzer seconded the motion; vote was 5-0, unanimous in favor.

5. PRESENTATION ITEMS

a. Wasatch Front Waste and Recycling District Presentation

Pam Roberts presented an update on solid waste and recycling services and explained recent billing questions and the reasons for the price increase. She stated that the residential fee was $26 per month billed quarterly at $78, up from $58.50 per quarter, and said the increase was driven by cost growth the agency had not fully kept up with since its last pre-2023 adjustment. She said overall costs had risen about 40 percent, particularly for labor, and described a "pay-for-experience" approach to attract and retain CDL drivers, along with a board-approved market adjustment that added approximately $300,000 in annual labor cost for CDL positions. She said a financial advisory review by Zions Bank recommended a $6.50 increase this year and additional $1.50 increases in 2026 and 2027, but she was working to defer the latter and believed the next increase might be needed in 2027. She reviewed included services—weekly garbage and recycling; seasonal container reservations; Christmas tree collection; leaf bags; a landfill voucher; and can repair and replacement—and noted carts cost over $70 each but black and blue cart repairs and replacements were covered by the standard fee.

Council Member Kevin Severson asked whether the pay-for-experience pay structure had improved recruiting, and Pam Roberts stated that it had.

DRAFT

Pam Roberts detailed cost-control measures, stating that the agency changed equipment for the leaf-bag program and downsized certain trucks, which she said would save about $136,000 this year and $7,000 per replacement cycle thereafter. She explained a tighter process for “go-backs,” under which staff verify missed-can calls with route dash-cam footage because test runs showed about 46 percent of such calls were false; she said collection mileage cost about $25 per mile and reported savings of just over $47,000 from January through June. She reviewed fleet constraints, stating that side-loader trucks were on a seven- to eight-year replacement schedule, four trucks ordered in 2023 had only recently arrived, new CNG trucks cost about $450,000 each versus $400,000 for diesel, and the resale market for used CNG trucks had weakened. She said the board approved purchasing eight diesel trucks, which she said would save $400,000 overall and were expected to have better resale prospects. She added that the agency reduced staffing by four positions—two through vacancies and additional layoffs—and reassigned duties after the quality-assurance inspector retired. She then reported on the seasonal container reservation program, stating it was in its sixth year, the prior street-pile model was no longer feasible due to staffing and illegal dumping, and the former program had required 20 CDL drivers and six ground crew while the current model operated with nine CDL drivers. She said Copperton received 100 percent of requested reservations in 2024 and 2025, that routing moved clockwise through the district, and that Copperton’s 2025 reservations occurred in June with a brief period left open for residents to book remaining containers.

James Kelsey, Sustainability Coordinator, presented recycling and diversion metrics for Copperton. He stated Copperton’s diversion rate was 16.05% in 2024 and 16.63% year-to-date in 2025 against a district goal of 18%. He said Copperton included 285 homes, or approximately 0.33 to 0.36 percent of district customers, generated 393 tons of refuse in 2024 and about 152 tons year-to-date, and produced 69 tons of recycling in 2024 with about 28 tons year-to-date. He reported five tons of green waste in 2024 and roughly 1.5 tons year-to-date with nine subscribers, and he corrected minor typos in a displayed chart regarding Copperton’s share and green-waste proportions. He said Copperton’s clean-recycling rate improved from 66.97 percent in 2021 to 79.5 percent in 2024, and was 78.5 percent year-to-date in 2025, close to the district’s 80 percent target. He explained that processing fees at the material recovery facility depended on market commodity prices, inbound material composition, and contamination rates, and he described the agency’s efforts to reduce contamination through route audits, public education, and increased driver participation, noting driver-submitted contamination reports rose from two last year to 16 this year.

Council Member Kevin Severson asked for clarification on “contamination rate,” and James Kelsey defined it as the presence of non-recyclable materials in recycling loads, citing common contaminants such as plastic bags, Styrofoam, and green waste. In response to a follow-up from Kevin Severson, James Kelsey said leftover product in otherwise recyclable containers accounted for a very small portion of contamination. Council Member Kathleen Bailey asked about wet cardboard, and James Kelsey stated that the processor allowed some moisture but encouraged residents to keep lids closed and break down boxes to minimize moisture.

James Kelsey described data-tracking methods using monthly sample sorts for each city to measure contamination and composition and to target education. He said estimates from 12

DRAFT

sample sorts in 2024 showed Copperton's recycling stream was approximately 58.5% cardboard by weight, with additional components including mixed paper, HDPE (natural and colored), PET drink bottles, aluminum, tin, and mixed plastics such as tubs, jars, and clamshells; he advised keeping caps on plastic bottles so lids could be captured during processing. Council Member Tessa Stitzer asked about pizza boxes, and James Kelsey said they were acceptable if clean and not saturated with grease or food, which Council Member Stitzer interpreted as recycling the clean lid and discarding a soiled bottom. He concluded with estimated annual resource savings attributable to Copperton's recycling—approximately 322,000 gallons of water, 782 mature trees, about 239,000 kilowatt-hours of electricity, a reduction of 55 metric tons of greenhouse gases (roughly the equivalent of 12 passenger vehicles per year), and about 115 cubic yards of compacted landfill space—and said further gains could come from increased participation in the green-waste program.

Mayor Sean Clayton thanked the presenters, stated appreciation for the savings efforts alongside the necessary price increases, and said the council understood that efforts were being made on both sides of the ledger. Council Member Kathleen Bailey congratulated Pam Roberts on retirement.

6. COUNCIL BUSINESS

a. Discussion and Potential Approval of FY2026 Copperton Town Insurance Policy

Mayor Sean Clayton introduced the annual renewal of the town's liability insurance and reported that the overall cost came in lower than the prior year. He stated that the general liability portion was $7,016.69, which was approximately $1,500 less than last year. He said the property insurance, covering the park, playground, bathrooms, and shed, was $2,158.58, and the workers' compensation coverage, which was required, was $636.30, reflecting a $70 decrease from the prior year. He noted the deductible was $1,000 and the assets were valued at $1.3 million. He recommended renewing the coverage through Utah Local Governments Trust and credited Brian Hartsell for working to reduce the cost.

Council Member Stitzer moved to approve the FY2026 Copperton Town Insurance Policy as presented tonight. Council Member McCalmon seconded the motion; vote was 5-0, unanimous in favor.

b. UPAHEAD – Emergency Text and Council Messaging Policy Updates

Council Member Tessa Stitzer reported that the Municipal Services District would have a booth at Copperton Town Days on August 23, where residents could sign up for services, provide feedback, and make suggestions.

Mayor Sean Clayton suggested that the town consider publishing some of the recycling and sustainability metrics presented earlier by Pam Roberts and James Kelsey, such as tree and energy savings, on the town website and in UPAHEAD notices. Council Member Tessa Stitzer said UPAHEAD could be used for that purpose and noted that the Wasatch Front Waste & Recycling District app already provided detailed information and was easy for residents to use.

Council Member Tessa Stitzer then raised the need for a coordinated procedure for sending alerts during emergencies, such as the recent fire, to ensure consistent messaging. She emphasized that if

DRAFT

the incident occurred on private property, such as Rio Tinto's, council members should seek approval from those property owners before issuing alerts. For incidents on town property, she recommended that messages go through the mayor, with all council members communicating via group text or phone to ensure alignment before posting.

Mayor Sean Clayton asked Nathan Bracken whether other municipalities had reverse-911 or similar emergency alert systems, noting that he would like to review their policies. Nathan Bracken stated that Magna Water used such a system under contract but did not appear to have a separate policy, and he noted that other communities often used these systems for general notices rather than emergencies.

Council Member Tessa Stitzer said UPAHEAD was effective in reaching residents quickly but asked how the council could formalize a process to ensure messages were handled properly. Diana Baun reported that Emigration Canyon used CodeRED, with one council member authorized to send alerts but only after receiving approval from the full council, though no written policy existed. Council Member Tessa Stitzer said most UPAHEAD posts were managed by Maridene Alexander, but she herself had full access and could post if needed. She urged the council to establish a clear agreement on communication responsibilities.

Mayor Sean Clayton suggested separating responsibilities, such as having Maridene handle event notifications while a council member managed emergency alerts. Council Member Tessa Stitzer noted UPAHEAD allowed multiple groups to be created for such purposes.

Madison Warner offered to attend a future meeting to share information on how other municipalities managed their alert systems and to help Copperton create a plan tailored to its needs. Mayor Sean Clayton asked Diana Baun to add that item to the next meeting agenda. Council Member Tessa Stitzer added that while informal communication during the recent fire had worked, it was not efficient, and a more streamlined process was needed. Mayor Sean Clayton agreed and said he would also consult with Joe to gather details about another municipality's program in advance of the next discussion.

7. <u>STRATEGIC SESSION</u> - None

8. <u>COMMITTEE/BOARD UPDATES</u>

a. Legal Updates – ***Nathan Bracken, Legal Counsel***

Nathan Bracken reported that he had participated in a second Salt Lake Valley Law Enforcement Service Area (SLVLESA) facilitated discussion earlier that day. He stated that the discussions were going well, that positive progress was being made, and that he would provide the mayor and council with a confidential summary by email.

b. Bingham Cemetery Board – ***Council Member Tessa Stitzer***

None – discussed previously in the meeting.

c. Copperton Community Council – ***Council Member Tessa Stitzer***

Council Member Tessa Stitzer provided a Community Council update, noting that Copperton Town Days would take place on August 22, followed by Movie in the Park on August 23. She

DRAFT

stated it would be a full-day event with both the Municipal Services District and the Copperton Council hosting booths, and she explained that she coordinated and ran the event, which required her to be actively involved throughout the day.

Council Member Sean Clayton asked who the council should contact to obtain an EZ-Up shade tent with the Copperton logo. Diana Baun said Maridene would likely be the right contact. Mayor Sean Clayton asked that Maridene be consulted about acquiring one.

Council Member Tessa Stitzer also reported that BINGO continued to take place and was receiving positive reviews.

d. Planning Commission – ***Council Member Kevin Severson***

No updates – no meeting since last update.

9. COPPERTON COUNCIL REPORTS

a. Mayor Sean Clayton

i) Greater Salt Lake Municipal Services District (GSLMSD)

ii) Council of Governments (COG)

Mayor Sean Clayton provided an update on the Greater Salt Lake Municipal Services District, stating that recent meetings had been relatively short and that the board was considering reducing the schedule to one meeting per month. He said the board continued to approve contracts and budget transfers, and he complimented Daniel Torres, Tamaran, and Daniel Hoffman for their work on operations, cataloging assets, and the new MSD building, which he said was less expensive than leasing county space and provided the district with its own facility. He also noted there had been election-related disputes in other areas of the MSD, but Copperton could use the situation as a learning opportunity since services were now managed internally rather than by the county. He reported that Dan Torres had shared maps with him and Council Member Tessa Stitzer and that he met separately with the Utah Department of Transportation (UDOT) to discuss Bacchus Highway realignment. He said UDOT planned within the next two years to straighten routes in the area, extend 9000 South through to Bacchus, and potentially abandon New Bingham Highway, which the state would transfer to West Jordan for maintenance. He explained that UDOT typically required a road exchange when transferring state routes to local governments, but Copperton had no roads to trade. He said Daniel Torres and Lizel at MSD were helping explore ways to secure fair treatment, such as ensuring the road was brought up to standard and establishing a perpetual maintenance fund. He said if Copperton assumed responsibility, the highway segment within town would become a town asset, which would allow Copperton to control crosswalks, speed features, and design.

Council Member Tessa Stitzer asked about renaming the road, recalling the difficulties residents experienced with address changes during a past renaming effort. She recommended

DRAFT

keeping the existing name, while Mayor Sean Clayton suggested “Old State Highway” as a possible option. Council Member Tessa Stitzer also reported that roadwork completed 4–5 years earlier at the west end of town, near Immaculate Conception Church, was sinking, and she believed the drainage work had been poorly done. Mayor Sean Clayton said that with UDOT’s renewed attention, Copperton would have an opportunity to require corrective work.

Mayor Sean Clayton also said he would soon meet with Tamaran and the contractor for a final walk-through of the first phase of the road project to ensure any damage caused during construction was repaired. He cited an example of a gutter near his home that had been replaced after he reported damage. He asked council members to notify him of any additional issues so they could be included in the final checklist before sign-off. He said the completed phase represented an $800,000 investment, while the second phase would be four times larger, estimated at $3 million, though it had not yet been bid and no contractor had been selected.

b. Council Member Linda McCalmon

i) Unified Police Department (UPD)

ii) Salt Lake Valley Law Enforcement Service area (SLVLESA)

Council Member Linda McCalmon delivered the Unified Police Department update, reporting that the UPD budget had been approved at $64.4 million, an increase of $2.74 million from the prior year. She explained that despite the increase, significant cuts were also made. The budget included a 2.5% markup, a 2.5% cost-of-living adjustment, an 8.3% increase in health insurance costs, seven additional sworn positions, a 1.25% increase in part-time positions, and an overall increase of 3.34%.

She also reported on Salt Lake Valley Law Enforcement Service Area (SLVLESA) matters, stating that the board had reviewed and approved the annual financial report and audit, which went smoothly. She said Rachel provided an update on the Salt Lake County facilitation process, noting that a related meeting was scheduled the following Tuesday. She concluded that the facilitation process appeared to be going well and that the SLVLESA meeting itself was brief.

c. Council Member Kathleen Bailey

i) Unified Fire Authority (UFA)

ii) Unified Fire Service Area (UFSA)

Council Member Kathleen Bailey noted that the meetings had been routine because the budget had already been completed. She reported on growing concerns related to lithium battery fires. She explained that these batteries, found in products such as electric scooters, bikes, and Teslas, were increasingly causing fires. The fires were most often linked to B-grade batteries purchased through vendors such as Amazon, which were not designed for the intended machines but could be adapted for use. These lower-quality batteries burned hotter than recommended ones and could not be extinguished with a regular fire extinguisher. Council Member Bailey cautioned that storing Teslas in garages could present risks and added that public relations efforts would be launched to encourage residents not to leave scooters or

DRAFT

bikes plugged in at all times. She further advised that batteries showing excessive heat or performance issues should no longer be used. She emphasized that precautions should be taken when children brought scooters into facilities like the Recreation Center or parked them at home, reiterating the importance of not leaving them charging continuously.

Mayor Clayton asked whether there was room during Town Days for agencies such as Unified Fire Authority (UFA), Wasatch Front Waste and Recycling District (WFWRD), and Unified Police Department (UPD) to provide informational materials to the public. Council Member Bailey inquired whether UPD was planning a booth. UPD representatives responded that no plans had been made yet, but they would consider participating. The council extended an invitation for UPD to join their booth or space to distribute materials. Mayor Clayton concluded that this type of outreach would be a valuable opportunity to share important safety information with the community.

d. Deputy Mayor Tessa Stitzer

i) Wasatch Front Waste and Recycle (WFWRD)

No updates other than what was discussed earlier in the meeting.

e. Council Member Kevin Severson

i) Salt Lake County Animal Services

No updates at this time – there will be a meeting in two weeks.

10. OTHER ANNOUNCEMENTS

a. Public Comment

David Sanderson spoke on behalf of the Bingham Fireman's Association. He explained that the organization, which traditionally hosted races during the 4th of July festivities, now had only five members, with minimal participation beyond himself, his father, and occasional support from others. He stated that the races cost approximately $1,100 each year, with the Community Council previously contributing $800 annually to offset expenses. This year, however, the contribution was reduced to $500, leaving the Association to cover an additional $600. Sanderson requested that the Town of Copperton contribute $500 to assist with costs, noting that the Association had about four years of funding left and was uncertain how much longer the races would continue given the aging membership. He added that the event had attracted over 225 children this year, based on candy distribution.

Mayor Sean Clayton responded that the Town could likely assist and asked for Sanderson's email address in order to provide him with a form to complete. Mayor Clayton explained that once the form was submitted, the request would be brought before the council at its next meeting for approval and payment. Mr. Sanderson provided his email address for follow-up.

Council Member Tessa Stitzer clarified that the Community Council's decision to reduce its contribution from $800 to $500 was to ensure continued funding for BINGO events, which typically drew about two dozen participants, while still leaving room to increase the budget in the future. Mr. Sanderson acknowledged the change and restated that his group had

DRAFT

personally covered around $600 this year. Council Member Kathleen Bailey asked whether the Association was seeking new membership. Mr. Sanderson responded that the Association had essentially ceased to exist, with little likelihood of revival, and anticipated that the tradition would eventually end. He noted that this might also affect the Lion's Club since the two activities were connected, though for now, volunteers and family members still assisted with setup and operations.

Laura Ingersoll, representing Rio Tinto, also spoke. She offered to provide additional details regarding a recent fire, though not all information could be released immediately. She said she could follow up at the next meeting or provide a report from emergency services if requested. She reminded the council that Copperton's day at the mine was scheduled for August 6 and that free tickets had already been posted on Facebook. Council Member Stitzer noted that notices had also been distributed through UPAHEAD. Ms. Ingersoll explained that tickets would be provided, consistent with other cities, and that flyers would be delivered door-to-door to ensure residents were informed.

Leann Akeron announced that the Copperton Improvement District (CID) would begin issuing fines for watering on Sundays. She explained that due to well problems, residents had been asked not to water on that day, but increasing violations, including by Kennecott, had led to enforcement measures. After a first warning, residents would be fined $50. Council Member Stitzer asked how the fine would be enforced and collected. Ms. Akeron responded that fines would be added to utility bills and that violations could be verified through photos or in-person checks, with door-to-door notifications given for initial warnings. Council Member Linda McCalmon inquired whether watering could resume at 12:01 a.m. on Monday for those scheduled to water that day, and Ms. Akeron confirmed it could. She also explained that repair parts for the wells were difficult to obtain and often required long wait times. Council Member Stitzer asked about long-term plans to address aging equipment. Ms. Akeron replied that while water systems inevitably broke down, repairs and rebuilds were ongoing, allowing the system to remain functional despite the challenges.

Jonathan Pratt asked whether there had been any updates to the annexation plan that had been drafted approximately three years earlier. Council Member Stitzer replied that there were no updates available at this time but promised to provide information in the future if changes occurred.

b. Announcements

Nathan Bracken requested time on the August council agenda to present restated Code Sections 1 and 2 and a related council governance item. He stated that the purpose was to finalize the transition from the metro township form of government to a five-member council form of government and to ensure the framework was in place ahead of upcoming elections.

11. CLOSED SESSIONS IF NEEDED AS ALLOWED PURSUANT TO UTAH CODE §52-4-205

DRAFT

a. Discuss the character, professional competence, or physical or mental health of an individual (§ 52-4-205(1)(a))

b. Discuss pending or reasonably imminent litigation (§ 52-4-205(1)(c))

c. Discuss the purchase, exchange, or lease of real property (§ 52-4-205(1)(d))

d. Discuss the deployment of security personnel, devices, or systems (§ 52-4-205(1)(f))

12. ADJOURN

Council Member Severson moved to adjourn the City Council Meeting. Council Member McCalmon seconded the motion; vote was 5-0, unanimous in favor.

The July 16, 2025 Town Council Meeting adjourned at 8:38 P.M.

This is a true and correct copy of the July 16, 2025 Town Council Meeting Minutes, which were approved on August 20, 2025.

Attest:

Sean Clayton, Mayor

Diana Baun, Town Clerk

DRAFT

PATROL ACTIVITY REPORT / JUNE 2025 / COPPERTON CITY

Attachment A
7.16.25

(ZONES 21)

	2024 J	2025 J	F	M	A	M	J	J	A	S	O	N	D
Total Calls	20	41	20	28	18	23	100						
Total Shortforms	14	5	4	9	7	6	10						
Total Cases (GO)	2	13	7	11	6	12	9						
Calls Per Officer	7	14	7	9	6	8	33						
Patrol Allocations	3	3	3	3	3	3	3						

	J	J	F	M	A	M	J	J	A	S	O	N	D
ARSON													
ASSAULT						1	1						
BURGLARY							1						
BURGLARY ALARM													
CIVIL RIGHTS													
CONSERVATION													
CRIMES AGNST PER													
DAMAGED PROP					2	1							
DRUG COURT													
DRUGS						1							
ESCAPE		1											
EXTORTION													
FAMILY OFFENSE	2	3	1	2	2	1							
FORGERY													
FRAUD						1							
HEALTH/SAFETY													
HOMICIDE													
INV OF PRIVACY						1							
KIDNAP													
LARCENY			1										
LIQUOR													
MORALS													
OBST JUDICIAL													
OBST POLICE													
PROPERTY CRIME													
PROSTITUTION													
PROACTIVE ENF													
PUBLIC ORDER		4	2	3	1	3	5						
PUBLIC PEACE		2	2	4	1		2						
ROBBERY													
ROBBERY ALARM													
RUNAWAY													
SEXUAL ASLT													
SEXUAL EXPLOIT													
SEXUAL OFFENSE		1											
STOLEN PROP													
STOLEN VEHICLE						1							
TRAFFIC		2	1			1							
WEAPON OFFENSE				2		1							
BLANK (NO NCIC)													
TOTAL	**2**	**13**	**7**	**11**	**6**	**12**	**9**	**0**	**0**	**0**	**0**	**0**	**0**

	J	J	F	M	A	M	J	J	A	S	O	N	D
Booking Arrests	-	1	1	1	-	1	N/A						
Citations	-	1	6	1	-	1	4						

Wasatch Front Waste and Recycling District

Report for Town of Copperton Council Meeting Wednesday, July 16, 2025

OUR VISION: A SUSTAINABLE ORGANIZATION THAT PROVIDES FOR THE WELFARE OF OUR COMMUNITIES.

OUR MISSION: TO PROVIDE SUSTAINABLE QUALITY INTEGRATED WASTE AND RECYCLING COLLECTION SERVICES FOR THE HEALTH AND SAFETY OF OUR COMMUNITY…BECAUSE NOT EVERYTHING FITS IN THE CAN.

Sustaining WFWRD Services with the 2025 Fee Increase

The District has experienced 40% overall increased costs ($6,000,000) since 2020 related to needed salary market adjustments and pay for work experience to boost recruitment/retention especially CDL drivers, the Driver Apprentice Program, safety/training, project management & data analysis. There have also been increases for truck maintenance up 47%, replacement truck purchase prices are up 35%, fuel is up 65% and garbage tip fees are up 8%.

Knowing this, and with the advice from the financial advisory team at Zions, the WFWRD Board approved a $6.50 per month fee increase for 2025 (33%) to sustain service levels. The monthly fee is now $26.00 per month/$78.00 per quarter/$312.00 annual for the following services:

- Weekly curbside garbage and recycling collections.
- Seasonal Container Reservation Program (SCRP) with the goal of at least 60 container deliveries per day. (Mid-April through September)
- Can Repair and Replacement.
- Seasonal Services: Central leaf bag collections and curbside Christmas tree collections.
- Landfill Vouchers for a residential truck, car, or trailer load.
- Central glass collections.

Fee History: The last fee increase was implemented in 2023 after five years since our previous fee increase. Hindsight: Waiting five years was too long and $2.50 wasn't enough. We lost the time value of money.

- 2023: $2.50 per home/month increase to $19.50 per month/$58.50 per quarter/$234.00 annual.
- 2018: $2.25 per month, to $17.00 per month/$51.00 per quarter/$204.00 annual.
- 2014: $2.00 per month, from $12.75 to $14.75.
- 2011: $1.75 per month, from $11.00 to $12.75 per month.

WASATCH FRONT
Waste & Recycling District

Financial Stewardship to Reduce Costs

Operations and Staff Changes to Reduce Costs As Follows:

1. **Leaf Bag and Trailer Services**: Changed the type of equipment used for trailers and we saved $68,000 on light duty truck replacements by downsizing to one-ton pick-ups. We will also keep one aging pickup rather than replace and save another $68,000. ($136,000 saved in 2025) Estimated annual replacement savings $7,000.

2. **"Go-Backs":** WFWRD receives reports from residents stating that their can was missed on their collection day. There are high costs associated with going back at $25.00 per mile. (Fully-loaded cost.)

- We conducted two separate 2-week tests in 2024 to verify through dash camera footage if we missed cans, or if resident(s) didn't have their cans out, or they set their cans out after our driver has gone by. Findings: **46% were false** while 54% of the reports were valid.
- Starting in January, the Customer Service Reps began viewing dashcam footage to verify missed pick-ups. If we did miss, we will go-back on the go-back scheduled day. If we did not miss, customer education follows to reduce false reports in the future. (Reminder to have your cans out by 7:00 a.m. on collection day.)
- The results for January through June 2025 is $47,399 in reduced costs. Our goal is to save $150,000 in 2025 by reducing unnecessary go-backs.

3. **2025 Residential Collection Truck Replacements**: The Board voted to save $400,000 on capital purchases by ordering eight diesel side load trucks versus CNG. ($400,00 per truck vs. $450,000). Projections show that the resale for diesel trucks will be a higher dollar.

4. **Personnel Changes and "Right Sizing" Resources:**

- We reduced three positions in 2025 and are absorbing those workloads.
- The former Controller/Treasurer position has been reclassified as an Accountant II, which fits more within our business model. There will be money saved by a reduced salary range.
- A veteran Supervisor retired in May, and our Operations Team has committed to absorb the workload with the remaining four Supervisors, saving an estimated $120,000 annually. The change to the SCRP services with containers being delivered to resident's driveways means fewer staff with employees not needing to clean-up debris on the streets.

Seasonal Container Reservation Program (SCRP) Stats

Overview:

- WFWRD services 285 single family homes up to a fourplex in Copperton.
- The 2025 season marks the sixth year of SCRP.
- We have enough resources to service between 9-11% of the homes in our cities.
- Annual SCRP services run mid-April through September:
  - We started in Murray/Holladay this year and moved clockwise through the District and will end in Millcreek.
  - Copperton service dates were June 17th – 23rd.

Copperton Stats During the Delivery Days of Service:

- 2025: We accommodated 25 out of the 25 requested reservations. Tonnages TBD.
- 2024: Accommodated 30 of the 30 requested reservations and collected 15 tons of bulky waste.

Then ➡

Vs.

Now ➡

Copperton's Impact & Recycling Stream Quality

Diversion Rate – Keeping Material Out of the Landfill for Reuse

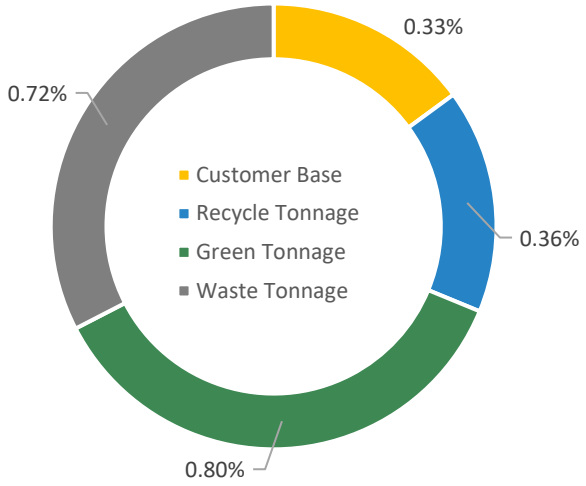
- **2024 Diversion Rate:** 16.05%, with a district-wide goal of 18%
- **January - May Diversion Rate 2025:** 16.63% (a slight increase from 2024)

Copperton's Share of System-Wide Efforts

- 285 Total Customers
  - Represents .33% of District Customers

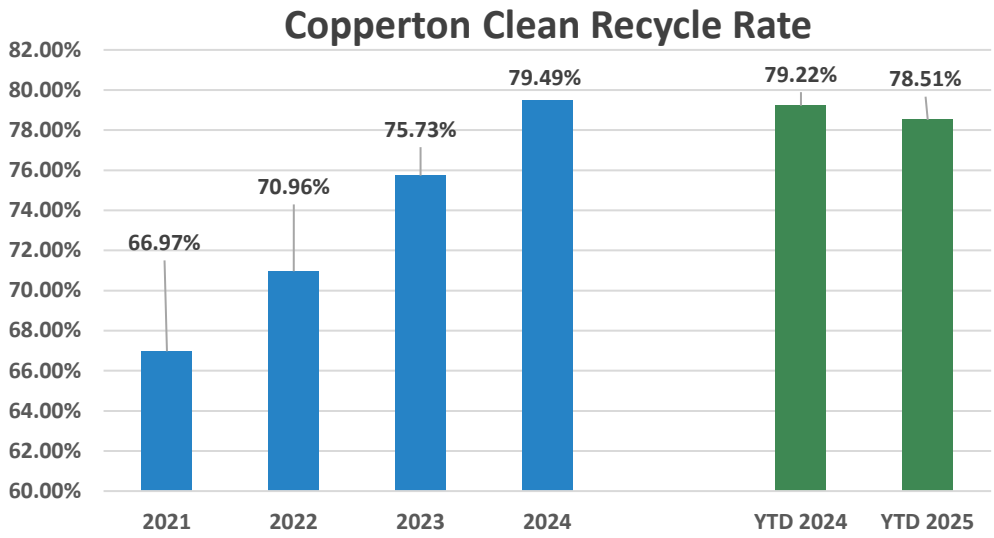
In 2024 Copperton Generated:

- 393.42 Tons of Refuse
  - YTD: 151.63 Tons of Refuse
- 69.18 tons of Recycle material
  - YTD: 28.38 Tons of Recycle
- 5.14 tons of Green Waste
  - YTD: 1.32 Tons of Green Waste
  - 9 Green Waste Subscribers



Copperton's Clean Recycle Rate

- Contamination in the recycle stream has decreased since 2021
- **Lower Contamination = Lower Processing Fees**
- Focus on education and addressing contamination at the Curb through driver participation
- Copperton received **2** reports of contaminated cans in 2024
  - YTD: **16** Copperton Reports



What Are Sample Sorts?

- Monthly inspections of recycling loads.
- Tool to identify material types and contamination.
- Help us shape targeted education campaigns.

What's in the Bin?

2024 Copperton Total Recycle Tonnage: 69.18 Tons

Commodity	Percentage of Load	Weight in Tonnage
OCC (Cardboard)	58.44 %	40.43
Mixed Paper	8.08 %	5.59
HDPE Natural	3.91 %	2.70
HDPE Color	1.80 %	1.24
PET	2.14 %	1.48
Aluminum	1.52 %	1.05
Tin	1.25 %	0.87
Mixed Plastic	2.35 %	1.62
Contamination	20.51 %	14.19

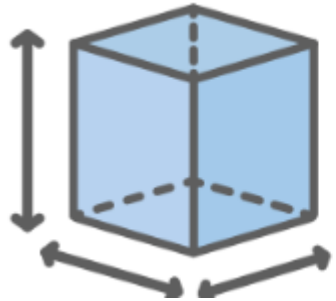
RESOURCES SAVED

322 Thousand
Gallons of Water
Enough water to provide daily usage to **10** people for an entire year.

782
Mature Trees
It is estimated that thesse trees could **118 thousand** cardboard boxes

239
Killowatt- Hours of Electricity
Enough energy to supply **22** homes power for an entire year

55
Metric Tons of Greenhouse Gases
Equivalent to the amount produced by **12** individual cars for an entire year.



115
Cubic Yards of Landfill Space
Salt Lake Landfill Lifespan Estimate: ~ 50+ Years
Trans Jordan Landfill Lifespan Estimate ~ 8-10 Years

Thank You for Your Time
Any Questions?

Contact Information:
Pam Roberts, General Manager
proberts@wasatchfrontwaste.org
(385) 468-6342

Contact Information:
James Kelsey, Sustainability Coordinator
jakelsey@wasatchfrontwaste.org
(385) 468-6337

UNIFIED FIRE AUTHORITY
QUARTERLY REPORT

COPPERTON

QUARTER 2

APR. 1, 2025 - JUN. 30, 2025

COPPERTON LIAISON
Battalion Chief Nathan Bogenschutz
(801) 244-0932
nbogenschutz@unifiedfireut.gov

QUARTER 2

UNIFIED FIRE AUTHORITY QUARTERLY REPORT

COPPERTON

APR. 1, 2025 - JUN. 30, 2025

QUARTER 2

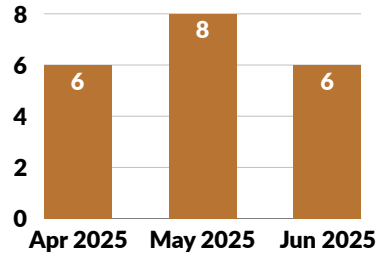
Call Volume

20
TOTAL INCIDENTS

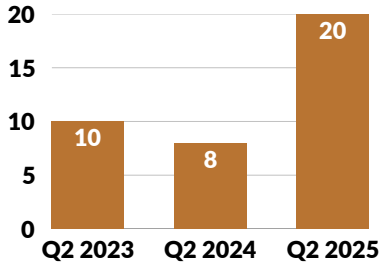
10
EMERGENT

50%
% EMERGENT

Q2 Monthly Incident Counts



Q2 Yearly Total Incident Counts



Call Type

TOP **FIRE** CALLS

Fire, Other	1

TOP **EMS** CALLS

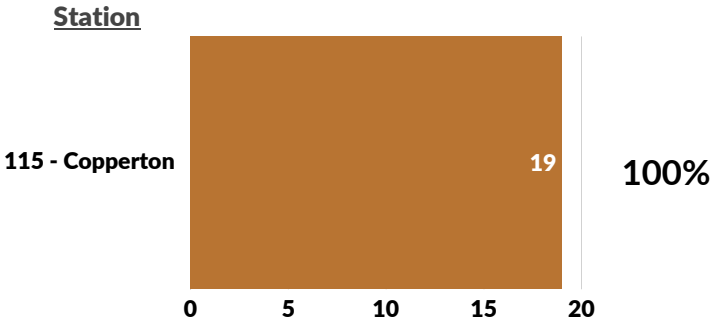
Diabetic Problem	3
Seizure	2
Short Fall	2
Chest Pain	1
Head Injury	1

TOP **OTHER** CALLS

Flammable Spills & Leaks	2
Malicious, False Alarm	1
False Alarm/False Call	1

Incoming Units

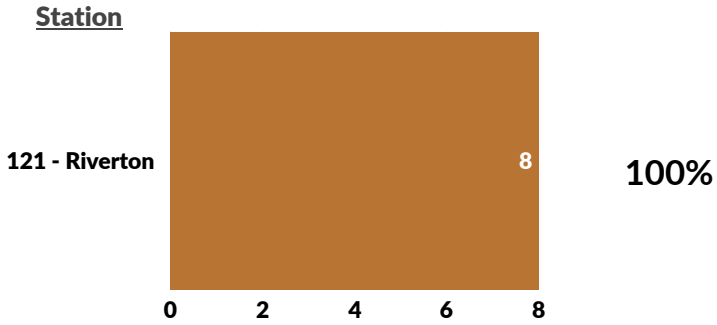
Top **Engine/Truck** Responses



100%

19
TOTAL UNIT RESPONSES

Top **Ambulance** Responses



100%

8
TOTAL UNIT RESPONSES

Emergent Total Time

04:12
50th PERCENTILE

06:32
90th PERCENTILE

**Dispatch to Arrival (does not include call processing time)*

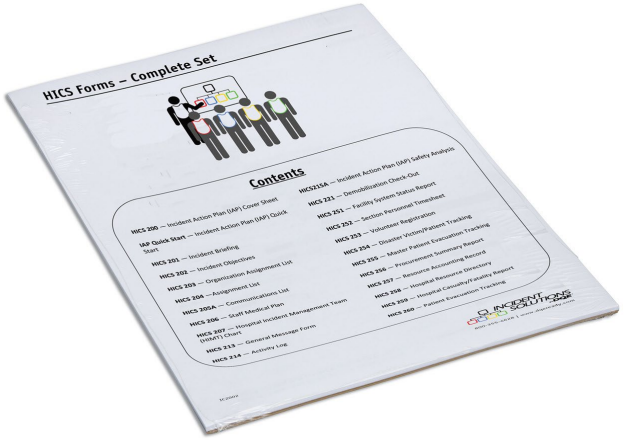
Emergency Operation Information Management

Summary Highlights training from ICS 300, L 0962 Planning section chief, L964 Situation Unit Leader, FEMA EEIs

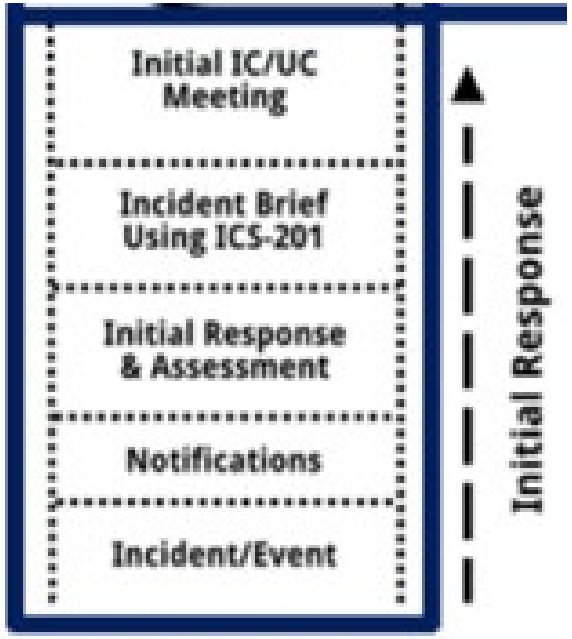
Brief Overview

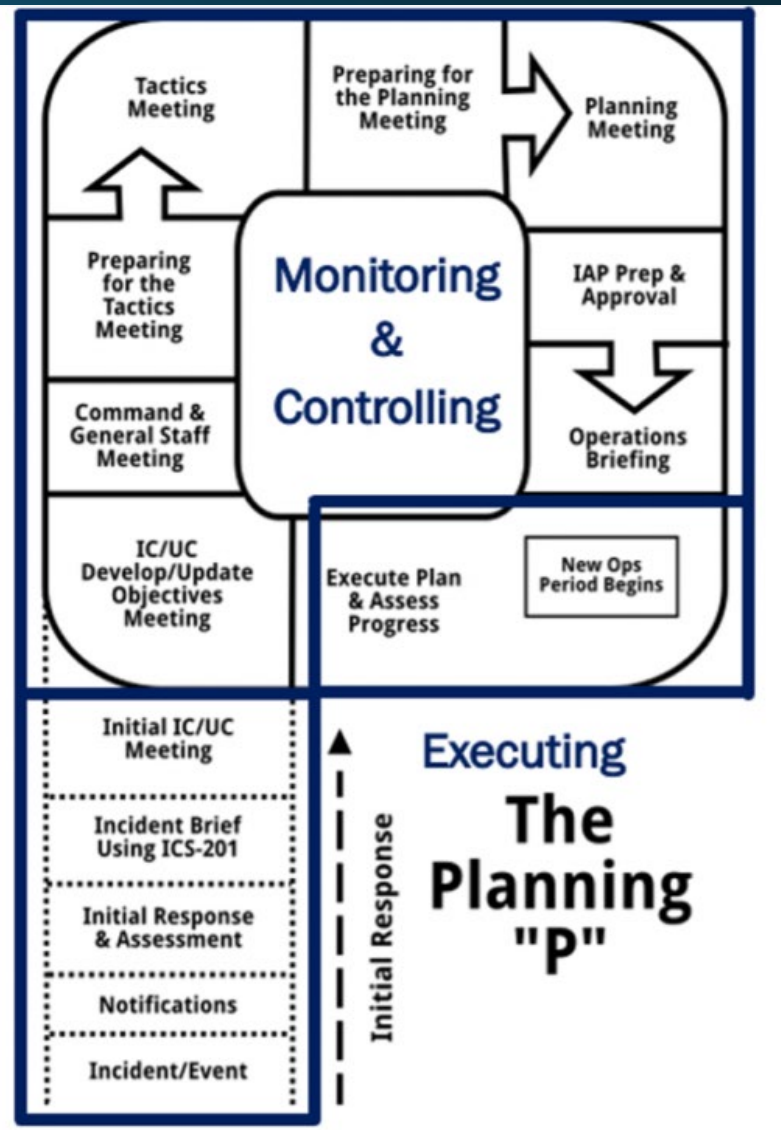
- **Intentions**: Overview the most critical resource an EOC has to offer; which is coordinated real-time information
- Emergency Information Management Structure
- Data Collection
- Analysis
- Information Sharing
- Situational Awareness
- Decision Support
- Impact Assessment
- Report/Brief Cadence
- Will not cover Public Information Officer role

The Planning "P"



Initiation





Essential Elements of Information (EEIs)

- Hazard Specific, Known unknowns
- Specific and Measurable

Weather

Weather forecast and related Information
River forecast and flooding
Extended weather
Pre-landfall Information
Predictive modeling of impacts
Hazard-specific information
Historical information

Impacts

Boundaries of Disaster Area
Boundaries of secondary disaster areas
Jurisdictional boundaries affected
Safety hazards
Evacuations
Debris

Climate Hazard Scenario + Community Member Concerns

Hazard, Risk, Vulnerability Assessment Data and Mapping

Infrastructure Status

Critical infrastructure and facilities
Transportation
Communications
Emergency operations centers

Survivors

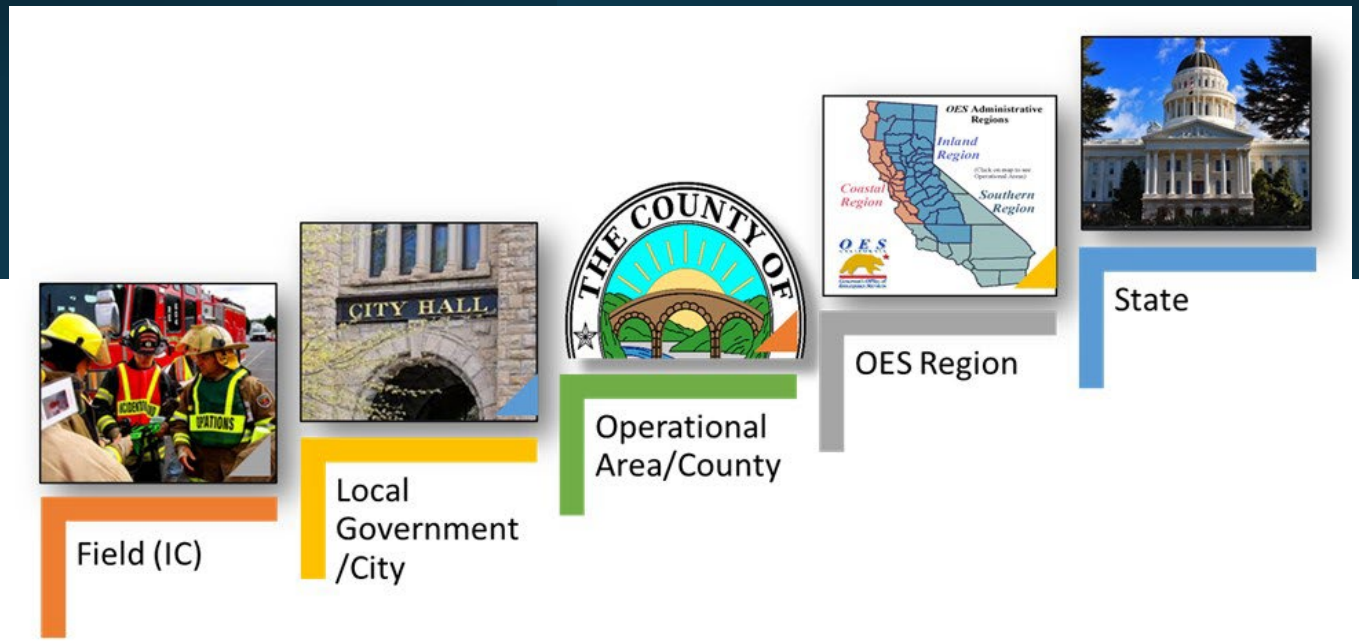
Socio-economic/Political Impacts
Demographics
Evacuations
Shelters
Medical shelters

Assessment (Fact finding phase)

Data Collection

Fact Finding Stage

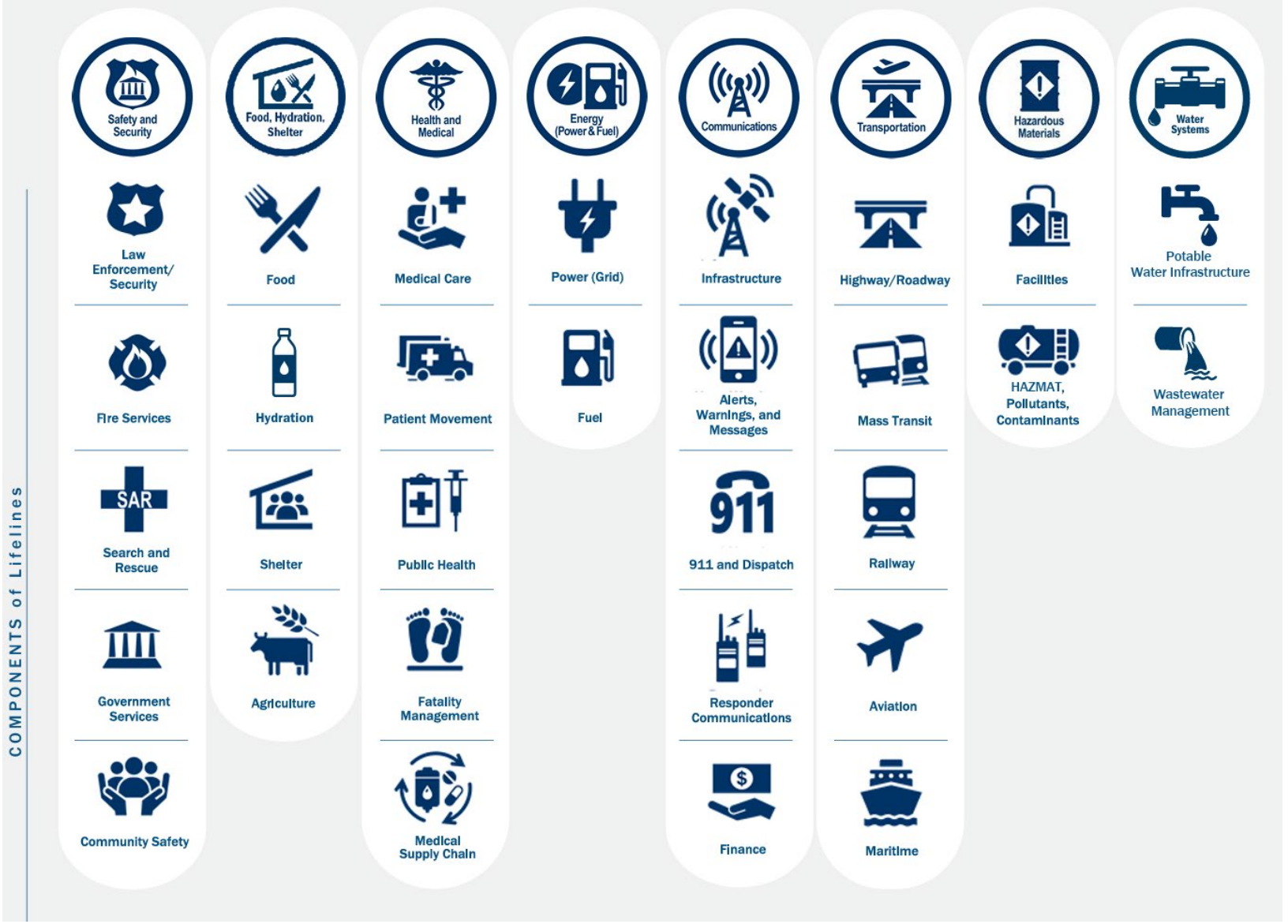
- **Essential Elements of Information; EEIs (Known Unknown)**
- **Request for Information (RFI)**
  - **Per Jurisdiction & Authority**
  - **Leveraging Subject Matter Expertise (SMEs) / Liaisons to source complex EEIs**
  - **Emergency Service Function (ESF) categorize expertise into 15 sections**
  - **Private Sector Agency Reps**



ESF #1 Transportation	ESF #2 Communications	ESF #3 Public Works & Engineering	ESF #4 Firefighting	ESF #5 Information and Planning
ESF #6 Mass Care, Emergency Assistance, Temporary Housing, & Human Services	ESF #7 Logistics	ESF #8 Public Health & Medical Services	ESF #9 Search & Rescue	ESF #10 Oil & Hazardous Materials Response
ESF #11 Agriculture & Natural Resources	ESF #12 Energy	ESF #13 Public Safety & Security	ESF #14 Cross-Sector Business and Infrastructure	ESF #15 External Affairs

Impact Assessment

- Determine if the incident is stable, cascading into a more hazardous situation or downsizing
- Secondary Factors
  - Weather forecast, Human factors
- Cascading Effects
  - Initial event led to other failures
- Advance planning can attempt to mitigate secondary impacts from the initial incident
- Consider critical infrastructure and community lifelines
  - aids in impact assessments and scaling up or down our response



Impact Assessments

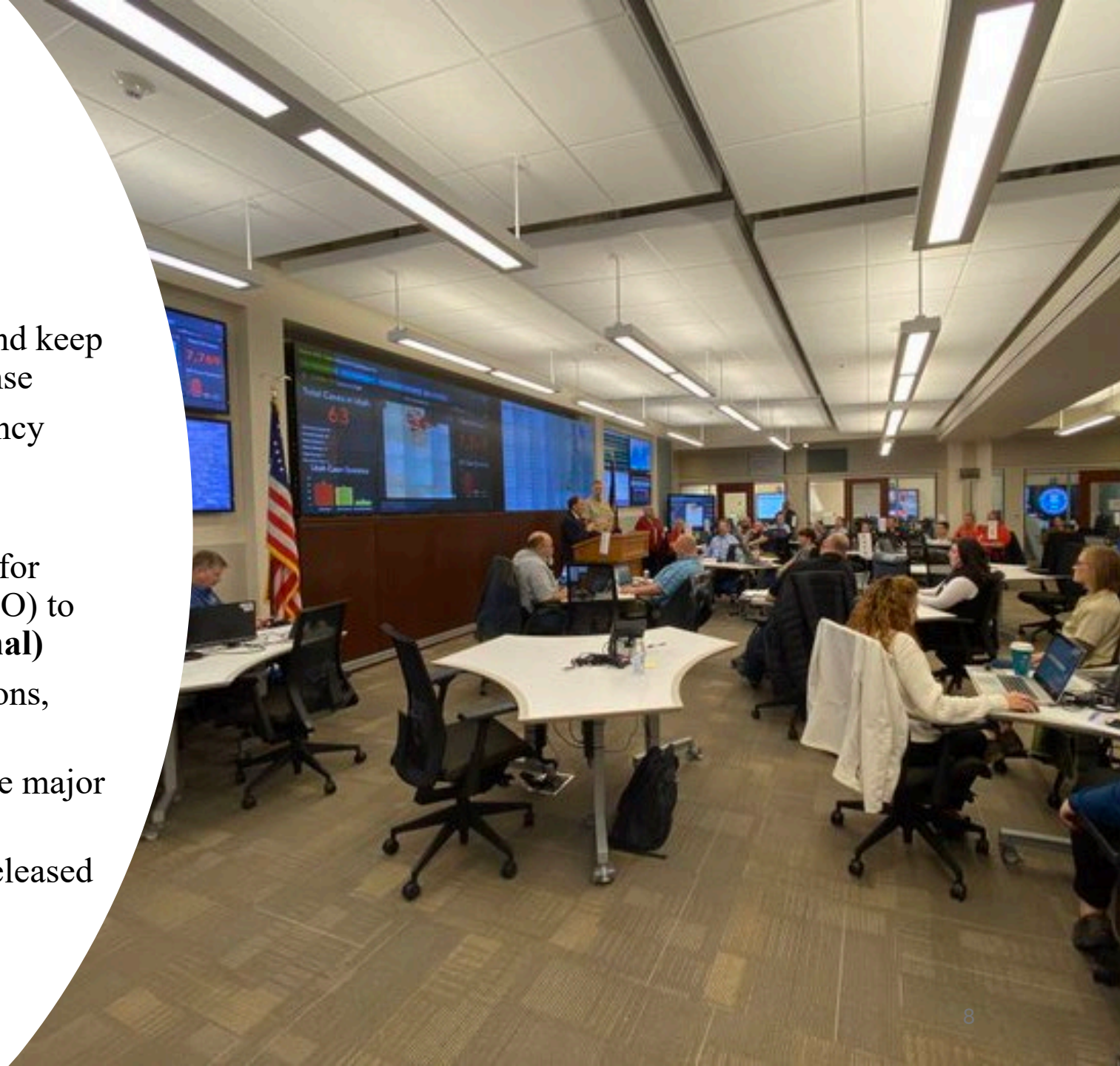
- **Casualties & Injuries:** Number of fatalities and injuries.
- **Infrastructure Damage:** Buildings, utilities, transportation networks affected.
- **Environmental Damage:** Contamination, pollution, or long-term ecological effects
- **Economic Losses:** Business interruptions, government expenditures, and property damage
- **Community & Social Impact:** Displacement, Isolated communities, psychological effects, and public sentiment
- Determines how we scale up or down our operational footprint
- Drives decisions on Public messaging, Resource Request, Proclamations and Recovery operations

Dissemination of Information: Situation Reports

Situation Reports "SitReps",

- Keeps stakeholders informed of the current situation, drives decisions to action and keep "one team" cohesion in supporting the response

- Reports due in by a specific time daily and frequency distances as incident slows
- For Official Use Only (FOUO) **Internal**
- Used to generate executive summaries (**Internal**) for elected officials and public information officer (PIO) to build talking points and public messaging **(External)**
- **Highlights:** status updates, challenges, key decisions, and staffing posture
- Helps identify emerging issues before they become major problems
- Sets an expectation of when information will be released
- Holds accountability and public records



Dissemination of Information: Coordination Calls

Coordination Meeting is an expedited method to collect and disseminate information or to discuss concerns that don't fit within a formal report template.

- Start within an hour of an initial event to brief support staff and issue roles and tasks
- Coordination Calls/meetings continues daily as needed
- Stakeholder should be present even if they have Nothing Significant to Report (NSTR)
- Document meeting minutes to identify action items, hold accountability and maintain public records
- Coord Calls should be no longer than necessary, Brief out high level factors: Department Status, Actions taken, Unmet needs

Common pitfalls in EOC information management

- Not vetting information before reporting it as fact
- Using passive words that are not objective in context
- Not using brief bullet points with time and dates
- Sending internal reports to external partners or public, when in doubt, ask your command staff/PIO
- Reports are not approved and edited by one central point of contact before distribution, inconsistent formatting
- Coordination calls invites are sent externally to public or the press
- Not directing and formalizing your RFIs to the correct jurisdictions (Law, Fire, County OES etc. ..)
- Not providing enough details that drive to decision making
- Not sharing enough to neighboring jurisdictions or incident command post (ICP)
- Not having the SME, Liaisons and stakeholders present to move decisions towards actions
- Not scrubbing outdated information out of your reports as the incident wears on
- Working in silos, not knowing what the other sections are doing
- Avoid Analysis Paralysis: Do not wait on actions or reports until you have every nuance of the situation. Follow up as needed

Questions

PHD Doc
MANAGEMENT
OPERATIONS SECTION CHIEF
SANTA CLARA COUNTY
EMS AGENCY

Town of Copperton

Jurisdictional Annex to the
Salt Lake County Hazard Mitigation Plan

Month XXXX | Draft X.X

THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT

Table of Contents

Town of Copperton Annex 1

Planning Process Contact Information 1
Jurisdiction Profile 1
Date of Incorporation 1
Location and Description 1
Population 2
Demographics 2
Brief History 2
Climate 2
Public Services 2
Governing Body 2
Development Trends 2
Jurisdiction-Specific Hazards and Risk 3
Hazard Event History 5
National Flood Insurance Program Summary 9
Jurisdiction-Specific Vulnerabilities and Impacts 9
Hazards Not Profiled 24
Jurisdiction-Specific Changes in Vulnerability 24
Additional Public Involvement 28
Plan Integration 29
Capability Assessment 30
Planning and Regulatory Capabilities 30
Administrative and Technical Capabilities 32
Financial Capabilities 33
Education and Outreach Capabilities 35
Opportunities to Expand and/or Improve Capabilities 36
Mitigation Strategy 38

DRAFT

List of Figures

Figure 1: Social Media Posts for the Hazard Mitigation Survey (*left*), from the Municipal Services District (*middle*), and for the Draft Plan Review (*right*)..... 28
Figure 2: Mitigation Survey at Copperton Park Community Event..... 29

List of Tables

Table 1: Contact Information for the Town of Copperton..... 1
Table 2: Participant List for the Town of Copperton..... 1
Table 3: Calculated Priority Risk Index Values for the Town of Copperton..... 3
Table 4: Criteria for the Calculated Priority Risk Index..... 4
Table 5: History of Hazard Events in the Town of Copperton..... 6
Table 6: National Flood Insurance Program Status for the Town of Copperton..... 9
Table 7: Jurisdiction-Specific Vulnerabilities and Impacts in the City of Copperton..... 10
Table 8: Jurisdiction-Specific Changes in Vulnerability in the Town of Copperton..... 24
Table 9: Integration of Previous Plans by the Town of Copperton..... 30
Table 10: Opportunities for Integration with Future Plans of the Town of Copperton..... 30
Table 11: Assessment of the Planning Capabilities of the Town of Copperton..... 30
Table 12: Assessment of the Regulations and Ordinances of the Town of Copperton..... 31
Table 13: Assessment of the Administrative Capabilities of the Town of Copperton..... 32
Table 14: Assessment of the Technical Capabilities of the Town of Copperton..... 33
Table 15: Assessment of the Financial Capabilities of the Town of Copperton..... 34
Table 16: Assessment of the Education and Outreach Capabilities of the Town of Copperton..... 35
Table 17: Opportunities to Expand or Improve the Capabilities of the Town of Copperton..... 36
Table 18: Mitigation Action Alternatives for the Town of Copperton..... 38
Table 19: Status of Prior Mitigation Actions of the Town of Copperton..... 38
Table 20: 2025 Mitigation Action Plan for the Town of Copperton..... 39

DRAFT

Town of Copperton Annex

To participate in this multi-jurisdictional hazard mitigation plan (MJHMP) update for Salt Lake County (SLCo), the governing body of the town of Copperton passed a formal resolution, a copy of which is maintained at the local government offices.

Planning Process Contact Information

Table 1 provides information on the point of contact during the updating of the MJHMP.

Table 1: Contact Information for the Town of Copperton

Name	Contact Information
Madison Warner	**Phone:** 801-743-7100; **email:** Mwarner@unifiedfire.org

The town of Copperton has a fully integrated approach to hazard mitigation planning and program implementation. During the 2024 update process, the MJHMP participation roles in Table 2 were recorded.

Table 2: Participant List for the Town of Copperton

Name	Title	Jurisdiction
Madison Warner	Municipal Planner at Salt Lake County Emergency Management	Kearns, Copperton, and Magna
Brad Jewett	Intelligence Specialist	Salt Lake County Emergency Management

Jurisdiction Profile

Date of Incorporation

Copperton became a metro township in January 2017, then converted to a town on May 1, 2024.

Location and Description

The town of Copperton is located southwest of Salt Lake City. The town is approximately 0.3 square miles in area and is approximately 5,400 feet above sea level. It is renowned for its picturesque landscapes and historical importance. The Copperton Historic District, which is listed on the National Register of Historic Places, includes over 230 contributing buildings.

DRAFT

Population

The 2022 American Community Survey 5-Year Estimate from the U.S. Census Bureau records the population of the town of Copperton as 865 people.

Demographics

Most of the 865 people are between the ages of 25 and 34, with a median age of 32; 461 are females (53.3%) and 404 are males (46.7%). English is the primary language in 88.4% of homes,, with 7.9% Spanish, and 3.7% other languages.

Brief History

In 1926, Copperton was established by the Utah Copper Company as a residential area and model city for its employees. It was designed to showcase company-subsidized family life featuring model brick and stucco homes, a community park, and amenities like electricity and paved streets. Construction of housing units ended in the 1930s and company-furnished housing ended in 1955. The town was added to the National Register of Historic Places in 1986 preserving its unique history and architecture.

Climate

The town of Copperton experiences a humid subtropical climate (Cfa Köppen classification) characterized by hot, humid summers and mild winters with consistent precipitation throughout the year. Average highs are approximately 78°F in the summer and approximately 33°F in the winter. Annual precipitation is approximately 16 inches annually with snowfall averaging 79 inches annually.

Public Services

The town of Copperton offers a wide range of public services through the Greater Salt Lake Municipal Services District (MSD). The MSD provides staffing and administrative support and other services and handles planning and zoning, business licensing, code enforcement, inspections, emergency planning, and related municipal services. Public works services are contracted with SLCo Public Works, which encompasses the construction and maintenance of roads, snow removal, and street lighting.

Governing Body

The town of Copperton's governing body is the Copperton Council, which includes the Mayor, Deputy Mayor, and three council members.

Development Trends

The community is physically separated from development in nearby communities by mining operation buffer areas.

DRAFT

Jurisdiction-Specific Hazards and Risk

The Calculated Priority Risk Index (CPRI) is a comprehensive assessment tool for evaluating and prioritizing risks in a given context. It considers various factors, such as probability, impact, and urgency, to determine the level of risk associated with events or situations. The results for each hazard, including its risk factor (RF) value, are shown in Table 3. The results are based on the criteria in Table 3 and the equation that follows it. The CPRI helps organizations and individuals make informed decisions about risk management and mitigation strategies. It provides a systematic approach to identifying and addressing potential issues, allowing for a more efficient allocation of resources and proactive risk prevention. With the CPRI, stakeholders can prioritize their focus on the most critical risks, leading to more effective risk management and, ultimately, better outcomes.

Table 3: Calculated Priority Risk Index Values for the Town of Copperton

Type of Hazard Event	Probability of Future Events	Spatial Extent	Severity of Life/ Property Impact	Warning Time	Duration	Response Capacity	Risk Factor Value
Avalanche	0	0	0	0	0	0	0
Drought	3	4	2	1	4	2	2.6
Earthquake	3	4	4	4	4	3	3.6
Extreme Heat	3	4	3	1	4	2	2.9
Extreme Cold	2	4	2	1	3	1	2.1
Flooding	2	1	2	2	3	3	2.1
Landslide/ Slope Failure	2	1	1	0	4	1	1.5
Radon	4	4	3	1	4	1	3.1
Heavy Rain	3	3	2	3	1	1	2.3
High Wind	2	3	2	1	1	2	1.9
Lightning	3	1	1	1	1	3	1.8
Severe Winter Weather	3	4	2	1	3	2	2.5
Tornado	1	1	3	4	1	1	1.9
Wildfire	2	2	2	4	3	2	2.3
Dam Failure	2	3	3	3	2	3	2.6
Civil Disturbance	3	1	2	3	4	1	2.4
Cyberattack	3	3	2	4	4	3	2.9
Hazardous Materials Incident (Transportation & Fixed Facility)	4	2	3	4	4	3	3.4

DRAFT

Type of Hazard Event	Probability of Future Events	Spatial Extent	Severity of Life/ Property Impact	Warning Time	Duration	Response Capacity	Risk Factor Value
Public Health Epidemic/ Pandemic	2	4	3	1	4	2	2.6
Terrorism	1	3	4	4	3	4	2.9

Table 4: Criteria for the Calculated Priority Risk Index

Risk Index Factor	Degree of Risk Level		Criteria	Factor Weight for Degree of Risk Level
Probability of Future Events	1	Unlikely	Less than 1 percent probability of occurrence in the next year or a recurrence interval of greater than every 100 years.	30%
	2	Occasional	1 to 10 percent probability of occurrence in the next year or a recurrence interval of 11 to 100 years.	
	3	Likely	11 to 90 percent probability of occurrence in the next year or a recurrence interval of 1 to 10 years.	
	4	Highly Likely	91 to 100 percent probability of occurrence in the next year or a recurrence interval of less than 1 year.	
Spatial Extent	1	Limited	Less than 10% of the planning area could be impacted.	10%
	2	Small	10%–25% of the planning area could be impacted	
	3	Significant	25%–50% of the planning area could be impacted.	
	4	Extensive	50%–100% of the planning area could be impacted.	
Severity of Life/Property Impact	1	Negligible	Less than 5% of the affected area's critical and non-critical facilities and structures are damaged/ destroyed. Only minor property damage and minimal disruption of life. Temporary shutdown of critical facilities.	30%
	2	Limited	More than 5% and less than 25% percent of property in the affected area is damaged/ destroyed. Complete shutdown of critical facilities for more than one day but less than one week.	
	3	Critical	More than 25% and less than 50% of property in the affected area was damaged/ destroyed. Complete shutdown of critical facilities for over a week but less than one month.	
	4	Catastrophic	Over 50% of critical and non-critical facilities and infrastructures in the affected area are damaged/	

DRAFT

Risk Index Factor	Degree of Risk Level		Criteria	Factor Weight for Degree of Risk Level
			destroyed. Complete shutdown of critical facilities for more than one month.	
Warning Time	1	Self-defined	More than 24 hours	10%
	2	Self-defined	12 to 24 hours.	
	3	Self-defined	6 to 12 hours.	
	4	Self-defined	Less than 6 hours.	
Duration	1	Brief	Up to 6 hours.	10%
	2	Intermediate	Up to one day.	
	3	Extended	Up to one week.	
	4	Prolonged	More than one week.	
Response Capacity	1	High	Significant resources and capability to respond to this kind of event; staff are trained, experienced, and ready.	10%
	2	Medium	Some resources and capability to respond to this kind of staff; some staff may be trained, experienced, and ready while others may need additional support.	
	3	Low	Limited resources and capability to respond to this kind of event; additional staff or staff training needed.	
	4	None	No resources and capability to respond this kind of event; additional outside support would be required.	

RISK FACTOR (RF) EQUATION

RF Value = [(Probability x 0.30) + (Spatial Extent x 0.10) + (Severity of Life/Property Impact x 0.30) + (Warning Time x 0.10) + (Duration x 0.10) + (Response Capacity x 0.10)]

Hazards with an RF value greater than or equal to 2.5 are considered high risk. Those with RF values of 2.0 to 2.4 are considered moderate risk hazards, and those with an RF value less than 2.0 are considered low risk. The highest possible RF value is 4.

Hazard Event History

Examining hazard event histories provides valuable insights to inform decision-making and help prioritize resources for risk prevention and response efforts. Table 5 lists the hazard events impacting the town of Copperton planning area since the 2019 plan update, as recorded in the Storm Events Database from the National Centers for Environmental Information.

DRAFT

Table 5: History of Hazard Events in the Town of Copperton

Type of Hazard Event	FEMA Disaster #	Date(s)	Damage or Impacts	Description
Avalanche	N/A	N/A	N/A	N/A
Drought	N/A	1930s: The Great Salt Lake and streams experienced low water levels 1950s–1960s: The Great Salt Lake experienced even lower water levels than in the 1930s. 2020: Utah experienced its driest year on record, with record dry soils and low snowpack. 2021: The Great Salt Lake reached an all-time record low due to a drought.	Air quality issues, potential for greater ecosystem collapse.	The entire county faces risk of historic drought.
Earthquake	DR-4548-UT	A 5.7M earthquake was felt March 2020. 1962: Magna 5.2M earthquake and the 1992 Western Traverse Mountains 4.2M earthquake[1]. The Magna earthquake caused minor damage to buildings in several cities and towns within one mile	Some structural damage was reported, mostly on the south end of Copperton. Walls were cracked, plaster was knocked off, and lead paint dust was released. The Greater Salt Lake Municipal Services District, which includes Copperton, received 219 damage reports online. Tens of thousands lost power.	The Wasatch Fault is considered overdue for a major earthquake, with a 57% chance of a 6.0M or greater earthquake occurring in the next 50 years. The Copperton quadrangle may experience significant ground shaking due to nearby faults, primarily the West Valley fault zone and the Wasatch fault zone, but also the Harkers fault and an unnamed fault in the southwest part of the quadrangle for which the time of latest movement is not known. Numerous earthquakes greater than 4.0 magnitude have occurred near

[1] Christensen, 1992; University of Utah Seismograph Stations, 2010a; Figure 3.

DRAFT

Type of Hazard Event	FEMA Disaster #	Date(s)	Damage or Impacts	Description
		(1.6 km) to the southwest of the epicenter, which was approximately 5 miles (8 km) north of Copperton.		the Copperton quadrangle over the past century. The proximity of Bingham Canyon Mine is a concern for larger land mass movement due to an earthquake.
Extreme Heat	N/A	Summers of 2020, 2021, 2022, 2023, 2024	Reported 9 deaths in Northern Utah, an upward trend in heat exposure and heat-related deaths since 2015. Excessive heat can also affect infrastructure.	Specific impacts on Copperton were not available, but general impacts include increased risk of heat-related illness and increased power demand for cooling systems.
Extreme Cold	N/A	Winter of 2022 & 2023	2022: 5 people experiencing homelessness died from cold-related exposure in Salt Lake City, but this threat could impact neighboring jurisdictions.	Specific impacts on Copperton were not available, but extreme cold can contribute to hypothermia and other cold-related illness/ . Increased demand for heating systems. Potential for frozen pipes or other service disruptions.
Flooding	N/A	N/A	Some minor flooding reported by residents due to faulty storm drain.	Minor residential and commercial damage occurred.
Landslide/ Slope Failure	N/A	April 10, 2013	No reported damage to the town of Copperton, as this slide was the result of mining activity and took place in a restricted area with controlled access and distance from the town.	Two massive landslides carried about 145 million tons of waste rock into the open pit at Bingham Canyon, the largest copper mine in the U.S.
Radon	N/A	Radon is present in soils.	The specific impacts of radon in the area are not known (i.e., exact count of illnesses known to be caused by radon), but test results have indicated elevated radon levels in the area.	As shown in Figures 147 and 148 in Volume 1, elevated radon levels have been found in the Copperton area.
Heavy Rain	N/A	N/A	N/A	There have been some significant rains, but no major damage associated.

DRAFT

Type of Hazard Event	FEMA Disaster #	Date(s)	Damage or Impacts	Description
High Wind	N/A	September 8, 2020	N/A	Salt Lake County and surrounding areas experienced a severe windstorm with winds exceeding 100 mph in some areas.
Lightning	N/A	N/A	N/A	N/A
Severe Winter Weather	N/A	N/A	N/A	There have been some significant winter storms, but no major damage was associated.
Tornado	N/A	N/A	N/A	N/A
Wildfire		June 17, 2022 July 30, 2019	Barney's Wash fire Small brush fire	This fire got close to Copperton but was handled by UFA, South Jordan, West Jordan, and Rio Tinto. This was a brush fire. Small brush fire in 2019 on private property south of Copperton. There were issues with access as UFA had to wait for Rio Tinto personnel to give them access.
Dam Failure	N/A	N/A	There are three dams near Copperton with significant hazard ratings that could affect the area.	The inundation areas of these dams are southeast of the town but could impact roadways or other infrastructure that are critical to the town.
Civil Disturbance	N/A	N/A	N/A	N/A
Cyberattack	N/A	N/A	N/A	N/A
Hazardous Materials Incident (Transportation & Fixed Facility)	N/A	N/A	N/A	Rio Tinto stores wastewater from the Bingham Canyon Mine, one of the largest open-pit copper mines in the world and a massive source of toxic chemicals. There are TRI facilities nearby
Public Health Epidemic/ Pandemic	DR-4525-UT	January 20, 2020 – May 11, 2023	Unknown degree of damage done to community and local economy	A pandemic of SARS-CoV-2 (also known as COVID-19) killed millions and has many medical repercussions that are still being studied. There is no specific data on Copperton residents who were affected medically or otherwise.
Terrorism	N/A	N/A	N/A	N/A

DRAFT

National Flood Insurance Program Summary

The town of Copperton participates in the National Flood Insurance Program (NFIP). Table 6 displays statistics related to the NFIP. The town of Copperton does not participate in the Community Rating System.

Table 6: National Flood Insurance Program Status for the Town of Copperton[2]

Init FHBM Identified	Init FIRM Identified	Current Effective Map Date	Adopted Date	Date Joined NFIP	Tribal
12/18/85	12/18/85	9/25/09	2009	6/3/20	No

No information was available regarding active NFIP policies, coverage amounts, losses or payments for the Town of Copperton.

Copperton has designated the Director of Planning and Development Services as the Floodplain Administrator. The duties of the Floodplain Administrator are supported by the Greater Salt Lake Municipal Services District (MSD). The current Flood Damage Prevention and Control Ordinance was adopted on 10/20/2021. The current FIRM became effective 9/25/2009. The MSD is responsible for issuing floodplain permits in MSD Member Communities, including Copperton. The permits include a description of all work, including the kind and type of construction, proposed intent, and location. Substantial damage/substantial improvement structures are identified through the permitting process. Structures that are determined to be substantially damaged or substantial improvements are required to come into compliance with current codes. The MSD Building Department provides guidance on how to build in accordance with existing building codes.

Jurisdiction-Specific Vulnerabilities and Impacts

Table 7 provides information on the vulnerable assets in the town of Copperton, including its critical facilities, highlighting the [town's vulnerability to identified hazards. By understanding the risks associated with these assets, local authorities can develop proactive strategies to mitigate vulnerabilities and ensure the safety and functionality of these important assets during hazard events. This data is invaluable for decision-making and prioritizing resources for emergency response and preparedness efforts, ultimately contributing to more effective risk management and greater resilience in the community.

Community assets that may be vulnerable to hazards in Copperton include the 865 residents, 1 fire station, Copperton Park, and the Bingham Canyon Lions Club community center. Primary roads in Copperton are 10200 South, SR 48 (New Bingham Hwy), and SR 209 (Old Bingham Hwy). The Rio Tinto Kennecott copper mine is a significant industry near Copperton. It is accessed through Copperton and the Kennecott office building is just outside the town. Natural resources in the area include the mineral contents in the nearby hills, vegetation and wildlife in the foothills, and Bingham Creek. The Copperton Historic District includes 237 buildings and 2 contributing structures in the town, mainly homes built for

[2] FIRM = Flood Insurance Rate Map, FHBM = Flood Hazard Boundary Map

employees of the Utah Copper Company between 1926 to 1941. Copperton Community Methodist Church is also listed on the NRHP.

Table 7: Jurisdiction-Specific Vulnerabilities and Impacts in the City of Copperton

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
Avalanche	People	N/A
Drought	People	*Vulnerability:* Drought can affect all populations in Copperton. Prolonged drought conditions can pose serious challenges for vulnerable groups, including seniors, children, low-income households, and individuals experiencing homelessness. *Impacts:* These residents may struggle to afford rising water bills, install water-efficient fixtures, or maintain cooling during extreme heat. Limited access to water can increase the risk of heat-related illnesses and worsen air quality as dust and particulates become more prevalent. Additionally, food security may be impacted if locally grown produce becomes scarce or if prices rise due to agricultural strain across the region. Public health can decline due to water rationing and loss/damage to green or natural spaces.
	Structures	*Vulnerability:* All structures in Copperton are vulnerable to drought. *Impacts:* Many homes in Copperton, especially older ones, may have outdated plumbing systems and appliances that use more water than current efficiency standards allow. As drought persists, properties without waterwise landscaping are more likely to contribute to fire risk from dry vegetation near buildings. Without adequate irrigation alternatives, both curb appeal and safety may decline in residential neighborhoods.
	Economic Assets	*Vulnerability:* Local businesses are vulnerable, particularly those that are dependent on a consistent water supply. *Impacts:* Local businesses that depend on a consistent water supply may experience financial setbacks. Restrictions on water use can reduce business activity, increase operational costs, or result in temporary closures. For a small community like Copperton, the ripple effects of even modest economic disruptions can be significant.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Vegetation in foothills and Copperton Park is vulnerable to drought. *Impacts:* Drought can have a visible impact on Copperton's natural environment, reducing the vitality of parks, greenways, and surrounding foothills. Vegetation loss not only affects the look of public spaces but also degrades habitat for local wildlife. Historic properties, especially those with landscaping or irrigation-dependent grounds, may suffer neglect or deterioration. Airborne dust from dry soils can contribute to respiratory issues and affect the enjoyment of outdoor cultural amenities.
	Critical Facilities and Infrastructure	*Vulnerability:* Copperton's culinary water supply is vulnerable to ongoing drought. *Impacts:* Ongoing drought may strain Copperton's culinary water supply, requiring conservation measures or temporary restrictions. Water-dependent operations at facilities such as senior centers, clinics, and schools could be disrupted. Dry conditions also elevate the

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		risk of wildfires, which can threaten key infrastructure like power lines and water treatment systems. Soil degradation from extended dryness can increase flood risk when sudden rainfall occurs, placing pressure on stormwater systems.
	Community Activities	*Vulnerability:* Community events and Copperton Park are vulnerable to the impacts of drought. *Impacts:* Parks and gathering areas in Copperton may become less inviting or safe during drought due to heat stress, dry grass, and limited irrigation. Community events may be scaled back or canceled during peak summer months to protect public health. Public outreach is essential to promote water conservation strategies, encourage heat safety practices, and educate residents about drought-tolerant landscaping options.
Earthquake	People	*Vulnerability:* All Copperton residents are vulnerable. Vulnerable populations, including the elderly, young children, low-income individuals, and unsheltered persons, may be more affected by an earthquake. *Impacts:* Health impacts can be severe, especially if people are trapped under collapsed homes or other structures.
	Structures	*Vulnerability:* All homes and other structures in Copperton are vulnerable. The 2020 earthquake highlighted the risk, and the brick houses that are predominant in Copperton are historically known to fail during earthquakes. *Impacts:* Unreinforced masonry structures are likely to experience extensive damage from a moderate or strong earthquake. This is a significant concern, as not all residents have the tools or the funds to improve their homes or businesses to withstand a significant earthquake. Residents may be injured and are likely to be displaced if homes are damaged.
	Economic Assets	*Vulnerability:* Businesses throughout the region are vulnerable. *Impacts:* Economic impacts could be great due to direct damage to businesses and service disruptions. Failure of utility and transportation systems can affect businesses' ability to function. In addition, recovery for the community and businesses may be lengthy. Access to emergency services, such as police, fire, and emergency medical services (EMS), may be disrupted.
	Natural, Historic, and Cultural Resources	*Vulnerability:* The Historic District and the environment are vulnerable to earthquakes. *Impacts:* The resources could be severely damaged due to an earthquake. Unreinforced masonry buildings could be affected. Local vegetation and wildlife could be impacted by an earthquake.
	Critical Facilities and Infrastructure	*Vulnerability:* The fire station and all town infrastructure could be negatively affected due to physical damage, utilities failure, and medical surges. *Impacts:* Access to emergency services, such as fire stations, police stations, or medical facilities, could be compromised.
	Community Activities	*Vulnerability:* Community events are vulnerable to earthquakes.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		Impacts: Community gatherings could lead to an increased risk to public safety if an earthquake were to occur in the middle of an event. Future events may be canceled.
Extreme Heat	People	*Vulnerability:* Extreme heat can affect all Copperton residents *Impacts:* In Copperton, extended periods of high temperatures pose a serious health risk. Outdoor workers and residents without access to reliable air conditioning face the highest risk of heat exhaustion or heat stroke. As summer temperatures rise, especially during midday, hospital visits may increase, while outdoor recreation decreases due to the unsafe conditions. Residents will face increased energy costs for cooling systems.
	Structures	*Vulnerability:* All structures in Copperton are vulnerable to extreme heat. *Impacts:* Prolonged heat can stress buildings and infrastructure in Copperton. Roads and pavements may crack, and roofing materials can deteriorate under intense sunlight. Structures lacking proper insulation or cooling systems may become dangerously hot inside, placing residents at risk and overloading electrical systems.
	Economic Assets	*Vulnerability:* All businesses in Copperton are vulnerable to extreme heat. *Impacts:* Businesses in Copperton face rising cooling costs during periods of extreme heat. Companies reliant on outdoor services may need to limit work hours or reduce output, resulting in lost revenue. Recreational venues, including parks and local outdoor markets, could see a drop in attendance, especially during the hottest parts of the day.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Copperton Park is vulnerable to extreme heat. *Impacts:* Local parks and green spaces may suffer from drying vegetation and declining wildlife activity, especially if heat is paired with limited water supply. Trees and plants may become more vulnerable to disease or fire. Additionally, prolonged heat may accelerate the weathering of historic structures, public monuments, and art installations.
	Critical Facilities and Infrastructure	*Vulnerability:* Community centers and power infrastructure are vulnerable to extreme heat. *Impacts:* Essential facilities such as clinics, senior centers, and community shelters in Copperton may experience spikes in utility use as they work to keep interiors cool. Power demand for air conditioning can strain the grid, increasing the risk of localized outages. Fire danger also grows during extreme heat, particularly in areas with dry vegetation.
	Community Activities	*Vulnerability:* Community events are vulnerable to extreme heat. *Impacts:* Community events held during the summer months are at risk of being delayed, relocated, or canceled if cooling measures are not available. Public participation in outdoor gatherings may decrease, especially during excessive heat warnings, limiting community engagement.
	People	*Vulnerability:* All residents are potentially vulnerable to extreme cold. Severe cold spells can be especially hazardous in Copperton for

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
Extreme Cold		vulnerable groups, including seniors, young children, lower-income families, and individuals without stable housing. *Impacts:* Residents without reliable heating, insulation, or winter clothing may struggle to stay safe. Outdoor workers are also at risk of hypothermia and frostbite if protective gear and shelter are not accessible.
	Structures	*Vulnerability:* All structures are vulnerable to extreme cold. *Impacts:* Cold temperatures can cause pipes to freeze and burst in both older and newer homes lacking proper insulation. Prolonged exposure to cold can weaken roofing materials and compromise structural components, especially when followed by heavy snowfall. Repeated freeze–thaw cycles can deteriorate wood, brick, and metal components of buildings over time.
	Economic Assets	*Vulnerability:* Businesses and household budgets are vulnerable to extreme cold. *Impacts:* Heating expenses tend to spike during winter storms and cold snaps, placing a financial burden on both households and businesses. Companies may need to adjust hours of operation or delay projects due to weather-related barriers. The town may also face increased costs for maintaining warming shelters or assisting residents with heating needs.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Wildlife, vegetation, and the Historic District are vulnerable to extreme cold. *Impacts:* Extreme cold can take a toll on native wildlife in Copperton, particularly species not well adapted to sudden drops in temperature. Vegetation may also suffer, especially if cold is accompanied by wind or ice. Historic properties may be at risk of material damage or structural wear due to the expansion and contraction of building components.
	Critical Facilities and Infrastructure	*Vulnerability:* Cold weather can stress key systems in Copperton, including emergency services, utility lines, and water distribution systems. *Impacts:* Power outages are more likely when ice or snow accumulates on lines. Burst pipes in critical facilities, such as fire stations or clinics, could disrupt service delivery during emergencies.
	Community Activities	*Vulnerability:* Community activities are vulnerable to extreme cold. *Impacts:* Outdoor events and programs may be canceled if temperatures become dangerously low or snow makes travel difficult. Icy roads and unreliable vehicles can prevent residents from attending both recreational and essential services. Without sufficient heating in public spaces, community gatherings may have to be postponed or moved indoors.
Flooding	People	*Vulnerability:* People near Bingham Creek or low-lying areas are vulnerable to flooding. No Special Flood Hazard Zones (SFHZs) are within the town boundaries. *Impacts:* Individuals may need rescuing from high waters. Waterborne hazardous materials from Kennecott Mine could pose an additional risk, especially if they overflow Bingham Creek reservoir. Unsheltered populations, young children, low income, and the elderly are a

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		significant concern. Persons displaced by flooding may need public shelter.
	Structures	*Vulnerability:* No SFHZs are within Copperton. Some structures near Bingham Creek or in low-lying areas may be vulnerable to flooding. *Impacts:* Structures may be affected if they are exposed to floodwaters. Damage can include foundation damage, cracked pipes, damaged electrical systems, and mold. In addition, entire structures can be carried away if the water is moving very fast.
	Economic Assets	*Vulnerability:* Kennecott mine and other businesses are vulnerable to flooding. *Impacts:* Flooding could interrupt commerce and cause major interruptions to Kennecott Mine, particularly if roadways are damaged or closed. Rebuilding structures affected by flooding could be a significant cost for the town if financial assistance is not provided or the homeowner does not have flood insurance.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Wildlife, vegetation, and the Historic District are vulnerable to flooding. *Impacts:* Flooding can impact local wildlife and flora/fauna with the sheer amount of water and debris that move into the area. This could impact historical buildings or infrastructure, especially if they do not have flood insurance or the funds to rebuild.
	Critical Facilities and Infrastructure	*Vulnerability:* Roads and utilities are vulnerable to flooding. *Impacts:* Floodwater could damage roads and utilities, and carry hazardous materials. Access to emergency services like police, fire, and medical facilities would be impacted by flooding.
	Community Activities	*Vulnerability:* Community events and Copperton Park are vulnerable to flooding. *Impacts:* The time it takes for the town to recover from a significant flooding event would impact the ability to have community events. Local parks or businesses may not be able to operate.
Landslide/ Slope Failure	People	*Vulnerability:* The majority of landslide risk is associated with Kennecott Mine. This could include its employees. The slope on the north end of town has moderate susceptibility to landslides and could pose a risk to residents. *Impacts:* People could be injured if caught in a landslide. If the mine is affected, residents could lose wages or experience other impacts from possible closures or inability to work.
	Structures	*Vulnerability:* The majority of landslide risk is associated with Kennecott Mine. This could include its structures. The slope on the north side of town may pose a risk of landslide to nearby structures. *Impacts:* Homes could be damaged, and residents displaced. Repairs may be difficult or costly.
	Economic Assets	*Vulnerability:* The majority of landslide risk is associated with Kennecott Mine. *Impacts:* This could disrupt or halt mine operations and lead to loss of revenue and lost wages for employees.
	Natural, Historic, and	*Vulnerability:* Vegetation and environmental contamination are vulnerable to landslides.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Cultural Resources	*Impacts:* Landslide can impact local vegetation with excess debris in certain areas that may affect air or water quality. With Rio Tinto nearby, hazardous materials can seep into the soil or impact local wildlife and vegetation.
	Critical Facilities and Infrastructure	*Vulnerability:* Major roadways in and near Copperton, utilities, and emergency response are in landslide-susceptible areas. *Impacts:* Landslides could disrupt transportation to the town or to those who are employed at the Kennecott Mine. Managing debris after an incident would affect the ability of public works to complete their day-to-day duties. In addition, excess debris could affect essential services like power, water, medical facilities, police, and fire. Road access becomes an issue.
	Community Activities	*Vulnerability:* Community activities are vulnerable to landslides. *Impacts:* Community activities could be impacted if recreation areas, local businesses, or residential homes cannot be rebuilt or restored to their original condition.
Radon	People	*Vulnerability:* There are a significant number of properties throughout Copperton that have high radon levels. Seventy-seven percent of homes tested in the Copperton zip code have dangerous radon levels. *Impacts:* Radon increases risk of lung cancer for people exposed to it.
	Structures	Structures: Radon doesn't directly damage structures, but structural design or deterioration may contribute to radon accumulation. *Impacts:* Radon can seep through cracks in foundations or walls and accumulate in homes, putting occupants at risk of lung cancer. There are properties throughout Copperton with high radon levels. Radon kits are available through the state and other online services, but the cost may prevent people from purchasing them.
	Economic Assets	*Vulnerability:* Businesses and home values are vulnerable to high radon levels. *Impacts:* The cost of remediation for high radon levels and radon monitoring services may prevent people from reducing their radon levels. This can affect overall home prices and the local economy if it is known that the area has high radon levels.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Historical structures and the environment are vulnerable to radon exposure. *Impacts:* Local vegetation and wildlife can be impacted by radon. In addition, historical structures may be affected by radon, especially if it is not mitigated or they have poor ventilation. Older homes may have structural deterioration that contributes to radon entering the home.
	Critical Facilities and Infrastructure	*Vulnerability:* Fire station and community centers are vulnerable to radon. *Impacts:* Critical facilities and infrastructure may be impacted if there are high radon levels because remediation is required. Occupants may be exposed to radon. Radon may also impact access to critical facilities if people have existing health conditions.
	Community Activities	*Vulnerability:* Community activities have minimal vulnerability to radon exposure.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		Impacts: Radon poses a higher risk from long-term indoor exposure. Attendance at community activities, especially those held indoors, could be impacted if radon levels are high. Those who are immunocompromised or have existing health conditions may choose not to attend because of the health risks associated with radon.
Heavy Rain	People	*Vulnerability:* Heavy rain can occur anywhere in the city, and all individuals are potentially vulnerable. *Impacts:* Individuals may need rescuing from high waters. Waterborne hazardous materials from Kennecott Mine could pose an additional risk, especially if the Bingham Creek reservoir overflows. Unsheltered populations, young children, low-income individuals, and the elderly are a significant concern.
	Structures	*Vulnerability:* Structures near low-lying areas or impervious surfaces could be affected by ponding or high runoff during heavy rain. *Impacts:* Structures may be affected if they are exposed to localized flooding. This can include foundation damage, cracked pipes, damaged electrical systems, and mold. In addition, entire structures can be carried away if the water is moving very fast.
	Economic Assets	*Vulnerability:* All businesses in Copperton are vulnerable to heavy rain. *Impacts:* Heavy rain and localized flooding could interrupt commerce and cause major interruptions to Kennecott Mine. Repairs to damaged structures or infrastructure could be a significant cost if financial assistance is not provided or the homeowner does not have flood insurance.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Wildlife, vegetation, and waterways are vulnerable to heavy rain. *Impacts:* Flooding can impact local wildlife and flora/fauna with the sheer amount of water and debris that move into the area. Heavy rain can cause erosion and damage to habitats. Historical homes could also be damaged by flooding.
	Critical Facilities and Infrastructure	*Vulnerability:* Roads, utilities, and emergency response systems are vulnerable to heavy rain. *Impacts:* Localized flooding from heavy rain could damage roads and utilities, and carry hazardous materials. Access to emergency services, such as police, fire, and medical facilities, could be disrupted.
	Community Activities	*Vulnerability:* Outdoor events and recreation are vulnerable to heavy rain. *Impacts:* Outdoor events may be disrupted or canceled due to heavy rain. Local parks or businesses might not be able to operate. It may take significant time for the town to recover from damage caused by heavy rain.
High Wind	People	*Vulnerability:* All residents in Copperton can face risks during high wind events, especially those who are outdoors or near structures and trees. *Impacts:* Blowing debris, falling branches, and damaged infrastructure can cause injuries. Wind-related hazards may be especially dangerous for children, seniors, and individuals with mobility challenges, who may have limited ability to seek shelter quickly.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Structures	*Vulnerability:* Buildings in Copperton, particularly older homes, sheds, and fences, are vulnerable to wind-related damage. *Impacts:* Shingles can be lifted, windows shattered, and trees or utility poles may fall onto roofs or vehicles. Wind can also loosen signs and lightweight materials from commercial properties, creating additional hazards.
	Economic Assets	*Vulnerability:* Copperton businesses are vulnerable to high wind. *Impacts:* Storm damage can temporarily or permanently shut down small businesses, especially those without adequate insurance coverage. Clean-up costs and service disruptions can affect local commerce. Businesses that depend on consistent access to customers or transportation routes may experience revenue losses.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Copperton Park and historic homes are vulnerable to high wind. *Impacts:* Strong winds can damage trees, wildlife habitats, and park infrastructure in Copperton's green spaces. If historic landmarks or cultural sites are impacted and lack proper insurance or funding for repair, it may be difficult to restore them to their original condition.
	Critical Facilities and Infrastructure	*Vulnerability:* Power lines, roads, and emergency response systems are vulnerable to high wind. *Impacts:* Windstorms can down power lines, damage utility systems, and scatter debris across local roads, making emergency response more difficult. Disruptions to road access can delay fire, EMS, and law enforcement operations. Public infrastructure like water systems and electrical grids may also be affected, particularly in more remote parts of the community.
	Community Activities	*Vulnerability:* Outdoor events and recreation are vulnerable to high wind. *Impacts:* Outdoor gatherings, such as fairs or sporting events, may need to be canceled or delayed due to safety concerns during high wind events. Without proper shelter or medical staff on-site, the risk of injury during these storms increases.
Lightning	People	*Vulnerability:* Lightning presents a direct danger to anyone caught outside during storms, which potentially includes all Copperton residents. Those involved in recreation or outdoor work are most vulnerable. *Impacts:* Those in proximity to a lightning strike can be seriously injured or killed. Individuals may also be harmed by secondary effects of lightning, such as structure fires, electrical surges, or when lightning strikes water or conductive surfaces nearby.
	Structures	*Vulnerability:* Homes, barns, and outbuildings may be struck by lightning. *Impacts:* Lightning strikes can cause fires or electrical damage. Buildings without proper lightning protection systems are at higher risk, especially if they have outdated electrical infrastructure or are located in exposed areas.
	Economic Assets	*Vulnerability:* All Copperton businesses are vulnerable to lightning.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		Impacts: Fires or damage resulting from lightning strikes can cause costly repairs for local businesses. Prolonged closures may follow if critical systems are damaged. If such incidents are publicized, they may also impact the community's reputation for safety and deter new residents or business development.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Environment, wildfire risk, and risk to historic homes to lightning. *Impacts:* Lightning can ignite dry vegetation in Copperton, potentially sparking wildfires that damage ecosystems. Public safety and infrastructure, transportation, and other local resources may be overwhelmed by cascading effects like wildfires or medical surges. Historic buildings and cultural landmarks may be especially difficult to repair if they are not insured or if restoration resources are limited.
	Critical Facilities and Infrastructure	*Vulnerability:* Lightning can damage power infrastructure, communication towers, and electrical substations. *Impacts:* Damage to utilities can result in power outages or electrical surges. Medical responders could experience increased demand if lightning strikes cause injuries, and response efforts may be delayed if infrastructure is compromised.
	Community Activities	*Vulnerability:* Outdoor events, recreation, sports, and markets are vulnerable to lightning. *Impacts:* Outdoor events may be canceled due to lightning risks, particularly if shelter options are limited. Repeated interruptions during summer events could reduce attendance and engagement in community programs.
Severe Winter Storm	People	*Vulnerability:* All residents are potentially vulnerable. Cold snaps and snowstorms pose significant risks in Copperton, particularly for seniors, young children, low-income households, and unsheltered residents. *Impacts:* Individuals working outdoors, such as construction crews or service workers, are vulnerable to frostbite and hypothermia if safety precautions are not in place. Snow accumulation can also isolate residents who lack the means or ability to clear paths or driveways.
	Structures	*Vulnerability:* All structures are vulnerable to severe winter storms. *Impacts:* Buildings with flat or poorly maintained roofs are susceptible to collapse under heavy snow or ice loads. In older structures, pipes may freeze and burst during prolonged cold periods. Fluctuating temperatures can cause expansion and contraction of building materials, leading to gradual structural wear.
	Economic Assets	*Vulnerability:* All Copperton businesses to severe winter storms. *Impacts:* Local commerce may slow or halt altogether if roads remain uncleared or if facilities cannot maintain heat. Heating costs may rise for residents and businesses alike. Snow events may also interrupt operations for delivery services, contractors, and tourism-related businesses.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Parks, mature trees, and historic homes are vulnerable to severe winter storms. *Impacts:* Parks and trees can suffer from broken limbs and root damage due to ice buildup. Historical structures may also face

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		increased stress during severe weather, especially if roofs or foundations are not built to handle significant snow weight.
	Critical Facilities and Infrastructure	*Vulnerability:* Utilities, roads, and emergency response systems are vulnerable to severe winter storms. *Impacts:* Utilities in Copperton can be interrupted by ice or snow. If public works teams are unable to clear roads in a timely manner, emergency responders may be delayed. Extended exposure to cold can strain community infrastructure such as heating centers, water towers, and substations.
	Community Activities	*Vulnerability:* Community events are vulnerable to severe winter storms. *Impacts:* Outdoor events during the winter months may be canceled if snow removal and heating support are unavailable. Residents may be unable to attend community gatherings or access essential services if roads become impassable or cars fail to start in subzero temperatures.
Tornado	People	*Vulnerability:* Though rare, tornadoes remain a possibility in Copperton and all residents are at risk. *Impacts:* Tornadoes can cause serious injury or death. People in mobile homes or older, unreinforced structures are at greater risk. A tornado strike can disrupt transportation and limit access to hospitals, schools, and other essential services. Emergency responders may face increased demands due to injuries and displacement.
	Structures	*Vulnerability:* Homes, businesses, and public buildings are all vulnerable to tornadoes. *Impacts:* Structures may experience roof damage, shattered windows, or even full structural collapse during a tornado. Buildings without basements or safe rooms provide less protection. Recovery time can be lengthy, especially if damage is widespread.
	Economic Assets	*Vulnerability:* All Copperton businesses are vulnerable to tornadoes. *Impacts:* Businesses may close temporarily or permanently following a tornado, particularly if they lack insurance coverage or emergency funds. Job loss and economic disruption can follow, especially in small communities where businesses are tightly woven into local infrastructure and services.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Parks, natural plants and wildlife, and historic homes are vulnerable to tornadoes. *Impacts:* Tornadoes can damage vegetation, parks, and wildlife corridors in and around Copperton. Historical buildings made of older materials are especially vulnerable and may be difficult to restore. Loss of cultural spaces like community halls or public landmarks can have lasting emotional and economic effects.
	Critical Facilities and Infrastructure	*Vulnerability:* Utilities and emergency facilities, such as the fire station, are vulnerable to tornado damage. *Impacts:* Water and power services can be interrupted if distribution lines are affected. Blocked roads may prevent timely access for ambulances, fire trucks, or police vehicles. Re-establishing power and communications could take days, depending on the extent of destruction.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Community Activities	*Vulnerability:* Community centers and events are vulnerable to tornadoes. *Impacts:* Community centers and recreation facilities may be shut down for repairs, limiting access to programs and services. Outdoor events would need strong contingency plans or cancellations if tornado risks increase. Rebuilding efforts may take priority, reducing the availability of public spaces for months following a disaster.
Wildfire	People	*Vulnerability:* Copperton is located near the foothills of the Oquirrh mountains where wildfires are more likely than more urban areas. All residents are potentially at risk. *Impacts:* Urban interface wildfire areas can pose a health and safety hazard due to unpredictable or fast-moving fires. Residents may be evacuated from homes. Limited transportation routes to town could increase risk. There are health concerns about hazardous materials exposure if the fire starts at Rio Tinto and moves into Copperton. Wildfire smoke contributes to unhealthy air quality, which may impact Copperton residents even if the fire is not nearby.
	Structures	*Vulnerability:* All structures in Copperton are in close proximity to a moderate to high wildfire risk area and are at risk. Those closest to the foothills are at the highest risk. *Impacts:* Wildfire can damage structures and affect emergency services. If people do not have insurance, they may not be able to afford residential repairs.
	Economic Assets	*Vulnerability:* Local businesses could suffer if they do not have the funds to repair damage. If the area is prone to burning, there is also the reputational impact, where people do not want to visit if it is not safe or high risk.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Natural spaces and resources, such as vegetation and wildlife, as well as historic homes, are vulnerable to wildfires. *Impacts:* Wildfires can lead to the loss of natural spaces and wildlife habitats and may increase erosion. Historic buildings would need to be rebuilt. The extensive open space surrounding Copperton raises concerns about small brush fires that could grow. Nearby Rio Tinto land poses a risk, as any fire or chemical leak could impact Copperton's vegetation and wildlife.
	Critical Facilities and Infrastructure	*Vulnerability:* Fire station, utilities, and roadways are vulnerable to wildfires. *Impacts:* Interruptions to utilities and transportation are possible. Power could be turned off if it is deemed unsafe by Rocky Mountain Power. Road access and communications are concerns if emergency services cannot reach residents. Medical services would be impacted if they have to run on a generator or other limited power source.
	Community Activities	*Vulnerability:* Community activities and events are vulnerable to wildfires. *Impacts:* Events may be disrupted or possibly canceled, especially in outdoor areas like parks, if there is high wildfire risk. Areas with a lot of brush or natural vegetation present a high risk, which may deter people from engaging in recreation in those areas.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
Dam Failure	People	*Vulnerability:* There are three dams in Copperton, one ranked as high hazard and two rated as significant hazard—Kennecott Mine Bingham Creek, Kennecott Mine Small Reservoir, and Large Bingham Reservoir Distilling Basin. *Impacts:* The dams are located downslope of most residences and are not likely to directly impact people. However, access to emergency services, such as police, fire, or medical, support could be disrupted if the Kennecott Mine Bingham Creek Dam has a sunny day failure that spills into West Jordan. Public health could be impacted if there is no clean drinking water or if there is a power failure.
	Structures	*Vulnerability:* The Kennecott Mine Bingham Creek sunny day failure for dam inundation would impact surrounding jurisdictions. Direct vulnerability to Copperton structures is low. *Impacts:* Significant flooding could occur, impacting emergency vehicle access to and from Copperton.
	Economic Assets	*Vulnerability:* Business disruptions throughout Copperton are possible. *Impacts:* Flooding could cause substantial travel delays for residents and local businesses, which impacts the economy. Recovery efforts are tied to the amount of money or insurance people have to be able to rebuild after a dam failure. In addition, further inspections may be required for structures that are affected by a dam failure if there are any hazardous materials in the Rio Tinto-owned dams.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Vegetation, wildlife, and historic homes are vulnerable to dam failure. *Impacts:* Local vegetation and wildlife could be impacted if there is a dam failure. Historical buildings are at risk, especially if an insurance policy or adequate funds are not available to make repairs after flooding or other damage from a dam failure.
	Critical Facilities and Infrastructure	*Vulnerability:* Roads and downstream critical facilities are vulnerable to dam failure. *Impacts:* The Kennecott Mine Bingham Creek sunny day failure for dam inundation would impact surrounding jurisdictions. It could cause significant flooding and impact emergency vehicle access to and from Copperton.
	Community Activities	*Vulnerability:* All community events are vulnerable to dam failure. *Impacts:* Community activities would be affected, especially outdoor events, due to impacts on local vegetation, particularly if exposed to chemicals or other hazardous materials from the dam failure. Plants may not grow in certain areas, and it can also affect air quality.
Civil Disturbance	People	Possible risk to health or safety. A civil disturbance could overwhelm local resources and potentially impact access to emergency services if people are injured.
	Structures	Looting or damage to buildings is possible.
	Economic Assets	Theft or interruption of services/transportation. It can affect Copperton from a reputation standpoint if people are afraid to visit or live in the area after a civil disturbance. They may also be concerned about crime.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Natural, Historic, and Cultural Resources	Local business owners may be impacted if they cannot afford repairs associated with property damage.
	Critical Facilities and Infrastructure	Service/transportation interruption. Power and water service could be affected if they are struck or shut down. Police and fire could be impacted if roads are inaccessible.
	Community Activities	Outdoor community activities would be impacted if it is not safe or vandalism is likely.
Cyberattack	People	Communication interruptions or power failure is a concern for vulnerable populations.
	Structures	A cyberattack could impact the physical security of buildings or residential homes if the security system can be hacked into. In addition, a cyberattack could affect fire suppression systems or evacuation methods, which would exacerbate the issue.
	Economic Assets	Flow of commerce could be interrupted. This could impact payroll or other virtual systems for emergency services, local businesses, government services, or residential homes (like paying a mortgage or utility bill). If people cannot use the internet or are locked out a specific account, it is challenging to pay bills, complete projects, or access information.
	Natural, Historic, and Cultural Resources	Natural, historic, and cultural resources could be impacted if the cyberattack accesses critical infrastructure like water or power. This could disrupt the energy grid by manipulating data or overriding emergency systems. It could flood areas, redirect emergency services, or shut off power.
	Critical Facilities and Infrastructure	Delivery of utilities could be affected. In addition, critical infrastructure could be compromised if the hacker is asking for a ransom or the cyberattack cannot be resolved in a reasonable time for power/water infrastructure to come online. Shelters would have to be set up to provide essential services.
	Community Activities	Community activities can be impacted from a reputational perspective if there is no public trust. The public may not want to go to certain areas or visit local businesses in Copperton if they are affected by a cyberattack.
Hazardous Materials Incident (Transporta-tion & Fixed Facility)	People	High risk of exposure due to the proximity of the industrial mining operation. This can include respiratory illnesses or other health impacts from exposure.
	Structures	Could require people to evacuate or shelter in place. Structures would have to complete HazMat cleanup if they were exposed to hazardous materials or in the area affected by an incident.
	Economic Assets	Mainly would affect operations at Rio Tinto but could also affect small businesses in the town. Local businesses may not financially recover from business loss after hazmat clean up, whether that's from a reduction in customers or the amount of time they were closed.
	Natural, Historic, and	Could severely damage local vegetation. Natural, historical, and cultural resources would be affected by the exposure to hazardous materials. Remediation or ventilation may be needed.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Cultural Resources	
	Critical Facilities and Infrastructure	Possible interruption of essential services like fire, police, and EMS. Access to medical facilities could be impacted if there are significant road closures.
	Community Activities	Outdoor community activities could be impacted if the local vegetation was affected by the hazardous materials. Outdoor recreation may be a concern for vulnerable populations.
Public Health Epidemic/Pandemic	People	Direct risk due to contagious/severe illnesses. Vulnerable populations are especially at risk if they are exposed, which could overwhelm medical facilities or create a medical surge.
	Structures	If medical facilities are overwhelmed, additional local facilities or temporary structures may have to be identified to accommodate patients.
	Economic Assets	Interruptions of normal business operations, potential reduction in the workforce, and social distancing restrictions that can impact local businesses.
	Natural, Historic, and Cultural Resources	Increased use of outdoor spaces as seen with the COVID-19 pandemic. Restricted access to outdoor areas or historical buildings if social distancing is required. This can also impact the visitation to those areas if people do not want to socially distance or are afraid of the potential exposure.
	Critical Facilities and Infrastructure	Increased use of public health resources, leading to a medical surge. Illness for public safety or healthcare professionals if they are working with or exposed to patients experiencing symptoms.
	Community Activities	Community activities and events would be impacted by social distancing requirements. People may opt for virtual instead of in-person activities.
Terrorism	People	People could be scared to recreate outside due to previous terrorism events or could sustain injuries from a terrorism event.
	Structures	Structures could sustain damage from a terrorism event and the owner's financial situation could affect their ability to make repairs. If it is commercial property, they may be concerned about future terrorism events and choose to relocate.
	Economic Assets	The reputation of the area post-terrorism event could affect the local businesses, whether those are existing or new. A new business may not want to move into the area if the land or building was previously affected by a terrorism event. In addition, the terrorism event could be costly for a resident or local business to make needed damage repairs.
	Natural, Historic, and Cultural Resources	Historic buildings or cultural resources could be impacted if there is lower visitation by locals or tourists. Local wildlife may migrate into a different area if there is significant activity in where they typically go.
	Critical Facilities and Infrastructure	Critical facilities and infrastructure would be affected by a targeted terrorism event. Essential employees may not be able to perform their

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		job duties and water/power infrastructure could be shut down or damaged.
	Community Activities	Community activities could be affected by a terrorism event if the reputation of the area declines. If it is deemed unsafe or if there are multiple incidents in the same area, people won't want to recreate or attend events.

Hazards Not Profiled

Avalanche has been omitted from further discussion of hazard impacts and from mitigation actions. As shown in the description in Volume 1, avalanche risk is primarily in the Wasatch Mountains in SLCo. No previous occurrences of avalanche have impacted Copperton.

Jurisdiction-Specific Changes in Vulnerability

Hazard events can impact communities, infrastructures, and ecosystems. The severity of these impacts can be influenced by climate change, population patterns, and land use developments. Understanding these factors is crucial for the town of Copperton to develop a resilient community and minimize the impacts of hazards.

Table 8 displays the unique changes within the community and the related effects on each identified hazard affecting the town of Copperton.

Table 8: Jurisdiction-Specific Changes in Vulnerability in the Town of Copperton

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
Avalanche	N/A	N/A	N/A	N/A
Drought	Extreme or unusual weather, lack of rainfall, decreased snowpack	An increased population has led to greater need for water resources, such as for cooling, landscape maintenance, commercial businesses, and emergency services. Population has increased since 2019.	Increased development in Rio Tinto may also increase its water needs.	Increased due to climate change and population growth
Earthquake	Extreme or unusual weather patterns, increased greenhouse gas emissions, and	Increased road use with an increased population.	Increased development at Rio Tinto could increase the risk of seismic events in Copperton.	Same

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	rising sea levels can trigger seismic activity.			
Extreme Heat	Extreme or unusual weather, drought, less local vegetation, wildlife, and snowpack Increases in extreme heat can be closely related to increased impacts of drought and wildfire.	An increased population requires more water use for essential services, local businesses, and landscaping. In addition, resources like cooling facilities for vulnerable populations are needed.	There have been minimal changes in land use and development in Copperton since the previous hazard mitigation plan update.	Increased due to climate change and the increased population
Extreme Cold	Extreme or unusual weather, reduction in local vegetation and wildlife	The increased population may place a strain on local resources, such as power and water infrastructure to run essential services or the staffing needed at warming centers for vulnerable populations.	There have been minimal changes in land use and development in Copperton since the previous hazard mitigation plan update.	Increased due to climate change and the increased population
Flooding	Extreme/ unusual weather (like heavy rain events, preventing the soil from absorbing moisture), excess debris, contamination and disease	Vulnerable populations (the elderly, young children, and unsheltered) may be impacted by flooding if they cannot seek shelter or get out of the flood zone in time. The increased population can also impact essential services, creating a medical surge if people are injured.	There have been minimal changes in land use and development in Copperton since the previous hazard mitigation plan update.	Increased due to climate change and the increased population
Landslide/ Slope Failure	Drought, decreased snowpack, variable rain patterns can all contribute to changes in soil moisture and slope stability.	The number of workers at Rio Tinto could impact evacuation procedures and overwhelm Copperton if people are moving into the area. There could be a medical surge due to population growth in Copperton.	The increased development at the neighboring Rio Tinto site could impact Copperton through landslide and/or slope failure.	Increased due to climate change and population growth

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
Radon	Greater exposure to radon if we continue to see higher temperatures (permafrost thawing allows radon to seep through).	The continued activity in Rio Tinto as well and the population growth in Copperton places mores people at risk.	There have been minimal changes in land use and development in Copperton since the previous hazard mitigation plan update.	Same but population growth increases the number of people exposed to hazard
Heavy Rain	Extreme or unusual weather, flooding, landslides, soil or crop damage, water quality	Heavy rain could cause flooding which would impact residential areas and local businesses. It could also disrupt or prevent timely response from emergency vehicles if roadways are flooded or blocked by debris.	There have been minimal changes in land use and development in Copperton since the previous hazard mitigation plan update.	Increased due to climate change and population growth.
High Wind	Extreme or unusual weather, air quality, water quality, soil erosion	Vulnerable populations (the elderly, young children, and unsheltered) would be impacted if they cannot seek shelter. They would also be the most affected by poor air or water quality.	Materials from increased development at Rio Tinto could be pushed into Copperton, affecting water, soil, and air quality.	Increased due to climate change
Lightning	Extreme or unusual weather, increased likelihood of fires, air pollution, greenhouse gas emissions	Vulnerable populations (the elderly, young children, and unsheltered) may not be able to find or take shelter.	There have been minimal changes in land use and development in Copperton since the previous hazard mitigation plan update.	Increased due to climate change and population growth
Severe Winter Weather	Extreme or unusual weather, less outdoor recreation or investment in local economy (not going out to eat, attending community events, or commuting in/out of town)	The population growth places socially vulnerable groups at risk, especially if heavy snow is associated with a Code Blue alert where shelters must increase their capacity. Heavy snow can also place a strain on fire, police, and EMS if there are car accidents or falls.	There have been minimal changes in land use and development in Copperton since the previous hazard mitigation plan update.	Increased due to climate change and population growth

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
Tornado	Possible increase in severe thunderstorms; diminished quality of air, water, and soil	Vulnerable populations (the elderly, young children, and unsheltered) are most at risk of serious injury.	There have been minimal changes in land use and development in Copperton since the previous hazard mitigation plan update.	Same
Wildfire	Extreme or unusual weather, soil erosion, landslides, drought, lack of vegetation, higher temperatures	Rebuilding is a concern for local homeowners if they do not have the funds or an insurance policy.	There have been minimal changes in land use and development in Copperton since the previous hazard mitigation plan update.	Increased due to climate change and population growth
Dam Failure	Increased precipitation, soil erosion, air quality, water quality, reduction in local wildlife and vegetation	Dam failures could spill into surrounding jurisdictions, affecting access to and from Copperton. This can place a strain on emergency services (police, fire, and EMS)	There have been minimal changes in land use and development in Copperton since the previous hazard mitigation plan update.	Same
Civil Disturbance	N/A	A civil disturbance can overwhelm emergency services (police, fire, and EMS), and affect road access to and from Copperton, especially if there is debris.	There have been minimal changes in land use and development in Copperton since the previous hazard mitigation plan update.	Same
Cyberattack	N/A	In an increasingly digital world, Copperton is vulnerable to cyberattacks on critical infrastructure, which would impact water and power. In addition, police and fire systems could be disrupted. Payroll for local employees or businesses could be hacked into.	There have been minimal changes in land use and development in Copperton since the previous hazard mitigation plan update.	Same
Hazardous Materials Incident (Transporta-	N/A	Increased activity on roads presents a greater risk to the population. If roads are	Increased development at Rio Tinto could expose Copperton to	Same

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
tion & Fixed Facility)		inaccessible due to a hazmat incident, it prevents emergency vehicles from responding quickly.	hazardous materials, which would impact air, water, and soil quality.	
Public Health Epidemic/ Pandemic	N/A	Essential services could become overwhelmed, preventing timely medical response.	There have been minimal changes in land use and development in Copperton since the previous hazard mitigation plan update.	Same
Terrorism	N/A	If roads are blocked or inaccessible, it prevents timely public safety response.	There have been minimal changes in land use and development in Copperton since the previous hazard mitigation plan update.	Same

Additional Public Involvement

The town of Copperton provided several opportunities for public participation. Figure 1 and Figure 2 present examples of public outreach.

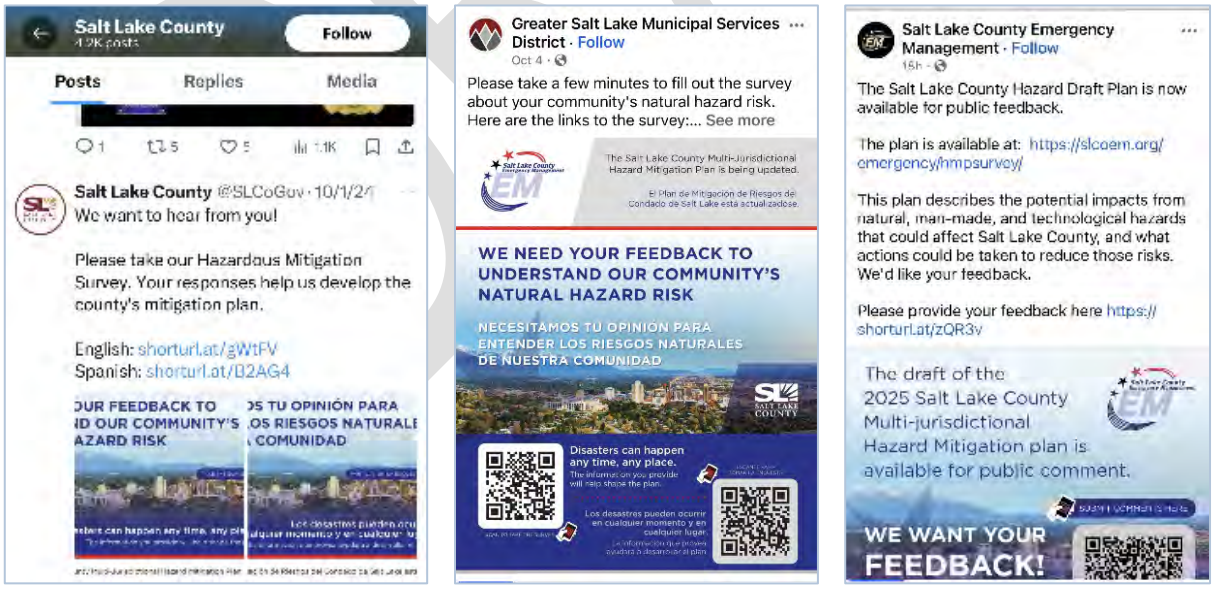


Figure 1: Social Media Posts for the Hazard Mitigation Survey (*left*), from the Municipal Services District (*middle*), and for the Draft Plan Review (*right*)

Figure 2: Mitigation Survey at Copperton Park Community Event

Plan Integration

Incorporating the underlying principles of the Hazard Mitigation Plan and its recommendations into other plans is a highly effective and low-cost way to expand their influence. All plan participants will use existing methods and programs to implement hazard mitigation actions where possible. As previously stated, mitigation is most successful when it is incorporated into the day-to-day functions and priorities of government and public service. This plan builds on the momentum developed through previous and related planning efforts and mitigation programs, and it recommends implementing actions where possible through these other program mechanisms. These existing mechanisms include the following:

- Regularity Capabilities
- Administrative Capabilities
- Fiscal Capabilities

Respective planning stakeholders will conduct implementation and incorporation into existing planning mechanisms and will be done through the routine actions of:

- Monitoring other planning/program agendas
- Attending other planning/program meetings
- Participating in other planning processes; and
- Monitoring community budget meetings for other community program opportunities.

The successful implementation of this plan will require constant and vigilant review of existing plans and programs for coordination and multi-objective opportunities that promote a safe, sustainable community. Regular efforts should be made to monitor the progress of mitigation actions implemented through other

DRAFT

planning mechanisms. Where appropriate, priority actions should be incorporated into planning updates. Table 9 lists existing planning mechanisms in which the Hazard Mitigation Plan has been integrated.

Table 10 lists the opportunities for integrating elements of this plan into other plans.

Table 9: Integration of Previous Plans by the Town of Copperton

Plan	Description
Community Wildfire Protection Plan	Addresses wildfire vulnerability and potential mitigation actions.

Table 10: Opportunities for Integration with Future Plans of the Town of Copperton

Plan	Description
CEMP – Comprehensive Emergency Management Plan	Framework to prepare for, mitigate, respond to, and recover from hazards
Copperton General Plan	This document guides future development for Copperton and sets goals for the community
Copperton Active Transportation Plan	Creating safe local and regional connections for people walking, biking, and rolling.

Capability Assessment

Local mitigation capabilities are existing authorities, policies, programs, and resources that reduce hazard impacts or could help carry out hazard mitigation activities.

Planning and Regulatory Capabilities

Planning and regulatory capabilities are the plans, policies, codes, and ordinances that prevent and reduce the impacts of hazards.

Table 11: Assessment of the Planning Capabilities of the Town of Copperton

Plan	Does it address hazards? (Y/N)	How can it be used to implement mitigation actions?	When was the last update? When is the next update?
General Plan	Y	Review the actions identified in the general plan and how they can be updated or incorporated into the hazard mitigation plan.	2020
Capital Improvement Plan	Y	Master storm drain plan study can inform hazards like flooding.	Updated in the MSD 2024 Strategic Plan
Climate Change Adaptation Plan	N	N/A	N/A

DRAFT

Plan	Does it address hazards? (Y/N)	How can it be used to implement mitigation actions?	When was the last update? When is the next update?
Community Wildfire Protection Plan	Y	Can inform wildfire mitigation actions.	2021
Economic Development Plan	N	N/A	N/A
Land Use Plan	Y	Provides an overview and historical context to inform future efforts and mitigation actions in the General Plan.	2020
Local Emergency Operations Plan	Y	The vulnerabilities and hazards identified can inform mitigation strategies.	Updated recently – Comprehensive Emergency Management Plan can be adopted
Stormwater Management Plan	Y	Can inform flooding-related mitigation actions.	2022
Transportation Plan	Y	Informs public safety.	2024
Substantial Damage Plan	N	N/A	N/A
Other? (Describe)			

Table 12: Assessment of the Regulations and Ordinances of the Town of Copperton

Regulation/ Ordinance	Does it effectively reduce hazard impacts?	Is it adequately administered and enforced?	When was the last update? When is the next update?
Building Code	Building codes ensure that structures are built to standard and brought up to code when remodeling occurs. Copperton has several commercial buildings. The town has adopted the International Building Code (IBC 2021) and International Residential Code (IRC 2021) as adopted by the state with amendments as well as Appendix C, Group U and Appendix K of the IBC.	Unknown	2023
Flood Insurance Rate Maps	Y	Yes	2022
Floodplain Ordinance	N	Yes	2023
Subdivision Ordinance	Varies	Yes	2024
Zoning Ordinance	Varies	Yes	2023

Regulation/ Ordinance	Does it effectively reduce hazard impacts?	Is it adequately administered and enforced?	When was the last update? When is the next update?
Natural Hazard-Specific Ordinance (Stormwater, Steep Slope, Wildfire)	Y – Wildfire & Stormwater No steep slopes in Copperton (outside copper mine)	Yes	Will be updated in 2025.
Acquisition of Land for Open Space and Public Recreation Use	Copperton is built out to its boundaries in all directions. New growth is only when land is rezoned or repurposed.	Yes	2023
Prohibition of Building in At-Risk Areas	Y	Yes	2023
Other? (Describe)			

Administrative and Technical Capabilities

Administrative and technical capabilities include staff and their skills. They also include tools that can help carry out mitigation actions.

Table 13: Assessment of the Administrative Capabilities of the Town of Copperton[3]

Administrative Capability	In Place? (Y/N)	Is staffing adequate?	Are staff trained on hazards and mitigation?	Is coordination between agencies and staff effective?
Chief Building Official	Y via MSD	Yes	Yes	Yes
Civil Engineer	Y (MSD)	Yes	Yes	Yes
Community Planner	Y(MSD)	Yes	Yes	Yes
Emergency Manager	Y, MSD-appointed	Yes; however, the appointee might have other job duties	Yes	Yes
Floodplain Administrator	Y, MSD	Yes	Yes	Yes
Geographic Information System (GIS) Coordinator	Y, MSD	Yes	Yes	Yes
Planning Commission	Y	Yes	Yes	Yes
Fire Safe Council	N – UFA is their fire department.	N/A	N/A	N/A

[3] LDS = Church of Jesus Christ of Latter-Day Saints, MSD = Municipal Services District, UFA = Unified Fire Authority.

Administrative Capability	In Place? (Y/N)	Is staffing adequate?	Are staff trained on hazards and mitigation?	Is coordination between agencies and staff effective?
CERT (Community Emergency Response Team)	N	N/A	N/A	N/A
Active VOAD (Voluntary Agencies Active in Disasters)	Y	No, more is needed. Work with LDS, Southern Baptist Disaster Relief, Salvation Army, and Habitat for Humanity.	Yes	Could be improved.
Other? (Please describe)				

Table 14: Assessment of the Technical Capabilities of the Town of Copperton[4]

Technical Capability	In Place? (Y/N)	How has it been used to assess/mitigate risk in the past?	How can it be used to assess/mitigate risk in the future?
Mitigation Grant Writing	Y, MSD	Copperton is part of the MSD. All services are currently contracted out – UFA, UPD, public works, or through the MSD.	Copperton can apply for hazard mitigation grant funding to complete projects or studies.
Hazard Data and Information	Y, MSD	Provide information for studies and inform Copperton, the MSD, and the general public of different hazards that affect the community to drive change.	Actions from the general plan that identified known hazards and issues can information mitigation actions in the hazard mitigation plan update.
GIS	Y, MSD	Maps were created to show different hazards in the General Plan and the stormwater master plan.	The maps and GIS data can inform mitigation actions for the hazard mitigation plan update to reduce risk.
Mutual Aid Agreements	Y, MSD and SLCo	Mutual aid agreements for police (UPD), fire (UFA), public works (SLCo PW)	Mutual aid agreements strengthen Copperton's resilience.
Other? (Please describe)			

Financial Capabilities

Financial capabilities are the resources to fund mitigation actions. Talking about funding and financial capabilities is important to determine what kinds of projects are feasible, given their cost. Mitigation

[4] MSD = Municipal Services District, SLCo PW = Salt Lake County Public Works, UFA = Unified Fire Authority, UPD = Unified Police Department.

actions like outreach programs are lower cost and often use staff time and existing budgets. Other actions, such as earthquake retrofits, could require substantial funding from local, state, and federal partners. Partnerships, including those willing to donate land, supplies, in-kind matches, and cash, can be included.

Table 15: Assessment of the Financial Capabilities of the Town of Copperton

Funding Resource	In Place? (Y/N)	Has it been used in the past and for what types of activities?	Could it be used to fund future mitigation actions?	Can it be used as the local cost match for a federal grant?
Capital Improvement Project Funding	Y	Yes, Master Storm Drain Plan	Yes	Unknown
General Funds	Y	Unknown	Unknown	Unknown
Hazard Mitigation Grant Program (HMGP/404)	N	Could apply for funding but have not in the past.	Yes	Unknown
Building Resilient Infrastructure & Communities (BRIC)	N	Could apply for funding but have not in the past.	Yes	Unknown
Flood Mitigation Assistance (FMA)	N	Could apply for funding but have not in the past.	Yes	Unknown
Public Assistance Mitigation (PA Mitigation/406)	N	Could apply for funding but have not in the past.	Unknown	Unknown
Community Development Block Grant (CDBG)	N	Could apply for funding but have not in the past.	Yes	Unknown
Natural Resources Conservation Services (NRCS) Programs	N	Could have done studies related to the Bingham Canyon Mine.	Unknown	Unknown
U.S. Army Corps (USACE) Programs	N	Unknown	Unknown	Unknown
Property, Sales, Income, or Special Purpose Taxes	Y	Unknown	Unknown	Unknown
Stormwater Utility Fee	Y	Copperton Improvement District manages.	Unknown	Unknown
Fees for Water, Sewer, Gas, or Electric Services	Y	Unknown	Unknown	Unknown
Impact Fees from New Development and Redevelopment	Y	Unknown	Unknown	Unknown

DRAFT

Funding Resource	In Place? (Y/N)	Has it been used in the past and for what types of activities?	Could it be used to fund future mitigation actions?	Can it be used as the local cost match for a federal grant?
General Obligation or Special Purpose Bonds	Unknown	Unknown	Unknown	Unknown
Federal-funded Programs (Please describe)	Unknown	Unknown	Unknown	Unknown
Private Sector or Nonprofit Programs	Wasatch Front Regional Council	Provided a $73,500 grant to fund an Active Transportation Plan and Connectivity Ordinance	Yes	Unknown
Other?				

Education and Outreach Capabilities

Education and outreach capabilities are programs and methods that could communicate about and encourage risk reduction. These programs may be run by a participant or a community-based partner. Partners, especially those who work with underserved communities, can help identify additional education and outreach capabilities.

Table 16: Assessment of the Education and Outreach Capabilities of the Town of Copperton[5]

Education and Outreach Capability	In Place? (Y/N)	Does it currently incorporate hazard mitigation?	Could it be used to support mitigation in the future?
Community Newsletter(s)	Y	Unknown	Yes
Hazard Awareness Campaigns (such as Firewise, Storm Ready, Severe Weather Awareness Week, School Programs)	Y	Yes	Yes
Public Meetings/Events (Please Describe)	Y	Yes	Yes
Emergency Management Listserv	Y, through MSD/UFA	Yes	Yes
Local News	Y	Yes	Yes
Distributing Hard Copies of Notices (e.g., public libraries, door-to-door outreach)	Y	Unknown	Yes

[5] IPAWS = Integrated Public Alert and Warning System, MSD = Municipal Services District, SLCo EM = Salt Lake County Emergency Management, UFA = Unified Fire Authority.

Education and Outreach Capability	In Place? (Y/N)	Does it currently incorporate hazard mitigation?	Could it be used to support mitigation in the future?
Insurance Disclosures/Outreach	N	N	N
Organizations that Represent, Advocate for, or Interact with Underserved and Vulnerable Communities (Please Describe)	Y	Yes	Yes
Social Media (Please Describe)	Y	Facebook and Instagram. Use Wireless Emergency Alert (WEA) for emergency alerts and coordinate with SLCo EM for an IPAWS.	Yes
Other? (Please Describe)			

Opportunities to Expand and/or Improve Capabilities

Actions that can expand and improve existing authorities, plans, policies, and resources for mitigation include budgeting for mitigation actions, passing policies and procedures for mitigation actions, adopting and implementing stricter mitigation regulations, approving mitigation updates, and making additions to existing plans as new needs are recognized. Table 17 lists the opportunities for the town of Copperton.

Table 17: Opportunities to Expand or Improve the Capabilities of the Town of Copperton[6]

Capability	Opportunity to Expand and/or Improve
Planning and Regulations	Copperton can adopt the CEMP created by the SLCo EM/MSD planners. In addition, the CEMP will have annexes added to it that address specific hazards. To address the unknowns in planning and regulatory capabilities, there are several opportunities for improvement and expansion. First, it is essential to conduct a detailed review of the General Plan, Capital Improvement Plan, Community Wildfire Protection Plan, and other relevant plans to update them. This will help in understanding how these plans can be better used to implement mitigation actions. For the Capital Improvement Plan, the integration of the master storm drain plan can be expanded to include broader flood hazard mitigation measures. This can help inform future infrastructure investments and improve overall community resilience to flooding. The Land Use Plan provides a historical context that can inform future efforts and mitigation actions. By updating the plan with recent data and trends, the community can better anticipate and manage future risks. Similarly, the CEMP should continue to be regularly updated, with the vulnerabilities and hazards identified being used to inform targeted mitigation strategies.

[6] CEMP = Comprehensive Emergency Management Plan, MSD = Municipal Services District, SLCo EM = Salt Lake County Emergency Management

Capability	Opportunity to Expand and/or Improve
	For the Stormwater Management Plan, which was last updated in 2022, regular reviews and updates are needed to ensure that it remains effective in addressing flooding-related hazards. The Transportation Plan, due for an update in 2024, should include considerations for public safety and mitigation actions related to transportation infrastructure. In terms of regulations and ordinances, assessing the Building Code's effectiveness in reducing hazard impacts and ensuring that it is adequately administered and enforced is crucial. This includes understanding the last update and planning for future updates. The same approach should be applied to the Flood Insurance Rate Maps, Floodplain Ordinance, Subdivision Ordinance, and Zoning Ordinance, with a focus on identifying and addressing any gaps in hazard mitigation.
Administrative and Technical	Many positions and technical capabilities that support effective mitigation action implementation are coordinated by the MSD on Copperton's behalf. One local opportunity to expand capabilities is through engaging community-based organizations, such as voluntary agencies active in disasters. By engaging the LDS, Southern Baptist Disaster Relief, Salvation Army, and Habitat for Humanity, Copperton can leverage volunteer resources to build safer homes, implement hazard awareness campaigns and increase community resilience.
Financial	To address the unknowns in financial capabilities, there are several opportunities for improvement and expansion. First, conducting a comprehensive assessment to identify existing funding resources and their past use is crucial. This will provide clarity regarding which resources have been used for specific activities and their potential to fund future mitigation actions. For instance, evaluating the use of Capital Improvement Project Funding and General Funds in past activities will help determine their effectiveness and how they can be leveraged for future mitigation efforts. Next, exploring opportunities to apply for various grant programs, such as the Hazard Mitigation Grant Program (HMGP/404), Building Resilient Infrastructure and Communities (BRIC), Flood Mitigation Assistance (FMA), Public Assistance Mitigation (PA Mitigation/406), and Community Development Block Grant (CDBG), can significantly enhance financial capabilities. These grants, although not previously used, can provide substantial funding for mitigation actions if successfully obtained. Engaging with state and federal partners, as well as private sector and nonprofit organizations, can open doors to additional funding resources. For example, partnerships with the Natural Resources Conservation Service (NRCS) and the U.S. Army Corps of Engineers (USACE) can be explored for studies and projects related to specific hazards, such as the Bingham Canyon Mine. Similarly, the Wasatch Front Regional Council's grant for the Active Transportation Plan and Connectivity Ordinance demonstrates the potential for securing funds from regional entities. For revenue-generating options, such as property, sales, income, or special purpose taxes, and fees for water, sewer, gas, or electric services, it is essential to evaluate their contribution to mitigation actions and their potential to serve as local cost matches for federal grants. Understanding the role of these resources in supporting mitigation efforts will help in planning and allocating budgets effectively. Regularly reviewing and updating the financial capability assessment will ensure that the community remains well-equipped to handle future challenges. By addressing these opportunities, the community can strengthen its financial capabilities, making it more feasible to implement a wide range of mitigation actions and enhance overall resilience to hazards.

DRAFT

Capability	Opportunity to Expand and/or Improve
Education and Outreach	Copperton can develop more hazard-specific public outreach and engagement programs. In addition, evaluating the effectiveness of methodologies of public outreach such as the distribution of hard copies of notices and exploring ways to enhance this method, such as increasing distribution points or collaborating with local organizations, can improve outreach efforts. Insurance disclosures and outreach are currently unknown, presenting an opportunity to collaborate with insurance companies to integrate hazard mitigation information into their communications with policyholders. This can help raise awareness and encourage proactive risk-reduction measures among residents. For social media, developing a comprehensive strategy that includes regular updates on hazard mitigation, interactive posts, and the use of analytics to measure effectiveness can enhance outreach capabilities. Expanding the use of social media platforms beyond Facebook and Instagram can also increase the reach and impact of mitigation messages.

Mitigation Strategy

Mitigation strategies provide proactive measures that are designed to minimize the impacts of hazards on the town of Copperton. Table 18 shows mitigation action alternatives, and

Table 19 shows the status of previous mitigation activities. Table 20 is the 2025 mitigation action plan for the town of Copperton.

Table 18: Mitigation Action Alternatives for the Town of Copperton

Action	Type of Action	Selected for inclusion in the plan?	If not selected, why not?
Continue social media engagement	Education and Awareness Programs		
Adopt new building codes as they are approved to bring some existing structures up to current codes	Structure and Infrastructure Projects		

Table 19: Status of Prior Mitigation Actions of the Town of Copperton

Action	Hazard(s)	Lead Agency	Support Agency(ies)	Status Update
Conduct seismic retrofitting and implement a program for residents similar to the "Fix the Bricks" initiative.	Earthquake	Copperton	Municipal Services District (MSD)	Ongoing, not yet completed
Provide additional education and materials to the public regarding the earthquake risk and potential mitigation actions that can be taken.	Earthquake	Copperton	MSD	Ongoing

DRAFT

Table 20: 2025 Mitigation Action Plan for the Town of Copperton[7]

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
1	Enhance security at critical infrastructure locations to prevent potential terrorist acts.	Terrorism	MSD	Copperton, SLCo EM, UPD, UFA, SLCo IT, SLCo PW, SLCo Clerk's Office, SLCo Sheriff's Office	Increases security protocols (both in technology and policy) for staff/first responders, clarifies expectations/understanding for local jurisdictions and the public.	High	MSD General Fund–Copperton, SLCo EM General Fund, UPD General Fund, SLCo Sheriff's Office General Fund, UFA General Fund, SHSP grant	Short term	Medium	
2	Develop and implement public education programs on disaster awareness and mitigation.	Civil Disturbance, Dam Failure, Drought, Wildfire, Earthquake, Extreme Heat, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide, Lightning, Public Health Epidemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	Copperton	MSD, UFA, UPD, SLCo Sheriff's Office, SLCo PW, SLCo EM	Improves understanding of local resources and strengthens relationships with the public and stakeholders. Outlines plans/SOPs for programs. Shares information digitally and in person on topics such as how to complete non-structural retrofits on homes to reduce the risk of earthquakes and home weatherization for extreme cold/severe winter weather events.	Low	MSD General Fund–Copperton, SLCo EM General Fund	Short term	Medium	
3	Integrate WebEOC, Crisis Track, GIS, and other technological enhancements.	Civil Disturbance, Dam Failure, Drought, Wildfire, Earthquake, Extreme Heat, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide, Lightning, Public Health Epidemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	Copperton	MSD, SLCo EM, UFA, UPD, SLCo PW, SLCo Health Department	Provides a common operating platform for stakeholders, increases situational awareness, and improves response time.	Low	MSD General Fund–Copperton, SLCo EM General Fund, UFA General Fund	Medium term	Medium	Copperton already has this software; need to improve training and documentation.
4	Enhance and continue to promote the implementation of CERT and SAFE Hubs.	Civil Disturbance, Dam Failure, Drought, Wildfire, Earthquake, Extreme Heat, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide, Lightning, Public Health Epidemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	Copperton	MSD, SLCo EM	Improves awareness of local resources.	Low	MSD General Fund–Copperton, SLCo EM General Fund, State of Utah DEM General Fund	Short term	Medium	SAFE Hubs, previously S.A.F.E. Neighborhoods, is going through a rebrand with a new public awareness campaign and information for all partners.
5	Establish access and functional needs registry and improve incorporation of those with access and functional needs in plans.	Civil Disturbance, Dam Failure, Drought, Wildfire, Earthquake, Extreme Heat, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide, Lightning, Public Health Epidemic, Radon, Severe Winter	Copperton	SLCo EM, MSD, UFA, UPD, SLCo Sheriff's Office	Improves situational awareness for the public and stakeholders, provides greater understanding of resources available for those with access and functional needs.	Low	MSD General Fund–Copperton, SLCo EM General Fund, State of Utah DEM staff time	Short term	High	The state of Utah's Access and Functional Needs Registry is dissolving in 2025. The county needs a way to account for those with access and functional needs, including

[7] ATF = Bureau of Alcohol, Tobacco, Firearms and Explosives, BRIC = Building Resilient Infrastructure and Communities, CWDG = Community Wildfire Defense Grant, DEM = Department of Emergency Management, DHS = Department of Homeland Security, EMPG = Emergency Management Performance Grant, FBI = Federal Bureau of Investigation, FEMA = Federal Emergency Management Agency, FMA = Flood Mitigation Assistance, HHPD = High Hazard Potential Dam, HMA = Hazard Mitigation Assistance, HMGP = Hazard Mitigation Grant Program, LEPC = Local Emergency Planning Committee, MSD = Municipal Services District, NWS = National Weather Service, SIAC = Statewide Information and Analysis Center, SHSP = State Homeland Security Program, SLC = Salt Lake City, SLCo EM = Salt Lake County Emergency Management, SLCo IT = Salt Lake County Information Technology, SLCo PW = Salt Lake County Public Works, SOP = Standard Operating Procedure, UDOT = Utah Department of Transportation, UFA = Unified Fire Authority, UPD = Unified Police Department

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
		Weather, Terrorism, Tornado, Wildfire								incorporation into plans/SOPs.
6	Bring deficient high hazard dams up to current industry standards.	Dam Failure	Dam owners	Water companies, SLCo EM, MSD, Copperton	Preserves life and safety (personal injuries, safety of first responders), reduces damage to critical infrastructure.	High	MSD General Fund- PW Operations Copperton, MSD Capital Projects Fund, SLCo PW Operations Fund, dam owners, water districts, State of Utah DWR General Fund and staff time, HHPD grant	Long term	High	
7	Procure generators and transfer switches for critical facilities.	Extreme Heat	MSD	Copperton, SLCo EM, SLCo Facilities Management, local public utilities, Rio Tinto	Provides backup generators for cooling centers and Code Blue centers. Ensures accurate inventory of what the county has to provide to other agencies or jurisdictions as needed.	Medium	SLCo PW General Fund, MSD General Fund– Copperton, HMA grant	Long term	Medium	
8	Increase the size of culverts and bridges.	Flooding	MSD	SLCo EM, SLCo PW, Copperton	Allows for larger runoff during spring melt season, reduces the amount of debris buildup.	High	SLCo PW General Fund, UDOT Operational Fund, MSD Capital Projects– Copperton, HMGP, FMA grant	Long term	Medium	
9	Procure Flood Mitigation Assistance (FMA) grants.	Flooding	SLCo EM	Copperton, SLCo PW, MSD	Improves understanding of grants available and how money can be used for mitigation efforts.	Low	HMGP, FMA grant, SLCo EM General Fund, MSD General Fund–Copperton, State of Utah DEM staff time	Long term	Medium	
10	Develop an enhanced emergency notification communication system for Copperton.	Civil Disturbance, Dam Failure, Drought, Earthquake, Extreme Heat, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide, Lightning, Public Health Epidemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	SLCo EM	MSD, UFA, UPD, UDOT	Provides early notification of impending wildfires to decrease loss of life. Improves relationships with the public and stakeholders. Ensures faster delivery of information with templates and plans ready to go.	Medium	MSD General Fund– Copperton, SLCo EM General Fund, Next Generation Warning System grant, EMPG	Short term	Medium	
11	Promote the Firewise Initiative and regularly review/ update the Community Wildfire Protection Plan (CWPP).	Wildfire	UFA	SLCo EM, MSD, Copperton, FFSL	Increases awareness of plans (for the public and stakeholders), improves eligibility for grants or other funding sources, ensures regular review of CWPP.	Low	MSD General Fund– Copperton, SLCo EM General Fund CWDG grant, UFA General Fund	Short term	Medium	
12	Conduct public awareness campaign on Tier 2 reporting software for chemical reporting.	Hazardous materials incident	SLCo EM	LEPC, UFA, UPD, Copperton, SLCo Sheriff's Office, Rio Tinto	Improves understanding of Tier 2 reporting and how Copperton can find and submit information. Provides a common operating platform for hazardous materials reporting.	Low	MSD General Fund– Copperton, SLCo EM General Fund, LEPC, State of Utah DEM staff time, UFA General Fund	Long term	Medium	

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
13	Enact local regulations and codes for development to reduce landslide and slope failure damage to critical infrastructure and buildings.	Landslide and slope failure	MSD	SLCo EM, UFA, Copperton	Reduces the likelihood of landslides and critical infrastructure/building damage. Ensures that future development is up to code and follows policy to avoid repetitive loss properties.	Low	SLCo General Fund, MSD General Fund – Code Enforcement, MSD General Fund-Copperton, State of Utah staff time, HMGP	Long term	Medium	
14	Leverage WebEOC and GIS to track the spread of contagious disease.	Public Health Epidemic/Pandemic	SLCo Health Department	SLCo EM, UFA, MSD, UPD, Sheriff's Office, Copperton	Uses GIS and WebEOC software to maintain situational awareness and tracks illnesses throughout the county.	Low	SLCo EM General Fund, MSD General Fund–Copperton, SLCo Health Department General Fund, State of Utah DEM staff time	Short term	Medium	Copperton already has this software through SLCo EM and the MSD; need to improve training and documentation.
15	Create public awareness campaigns and public education programs on radon risks and provide home testing for radon.	Radon	SLCo EM	SLCo Health Department, SLCo Aging and Adult Services, Copperton, MSD	Decreases radon-caused cancer deaths. Increases engagement/ understanding with the public on what SLCo can do or help with.	Low	SLCo General Fund–Health Department, SLCo General Fund–Aging and Adult Services, MSD General Fund–Copperton, Utah Department of Environmental Quality General Fund	Short term	Low	
16	Develop road resurfacing project including permeable pavement for areas with rain-based flooding.	Severe Weather – Heavy Rain	MSD	UDOT, SLCo PW, Copperton	Reduces pollutants discharged in runoff, reduced maintenance time/costs on roads, improved traction on roads.	High	MSD Capital Projects–Copperton, MSD General Fund–Copperton, SLCo PW General Fund, UDOT Operational or Capital Fund, HMA grant	Long term	Low	
17	Create a public education program for property owners to learn about tree maintenance and high-strength windows.	Severe Weather – High Wind	MSD	SLCo EM, SLCo Aging and Adult Services, NWS, SLCo PW, Copperton	Reduces damage during high wind event to critical infrastructure. Prevents personal injuries (people driving on roads or walking in neighborhoods). Improves relationships with stakeholders and the public.	Low	SLCo PW General Fund, MSD General Fund–Copperton, SLCo EM General Fund,	Short term	Low	
18	Develop a severe winter weather mitigation program to maintain access to primary roadways and evacuation routes.	Severe Winter Weather – Heavy Snow, Blizzard	SLCo PW and Municipal Services	MSD, SLCo EM, Copperton, UDOT, NWS	Ensures emergency services like police, fire, and EMS can use roads to provide their services.	Medium	MSD General Fund–Copperton, NWS Operational Fund, SLCo EM General Fund, UDOT Operational Fund	Short term	High	A severe winter storm with heavy snowfall requires our operators and equipment to be used to clear roads and streets for the public and emergency vehicles to use. The primary efforts will be to keep the roads open by clearing snow.
19	Conduct public awareness campaign about lightning safety.	Severe Weather – Lightning	Copperton	SLCo EM, NWS, UFA, SLCo PW	Increases lightning strike awareness for the public.	Low	SLCo EM General Fund, MSD General Fund–Copperton, NWS	Short term	Low	

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
							Operational Fund, UFA General Fund			
20	Improve outreach for "see something, say something" QR code to deter terrorist acts.	Terrorism (including cyberattacks)	SLCo EM	UPD, UFA, MSD, Copperton, SLCo IT, SLCo Sheriff's Office	Ensures that residents and local agencies/jurisdictions are aware of local intelligence resources and ways in which they can report suspicious activity. Encourages QR code use/outreach at special events throughout the county.	Low	SLCo EM General Fund, MSD General Fund–Copperton, UPD General Fund, SLCo Sheriff's Office General Fund, SHSP grant	Short term	Medium	
21	Be a part of the countywide intelligence group/ division to monitor and analyze threats before an incident occurs.	Terrorism (including cyberattacks)	SLCo EM	Copperton, SLCo Sheriff's Office, SIAC, DHS, ATF, FBI	Increases situational awareness.	Low	SHSP grant, SLCo EM General Fund, MSD General Fund–Copperton, SLCo Sheriff's Office General Fund, SIAC General Fund	Short term	Medium	This would be a core group of stakeholders that meet on a regular basis to share and collaborate on intelligence data.
22	Code Enforcement – Review critical infrastructure facilities to ensure that building materials are up to code and are tornado resistant.	Tornado	MSD	Copperton, SLCo PW, SLCo EM	Ensures that critical infrastructure facilities are operational/functional in the event of a disaster. Preserves life and safety.	Medium	SLCo EM General Fund, MSD General Fund–Copperton, UFA General Fund	Short term	Low	
23	Enhance interoperable radio communications systems throughout the county.	Civil Disturbance, Dam Failure, Drought, Earthquake, Extreme Heat, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide, Lightning, Public Health Epidemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	Copperton	MSD, UFA, UPD, SLCo Sheriff's Office, SLCo EM	Improves communication between different agencies and provides a common operating platform.	Medium	SLCo EM General Fund, MSD General Fund–Copperton, SLCo Sheriff's Office General Fund	Short term	Medium	
24	Develop a countywide single source of information sharing/gathering for intelligence.	Civil Disturbance, Terrorism	SLCo EM	Copperton, SLCo Sheriff's Office, SIAC, MSD	Improves coordination between local agencies/jurisdictions.	Medium	SHSP Grants, SLCo General Fund, MSD General Fund–Copperton	Short term	Medium	Have one common operating platform to be used by all agencies in SLCo to collect suspicious activity reports. Develop a public awareness campaign to educate the public on how and what to report.
25	Install xeriscaping on government-owned buildings.	Drought	Copperton	SLCo Facilities, Water companies/ districts, Copperton, MSD, state of Utah, SLCO EM	Decreases the cost of landscape irrigation and decreases water use.	High	SLCo General Fund-Facilities, MSD General Fund–Copperton	Short term	Low	
26	Improve communication to the public and stakeholders on	Severe Winter Weather	SLCo EM	Copperton, SLCo Office of Homeless and Criminal Justice Reform,	Prevents further damage to critical infrastructure, ensures that homeless individuals have warming resources available,	Low	SLCo EM General Fund, SLCo General Fund-Health Department, State of Utah General Fund–	Short term	Low	

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
	resources available when Code Blue is in effect during severe winter weather.			NWS, SLCo Health Department, State of Utah	offloads some of the pressure on local homeless resource providers with standard protocols to follow with Code Blue.		Health and Human Services, NWS General Fund			
27	Install earthquake and ground sensors to help anticipate the likelihood of an earthquake in strategic locations.	Earthquake	SLCo EM	MSD, Copperton, NWS	Monitors high seismic areas more intimately to be able to alert the population of impending seismic activity.	Low	SLCo EM General Fund, MSD General Fund–Copperton, NWS General Fund	Short term	Low	
28	Construct extreme cold shelters to protect citizens from the adverse effects of cold weather.	Extreme Cold	SLCo EM	MSD, Copperton	Protects the population from extreme cold when they cannot find heat, or shelter.	High	SLCo EM General Fund, MSD General Fund–Copperton	Short term	High	
29	Conduct seismic retrofitting and implement a program for residents similar to the “Fix the Bricks” initiative.	Earthquake	Copperton	MSD, SLCo EM	Reduces potential damage to structures and improves safety for residents.	High	SLCo EM General Fund, MSD General Fund-Copperton, HMGP	Long term	Medium	
30	Provide additional education and materials to the public regarding the earthquake risk and potential mitigation actions that can be taken.	Earthquake	Copperton	MSD, SLCo Em	Increases public awareness and preparedness, potentially reducing damage and injuries.	Low	SLCo EM General Fund, MSD General Fund-Copperton, HMGP	Short term	Medium	

DRAFT

THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT

Salt Lake County Emergency Management
EM
Unified Fire Authority

Multi-Jurisdictional Hazard Mitigation Plan

Salt Lake County | Volume 1

2025

Salt Lake County
Emergency Management

3380 South 900 West
Salt Lake City, UT 84119

SALT LAKE COUNTY

THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT

Executive Summary

Natural disasters, such as earthquakes, wildfires, and severe weather events, pose significant danger to life and property in Salt Lake County. Hazard mitigation planning is the process communities can use to identify and assess the risks posed by these hazards and implement measures to reduce the potential impacts of those hazards. It has been recognized that taking action before a natural disaster can substantially reduce the damage caused by these hazards and increase the overall resilience of the community to natural disasters.

Mitigation planning is a collaborative process that provides local governments a framework to reduce or eliminate long-term risk from hazards. Salt Lake County has joined with 23 cities and towns, 2 school districts, and 1 community college for this effort. The planning process includes establishing a planning team to review data on past hazard events and possible future events, evaluate current capabilities, and develop strategies to address hazards. To inform his process, participants from each jurisdiction have collaborated with local emergency managers, planning and development departments, floodplain managers, economic development staff, health and human services departments, public works, city administrators, and geographic information system (GIS) specialists. Participants also consulted existing planning documentation to integrate this plan with other community planning efforts.

Mitigation plans are updated every 5 years. This plan updates the 2019 Salt Lake County Hazard Mitigation Plan and reaffirms the participant's commitment to reducing hazard risk. It is organized in two volumes. Volume 1 contains comprehensive details on each step of the planning process, profiles of each hazard identified by the planning team as having the potential to affect the county, an evaluation of previous mitigation strategies, and the mitigation strategies for the next 5-year planning cycle. Because each community may face different hazards or have unique vulnerabilities to hazards, Volume 2 contains annexes for individual participating jurisdictions. These annexes describe jurisdiction-specific hazard histories and vulnerabilities, an evaluation of the status of previously identified mitigation actions, and new mitigation strategies that have been identified.

This document will describe each stage of the planning process, which includes building the planning team, creating an outreach strategy for identifying community stakeholders and seeking public input, conducting a risk assessment, documenting capabilities, developing and prioritizing mitigation actions, and establishing a strategy for implementing them. Once adopted, this plan makes communities eligible for various grant funding programs to implement identified mitigation actions. Twenty-seven jurisdictions participated in this planning update.

DRAFT

Promulgation

This plan is promulgated as “Salt Lake County’s Multi-Jurisdictional Hazard Mitigation Plan.” It is designed to comply with all applicable federal, state, and local ordinances and resolutions and provides guidance for preparing for and mitigating hazards that threaten the community.

This plan has been constructed using the best available information from a planning perspective. It is recognized that as new information becomes available, decisions and actions may differ from those envisioned when the plan was developed.

Salt Lake County fully supports the plan and urges all officials, employees, and others involved in the total emergency management effort, individually and collectively, to do their share in making Salt Lake County a disaster-resistant and resilient community.

This plan supersedes all previous hazard mitigation plans.

Promulgated this ____ day of _____, 2025.

Authority

Federal Authority

Public Law (PL) 93-288, as amended, established the basis for federal hazard mitigation activity in 1974. A section of this act requires identifying, evaluating, and mitigating hazards as a prerequisite for state receipt of future disaster assistance outlays. Since 1974, many additional programs, regulations, and laws have expanded on the original legislation to establish hazard mitigation as a priority at all levels of government. When the Stafford Act amended PL 93-288, several additional provisions were added that provided for the availability of significant mitigation measures in the aftermath of presidentially declared disasters. The current Stafford Act is the “Robert T. Stafford Disaster Relief and Emergency Assistance Act,” as amended in August 2016.

State Authority

- The Governor’s Emergency Operation Directive
- The Robert T. Stafford Disaster Relief and Emergency Assistance Act, amendments to Public Law 93-288, as amended
- Title 44, Code of Federal Regulations, Federal Emergency Management Agency Regulations, as amended
- State Emergency Management Act of 1981, Utah Code 53-2, 63-5
- Disaster Response Recovery Act, 63-5A

DRAFT

- Executive Order of the Governor, Executive Order 11
- Emergency Interim Succession Act, 63-5B

Utah State Code

In Utah Code 53-2-104, it is stated that the Utah Division of Emergency Management shall prepare, implement, and maintain programs and plans to provide for:

1. Prevention and minimization of injury and damage caused by disasters
2. Identification of areas particularly vulnerable to disasters
3. Coordination of hazard mitigation and other preventive and preparedness measures designed to eliminate or reduce disasters
4. Assistance to local officials in designing local emergency action plans
5. Coordination of federal, state, and local emergency activities; Coordination of emergency operations plans with emergency plans of the federal government; and
6. Other measures necessary, incidental, or appropriate to this chapter

Local Authority

Local governments play an essential role in implementing effective mitigation. For this plan, local governments include cities, counties, and special service districts with elected boards. Each local government will review all present and potential damage, losses, and related impacts associated with natural hazards to determine the need or requirement for mitigation action and planning. In the cities in Salt Lake County, the local executives are responsible for carrying out plans and policies, including the county Mayor and city or town mayors and administrators. Local governments must be prepared to participate in the post-disaster hazard mitigation team process and pre-mitigation planning as outlined in this document to effectively protect their citizens. All jurisdictions in Salt Lake County participated in the development of this plan.

DRAFT

THIS PAGE INTENTIONALLY LEFT BLANK.

DRAFT

Table of Contents

Introduction 1

Purpose and Scope 1
Background 2
How To Navigate This Plan 3

Community Profile 5

Geography, Land Use, and Development 5
Population 10
Housing 19
Economy 19
Critical Facilities and Infrastructure 22
Planning for the Future 30

Planning Process 37

Plan Update Approach 37
Stakeholder Engagement 46
Public Outreach 61

Risk Assessment 71

Methodology 71
Avalanche 95
Dam Failure 113
Drought 132
Earthquake 153
Extreme Cold 188
Extreme Heat 196
Flooding (Urban/Flash Flooding and Riverine Flooding) 205
Heavy Rain 238
High Wind 243
Landslide/Slope Failure 255
Lightning 275

DRAFT

Public Health/Epidemic/Pandemic 283
Radon 295
Severe Winter Weather 308
Tornado 318
Wildfire 332
Civil Disturbance 354
Hazardous Materials 362
Terrorism 373

Capability Assessment 384

Planning and Regulatory 384
Administrative and Technical Capabilities 386
Financial Capabilities 388
Education and Outreach Program Capabilities 390
Opportunities to Expand and/or Improve Capabilities 391
Jurisdictional Capabilities 392
National Flood Insurance Program (NFIP) Capabilities 392

Mitigation Strategy 395

Mitigation Goals 395
Mitigation Action Plan 396
2025 Mitigation Action Plan 404
NFIP-Specific Mitigation Actions and Implementation 416

Plan Implementation and Maintenance 417

Plan Implementation 417
Incorporation into Other Planning Mechanisms 417
Maintenance Schedule and Evaluation Process 419
Continued Public Involvement 421

DRAFT

Appendix A: List of Acronyms 429

Appendix B: Meeting Documentation 435

Appendix C: Public Outreach Survey Documentation 437

Appendix D: Plan Effectiveness Evaluation Form 439

DRAFT

List of Figures

Figure 1: Salt Lake County Profile Map 6
Figure 2: Map of Salt Lake County Rivers and Lakes 7
Figure 3: Types of Land Cover in Salt Lake County 8
Figure 4: High and Low Temperatures in Salt Lake City, Salt Lake County, and the state of Utah 10
Figure 5: Climate Chart for Salt Lake City 10
Figure 6: Population Growth Rates for Salt Lake County, 2011–2022 12
Figure 7: Population Density of Salt Lake County 13
Figure 8: Nighttime Population of Salt Lake County 14
Figure 9: Salt Lake County Population by Gender and Age 16
Figure 10: Population 65 Years Old and Older in Salt Lake County by Census Tract 17
Figure 11: Population by Race of Salt Lake County 18
Figure 12: Educational Attainment in Salt Lake County 19
Figure 13: Unemployment Rates in the United States and Selected Areas 21
Figure 14: Railways in Salt Lake County 25
Figure 15: Map of the Salt Lake County Transit System 26
Figure 16: Pipelines in Salt Lake County 27
Figure 17: Map of Wasatch Choice Roads and Transit 31
Figure 18: Map of Wasatch Choice Land Use 33
Figure 19: Map of Wasatch Choice Economic Development 34
Figure 20: Recreation Centers in Salt Lake County 35
Figure 21: Mitigation Plan Announcement in the Salt Lake County Government Center 38
Figure 22: Salt Lake County Hazard Mitigation Plan Kickoff Meeting 38
Figure 23: FEMA Community Lifelines 47
Figure 24: Social Media Graphic for Public Outreach Survey 62
Figure 25: Public Outreach at Salt Lake County Senior Expo 63
Figure 26: Public Outreach at Copperton Town Days 63
Figure 27: Announcement of Public Comment Period for Draft Plan 64
Figure 28: Survey Results on Concerns About Specific Hazards 67
Figure 29: Survey Results on Hazard Insurance Coverage 68
Figure 30: Survey Results on Where Respondents Live and Work 69
Figure 31: Survey Results on Vulnerable Populations 70
Figure 32: FEMA Community Lifelines 78
Figure 33: Salt Lake County Facilities 80
Figure 34: Emergency Operations Centers in Salt Lake County 81
Figure 35: Fire Stations in Salt Lake County 82
Figure 36: Hospitals in Salt Lake County 83
Figure 37: Police Stations in Salt Lake County 84
Figure 38: Schools in Salt Lake County 85
Figure 39: FEMA National Risk Index Equation 86
Figure 40: Themes and Variables in the Social Vulnerability Index 87
Figure 41: SVI – Overall Vulnerability Score by Census Tract for Salt Lake County 88

DRAFT

Figure 42: SVI – Household Characteristics by Census Tract for Salt Lake County 89
Figure 43: SVI – Socioeconomic Status by Census Tract for Salt Lake County 90
Figure 44: SVI – Housing Type and Transportation by Census Tract for Salt Lake County 91
Figure 45: SVI – Minority Status by Census Tract for Salt Lake County 92
Figure 46: Disadvantaged Populations by Census Tract in Salt Lake County 93
Figure 47: Factors Impacting Avalanche Activity 96
Figure 48: Avalanche Danger Rose 99
Figure 49: Historical Avalanche Paths in Salt Lake County 100
Figure 50: Locations of Avalanche Fatalities in and near Salt Lake County 101
Figure 51: Utah Department of Transportation Backcountry Closure Areas 103
Figure 52: Example of Backcountry Closure Area 103
Figure 53: Skier Days in Utah, 2003–2023 106
Figure 54: Ski Resort Infrastructure in Salt Lake County 107
Figure 55: Expected Annual Loss from Avalanche in Salt Lake County 109
Figure 56: National Risk Index Avalanche Risk Map, Legend, and Score for Salt Lake County 112
Figure 57: Mountain Dell Dam 113
Figure 58: Location of Dams 115
Figure 59: Dams in the Dam Inundation Area of Salt Lake County 117
Figure 60: Levees in Salt Lake County 118
Figure 61: Map of Dam Failure Rankings for Salt Lake County and Surrounding Counties 120
Figure 62: Effects of Drought on Soil 132
Figure 63: United States Drought Monitor Process for Defining Drought 133
Figure 64: U.S. Drought Monitor Categories for the State of Utah, November 2024 136
Figure 65: Percent of Salt Lake County in Drought Monitor Categories, 2000–2024 137
Figure 66: Precipitation for October–December 2024 Compared with the 60-Day Percentage of Normal Precipitation, 1991–2020 137
Figure 67: Palmer Drought Severity Index by Region 138
Figure 68: Annual Water Use by Category for Salt Lake County (Based on USGS data) 139
Figure 69: Seasonal Drought Forecast for the Intermountain West, 2023–2024 142
Figure 70: CMRA Projected Days Per Year with No Precipitation 143
Figure 71: CMRA Projected Maximum Number of Consecutive Dry Days 143
Figure 72: Climate Variability and Prediction for Northern Utah 145
Figure 73: Risk Index Rating for Drought for Utah Counties 147
Figure 74: National Risk Index Expected Annual Loss from Drought in Salt Lake County 149
Figure 75: National Risk Index Drought Risk Map, Legend, and Score for Salt Lake County 152
Figure 77: Effects of the 2020 Magna Earthquake 153
Figure 77: Earthquake Intensity Scale 155
Figure 78: Active Fault Lines and Historic Epicenters in Salt Lake County 157
Figure 79: Liquefaction Potential in Salt Lake County 158
Figure 80: Damage Following the Magna Earthquake 160
Figure 81: FEMA DR-4548 Utah Disaster Declaration for Earthquake and Aftershocks, December 31, 2020 160
Figure 82: Earthquakes in Salt Lake County Greater than 2.0, 1962–2024 161

DRAFT

Figure 83: National Seismic Hazard Model 163
Figure 84: Schools in Salt Lake County in the M 6.2 ShakeMap Scenario 167
Figure 85: Emergency Operations Centers in Salt Lake County in the M 6.2 ShakeMap Scenario 168
Figure 86: County Facilities in Salt Lake County in the M 6.2 ShakeMap Scenario 169
Figure 87: Fire Stations in Salt Lake County in the M 6.2 ShakeMap Scenario 170
Figure 88: Hospitals in Salt Lake County in the M 6.2 ShakeMap Scenario 171
Figure 89: Police Stations in Salt Lake County in the M 6.2 ShakeMap Scenario 172
Figure 90: Building Loss Estimates in Salt Lake County in the M 6.2 ShakeMap Scenario 177
Figure 91: Contents Loss Estimates in Salt Lake County in the M 6.2 ShakeMap Scenario 178
Figure 92: Salt Lake County Building Earthquake Repair Project 185
Figure 93: National Risk Index Earthquake Risk Map, Legend, and Score for Salt Lake County 187
Figure 94: Image of Salt Lake County in Cold Weather 188
Figure 95: National Weather Service Wind Chill Chart 189
Figure 96: National Risk Index Expected Annual Loss from Extreme Cold in Salt Lake County 192
Figure 97: National Risk Index Cold Wave Risk Map, Rating, and Score for Salt Lake County 195
Figure 98: Image of Hot Sun 196
Figure 99: National Weather Service Heat Index Chart 197
Figure 100: Projected Changes in the Heat Index for Utah Until 2021 by the Climate Risk and Resilience Portal 198
Figure 101: Projected Number of Days Each Year with Temperatures Exceeding 100ºF 199
Figure 102: National Risk Index Expected Annual Loss from Heat Waves in Salt Lake County 201
Figure 103: National Risk Index Heat Wave Risk Map, Rating, and Score for Salt Lake County 204
Figure 104: Image of Flooded Park 205
Figure 105: Image of a Flooded Road 208
Figure 106: Flooding of the Great Salt Lake at the Saltair Resort 209
Figure 107: Elevations of the Great Salt Lake, 2007–2024 210
Figure 108: Schools in the 100-Year (1% Annual Chance) Flood Zone 215
Figure 109: Fire Stations in the 100-Year (1% Annual Chance) Flood Zone 216
Figure 110: County Facilities in the 100-Year (1% Annual Chance) Flood Zone 217
Figure 111: Schools in the 500-Year (0.2% Annual Chance) Flood Zone 218
Figure 112: Fire Stations in the 500-Year (0.2% Annual Chance) Flood Zone 219
Figure 113: Emergency Operations Centers in the 500-Year (0.2% Annual Chance) Flood Zone 220
Figure 114: County Facilities in the 500-Year (0.2% Annual Chance) Flood Zone 221
Figure 115: Estimated Building Losses for the 100-Year (1% Annual Chance) Flood Scenario 225
Figure 116: Estimated Contents Losses for 100-Year (1% Annual Chance) Flood Scenario 226
Figure 117: Estimated Building Losses for the 500-Year (0.2% Annual Chance) Flood Scenario 227
Figure 118: Estimated Contents Losses for the 500-Year (0.2% Annual Chance) Flood Scenario 228
Figure 119: National Risk Index Expected Annual Loss from Riverine Flooding in Salt Lake County 234
Figure 120: Surplus Levee Right of Way Map for Salt Lake County 236
Figure 121: National Risk Index Riverine Flooding Risk Map, Legend, and Score for Salt Lake County 237
Figure 122: Image of Heavy Rain 238
Figure 123: Damage from a High Wind Event in 2020 243
Figure 124: Wind Damage in Salt Lake County Following a Storm in 2020 244

DRAFT

Figure 125: Windstorm Damage in Salt Lake County, September 2020 247
Figure 126: Historic Wind Events in Salt Lake County, 1995–2003 248
Figure 127: National Risk Index Expected Annual Loss from Strong Wind in Salt Lake County 251
Figure 128: National Risk Index Strong Wind Risk Map, Legend, and Score for Salt Lake County 254
Figure 129: Image of a Landslide 255
Figure 130: Diagram of an Idealized Landslide with Commonly Used Terminology 256
Figure 131: Landslide Susceptibility Scale 258
Figure 132: Salt Lake County Facilities in Areas Susceptible to Landslides 259
Figure 133: Emergency Operations Centers Areas Susceptible to Landslides in Salt Lake County 260
Figure 134: Fire Stations in Areas Susceptible to Landslides in Salt Lake County 261
Figure 135: Hospitals in Areas Susceptible to Landslides in Salt Lake County 262
Figure 136: Police Stations in Areas Susceptible to Landslides in Salt Lake County 263
Figure 137: Schools in Areas Susceptible to Landslides in Salt Lake County 264
Figure 138: Landslide in Big Cottonwood Canyon, August 2021 265
Figure 139: FEMA National Risk Index Salt Lake County Expected Annual Loss from Landslides 271
Figure 140: National Risk Index Landslide Risk Map and Score for Salt Lake County 274
Figure 141: Image of lightning 275
Figure 142: FEMA National Risk Index Salt Lake County Expected Annual Loss from Lightning 280
Figure 143: National Risk Index Lightning Risk Map, Legend, and Score for Salt Lake County 282
Figure 144: Testing During the COVID-19 Pandemic 283
Figure 145: Pandemic Severity Index 285
Figure 146: Emerging or Reemerging Priority Pathogens 290
Figure 147: Image of How Radon Enters Homes 295
Figure 148: Radon, pCi/L Range of Magnitude by County in Utah 297
Figure 149: Radon Hazard Ranking in Local Mitigation Plans by County in Utah 298
Figure 150: Average Radon Test Results for Salt Lake County 300
Figure 151: Percentage of Tests in Salt Lake County with Elevated Radon Levels 301
Figure 152: Salt Lake County Radon Test Results, 2006–2021 303
Figure 153: EPA Map of Radon Zones in the United States 307
Figure 154: Snowplow Clearing Road After a Heavy Snow 308
Figure 155: Snow in the Wasatch Mountains 309
Figure 156: Winter Storm Severity Index 310
Figure 157: National Risk Index Expected Annual Loss from Winter Weather in Salt Lake County 314
Figure 158: National Risk Index Winter Weather Risk Map, Rating, and Score for Salt Lake County 317
Figure 159: Image of a Tornado 318
Figure 160: Tornadoes in Salt Lake County, 1995–2023 322
Figure 161: Explosion of a Power Substation During a Tornado in Salt Lake City, August 11, 1999 323
Figure 162: Path of a Tornado Across Salt Lake City, August 11, 1999 324
Figure 163: Critical Facilities in Relation to Tornadoes in Salt Lake County, 1995–2023 327
Figure 164: National Risk Index Expected Annual Loss from Tornadoes in Salt Lake County 328
Figure 165: National Risk Index Tornado Risk Map, Legend, and Score for Salt Lake County 331
Figure 167: Wildland Firefighters at Work 332
Figure 167: Key Factors of an Area's Vulnerability to Wildfire 333

DRAFT

Figure 168: Wildfire Risk to Potential Structures 336
Figure 169: Wildfire Hazard Potential 337
Figure 170: Historical Fire Perimeters and Origin Points 339
Figure 171: Wildfire Data for Utah, 2011–2021 340
Figure 172: Number of Wildfires Reported per Month by Agency 340
Figure 173: Wildland Fire Potential in the United States 342
Figure 174: Burn Probability in Salt Lake County 343
Figure 175: Potential for Extreme Fire Behavior in Salt Lake County 344
Figure 176: Fire Risk Assessment Framework 346
Figure 177: National Risk Index Expected Annual Loss from Wildfires in Salt Lake County 349
Figure 178: Three Populations Vulnerable to Wildfire in Salt Lake County 351
Figure 179: National Risk Index Wildfire Risk Map, Legend, and Score for Salt Lake County 353
Figure 180: Civil Unrest, Salt Lake City, 2020 354
Figure 181: Protest Outside Salt Lake City Public Safety Building, June 2020 357
Figure 182: Image of Hazardous Materials in Storage 362
Figure 183: Pipelines That Carry Gas and Hazardous Liquids in Salt Lake County 365
Figure 185: Newspapers After a Car Bombing 373

List of Tables

Table 1: Temperature and Precipitation in Salt Lake City 9
Table 2: Climate Overview of Salt Lake County and the United States 9
Table 3: Population Growth Rates for Salt Lake County Utah, 2010–2023 11
Table 4: Population Projections for Salt Lake County, 2015–2065 15
Table 5: Household Projections for Salt Lake County, 2015–2065 15
Table 6: Non-Farm Employment in Salt Lake County, 2023–2024 20
Table 7: Employment Share In Salt Lake City Area (Non-Farming Jobs) 20
Table 8: Employment Projections for Salt Lake County, 2015–2065 21
Table 9: Average Hourly Wages for Selected Occupations 22
Table 10: Count of Critical Facilities by Jurisdiction 23
Table 11: Trunk Radio Systems in Salt Lake County 28
Table 12: Participating Jurisdictions 40
Table 13: Existing Resources and Their Use in the Plan Update 41
Table 14: Plan Participation Schedule of Activities 45
Table 15: Stakeholders Given the Opportunity to Participate 47
Table 16: Stakeholders That Participated in the Planning Update 53
Table 17: Public Outreach Conducted by Jurisdiction 64
Table 18: Hazards Identified for 2025 Hazard Mitigation Plan 72
Table 19: Past Disaster Declarations 74
Table 20: Calculated Priority Risk Criteria 75
Table 21: Calculated Priority Risk Index for Salt Lake County 76
Table 22: Canadian Snow Avalanche Size Classification System and Typical Factors 97

DRAFT

Table 23: North American Public Avalanche Danger Scale 98
Table 24: Avalanche Fatalities in Salt Lake County, 2019–2023 105
Table 25: Army Corps of Engineers Hazard Profile Classification 118
Table 26: Salt Lake County Dams by Hazard Rating 119
Table 27: High-Hazard Dam Ownership in Salt Lake County 119
Table 28: High-Hazard Dams in Salt Lake County 121
Table 29: Dam Condition Rating Descriptions 124
Table 30: Potential Dam Inundation Area in Salt Lake County 126
Table 31: Structures Within Potential Dam Inundation Areas, by Jurisdiction and Occupancy Type 126
Table 32: Population Estimated to be Within the Dam Inundation Area by Jurisdiction 127
Table 33: Characteristics of Drought in Salt Lake County 134
Table 34: Drought Classification 135
Table 35: Palmer Drought Severity Index Classification and Range 135
Table 36: Annual Water Use by Category for Salt Lake County (Based on USGS data) 139
Table 37: Salt Lake County Agricultural Statistics 147
Table 38: Fault Zones in Salt Lake County 156
Table 39: Expected Damage to Essential Facilities 166
Table 40: Building-Related Economic Loss Estimates (in Millions) 173
Table 41: Approximated Hazus Loss Estimation by Jurisdiction (in Thousands) 175
Table 42: Expected Building Damage by Occupancy Type 179
Table 43: Salt Lake County Earthquake Scenario Casualty Estimates 180
Table 44: Expected Damage to Transportation Systems 181
Table 45: Transportation System Economic Losses (in Millions) 181
Table 46: Expected Utility System Facility Damage 182
Table 47: Expected Utility System Pipeline Damage (Site-Specific) 182
Table 48: Expected Potable Water and Electric Power System Performance 183
Table 49: Utility System Economic Losses (in Millions) 183
Table 50: Facilities in the 1% Annual Chance Floodplain by Jurisdiction 212
Table 51: Facilities in the 500-Year (0.2% annual chance) Floodplain by Jurisdiction 213
Table 52: Loss Estimates for a 100-Year Flood Event (in Thousands) 223
Table 53: Loss Estimates for a 500-Year Flood Event (in Thousands) 224
Table 54: Expected Building Damage by Occupancy for the 100-Year Flood Scenario 229
Table 55: Expected Building Damage by Building Type for the 100-Year Flood Scenario 229
Table 56: Expected Building Damage by Occupancy Type for the 500-Year Flood Scenario 229
Table 57: Expected Building Damage by Building Type for the 500-Year Flood Scenario 230
Table 58: Building Related Economic Loss Estimates for a 100-Year Flood Event (In Millions) 230
Table 59: Building-Related Economic Loss Estimates for a 500-Year Flood Event (In Millions) 230
Table 60: Debris Generation and Removal 231
Table 61: NFIP Policies for Salt Lake County and Jurisdictions 232
Table 62: Repetitive Loss (RL) Statistics for Salt Lake County 233
Table 63: Rainfall Intensity Scale 239
Table 64: Beaufort Wind Scale 245
Table 65: Infrastructure Vulnerable to Landslides, Salt Lake County 268

DRAFT

Table 66: Vulnerability Assessment for Landslides, Incorporated Salt Lake County 269
Table 67: Lightning Activity Scale 276
Table 68: Historical Health Incidents, Utah 286
Table 69: Salt Lake County Vulnerable Populations 315
Table 70: Fujita Tornado Damage Scale 319
Table 71: Enhanced Fujita Scale for Tornado Damage 320
Table 72: Salt Lake County Vulnerable Populations 329
Table 73: Wildfire Hazard Potential Area by Category 338
Table 74: Burn Probability Categories and Acreage 343
Table 75: Salt Lake County Wildfire Threat, 2024 346
Table 76: Firewise Communities in Salt Lake County 346
Table 77: Communities at Risk – Forestry, Fire, State Lands (2019) 347
Table 78: Salt Lake County Vulnerable Populations at Risk of Wildfire 351
Table 79: HAZMAT Incident Levels 363
Table 80: Petrochemical Companies in Salt Lake County 364
Table 81: HAZMAT Transportation Incidents, Salt Lake County 365
Table 82: Superfund Sites, Salt Lake County 367
Table 83: Salt Lake County Terrorism Incidents 375
Table 84: Active Shooter Incidents in Salt Lake County 376
Table 85: Terrorism Vulnerability 379
Table 86: Future Development Projections for Salt Lake County 382
Table 87: Assessment of the Planning and Regulatory Capabilities of Salt Lake County 384
Table 88: Assessment of the Regulations and Ordinances of Salt Lake County 386
Table 89: Assessment of the Administrative Capabilities of Salt Lake County 386
Table 90: Assessment of the Technical Capabilities of Salt Lake County 388
Table 91: Assessment of the Financial Capabilities of Salt Lake County 389
Table 92: Assessment of the Education and Outreach Capabilities of Salt Lake County 390
Table 93: Opportunities to Expand and/or Improve the Capabilities of Salt Lake County 392
Table 94:Status of Previous Mitigation Actions from the 2015 and 2019 Multijurisdictional Hazard Mitigation Plans 400
Table 95: 2025 Mitigation Action Plan 404
Table 96: Previous Plan Integration for Salt Lake County 418
Table 97: Future Plan Integration for Salt Lake County 418
Table 98: Strategies for Continued Public Involvement by Plan Participants 422

DRAFT

Introduction

Purpose and Scope

The four purposes of this plan are:

1. To identify threats to the community
2. To create mitigation strategies to address those threats
3. To develop long-term mitigation planning goals and objectives
4. To fulfill federal, state, and local hazard mitigation planning obligations

Mitigation actions minimize conditions that have an undesirable impact on our citizens, the economy, the environment, and the well-being of Salt Lake County and surrounding municipalities. This mitigation plan is intended to enhance the awareness of elected officials, agencies, and the public of these hazards and their associated threats to life and property. The plan also details what actions can be taken to help prevent or reduce hazard vulnerability to each jurisdiction.

Hazard mitigation is often a neglected aspect of emergency management. When local governments place a low priority on mitigation implementation activities relative to the perceived threat, some important mitigation measures may be neglected in favor of higher-priority activities. Mitigation success can be achieved. However, if accurate information is conveyed through complete hazard identification and impact studies and followed by effective mitigation management. Hazard mitigation is the key to greatly reducing long-term risk to people and property from natural hazards and their effects.

Salt Lake County and all participating jurisdictions, coupled with their respective citizens, stakeholders, and partner agencies, prepared this local hazard mitigation plan intending to guide hazard mitigation planning in reducing the casualties and costs of natural disasters by providing comprehensive hazard identification, risk assessment, capability, and vulnerability analysis, mitigation strategies, and an implementation schedule. This plan demonstrates the community's commitment to reducing risks from hazards and serves as a tool to help decision makers direct mitigation activities and resources. This plan was also developed to make Salt Lake County and participating jurisdictions eligible for certain federal disaster assistance, specifically, the Federal Emergency Management Agency's (FEMA) Hazard Mitigation Grant Program, Building Resilient Infrastructure in Communities (BRIC), and Pre-Disaster Mitigation program, and to earn points for the National Flood Insurance Program's Community Rating System (CRS), which could lower flood insurance premiums in CRS communities.

This mitigation plan is a revision of the 2019 Salt Lake County Multi-Jurisdictional Multi-Hazard Mitigation Plan. The 2019 plan was reviewed to evaluate its strengths, weaknesses, and utility. The hazards, vulnerabilities, and risks were examined regarding their impact, severity, and how they may affect the population. Updates also describe hazard impacts that have occurred since the last plan revision. The planning team considered previously unidentified hazards including in the plan update. A capabilities

DRAFT

assessment was conducted to identify potential mitigation needs and further align the mitigation plan with other community planning efforts. The revision process included a review of proposed mitigation goals, objectives, and actions to determine their validity and how effective they have been or will be at reducing vulnerability in the county. New priorities have been set to support the identified changes. The mitigation plan was also evaluated to support the state mitigation plan goals and objectives and other local planning efforts. Finally, an implementation strategy and timeline will assign the responsibility and schedule for tracking the implementation of the identified mitigation actions. The mitigation plan will be adopted through the regular legal process and establish authority and guide all mitigation activities outlined in the plan.

This plan also used current county, city, and applicable private hazard mitigation, emergency operations plans, census data, and available GIS and assessor's data as resources for the planning team. Salt Lake County Emergency Management staff, planning team members, county, city, and applicable emergency managers/planners, subject matter experts, recruits from other jurisdictions, such as other local government units, the private sector, non-governmental organizations, academia, airports, and the military were consulted during this planning activity. This plan also demonstrates that the public and all community stakeholders have proactively offered opportunities for participation in the planning process. Examples of participation include relevant involvement in any planning process, attendance at meetings, contributing research, data, and other information, and commenting on drafts of the plan.

This plan was developed in accordance with the requirements of the FEMA Section 322 regulations, 44 Code of Federal Regulations Part 201, the Utah Division of Emergency Management (Utah DEM), and local planning agencies. FEMA regulations were followed during the development of this plan. Salt Lake County Emergency Management (SLCo EM) will conduct monitoring, evaluation, updates, and implementation annually or following any natural disaster. (Any changes made after the annual review will have to be promulgated by the county council. A major revision will occur every five years. Each adopting jurisdiction may also participate in annual or interim plan reviews, updates, and revisions and would also need changes to be promulgated by their local executive leadership.

Background

Salt Lake County is vulnerable to natural and technological (human-caused) hazards threatening our citizens' health, welfare, and security. Action taken to reduce or eliminate the long-term risk to human life and property from these hazards is known as mitigation. The losses of life and property and the cost of response to and recovery from potential disasters can be substantially reduced when attention is turned to mitigation of the impacts and effects before they occur or re-occur.

Hazard mitigation planning is identifying hazard risks and vulnerabilities and establishing goals, policies, and procedures to implement risk-reducing actions. This plan represents a collaborative effort of many participants in our community with the mission to engage community stakeholders in developing a comprehensive approach to reduce long-term hazard risk by identifying and implementing effective mitigation strategies.

DRAFT

Mitigation planning creates safer communities by reducing loss of life and property damage and protecting community assets from the negative impacts of hazards. Implementing mitigation strategies can also reduce the cost of disaster response and recovery by:

- Identifying cost-effective actions that reduce risk
- Focusing resources on the greatest vulnerabilities
- Building partnerships between jurisdictions
- Increasing public awareness of hazards and risk
- Communicating planning priorities
- Aligning risk-reduction efforts with other community plans and objectives
- Establishing eligibility for mitigation grant programs

Hazard mitigation is any cost-effective action that reduces, limits, or prevents the vulnerability of people, property, and/or the environment to potentially damaging, harmful, or costly hazards. Hazard mitigation actions, which can be used to eliminate or minimize the risk to life and property, fall into three categories:

1. Those that keep the hazard away from people
2. Those that keep people, property, and structures away from the hazard
3. Those that do not address the hazard but rather reduce the impact of the hazard on the victims, such as insurance

Local mitigation plans are required to be updated every five years. This plan will update the 2019 Salt Lake County Multi-Jurisdictional Multi-Hazard Mitigation Plan. This mitigation plan is a collaborative effort that will serve all of Salt Lake County, including each of the participating jurisdictions and special service districts in the county. The revision of this plan supports the State Hazard Mitigation Plan mission, which is “to permanently reduce the region’s vulnerability to natural hazards.”

The plan is intended to promote sound public policy and protect or reduce the vulnerability of the citizens, critical facilities, infrastructure, private property, and the natural environment in the region. The framework of this plan will now serve as a tool to guide, plan, and allocate resources across multi-jurisdictional boundaries. It will assist jurisdictions in assessing their resilience to disasters and disruptions. It will serve as a guide to prioritize mitigation and preparedness efforts, allocate funding, guide development in innovative ways, and effectively use and share scarce resources. It represents the county’s commitment to reducing risks from natural hazards.

How To Navigate This Plan

This plan has been set up in two volumes so that elements that are jurisdiction-specific can be easily distinguished from those that apply to the whole planning area:

- Volume 1 includes all federally required elements of a disaster mitigation plan that apply to the entire planning area. This includes the description of the planning process, public involvement strategy,

DRAFT

goals and objectives, countywide hazard risk assessment, countywide mitigation actions, and a plan maintenance strategy. The following appendices at the end of Volume 1 include information and explanations to support the main content of the plan:

  - **Appendix A**: List of Acronyms
  - **Appendix B:** Meeting Documentation
  - **Appendix C**: Public Outreach Survey Documentation
  - **Appendix D**: Plan Effectiveness Evaluation Form
- Volume 2 includes all federally required jurisdiction-specific elements in the annexes of each participating jurisdiction.

All planning partners will adopt Volume 1 in its entirety and their respective jurisdiction-specific annex in Volume 2.

DRAFT

Community Profile

Geography, Land Use, and Development

Geography

At approximately 807.37 square miles, including 65.09 square miles of water area, Salt Lake County is the fifth smallest county in Utah by land area. Tooele County borders Salt Lake County to the west, while Summit County borders it to the east. To the north lie Davis and Morgan Counties, with Utah County to the south. The Great Salt Lake occupies much of the northwest corner of the county. The Wasatch and Oquirrh Mountains form the eastern and western borders of the county, respectively (Figure 1).

Land Use and Development

Salt Lake County has 23 cities and towns: Alta, Bluffdale, Brighton, Copperton, Cottonwood Heights, Draper, Emigration Canyon, Herriman, Holladay, Kearns, Magna, Midvale, Millcreek, Murray, Riverton, Sandy City, Salt Lake City, South Jordan, South Salt Lake, Taylorsville, West Jordan, West Valley City, and White City. The Greater Salt Lake Municipal Services District (MSD) provides municipal services, such as staffing and administrative support for member communities, which include Brighton, Copperton, Emigration Canyon, Kearns, Magna, White City and Unincorporated Salt Lake County. The MSD also provides planning and zoning, business licensing, and code enforcement services to member communities. Animal Control Services, Parks Maintenance and operations, and Public Works Operations for the MSD are contracted with Salt Lake County. Salt Lake County's land ownership is approximately 79.4% private, 6% federal, and 10% state. 4.6% of this area is water. Figure 2 shows the locations of lakes, rivers, and canals in the county.

A significant portion of Salt Lake County is currently zoned for low-density residential development. Some higher densities are allowed in eastern Salt Lake City, while the southern areas of Salt Lake County are zoned for lower housing density. Industrial land uses are planned for West Salt Lake City, along the I-15 corridor, northern West Valley City, the western portion of North Salt Lake, and the west side of Salt Lake County. Areas primarily for commercial use include Salt Lake City's central business district and along primary transportation corridors, including I-15, I-215, State Street, 400 South, Highland Drive, 3500 South, 4500 South, and 7200 South.

Additional commercial land use nodes are dispersed throughout Salt Lake County to serve adjoining residential communities. Many public and private lands remain undeveloped because of specific environmental constraints, such as steep slopes and prime wetlands. Some areas currently used for industrial or mining activity may be redeveloped for commercial and residential purposes. Kennecott Utah Copper Corporation currently owns much of this land.

DRAFT

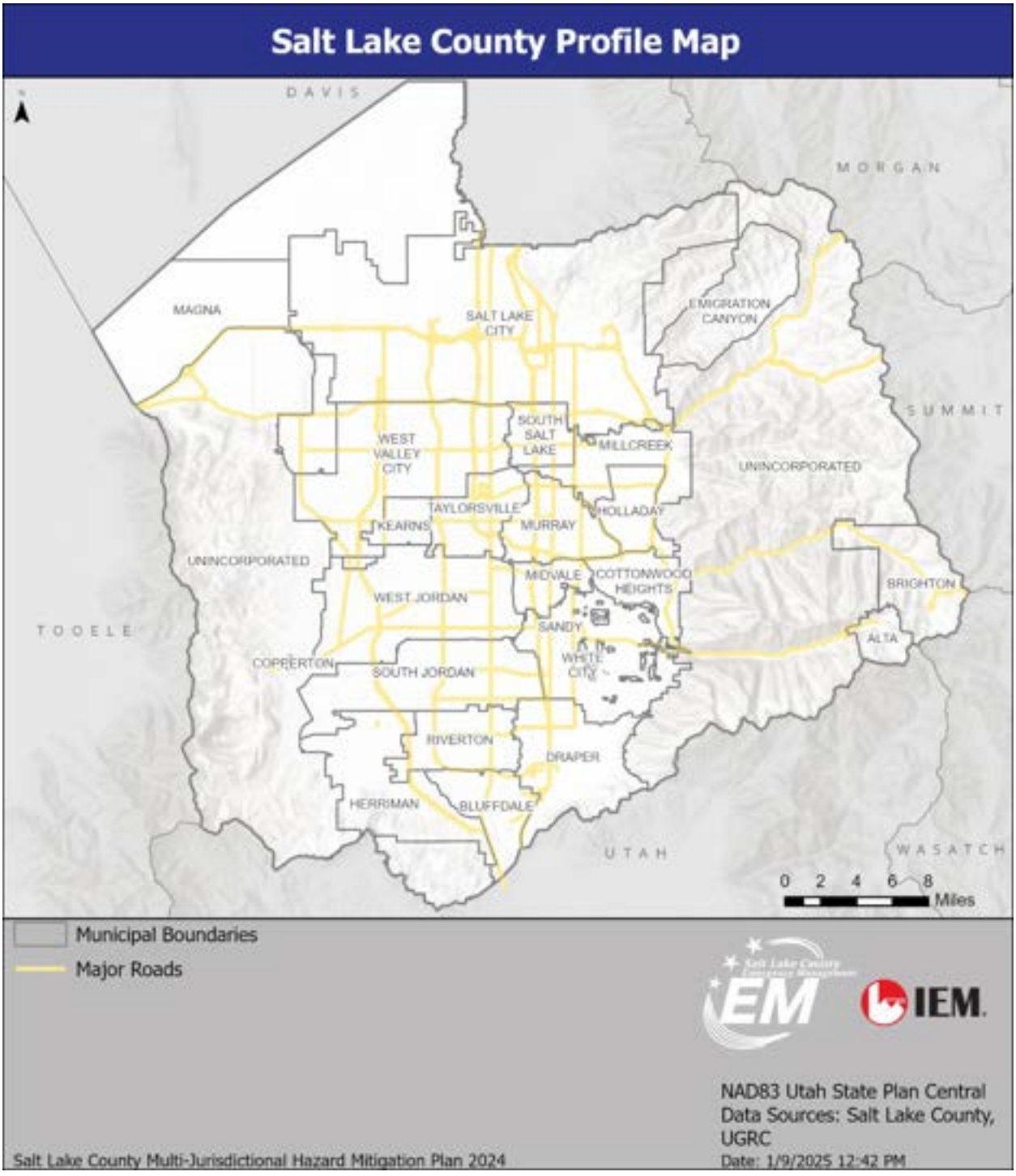


Figure 1: Salt Lake County Profile Map

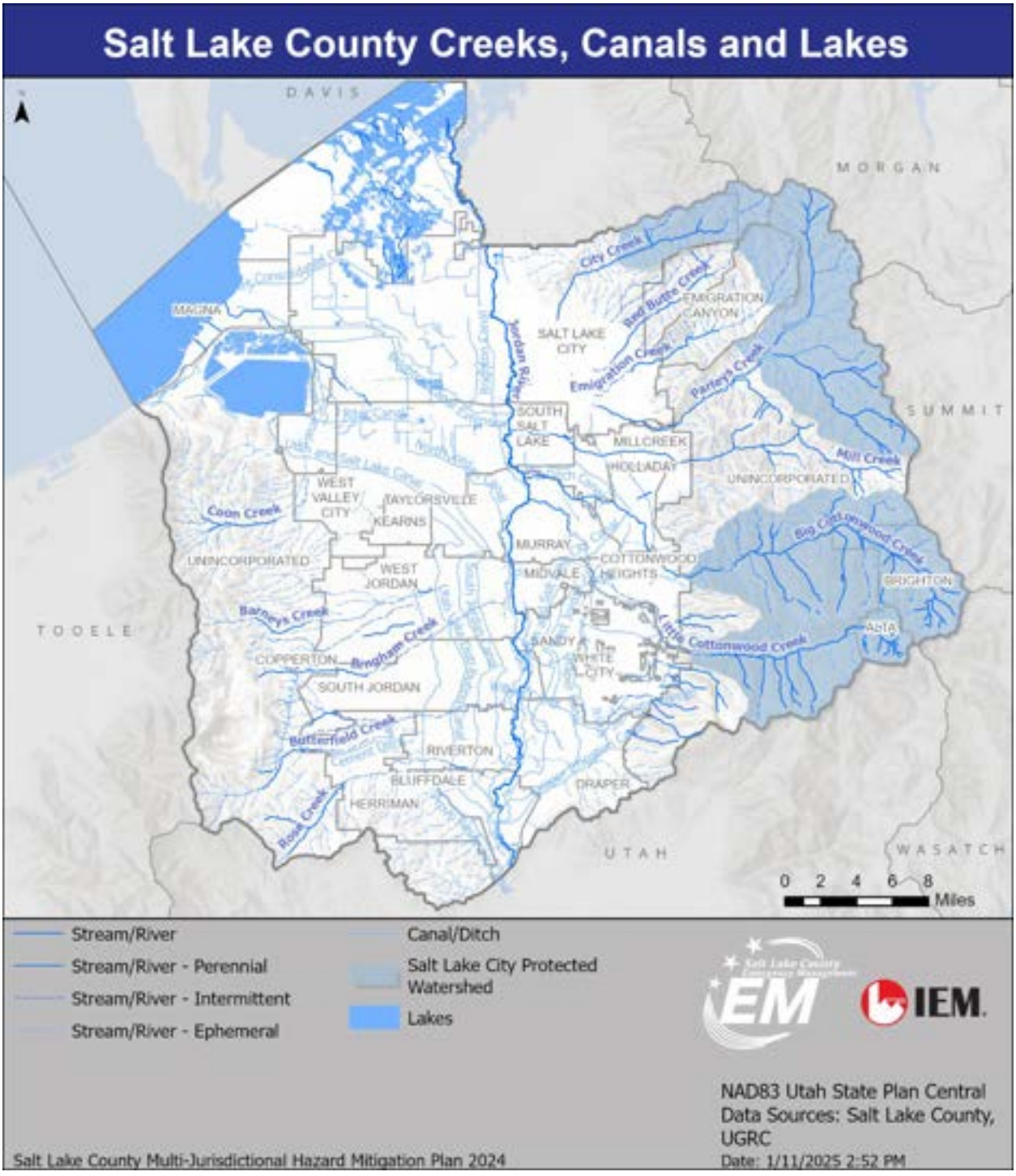


Figure 2: Map of Salt Lake County Rivers and Lakes

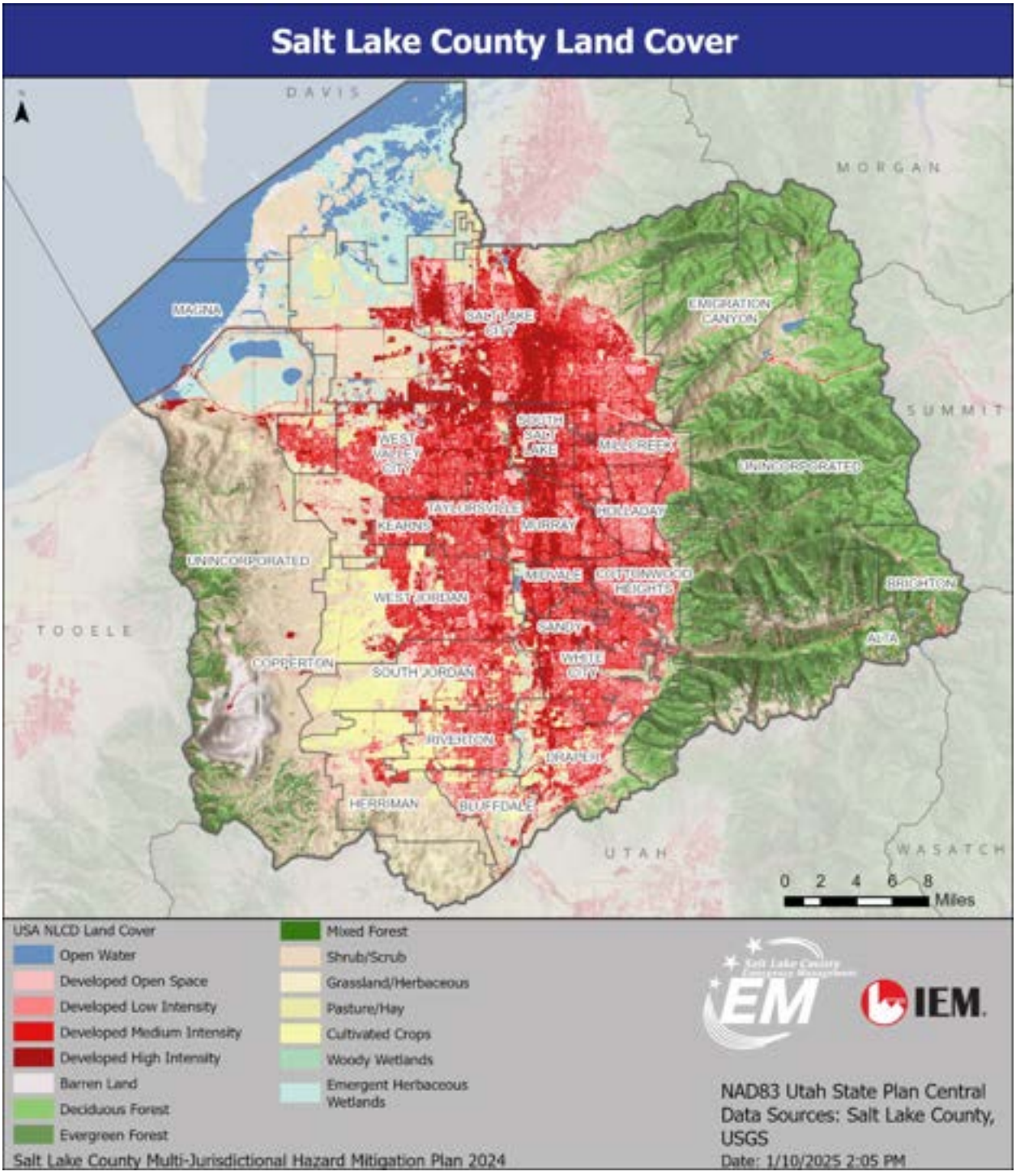


Figure 3: Types of Land Cover in Salt Lake County

Climate and Weather

The Salt Lake City Climate Book is a long-term project that maintains historical climate records for the Salt Lake City Weather Forecast Office and the region it serves. It includes temperature, precipitation, and snowfall records, including averages, minimums, maximums and extremes. Table 1 summarizes the

records available through this source, including monthly average temperatures, normal monthly precipitation, and normal snowfall.[1]

Table 1: Temperature and Precipitation in Salt Lake City

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average Temperature (˚F)	31.4	36.6	45.8	51.8	61.5	71.6	81.1	79.1	68.4	54.6	41.7	32.2
Average Maximum Temperature (˚F)	38.6	44.7	55.3	61.9	72.6	84.1	94.0	91.7	80.6	65.5	50.7	39.0
Average Minimum Temperature (˚F)	24.2	28.6	36.3	41.8	50.4	59.1	68.2	66.6	56.3	43.6	32.8	25.3
Normal Precipitation (inches)	1.43	1.30	1.75	2.16	1.82	0.95	0.49	0.58	1.06	1.26	1.32	1.40
Normal Snowfall (inches)	12.7	10.7	5.9	2.9	0.1	0	0	0	0	0.5	7.0	12.1

Table 2, Figure 4, and Figure 5 provide, respectively, a climate overview, climate averages, and weather data for Salt Lake County.

Table 2: Climate Overview of Salt Lake County and the United States[2]

Climate Metric	Salt Lake, Utah	United States
Rainfall	19.6 in.	38.1 in.
Snowfall	54.2 in.	27.8 in.
Precipitation	90.2 days	106.2 days
Sunny	226 days	205 days
Avg. July High	91.4°F	85.8°F
Avg. Jan Low	22.8°F	21.7°F
Comfort Index (higher = better)	7.1	7
UV Index	4.7	4.3
Elevation	5599 ft.	2443 ft.

[1] National Weather Service, Salt Lake City Weather Forecast Office. https://www.weather.gov/slc/climatebook#PDFS.
[2] Bestplaces.net. “Salt Lake County Climate Overview.” 2024. https://www.bestplaces.net/climate/county/utah/salt_lake.

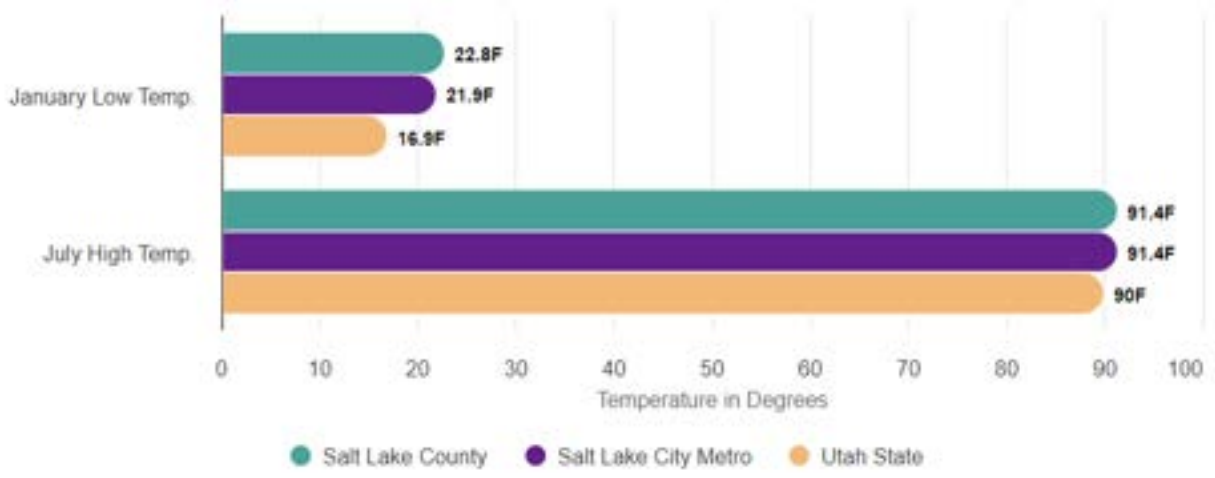


Figure 4: High and Low Temperatures in Salt Lake City, Salt Lake County, and the state of Utah[3]

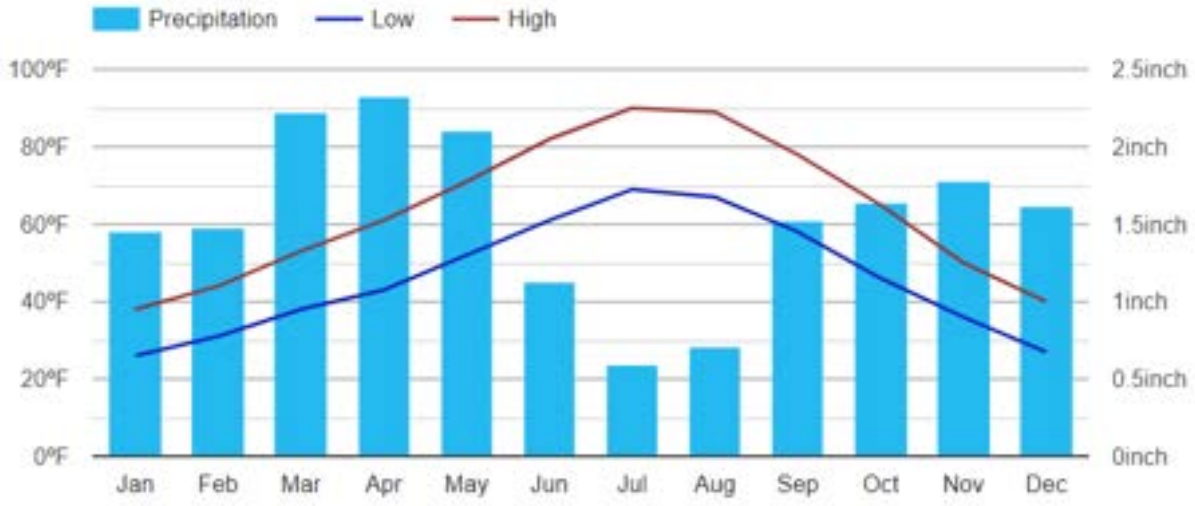


Figure 5: Climate Chart for Salt Lake City[4]

Population

According to the United States Census, Salt Lake County continues to be the most populous county in Utah, with a population of 1,185,813 in 2023. It has grown steadily over the past 13 years (see Table 3).[5] The 2024 estimated population of Salt Lake County is 1,185,057, with a growth rate of -0.06% in the past

[3] Ibid.
[4] The blue line shows the average low temperature, and the red line shows the average high temperature. USClimateData.com. "Climate Salt Lake City – Utah." 2024. https://www.usclimatedata.com/climate/salt-lake-city/utah/united-states/usut0225.
[5] U.S. Census. "Quick Facts Salt Lake County Utah." 2024. https://www.census.gov/quickfacts/fact/table/saltlakecountyutah/HSG445222.

year, according to the most recent United States census data. The 2010 population was 1,032,997, which has grown by 14.72% since then.[6]

Table 3: Population Growth Rates for Salt Lake County Utah, 2010–2023[7]

Year	Population	Growth	Growth Rate
2023	1,185,813	-756	-0.06%
2022	1,186,569	257	0.02%
2021	1,186,312	-671	-0.06%
2020	1,186,983	28,398	2.45%
2019	1,158,585	9,636	0.84%
2018	1,148,949	11,676	1.03%
2017	1,137,273	16,522	1.47%
2016	1,120,751	18,061	1.64%
2015	1,102,690	12,350	1.13%
2014	1,090,340	10,679	0.99%
2013	1,079,661	15,521	1.46%
2012	1,064,140	16,438	1.57%
2011	1,047,702	14,705	1.42%
2010	1,032,997	0	0%

Salt Lake County's population increased in 10 of the 13 years between 2010 and 2023. The largest annual population increase was 2.4% between 2019 and 2020. The county's largest decline in growth was between 2020 and 2021, when the population growth rate saw no increase. Between 2010 and 2022, the county grew by an average of 1.2% per year (see Figure 6).[8]

DRAFT

[6] World Population Review.com. "Salt Lake County, Utah Population 2024." 2024. https://worldpopulationreview.com/us-counties/utah/salt-lake-county.
[7] Ibid.
[8] USA Facts. "Our Changing Population Salt Lake County, Utah." 2024. https://usafacts.org/data/topics/people-society/population-and-demographics/our-changing-population/state/utah/county/salt-lake-county/#:~:text=Salt%20Lake%20County%27s%20population%20increased%2010%20out%20of,grew%20by%20an%20average%20of%201.2%25%20per%20year.

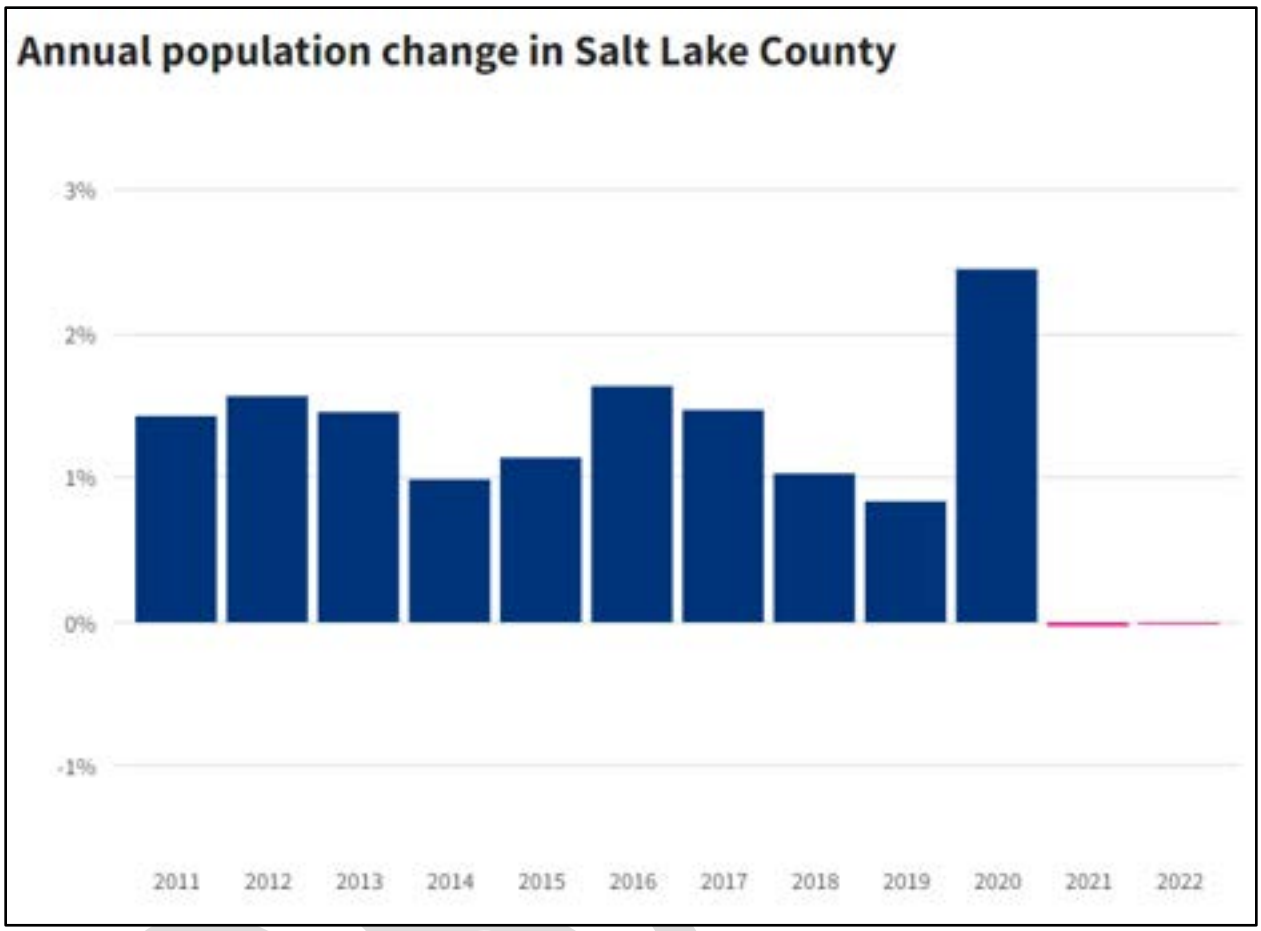


Figure 6: Population Growth Rates for Salt Lake County, 2011–2022[9]

City Populations

Salt Lake County contains two of the largest cities in the state: Salt Lake City, which has a population of approximately 209,593 (a 4.9% increase from 2020, when it was 199,723), and West Valley City, which has a population of approximately 134,470 (−4.1% decrease from 2020, when it was 140,238), according to the 2023 census data.[10] Figure 7 shows the current daytime population density in the county, followed by the nighttime population in Figure 8 based on LandScan data from Oak Ridge National Laboratory. LandScan data are the community standard for global population data. It is derived through the use of available data and satellite imagery to map geographic areas with superimposed layers of information to represent an "ambient" (24-hour average) population.

[9] USA Facts. "Our Changing Population: Salt Lake County, Utah." 2024. https://usafacts.org/data/topics/people-society/population-and-demographics/our-changing-population/state/utah/county/salt-lake-county/#:~:text=Salt%20Lake%20County%27s%20population%20increased%2010%20out%20of,grew%20by%20an%20average%20of%201.2%25%20per%20year

[10] U.S. Census. "Quick Facts Salt Lake City and West Valley City Utah." 2024. https://www.census.gov/quickfacts/fact/table/westvalleycitycityutah,saltlakecitycityutah/HSG445222

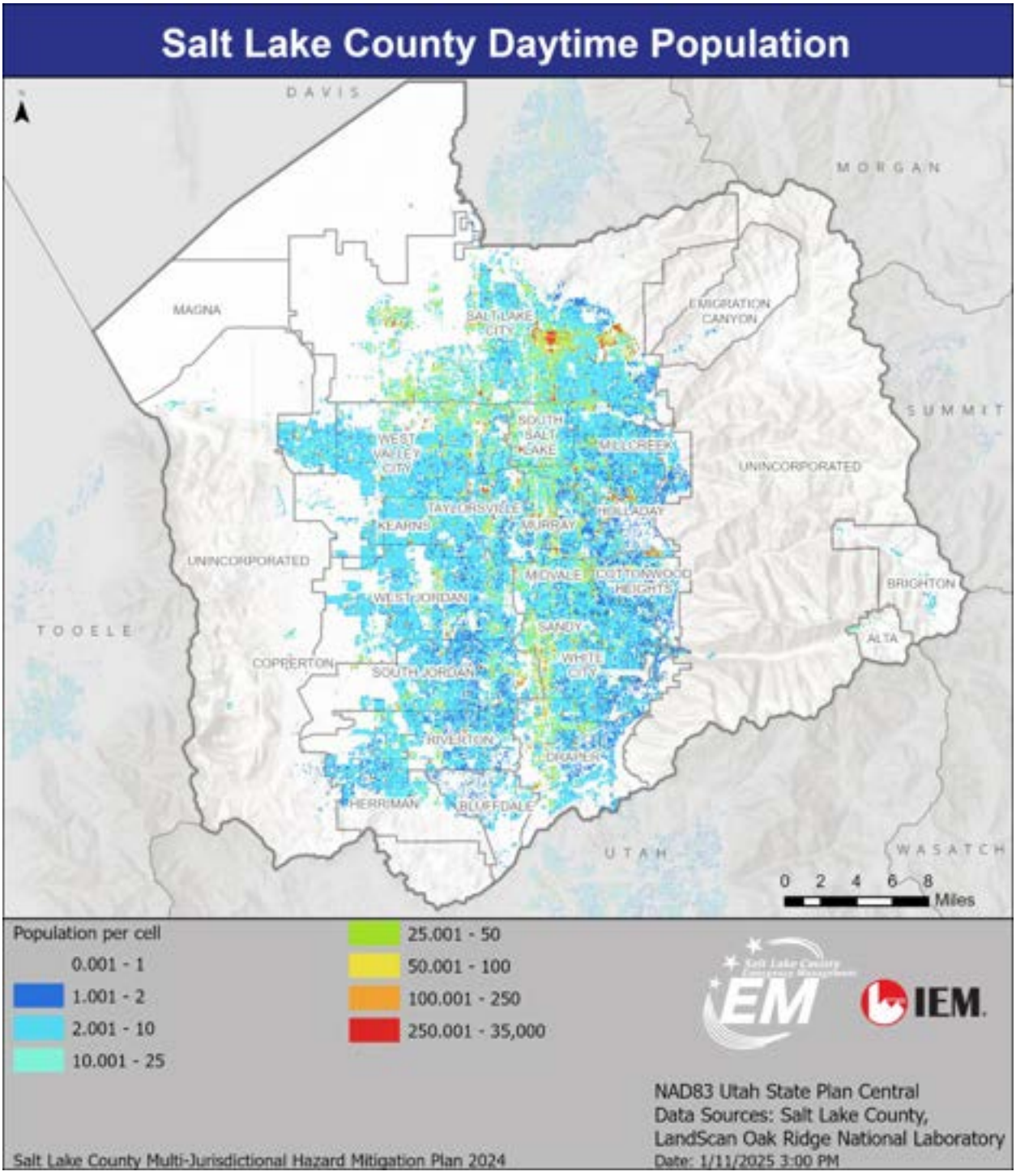


Figure 7: Population Density of Salt Lake County

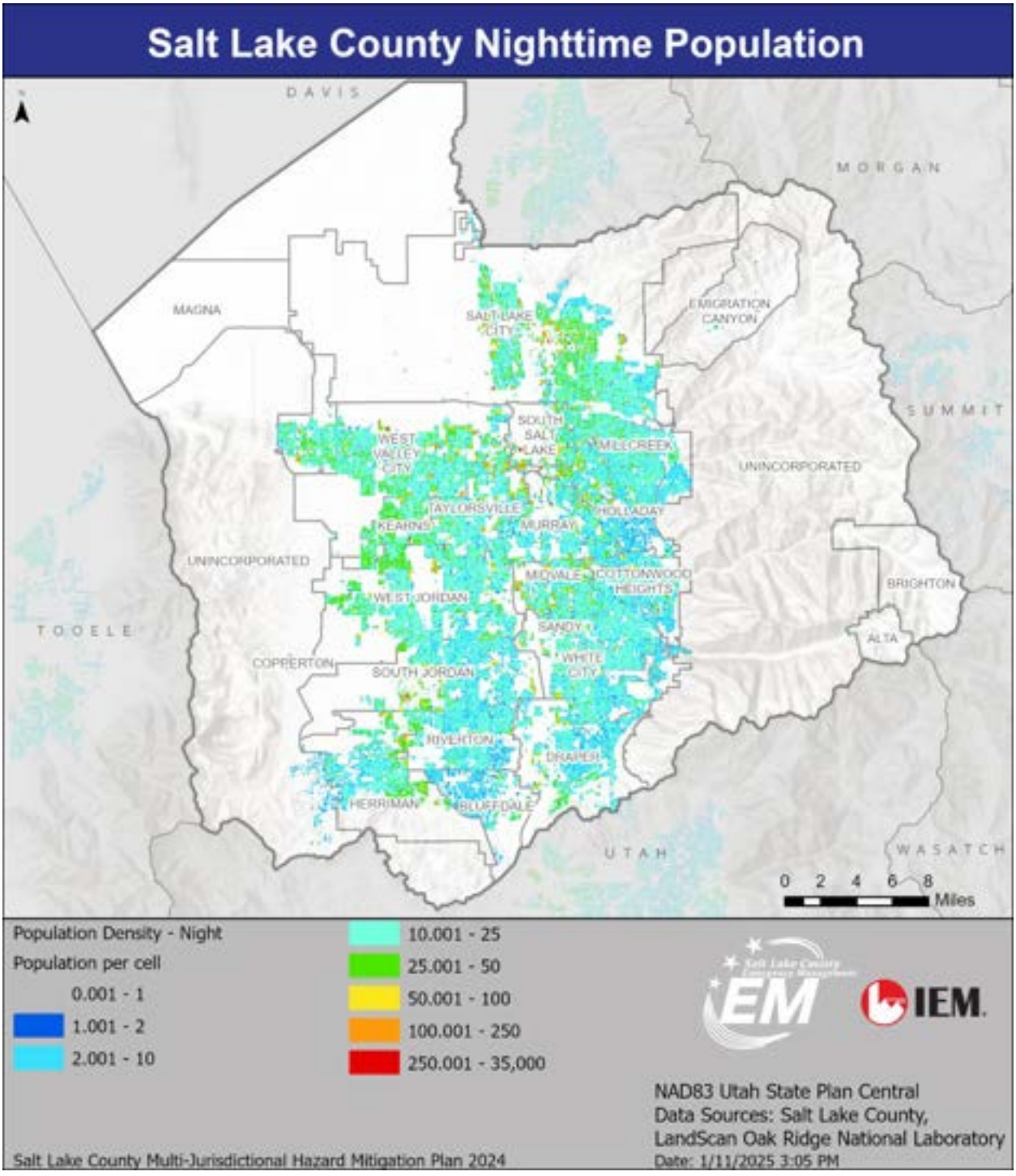


Figure 8: Nighttime Population of Salt Lake County

Table 4 and Table 5 list Salt Lake County population and household projections, indicating continued growth of 55% from 2015 to 2065, as determined by The University of Utah's Kem C. Gardner Policy Institute.[11]

Population Projections

Table 4: Population Projections for Salt Lake County, 2015–2065[12]

County	2015	2025	2035	2045	2055	2065	Absolute Change 2015–2065	Percent Change 2015–2065
Salt Lake County	1,094,650	1,249,961	1,361,099	1,470,574	1,594,804	1,693,513	598,863	55%

Table 5: Household Projections for Salt Lake County, 2015–2065[13]

County	2015	2025	2035	2045	2055	2065	Absolute Change 2015–2065	Percent Change 2015–2065
Salt Lake County	379,320	454,929	521,352	579,472	635,143	689,490	310,170	82%

Population by Age and Gender

Figure 9 lists the 2024 statistical population data for Salt Lake County based on age and gender, indicating the median age is 32.3. Approximately 12.2% of the population are over age 65. Overall, 49.4% are females, and 50.6% are males. Figure 10 shows the distribution of seniors by census tract.

[11] Hanson, Janelle. "Utah in 2065." The University of Utah, Kem C. Gardner Policy Institute. October 21, 2016. https://attheu.utah.edu/facultystaff/utah-in-2065/.
[12] Ibid.
[13] Ibid.

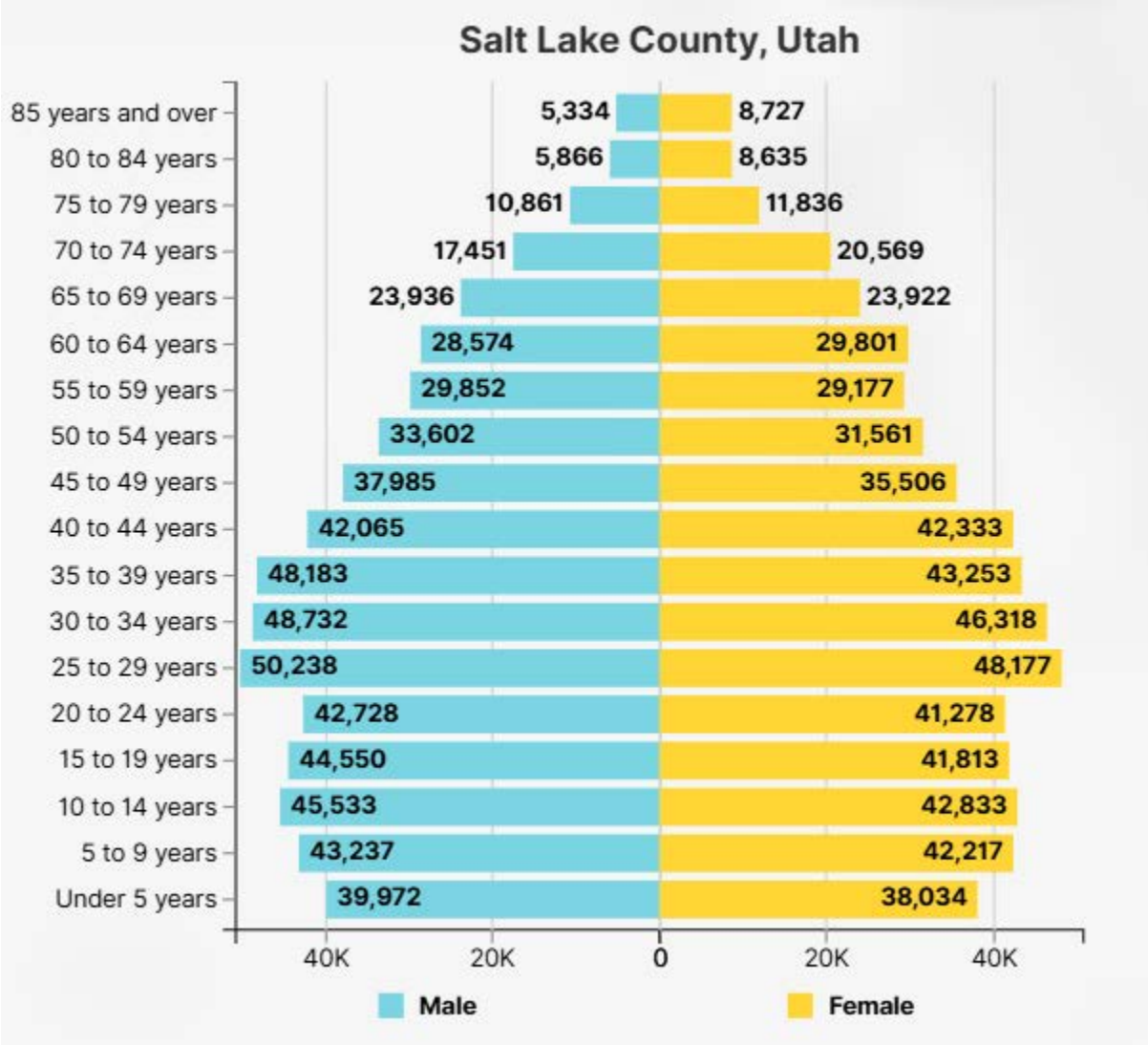


Figure 9: Salt Lake County Population by Gender and Age[14]

[14] US Census Bureau. "Salt Lake County, Utah Population Pyramid." 2024 https://data.census.gov/profile/Salt_Lake_County,_Utah?g=050XX00US49035.

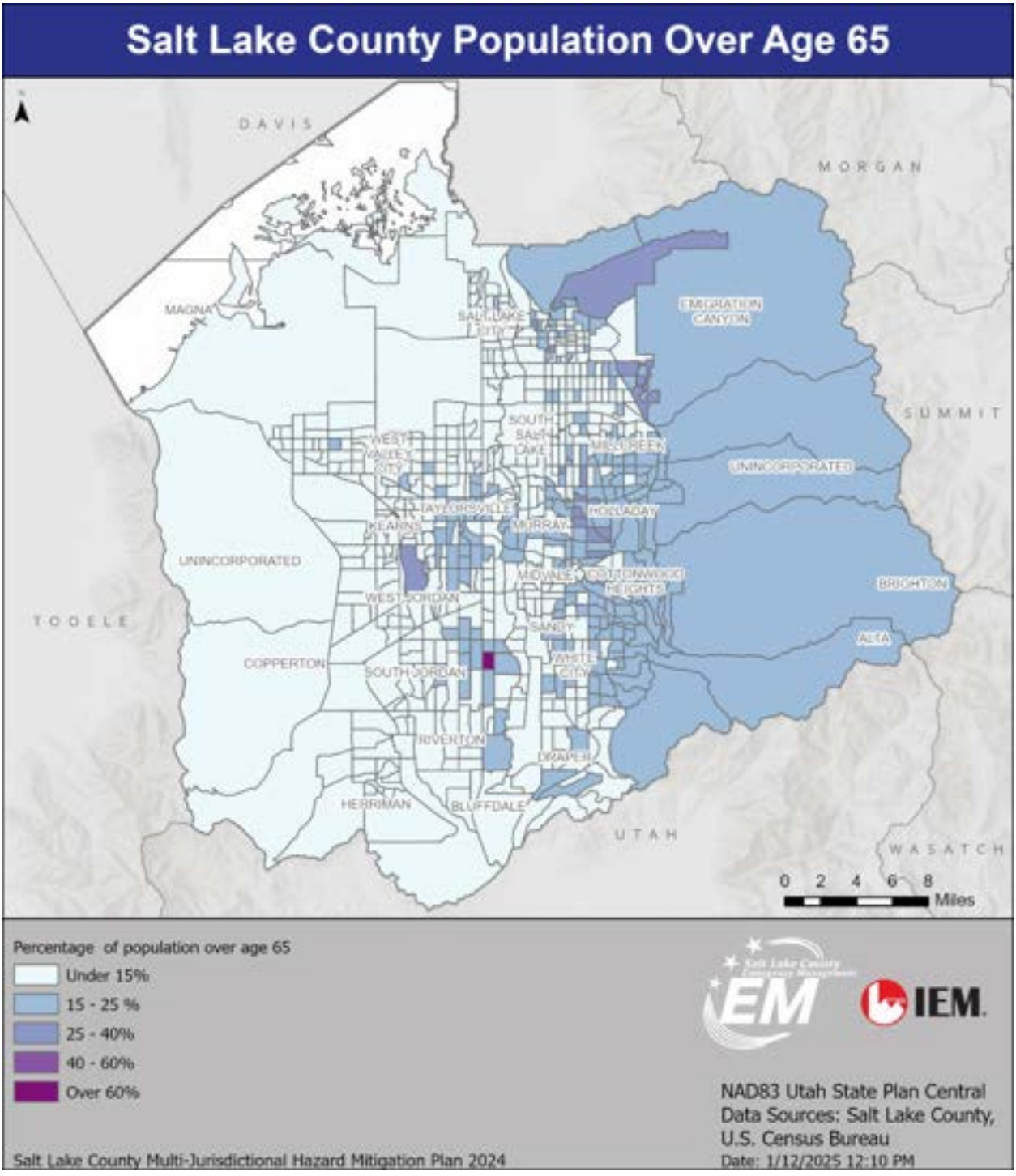


Figure 10: Population 65 Years Old and Older in Salt Lake County by Census Tract

Population by Race

Figure 11 illustrates the Salt Lake County population by race. Of the population, 880,344, or 74.56%, are white; 106,540, or 9.02%, identify as another race; 94,251, or 7.98%, identify as two or more races;

49,060, or 4.16%, are Asian; 21,531, or 1.82%; are Black or African American; 18,674, or 1.58%, are Native Hawaiian or Pacific Islander; and 10,243, or 0.87%, are Native American.

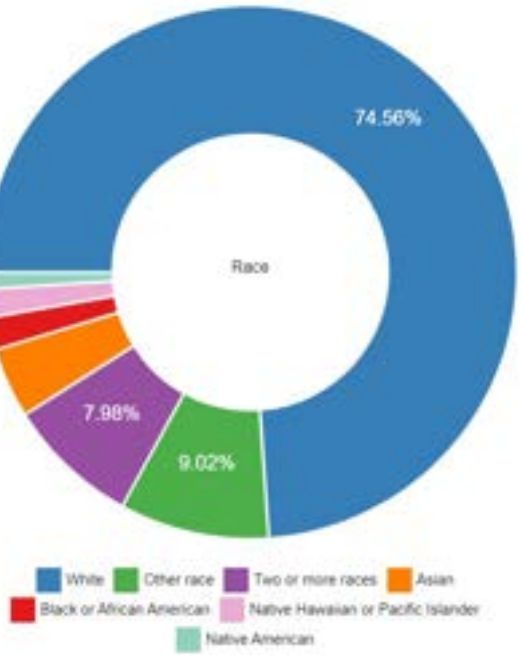


Figure 11: Population by Race of Salt Lake County[15]

Population by Educational Attainment

Figure 12 illustrates the educational attainment levels of the Salt Lake County population. For residents over 25 years old, 25,107 (3.33%) have less than a ninth-grade education, and 36,846 (4.88%) attained a ninth- to twelfth-grade education. High school graduates make up 22.34% of the population (168,538 individuals). Some college, associate degree, bachelor's degree, and graduate degree attainment totals 523,933, or 69.46%.[16]

[15] Ibid.
[16] Ibid.

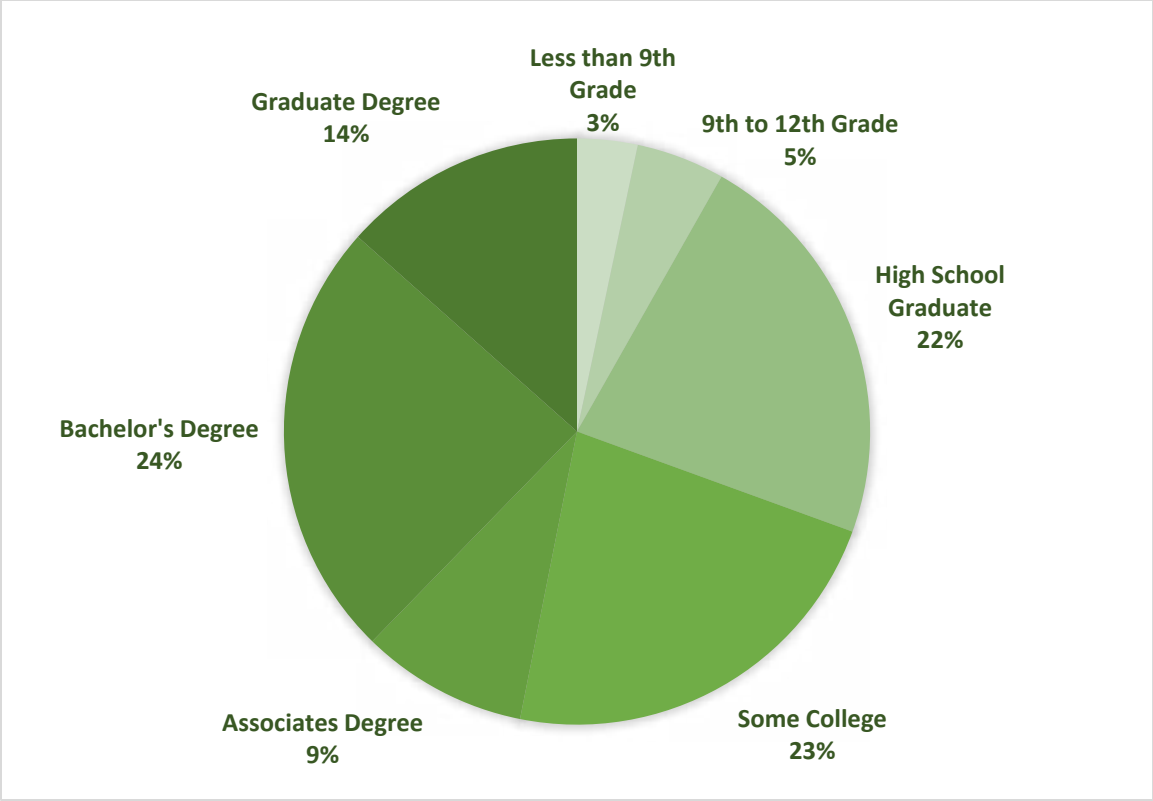


Figure 12: Educational Attainment in Salt Lake County[17]

Housing

For 2018–2022, the United States Census Bureau reports an owner-occupied housing unit rate for Salt Lake County of 67.1%, with 458,880 housing units, as of July 1, 2023. The median value of owner-occupied housing units for 2018–2022 was $440,400. The median selected owner costs for a monthly mortgage was $1,939, while the median gross rent was $1,394.[18]

Economy

Employment

Salt Lake County is the backbone of Utah's economy, making up approximately 39% of the labor force and 47% of the non-farming job market. The trade and transportation industry, the largest employment division in the county, supplies approximately 20% of the county's employment share. Trade is the second major source of employment, followed by government and education, health, and social services. Salt Lake is a regional center for the finance, healthcare, and high-tech industries. Major employers include the University of Utah, the state of Utah, Intermountain Healthcare, Granite School District,

[17] Ibid.
[18] U.S. Census. "Salt Lake County Utah." 2024. https://www.census.gov/quickfacts/fact/table/saltlakecountyutah/HSG445222.

Jordan School District, Salt Lake County, Wal-Mart, Discover Financial Services Inc., Delta Airlines, the United States Postal Service, Salt Lake City School District, and Salt Lake City.

Table 6: Non-Farm Employment in Salt Lake County, 2023–2024[19]

July 2023	June 2024	July 2024	% Change Over Year
798,540	817,886	815,309	2.1%

Table 7: Employment Share In Salt Lake City Area (Non-Farming Jobs)[20]

Employment Type	July 2024 (thousands)	Change from July 2023 to July 2024 (thousands)	Change from July 2023 to July 2024
Total Nonfarm	841.8	24.3	3.0%
Trade/Transport/Utilities	161.1	1.9	1.2%
Prof/Business Services	149.8	3.9	2.7%
Government	116.4	5.3	4.8%
Education/Health/Social Services	99.5	5.2	5.5%
Leisure/Hospitality	72.7	2.4	3.4%
Financial Activities	64.3	0.6	0.9%
Manufacturing	66.4	2.3	3.6%
Mining, Logging, and Construction	63.6	3.5	5.8%
Information	24.5	0.0	0.0%
Other Services	22.5	-0.8	-3.4%

The unemployment rate measures those people who reside in a county, are jobless and available to take a job, and have actively sought work in the past four weeks. The unemployment rate is a proxy for the availability of labor. An unemployment rate between 4.0% and 4.8% may be considered balanced in terms of excess, balance, and shortage.

According to the United States Bureau of Labor Statistics, the unemployment rate in Salt Lake County in July 2024 was 3.6%, up from July 2023 at 2.6%.[21]

[19] Utah.gov. Department of Workforce Services. “Non-Farm Employment.” 2024. https://jobs.utah.gov/wi/data/library/employment/countyemployment.html.
[20] United States Bureau of Labor Statistics. “Salt Lake City Area Economic Summary.” August 29, 2024. https://www.bls.gov/regions/mountain-plains/summary/BLSSummary_SaltLakeCity.pdf.
[21] Utah.gov. Department of Workforce Services. “Seasonal Adjusted Unemployment Rates.” 2024. https://jobs.utah.gov/wi/data/library/employment/countyunemployment.html.

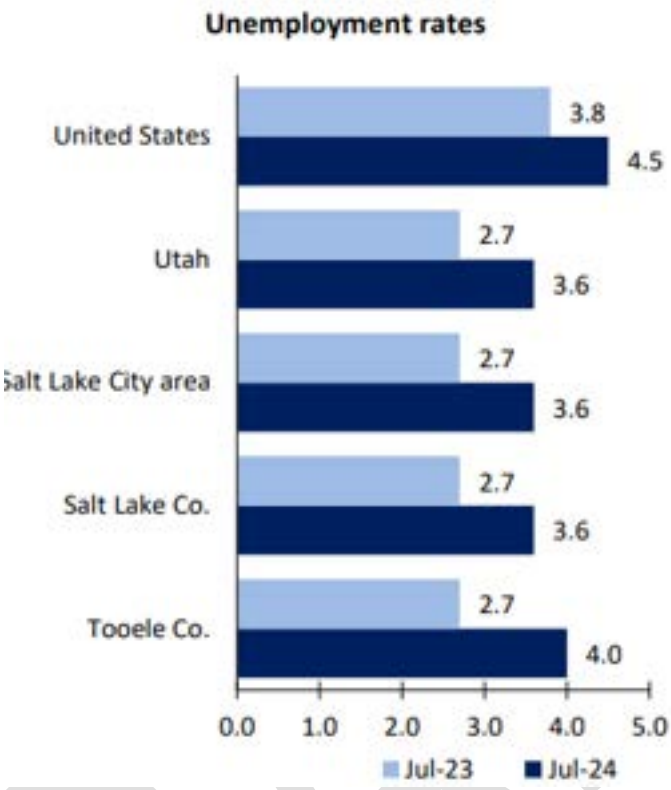


Figure 13: Unemployment Rates in the United States and Selected Areas[22]

Looking ahead, Table 8 shows the employed population in the county is projected to increase by 72% from 2015 to 2065.[23]

Table 8: Employment Projections for Salt Lake County, 2015–2065[24]

County	2015	2025	2035	2045	2055	2065	Absolute Change 2015–2065	Percent Change 2015–2065
Salt Lake County	844,316	1,053,362	1,182,092	1,293,225	1,385,240	1,454,567	610,251	72%

Income

According to the Bureau of Labor Statistics, the average weekly wage for all industries in the Salt Lake City area is $1,130.

[22] U.S. Bureau of Labor Statistics. "Salt Lake City Area Economic Summary." August 29, 2024. https://www.bls.gov/regions/mountain-plains/summary/BLSSummary_SaltLakeCity.pdf.
[23] Hanson, Janelle. "Utah in 2065." The University of Utah, Kem C. Gardner Policy Institute. October 21, 2016. https://attheu.utah.edu/facultystaff/utah-in-2065/.
[24] Ibid.

Table 9: Average Hourly Wages for Selected Occupations[25]

Occupation	Salt Lake City	United States
All Occupations	$31.67	$31.48
Software Developers	$58.13	$66.40
General and Operations Manager	$55.06	$62.18
Training and Development Specialists	$34.79	$34.60
Market Research Analysts and Marketing Specialists	$32.15	$40.00
Electricians	$29.38	$32.60
Paralegals and Legal Assistance	$28.20	$31.95

Poverty

A measure of poverty takes income and family size into account and has both immediate and long-lasting effects on health. Income assesses the financial resources available to individuals or families for necessities (e.g., food, clothing, and healthcare) to maintain or increase their well-being. Persons living in poverty are worse off than persons in more affluent households for many indicators tracked by the Utah Department of Health and Human Services Public Health Indicator Base Information System (PHIBIS). The Utah Public Health Data Resources reports poverty statistics based on the 2022 Model-based Small Area Income & Poverty Estimates (SAIPE) for school districts, counties, and states. The poverty threshold for a family of four, including two children, was $29,678 in 2022. Poverty thresholds are updated annually using the Consumer Price Index for All Urban Consumers (CPI-U) to allow for changes in the cost of living. They do not vary geographically. PHIBIS reports that the percentage of persons living in poverty in Salt Lake County is 7.7%. In addition, Utah has a lower percentage of children in poverty than the U.S. as a whole, 8.5% vs. 16.3% in 2022.[26]

Critical Facilities and Infrastructure

Critical facilities include structures from which public safety actions and other essential services are provided. Although not an exhaustive list of facilities that perform important community functions, this plan identifies critical facilities such as emergency operations centers, fire stations, hospitals, police stations, schools, and other county facilities. County facilities include community assets, such as recreation centers, libraries, public works, parks, cultural venues, public health facilities, justice centers, and senior centers.

[25] U.S. Bureau of Labor Statistics. “Salt Lake City Area Economic Summary.” August 29, 2024. https://www.bls.gov/regions/mountain-plains/summary/BLSSummary_SaltLakeCity.pdf.
[26] Utah.gov. “Health Indicator Report of Utah Population Characteristics: Poverty, Children Age 17 and Under.” Utah Department of Health and Human Services, Public Health Indicator Based Information System (IBIS). 2022. https://ibis.utah.gov/ibisph-view/indicator/view/ChldPov.html.

Table 10: Count of Critical Facilities by Jurisdiction

Name	Emergency Operations Centers	Fire Stations	Hospitals	Police Stations	Schools	County Facilities
Alta	1	0	0	1	0	1
Bluffdale	1	2	0	2	7	1
Brighton	0	1	0	0	0	0
Copperton	0	1	0	0	0	1
Cottonwood Heights	1	2	0	1	7	10
Draper	1	3	1	1	21	7
Emigration Canyon	0	1	0	0	0	0
Herriman	1	2	0	1	12	6
Holladay	1	1	0	1	16	8
Kearns	0	1	0	1	11	11
Magna	0	2	0	1	7	8
Midvale	1	2	0	1	15	10
Millcreek	0	3	2	1	20	14
Murray	1	4	2	2	28	16
Riverton	1	3	1	1	12	10
Salt Lake City	2	14	5	9	85	32
Sandy City	1	5	2	1	35	7
South Jordan	1	3	0	1	22	9
South Salt Lake	2	3	1	3	24	16
Taylorsville	1	2	0	2	17	16
Unincorporated	0	1	0	0	3	3
West Jordan	1	5	1	1	42	15
West Valley City	1	6	1	2	37	16
White City	0	0	0	0	1	1
Salt Lake Community College	0	0	0	0	9	0
Jordan School District	0	0	0	0	68	0
Canyons School District	0	0	0	0	47	0

STATE-OWNED FACILITIES

Salt Lake County has 1,463 state-owned facilities with an insured value of approximately $7.3 billion.

DRAFT

Transportation

As of 2023, the Salt Lake County International Airport was the 21st busiest airport in the United States, operating as a major hub for Delta Air Lines and SkyWest Airlines. Although not visible in Figure 14, the South Valley Regional Airport in West Jordan also is available for public use.

Salt Lake County can be traversed on several interstate highways, including I-15, I-80, and I-215. Numerous other freeways, expressways, and significant arterial routes interconnect in the county, including SR-68, SR-201, and SR-154. The county also contains many bike paths for active transportation.

The county is also heavily networked with bus and commuter rail lines operated by the Utah Transit Authority (UTA) (Figure 14 and Figure 15). The FrontRunner commuter rail line, TRAX light rail system, and many bus routes are all used for public transportation throughout Salt Lake County.

DRAFT

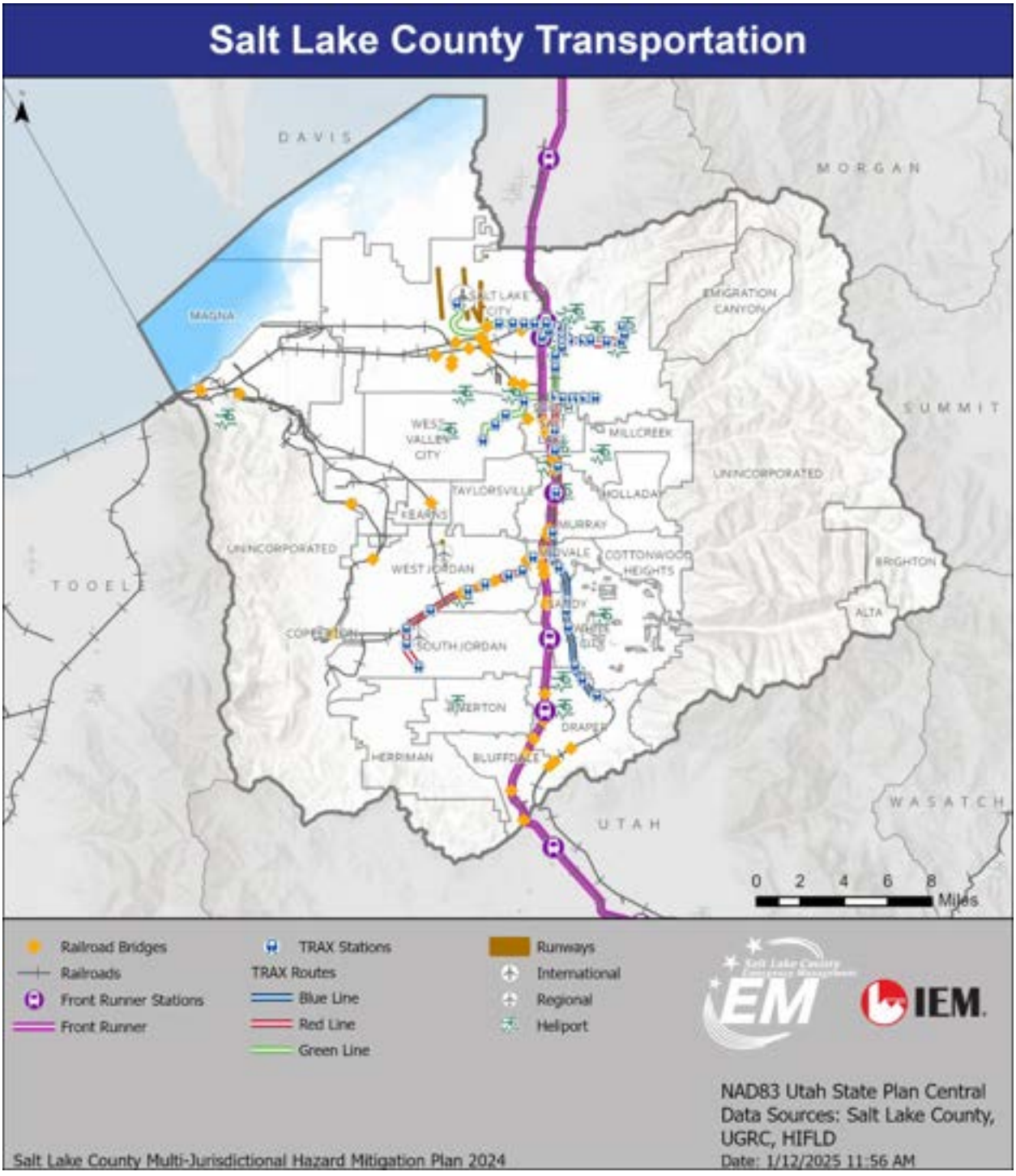


Figure 14: Railways in Salt Lake County

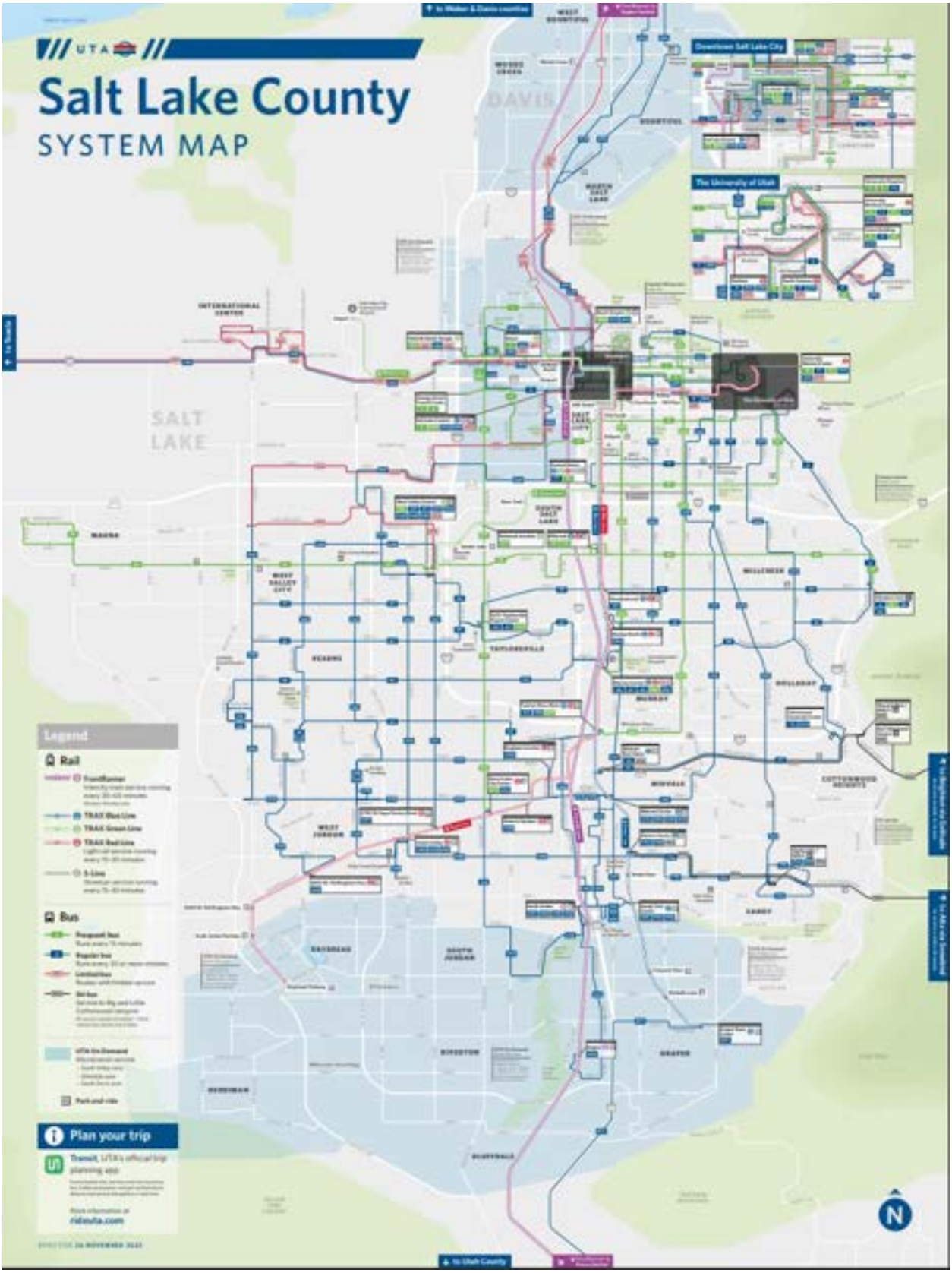


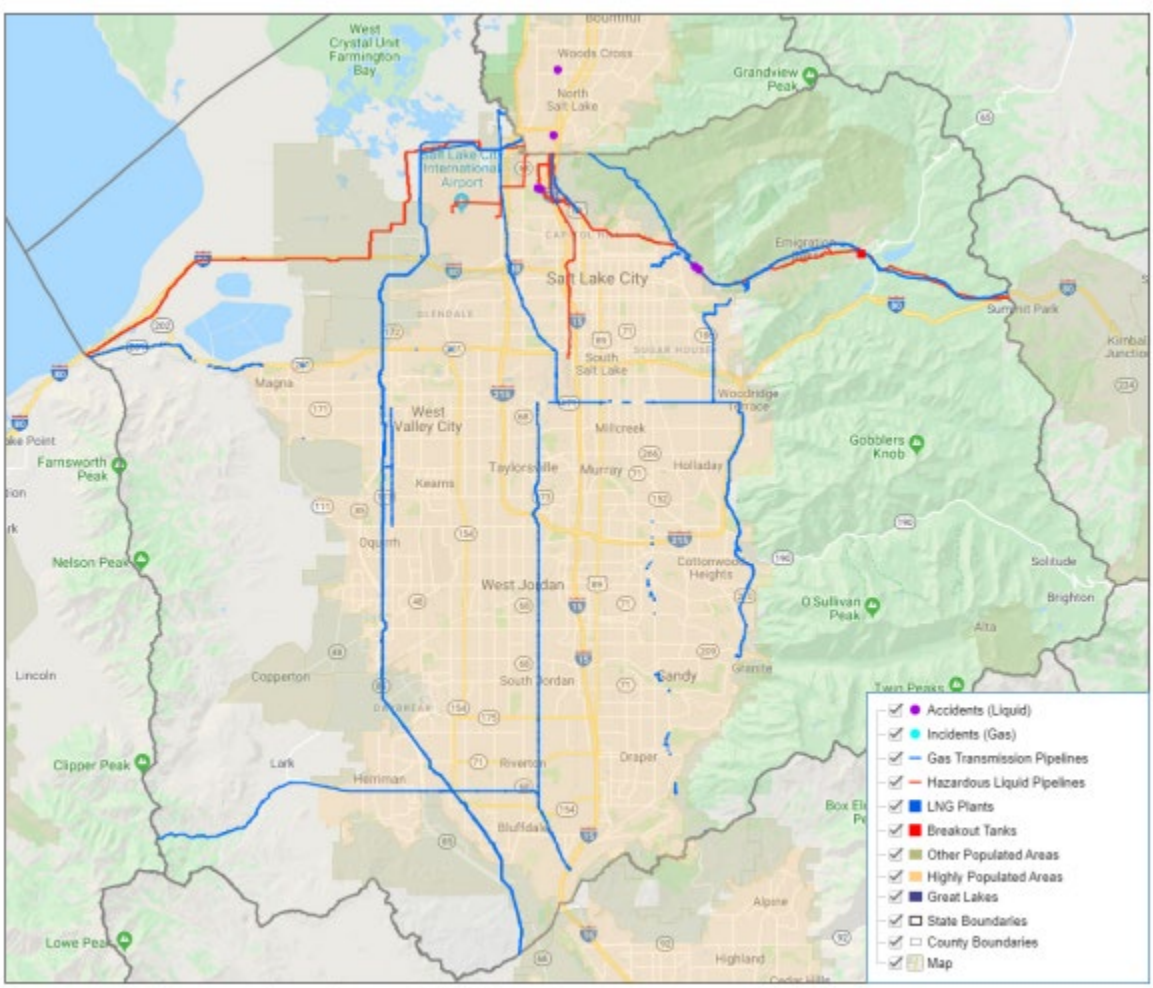
Figure 15: Map of the Salt Lake County Transit System

Water Control Structures

According to the 2024 Utah Enhanced State Hazard Mitigation Plan, there are approximately 266 High Hazard Potential Dams (HHPDs) in the state and 28 in Salt Lake County. The largest concentration of high and significant hazard dams is in the Wasatch Front counties, including the Salt Lake City metropolitan area. The Wasatch Front is a region in north central Utah of mostly contiguous cities and towns along the Wasatch Mountains. It stretches from Santaquin in the south to Pleasant View in the north. The Wasatch Front is the most highly populated region in Utah, with 80% of its residents in this area. The National Levee Database also maps five levee systems (160 levee structures) in the county.

Pipelines

The National Pipelines Mapping System has a public map viewer that can be used to view gas transmission and hazardous liquid pipelines in Salt Lake County (Figure 16).



Source: https://pvnpms.phmsa.dot.gov/PublicViewer/

Figure 16: Pipelines in Salt Lake County

Communications

The major newspapers in the county include the Salt Lake Tribune and Deseret News, although many others are in circulation in the county. There are approximately 17 full-power television stations in the Salt Lake City market. There are also approximately 30 trunked radio systems in Salt Lake County (Table 11).

Table 11: Trunk Radio Systems in Salt Lake County[27]

System Name	Type	City
Alpha Communications	DMR Motorola Connect Plus (TRBO)	Salt Lake City
Brian Leifson	Motorola Type II Smartnet	Salt Lake City
Brigham Young University	DMR Motorola Connect Plus (TRBO)	Provo
Church of Jesus Christ of Latter-Day Saints	Project 25 Phase II	Salt Lake City
City Creek Center	DMR Motorola Capacity Plus Single Site (TRBO)	Salt Lake City
Delta Airlines	DMR Motorola Capacity Plus Single Site (TRBO)	Salt Lake City
Discover Cardtronics	DMR Motorola Capacity Plus Single Site (TRBO)	West Valley City
eBay Data Center	DMR Conventional Networked	South Jordan
Enbridge Gas	DMR Tier 3 Standard	Multiple
Frito Lay Plant	DMR Motorola Capacity Plus Single Site (TRBO)	West Valley City
Geneva Rock and Cement	DMR Motorola Capacity Plus Multi-Site (TRBO)	Orem
Henkel Corporation	LTR Standard	Salt Lake City
Herriman City	DMR Motorola Capacity Plus Single Site (TRBO)	Herriman
Hill Air Force Base	Project 25 Phase II	Various
Hogle Zoo	DMR Motorola Capacity Plus Single Site (TRBO)	Salt Lake City
Hyatt Regency Salt Lake City	DMR Motorola Capacity Plus Single Site (TRBO)	Salt Lake City
Intel Corporation	Motorola Type II	Salt Lake City
Intermountain Health Care Hospitals	NXDN NEXEDGE 4800	Salt Lake City
Jordan School District	DMR Motorola Capacity Plus Single Site (TRBO)	West Jordan
Kennecott Utah Copper (Capacity Plus)	DMR Motorola Capacity Plus Multi-Site (TRBO)	Magna
Kennecott Utah Copper (Connect Plus)	DMR Motorola Connect Plus (TRBO)	Magna
Kennecott Utah Copper (P25)	Project 25 Phase II	Magna
Kilgore Companies	NXDN Icom IDAS Type C	Various
Little America	DMR Motorola Capacity Plus Multi-Site (TRBO)	Salt Lake City
McIntosh Communications (DMR)	DMR Motorola Capacity Plus Multi-Site (TRBO)	Salt Lake City

[27] RadioReference.com. https://www.radioreference.com/ DMR = Digital Mobile Radio, LTR = Logic Trunked Radio, MPT 1327 is an industry standard for trunked radio communications networks, NEXEDGE is a model of radio from Kenwood, NXDN = Next Generation Digital Narrowband, TRBO is a digital radio format.

System Name	Type	City
McIntosh Communications (Ensign Peak)	LTR Standard	Salt Lake City
My Patriot Supply	DMR Motorola Capacity Plus Single Site (TRBO)	Salt Lake City
National Security Agency Data Centers	Project 25 Phase II	Multiple
Northrop Grumman Systems	DMR Motorola Capacity Plus Single Site (TRBO)	Magna
Peak Wireless Services	NXDN NEXEDGE 9600	Multiple
Peak Wireless Services (DFA)	NXDN NEXEDGE 4800	Various
Progressive Leasing	DMR Motorola Capacity Plus Single Site (TRBO)	Draper
RPAI Southwest Management	DMR Motorola Capacity Plus Single Site (TRBO)	Salt Lake City
Salt Lake City Public Safety	Motorola Type II	Salt Lake City
Salt Lake County Public Works	Motorola Type II Smartnet	Salt Lake City
Salt Palace Convention Center	DMR Motorola Capacity Plus Single Site (TRBO)	Salt Lake City
Snowbird Ski Resort	DMR Conventional Networked	Alta
South Valley Sewer District	DMR Motorola Capacity Plus Multi-Site (TRBO)	Bluffdale
South Valley Water Reclamation	DMR Motorola Capacity Plus Single Site (TRBO)	West Jordan
Staker Parson Construction	DMR Motorola Capacity Plus Single Site (TRBO)	Riverton
Sun Communications	DMR Motorola Capacity Plus Single Site (TRBO)	Salt Lake City
Sunroc Construction	DMR Motorola Capacity Plus Multi-Site (TRBO)	Spanish Fork
Tesoro Companies	DMR Conventional Networked	Salt Lake City
Tesoro Refinery	DMR Motorola Capacity Plus Single Site (TRBO)	Salt Lake City
UCS Wireless (900)	DMR Motorola Capacity Plus Multi-Site (TRBO)	Salt Lake City
UCS Wireless (UHF)	DMR Motorola Capacity Plus Multi-Site (TRBO)	Salt Lake City
Unified Fire Authority	Project 25 Phase II	Salt Lake City
Unified Fire Authority (BD10)	Motorola Type II	Salt Lake City
United Parcel Service	DMR Tier 3 Capacity Max	Salt Lake City
United Parcel Service Delivery	DMR Motorola Capacity Plus Single Site (TRBO)	West Valley City
University of Utah Hospitals	NXDN NEXEDGE 4800	Salt Lake City
Utah Communications Authority	Motorola Type II SmartZone Omnilink	Various
Utah Communications Authority (P25)	Project 25 Phase II	Statewide
Utah Transit Authority	MPT-1327 Standard	Salt Lake City
Wasatch Front T-3	DMR Tier 3 Capacity Max	Salt Lake City

DRAFT

Planning for the Future

Salt Lake County anticipates continued population growth over the next 30 years, expected to reach 1,385,240 by 2055. Salt Lake County is also influenced by growth in neighboring counties. According to the Wasatch Choice 2050 Plan, the Wasatch Front region could reach almost 5 million by 2050. This growth necessitates the development of key infrastructure guided by long-range planning. To that end, the Wasatch Front Regional Council (WFRC) is responsible for coordinating the transportation planning process for the region. WFRC is an association of governments comprised of elected officials from Box Elder, Davis, Morgan, Salt Lake, Tooele, and Weber Counties. The WFRC has facilitated the development of the Wasatch Choice 2050 Plan, which is the communities' shared vision for transportation investments, development patterns, and economic opportunities. The Wasatch Choice 2050 Plan envisions transportation investments and interrelated land and economic development decisions that achieve desired local and regional outcomes.[28]

Four key strategies represent the overarching themes in the Wasatch Choice 2050 Plan and help achieve the regional goals. The key strategies of the Wasatch Choice 2050 Plan are as follows.

- **Provide Transportation Choices:** Help us have real options for getting around and increase the number of easily reached destinations.
- **Support Housing Options:** Support affordable housing types and locations that work best for our lives.
- **Preserve Open Space:** Preserve sufficient and easily accessible open lands that provide recreational opportunities.
- **Link Economic Development with Transportation and Housing Decisions:** Create a synergy between these three key building blocks. Enable shorter and less expensive travel to afford us more time and money. Efficiently use infrastructure to save taxpayer dollars. Provide housing options and increase housing affordability. Improve the air we breathe by reducing auto emissions.

Wasatch Choice is implemented through the Comprehensive Economic Development Strategy, Local Planning, and Regional Transportation Plan (RTP). The following maps from the 2019–2050 RTP show the region's vision for future transportation and land use.

[28] Wasatch Choice 2050 Plan. "Goals and Strategies." https://wasatchchoice.org/.

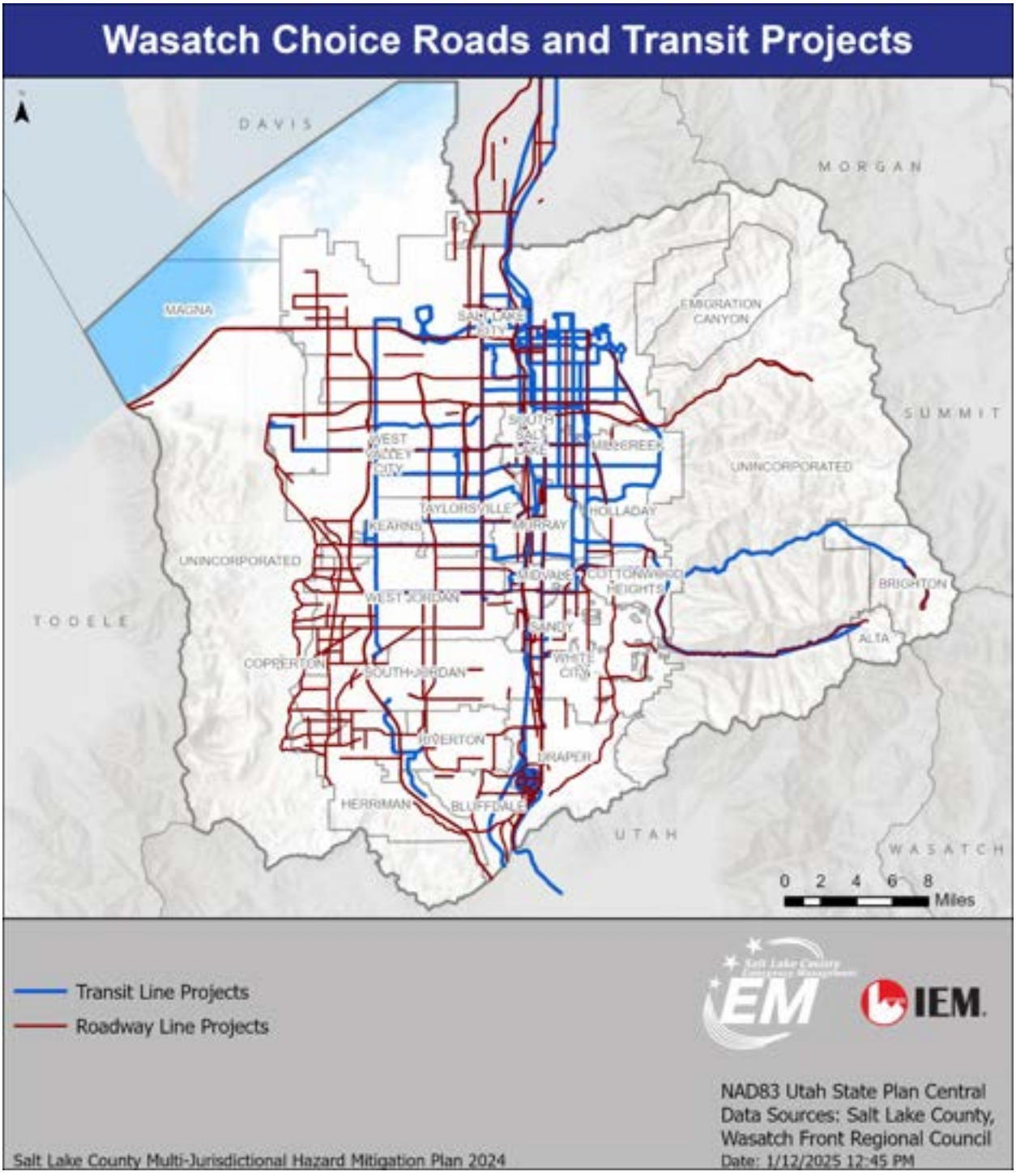


Figure 17: Map of Wasatch Choice Roads and Transit[29]

The regionally significant land uses include a hierarchy of centers (Figure 18). Centers are the hearts of a community and are locations where communities anticipate welcoming more buildings, even as they may

[29] Wasatch Choice 2050 Plan. "Transportation Map." https://wasatchchoice.org/vision-map/#mapList=vision.transportation.landuse.econdev.recreation.olympics&selectedMap=vision&sideBarClosed=false&x=-12450274&y=4979018&scale=288895.

maintain lower levels of density elsewhere. The locations vary in scale but, in all cases, are denser than their surrounding area, walkable, and offer a mix of uses. Because of these traits, residents in or near centers drive shorter distances and are likelier to walk, bike, and ride transit. Overall, this reduces traffic congestion and air emissions. In addition, they are typically good candidate locations for providing various housing options, including units that impact housing affordability.

DRAFT

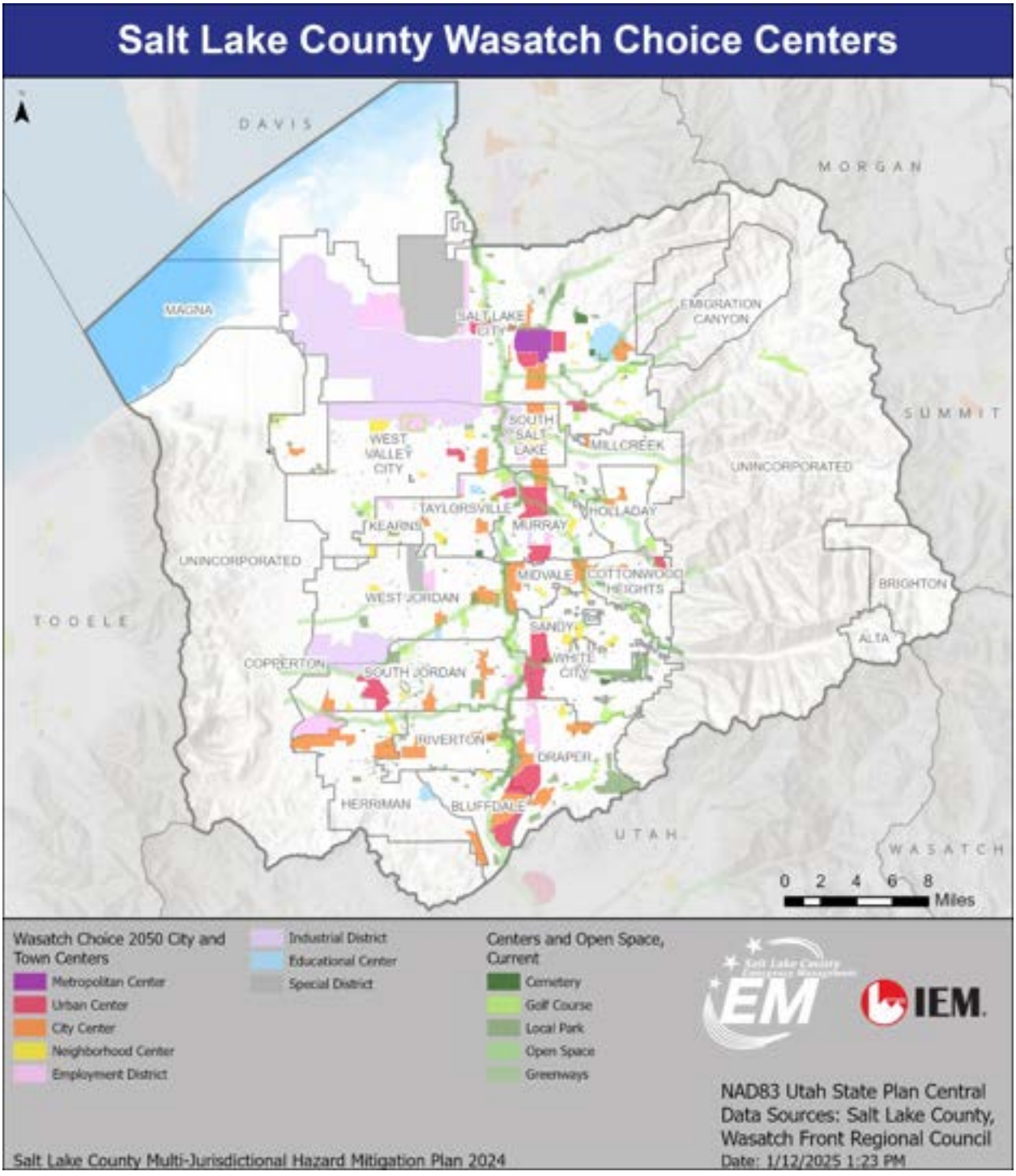


Figure 18: Map of Wasatch Choice Land Use[30]

The economic development map (Figure 19) shows several important regional policy and geographic considerations: Utah State Economic Clusters, Opportunity Zones, Community Development Areas

[30] Wasatch Choice 2050 Plan. https://wasatchchoice.org/vision-map/#mapList=vision.transportation.landuse.econdev.recreation.olympics&selectedMap=landuse&sideBarClosed=false&x=-12450274&y=4979018&scale=288895.

(CDA) and Regional Development Areas (RDA), and Transit-Oriented Developments (TODs). Utah's industry clusters are aerospace and defense, energy, financial services, life sciences, outdoor products and recreation, and software and IT. Nurturing industry clusters helps the state and Salt Lake County sustain a competitive business advantage. Opportunity Zones are areas determined by the U.S. Census Bureau as "low-income communities." Designated Opportunity Zones incentivize private sector investments in housing and economic development in these areas by providing tax incentives. CDAs and Community Reinvestment Areas (CRAs) are public financing tools. They temporarily use the increase in tax revenue spurred by land reinvestment to pay for infrastructure improvements. By doing so, they further encourage land reinvestment. TODs refer to housing, jobs, and commercial developments centered around transit. Development that is well integrated with transit choices provides additional transportation choices and positively impacts the economy through increased accessibility to jobs and housing. TODs help reduce household transportation costs, congestion, and air pollution.

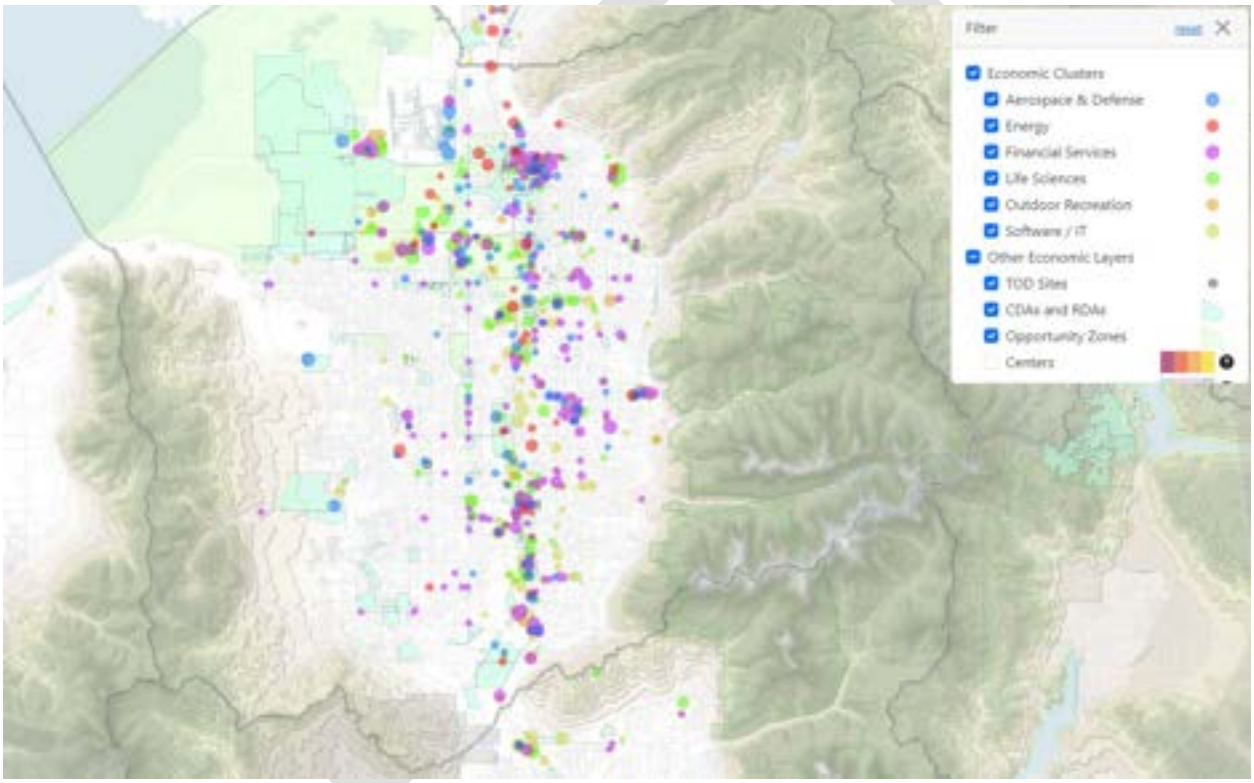


Figure 19: Map of Wasatch Choice Economic Development[31]

The Wasatch Front region is a stunning natural setting. As growth continues, one challenge is to ensure that residents have sufficient open space and recreational opportunities that are easy to access. Open space can manifest itself in several ways: natural, untouched landscapes; mountain trails; bird sanctuaries; rivers and lakes; places of solitude; playgrounds; paved urban trails; neighborhood pocket parks; regional urban parks; sports complexes; and community gathering places, among many more.

[31] Wasatch Choice 2050 Plan. "Economic Opportunities." https://wasatchchoice.org/vision-map/#mapList=vision.transportation.landuse.econdev.recreation.olympics&selectedMap=landuse&sideBarClosed=false&x=-12450274&y=4979018&scale=288895.

Besides the mental and physical health benefits for people using these spaces, open space is critical green infrastructure.

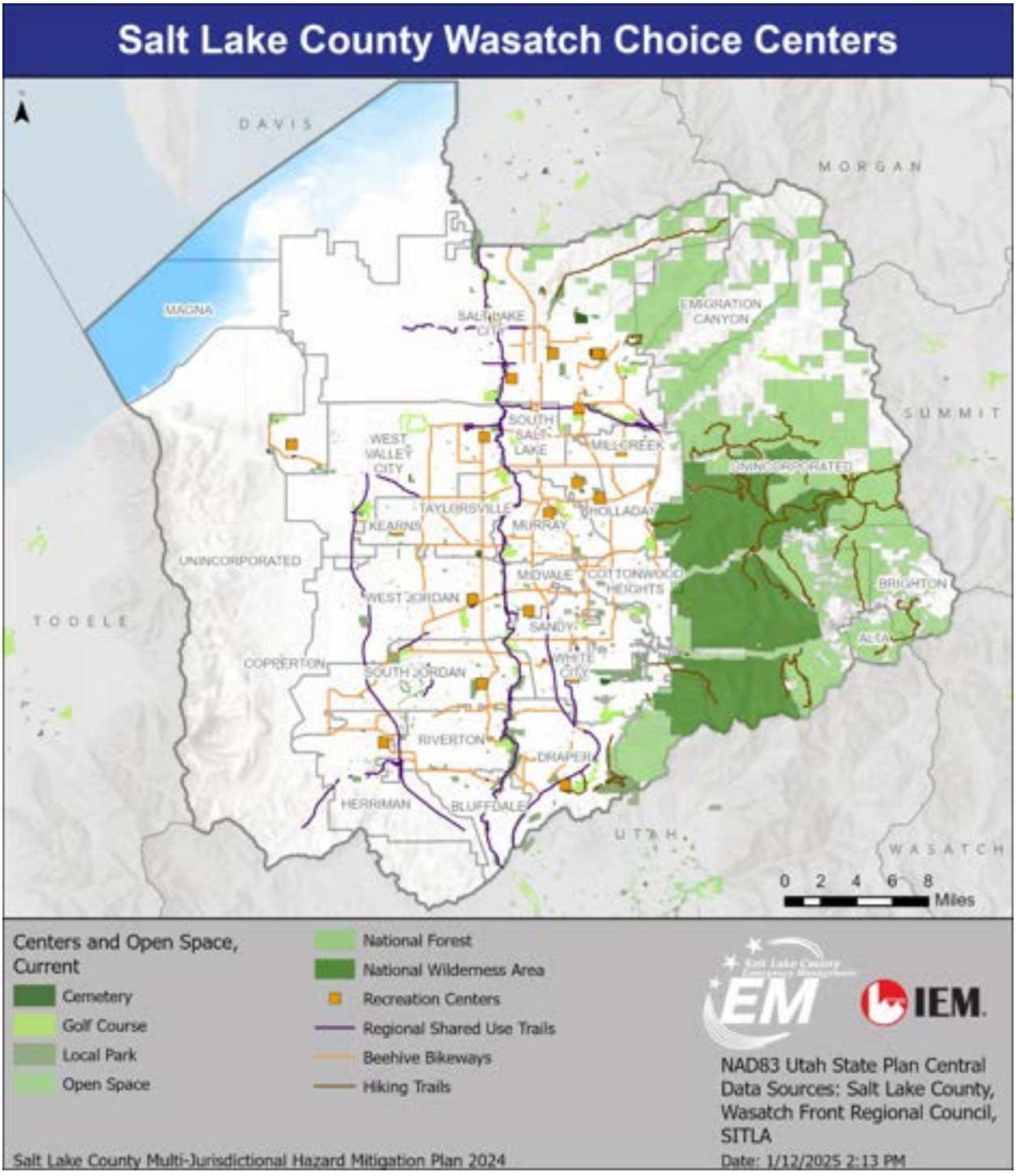


Figure 20: Recreation Centers in Salt Lake County

As the region grows, diverse open space and recreation opportunities must be planned to maintain the quality of life that many residents enjoy. Setting local goals for park space per household is one way to

focus attention on providing recreational spaces in growth areas. Parks are becoming even more important as the region densifies with high rates of multifamily residential development. Establishing goals and intentions is a great step, but energy and funding must also be put into making new parks become a reality.

In addition, recreation planning should look to enhance access to these spaces by walking and biking. This can be accomplished by linking these spaces through a biking and walking network, such as the 100-mile Golden Spoke network of off-street paved pathways consisting of the Provo River Parkway, Murdock Canal Trail, Jordan River Parkway, Legacy Parkway Trail, Denver & Rio Grande Western Trail, and Ogden River Trail.

DRAFT

Planning Process

Hazard mitigation plans serve as the foundation of an effective mitigation program. A robust whole-community planning process is important for gathering vital stakeholder input and building partnerships to implement mitigation actions. An inclusive planning process ensures that local jurisdictions and countywide participants are involved and can provide meaningful input. By soliciting information from a broad range of stakeholders, the plan update meets the requirements outlined by FEMA in the Local Mitigation Planning Policy Guide. It reflects the plan participants' unique risks, vulnerabilities, goals, and strategies.

This section describes each stage of the planning process used to develop the 2025 Salt Lake County Multi-Jurisdictional Hazard Mitigation Plan (MJHMP). This process provided a framework for document development. It included organizing resources, assessing risk, developing the mitigation plan, drafting it, reviewing and revising it, and adopting and submitting the plan for approval.

Plan Update Approach

Hazard mitigation planning in the United States is guided by the statutory regulations described in the Disaster Mitigation Act of 2000 (DMA 2000) and implemented through 44 Code of Federal Regulations (CFR) Part 201 and 206. FEMA's guidelines outline a four-step planning process for developing and approving hazard mitigation plans.

To develop the MJHMP, a planning process was created based on the various federal guidance documents and regulations, including FEMA's Local Mitigation Planning Handbook, which shows that the MJHMP planning process includes four core components: organizing resources, assessing risk, developing the mitigation action strategy, and adopting and implementing the plan.

Salt Lake County Emergency Management (SLCo EM) gathered letters of commitment from the participating jurisdictions during the summer of 2024. Once participating jurisdictions were identified, IEM facilitated the Kickoff Meeting with SLCo EM staff and jurisdictional planning partners to address the purpose of the mitigation plan and the planning process, establish a schedule for future meetings, and explain the importance of public and stakeholder involvement. In addition, they identified project objectives and data needs, refined plan boundaries, collected background information, identified project issues and challenges, discussed networking with essential partners, and facilitated discussion of the public outreach strategy and project management. This meeting also emphasized the need for public outreach, particularly to vulnerable populations.

Following the Kickoff Meeting, the SLCo EM staff facilitated two presentations with executive leaders of participating jurisdictions, one with the Salt Lake County Council on October 15 and another with the Council of Mayors on October 17. These meetings were an opportunity to introduce the purpose of the mitigation plan and the planning process and explain the importance of public and stakeholder involvement. SLCo EM also facilitated a meeting with the participating jurisdictions' Public Information Officers (PIOs) on September 30 to help engage them in outreach efforts.

DRAFT

Figure 21: Mitigation Plan Announcement in the Salt Lake County Government Center

The Risk Assessment Review Meeting gave plan participants an opportunity to provide input about past and potential hazard impacts on each jurisdiction. The Mitigation Strategy Meeting gave plan participants the opportunity to discuss the approach to mitigation across the planning area and included a brainstorming session to propose measures to reduce the current and future vulnerabilities described in the risk assessment stage of the plan. Plan participants were also invited to attend the Final Review and Plan Adoption Meetings and an Executive Leadership Meeting to conduct the closeout proceedings.

Figure 22: Salt Lake County Hazard Mitigation Plan Kickoff Meeting

Local Jurisdiction Plan Participation

The 2025 Salt Lake County MJHMP update was developed with support from many agencies, organizations, and individuals. SLCo EM is responsible for the plan update. Grant funding for the project was received by the Unified Fire Authority, which manages SLCo EM using a 50-year charter created with Salt Lake County in 2004. SLCo EM organized the planning participants and facilitated meetings and public outreach, and UFA provided additional staff, resources, and administrative support. SLCo EM hired IEM International, Inc. (IEM) to update the 2019 plan. IEM provided technical and outreach assistance throughout the planning process, including updating the base plan, facilitating meetings, and developing and incorporating forms to garner stakeholder input. Salt Lake County was joined by the Cities, Towns, and Special Districts listed in Table 12.

The IEM team worked with each participating jurisdiction throughout the planning process to identify hazards of concern and mitigation actions specific to each jurisdiction. The county representatives worked with available county staff outside meetings to obtain feedback and provide input about specific concerns, capabilities, and actions for each jurisdiction.

Many of the participating cities have a dedicated Emergency Manager or designee who serves as the primary participant in the mitigation planning process. As noted in the Community Profile, the Greater Salt Lake Municipal Services District provides municipal type services to the municipalities of Copperton, Emigration Canyon, City of Kearns, Magna City, White City, the Town of Brighton, and unincorporated areas in the county. The municipalities' emergency planning needs are such that they do not require a full-time emergency planner.

The MSD has a Municipal Emergency Management Services and Reimbursement agreement with the Unified Fire Authority (UFA) to hire emergency planning specialists who share the work of an emergency planner on a part-time, pro-rata basis. UFA has hired two emergency planning specialists who provide emergency planning services to the municipalities, the unincorporated county, and the MSD for an agreed-upon proportion of time. Midvale City also shares a municipal planner via contract with UFA. The UFA municipal planners performed the role of participating in the mitigation planning process on behalf of the municipalities, and coordinated with SLCo EM, the MSD, and other municipal executives or representatives as needed.

Table 12 outlines the schedule of activities for plan participation, detailing the levels of involvement from all participating jurisdictions. It indicates which jurisdictions aim to meet the optional High Hazard Potential Dam (HHPD) element. Those jurisdictions marked as pursuing this element are in areas designated as HHPDs. Special districts are labeled as N/A since they are encompassed in a specific city, and that city will fulfill the requirements for the HHPD element.[32]

[32] National Inventory of Dams, "Salt Lake County." https://nid.sec.usace.army.mil/#/dams/search/sy=@countyState:salt%20lake%20@hazardId:(4)&viewType=map&resultsType=dams&advanced=false&hideList=false&eventSystem=false.

Table 12: Participating Jurisdictions

Jurisdiction	Participant in the 2019 Plan	Participant in the 2025 Plan	Seeking to Meet Optional HHPD Element
Alta	Yes	Yes	No
Bluffdale	Yes	Yes	Yes
Brighton	Yes	Yes	Yes
Copperton	Yes	Yes	No
Cottonwood Heights	Yes	Yes	No
Draper	Yes	Yes	Yes
Emigration Canyon	Yes	Yes	No
Herriman	Yes	Yes	Yes
Holladay	Yes	Yes	Yes
Kearns	Yes	Yes	No
Magna	Yes	Yes	No
Midvale	Yes	Yes	Yes
Millcreek	Yes	Yes	No
Murray	Yes	Yes	No
Riverton	Yes	Yes	Yes
Salt Lake City	Yes	Yes	Yes
Sandy City	Yes	Yes	Yes
South Jordan	Yes	Yes	Yes
South Salt Lake	Yes	Yes	Yes
Taylorsville	Yes	Yes	No
West Jordan	Yes	Yes	No
West Valley City	Yes	Yes	No
White City	Yes	Yes	No
Salt Lake Community College	Yes	Yes	N/A
Salt Lake County	Yes	Yes	Yes
Jordan School District	No	Yes	N/A
Canyons School District	No	Yes	N/A

Organizing Resources

As part of this step, the IEM team reviewed and incorporated, as appropriate, various existing plans, studies, reports, and other technical data/information into the MJHMP update. Suggestions for important data to include were collected from the participating jurisdictions and stakeholders. Table 13 lists the existing resources and how they were incorporated in the MJHMP update, especially in the hazard profiles.

DRAFT

Table 13: Existing Resources and Their Use in the Plan Update[33]

Existing Resource	Used in Plan
A Strategic Plan for Earthquake Safety in Utah	Identification of potential earthquake mitigation actions and statistical data added to various sections of the hazard profiles
Earthquake Safety in Utah	Identification of potential earthquake mitigation actions and statistical data added to various sections of the hazard profiles
Federal Emergency Management Agency	How-to Guidelines for each section of the plan
National Climate Data Center	Statistics and research information for each jurisdiction relating to drought and severe weather conditions as part of the hazard profiles' previous occurrence sections
National Weather Service (NOAA/NCEI)	Each natural hazard profile includes statistical data related to previous occurrences of disasters in the jurisdictions that were reported.
Salt Lake County 2019 Hazard Mitigation Plan	To update all sections of the plan
Salt Lake County and Municipalities Emergency Operations Plans/ Comprehensive Emergency Management Plans	Histories, mitigation actions, public input; GIS, assessor, transportation, property, and infrastructure data
Salt Lake County Wildfire Preparedness Plan 2019	Descriptions of communities at risk, access concerns, resources and values at risk, and potential mitigation actions.
State of Utah Drought Response Plan 2022	Prior drought mitigation action review.
University of Utah Seismic Station	Earthquake data and statistical data added to various sections of the hazard profiles
Utah 2024 State Hazard Mitigation Plan	Climate Change sections of Hazard Profiles, maps, and figures relevant to sections
Utah Avalanche Center	Snow and avalanche statistical data added to various sections of the hazard profiles
Utah Department of Transportation	Traffic, accidents, hazardous materials transportation information, and statistical data added to various sections of the avalanche and other hazard profiles
Utah Division of Emergency Management	GIS data, flood data, Hazus data for floods, and earthquake data added to various sections of the hazard profiles
Utah Division of Forestry, Fire, and State Lands	State wildfire information and statistical data added to various sections of the hazard profiles.
Utah Geologic Survey	GIS data, geologic information added to various sections of the hazard profiles
Utah Geospatial Resource Center	GIS data and statistical data added to various sections of the hazard profiles
Utah Natural Hazards Handbook	Identification of natural hazard risks for Salt Lake County and statistical data added to various sections of the hazard profiles

[33] GIS = geographic information system, Hazus = Hazards United States, NCEI = National Centers for Environmental Information, NOAA = National Oceanic and Atmospheric Administration.

Existing Resource	Used in Plan
Utah Seismic Safety Commission Report and Recommendations: 2024	Identification of potential earthquake mitigation actions.
Utah State University	Climate data and statistical data added to various sections of the hazard profiles
Utah Statewide Fire Risk Assessment Project	Evaluation of fire risk assessment for Salt Lake County and potential mitigation actions and statistical data added to various sections of the hazard profiles
Utah Wildfire Risk Assessment	Division of Forestry, Fire, and State Lands primary mechanism to deploy wildfire risk information. Provides baseline information needed to support mitigation and prevention efforts across the state.
Wasatch Front Unreinforced Masonry Risk Reduction Strategy	Identification of potential earthquake mitigation actions and reducing risks posed by URM buildings.

Identifying the Hazards

Hazard identification was initiated through an extensive process that used the following multi-disciplinary cross-sector representation:

- Salt Lake County Emergency Management
- Consulting Planning Team
- Local Emergency Managers
- Local Emergency Planning Committee
- Public Works Staff
- Community Stakeholders
- Public individuals
- Elected officials
- Special Service Districts
- Utah Division of Emergency Management
- Utah Geological Survey
- Utah Geospatial Resource Center

The hazard identification process was aided by FEMA's how-to guidance documents, FEMA 386-1,2,3,7, FEMA Post Disaster Hazard Mitigation Planning Guidance DAP-12, the Disaster Mitigation Act of 2000, 44 CFR Parts 201 and 206, the Interim Final Rule, and the Local Mitigation Plan Review Tool. The risk assessment process also drew on assistance from local Geographical Information Systems (GIS) departments using the best available data.

The identification process for each participating jurisdiction encompassed natural hazards that consistently affected each area before and during the planning process based on the history of occurrences, probability, and risk. These specific hazards were identified based on a hazard identification risk assessment that identified the natural hazards listed below as being the most prevalent and posing the most risk to the county. Although it is recognized that dam failure is not a natural hazard, the potential impact on Salt Lake County from a catastrophic dam failure would likely be so severe that inclusion into the Plan was warranted. Municipal jurisdictions contributed to the risk assessment analyses performed for the county when in an identified hazard boundary. Upon initial review of this plan, specific hazards

DRAFT

associated with severe weather were renamed and split into separate hazards to identify better and address their unique considerations per Utah DEM and FEMA recommendations.

The 2025 MJHMP addresses the 19 natural and human-made hazards most applicable to Salt Lake County and includes the following:

NATURAL HAZARDS

- Avalanche
- Drought
- Earthquake
- Extreme Cold
- Extreme Heat
- Flooding
- Heavy Rain
- Severe Winter Weather
- High Wind
- Landslide/ Slope Failure
- Lightning
- Public Health Epidemic-Pandemic
- Radon
- Tornado
- Wildfire

MAN-MADE AND TECHNOLOGICAL HAZARDS

- Civil Disturbance
- Dam Failure
- Hazardous Materials
- Terrorism and Cyberterrorism

Changes in Priorities

Since the approval of the 2019 Salt Lake County Hazard Mitigation Plan, Salt Lake County, its jurisdictions, and its special districts have experienced several federally declared disasters, including the COVID-19 pandemic, the September 2020 high wind event, and the 2020 Magna earthquake. As part of this Plan update, additional emphasis is included in the risk assessment on how the identified hazards may be impacted by changes in climate conditions, including an increasing number of extreme heat events and the subsequent effects on wildfire and drought hazards. The effects of long-term drought on the Great Salt Lake has drawn the attention of various sectors statewide and is also a priority.

An additional change in priority is the passing of Utah House Bill 48 (Wildland Urban Interface Modifications), which became law in March 2025 and takes effect in January 2026. This law aims to mitigate wildfire risks through homeowner education, lot assessments, risk-based fees, and defensible space and home-hardening requirements. Fees from lot assessments will be used to cover assessment costs and support mitigation efforts. This program demonstrates the prioritization of mitigating wildfire risk.

These and other changes in priorities were considered during the vulnerability assessment and in the development of mitigation strategies and apply to the county, jurisdictions, and special districts. The other plan participants did not identify any additional priority changes from the last plan update.

Assessing Risk and Vulnerabilities

Each hazard identified was profiled with the most current available information and data, including the occurrence and probability ranking of future hazard events and a summary of each jurisdiction's vulnerability to each hazard. In profiling hazards, IEM researched hazards with the plan participants to

DRAFT

review all-natural and community-identified hazards and occurrences. All possible resources for information and data were considered, such as the current MJHMP, Master/General/Comprehensive Plans, Community Wildfire Protection Plans, Comprehensive Emergency Management Plan (CEMP), Strategic Plans, and similar sources. IEM provided Hazus models for the risk assessment.

IEM developed hazard profiles of each jurisdiction's vulnerability to specific hazards based on hazard assessments. This assessment identifies critical facilities and infrastructure by type and hazard area, describes land use and development trends to inform future land use policy and decisions, and explains how potential climate variation may impact the jurisdiction's current and future vulnerability for each hazard.

Evaluating Participant Capabilities

This update documents the effectiveness of the county's efforts to integrate mitigation into other planning efforts since the previously approved plan. IEM conducted a capability assessment to inventory existing plans, policies, procedures, programs, and other initiatives that are currently in place to support hazard mitigation. Jurisdictional participation in the NFIP was analyzed by working with local and state floodplain managers and NFIP administrators to collect information. Collecting and assessing this information identifies high-risk areas, properties, and populations and allows jurisdictions to determine mitigation actions that will most efficiently and effectively protect the community. The plan participants formulated and wrote a community description for the plan, using past plans, current and past studies, and the institutional knowledge of stakeholders, municipalities, and the public.

Developing Mitigation Goals and Actions

The Mitigation Strategy was evaluated, and updated goals and objectives were outlined in existing mitigation plans. This step is particularly important as Salt Lake County has experienced changes in risk severity and increased frequency of hazard events.

Maintaining the Plan

The plan implementation section identifies ways to incorporate mitigation strategies into existing planning practices, policies, and programs to institutionalize hazard mitigation in Salt Lake County's program. The plan maintenance process will also clearly indicate the method and schedule to be used over the next five years to monitor, evaluate, and update the plan, including timelines and responsibilities.

DRAFT

Table 14: Plan Participation Schedule of Activities

Meetings and Assignments	Salt Lake County	Alta	Bluffdale	Brighton	Copperton	Cottonwood Heights	Draper	Emigration Canyon	Herriman	Holladay	Kearns	Magna	Midvale	Millcreek	Murray	Riverton	Salt Lake City	Sandy	South Jordan	South Salt Lake	Taylorsville	West Jordan	West Valley City	White City	Salt Lake Community College	Jordan School District	Canyons School District
09/05/2024 Hazard Mitigation Plan (HMP) Kickoff Meeting	X	–	–	X	X	X	X	X	–	X	X	X	X	X	X	X	X	X	X	X	X	X	X	–	X	X	X
09/30/2024 Public Information Officer HMP Information Meeting	X	–	–	–	–	X	–	–	X	X	X	–	–	X	–	–	X	–	–	X	–	–	–	–	–	–	–
10/02/2024 Risk Assessment Meeting	X	X	–	X	X	X	–	X	–	X	X	X	X	X	–	–	X	–	X	X	X	X	–	–	X	X	–
10/21/2024 Mitigation Strategy Meeting	X	X	–	X	x	–	–	X	X	X	X	X	X	–	–	X	X	–	–	X	X	X	–	–	–	X	X
Letter of Intent Submitted	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Public Outreach Activities	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	
Completed Planning Process Form	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Submitted Mitigation Actions Status Update	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Submitted Risk Assessment Form	X	X	X	X	X		X	X		X	X	X	X	X		X	X	X	X	X	X	X			X	X	
Submitted Mitigation Strategy and 2024 Mitigation Actions	X	X		X	X			X	X	X	X	X	X	X				X	X	X	X		X	X			
Submitted Capabilities Assessment Form/NFIP Assessment Form	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
Participated in Draft Plan Review	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Completed Plan Adoption																											

DRAFT

Stakeholder Engagement

One of the first steps in the planning process was to identify and invite key agencies and stakeholders to participate in the plan update. Per the Local Mitigation Planning Policy Guide, stakeholders were categorized in the following ways:

4. Local and regional agencies involved in hazard mitigation activities.

   Examples include public works, emergency management, local floodplain administration, and GIS departments.

5. Agencies that have the authority to regulate development.

   Examples include zoning, planning, community, and economic development departments, building officials, planning commissions, or other elected officials.

6. Neighboring communities

   Examples include adjacent local governments, including special districts, such as those affected by similar hazard events or that may share a mitigation action or project that crosses boundaries. Neighboring communities may be partners in hazard mitigation and response activities or where critical assets, such as dams, are located.

7. Representatives of businesses, academia, and other private organizations.

   Examples include private utilities or major employers that sustain community lifelines.

8. Representatives of nonprofit organizations, including community-based organizations, which work directly with and/or support underserved communities and socially vulnerable populations.

   Examples include housing, healthcare, and social service agencies.

Another factor that was considered while developing the list of participants to engage in this plan update was community lifelines. Community lifelines are the most fundamental services in the community that, when stabilized, enable all other aspects of society to function (Figure 23). A thorough understanding of lifelines allows decision makers to identify key priorities, understand the root causes of the issues, and implement effective measures to reduce risk and respond to a catastrophic incident.

DRAFT

Figure 23: FEMA Community Lifelines[34]

For this plan update, each jurisdiction was asked to identify internal and external stakeholders who could support the plan update. The IEM team also helped identify stakeholders, including those representing underserved and vulnerable populations. These stakeholders were given multiple opportunities to participate through meetings, e-mails, phone calls, and reviewing the draft plan. When appropriate, IEM conducted meetings directly with the participating jurisdictions to ensure that all information included in the plan was identified. A list of stakeholders that were given the opportunity to participate in the plan update is included in Table 15. The stakeholder types have been adapted to preserve space and/or increase clarity.

Table 15: Stakeholders Given the Opportunity to Participate

Jurisdiction/Agency/ Organization	Type of Stakeholder	Description
Alta	Local Emergency Management	Local and regional agencies involved in hazard mitigation activities
American Red Cross	Disaster Nongovernmental Organization	Nonprofit organization serving underserved populations
Big Cottonwood Canyon Improvement District	Water Utility Company	Representatives of businesses, academia, and other private organizations
Bluffdale	Local Emergency Management	Local and regional agencies involved in hazard mitigation activities
Brighton	Local Emergency Management	Local and regional agencies involved in hazard mitigation activities
Canyons School District	Higher Education	Representatives of businesses, academia, and other private organizations
Town of Copperton	Local Emergency Management	Local and regional agencies involved in hazard mitigation activities

[34] FEMA. "Community Lifelines." https://www.fema.gov/emergency-managers/practitioners/lifelines.

Jurisdiction/Agency/ Organization	Type of Stakeholder	Description
Copperton Improvement District	Water Utility Company	Representatives of businesses, academia, and other private organizations
City of Cottonwood Heights	Local Emergency Management	Local and regional agencies involved in hazard mitigation activities
Cottonwood Improvement District	Water Utility Company	Representatives of businesses, academia, and other private organizations
Davis County Emergency Management	Local Emergency Management	Neighboring community
Daybreak Community Association	Private Dam Owner	Representatives of businesses, academia, and other private organizations
City of Draper	Local Fire Department and Emergency Management	Local and regional agencies involved in hazard mitigation activities
Draper Irrigation Company	Private Dam Owner	Representatives of businesses, academia, and other private organizations
City of Emigration Canyon	Local Emergency Management	Local and regional agencies involved in hazard mitigation activities
Emigration Canyon Improvement District	Water Utility Company	Representatives of businesses, academia, and other private organizations
Granger-Hunter Improvement District	Water Utility Company	Representatives of businesses, academia, and other private organizations
Greater Salt Lake Municipal Services District	Floodplain/Stormwater Management, Municipal Administrative Services for newly incorporated cities and towns	Local and regional agencies involved in hazard mitigation activities
City of Herriman	Local Emergency Management	Local and regional agencies involved in hazard mitigation activities
Herriman City Dam	Local Government Public Dam Owner	Agencies that have the authority to regulate development
Holladay	Local Emergency Management	Local and regional agencies involved in hazard mitigation activities
Jordan Basin Improvement District	Public Sanitary Sewer Service	Representatives of businesses, academia, and other private organizations
Jordan School District	Higher Education	Representatives of businesses, academia, and other private organizations
Jordan Valley Water Conservancy District	Water Utility Company	Representatives of businesses, academia, and other private organizations

DRAFT

Jurisdiction/Agency/ Organization	Type of Stakeholder	Description
Kearns	Local Emergency Management	Local and regional agencies involved in hazard mitigation activities
Kennecott Utah Copper LLC	Private Dam Owner	Representatives of businesses, academia, and other private organizations
City of Magna	Local Emergency Management	Local and regional agencies involved in hazard mitigation activities
Magna Water District	Water Utility Company	Representatives of businesses, academia, and other private organizations
Metropolitan Water District of Salt Lake City & Sandy City	Water Utility Company	Representatives of businesses, academia, and other private organizations
Midvale	Local Emergency Management	Local and regional agencies involved in hazard mitigation activities
Millcreek	Local Emergency Management	Local and regional agencies involved in hazard mitigation activities
City of Murray	Department of Public Works	Local and regional agencies involved in hazard mitigation activities
City of Murray	Fire Department and Emergency Management	Local and regional agencies involved in hazard mitigation activities
Murray City Power	Electrical Power Utility Company	Representatives of businesses, academia, and other private organizations
Murray City Wastewater	Wastewater Treatment Plan	Representatives of businesses, academia, and other private organizations
Murray City Water	Water Utility Company	Representatives of businesses, academia, and other private organizations
National Weather Service Weather Forecast Office, Salt Lake City	Warning Coordination Meteorology	Representatives of businesses, academia, and other private organizations
City of Riverton	Local Emergency Management	Local and regional agencies involved in hazard mitigation activities
Riverton City Dam	Local Government Public Dam Owner	Agencies that have the authority to regulate development
Rocky Mountain Power/ PacifiCorp	Electric Utility Company	Representatives of businesses, academia, and other private organizations
Salt Lake City	Local Emergency Management	Local and regional agencies involved in hazard mitigation activities
Salt Lake City Corporation	Local Government Utility and Dam Owner	Agencies that have the authority to regulate development

DRAFT

Jurisdiction/Agency/ Organization	Type of Stakeholder	Description
Salt Lake City Public Utilities	Local Government Utility and Dam Owner	Agencies that have the authority to regulate development
Salt Lake City Urban Forestry	Local Government Forestry Service	Local and regional agencies involved in hazard mitigation activities
Salt Lake Community College	Higher Education	Representatives of businesses, academia, and other private organizations
Salt Lake County Aging and Adult Services	Social Service Agency	Community-based organization serving underserved populations
Salt Lake County Animal Services	County Animal Shelter	Local and regional agencies involved in hazard mitigation activities
Salt Lake County Emergency Management	County Emergency Management	Local and regional agencies involved in hazard mitigation activities
Salt Lake County Facilities Management	County Buildings and Facilities	Local and regional agencies involved in hazard mitigation activities
Salt Lake County Flood Control	Public Works Department	Local and regional agencies involved in hazard mitigation activities
Salt Lake County Health Department	Public Health Agency	Local and regional agencies involved in hazard mitigation activities
Salt Lake County Human Services	Human Services Department	Local and regional agencies involved in hazard mitigation activities
Salt Lake County Information Technology Department	County Information Technology	Local and regional agencies involved in hazard mitigation activities
Salt Lake County Mayor's Office for New Americans	Salt Lake County Government	Representatives of nonprofit organizations, including community-based organizations, which work directly with and/or support underserved communities and socially vulnerable populations such as immigrants and refugees
Salt Lake County Office of Regional Development	County Development	Local and regional agencies involved in hazard mitigation activities
Salt Lake County Public Works	Public Works Department	Local and regional agencies involved in hazard mitigation activities
Salt Lake Valley Emergency Communications Center	Unified Emergency Communications System, 911 services, and police, fire, and medical dispatching	Representatives of businesses, academia, and other private organizations
Salvation Army	Disaster Non-Governmental Organization	Nonprofit organization serving underserved populations
Sandy City	Fire Department and Emergency Management	Local and regional agencies involved in hazard mitigation activities
Sandy City Dam	Local Government Utility and Dam Owner	Agencies that have the authority to regulate development

DRAFT

Jurisdiction/Agency/ Organization	Type of Stakeholder	Description
South Despain Ditch Company	Private Dam Owner	Representatives of businesses, academia, and other private organizations
South Jordan	Local Emergency Management	Local and regional agencies involved in hazard mitigation activities
South Salt Lake	Local Emergency Management	Local and regional agencies involved in hazard mitigation activities
SST Healthcare Coalition	Social Services Agency	Local and regional agencies involved in hazard mitigation activities
Summit County Emergency Management	Local Emergency Management	Neighboring community
City of Taylorsville	Local Emergency Management	Local and regional agencies involved in hazard mitigation activities
Taylorsville-Bennion Improvement District	Water Utility Company	Representatives of businesses, academia, and other private organizations
Tooele County Emergency Management	County Government	Neighboring community
Unified Fire Authority	Local Fire Department	Local and regional agencies involved in hazard mitigation activities
University of Utah, Information Technology	State University System	Representatives of businesses, academia, and other private organizations
Utah County Emergency Management	Local Emergency Management	Neighboring community
Utah Department of Health and Human Services	Social Services Agency	Agencies that have the authority to regulate development
Utah Department of Transportation	State Transportation Agency	Agencies that have the authority to regulate development
Utah Division of Emergency Management	State Emergency Management	Local and regional agencies involved in hazard mitigation activities
Utah Division of Water Rights Dam Safety Section	State Dam Safety Agency	Agencies that have the authority to regulate development
Utah Earthquake Program/Division of Emergency Management	State Emergency Management	Local and regional agencies involved in hazard mitigation activities
Utah State Floodplain Management	State Flood Management	Agencies that have the authority to regulate development
Utah Transit Authority	Public Transportation	Agencies that have the authority to regulate development
West Jordan	Local Emergency Management	Local and regional agencies involved in hazard mitigation activities

DRAFT

Jurisdiction/Agency/ Organization	Type of Stakeholder	Description
West Valley City	Local Emergency Management	Local and regional agencies involved in hazard mitigation activities
White City	Local Emergency Management	Local and regional agencies involved in hazard mitigation activities
White City Water Improvement District	Water Utility Company	Representatives of businesses, academia, and other private organizations

Furthermore, IEM and Salt Lake County met with Amy Van Horn, the Bureau of Reclamation's (BOR) Emergency Management Coordinator, to discuss the dam failure hazard profile. Data sources and current draft maps were evaluated, and BOR's feedback was considered when determining how best to profile this hazard.

Coordination with Other Agencies, Partners, and Stakeholders

A major priority was updating the plan to meet the mitigation planning requirements outlined in FEMA's Local Mitigation Planning Policy Guide. This included an increased emphasis on stakeholder engagement, evaluating the impacts and potential mitigation measures for community lifelines, addressing climate change, and expanding mitigation actions to address all hazards profiled in the plan.

The following agencies and partners were instrumental in the update process:

- American Red Cross (vulnerable population engagement)
- VOAD, Salvation Army Region 2 (disadvantaged and underserved population engagement)
- Federal Emergency Management Agency (How-to Guides)
- National Weather Service (hazard profile)
- National Centers for Environment Information (hazard profile)
- Sewer Districts
- Utah Division of Emergency Management (GIS data, flood data, Hazus data for floods and earthquakes)
- Utah Geological Survey
- (GIS data, geologic information, various hazard reports)
- Utah Division of Forestry, Fire, and State Lands (fire data)
- Utah Avalanche Center Snow and Avalanches (annual reports)
- Utah Department of Transportation (traffic data and information)
- University of Utah Seismic Station (earthquake data)
- Utah State University (climate data)

DRAFT

- Salt Lake Valley Emergency Communications Center (Emergency Alert Systems)
- Salt Lake County Departments and municipalities (Emergency Operations Plans, histories, mitigation actions, public input, GIS, assessor, transportation, property and infrastructure)

Although a multitude of stakeholders were given the opportunity to participate, not all could. The stakeholders listed in Table 16 participated directly in the plan by attending meetings, completing the digital stakeholder survey, and/or reviewing the draft plan. This stakeholder outreach was considered a success because of the broad range of stakeholders that participated and their active engagement and participation in the planning process.

Table 16: Stakeholders That Participated in the Planning Update[35]

Name	Title	Agency/ Jurisdiction	Type of Stakeholder
Yasmin Abbyad	EM Coordinator	City of South Salt Lake	Local and regional agencies involved in hazard mitigation activities
Brent Adamson	Emergency Manager	Herriman	Local and regional agencies involved in hazard mitigation activities
Maridene Alexander	Communications Manager	MSD	Local and regional agencies involved in hazard mitigation activities
Tess Alexander	EM Community Preparedness	Salt Lake City	Representatives of nonprofit organizations, including community-based organizations, which work directly with and/or provide support to underserved communities and socially vulnerable populations
Greg Anderson	Manager	Kearns Improvement District	Local and regional agencies involved in hazard mitigation activities
Isaac Astill	Executive Director of Auxiliary Services	Salt Lake City School District	Local and regional agencies involved in hazard mitigation activities
Molly Austin	Emergency Manager	Town of Alta	Local and regional agencies involved in hazard mitigation activities
Dean Ayala	District Engineer	Mt. Olympus Improvement District	Neighboring communities; Representatives of businesses, academia, and other private organizations
Tim Bachman	Community Emergency Response Team Coordinator	Millcreek	Representatives of nonprofit organizations, including community-based organizations, which work directly with and/or provide support to underserved communities and socially vulnerable populations

[35] EM = Emergency Management, JIC = Joint Information Center, MSD = Municipal Services District, PIO = Public Information Officer, SLCo = Salt Lake County, SLCo EM = Salt Lake County Emergency Management, UDEM = Utah Division of Emergency Management, UFA = Unified Fire Authority, UPD = Unified Police Department.

DRAFT

Name	Title	Agency/ Jurisdiction	Type of Stakeholder
Tereza Bagdasarova	Board of Directors	South Salt Lake Chamber of Commerce	Representatives of businesses, academia, and other private organizations
Carmen Bailey	Deputy Director – Public Lands	Salt Lake City	Local and regional agencies involved in hazard mitigation activities; Agencies that have the authority to regulate development
Scott Baird	Department Director	SLCo Public Works	Local and regional agencies involved in hazard mitigation activities
Kevin Barjenbruch	Warning Coordination Meteorologist	NOAA/National Weather Service Salt Lake City	Local and regional agencies involved in hazard mitigation activities
Mike Barker	City Manager	Draper	Local and regional agencies involved in hazard mitigation activities
Tara Behunin	Division Director	SLCo EM	Local and regional agencies involved in hazard mitigation activities
Chris Bell	Deputy Director – Sustainability	Salt Lake City	Local and regional agencies involved in hazard mitigation activities
Richard Bell	Deputy Chief	West Jordan Police	Local and regional agencies involved in hazard mitigation activities
Leon Berrett	Operations Associate Director	SLCo Public Works	Local and regional agencies involved in hazard mitigation activities
Lance Bess*	Emergency Manager	Cottonwood Heights	Internal EM Manager
Dan Blanchard	Safety and Emergency Manager	Utah Department of Corrections	Local and regional agencies involved in hazard mitigation activities
Paul Brenneman	Emergency Manager	Cottonwood Heights	Local and regional agencies involved in hazard mitigation activities
Roger Brooks	Emergency Manager	Granite School District	Representatives of nonprofit organizations, including community-based organizations, which work directly with and/or provide support to underserved communities and socially vulnerable populations
Tina Brown	Public Information Officer	SLCo EM	Agencies that have the authority to regulate development
Brian Buckhout	EM Municipal Planner	UFA/SLCo EM	Local and regional agencies involved in hazard mitigation activities
Don Buckley*	Emergency Manager	Draper City	Local and regional agencies involved in hazard mitigation activities
David Bullock	Facilities Manager	Jordan School District	Local and regional agencies involved in hazard mitigation activities
Michael Bullock	Deputy Chief	Sandy Fire Department	Local and regional agencies involved in hazard mitigation activities

DRAFT

Name	Title	Agency/ Jurisdiction	Type of Stakeholder
Jared Bunch	City Engineer	Holladay	Local and regional agencies involved in hazard mitigation activities
Karen Burnett	Geographic Information Systems (GIS) Director	Draper	Local and regional agencies involved in hazard mitigation activities
Gary Carter	Planning Section Chief	Salt Lake City Fire Department	Local and regional agencies involved in hazard mitigation activities
Chris Catalano	Emergency Manager	Millcreek	Local and regional agencies involved in hazard mitigation activities
Kellie Challburg	Assistant City Manager	Draper	Local and regional agencies involved in hazard mitigation activities
Brian Clegg	Director	West Jordan Public Works	Local and regional agencies involved in hazard mitigation activities
John Crofts	Utah Earthquake Program Manager	UDEM	Local and regional agencies involved in hazard mitigation activities
Kelly Colopy	Director	SLCo Human Services	Local and regional agencies involved in hazard mitigation activities
Scott Cooley	Public Works Director	Draper	Local and regional agencies involved in hazard mitigation activities
Julie Crookston	Deputy Director – Public Services	Salt Lake City	Agencies that have the authority to regulate development
Matt Dahl	City Manager	Midvale	Local and regional agencies involved in hazard mitigation activities
Greg Davenport	Director	West Jordan Public Utilities	Local and regional agencies involved in hazard mitigation activities
Braden Davis	Pipeline Technician	HF Sinclair	Representatives of businesses, academia, and other private organizations
Amy DeNeff	Emergency Manager	Sandy City	Local and regional agencies involved in hazard mitigation activities
Alex DeSmet*	Warning Coordination Meteorologist	Salt Lake City National Weather Service	Local and regional agencies involved in hazard mitigation activities
Jason Draper	Chief Engineer Floodplain Administrator	Salt Lake City Public Utilities	Local and regional agencies involved in hazard mitigation activities
Tal Ehlers	EM Program Manager	Utah Transit Authority	Agencies that have the authority to regulate development
Chet Ellis	Division Chief/Deputy Director	UFA	Local and regional agencies involved in hazard mitigation activities
John Evans	Fire Chief	West Valley City	Local and regional agencies involved in hazard mitigation activities

DRAFT

Name	Title	Agency/ Jurisdiction	Type of Stakeholder
Rich Ferguson	Police Chief	Draper	Local and regional agencies involved in hazard mitigation activities
Jed Fin	Deputy Fire Marshall	Murray City	Local and regional agencies involved in hazard mitigation activities
Katy Fleury	Brand Manager	SLCo	Local and regional agencies involved in hazard mitigation activities
John Flynt	EM Director	Salt Lake Community College	Local and regional agencies involved in hazard mitigation activities
Ben Ford	Wastewater Superintendent	Murray City	Local and regional agencies involved in hazard mitigation activities
Cory Fralick	Director	West Jordan Public Services	Local and regional agencies involved in hazard mitigation activities
Aaron Frisk	Water Superintendent	Murray City	Local and regional agencies involved in hazard mitigation activities
John Gallagher	Instrumentation process Control Technician	Jordan Basin Improvement District	Agencies that have the authority to regulate development
Ann Garcia	Economic Development and Housing Manager	Holladay City	Representatives of businesses, academia, and other private organizations
Valerie Greensides	Project Coordinator	UFA	Agencies that have the authority to regulate development
Michelle Hale	Program Director	Office of Preparedness & Response. Utah Department of Health and Human Services	Local and regional agencies involved in hazard mitigation activities
Jeremy Hart	Associate Director	SLCo Aging and Adult Services	Local and regional agencies involved in hazard mitigation activities
Brian Hartsell	Associate General Manager	MSD	Local and regional agencies involved in hazard mitigation activities
Nick Haskin	Emergency Manager	Murray City	Local and regional agencies involved in hazard mitigation activities
Carrie Hecht	Special Operations Facilitator	SLCo Animal Services	Local and regional agencies involved in hazard mitigation activities
Ember Herrick	Emergency Manager	Davis County	Local and regional agencies involved in hazard mitigation activities
Colin Hilton	Director	Olympic Oval	Local and regional agencies involved in hazard mitigation activities
Tom Holstrom	Assistant Manager	Central Valley Water	Representatives of businesses, academia, and other private organizations
Levi Hughes	Chief	UPD – Kearns Precinct	Local and regional agencies involved in hazard mitigation activities

DRAFT

Name	Title	Agency/ Jurisdiction	Type of Stakeholder
Cheri Jackson	Council Member	Millcreek	Representatives of nonprofit organizations, including community-based organizations, which work directly with and/or provide support to underserved communities and socially vulnerable populations
Ryan Jakeman	Facility Coordinator	Canyons School District	Local and regional agencies involved in hazard mitigation activities
Paul Jerome	Assistant Chief Administrative Officer	West Jordan Administration	Agencies that have the authority to regulate development
Allison Jester	Emergency Manager	Holladay City	Local and regional agencies involved in hazard mitigation activities
Brad Jewett	Intelligence Specialist	UFA – representing Midvale City	Agencies that have the authority to regulate development
Jason Jones	Emergency Manager/Police Department	Riverton	Local and regional agencies involved in hazard mitigation activities
Catherine Kanter	Deputy Mayor	SLCo Mayor's Office	Local and regional agencies involved in hazard mitigation activities
Mason Kemp	Mitigation Planning Lead	UDEM	Local and regional agencies involved in hazard mitigation activities
Jeff King	Emergency Manager Coordinator	Jordan Valley Water Conservancy District	Neighboring communities; Representatives of businesses, academia, and other private organizations
Chad Korb	Deputy Director – Information Management Services	Salt Lake City	Local and regional agencies involved in hazard mitigation activities
Jonathan LaFollette	PIO	Herriman City	Local and regional agencies involved in hazard mitigation activities
Robert Lambert	Battalion Chief	Draper	Local and regional agencies involved in hazard mitigation activities
Scott Langford	Director	West Jordan Community Development	Agencies that have the authority to regulate development
David Larsen*	Emergency Manager	Sandy City	Local and regional agencies involved in hazard mitigation activities
Michael Lasko	Community Member	Millcreek	Representatives of nonprofit organizations, including community-based organizations, which work directly with and/or provide support to underserved communities and socially vulnerable populations

DRAFT

Name	Title	Agency/ Jurisdiction	Type of Stakeholder
Korban Lee	Chief Administrative Officer	West Jordan Administration	Agencies that have the authority to regulate development
Robert Lewis	Captain	SLCo Animal Services	Local and regional agencies involved in hazard mitigation activities
Debbie Lyons	Director – Sustainability	Salt Lake City	Local and regional agencies involved in hazard mitigation activities
Mac Lund	External Relations and Government Operations	American Red Cross	Representatives of nonprofit organizations, including community-based organizations.
Marie Magers	PIO	West Jordan Public Affairs	Local and regional agencies involved in hazard mitigation activities
Savannah Mailloux	GIS Specialist	UFA	Agencies that have the authority to regulate development
Robert Martin	Assistant Facilities Coordinator	Canyons School District	Local and regional agencies involved in hazard mitigation activities
Robert Markle	Deputy Public Works Director	Draper	Local and regional agencies involved in hazard mitigation activities
Michelle McGaughey	Emergency Preparedness Bureau Manager	SLCo Health Department	Local and regional agencies involved in hazard mitigation activities
Kathryn McMullin	Emergency Manager	Summit County	Local and regional agencies involved in hazard mitigation activities
Dan McDougal	Director of Risk and Asset Management	Taylorsville–Bennion Improvement District	Local and regional agencies involved in hazard mitigation activities
Mark McGrath	Long-Range Planner	Taylorsville	Local and regional agencies involved in hazard mitigation activities
Scott McNeil	Logistics Section Officer	SLCo EM	Local and regional agencies involved in hazard mitigation activities
Jaime Milano	Emergency Operations Support Specialist	West Valley City	Local and regional agencies involved in hazard mitigation activities
John Miller	Director of Public Works	Millcreek	Local and regional agencies involved in hazard mitigation activities
Dan Moore	Enforcement Coordinator	Health Department	Local and regional agencies involved in hazard mitigation activities
Jeffory Mulcahy	Emergency Manager	West Jordan	Local and regional agencies involved in hazard mitigation activities
Scott Neal	Safety Coordinator	Jordan Basin Improvement District	Agencies that have the authority to regulate development
Kristie Overson	Mayor	Taylorsville	Local and regional agencies involved in hazard mitigation activities
Steve Pearson	Deputy Fire Chief	Draper	Local and regional agencies involved in hazard mitigation activities

DRAFT

Name	Title	Agency/ Jurisdiction	Type of Stakeholder
Andrew Peedle	Environmental Health and Safety Manager	Danone US, LLC	Representatives of businesses, academia, and other private organizations
Jamie Petersen	Region 1 Liaison	UDEM	Local and regional agencies involved in hazard mitigation activities
Audrey Pierce	EM Critical Infrastructure	Salt Lake City	Local and regional agencies involved in hazard mitigation activities
Zach Posner	Chief Information Officer	Salt Lake City IT	Local and regional agencies involved in hazard mitigation activities
Randy Porter	Police Chief	Granite School District Police	Representatives of nonprofit organizations, including community-based organizations, which work directly with and/or provide support to underserved communities and socially vulnerable populations
Deff Puls	Fire Marshall	Murray City	Local and regional agencies involved in hazard mitigation activities
Steve Quinn	Planning and Intelligence Officer	UFA	Agencies that have the authority to regulate development
Stephanie Rennick	Emergency Preparedness Bureau Planner	SLCo Health Department	Local and regional agencies involved in hazard mitigation activities
William Reyes	EM Planning Coordinator	Herriman	Local and regional agencies involved in hazard mitigation activities
Ian Roberts	Capital Outlay Manager	Jordan School District	Neighboring communities
Dave Rostrom	Facility Services Director	Jordan School District	Neighboring communities
Alex Rudowski	Grading, Floodplain & Stormwater Manager	Greater Salt Lake Municipal Services District	Local and regional agencies involved in hazard mitigation activities
Aaron Sainsbury	Emergency Manager	South Jordan	Local and regional agencies involved in hazard mitigation activities
Carly Sands	Community Support Liaison	UDEM	Local and regional agencies involved in hazard mitigation activities
Kevin Schmidt	Director	Kearns Oquirrh Park	Agencies that have the authority to regulate development
David Schuld*	Internal EM Manager	SLCo	Local and regional agencies involved in hazard mitigation activities
Nathan Scown	Operations Manager	Metropolitan Water District of Salt Lake and Sandy	Agencies that have the authority to regulate development
Darren Shepherd	Manager	Holliday Water Company	Neighboring communities; Representatives of businesses,

DRAFT

Name	Title	Agency/ Jurisdiction	Type of Stakeholder
			academia, and other private organizations
Ty Shepherd	Division Chief/ Emergency Manager	Salt Lake City	Local and regional agencies involved in hazard mitigation activities
Rina Shipley	Information Security Engineer	SLCo IT	Local and regional agencies involved in hazard mitigation activities
Tom Simons	EM Operations Captain	Salt Lake City	Local and regional agencies involved in hazard mitigation activities
Wade Skinner	Emergency Manager Program Manager	Rocky Mountain Power/PacifiCorp	Representatives of businesses, academia, and other private organizations
Roger Snow	Chair	Kearns Community Council	Neighboring communities
Liz Sollis	Communications Director	SLCo Mayor's Office	Local and regional agencies involved in hazard mitigation activities
Robert Stafford	Fire Department Assistant Chief	Salt Lake City	Local and regional agencies involved in hazard mitigation activities
Zach Stevens	Operations Manager	Mt. Olympus Improvement District	Representatives of businesses, academia, and other private organizations
Troy Stout	Assistant General Manager	Granger Hunter Improvement District	Local and regional agencies involved in hazard mitigation activities
Isaac Talbot	Emergency Manager	Central Valley Water Reclamation Facility	Representatives of businesses, academia, and other private organizations
Jon Teerlink	Director of Community and Economic Development	Holladay City	Agencies that have the authority to regulate development
Shazelle Terry	General Manager	Jordan Valley Water Conservancy District	Representatives of businesses, academia, and other private organizations
Scott Thomas	Administrator	Jordan School District Auxiliary Services	Neighboring communities
Tim Tomer	Facilities/Safety Program Manager	SLCo Aging and Adult Services	Nonprofit Organization serving underserved population
Chris Trevino	Deputy Chief	West Jordan Fire	Local and regional agencies involved in hazard mitigation activities
Erik Van Duren	Operations Specialist	SLCo EM	Local and regional agencies involved in hazard mitigation activities
Madison Warner	EM Municipal Planner	UFA/SLCo EM	Local and regional agencies involved in hazard mitigation activities
Martin Webb	Emergency Manager	Salt Lake Valley Emergency	Local and regional agencies involved in hazard mitigation activities

DRAFT

Name	Title	Agency/ Jurisdiction	Type of Stakeholder
		Communications Center	
Rebecca Weis	Planning Specialist	UFA	Agencies that have the authority to regulate development
Ben White	City Engineer	Taylorsville	Local and regional agencies involved in hazard mitigation activities
Dustin Willie	Police Lieutenant	Draper	Local and regional agencies involved in hazard mitigation activities
Matt Wilson	EM Planning Coordinator	Salt Lake City	Local and regional agencies involved in hazard mitigation activities
Eric Witt	EM Training Specialist	Salt Lake City	Local and regional agencies involved in hazard mitigation activities
Steve Wooldridge	Police Lieutenant	Salt Lake City	Local and regional agencies involved in hazard mitigation activities
Hannah Youell	Salt Lake City EM PIO/JIC Coordinator	Salt Lake City	Local and regional agencies involved in hazard mitigation activities
Michael Yei	Internal EM Manager	SLCo	Local and regional agencies involved in hazard mitigation activities
Jay Ziolkowski	Emergency Manager	Taylorsville	Local and regional agencies involved in hazard mitigation activities

*Indicates a person who replaced someone previously in that position during the planning process

Neighboring counties (Davis, Utah, Tooele, and Summit) had an opportunity to review the plan and provide feedback. In addition, hazard mitigation plans for the adjacent counties (Davis County, Tooele County, and the Mountainland Pre-Disaster Hazard Mitigation Plan) were reviewed to identify region-wide risks and mitigation opportunities.

Public Outreach

Public participation is a vital planning requirement for a FEMA-approved hazard mitigation plan. The public outreach strategy engaged the whole community throughout the planning process. It gave decision makers access to diverse perspectives, knowledge, and individual lived experiences to incorporate during the drafting stage and before final approval of this MJHMP. IEM developed and shared the public outreach strategy with the county planning working groups that engaged the public and assessed their understanding of the identified risks and their interest in mitigation opportunities.

The IEM planning team drafted and shared a public survey in English and Spanish. Each participating jurisdiction reviewed and shared the survey on multiple occasions in different venues and in-person and online formats (see Figure 24). Besides posting links to the survey on county and city websites and sharing on social media, the survey was also announced on KUER radio on October 19, 2024. A news article was published by KSL.com on October 30 that also announced the mitigation plan to the public

and provided a link to the survey.[36] A half-page announcement about the plan update and a link to the survey were included in the City Journal Community Newspaper, which was mailed to residents in 14 participating cities, including 2 printed in Spanish.

Figure 24: Social Media Graphic for Public Outreach Survey

The public survey asked the public about their hazards of concern, assessed their understanding of the assets at risk, solicited information on what areas or community assets are more vulnerable, what they are doing in terms of mitigation, what mitigation actions they would support the community undertaking and any specific suggestions for mitigation actions. The feedback insight into what community assets are of concern to the public and suggestions of mitigation actions the public would support.

SLCo EM and IEM facilitated a meeting with the participating jurisdictions' Public Information Officers (PIOs) to help engage them in the public outreach efforts. The PIOs helped post the survey on city social media pages, which significantly boosted community engagement with the survey. More details on outreach can be found in the jurisdictional annexes.

Vulnerable Populations

Engaging socially vulnerable populations and disadvantaged communities was an important component of the public survey process. The public outreach strategy provided opportunities for vulnerable populations and underserved communities to be involved in the plan's development. Each survey participant selected the any groups they identified themselves as being a member of, demonstrating that non-English speaking populations, the elderly, parents of youth, persons with disabilities, low-income individuals and other vulnerable or disadvantaged groups were engaged by the survey. Offering the survey in Spanish was essential for reaching non-English speaking residents of the county. The County

[36] KSL.com. "Utah residents need to prepare for these 5 kinds of emergencies." October 30, 2024. https://www.ksl.com/article/51160262/utah-residents-need-to-prepare-for-these-5-kinds-of-emergencies.

Office for New Americans shared the survey with immigrant and refugee communities and feedback from those responses were considered during the drafting of the mitigation strategy for each jurisdiction.

SLCo EM participated in the Salt Lake County Senior Expo on October 11. This was a key opportunity to engage with one of the county's vulnerable populations. SLCo EM staff discussed the planning process and hazard concerns with attendees, and they also provided reference materials and access to the public survey. Information was also shared at a community event in Copperton (see Figure 26).

Figure 25: Public Outreach at Salt Lake County Senior Expo

Figure 26: Public Outreach at Copperton Town Days

Draft Plan Review

Besides efforts to inform residents and stakeholders about the Hazard Mitigation Plan update and public survey, a draft of the updated mitigation plan was made available for the public to review it and provide feedback. An announcement of the draft plan (Figure 27) and link to a feedback form was shared by Salt Lake County Emergency Management and Salt Lake County government and was also reshared by Bluffdale, South Salt Lake, Millcreek, Midvale, East Millcreek Community Council, and Association of Community Councils Together. The draft was made available on December 19, 2024, and public comment was open through January 15, 2025.

Figure 27: Announcement of Public Comment Period for Draft Plan

Table 17 summarizes the public outreach for each jurisdiction during the planning process. Additional documentation of public outreach can be found in **Appendix C** and in the individual jurisdictional annexes in Volume 2.

Table 17: Public Outreach Conducted by Jurisdiction

Jurisdiction	Description of Outreach Efforts
Salt Lake County (SLCo)	Posted notification of Hazard Mitigation Plan update and access to survey on County website and social media page. Shared on SLCo Emergency Management (EM) social media pages and website. SLCo EM also promoted awareness of the plan update on local news media, including a televised report and written article on KSL News and public service announcement on KUER radio. SLCo EM also placed posters at the county government building and hosted a table at the Salt Lake County Senior Expo.
Alta	Shared notification of plan update and access to survey in Town of Alta Newsletter by email in October 2024. Flyer was posted in town office.
Bluffdale	Posted link to Draft Plan for public review on city social media page.

Jurisdiction	Description of Outreach Efforts
Brighton	Municipal Services District (MSD) and County social media posts.
Copperton	Table with survey flyers at community event. Also shared on MSD social media.
Cottonwood Heights	Posted notification of Hazard Mitigation Plan update and access to survey on city social media page.
Draper	Reposted Salt Lake County Emergency Management social media posts of Hazard Mitigation Plan update and access to survey. Announcement and link to survey in City Journal mailed to residents.
Emigration Canyon	Shared on MSD social media, which serves the city.
Herriman	Posted notification of Hazard Mitigation Plan update and access to survey on city social media page and city website. Announcement and link to survey in City Journal mailed to residents.
Holladay	Shared notification of plan update and access to survey by an email blast to residents. Posted a flyer in Senior Center and Recreation Center. Announcement and link to survey in City Journal mailed to residents.
Jordan School District	Posted notification of Hazard Mitigation Plan update and access to survey on social media page and on the school district website.
Kearns	Posted notification of Hazard Mitigation Plan update and access to survey on city social media page. Also shared on MSD social media, which serves the city.
Magna	Shared on MSD social media, which serves the city.
Midvale	Posted notification of Hazard Mitigation Plan update and access to survey on city social media pages and website. Also posted notification of draft for public comment. Announcement and link to survey in City Journal mailed to residents.
Millcreek	Posted notification of Hazard Mitigation Plan update and access to survey on city social media page. Also posted notification of plan draft for public comment. Announcement and link to survey in City Journal mailed to residents.
Murray	Announcement and link to survey in City Journal mailed to residents.
Riverton	Posted notification of Hazard Mitigation Plan update and access to survey on city social media pages. Announcement and link to survey in City Journal mailed to residents.
Salt Lake City	Reposted Salt Lake County Emergency Management social media post of Hazard Mitigation Plan update and access to survey. Also included announcement and link to survey in community newsletter.
Sandy City	Announcement and link to survey in City Journal mailed to residents.
South Jordan	Announcement and link to survey in City Journal mailed to residents.
South Salt Lake	Posted notification of Hazard Mitigation Plan update and access to survey on city social media pages and website. Also posted announcement of draft for public comment on social media. Posted notification of Hazard Mitigation Plan update and access to survey in CivicAlerts notification. Announcement and link to survey in City Journal mailed to residents.
Taylorsville	Posted survey in lobby of City Hall. Announcement and link to survey in City Journal mailed to residents.
West Jordan	Announcement and link to survey in City Journal mailed to residents.

DRAFT

Jurisdiction	Description of Outreach Efforts
West Valley City	Posted notification of Hazard Mitigation Plan update and access to survey on city social media page. Announcement and link to survey in City Journal mailed to residents.
White City	Shared on MSD social media which serves the city.

Feedback from the Public Survey

After several months of public outreach in Salt Lake County, approximately 564 community members responded to the Salt Lake County MJHMP Public Survey. The following summarizes the responses and comments received. A copy of the full survey and additional summary results are available in **Appendix C**.

LEVEL OF CONCERN ABOUT SPECIFIC HAZARDS

When participants were asked about specific natural hazards that may impact Salt Lake County, they were most often very concerned about earthquakes and drought.

Among the technical and human-made hazards identified, 327 respondents were somewhat or very concerned about radon, 156 were somewhat or very concerned about dam failure, 346 were somewhat or very concerned about terrorism, 478 were somewhat or very concerned about cyberterrorism, and 424 were somewhat or very concerned about a potential hazardous materials (HAZMAT) incident.

DRAFT

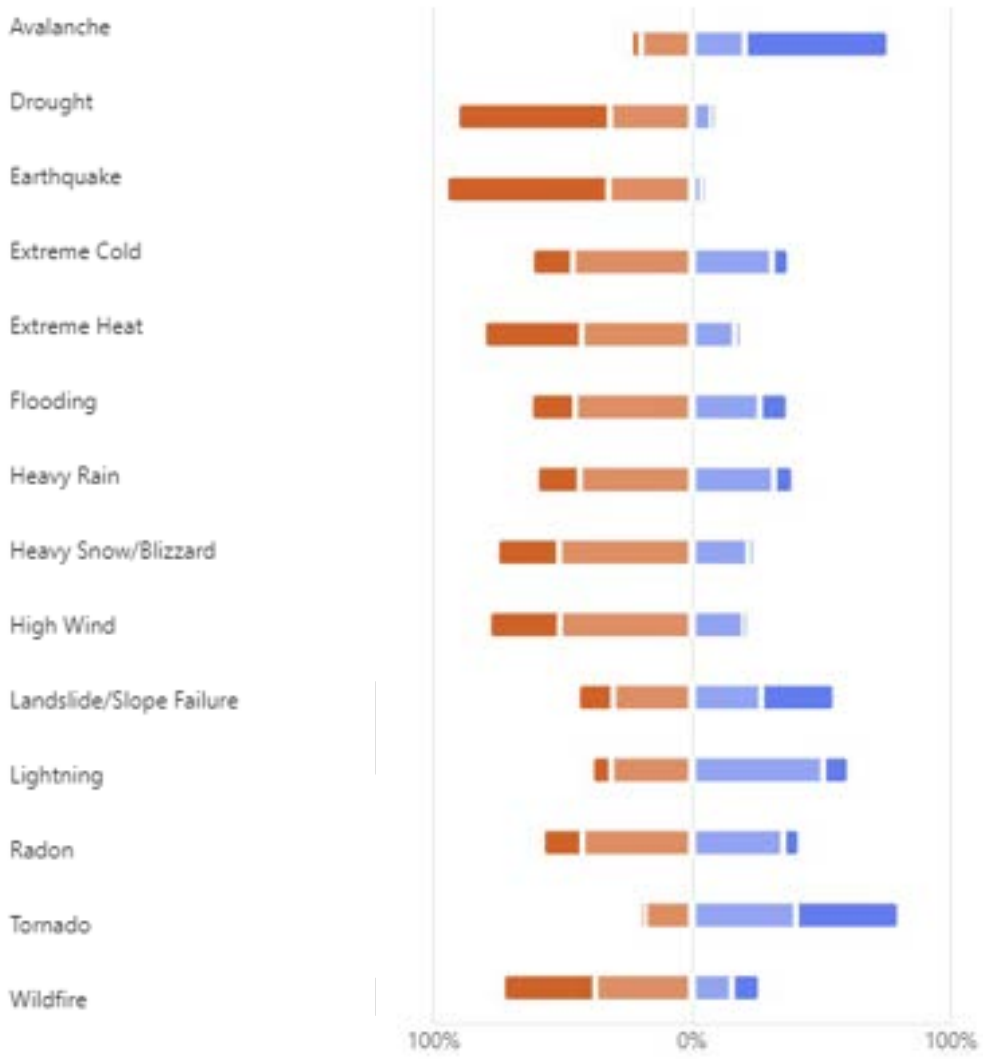


Figure 28: Survey Results on Concerns About Specific Hazards

HAZARD INSURANCE COVERAGE

Question #10 asked respondents what residential insurance coverage they currently have for natural hazards; 286 stated they have fire insurance, 131 have windstorm insurance, 173 have earthquake insurance, 89 have flood insurance, and 20 have landslide insurance.

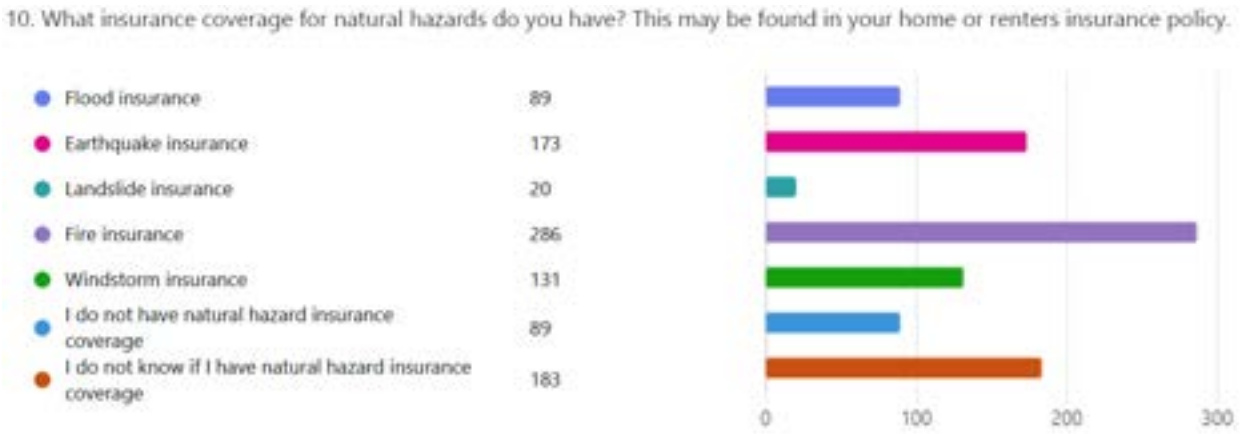


Figure 29: Survey Results on Hazard Insurance Coverage

WHERE RESPONDENTS LIVE OR WORK

Question #14 asked where respondents lived or worked at the time of the survey. Results can be sorted to determine whether there are geographic trends in responses to the other questions.

DRAFT

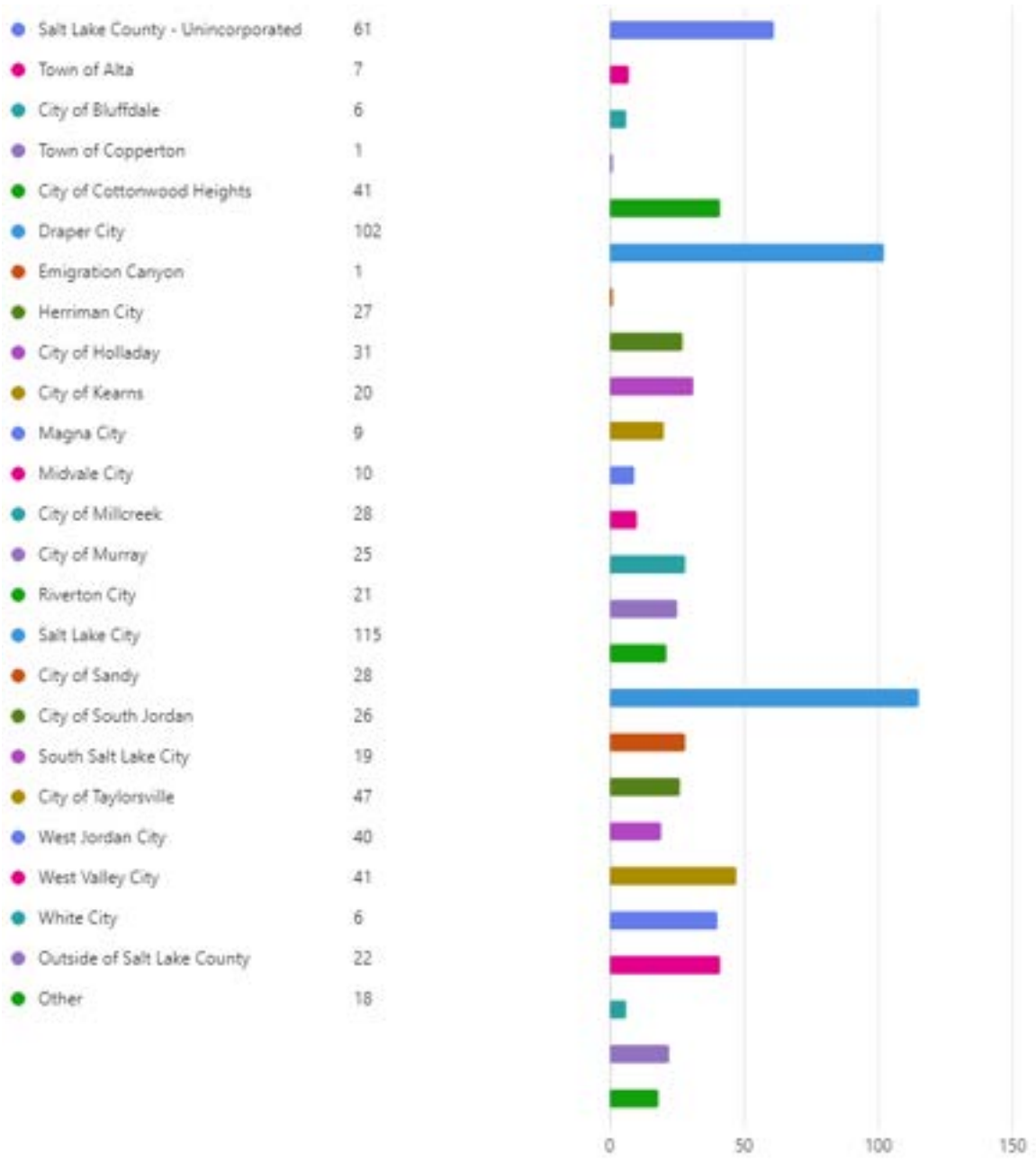


Figure 30: Survey Results on Where Respondents Live and Work

VULNERABLE POPULATIONS

Question #13 invited respondents to identify if they belonged to one or more vulnerable population categories. The intent of this question was to determine whether vulnerable populations were reached by the survey and had an opportunity to voice their unique concerns about natural hazards.

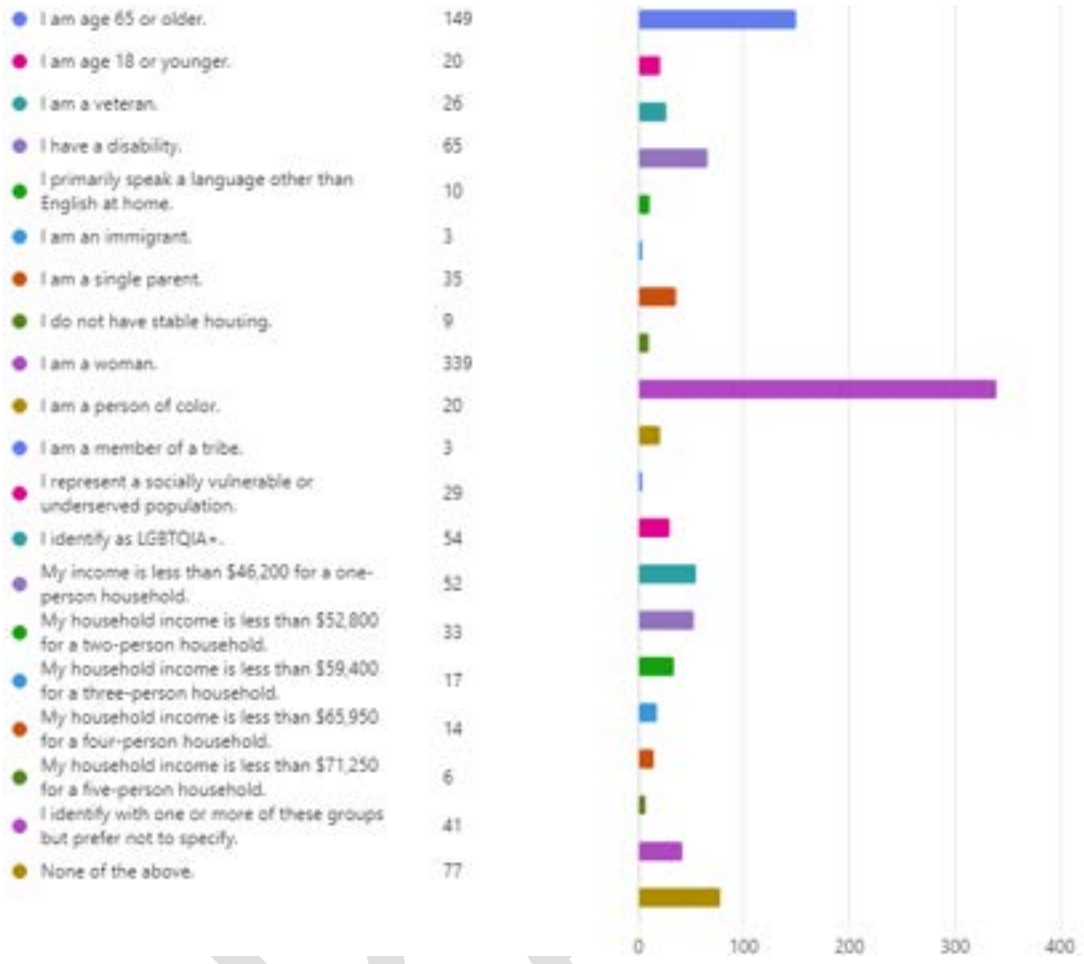


Figure 31: Survey Results on Vulnerable Populations

PARTS OF THE COMMUNITY MOST AT RISK

Question #4 asked, “What parts of your community (including buildings, people, economic activities and events, and natural areas) are most at risk of these hazards?” Of the 563 respondents, 101 identified “people” as most at risk, with buildings and homes also frequently selected.

MITIGATION IDEAS

Question #8 asked, “What other types of hazard mitigation activities would you support your community in taking? Be specific if you know an area or structure that needs mitigating.” Of the 558 respondents, 43 said they would support “community activities” and water and earthquake mitigation activities.

PROTECTION FROM FUTURE DISASTERS

Question #5 asked, “What at-risk areas (including structures, infrastructures, and natural areas) or people in your community would you like to see protected from future disasters? Be specific, if known.” Of the 560 response respondents, 78 answered protecting natural areas from future disasters and homes and buildings.

Risk Assessment

The Hazard Identification and Risk Assessment (HIRA) measures the potential impact of hazards on life, property, and economic activity. It intends to identify, as much as practicable, given the existing or available data, a community's qualitative and quantitative vulnerabilities. The risk assessment provides a clearer understanding of the impacts of natural hazards on the community. They also serve as a foundation for developing and prioritizing mitigation actions aimed at reducing damage from areas that might have significant impacts (see the section on **Mitigation Strategy**). This includes increased preparedness, faster response times, and improved allocation of resources to the most vulnerable areas.

This risk assessment followed the methodology described in the FEMA Local Mitigation Planning Handbook 2023, which outlines a five-step process:

1. **Identify Hazards:** This step helps clarify the hazards that may occur in the planning area.
2. **Describe Hazards:** This step includes gathering more information about the hazards, including where they can happen, the impact of past occurrences, and the potential frequency and intensity of future occurrences.
3. **Identify Community Assets:** This step evaluates which assets are most vulnerable to loss during a disaster, considering any development changes since the previous plan was created.
4. **Analyze Impacts:** This step describes how each hazard could affect the assets of each community.
5. **Summarize Vulnerability:** This step synthesizes all the analyses and uses the risk assessment to draw conclusions. Based on these conclusions, the planning team can develop a strategy to increase the resilience of residents, businesses, the economy, and other vital assets.

Methodology

The information gathered during the Multi-Jurisdictional Hazard Mitigation Plan (MJHMP) planning process related to the five steps has been incorporated into the following discussions in this chapter:

- **Hazard Identification:** This involves identifying and prioritizing the natural hazards that threaten Salt Lake County, including assets in other jurisdictions, such as levees and upstream dams, which can also affect your area. The reasoning for omitting some hazards from further consideration also is given in this discussion.
- **Hazard Profiles:** Each natural hazard that threatens Salt Lake County has a separate hazard profile that includes its location, extent/magnitude/severity, previous occurrences, and likelihood of future events. The previous plan identified severe weather as a hazard. This plan has broken this category into separate hazards—heavy rain, high wind, extreme heat, and lightning—to provide more detail on each and additional information on events since the last plan update. Extreme cold has been separated from severe winter weather and is now presented as a stand-alone hazard profile. No other new hazards have been added since the last plan.

DRAFT

- **Identify Assets:** Identify the assets in Salt Lake County at risk of hazards. Information includes people, structures, community lifelines, and other critical facilities; natural, historic, and cultural resources; and the economy and other activities that have value to the community.
- **Analyze Impacts:** Determine where hazards overlap with assets identified in the previous step, including descriptions of the assets' vulnerabilities and describing potential impacts.
- **Summarize Vulnerability:** Information from hazard profiles, vulnerability assets, changes in development, potential impacts, and losses are summarized to help Salt Lake County understand the most significant risks and vulnerabilities.

Identifying Hazards

According to FEMA guidance, identifying hazards is the first step in developing a risk assessment. Salt Lake County plan participants reviewed previously prepared hazard mitigation plans and relevant documents to identify natural hazards that could affect the county. Based on a review of the prior plan and consideration of recent events, 19 different hazards were identified.

Table 18: Hazards Identified for 2025 Hazard Mitigation Plan

Avalanche	Flooding	Public Health Epidemic/Pandemic	Dam Failure
Drought	Heavy Rain	Radon	Civil Disturbance
Earthquake	High Wind	Severe Winter Storm	Hazardous Materials Incident
Extreme Cold	Landslide/ Slope Failure	Tornadoes	Terrorism/ Cyberterrorism
Extreme Heat	Lightning	Wildfire	

The following information is provided for each hazard:

- **Hazard Description:** A brief introduction of the mechanisms behind the hazard.
- **Location:** An indication of geographic areas most likely to experience the hazard.
- **Magnitude/Extent:** A description of the potential magnitude and extent of the hazard, accompanied by the likelihood of the hazard occurring (or a time frame of recurrence, if available).
- **Historical Events:** Similar to location, a chronological summary of recent hazard occurrences, including extent or damage cost, if available.
- **Probability of future occurrences:** Likelihood of this event occurring in Salt Lake County, based on return intervals or past annual frequency.
- **Climate Change Considerations:** When applicable, a brief overview indicating how the hazard profile may change over time due to climate changes.
- **Secondary Hazards/Cascading Impacts:** A brief overview of secondary hazards often associated with the hazards.

DRAFT

- **Vulnerability Analysis:** A description of which assets—including structures, systems, populations, and other assets as defined by the plan participant—are at risk from each hazard. Vulnerability may be expressed in quantitative terms, such as replacement cost, or qualitatively, such as type of structure value, depending on available data. This section also discusses the impacts of hazards, which are the potential consequences of a hazard event, including land use and development changes. These impacts can include the following:
  - Modeled estimates of potential structural and economic losses, including values of community assets exposed to the hazard
  - Impacts on vulnerable populations
  - Changes in development and whether these changes represent a change in vulnerability since the 2019 plan
  - Effects on FEMA Community Lifelines

Hazard descriptions were based on information from local, state, and federal agencies that study these hazards. These sources were also used to identify the locations and extent of hazards that could impact people, structures, or other assets in Salt Lake County. These sources were identified in the

DRAFT

Planning Process section of this plan.

For each hazard profiled, a review of past events was conducted. This involved examining historical records of hazards that have previously affected the county and/or cities and towns, such as the National Centers for Environmental Information (NCEI) Storm Events Database. Hazards that may affect the county in the future were identified by gathering information from local, state, and federal agencies; accounts from newspapers or local media; state and regional weather records; conversations with the public and local officials; surveys; and meetings with personnel in the planning area. Information about federal Disaster Declarations in Salt Lake County was updated and compiled into Table 19, which provides a baseline for consideration in the hazard prioritization process.

Each participating jurisdiction considered these 19 hazards and evaluated which consistently affected its area based on the history of occurrences and probability. The jurisdictions used forms to identify the hazards they wished including in their risk assessment and briefly explained any that they decided to omit. They also identified community assets, critical facilities, or infrastructure in the community that are at risk from each hazard. Participants also described changes in development, such as changes in population or land use, which could affect their vulnerability to hazards. Details of these jurisdiction-specific hazards and an analysis of the vulnerabilities and potential impacts of each are described in the annexes in Volume 2 of this plan.

Past Disaster Declarations

Table 19: Past Disaster Declarations

Disaster Declaration Code	Incident Period	Date Declared	Description
FM-5408-UT	08/14/2021–08/18/2021	08/14/2021	Parleys Canyon fire
4578-DR-UT	09/07/2020–09/08/2020	01/12/2021	Severe storm, straight-line winds
DR-4548-UT	03/18/2020–04/17/2020	07/09/2020	Earthquake and aftershocks
DR-4525-UT	01/20/2020–05/11/2023	04/04/2020	COVID-19 pandemic
EM-3478-UT	01/20/2020–05/11/2023	03/13/2020	COVID-19
FM-2991-UT	06/29/2012–06/30/2012	06/29/2012	Rose Crest fire
DR-4011-UT	04/18/2011–07/16/2011	08/08/2011	Flooding
FM-2859-UT	09/19/2010	09/19/2010	Machine Gun fire
EM-3223-UT	08/29/2005–10/01/2005	09/05/2005	Hurricane Katrina evacuation
DR-1285-UT	08/11/1999	08/16/1999	Tornado, severe thunderstorms, hail
DR-720-UT	08/17/1974	08/17/1984	Severe storms, mudslides, landslides, flooding
DR-680-UT	04/13/1983	04/30/1983	Severe storms, landslides, flooding

DRAFT

Prioritization of Hazards

Each plan participant completed a Calculated Priority Risk Index (CPRI) based on the following criteria to identify how each plan participant is uniquely at risk of the hazards profiled.

Table 20: Calculated Priority Risk Criteria

Risk Index Factor	Degree of Risk Level		Criteria	Factor Weight for Degree of Risk Level
Probability of Future Events	1	Unlikely	Less than 1 percent probability of occurrence in the next year or a recurrence interval of greater than every 100 years.	30%
	2	Occasional	1 to 10 percent probability of occurrence in the next year or a recurrence interval of 11 to 100 years.	
	3	Likely	11 to 90 percent probability of occurrence in the next year or a recurrence interval of 1 to 10 years.	
	4	Highly Likely	91 to 100 percent probability of occurrence in the next year or a recurrence interval of less than 1 year.	
Spatial Extent	1	Limited	Less than 10% of the planning area could be impacted.	10%
	2	Small	10%–25% of the planning could be impacted	
	3	Significant	25%–50% of the planning area could be impacted.	
	4	Extensive	50%–100% of the planning area could be impacted.	
Severity of Life/Property Impact	1	Negligible	Less than 5% of the affected area's critical and non-critical facilities and structures are damaged/destroyed. Only minor property damage and minimal disruption of life. Temporary shutdown of critical facilities.	30%
	2	Limited	More than 5% and less than 25% percent of property in the affected area is damaged/destroyed. Complete shutdown of critical facilities for more than one day but less than one week.	
	3	Critical	More than 25% and less than 50% of property in the affected area was damaged/destroyed. Complete shutdown of critical facilities for over a week but less than one month.	
	4	Catastrophic	Over 50% of critical and non-critical facilities and infrastructures in the affected area are damaged/destroyed. Complete	

Risk Index Factor	Degree of Risk Level		Criteria	Factor Weight for Degree of Risk Level
			shutdown of critical facilities for more than one month.	
Warning Time	1	Self-defined	More than 24 hours	10%
	2	Self-defined	12 to 24 hours.	
	3	Self-defined	6 to 12 hours.	
	4	Self-defined	Less than 6 hours.	
Duration	1	Brief	Up to 6 hours.	10%
	2	Intermediate	Up to one day.	
	3	Extended	Up to one week.	
	4	Prolonged	More than one week.	
Response Capacity	1	High	Significant resources and capability to respond to this kind of event; staff are trained, experienced, and ready.	10%
	2	Medium	Some resources and capability to respond to this kind of staff; some staff may be trained, experienced, and ready while others may need additional support.	
	3	Low	Limited resources and capability to respond to this kind of event; additional staff or staff training needed.	
	4	None	No resources and capability to respond this kind of event; additional outside support would be required.	

RISK FACTOR (RF) EQUATION

RF Value = [(Probability x 0.30) + (Spatial Extent x 0.10) + (Severity of Life/Property Impact x 0.30) + (Warning Time x 0.10) + (Duration x 0.10) + (Response Capacity x 0.10)]

The Calculated Priority Risk Index for Salt Lake County

The following represents the overall risk of each hazard in Salt Lake County. Those with a risk factor value greater than or equal to 2.5 are considered high risk. Risk factors ranging from 2.0 to 2.4 are considered moderate risk, and those below 2.0 are considered low risk. The highest possible risk factor value is 4.

Table 21: Calculated Priority Risk Index for Salt Lake County

Type of Hazard Event	Probability of Future Events	Spatial Extent	Severity of Life/Property Impact	Warning Time	Duration	Response Capacity	Risk Factor Value
Avalanche	4	1	2	4	2	1	2.6

DRAFT

Type of Hazard Event	Probability of Future Events	Spatial Extent	Severity of Life/Property Impact	Warning Time	Duration	Response Capacity	Risk Factor Value
Drought	4	4	2	1	4	1	2.8
Earthquake	3	4	4	4	3	2	3.4
Extreme Heat	4	4	3	1	3	1	3
Extreme Cold	3	4	2	1	3	1	2.4
Flooding	4	3	3	3	3	1	3.1
Landslide/Slope Failure	2	1	2	4	1	2	2
Radon	4	4	2	1	4	2	2.9
Heavy Rain	4	3	2	3	1	1	2.6
High Wind	4	3	3	3	2	1	3
Lightning	4	2	2	4	1	1	2.6
Severe Winter Weather	4	3	2	2	2	1	2.6
Tornado	2	2	3	4	1	2	2.4
Wildfire	4	3	3	4	3	1	3.2
Dam Failure	2	2	3	2	2	3	2.4
Civil Disturbance	2	1	2	4	2	2	2.1
Cyberattack	2	3	3	4	3	2	2.7
Hazardous Materials Incident (Transportation & Fixed Facility)	3	1	2	4	1	1	2.2
Public Health Epidemic/ Pandemic	3	4	3	1	4	1	2.8
Terrorism	2	1	3	4	2	1	2.3

Vulnerability Assessment

A vulnerability assessment evaluates the assets potentially at risk from the identified hazards, including structures, populations, infrastructure, and other assets in hazard-prone areas. Impacts are the consequences or effects of each hazard on each community's assets and the losses a community may incur in the event of a disaster. Evaluating the assets at risk and potential impacts provides the foundation for determining where hazard mitigation resources are most needed. The FEMA Local Mitigation Planning Handbook provides a framework for conducting a vulnerability assessment.[37]

[37] FEMA. "Local Mitigation Planning Handbook." May 2023. https://www.fema.gov/sites/default/files/documents/fema_local-mitigation-planning-handbook_052023.pdf.

ASSET IDENTIFICATION

The vulnerability assessment relied on asset data from the county to provide a measure of the potential impacts of hazards on community assets. Assets refer to people, critical facilities, infrastructure, or other resources of value in the county and cities. When local data were unavailable, state or federal sources were consulted. Geospatial data are indispensable in determining which assets might be exposed to specific hazards. Geospatial analysis can be conducted by overlaying the community's assets on a map of the spatial extent of a natural hazard to determine areas of exposure and potential losses. For hazards without a defined spatial extent, maps of past occurrences can provide a reference for general risk in the county.

COMMUNITY LIFELINES

Lifelines are essential services in a community that, when maintained, allows all other aspects of society to function effectively. Community lifelines are essential for the well-being of any community, providing support and assistance to individuals who need help, especially during times of crisis. FEMA Community Lifelines are a critical component of emergency management in the United States. These lifelines are designed to address the essential needs of a community during and after a disaster. Community Lifelines help create a sense of safety and security in a community. They provide a safety net for individuals who may be struggling and offer comfort and reassurance that help is available when needed. Without these lifelines, communities would be significantly more vulnerable to crises and emergencies. There are eight lifelines, each with a specific focus.

Figure 32: FEMA Community Lifelines[38]

LOSS ESTIMATES

Hazus is a standardized risk modeling tool that estimates potential damage, economic losses, and other impacts from earthquakes, floods, tsunamis, and hurricanes. Hazus software relies on Esri's ArcGIS for Desktop technology. It includes nationwide datasets for general building stock, critical facilities,

[38] FEMA. "Community Lifelines." https://www.fema.gov/emergency-managers/practitioners/lifelines.

transportation, and other infrastructure data. The models estimate the potential damage to various assets based on a defined hazard scenario.

For this plan update, Hazus 6.1 was used to model 100-year (1% annual chance) and 500-year (0.2% annual chance) flood scenarios and an earthquake scenario based on a USGS ShakeMap scenario of a 6.2 magnitude earthquake on the Warm Springs Fault. Salt Lake County Division of Emergency Management (SLCo EM) provided GIS data for critical facilities, including 68 fire stations, 36 police stations, 16 hospitals, 18 emergency operations centers (EOCs), 218 county facilities, and 422 schools. These locations are shown in Figure 33–Figure 38. For the Hazus models of earthquake and flood scenarios, data on the county critical facilities were used to augment the default Hazus facility data. Other economic, transportation, utility, and building loss estimates were based on the default inventory data from Hazus 6.1.

DRAFT

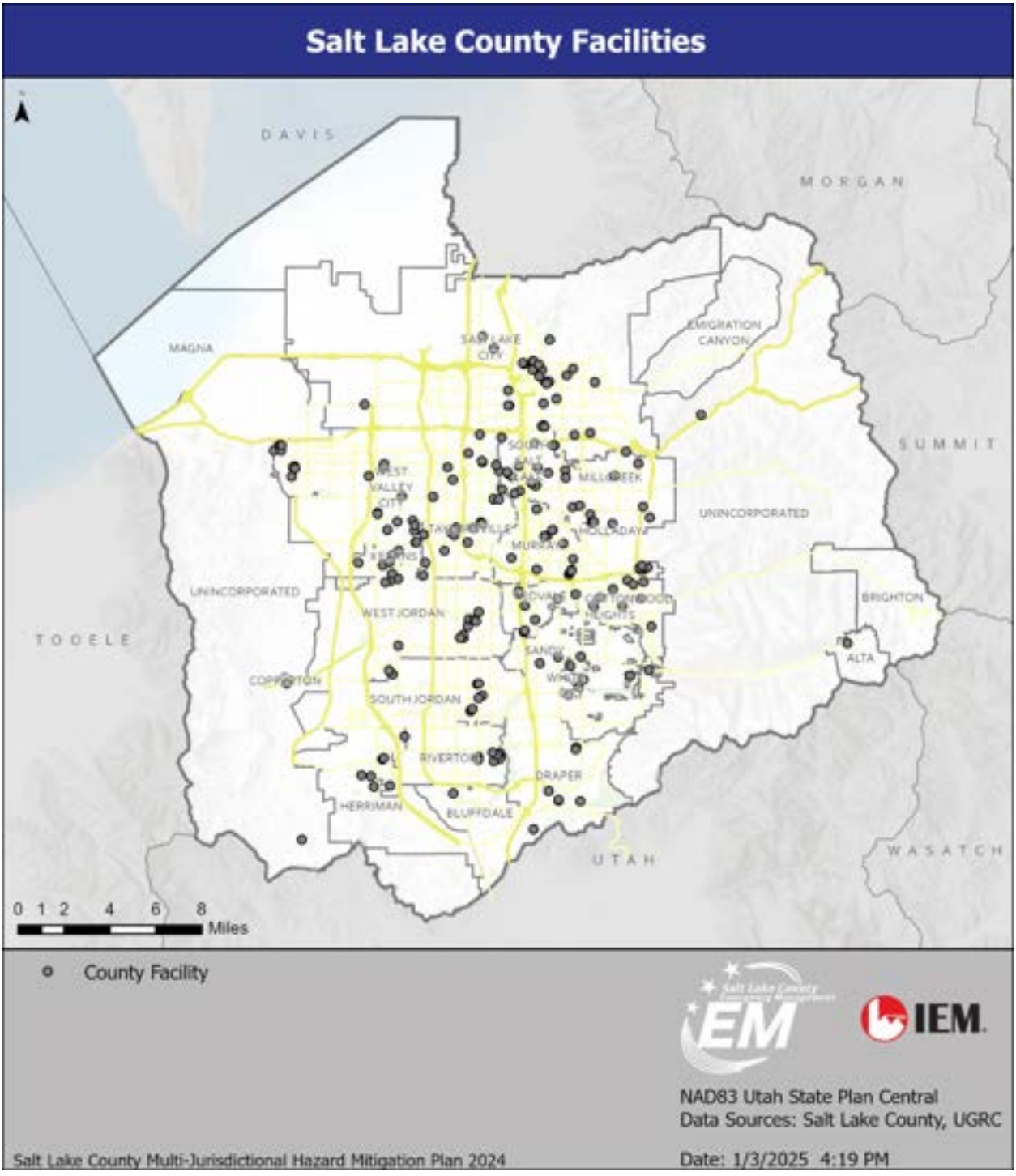


Figure 33: Salt Lake County Facilities

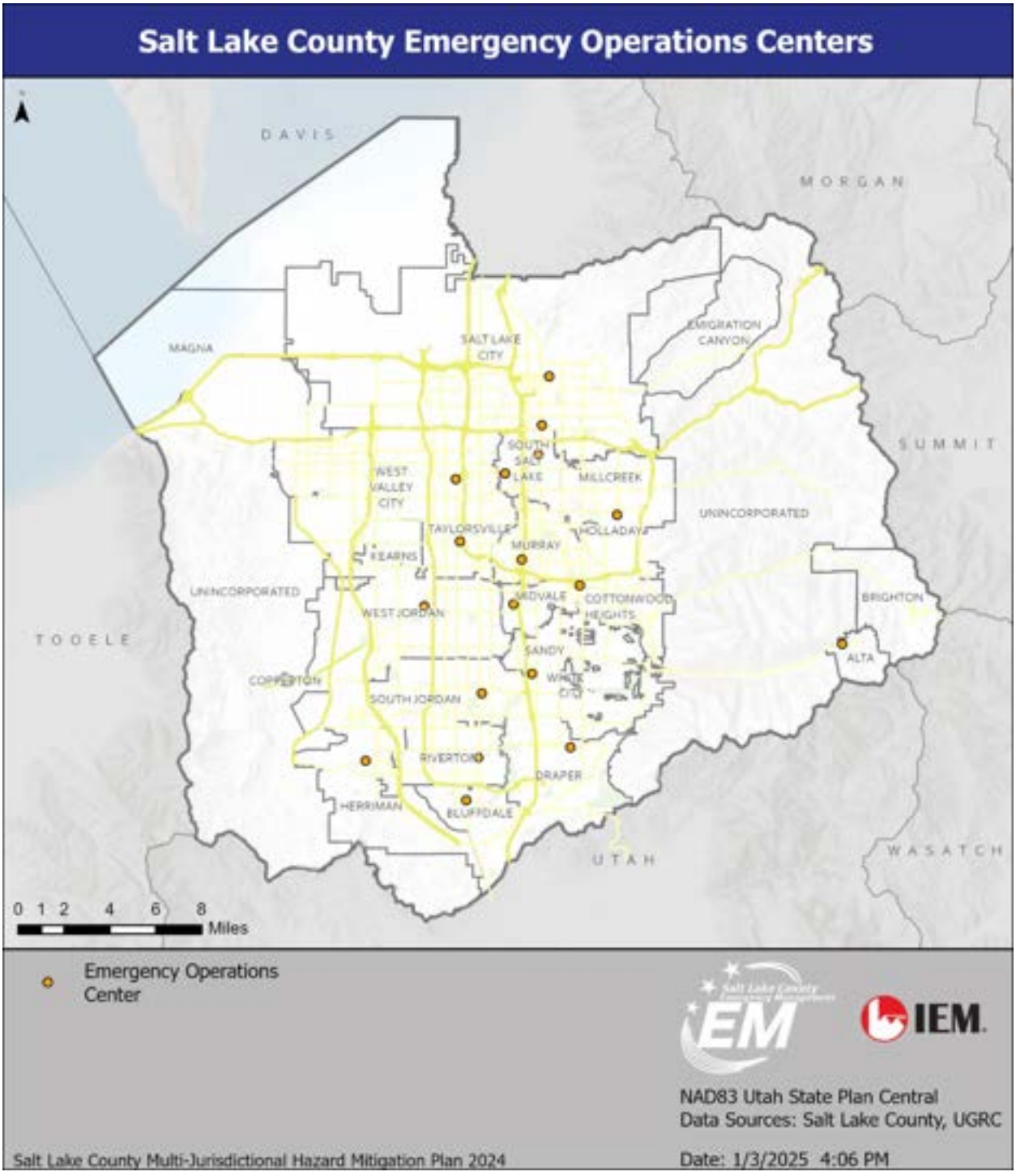


Figure 34: Emergency Operations Centers in Salt Lake County

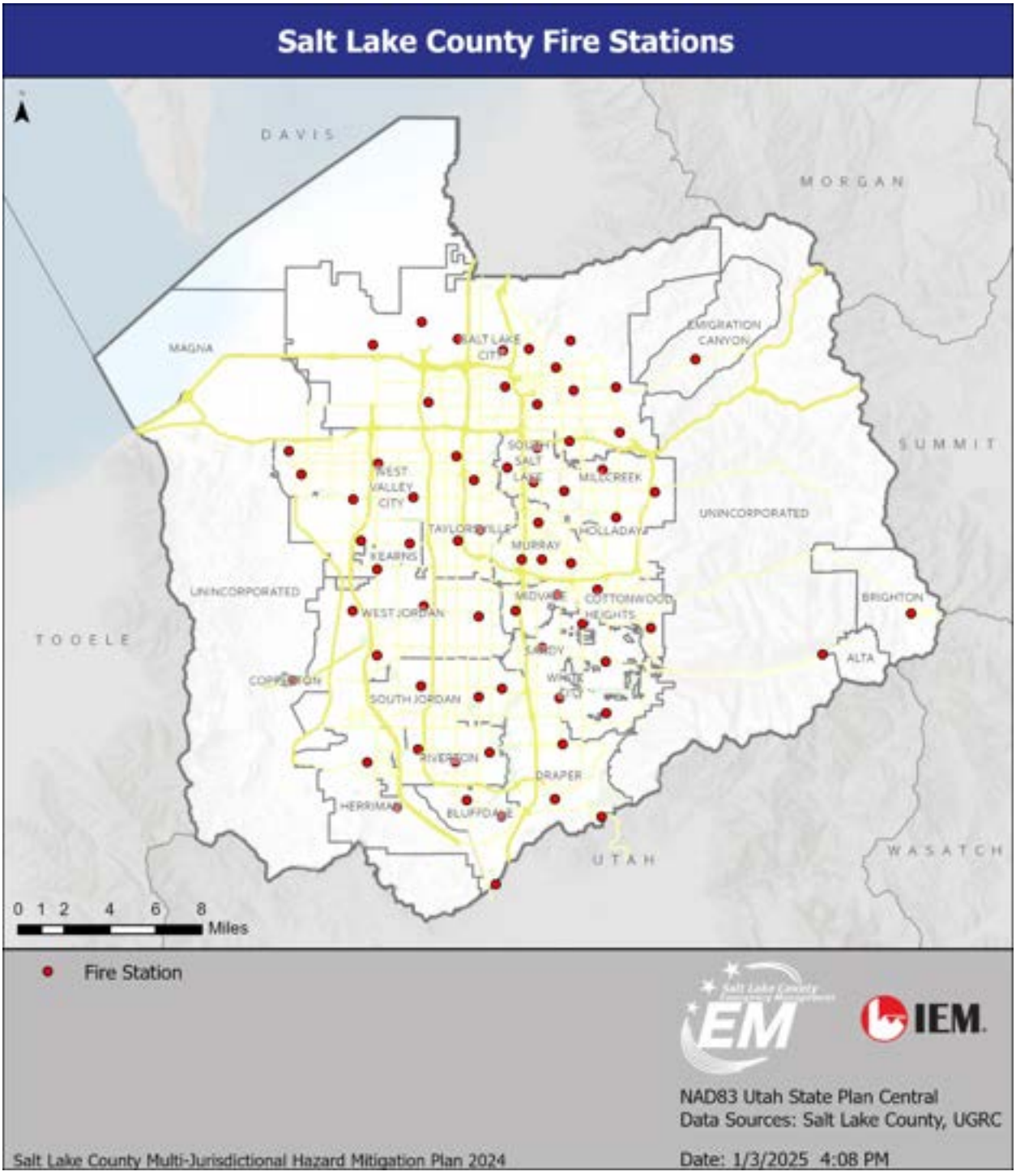


Figure 35: Fire Stations in Salt Lake County

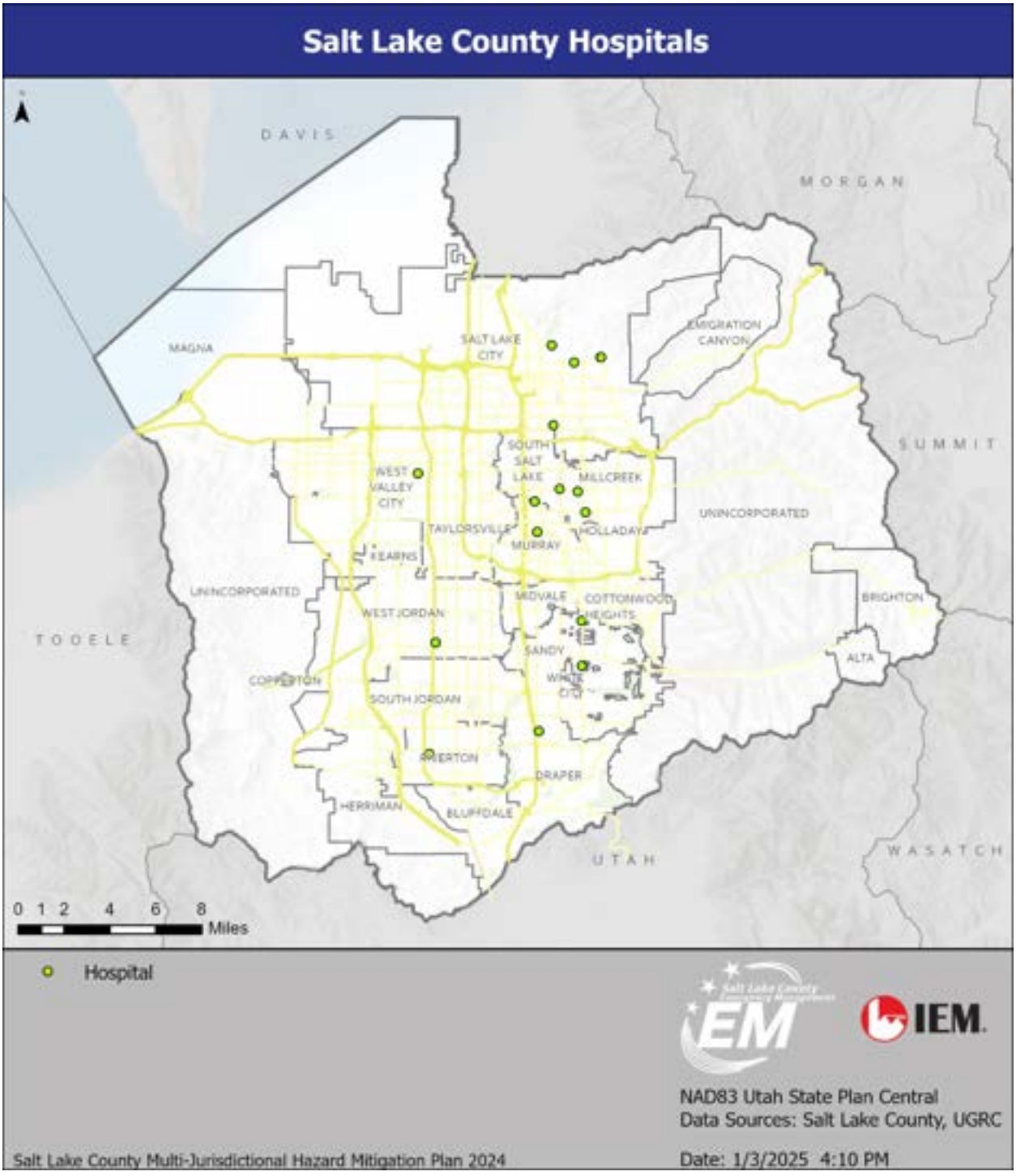


Figure 36: Hospitals in Salt Lake County

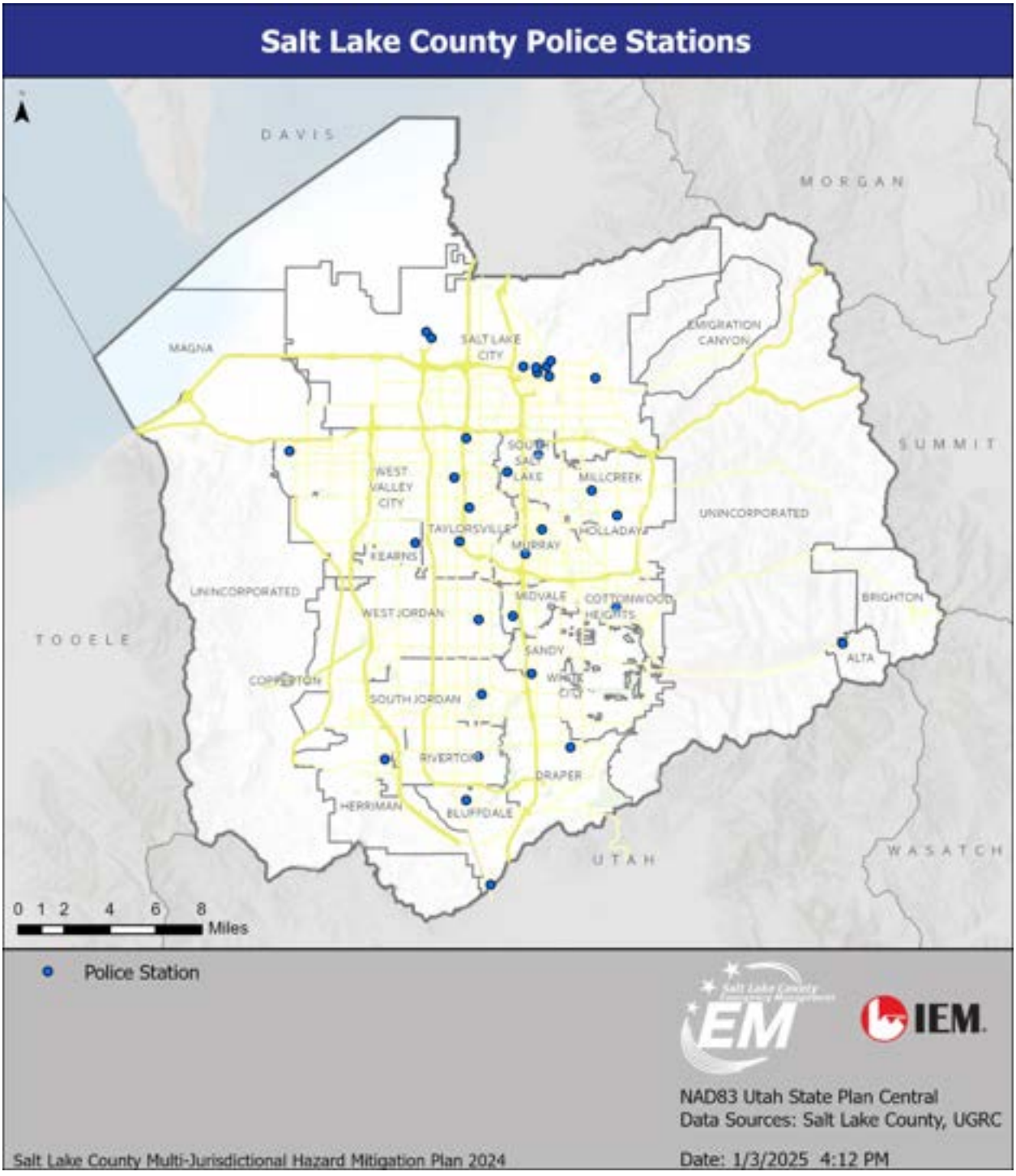


Figure 37: Police Stations in Salt Lake County

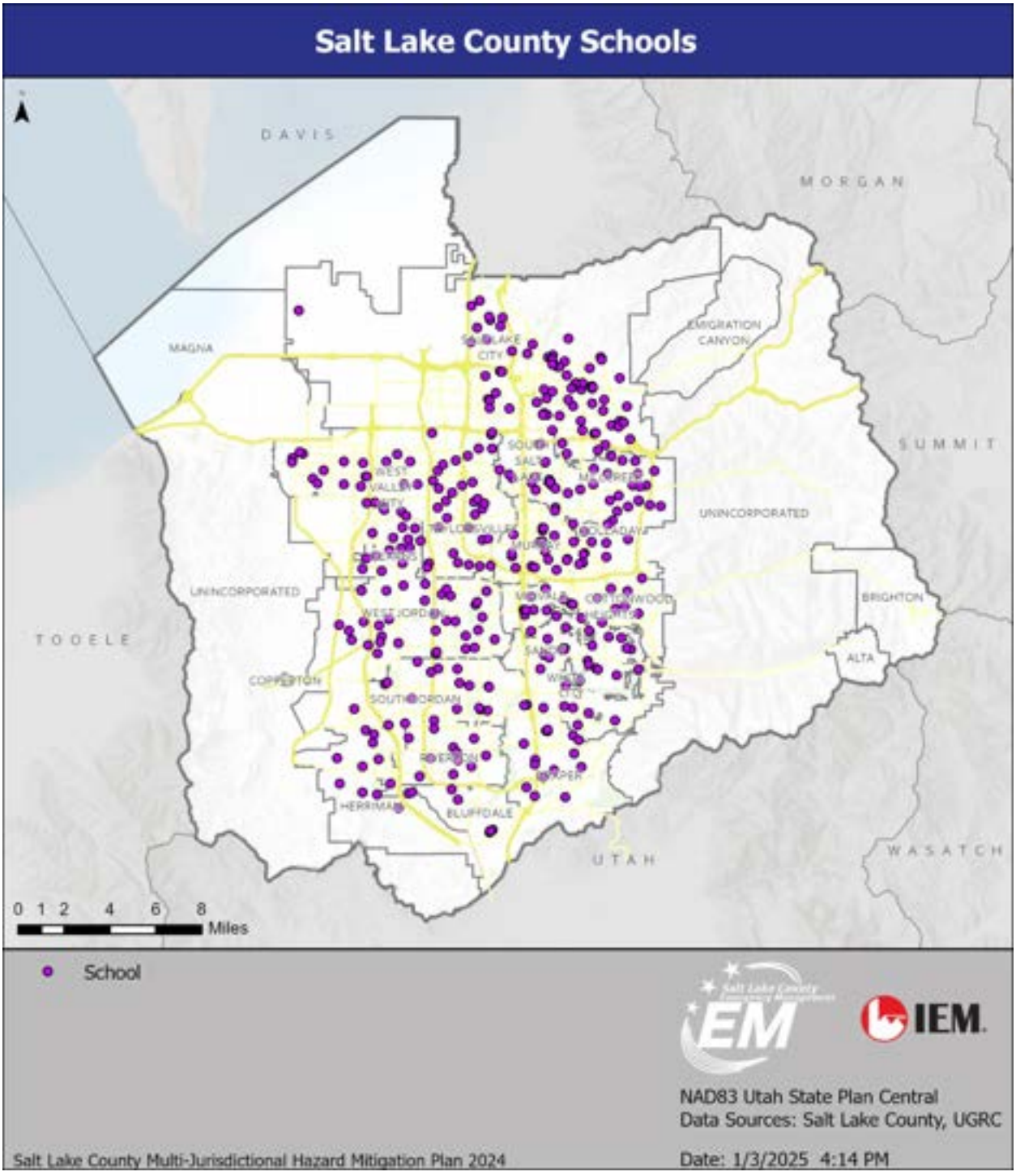


Figure 38: Schools in Salt Lake County

NATIONAL RISK INDEX

The National Risk Index (NRI) is an online dataset developed by FEMA and its partners that defines a baseline understanding of risk of all communities across the United States. This interactive online tool can compare risks across the countywide planning area with the rest of the United States regarding expected annual loss, social vulnerability, and community resilience. Figure 39 illustrates how these three factors contribute to a composite score. The data for each hazard are pulled from different datasets. Dollars are in terms of 2022 dollars. Images in each hazard profile are screen captures taken directly from the NRI.

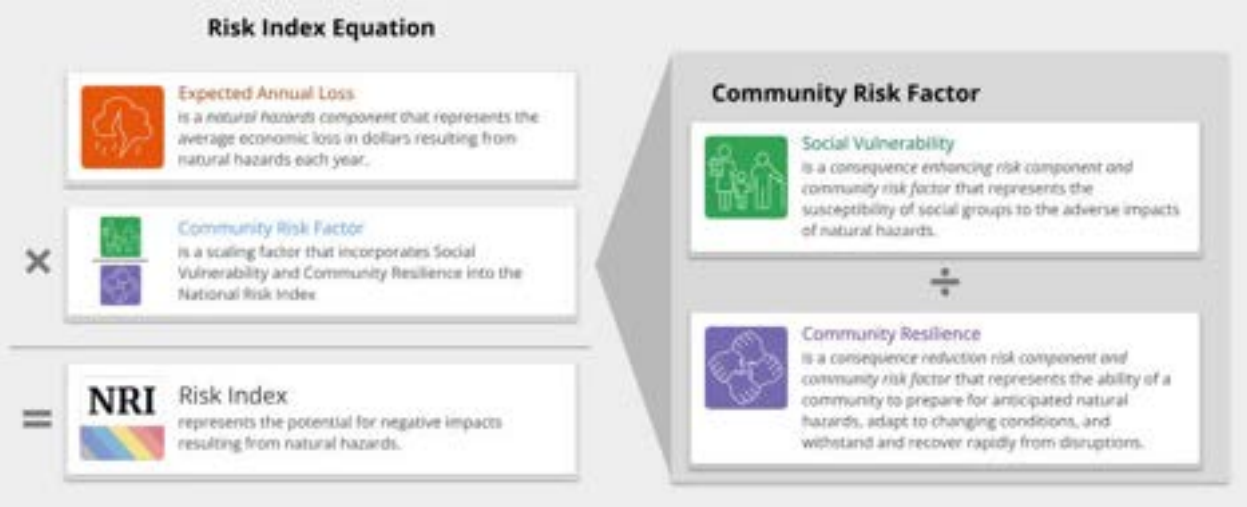


Figure 39: FEMA National Risk Index Equation

Ratings are described using qualitative terms ranging from "Very Low" to "Very High." No specific numeric values determine the rating, as scores are relative.[39] The following defines the NRI categories at a national level:

- **Very High:** 80th to 100th percentiles
- **Relatively High:** 60th to 80th percentiles
- **Relatively Moderate:** 40th to 60th percentiles
- **Relatively Low:** 20th to 40th percentiles
- **Very Low:** 0 to 20th percentiles

Ratings do not always reflect the local experience, including Salt Lake County. However, this tool can serve as a baseline to understand risk and see how risks in Salt Lake County differ from those in the rest of the United States.

Vulnerable Populations

Some social groups are more susceptible to the impacts of natural hazards, which affects their capacity to prepare for, respond to, and recover from hazard events. Historically, people in these groups have

[39] FEMA, National Risk Index. "Determining Risk." https://hazards.fema.gov/nri/determining-risk.

experienced disproportionate losses or economic impacts, disruption of livelihood, injuries, or death. Characteristics of socially vulnerable groups might include age, gender, income, race, ethnicity, language, or disabilities. For each hazard, care was given to identify populations that might be more susceptible to the effects of that hazard.

Several tools were referenced to help identify socially vulnerable populations in Salt Lake County. Social vulnerability is included in the NRI overall risk rating equation. This is based on the Social Vulnerability Index (SVI) from the Centers for Disease Control and Prevention (CDC). The SVI is a place-based index, database, and mapping application that provides a reference for understanding which areas are most likely to experience social vulnerability. It uses 16 variables from the U.S. Census 5-year American Community Survey to identify communities needing additional support. These are grouped into four themes and combined into a single measure of overall vulnerability, as shown in Figure 40.[40] The maps in Figure 41–Figure 45 show the areas in Salt Lake County with high percentages of socially vulnerable populations based on the four themes.

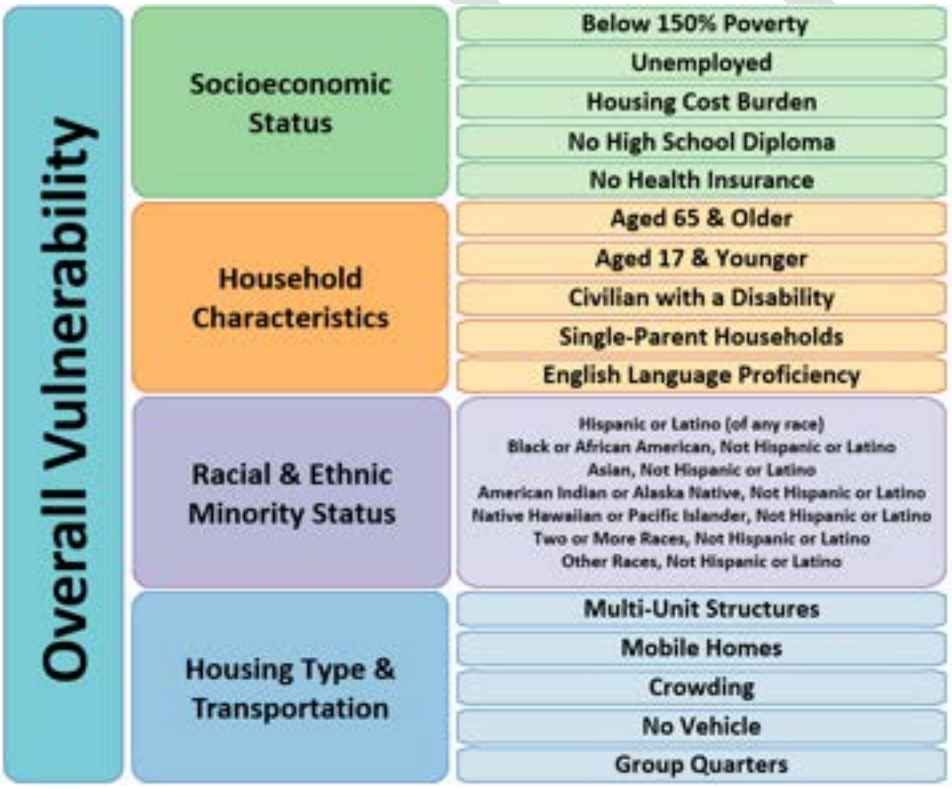


Figure 40: Themes and Variables in the Social Vulnerability Index

[40] CDC/ATSDR. "Social Vulnerability Index." 2022. https://www.atsdr.cdc.gov/place-health/php/svi/index.html.

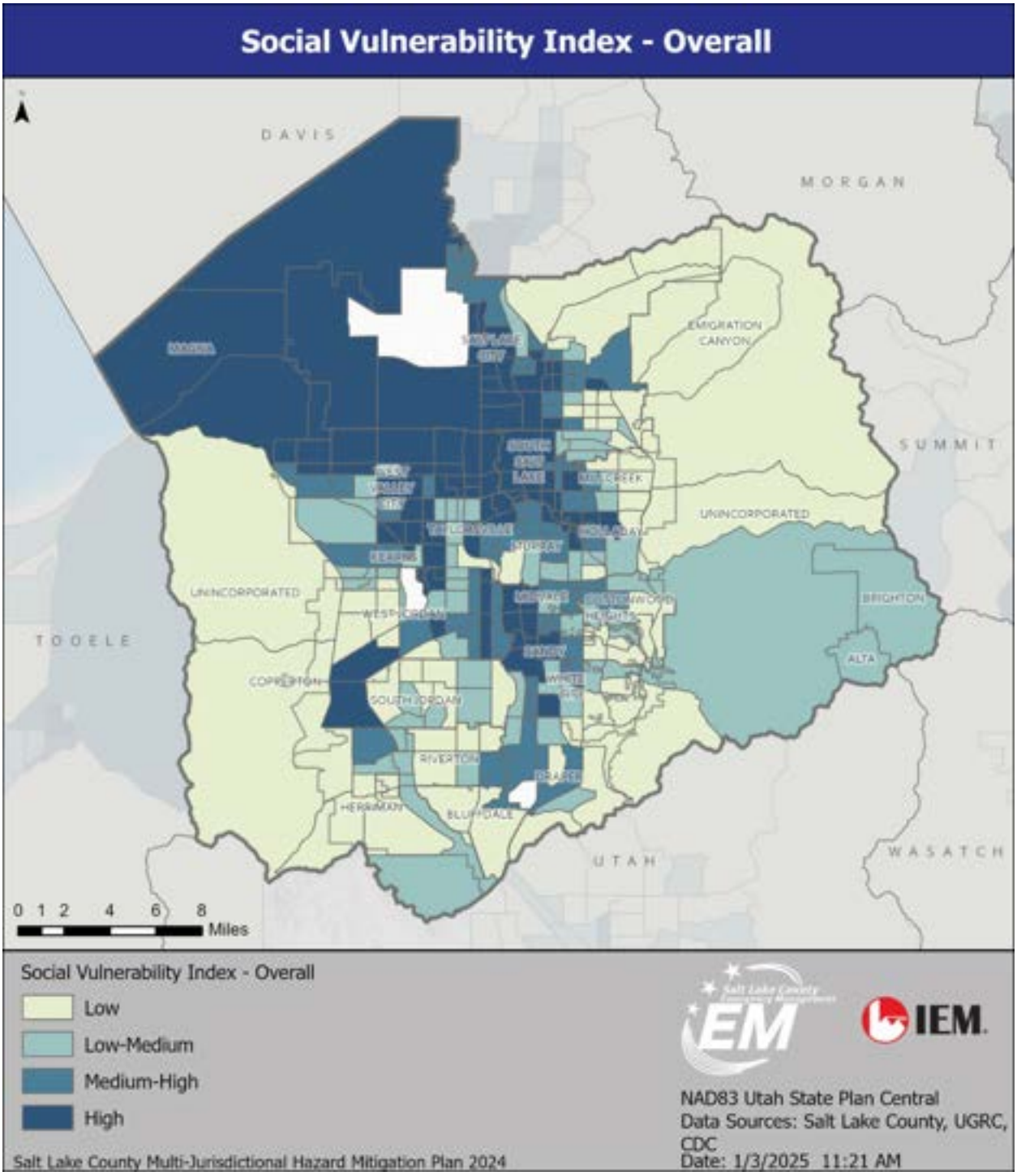


Figure 41: SVI – Overall Vulnerability Score by Census Tract for Salt Lake County

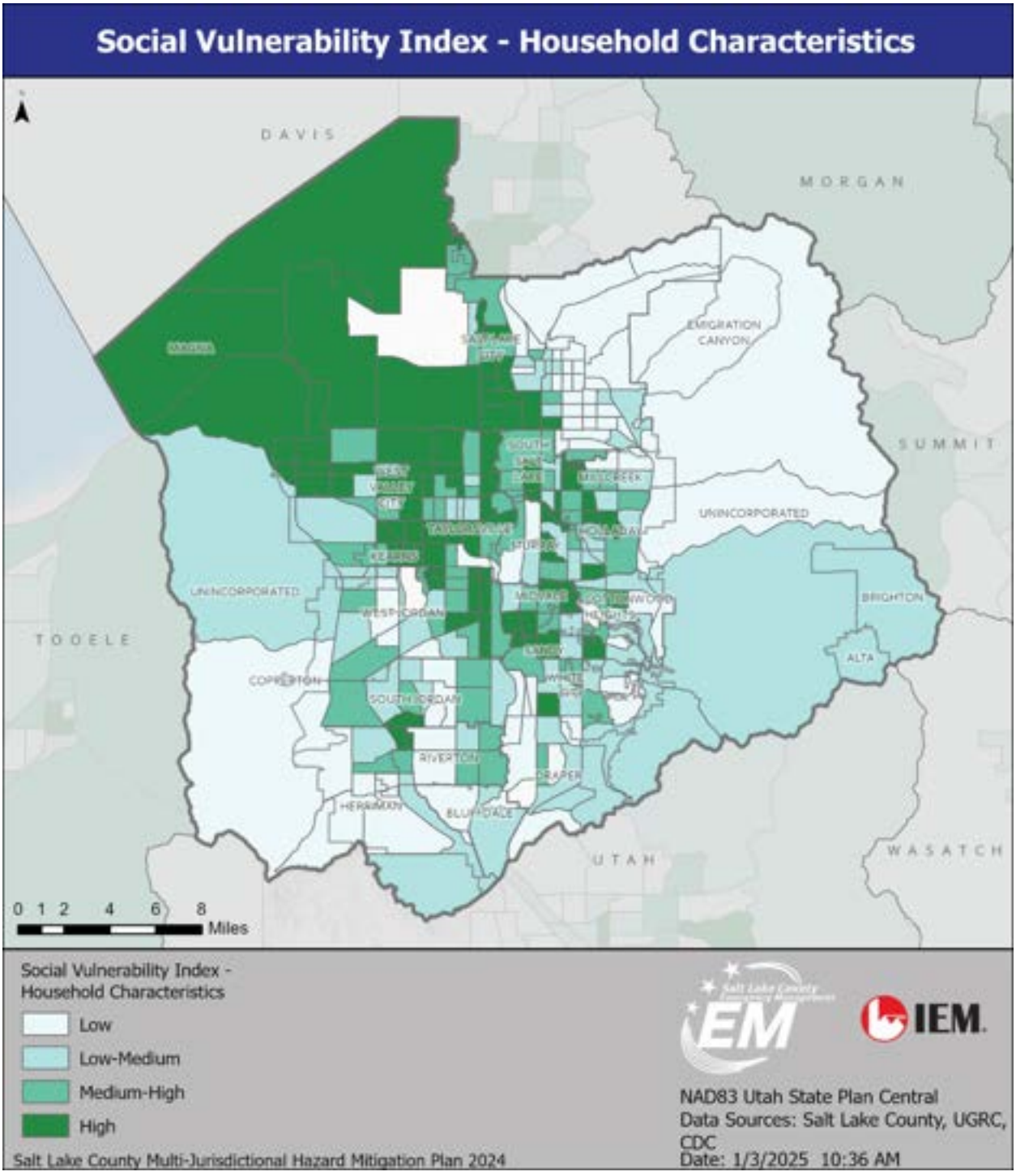


Figure 42: SVI – Household Characteristics by Census Tract for Salt Lake County

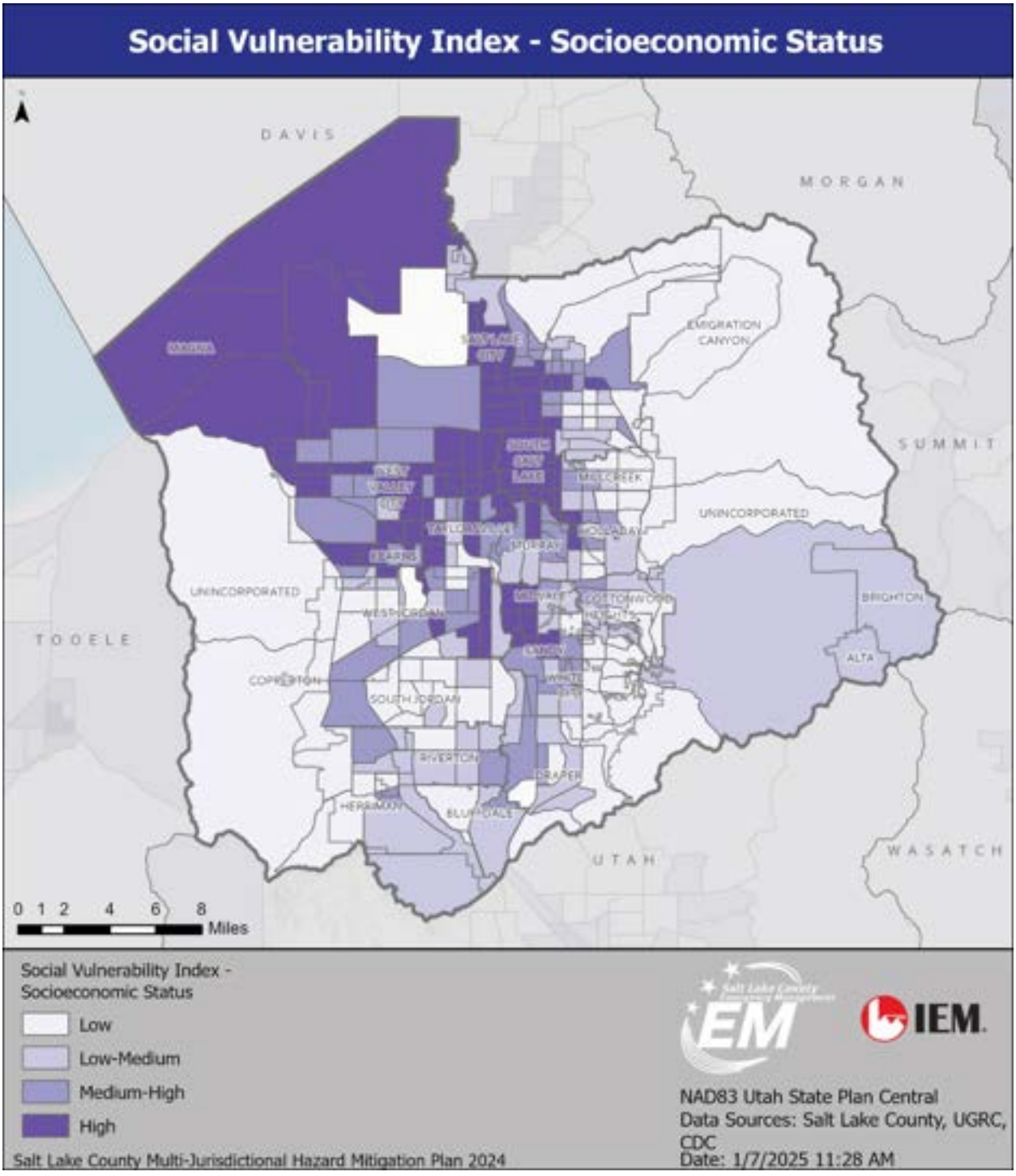


Figure 43: SVI – Socioeconomic Status by Census Tract for Salt Lake County

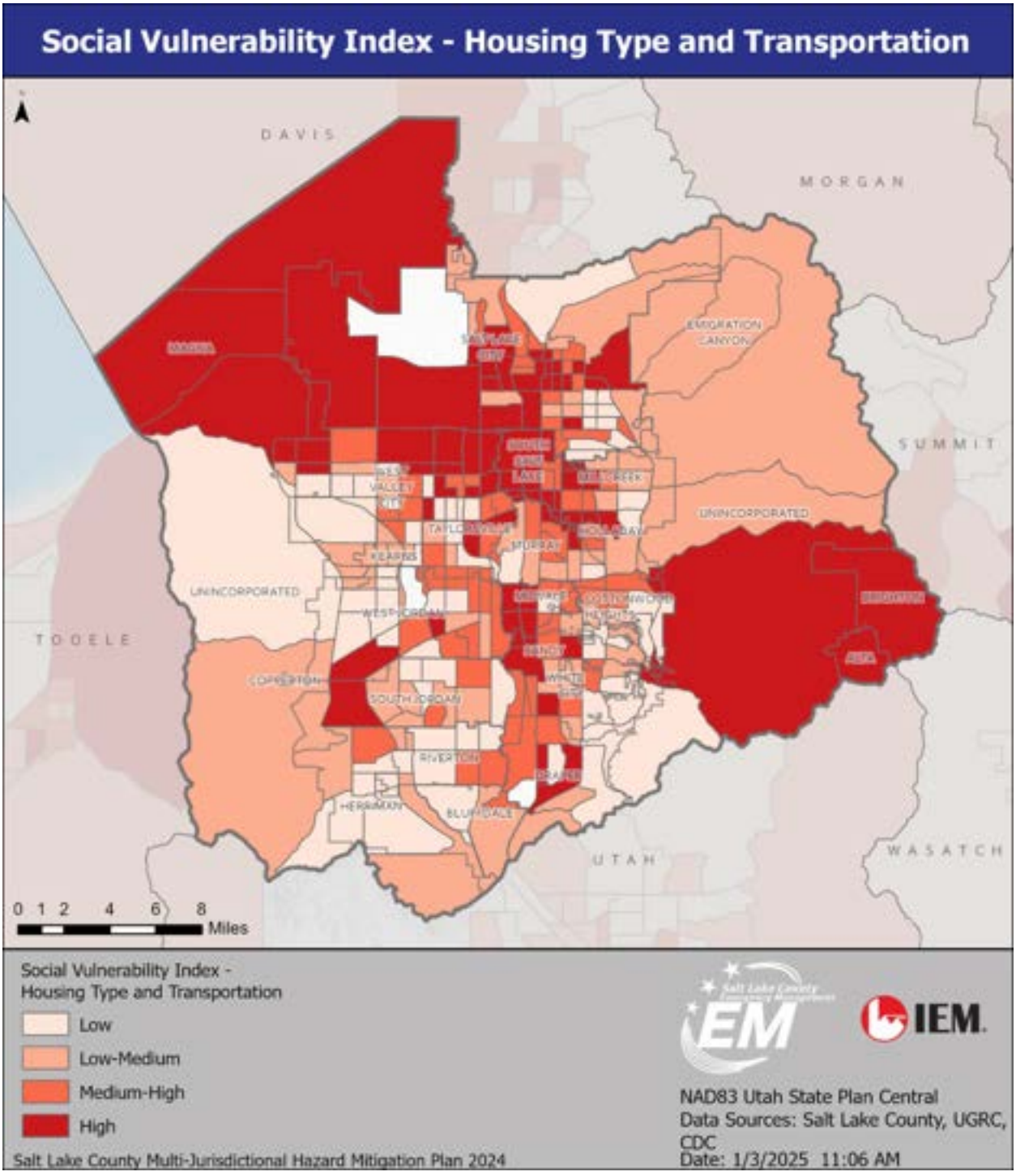


Figure 44: SVI – Housing Type and Transportation by Census Tract for Salt Lake County

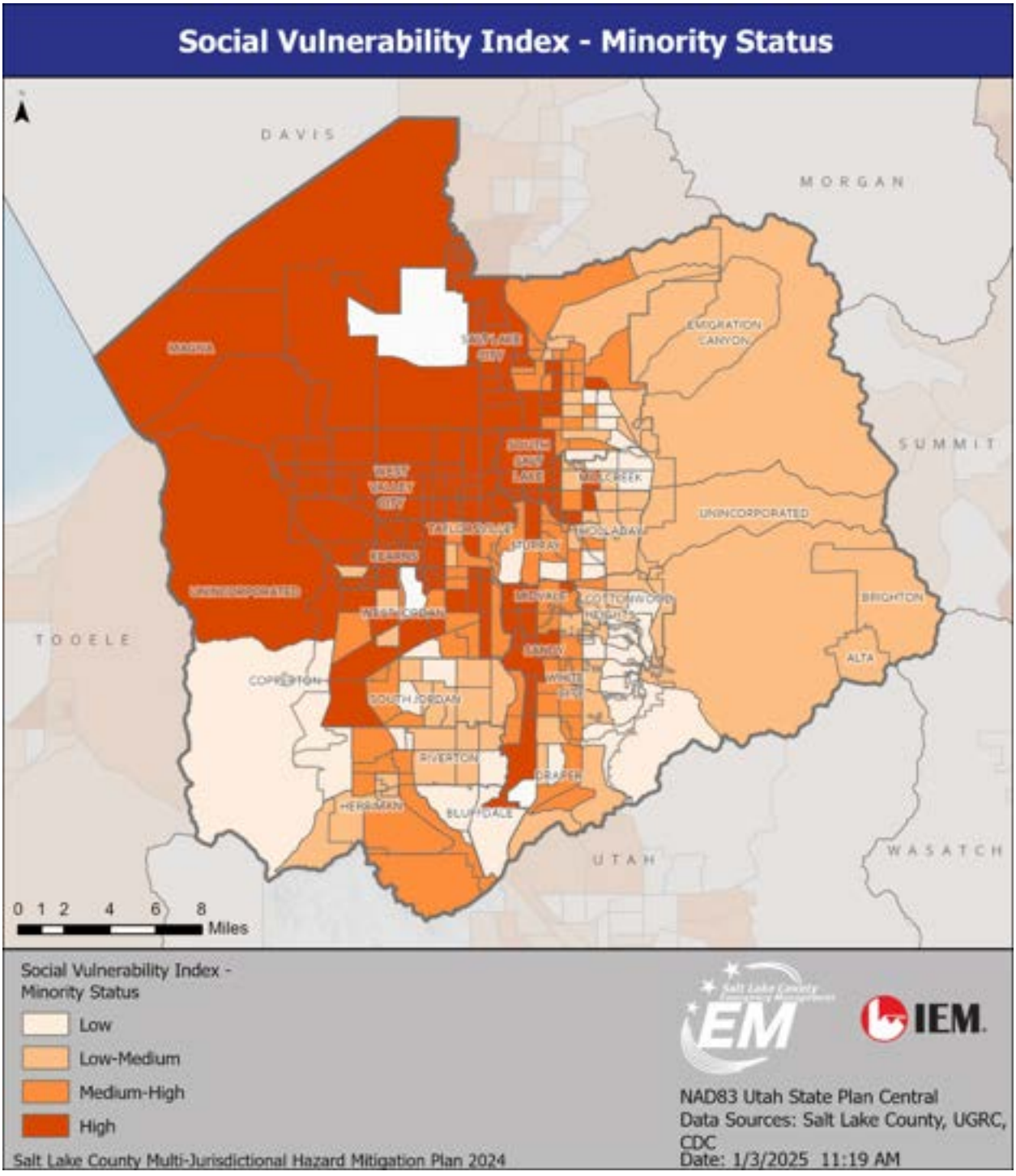


Figure 45: SVI – Minority Status by Census Tract for Salt Lake County

The Climate and Economic Justice Screening Tool is another method for identifying vulnerable populations. This interactive mapping tool identifies overburdened and underserved census tracts that are considered disadvantaged. Tracts that meet one or more categories of burden and the associated socioeconomic threshold are identified as disadvantaged. Figure 46 shows disadvantaged tracts in Salt Lake County.

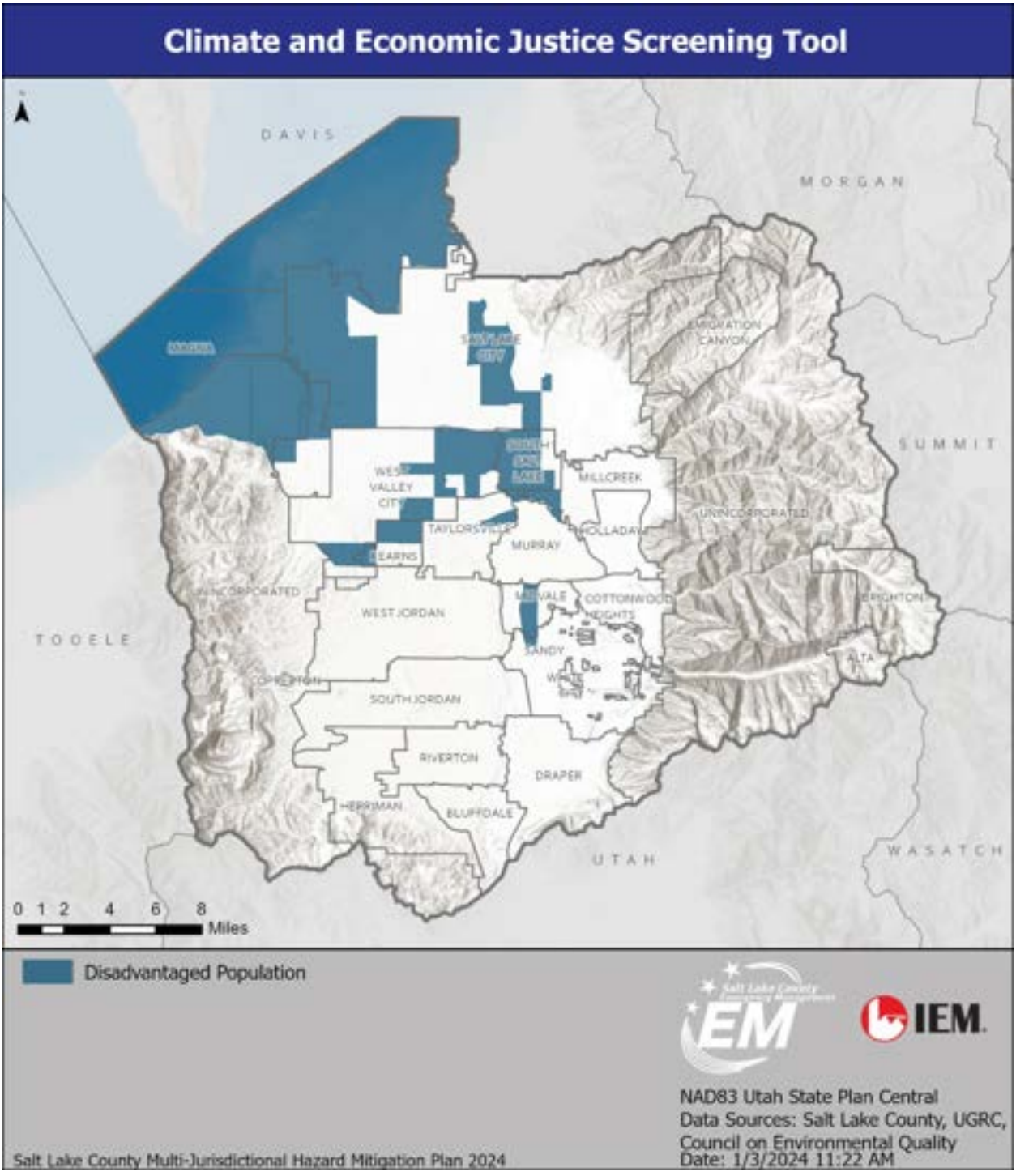


Figure 46: Disadvantaged Populations by Census Tract in Salt Lake County[41]

Indicators of disadvantaged status in one or more census tracts in Salt Lake County include the following:

[41] As determined by the Climate and Economic Justice Screening Tool, https://www.arcgis.com/home/item.html?id=b82df3b058204ccea64619efcd8065d2#.

- Projected wildfire risk
- Projected flood risk
- Expected population loss rate from natural hazards
- Asthma
- Low life expectancy
- Formerly used defense sites
- Proximity to hazardous waste facilities
- Proximity to risk management plan facilities
- Proximity to Superfund sites
- Underground storage tanks and releases
- Toxic concentrations in wastewater discharge
- Diesel particulate matter exposure
- Traffic proximity and volume
- Historic underinvestment in home loans
- Housing cost
- Lack of green space
- Homes containing lead paint
- Linguistic isolation
- Percentage of people with less than a high school diploma
- Low median income (comparison of median income in the tract to median incomes in the area)
- Low income (household income is less than or equal to twice the federal poverty level)

DRAFT

Avalanche

Hazard Description

A snow avalanche is the rapid downslope movement of a mass of snow, ice, and debris. Snow avalanches occur in the mountains of Utah during the winter and spring due to snow accumulation and unstable snowpack conditions. Avalanches can be extremely destructive due to the forceful energy of rapidly moving snow and debris and the resulting burial of areas in run-out zones. Avalanches can damage property, interrupt communication, and block transportation routes and streams. They often lead to injury and death, causing more fatalities than any other natural hazard in Utah. Over the past 25 years, an average of four people have been killed by avalanches in the state each year.

Although most avalanches occur in undeveloped areas, recreational endeavors—hiking, hunting, mountain climbing, skiing, snowboarding, snowmobiling, and other wintertime activities—bring the population into avalanche-prone areas. Due to the immense popularity of these activities, avalanches are actively mitigated in well-traveled areas. People venturing into the backcountry are at higher risk. Homes and businesses along the foothills and in mountain areas have been damaged by avalanches. Avalanches can occur naturally or be triggered artificially by explosives or people, such as snowmobilers, backcountry skiers, or other outdoor recreationists. The weather and terrain are two main natural factors that affect avalanche activity.

Weather events create a layered snowpack. When strong layers or slabs of snow form on top of weak layers, the snowpack can become unstable. The amount of snow, accumulation rate, wind speed, direction, moisture content, and snow crystal type all contribute to snowpack stability conditions. Most natural avalanches occur during or within 24 hours after a storm. In Utah, the avalanche potential is greatest from December through April.

Terrain factors affecting avalanches include slope angle, elevation, aspect, shape, and roughness. The slope angle is the primary factor influencing avalanche probability, with most occurring between 30 and 45 degrees (the optimum angles). The elevation and aspect dictate the depth, temperature, and moisture characteristics of the snowpack. The slope shape and roughness contribute to stability. For example, bowl-shaped slopes are more prone to avalanches than ridges. Boulders, shrubs, and trees contribute to the roughness of the slope and provide some stability.

Types of avalanches include wet and dry slab. Wet-slab avalanches occur most often on south-facing slopes in warming conditions. Dry slab avalanches occur mostly on north-facing slopes in mid-winter. Wind can accelerate snow deposition, leading to larger or more frequent avalanches. The two primary factors impacting avalanche activity are weather and terrain. Large, frequent storms deposit snow on steep slopes, creating avalanche hazards. Other factors that contribute to slope stability are the amount of snow, accumulation rate, moisture content, wind speed and direction, and type of snow crystals.

Avalanche paths may not experience a serious avalanche for years or even decades, but the potential remains, especially during above-average snowfall years. In Utah, 100 avalanche deaths occurred from 1958 to 2022. By comparison, there have been 61 deaths from lightning since 1950.

Topography also plays a vital role in avalanche dynamics. As shown in Figure 47 and as reported by the Utah Avalanche Center (UAC), slope angles between 30 and 45 degrees are optimal for avalanches. The risk of avalanches declines on slope angles below 30 degrees. At 50 or more degrees, they tend to produce sluff or loose snow avalanches that account for only a small percentage of avalanche deaths and property damage annually.[42]

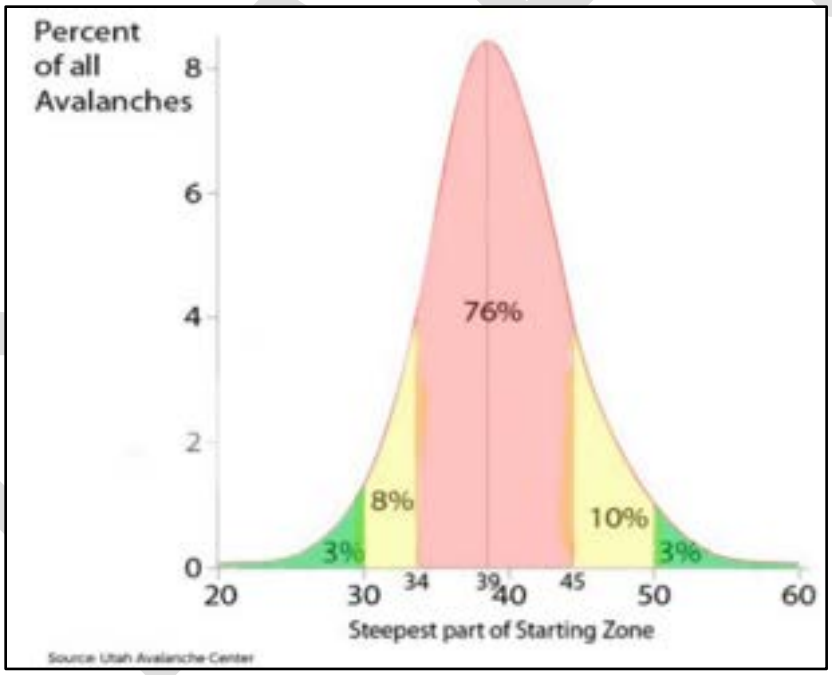


Figure 47: Factors Impacting Avalanche Activity[43]

[42] Ibid.
[43] Utah Avalanche Center, Utah Hazard Mitigation Plan. “Avalanche.” 2024. https://hazards.utah.gov/avalanche/.

Hazard Profile

Potential Impact		Catastrophic	**Probability**	X	Highly Likely
		Critical			Likely
	X	Limited			Occasional
		Negligible			Unlikely
Location	Occur in localized areas in canyons and foothills, primarily in the canyons of the Wasatch Mountains				
Seasonal Conditions	Winter, spring				
Conditions	Vary based on weather conditions, slope, aspect, and landform				
Duration	Initial impact seconds, possibly days, if avalanche impacts roads or structures				
Secondary Hazards	Traffic restrictions and limited access to and from canyon communities could disrupt emergency services in the canyon, mutual aid response to or from the canyon, or EMS transport out of the canyon				
Analysis Used	National Weather Service, Utah Avalanche Center, Utah Division of Emergency Management, local input, and review of historic events and scientific records				

Magnitude/Extent

Internationally, there is no standard method of evaluating avalanche size and magnitude. Different scales that have been proposed use various measures, such as the volume of snow transported relative to the avalanche path, potential or kinetic energy, deposit depth, or measures of other observable factors, such as the mass of the avalanche or water content of the debris.

Although all avalanche classification systems developed thus far have drawbacks, the Canadian system provides a compromise among the alternatives and is a practical tool for communication among most parties regarding avalanche magnitude.

Table 22: Canadian Snow Avalanche Size Classification System and Typical Factors[44]

Size	Description	Typical Mass (Tons "t")	Typical Path Length (Meters "m")	Typical Impact Pressure (Kilo-pascals "kPa")
5	Largest snow avalanches known; could destroy a village or a forest of 40 hectares	10^5	3000	1000
4	Could destroy a railway car, large truck, several buildings, or a forest with an area of up to 4 hectares (40,000 m^2)	10^4	2000	500
3	Could bury a car, destroy a small building, or break a few trees	10^3	1000	100
2	Could bury, injure, or kill a person	10^2	100	10

[44] Canadian Snow and Avalanche Center. "Snow and Avalanche Glossary." 2023. https://www.avalanche-center.org/Education/glossary/avalanche-size.php.

Size	Description	Typical Mass (Tons "t")	Typical Path Length (Meters "m")	Typical Impact Pressure (Kilo-pascals "kPa")
1	Relatively harmless to people	<10	10	1

The North American Public Avalanche Danger Scale is another tool forecasters use to communicate the potential for avalanches to cause harm or injury to backcountry travelers.

Table 23: North American Public Avalanche Danger Scale[45]

Danger Level	Travel Advice	Likelihood of Avalanche	Avalanche Size and Distribution
5 – Extreme	**Extraordinarily dangerous conditions.** Avoid all avalanche terrain.	Natural and human-triggered avalanches certain.	Very large avalanches in many areas.
4 – High	**Very dangerous avalanche conditions.** Travel in avalanche terrain not recommended.	Natural avalanches likely; human-triggered avalanches very likely.	Large avalanches in many areas, or very large avalanches in specific areas.
3 – Considerable	**Dangerous avalanche conditions.** Careful snowpack evaluation, cautious route-finding, and conservative decision-making is essential.	Natural avalanches possible; human-triggered avalanches likely.	Small avalanches in many areas; or large avalanches in specific areas; or very large avalanches in isolated areas.
2 – Moderate	**Heightened avalanche conditions on specific terrain features.** Evaluate snow and terrain carefully; identify features of concern.	Natural avalanches unlikely; human-triggered avalanches possible.	Small avalanches in specific areas or large avalanches in isolated areas.
1 – Low	**Generally safe avalanche conditions.** Watch for unstable snow on isolated terrain features.	Natural and human-triggered avalanches unlikely.	Small avalanches in isolated areas or extreme terrain.

The UAC forecasts include the overall danger rating using the scale in Table 23 and a "Danger Rose" (Figure 48), which provides additional information on avalanche danger based on aspect and elevation. This tool is used to inform the public, particularly outdoor recreationists, regarding avalanche danger.

[45] Avalanche.org. "North American Public Avalanche Danger Scale." 2010. https://avalanche.org/wp-content/uploads/2018/08/10_ISSW_Statham_etal_DangerScale.pdf.

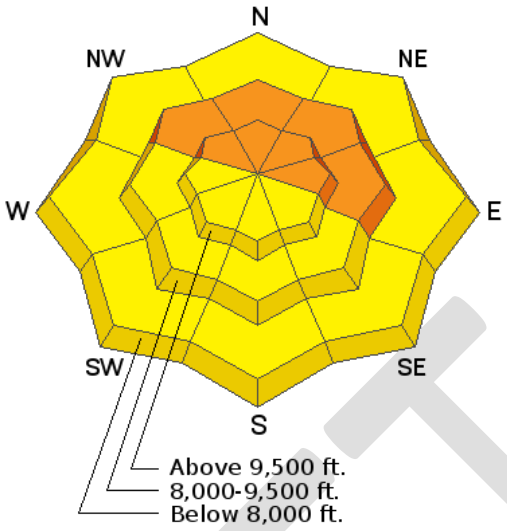


Figure 48: Avalanche Danger Rose[46]

Location

The risk of avalanches in Salt Lake County exists primarily in the Wasatch Range mountains—due to their high use for recreation and increasing development—although avalanches occur throughout Utah's mountainous areas. Avalanche risk in Salt Lake County is centered around the Big and Little Cottonwood Canyons. The town of Alta and the town of Brighton are especially at risk from the impacts of avalanches. The following maps from the UAC show the locations of known avalanche paths (Figure 49), and all reported avalanche events from 2009 to 2024 and the locations of all reported avalanche fatalities in the Salt Lake County Region (Figure 50).

DRAFT

[46] Utah Avalanche Center. "Danger Rose Tutorial." https://utahavalanchecenter.org/danger-rose-tutorial#:~:text=Avalanche%20Danger%20Rose%20We%20designed,make%20it%20easier%20to%20visualize.

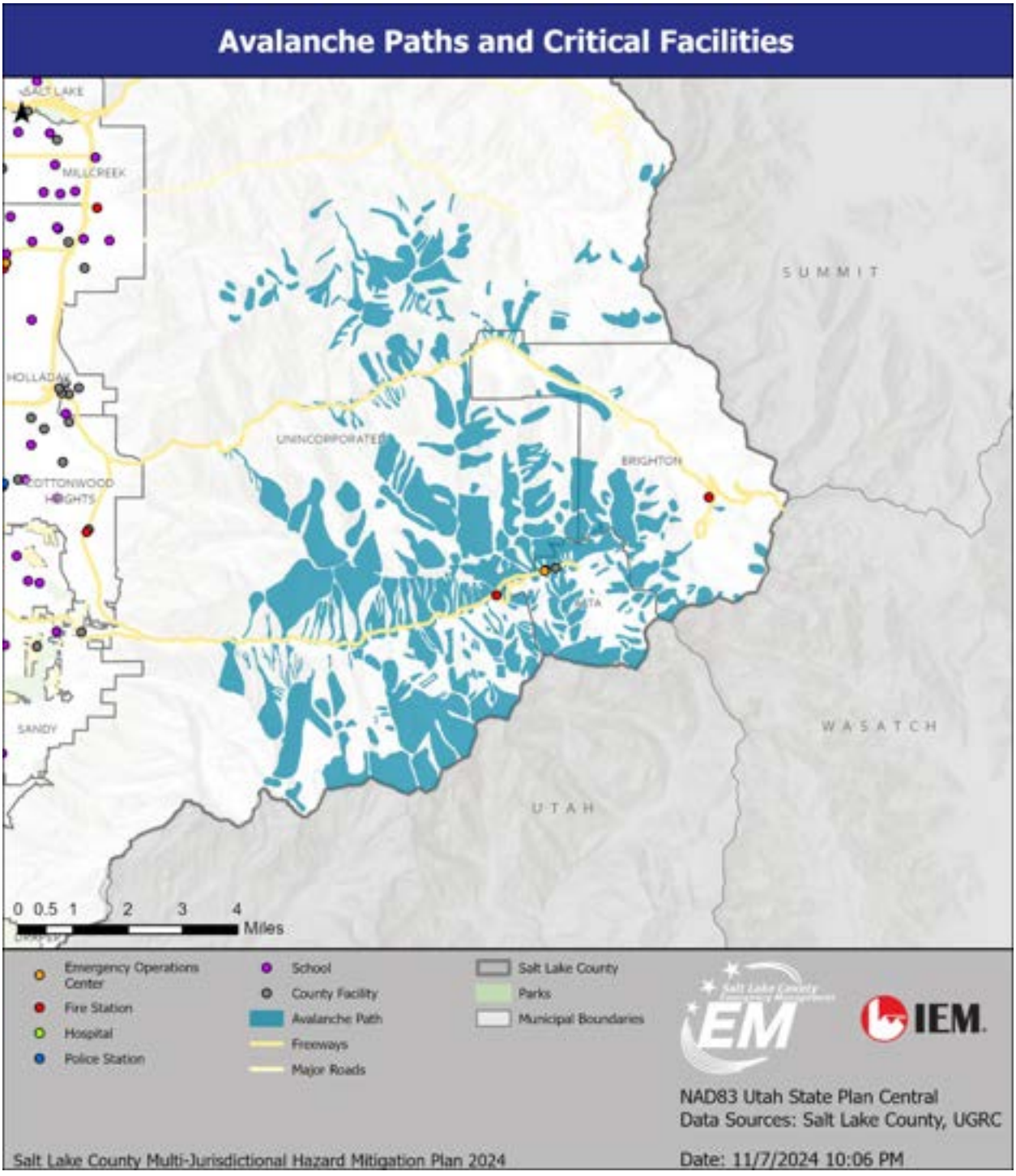


Figure 49: Historical Avalanche Paths in Salt Lake County

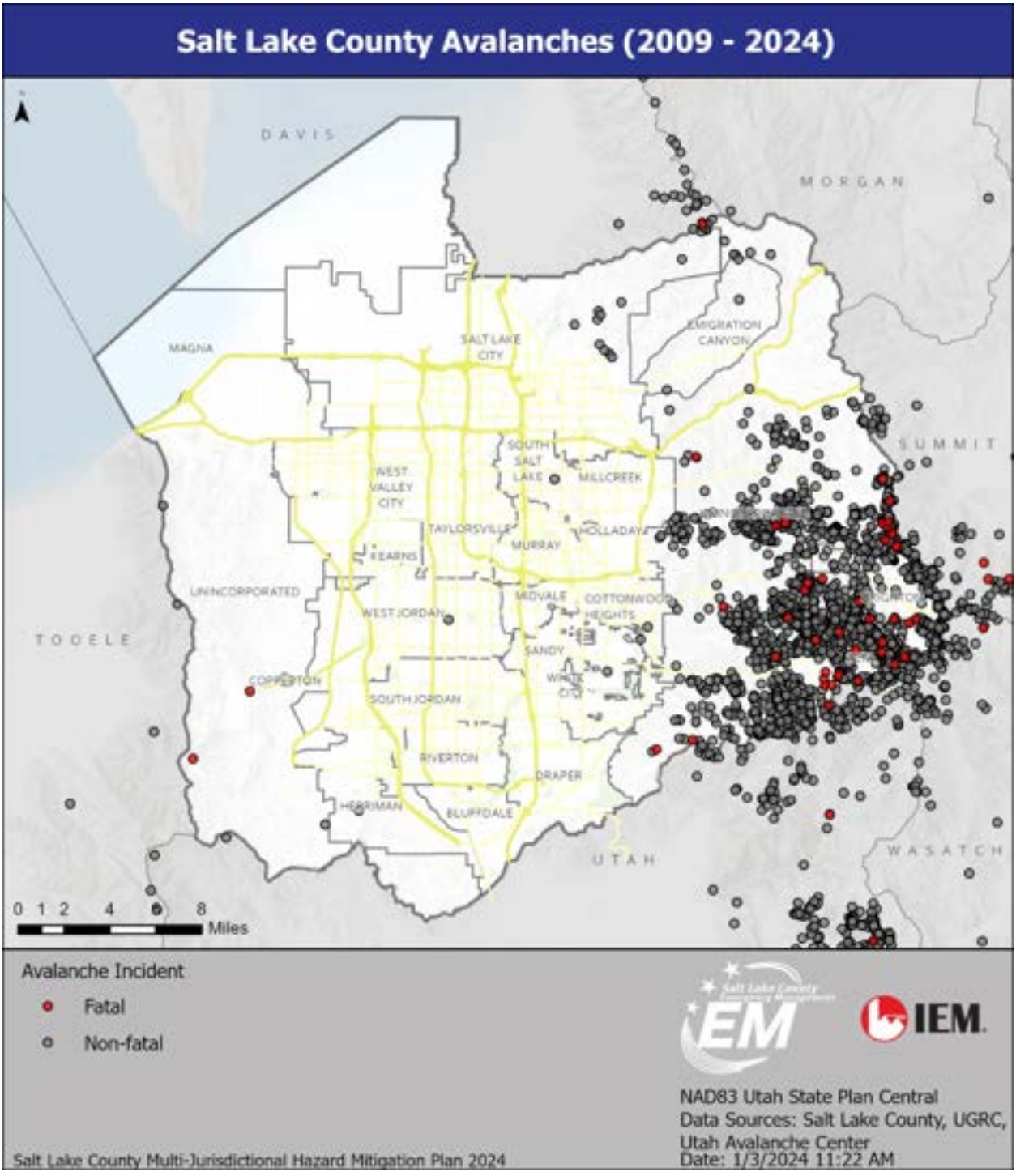


Figure 50: Locations of Avalanche Fatalities in and near Salt Lake County

Highway 210 in Little Cottonwood Canyon has the highest avalanche hazard-rating index of any major roadway in the country. When the Utah Department of Transportation (UDOT) and the town of Alta's Marshal agree that conditions are unsafe, the town goes into an Interlodge Alert. All occupants (including visitors and residents) must remain indoors until conditions are deemed safe. During large storm cycles,

an Interlodge Alert can last days until the storm cycle is over and proper avalanche control work has been performed.

The town's General Plan (dated November 2005, Updated 2013) covers Highway 210 access and possible mitigation activities to keep this critical road open. It also provides background on the Little Cottonwood Canyon Road Committee, a group consisting of representatives from Alta, Snowbird, Salt Lake County (including the Unified Fire Authority), UDOT, Utah Transit Authority (UTA), and U.S. Forest Service (USFS). It meets monthly to discuss access, use, and safety and security issues related to the canyon road.

The town of Brighton can also be affected by avalanche. Highway 190 could be deemed impassable due to avalanche or closed during UDOT avalanche control operations. Residents and skiers may become isolated from the rest of the county.

UDOT is responsible for managing the threat of avalanches on Utah's state and federal highways. The average daily traffic in Big and Little Cottonwood Canyons frequently exceeds the capacity of those roads, and slow-moving traffic conditions pose a significant threat to public safety if avalanche conditions are present. To address these safety concerns, the UDOT Avalanche Safety Plan establishes a process to develop avalanche hazard forecasts, conduct avalanche control and stability evaluations, and perform avalanche rescue.[47] When conditions are met, UDOT coordinates with the Unified Police Department (UPD) and the town of Alta to implement backcountry access closures where avalanche control work is planned. Following the complete evacuation of avalanche control areas, UDOT uses explosives and artillery to trigger avalanches that threaten public roads. Previously, UDOT used howitzers for avalanche control. In an effort to reduce the amount of artillery fired in the canyon and to enhance safety and efficiency, UDOT has installed remote-controlled avalanche mitigation equipment in Little Cottonwood Canyon. The Remote Avalanche Control System (RACS) uses wireless communications to Wyssen Avalanche Towers that deploy explosive charges that hang just over the ground to trigger an avalanche. These towers were expected to be operational for the 2024/2025 winter season.[48] Additional details on these procedures, maps of known avalanche paths, staging areas, and other details are available in the Safety Plan. Road and backcountry closures are announced on UDOT's Avalanche Safety webpage (see Figure 51) and social media sites.[49] Further details on backcountry closure zones are detailed in the Avalanche Safety Backcountry Policy, as shown in Figure 52.[50]

[47] UDOT. "Highway Avalanche Safety Plan for Big and Little Cottonwood Canyon." 2012. https://drive.google.com/file/d/1j-haYETjb3g2-xNq8qKetTDkT4OMuM4w/view.
[48] UDOT. "Mount Superior Avalanche Mitigation Project." https://udotinput.utah.gov/j0248.
[49] UDOT. "Avalanche Safety." https://udot.utah.gov/connect/current-conditions/avalanche/.
[50] UDOT. "Avalanche Safety Backcountry Closure Policy." http://www.udot.utah.gov/avalanche.

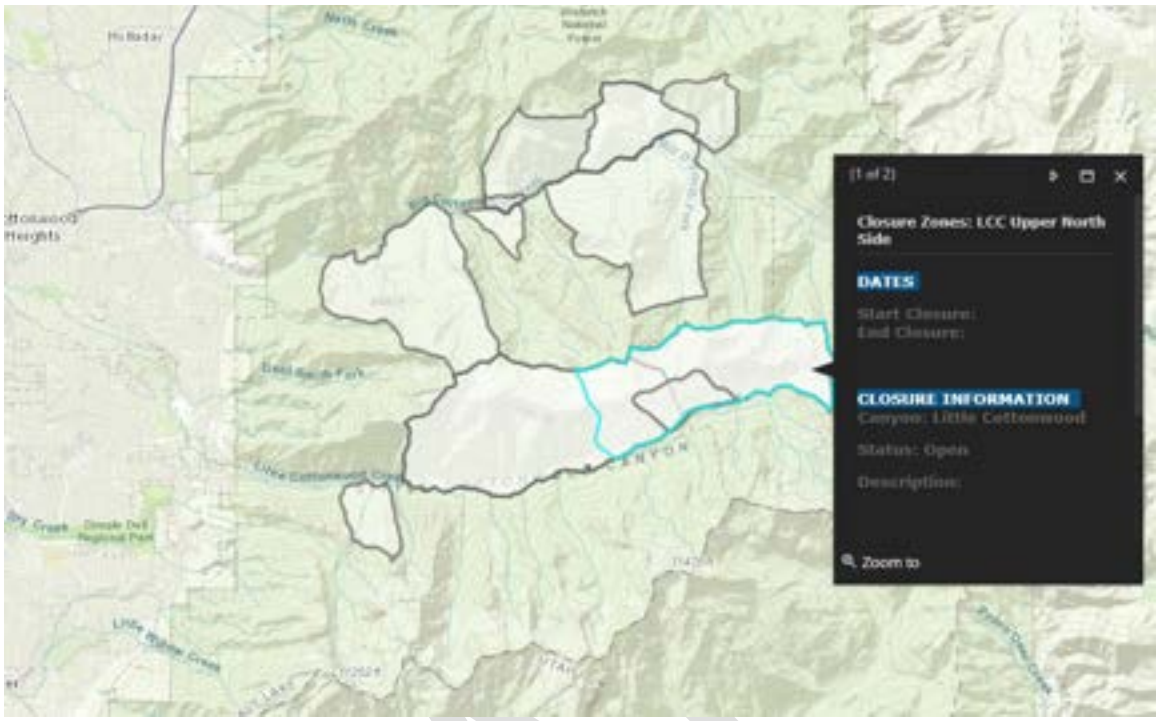


Figure 51: Utah Department of Transportation Backcountry Closure Areas

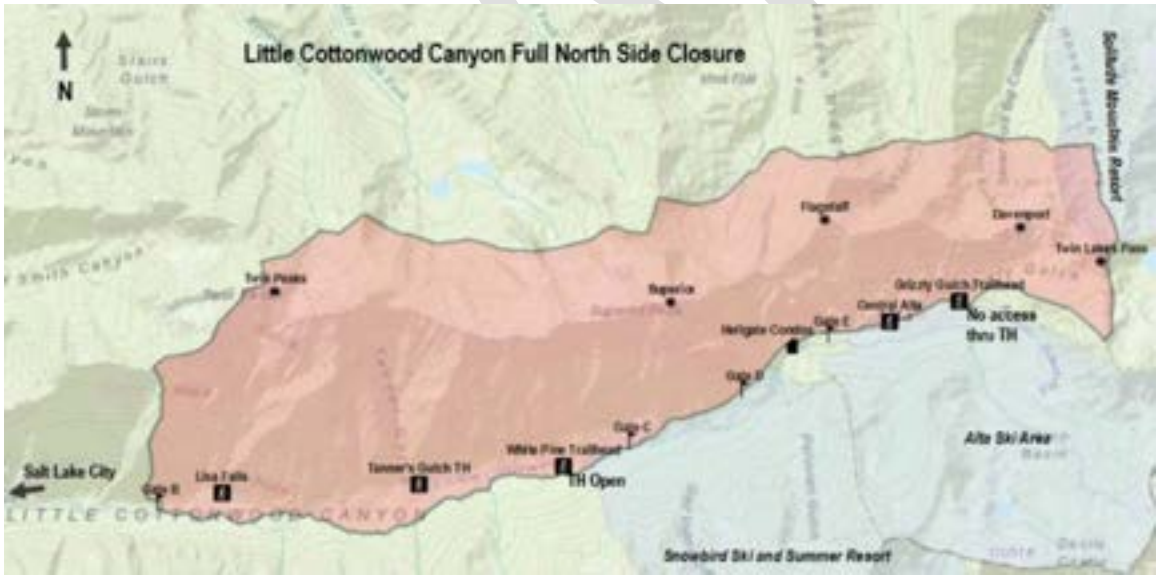


Figure 52: Example of Backcountry Closure Area[51]

Historical Events and Probability of Future Occurrences

Since January 1, 2019, the Salt Lake region has had over 2,400 avalanches. Avalanches are one of the deadliest types of natural disasters in Utah. According to the database of the National Centers for Environmental Information (NCEI) at the National Oceanic and Atmospheric Administration (NOAA),

[51] Ibid.

avalanches caused 128 deaths in the state between 1996 and 2022, accounting for 70% of severe weather-related deaths.[52]

According to data from the UAC, there have been 51 injuries and 57 deaths in the Salt Lake County region from all recorded avalanches since 1965. From 2009 to 2018, the region had approximately 2,151 reported avalanches, averaging approximately 215 reported events per year. According to NOAA, from 1996 to 2018, there have been only two events with significant recorded property damage, totaling $70,000.

According to FEMA, Disaster Declarations for States and Counties there were no Federally declared avalanche disasters from 01/01/2019 through 06/03/2025.[53] In addition, no state declarations have been made for the state of Utah due to an avalanche.[54]

On Thursday, May 9, 2024, two men died in an avalanche in the Big Willow drainage of the Wasatch Mountains. A group of 3 men were hiking toward Lone Peak following a significant, late-season storm. The avalanche broke around the lead hiker, who was partially buried but could dig himself out. The other two hikers were completely buried. The friend used a transceiver to locate the other two and worked to unbury them, but neither survived.

On Monday, April 17, 2023, a man died after being buried by a roof avalanche outside a cabin in the town of Brighton. It is believed he was attempting to clear or remove snow from the roof when the avalanche occurred. The following day, the UPD found him partially buried after they were called to perform a welfare check when the man failed to show up for work.

On Monday, March 27, 2023, a group of six snowmobile riders were recreating in Pole Canyon in the Oquirrh Mountains. Four left to return home while the other two continued toward the top of Flat Top mountain. An avalanche occurred while the two who had remained were descending. One could ride safely out of the path and the other was buried. The man called the rest of his party, contacted search and rescue, and began searching for his companion. He was eventually found deceased. It was noted that the UAC does not forecast avalanche conditions for the Oquirrh Mountains and has minimal data for that range.

On February 6, 2021, eight people in two groups went skiing in the Wilson Glades area, beginning at the Butler Fork Trailhead in Big Cottonwood Canyon. The two groups were ascending when the avalanche was triggered. Six people were caught and fully buried. Two survived, while the other four did not.

On January 21, 2016, a group of skiers were skiing along Gobblers Knob between Big Cottonwood and Millcreek Canyons. An avalanche, about 600 feet wide, was triggered, and two of the skiers were caught. One skier was partially buried and sustained minor injuries. The other skier, a 49-year-old male, was killed after being fully buried by the avalanche.

[52] “Avalanche.” Utah Hazard Mitigation Plan. 2024. https://hazards.utah.gov/avalanche/.
[53] FEMA, Disaster Declarations for States and Counties.” https://www.fema.gov/data-visualization/disaster-declarations-states-and-counties.
[54] Utah Department of Public Safety, “Utah Disaster History.” https://dem.utah.gov/utah-disaster-history/.

On March 14, 1998, Little Cottonwood Canyon had 6 avalanches. Vehicles were swept from the road, causing injuries to 5 people and $50,000 in property damage.

In 1983, a large avalanche completely covered Highway 210, buried several automobiles, and wiped out the first floor of the Peruvian Lodge. A Salt Lake City motorist was seriously injured in a 1998 avalanche in Little Cottonwood Canyon.

The number and severity of avalanches each year depend on many factors, such as previous snow conditions, amount of new snowfall, wind speeds, wind direction, snow density, and avalanche control work success, mostly occurring in the Wasatch Mountain range. It is reasonable to expect that avalanche occurrence frequency will continue to be in line with past events. Based on the average of 215 events occurring annually, the probability of future events is highly likely.

Table 24: Avalanche Fatalities in Salt Lake County, 2019–2023[55]

Date	Deaths	Region	Place	Trigger
12/15/2019	1	Salt Lake County	Dutch Draw	Snowboarder
01/08/2021	1	Salt Lake County	Dutch Draw	Skier
01/30/2021	1	Salt Lake County	Squaretop	Skier
02/06/2021	4	Salt Lake County	Wilson Glade	Skier
03/27/2023	1	Salt Lake County	Pole Canyon	Snowmobiler
04/17/2023	1	Salt Lake County	Brighton	Unknown
05/09/2024	2	Salt Lake County	Big Willow	Skier

Climate Change Considerations

The Utah State 2024 Hazard Mitigation Plan states that climate change will affect avalanche risk in Utah. Projections for higher temperatures suggest that the snowline will move to higher elevations, leaving less snow cover at lower elevations. As the snow cover declines, the spatial extent of possible avalanches will decline. The risk of impacts on roads and infrastructure will decline as the spatial extent declines. However, wintertime backcountry enthusiasts may follow the snowpack, and exposure may persist. The relationship between changing snowpack and avalanche deaths and injuries is likely complex.[56]

Climate change can have a significant impact on the natural hazard of avalanches related to the amount or timing of snowfall events and the variability in temperatures. Snowpack can become less stable leading to an increase in frequency and intensity of avalanches as global temperatures increase. Melting and refreezing of snowpack can cause weaker layers that are prone to collapse while more intense and frequent weather events, such as heavy snow followed by rapid warming can trigger avalanches in the Wasatch Mountains. The changing climate could cause a shorter and more variable snow season which can lead to a higher likelihood of avalanches occurring outside the traditional winter months posing new

[55] Utah Hazard Mitigation. “Avalanche Fatalities 2019–2023.” Utah Avalanche Center. 2024. https://hazards.utah.gov/avalanche/.
[56] Utah Hazard Mitigation. “Climate Change Considerations.” Utah Avalanche Center. 2024. https://hazards.utah.gov/avalanche/.

challenges for communities on and around the Wasatch Mountains. Recreationists may not be accustomed to these changing conditions or may feel safer after higher temperatures and underestimate the avalanche risk.

Secondary Hazards

Avalanches tend to be localized events causing immediate injury or death but do not have secondary impacts affecting the rest of the county. Nonetheless, avalanche events can damage roadways and other transportation infrastructure, producing traffic restrictions and restricting access of essential and critical emergency services delivery for canyon communities. Radio or other communications towers could also be damaged. In addition, large avalanches can disrupt vegetation and soils along waterways, which can negatively impact the watershed.

Vulnerability Assessment

As previously mentioned, avalanche risk in Salt Lake County is primarily found in the Wasatch Mountains, particularly in Big and Little Cottonwood Canyons. The town of Alta and town of Brighton are particularly at risk. State Highway 210 follows Little Cottonwood Creek for the length of Little Cottonwood Canyon and serves as the primary access route to the town. Culvert blockages, bank erosion, landslides, and avalanches can all close the town's only arterial connection with the rest of the county. Although the town of Alta only has a population of 225,[57] it has a significant, fluctuating tourist population due to ski resorts and other mountain recreation sites, which would be greatly impacted if an avalanche blocks Highway 210. Resorts saw a record 7.1 million skier visits in the 2022–2023 season. Figure 53 illustrates the increase in ski recreation in the state in recent years. 44% of those skier days are from Utah residents, but the remainder are from outside the area.

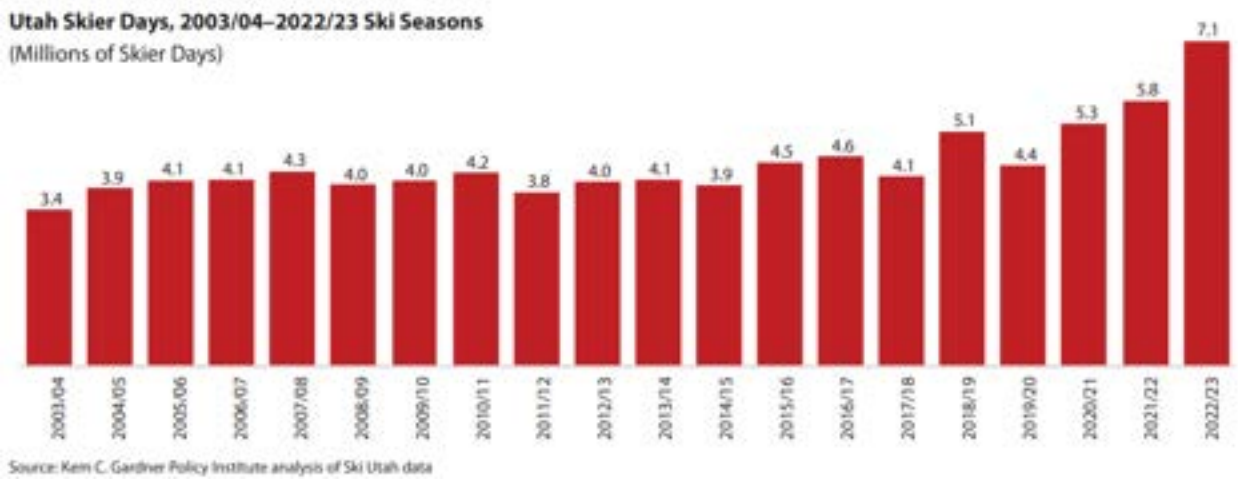


Figure 53: Skier Days in Utah, 2003–2023[58]

[57] World Population Review. Alta, Utah Population. 2024. https://worldpopulationreview.com/us-cities/utah/alta.
[58] Kem C. Gardner Policy Institute. The University of Utah. The Economic Contributions of Utah's Ski Industry. Fact Sheet, April 2024. https://d36oiwf74r1rap.cloudfront.net/wp-content/uploads/2024/05/Ski-Industry-FS-May2024.pdf.

According to the 2019 Utah State Hazard Mitigation Plan, the following 95 structures are vulnerable to avalanche events: 56 commercial, 38 residential, and 1 government with a value of $57,700,210.

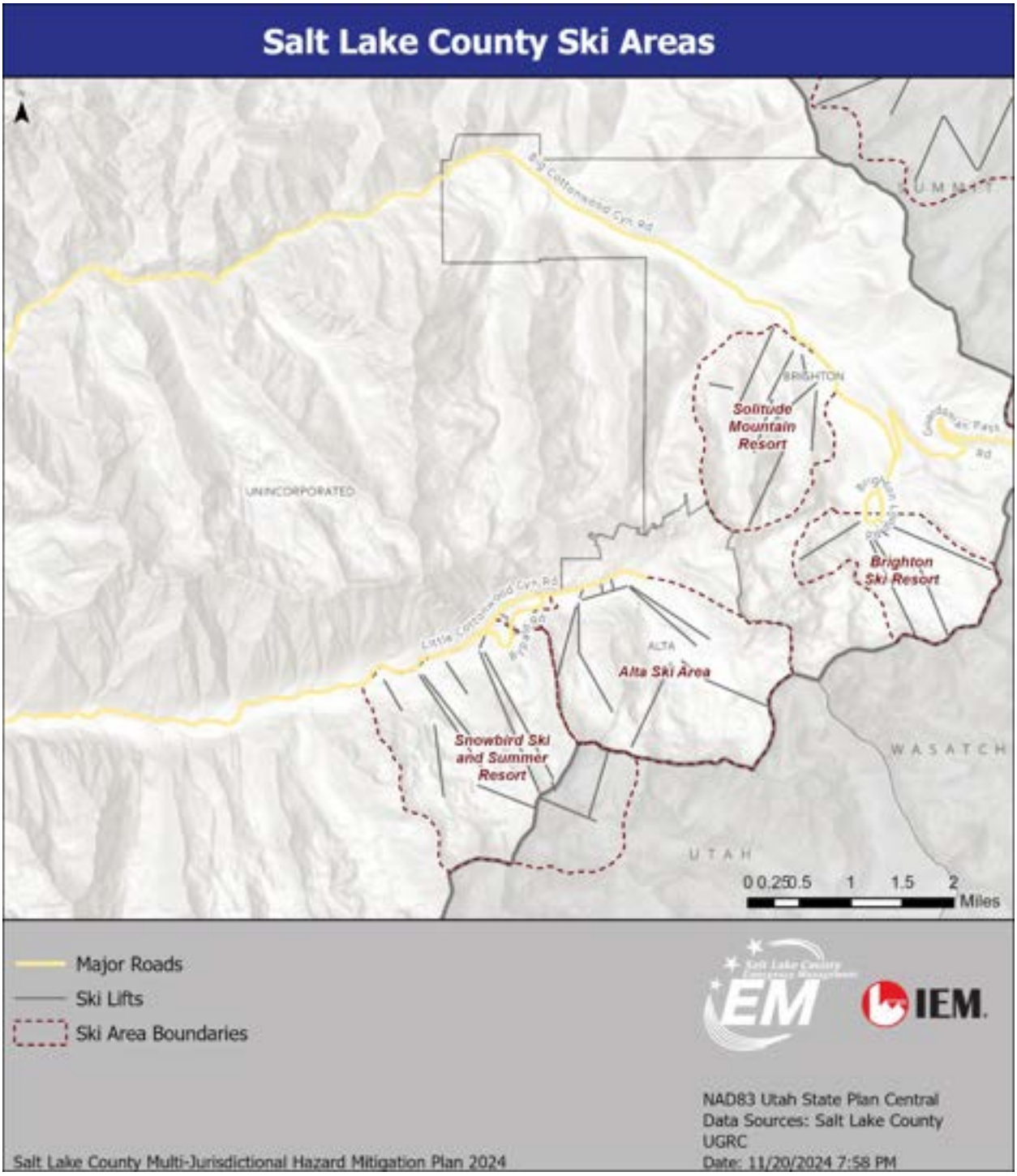


Figure 54: Ski Resort Infrastructure in Salt Lake County

ESTIMATED IMPACTS AND POTENTIAL LOSSES

In Salt Lake County, avalanche risks are concentrated in the Wasatch Mountains and more specifically in Big and Little Cottonwood Canyons. The towns of Alta and Brighton are especially vulnerable due to their geographic locations and routes to access the towns. The influx of tourists, especially during ski season, heightens the impacts avalanches have on human lives and the local economy. Population trends can significantly impact avalanche risks, as an increased population can lead to more people in mountainous areas for recreation or residence. An increased population density in mountainous areas leads to more infrastructure, such as roads and buildings, which can be impacted by avalanches. This increase in population density coupled with tourists and seasonal residents can strain local emergency response systems. The changes in land use due to development can also alter avalanche paths and potentially increase the risk to human life and property.

The most direct impacts on the populations in these avalanche prone areas is the risk of injury or death if caught in an avalanche. Structures in Big and Little Cottonwood Canyon could be damaged or destroyed by an avalanche. Transportation routes have been closed and damaged by avalanches in the past and will likely be impacted in the future. Road closures isolate people in the upper part of the canyons from emergency services and other resources they might typically access in the valley communities. It may also impede people from traveling to or from work. Avalanches can also impact services the community depends on, including communications towers, power distribution, and water systems in canyon areas. Furthermore, damage to facilities or road closures can have significant economic impacts on businesses dependent on winter recreation.

The National Risk Index (NRI) includes data on the expected annual losses (EALs) from individual natural hazards, historical loss, and overall risk at a county and Census tract level. Salt Lake County's EAL value due to avalanches is $2 million, with a risk score of 96.6 and a rating of Very High compared with the rest of the United States (Figure 55).

DRAFT

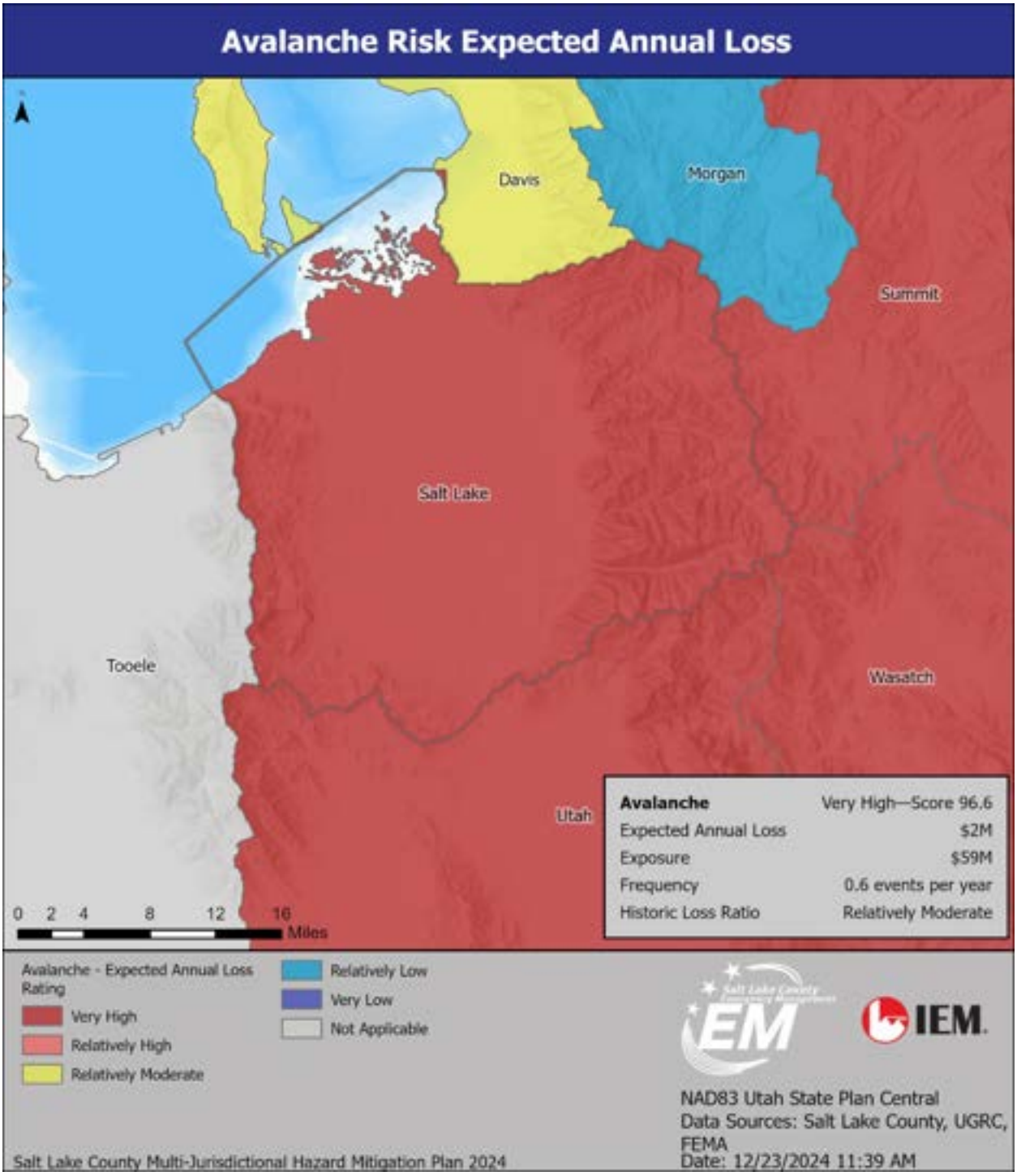


Figure 55: Expected Annual Loss from Avalanche in Salt Lake County[59]

[59] FEMA, National Risk Index. "Salt Lake County Expected Annual Loss Avalanche Risk Score, Map and Legend." https://hazards.fema.gov/nri/map.

VULNERABLE POPULATIONS

The Utah State 2024 Hazard Mitigation Plan states that victims of avalanche hazards are primarily backcountry skiing or snowmobile enthusiasts, who are often specially trained and equipped to avoid or survive the avalanche hazard and are typically undertaking a calculated risk of injury or death vs. the reward of fresh powder snow. However, outdoor recreation industries and destinations have seen significant increase in visitors since COVID-19. Those who are new to outdoor recreation might have less understanding or awareness of avalanche hazards and proper precautions.

Although ski towns, such as the town of Alta, might have a relatively small permanent population, they also often have significant, fluctuating tourist populations during the winter months, which increases the likelihood of population impacts. In addition, the American Institute for Avalanche Research and Education reports that 90 percent of avalanche victims die in slides triggered by themselves or a member of their group. Avalanche closures and mitigation in high-risk areas, such as Little Cottonwood Canyon are designed to limit risk to populations on roads and those staying at ski areas. Road closures can isolate these populations from critical support, including medical care, ambulances, food, fuel, and other supplies. Although the permanent residents in Alta and Brighton were not identified as vulnerable or underserved communities, tourists and other visitors to the canyon might have unique challenges. Visitors in the canyon may need to shelter in place during Interlodge Alert conditions with minimal resources. They might have few options for food, clothing, and shelter during Interlodge or canyon road closures. Some may not have access to their daily medications. Some could be visiting from other countries and may not speak English and might have difficulty understanding information regarding Interlodge Alerts or other safety information. The resorts and related businesses may also employ seasonal workers that might have limited access to resources, may live outside canyons, or have language barriers.

COMMUNITY LIFELINES

The main lifelines for avalanches are food, hydration, shelter, transportation, communications, and safety and security. A primary focus during times of high avalanche risk is ensuring that the safety of residents and recreationists. Emergency services provided by Unified Fire Authority and the town of Alta Marshal could be impeded by an avalanche. Road closures would prohibit transport of patients by EMS. Closures also may impede normal staffing/shift changes. Heavy snowfall and avalanches can damage communications equipment. During the 2022 season, communication to anyone outside the canyon was disrupted. Enforcement of Interlodge alerts and providing adequate food, hydration, and shelter for those in the affected area is a priority. During prolonged Interlodge conditions, food and water for people sheltering in the canyon may become scarce. Closure of roadways for avalanche control efforts when necessary, helps maintain the safety of motorists but limits egress and access to resources for those farther up the canyon.

CHANGES IN DEVELOPMENT

Although the residential populations of the town of Alta and the town of Brighton have not grown significantly, record numbers of visitors to the canyon ski resorts have been recorded since the last plan

DRAFT

update, which totaled 6.75 million skier visits between Utah's 15 ski areas in the 2023–2024 ski season.[60] The increased volume of recreationists represents an overall increase in vulnerability. No significant developments are underway in the area most at risk of avalanche, but future development, such as changes to road infrastructure, expansion or re-routing of ski infrastructure, or other modifications to the landscape, could affect avalanche risk. In 2022, UDOT announced plans to construct a gondola from the base of Little Cottonwood Canyon to the Snowbird and Alta ski resort areas. The gondola is intended to alleviate traffic congestion and will operate in a separate alignment from the road. However, this development has been controversial, and many residents have protested the gondola. It is not yet clear how construction of the gondola may affect vulnerability to avalanche.

An increase in avalanche vulnerability can increase loss of life and property and negatively affect the reputation of the ski resort area. Climate changes could affect snow levels and might decrease tourism, and businesses may move out of those areas. In addition, people may move to a different area that is less prone to avalanches if the likelihood continues to increase. New Wyssen avalanche towers installed near Alta may increase effectiveness of avalanche mitigation,[61] possibly reducing potential impacts of avalanches. Overall, due to an increased volume of visitation to avalanche prone areas, vulnerability to avalanches has increased since the last plan update.

VULNERABILITY SCORE

To analyze Salt Lake County's vulnerability to avalanches, the NRI was used as a primary tool during the 2024 update. The NRI defines risk as the potential for negative impacts due to a natural hazard. It determines a community's risk relative to other communities by examining the EAL and social vulnerability in a given community in relation to its resilience. Salt Lake County's NRI Avalanche risk rating is shown in Figure 56. Salt Lake County has a Relatively High Avalanche risk and a risk score of 92.8.

DRAFT

[60] Stefanich, Logan. "Here's what's new at Utah's 15 ski resorts in what's anticipated to be another busy season." KSL.com. November 13, 2024. https://www.ksl.com/article/51189141/heres-whats-new-at-utahs-15-ski-resorts-in-whats-anticipated-to-be-another-busy-season.
[61] Wyssen Avalanche Towers Protect Alta Ski Area. https://www.wyssenavalanche.com/en/wyssen-avalanche-towers-protect-alta-ski-area/.

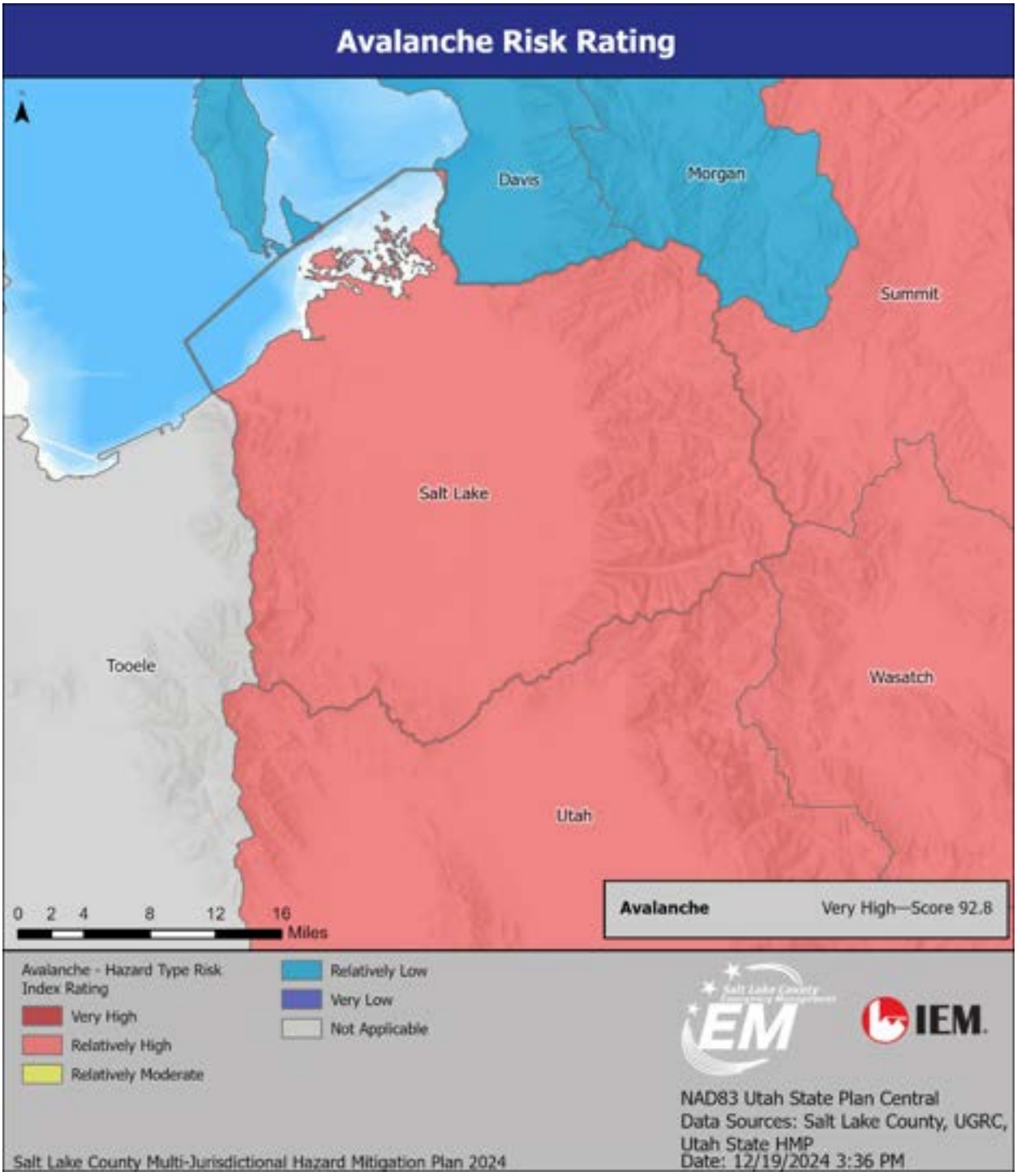


Figure 56: National Risk Index Avalanche Risk Map, Legend, and Score for Salt Lake County[62]

[62] FEMA, National Risk Index. "Salt Lake County Avalanche Score, Map and Legend." https://hazards.fema.gov/nri/map.

Dam Failure

Figure 57: Mountain Dell Dam[63]

Hazard Description

A dam is an artificial barrier that can store water, wastewater, or liquid-borne materials for many reasons—flood control, human water supply, irrigation, livestock water supply, energy generation, recreation, or pollution control.

Dams are usually human-made and, therefore, not inherently considered natural hazards; however, dam failures can occur because of natural events. The impacts of a dam failure can be like natural flood events, although they are often more sudden and violent than normal stream floods. Dam failure causes include breach from flooding, overtopping, ground shaking from earthquakes, settlement from liquefaction, slope failure, and slumping, internal erosion from piping, failure of foundations and abutments, outlet leaks or failures, and internal weakening caused by vegetation and rodents. Possible effects include flooding, silting, loss of water resources, and loss of property and life.

There are two types of dam failures: “rainy day” and “sunny day” failures. Rainy day failures occur because floodwaters overstress the dam, spillway, or outlet capacities. The floodwaters eventually flow over the top of the dam and erode the structure from the top down. The breach flows of the dam are added to the floodwaters from the rainstorm to produce a flood with a large proportion and destructive power. Sunny day failures are due to seepage and erosion inside the dam that removes fine material, creating a large void that can cause the dam to collapse or overtop and wash away. Sunny day failures

[63] https://www.wikiwand.com/en/articles/Mountain_Dell_Dam

can be the most dangerous because they can happen quickly without warning to owners or downstream residents.

Dam failures can also result from a combination of causes, including the following:

- Failure of upstream dams on the same waterway
- Improper maintenance
- Negligent operation
- Internal erosion caused by embankment or foundation leakage or piping, root growth, or rodent/wildlife activity
- Earthquake/seismic activity
- Prolonged periods of rainfall and flooding, which cause overtopping
- Improper design
- Inadequate spillway capacity resulting in excess overtopping flows
- Intentional structural attacks and cyberattacks

Hazard Profile

Potential Impact		Catastrophic	**Probability**		Highly Likely
	X	Critical			Likely
		Limited		X	Occasional
		Negligible			Unlikely
Location	Dams are located throughout the county, with most representing high and moderate hazards in the eastern and southern portions				
Seasonal Conditions	Rainy day failure: anytime Sunny day failure: spring and late summer				
Conditions	Rainy day failures happen mainly during heavy precipitation events and might have some warning time. By contrast, sunny day failures can happen anytime, without warning.				
Duration	Hours or days, depending on the spillway type and area, maximum cubic feet per second (cfs) discharge, overflow or breach type, and dam type				
Secondary Hazards	Raw sewage/health risks, electrical fires, and gas spills				
Analysis Used	Review of Bureau of Reclamation inundation maps and plans, Flood Insurance Study, and Utah Division of Water Rights				

Location

Salt Lake County Emergency Management (SLCo EM) provided data on dams from the Dam Safety Database Information Viewer maintained by the Utah Division of Water Rights.[64] Figure 59 shows the

[64] Utah Division of Water Rights. "Dam Safety Database Information Viewer." https://www.waterrights.utah.gov/cgi-bin/damview.exe?Startup.

location of all 72 dams in Salt Lake County. The county has 28 high-hazard, 34 significant-hazard, and 10 low-hazard dams (Figure 58), with an average age of 47 years.

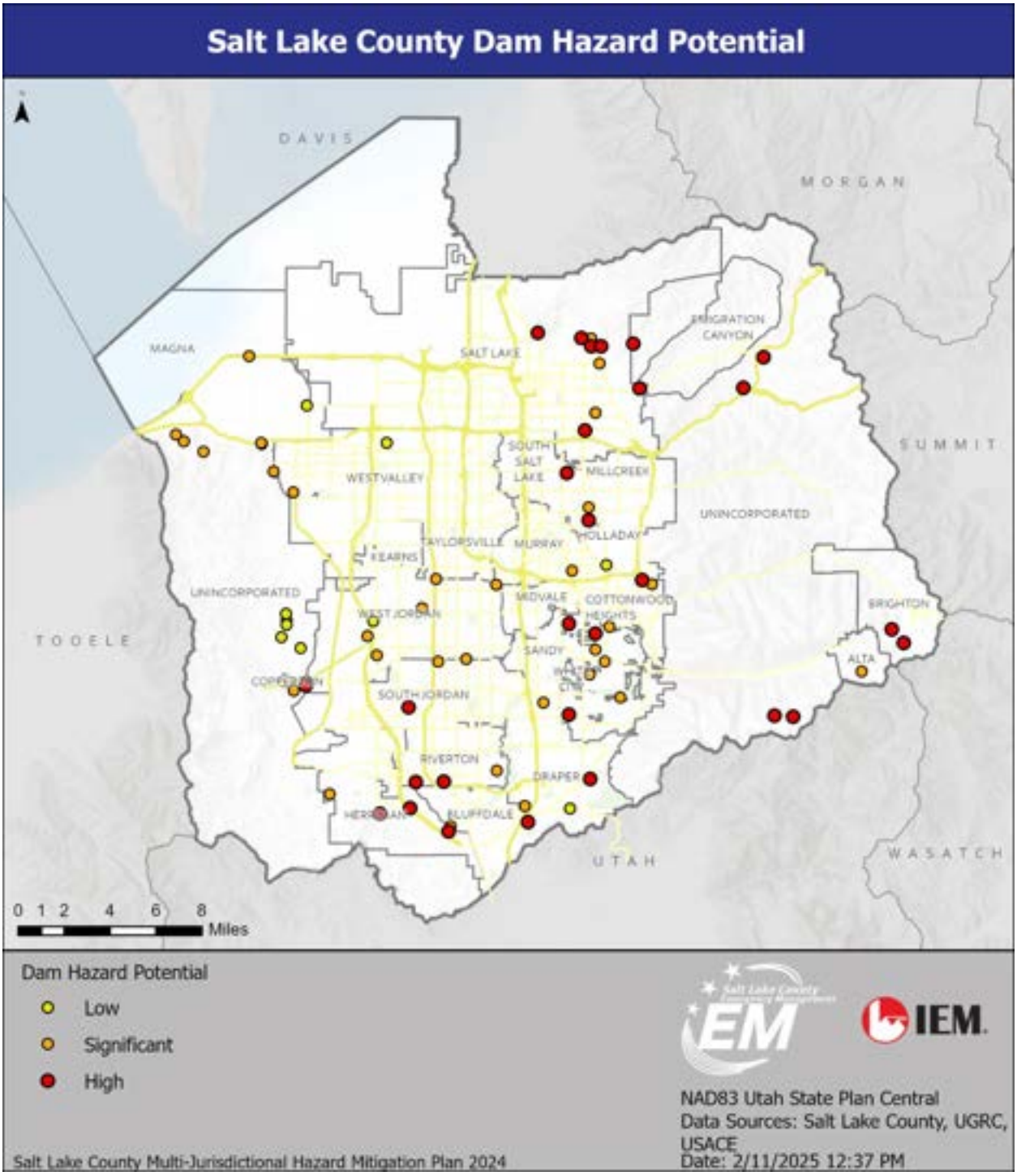


Figure 58: Location of Dams

Utah Division of Water Rights and Utah Geospatial Resource Center have mapped potential dam inundation areas for 32 high or significant hazard dams in Salt Lake County, shown in Figure 59. These

map features were generated using cross sections to model how water would flow if a dam were to fail. Dam inundation areas have not been delineated for all dams, particularly significant and low hazard dams. Community planners have to infer where flood hazard areas exist downslope of dams.

Floods, earthquakes, ground shaking, surface faulting, and landslides all pose a concern for causing a dam incident. A special concern of dam safety is not only the safety of dams to the community but also the safety of dams themselves in case of other hazards or failures of upstream dams. A GIS overlay analysis of the 28 high-hazard dams and potential inundation areas was conducted and revealed that 14 dams are in the inundation areas of other dams (Figure 59).

DRAFT

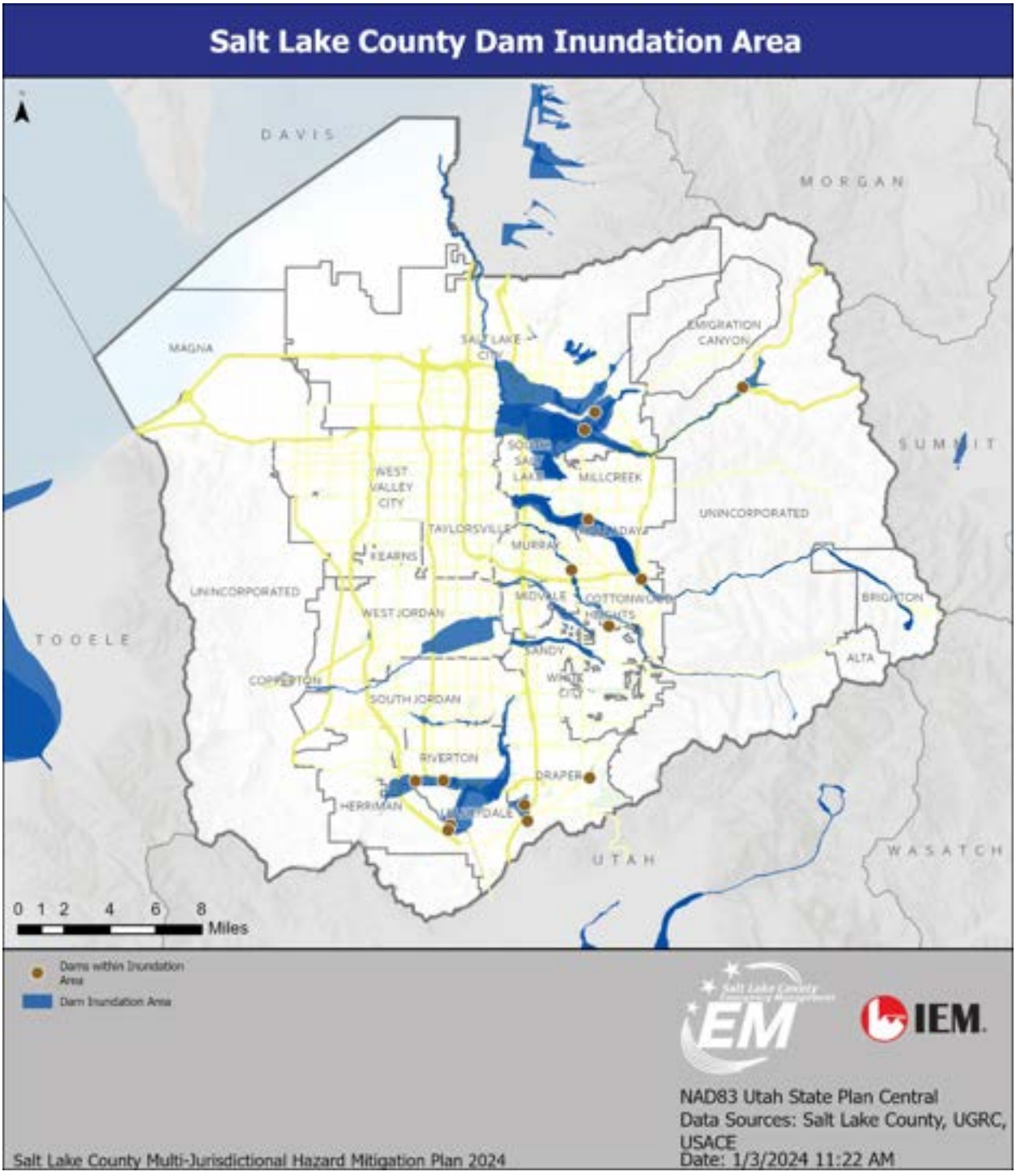


Figure 59: Dams in the Dam Inundation Area of Salt Lake County

Levees can experience failures under similar conditions to dam failures. Figure 60 shows the location of levees in Salt Lake County.

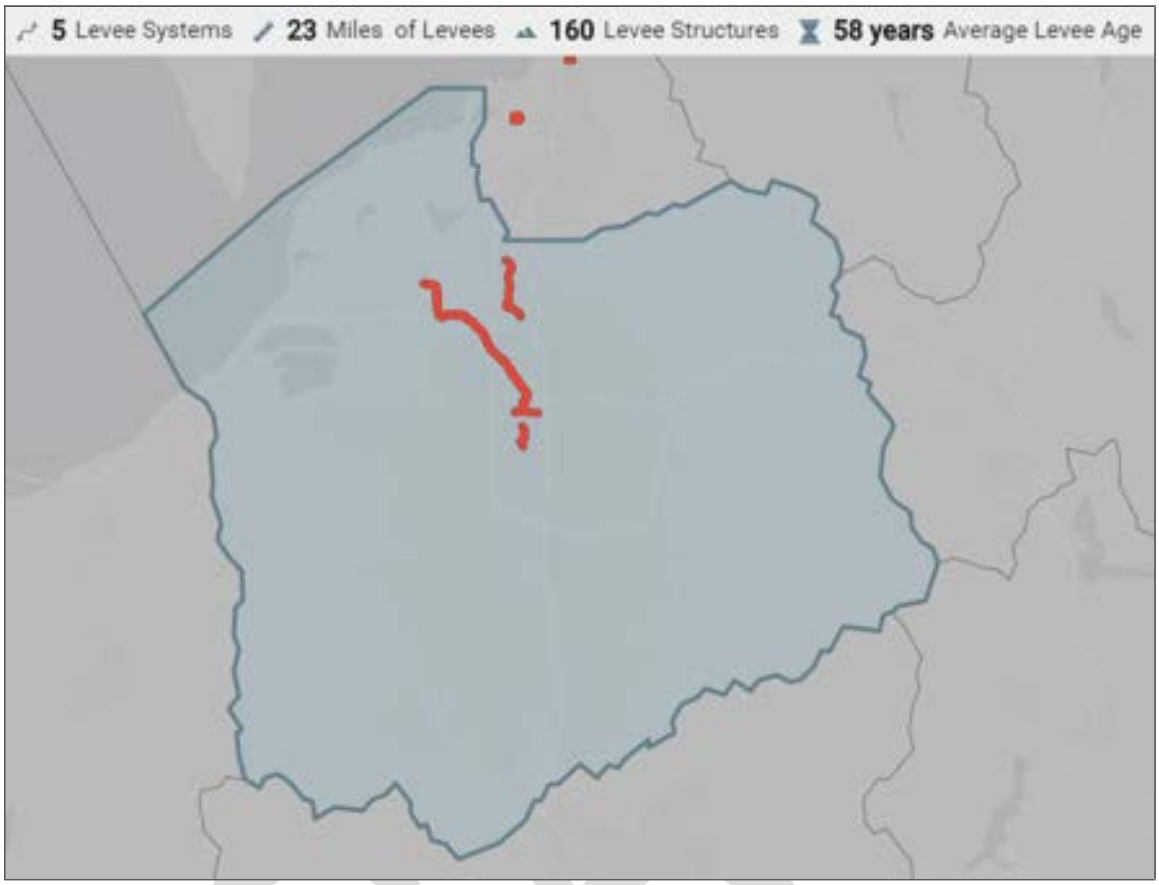


Figure 60: Levees in Salt Lake County[65]

Magnitude/Extent

The severity of a dam or levee failure depends on the area protected by the dam or levee, the volume and velocity of water that breaches the structure, and the structures and population in the protected area. A dam or levee breach will usually flood protected areas, generating impacts like those seen in areas in the floodplain and not generally protected by a levee. Table 25 provides dam failure classifications.

Table 25: Army Corps of Engineers Hazard Profile Classification

Hazard Category (a)	Direct Loss of Life (b)	Lifeline Losses (c)	Property Losses (d)	Environmental Losses (e)
Low	None (rural location, no permanent structures for human habitation)	No disruption of services (cosmetic or rapidly repairable damage)	Private agricultural lands, equipment, and isolated buildings	Minimal incremental damage
Significant	In rural locations, only transient or day-use facilities	Disruption of essential facilities and access	Major public and private facilities	Major mitigation required

[65] National Levee Database. 2024. https://levees.sec.usace.army.mil/search.

Hazard Category (a)	Direct Loss of Life (b)	Lifeline Losses (c)	Property Losses (d)	Environmental Losses (e)
High	Certain (one or more) extensive residential, commercial, or industrial development	Disruption of essential facilities and access	Extensive public and private facilities	Extensive mitigation cost or impossible to mitigate

- Categories are assigned to overall projects, not individual structures at a project.
- The loss of life potential is based on inundation mapping of the area downstream of the project. Analyses of loss of life potential should take into account the population at risk, time of flood wave travel, and warning time.
- Indirect threats to life caused by the interruption of lifeline services are due to project failures or operational disruption, such as the loss of critical medical facilities or access to them.
- Property losses include damage to project facilities and downstream property and indirect impacts due to the loss of project services, such as the loss of a dam and navigation pool or the loss of water or power supply.
- The environmental impact downstream is caused by the incremental flood wave produced by the project failure, beyond what would normally be expected for the magnitude flood event under which the failure occurs.

The hazard rating does not reflect the dam's condition or likelihood of failure; rather, it indicates the potential for loss of life or property damage from failure and should be prioritized for monitoring. Of the 72 dams in Salt Lake County, 28 are high hazard potential dams (HHPDs), meaning if they fail there is a high probability of loss of life and extensive property loss (see Table 26 for a breakdown of dam hazard ratings in Salt Lake County).

Table 26: Salt Lake County Dams by Hazard Rating

Low Hazard	Significant Hazard	High Hazard
10	34	28

The 2024 Utah Enhanced State Hazard Mitigation Plan provides an inventory of all high-hazard dams by county and owner type in Utah. In Salt Lake County, ownership of these high-hazard dams is distributed among local governments, private entities, public utilities, and the state (see Table 27).

Table 27: High-Hazard Dam Ownership in Salt Lake County

High-Hazard Dams	Local Government	Federal	Private	Public Utility	State
28	61%	–	36%	4%	–

Figure 61 shows dam failure rankings in Salt Lake County and the surrounding northern counties.

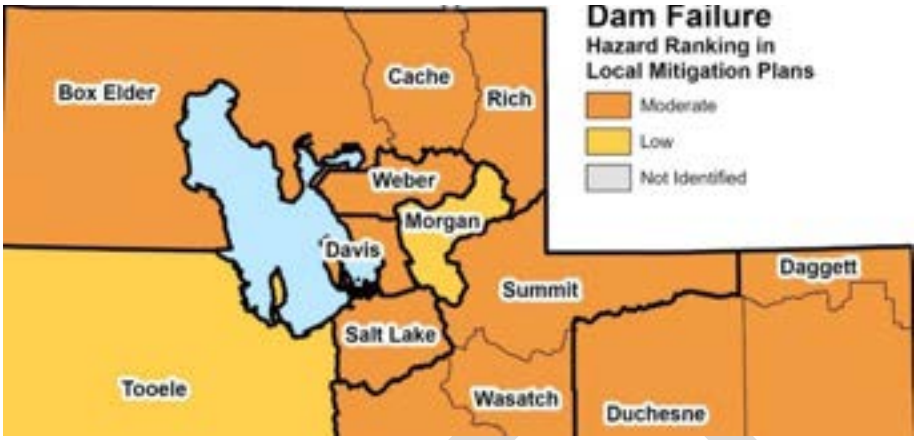


Figure 61: Map of Dam Failure Rankings for Salt Lake County and Surrounding Counties[66]

Table 28 provides a listing of all HHPDs in Salt Lake County with additional details about ownership, size, age, capacity, hazard classification, date of last inspection and whether an Emergency Action Plan (EAP) has been completed for each.

DRAFT

[66] Utah Enhanced State Hazard Mitigation Plan. "Figure 4-37 Dam Failure Rankings from LHMP." 2024. https://hazards.utah.gov/state-of-utah-hazard-mitigation-plan/

Table 28: High-Hazard Dams in Salt Lake County[67]

Dam	Owner	Purpose	Height (ft.)	Year Completed	NID Storage (acre-ft.)	Hazard Classification	Last Inspection	EAP Prepared
Salt Lake County – Sugarhouse	Salt Lake County Public Works	Flood risk reduction	35	1984	120	High	7/13/2022	Yes
Salt Lake County Chandler Drive (#13)	Salt Lake County Public Works	Flood risk reduction	128	1977	52	High	9/21/2022	Yes
Salt Lake County – Scott Avenue	Salt Lake County Public Works	Flood risk reduction	12	1987	71	High	7/13/2022	Yes
Salt Lake County Shriners (#12)	Salt Lake County Public Works	Flood risk reduction	59	1978	17	High	9/21/2022	Yes
Twin Lakes (Salt Lake)	Salt Lake City Corporation	Water supply	62	1914	575	High	8/3/2023	Yes
Salt Lake County Federal Heights (#1a)	Salt Lake County Public Works	Flood risk reduction	23	1978	16	High	9/21/2022	Yes
Salt Lake County – Creekside Park (Big Cottonwood)	Salt Lake County Public Works	Flood risk reduction	16	1969	90	High	7/13/2022	Yes
Salt Lake County – Rotary Glen Park	Salt Lake County Public Works	Flood risk reduction	25	1986	5	High	7/13/2022	Yes
Salt Lake County – Big Cottonwood (Spencer's)	Salt Lake County Public Works	Flood risk reduction	31	1984	132	High	7/13/2022	Yes
Lake Mary – Phoebe	Salt Lake City Corporation	Water supply	72	1915	742	High	8/3/2023	Yes
Red Pine	Salt Lake City Corporation	Irrigation	20	1929	100	High	8/16/2023	Yes
Red Butte Dam	Salt Lake City Corporation	Water supply	128	1930	565	High	9/8/2023	Yes

[67] EAP = Emergency Action Plan, NID = National Inventory of Dams.

DRAFT

Dam	Owner	Purpose	Height (ft.)	Year Completed	NID Storage (acre-ft.)	Hazard Classification	Last Inspection	EAP Prepared
Mountain Dell	Salt Lake City Corporation	Water supply	105	1916	3506	High	9/8/2023	Yes
Little Dell	Salt Lake City Corporation	Water supply	224	1993	25,000	High	9/8/2023	Yes
Ensign Downs Db (Aka Victory Road Db)	Salt Lake City Public Utilities	Flood risk reduction	23	1991	1.75	High	9/8/2022	Yes
Kennecott Mine Bingham Creek	Kennecott Utah Copper, LLC	Water supply	77	1965	2140	High	7/11/2023	Yes
White Pine	South Despain Ditch Company	Irrigation	54	1933	350	High	8/25/2023	Yes
Oquirrh Lake Dam/Kennecott Daybreak	Daybreak Community Association	Recreation	17	2006	1100	High	10/31/2023	Yes
Sandy City – East Sandy Elementary	Sandy City	Flood risk reduction	5	2002	10	High	5/25/2023	Yes
Jordan Valley Water Purification Upper	Jordan Valley Water Conservancy District	Water supply	44	1981	550	High	10/31/2023	Yes
Draper Pressure Irrigation Project	Draper Irrigation Company	Water supply	18	1993	50	High	5/4/2023	Yes
Sandy City – Storm Mountain Db	Sandy City	Flood risk reduction	9	1990	19	High	5/25/2023	Yes
Juniper Canyon Detention Basin 3	Herriman City	Flood risk reduction	49	2020	61	High	8/4/2022	Yes
Sandy City – Flat Iron Mesa	Sandy City	Flood risk reduction	7	Undetermined	4	High	5/25/2023	Yes
Riverton City – Black Ridge Reservoir	Riverton City	Irrigation	32	2009	77	High	9/27/2023	Yes

DRAFT

Dam	Owner	Purpose	Height (ft.)	Year Completed	NID Storage (acre-ft.)	Hazard Classification	Last Inspection	EAP Prepared
Riverton City – 4200 West Pond	Riverton City	Water supply	12	2000	47	High	9/27/2023	Yes
Riverton City – 3200 West Pond	Riverton City	Water supply	16	2000	94	High	9/27/2023	Yes
Point of the Mountain Raw Water Reservoir	Metropolitan Water District	Water supply	18	2006	136	High	5/3/2023	Yes

DRAFT

DAM SAFETY INSPECTION IN UTAH

The 2024 Utah Enhanced State Hazard Mitigation Plan declares that the Utah State Engineer has been charged with regulating non-federal dams since 1919. Utah started its Dam Safety Section in the 1970s in the State of Utah Engineer's Office to administer all non-federal dams in response to the Federal Dam Safety Act. In 1990, the legislature directed the State Engineer to regulate all dams in the state, including federally owned dams, except for those owned by the Bureau of Reclamation.

The frequency of dam inspection is designated based on the hazard rating: The Utah Division of Water Rights inspects high-hazard dams every year, moderate-hazard dams every two years, and low-hazard dams every five years.

Dams may be classified according to the type of construction material used, the methods employed in construction, the slope or cross-section of the dam, the way the dam resists the forces of the water pressure behind it, the means used for controlling seepage, the storage characteristics (on a watercourse, off-stream, above, or below ground level), and occasionally, their purpose. The materials used for building dams include earth, rock, tailings from mining or milling, concrete, masonry, and combinations.[68]

Dams may also have a safety condition rating assigned to them, based on a 4-tier scale. Table 29 provides descriptions of the safety condition ratings and a count of dams identified within each category in Salt Lake County. Three high hazard dams have been rated as "poor" and are also considered high hazard potential. These are Lake Mary-Phoebe, Red Pine, and Mountain Dell. Ten high hazard dams in Salt Lake County are rated "fair." The remaining 15 are considered "satisfactory." Most of the significant hazard dams do not have a condition rating, with the exception of one dam rated fair: Salt Lake County School Pond – 14.

Table 29: Dam Condition Rating Descriptions

Condition Rating	Definition	Dams in Salt Lake County
Satisfactory	No existing or potential dam safety deficiencies are recognized.	15
Fair	No existing dam safety deficiencies are recognized for normal loading conditions. Rare or extreme hydrologic and/or seismic events may result in a dam safety deficiency.	11
Poor	A dam safety deficiency is recognized for loading conditions that may realistically occur. Remedial action is necessary. Poor may also be used when uncertainties exist as to critical analysis parameters, which identify a potential dam safety deficiency. Further investigations and studies are necessary.	3
Unsatisfactory	A dam safety deficiency is recognized that requires immediate or emergency remedial action for problem resolution.	0
Not Rated or not available	A condition rating was not recorded or is otherwise unavailable	45

[68] Utah Hazard Mitigation. "Dam Failure." 2024. https://hazards.utah.gov/dam-failure/.

Historical Events and Probability of Future Occurrences

Based on the FEMA Disaster Declarations Database, Salt Lake County has received no designation for dam failure disaster declarations since the last plan update. No record was found of any historical dam failure incidents in Salt Lake County either; however, incidents have occurred in other parts of Utah, according to the 2024 Utah Enhanced State Hazard Mitigation Plan.

Dam failure incidents are infrequent and usually coincide with events that cause them, such as earthquakes, flooding, excessive rainfall, and snowmelt. There is a “residual risk” associated with dams and levee failures. Residual risk is the risk that remains after safeguards have been implemented. For dams and levees, the residual risk is correlated with events beyond those the facility was designed to withstand. However, the probability of any dam or levee failure in Salt Lake County is occasional in today’s regulatory environment.

Climate Change Considerations

Several recent and high-profile dam incidents related to an unexpected high runoff event have raised serious concerns about the impact of climate change on dam safety across the nation. More recently, evidence has mounted that climate change is making extreme weather events more frequent and extreme. The 2024 Utah Enhanced State Hazard Mitigation Plan[69] references studies that found climate change has already doubled the probability of an event sufficiently large enough to cause catastrophic flooding. In addition, changing the snow/rain regime could increase sudden runoff by another 200%–400%.

Extreme weather events, such as heavy rainfall and rapid melting of snowpack can become more frequent and intense as global temperatures rise. These events can lead to higher water inflows into reservoirs, which can exceed the capacity of dams, increasing pressure on the structure. Changes in precipitation patterns, along with more frequent severe storms, can cause erosion and sediment buildup around dam sites, potentially leading to dam failure.

Secondary Hazards

Dam failure can have a cascading impact on other hazards, including storms, seismic events, landslides, wildfires, and flooding. Given the relatively higher risk of an earthquake in Salt Lake County, this hazard is of particular concern for dams.

As mentioned previously, a dam failure can threaten downstream dams and may contribute to additional failures. If damage is caused to hazardous material storage facilities in the inundation zone, dam failure could also release hazardous materials.

Dam failure may cause extreme erosion along canyon waterways, resulting in steep, unstable slopes that may later be subject to landslides or other slope failure.

[69] Utah State Enhanced Mitigation Plan. 2024 https://hazards.utah.gov/state-of-utah-hazard-mitigation-plan/.

DRAFT

Vulnerability Assessment

Thirty-two dams in Salt Lake County have delineated dam failure inundation boundaries. This includes all but one of the high hazard dams: Juniper Canyon Detention Basin 3. These zones were used to determine potential exposure of community assets to dam failure. This includes a count of structures, population, and critical facilities within areas that may be flooded following a dam failure. This analysis does not account for depth or velocity of flooding, models of potential damage to structures based on construction or occupancy type, or estimated economic losses from flooding following a dam failure as used in the Hazus flood model.

Using the available dam inundation boundaries, and USA Structures building dataset from FEMA Geospatial Resource Center, an overlay analysis was conducted to determine which structures within Salt Lake County are potentially exposed to dam failure. Table 31 provides a count of structures that were identified within one or more inundation boundaries, grouped by jurisdiction. In addition, estimates of the number of people potentially affected by dam failure were also calculated using U.S. Census Bureau 2022 American Community Survey census block data (Table 32). For census blocks where only a portion overlaps a dam inundation boundary, a proportional percentage of the population of that block was included in the summarized population count.

For those dams that did not have dam inundation boundaries delineated, and for assets that were not included in the mapping analysis, a qualitative description of assets downstream of the dam and potential impacts was considered.

It should also be noted that there are limitations to the dam inundation boundaries. In addition to not having boundaries delineated for all dams, this dataset is based on hydraulic models that make assumptions regarding how water will flow following a failure, which may not capture all variables. Accuracy of input data, as well as changes in land use, soil characteristics, and other conditions, can affect the precision and accuracy of inundation maps. The nature of the dam breach is variable, and the size and cause of the breach can introduce uncertainty regarding the impacts. Although this analysis provides useful guidance for planning, it may not capture all potential vulnerabilities.

Table 30: Potential Dam Inundation Area in Salt Lake County[70]

Total Area	Potential Inundation Area	Potential Inundation Area Percent
805.18 sq mi.	38.67 sq mi.	4.80%

Table 31: Structures Within Potential Dam Inundation Areas, by Jurisdiction and Occupancy Type

Jurisdiction	Residential	Commercial	Industrial	Gov	Education	Other	Total
Town of Alta	0	0	0	0	0	0	0

[70] 2019 Utah State Hazard Mitigation Plan. “Dam Failure 2019.” https://site.utah.gov/dps-emergency/wp-content/uploads/sites/18/2019/02/5-Dam-Failure.pdf.

Jurisdiction	Residential	Commercial	Industrial	Gov	Education	Other	Total
Town of Brighton	35	40	0	5	0	50	130
Bluffdale	1,796	43	22	23	2	80	1,966
Copperton	0	0	0	0	0	0	0
Cottonwood Heights	562	83	6	15	5	13	684
Draper	80	29	0	5	9	2	125
Emigration Canyon	0	0	0	0	0	0	0
Herriman	119	0	0	8	2	9	138
Holladay	1,481	88	0	19	4	79	1,671
Kearns	0	0	0	0	0	0	0
Magna	0	0	0	0	0	0	0
Midvale	703	47	0	3	1	22	776
Millcreek	1,042	229	71	22	0	85	1,449
Murray	1,406	295	131	23	11	98	1,964
Riverton	1,821	8	1	39	18	45	1,932
Salt Lake City	20,693	1,422	709	182	223	597	23,826
Sandy City	1,995	219	21	9	16	58	2,318
South Jordan	418	45	0	5	2	1	471
South Salt Lake	3,413	532	289	56	27	315	4,362
Taylorsville	0	0	0	0	0	0	0
West Jordan	3,544	104	76	27	33	87	3,871
West Valley City	0	2	8	1	1	1	13
White City	0	0	0	0	0	0	0
Unincorporated Salt Lake County	237	6	3	20	0	11	277
Total	**39,345**	**3,192**	**1,337**	**462**	**354**	**1,553**	**46,243**

Table 32: Population Estimated to be Within the Dam Inundation Area by Jurisdiction

Jurisdiction	Population Estimated in Dam Inundation Areas
Town of Alta	0
Town of Brighton	8
Bluffdale	5,298
Copperton	0
Cottonwood Heights	2,949
Draper	1,366
Emigration Canyon	0

DRAFT

Jurisdiction	Population Estimated in Dam Inundation Areas
Herriman	1,031
Holladay	6,813
Kearns	0
Magna	0
Midvale	2,255
Millcreek	6,993
Murray	7,954
Riverton	8,274
Salt Lake City	66,715
Sandy City	8,224
South Jordan	2,992
South Salt Lake	15,219
Taylorsville	10
West Jordan	13,415
West Valley City	266
White City	0
Unincorporated Salt Lake County	1,267
Total	**150,050**

Using the list of critical facilities identified in the Community Profile, an overlay was also implemented to identify critical facilities that have potential exposure to dam failure. There are 73 critical facilities in the inundation boundaries of dams in Salt Lake County. A detailed breakdown of these facilities follows. Other city structures and government service facilities in the inundation areas also may be impacted, but these were not included in the mapping. Additional vulnerability is discussed within the jurisdictional annexes.

- **Three emergency operations centers (EOCs):** Bluffdale, South Salt Lake, and the Municipal Services District
- **Nine fire stations:** Murray Station #82, Bluffdale Station #91, Sandy Station #35, Salt Lake City Station #4, Salt Lake City Station #8, Salt Lake City Station #6, Salt Lake City Station #3, UFA Station #108, and South Salt Lake Station #42
- **Four hospitals:** Holy Cross Hospital Salt Lake, Holy Cross Hospital Jordan Valley, KPC Promise Hospital of Salt Lake, and Marian Center
- **Four police stations:** South Salt Lake Police Department, West Jordan Police Department, Bluffdale Police Department, and Granite School District Police Department
- **Fifty-two schools (count per city):** Bluffdale (1), Midvale (1), Murray (4), Riverton (2), Salt Lake City (36), Sandy City (3), and West Jordan (5)

DRAFT

- **Thirty-nine county facilities (count per city):** Cottonwood Heights (1), Holladay (2), Midvale (1), Murray (1), Riverton (1), Salt Lake City (13), unincorporated county (7), South Salt Lake (4), and West Jordan (9)

ESTIMATED IMPACT AND POTENTIAL LOSSES

The impact of dam failure hazards on people in Utah is similar to riverine flooding, but the potential magnitude and sudden onset of flooding can be especially catastrophic. Impacts range from death and physical harm to displacement and property damage to inconvenience. Homes, businesses, and other structures downstream of the failure can be damaged or destroyed. Road closures, congestion, and possible water supply and wastewater services loss are likely.

Dam failures can occur suddenly, but those downstream might have some warning to evacuate. Individuals living near or just downstream of dams, particularly in low-lying areas, are most vulnerable to dam failure and potential flooding. Homes may be damaged or destroyed, resulting in potential long-term displacement for residents. Some of these households may require public sheltering assistance.

Significant structural and infrastructural losses can result from a dam failure. Homes, businesses, and government service facilities can be damaged. Damage is often worst close to the dam site because of the volume and velocity of water released. Over 46,000 structures are located in potential inundation areas in Salt Lake County. Besides the costs of rebuilding structures, significant economic impacts are likely due to lost inventory or revenue during business closures. Employees may lose wages or experience long-term job loss, and financial hardship may exacerbate slow economic recovery. Businesses not directly impacted by a dam failure may incur losses due to transportation or other infrastructure interruptions or an inability for employees to return to work.

Besides the direct damage and loss of life that may occur from a dam or levee failure, there are many possible consequences for community assets. Disruption of a public water supply or wastewater treatment facility could lead to reduced water quality, water shortages, exposure to sewage, and other health hazards. Damage or disruption to major roads, railroads, power, communications, or other public utilities could delay vital services. Debris, sediment, and other material deposited following a dam failure can require extensive cleanup efforts. Natural environmental resources, such as wildlife habitat and recreation areas, can also be damaged. Historical structures and cultural resources such as community centers, recreation facilities, parks, and trails can also be damaged or destroyed. Community events and activities at these sites may be postponed or canceled.

Major transportation corridors that could be impacted include Little Cottonwood Canyon Rd, Big Cottonwood Canyon Rd, I-215 East Belt, I-80 through Parleys Canyon to the intersection with I-15, Bangerter Highway in the southern part of the county, Mountain View Corridor near Riverton and Herriman, and various segments of I-15. TRAX and FrontRunner lines are roughly parallel to the I-15 corridor and also may be affected. Other utility lines and infrastructure likely run along these transportation routes.

DRAFT

The Mitigation Planning Team identified additional significant community assets that may be impacted by dam failure. These include areas of particular concern, critical facilities, critical infrastructure, areas of future development, major employers, or economic sectors, cultural or historic facilities, and significant populations or natural resources. More detailed information on jurisdictional assets is presented in their individual annex in Volume 2.

VULNERABLE POPULATIONS

Individuals with access and functional needs, disabilities, elderly individuals, and those lacking access to reliable transportation might have difficulty evacuating even if given notice of a potential dam failure. Those who speak a language other than English might have difficulty understanding emergency alerts and the proper actions to take if a dam failure is imminent. Those with low household incomes might have significant difficulty finding alternative housing if displaced from their homes.

CHANGES IN DEVELOPMENT

Population growth has increased steadily in Salt Lake County, with an estimated 2.6% growth rate since 2020, according to the U.S. Census Bureau. Most of this growth has occurred in the south and western parts of the county, on the outer edges of urban growth. Since most of the significant and high hazard dams are in the central or eastern parts of the county, this growth has not increased the vulnerability of the county to dam failure.

Still, this growth puts a strain on emergency response systems, making it challenging to evacuate residents in a timely manner. Increased population density can also lead to many changes in land use, such as deforestation or urbanization, which can alter flow patterns and increase the likelihood of the overtopping of a dam or dam failure due to erosion.

According to the 2024 Utah Enhanced State Hazard Mitigation Plan, the largest concentration of high- and significant-hazard dams in the state is in the Wasatch Front counties, including Salt Lake County. The National Levee Database also maps 5 levee systems (160 levee structures) in the county. As the county's population grows and shifts, situations arise where development in areas downstream from dams causes the hazard potential for some of these structures to increase, such as from a significant hazard to a high hazard. The number of high-hazard dams should be monitored over time to determine whether this might be a trend. Localized changes in growth or development in parts of the county may indicate changes in vulnerability and are addressed in the jurisdictional annexes. The overall vulnerability to dam failure in the county has remained the same since the last plan update.

COMMUNITY LIFELINES

The 2024 Utah Enhanced State Hazard Mitigation Plan articulates that any and possibly all community lifelines will be impacted in the aftermath of a dam incident, such as a high-hazard dam failure. The immediate concern is for the safety and security of the people in inundation areas. It is reasonable to expect that access to food, water, shelter, and healthcare will be compromised for many people. Dam failures are notoriously destructive, and impacts on aboveground power distribution, if not generation, can be expected. The same can be said for transportation, especially due to damaged roadways and

railways. Cellular communications may fare better. Inundation zones are relatively narrow and elongated; thus, unaffected transmission towers may be able to service inundated areas. The release of hazardous materials is an area of uncertainty. What seems certain is widespread impact. Articulating precisely what these impacts mean and how to mitigate them is a difficult-to-fill knowledge gap.

VULNERABILITY SCORE

The NRI does not include data on the relative risk of dam failure.

DRAFT

Drought

Hazard Description

According to the National Integrated Drought Information System, drought is a deficiency of precipitation over an extended period, resulting in a water shortage for some activity, group, or environmental sector.[71] Although yearly variations in recorded precipitation are normal, a drought exceeds these norms, marked by significantly low precipitation for an extended period or over a large area. Although most natural hazards are sudden and cause immediate impacts, droughts begin gradually and can last for extended periods, often resulting in profound socioeconomic impacts. Figure 62 shows the effects of drought on the soil. [72]

Droughts can be categorized based on their unique characteristics and are often viewed as different phases of a single prolonged event (see Figure 63).

Figure 62: Effects of Drought on Soil

- **Meteorological Drought:** A measure of the departure of precipitation from normal for a particular location
- **Agricultural Drought:** Where the amount of moisture in the soil no longer meets the needs of a particular crop
- **Hydrological Drought:** When surface and subsurface water supplies are below normal

[71] Drought Basics. “Defining Drought.” https://www.drought.gov/what-is-drought/drought-basics.
[72] Photo credit: Underground Brittle Dry - Free photo on Pixabay.

- **Socioeconomic Drought:** Prolonged and severe dry conditions that impact sectors beyond the agricultural community, such as the community drinking supply and other social and economic enterprises

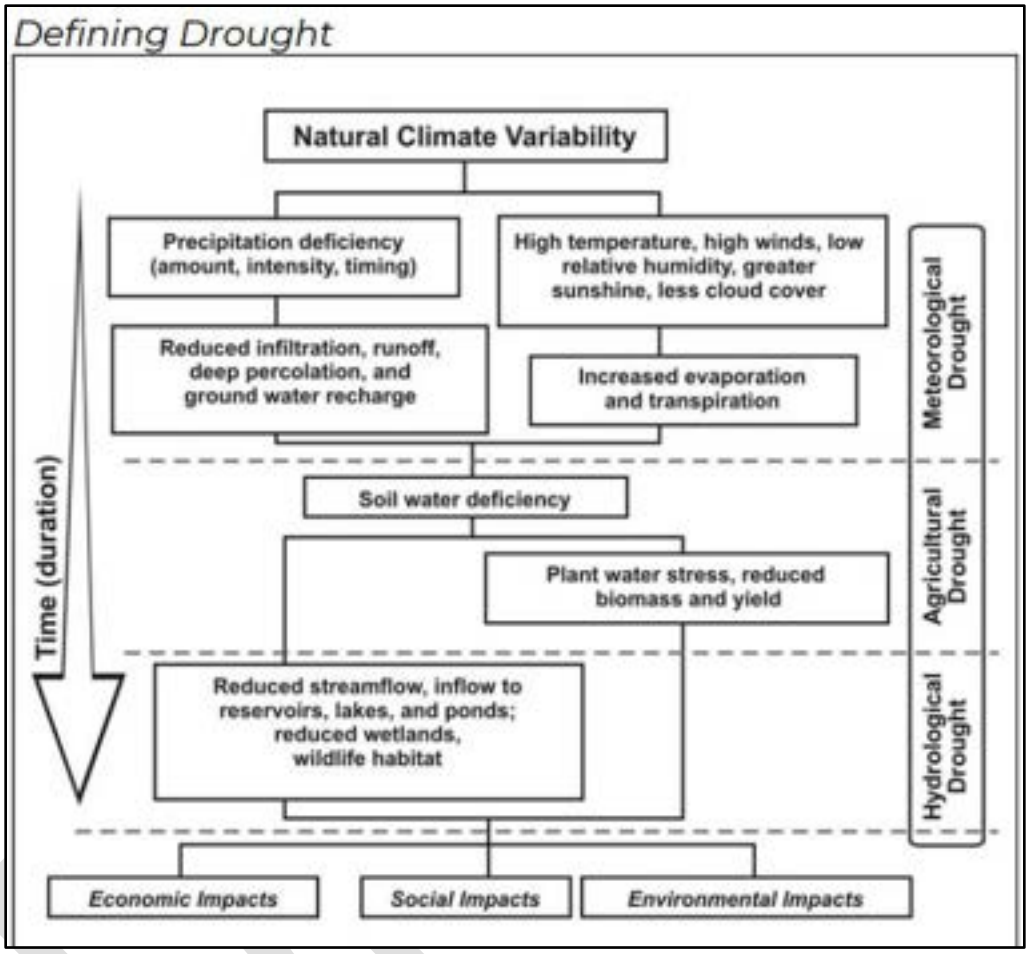


Figure 63: United States Drought Monitor Process for Defining Drought[73]

Hazard Profile

Although the agricultural community is usually the most heavily impacted by drought, extended droughts can also have direct and indirect impacts on economic, social, or environmental sectors. When drought begins to affect the general population, reservoirs, wells, and aquifers often reach low levels, necessitating conservation measures. These measures can include water-use restrictions, secondary water systems, water recycling, and xeriscaping. Additional conservation options include establishing emergency water agreements with neighboring water districts or transporting water from external sources (see Table 33).

[73] Utah Division of Water Resources. "Drought Response Plans: Triggers and Actions." June 28, 2022. https://water.utah.gov/wp-content/uploads/2022/07/Drought-Response-Plan-070822.pdf.

Table 33: Characteristics of Drought in Salt Lake County

Potential Impact		Catastrophic	**Probability**	X	Highly Likely
		Critical			Likely
	X	Limited			Occasional
		Negligible			Unlikely
Location	Countywide				
Seasonal Pattern	Impacts typically noticeable in summer, conditions can be year-round				
Conditions	Meteorological Drought: Lack of precipitation Agricultural Drought: Lack of water for crop production Hydrologic Drought: Lack of water in the overall water supply Socioeconomic Drought: Lack of water sufficient to support the population				
Duration	Months, years				
Secondary Hazards	Wildfires, dust storms, air quality				
Analysis Used	National Weather Service, Utah Climate Center, Utah Division of Water Resources, newspapers, local input				

Magnitude/Extent

The United States Drought Monitor provides a map that identifies drought-affected areas and classifies them by intensity, ranging from D1 (least intense) to D4 (most intense) (see Table 34). Drought is defined as a moisture deficit severe enough to have social, environmental, or economic effects. D0 areas are not in drought but are experiencing abnormally dry conditions that could develop into drought or are still recovering from a past drought and are not yet back to normal.

The Palmer Drought Severity Index (PDSI), developed by Wayne Palmer in 1965, measures drought severity based on temperature, precipitation, and soil moisture (Utah Division of Water Resources 2007a). The PDSI is considered the “semi-official” drought index due to its standardization across various climates. It uses zero to represent normal conditions, with values ranging from 6 to −6 (see Table 35). Negative numbers indicate dry periods, while positive numbers represent wet periods.

DRAFT

Table 34: Drought Classification[74]

			Ranges				
Category	Description	Possible Impacts	Palmer Drought Severity Index (PDSI)	CPC Soil Moisture Model (Percentiles)	USGS Weekly Streamflow (Percentiles)	Standardized Precipitation Index (SPI)	Objective Drought Indicator Blends (Percentiles)
D0	Abnormally Dry	Going into drought: • short-term dryness slowing planting, growth of crops or pastures Coming out of drought: • some lingering water deficits • pastures or crops not fully recovered	-1.0 to -1.9	21 to 30	21 to 30	-0.5 to -0.7	21 to 30
D1	Moderate Drought	• Some damage to crops, pastures • Streams, reservoirs, or wells low, some water shortages developing or imminent • Voluntary water-use restrictions requested	-2.0 to -2.9	11 to 20	11 to 20	-0.8 to -1.2	11 to 20
D2	Severe Drought	• Crop or pasture losses likely • Water shortages common • Water restrictions imposed	-3.0 to -3.9	6 to 10	6 to 10	-1.3 to -1.5	6 to 10
D3	Extreme Drought	• Major crop/pasture losses • Widespread water shortages or restrictions	-4.0 to -4.9	3 to 5	3 to 5	-1.6 to -1.9	3 to 5
D4	Exceptional Drought	• Exceptional and widespread crop/pasture losses • Shortages of water in reservoirs, streams, and wells creating water emergencies	-5.0 or less	0 to 2	0 to 2	-2.0 or less	0 to 2

Table 35: Palmer Drought Severity Index Classification and Range

Range	Palmer Classification
4.0 or higher	Extremely Wet
3.0 to 3.99	Very Wet
2.0 to 2.99	Moderately Wet
1.0 to 1.99	Slightly Wet
0.5 to 0.99	Incipient Wet Spell
0.49 to −0.49	Near Normal
−0.5 to −0.99	Incipient Dry Spell
−1.0 to −1.99	Mild Drought
−2.0 to −2.99	Moderate Drought
−3.0 to −3.99	Severe Drought
−4.0 or lower	Extreme Drought

Location

Utah is the second driest state in the United States, and drought has a significant impact on the region. The lack of water affects agriculture and industry, limiting economic activity and reducing the availability of water for irrigation and culinary purposes. Severe drought leads to the depletion of agricultural lands and soil deterioration. In the Wasatch Front Region, the risk of drought is particularly high.

[74] National Drought Mitigation Center, U.S. Drought Monitor. “Drought Classification.” 2024. https://droughtmonitor.unl.edu/About/AbouttheData/DroughtClassification.aspx.

Salt Lake County falls in two climatic regions: the North Central Region and the Northern Mountains Region. Although the two regions exhibit distinct characteristics, they often experience similar drought periods, experiencing mild drought (PDSI ≥ −1) every 2.6–3.3 years, moderate drought (PDSI ≥ −2) every 3.7–5.2 years, and severe drought (PDSI ≥ −3) every 6.9–8.5 years. The Northern Mountain Region typically experiences droughts less frequently (Utah Division of Water Resources 2007a). The Northern Mountain Region experiences more severe drought conditions at its peak than the Western Region. This may be because the Northern Mountains Region simply has more water to lose, as the Wasatch and Uinta Mountains receive significantly more precipitation on average. Figure 64 depicts a recent snapshot of the extent of drought in the State of Utah. Figure 65 shows a time series of drought conditions for Salt Lake County since January 2000. Extreme and exceptional drought conditions occurred from 2021 to 2023.

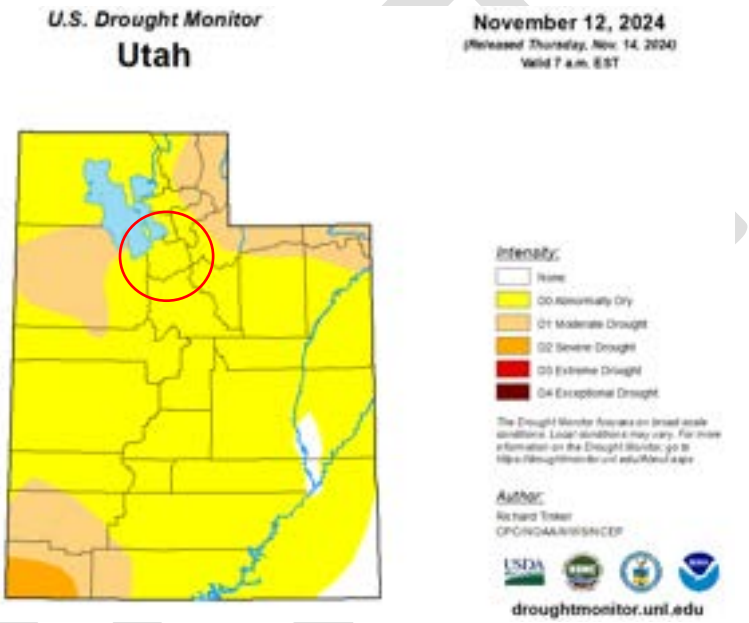


Figure 64: U.S. Drought Monitor Categories for the State of Utah, November 2024

Figure 66 shows precipitation between October 17, 2024, and December 13, 2024, as a percentage of the historical average (1991–2020) for the same period. Green/blue shades indicate higher than normal precipitation, while brown shades indicate lower than normal precipitation.

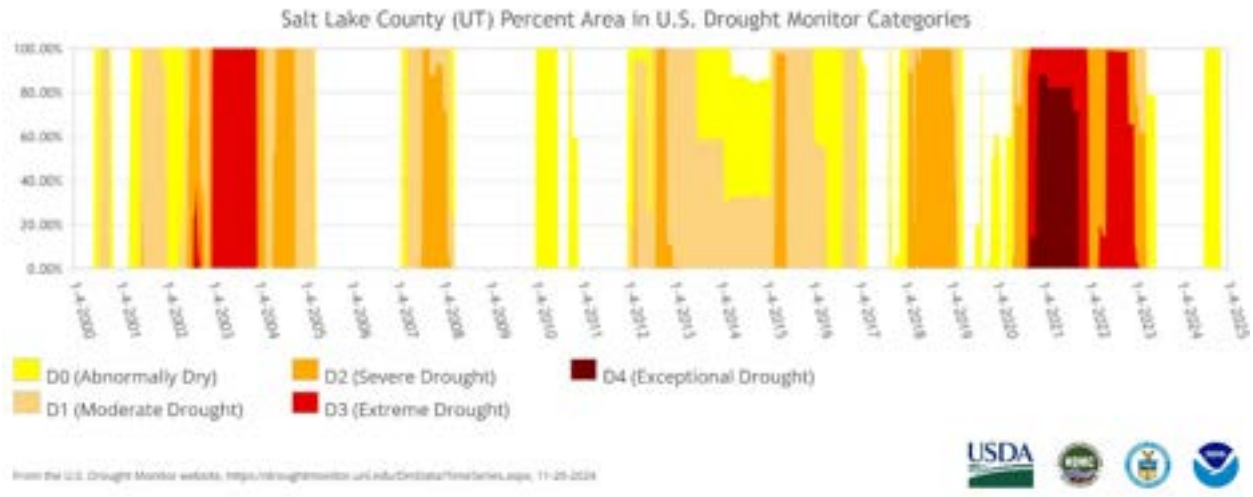


Figure 65: Percent of Salt Lake County in Drought Monitor Categories, 2000–2024

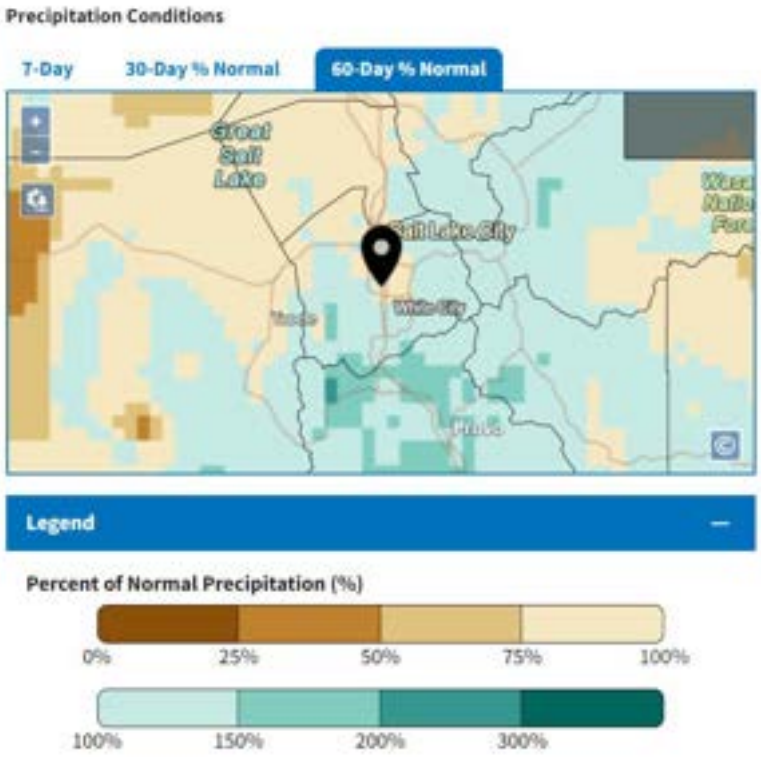


Figure 66: Precipitation for October–December 2024 Compared with the 60-Day Percentage of Normal Precipitation, 1991–2020[75]

[75] NOAA, National Integrated Drought Information System. "Drought Conditions for Salt Lake County." Drought.gov. 2024. https://www.drought.gov/states/utah/county/salt%20lake.

Historical Events and Probability of Future Occurrences

Based on the FEMA Disaster Declarations Database, Salt Lake County has received no designation for drought Disaster Declarations since the last plan update. However, Governor Spencer Cox issued an Executive Order declaring a State of Emergency due to drought on March 17, 2021, and again on April 21, 2022, due to drought conditions affecting the entire state. Since 2019, 14 USDA drought-related Disaster Declarations have been recorded for Salt Lake County.[76]

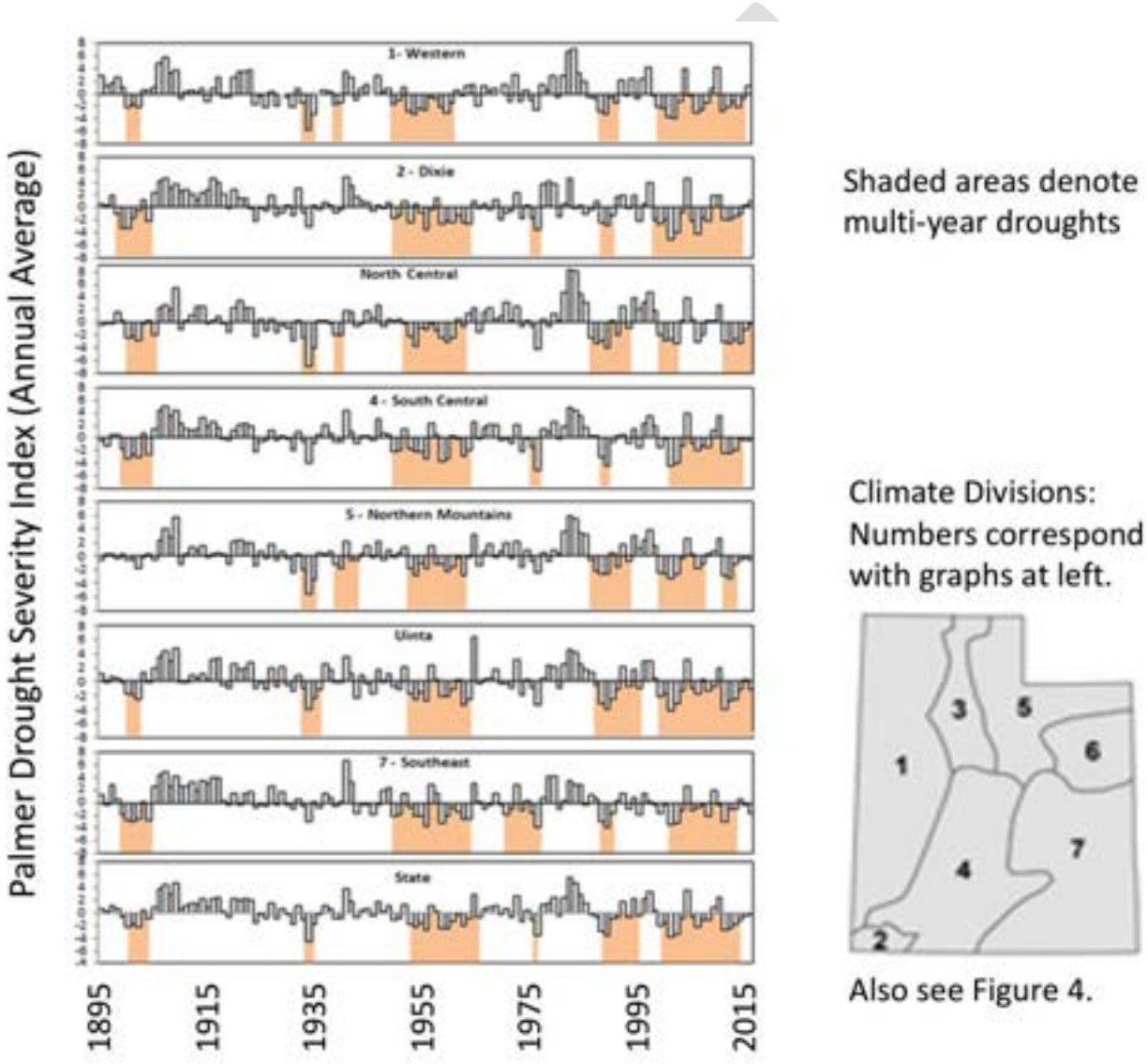


Figure 67: Palmer Drought Severity Index by Region[77]

Figure 67 provides a historical reference for multiyear droughts since 1895. The most severe drought in history for the North Central and Northern Mountains Regions occurred in 1934, during the height of the

[76] U.S. Department of Agriculture, Farm Service Agency. "Disaster Designation Information." https://www.fsa.usda.gov/resources/disaster-assistance-program/disaster-designation-information.
[77] Utah Hazard Mitigation, Utah Department of Public Safety. "Utah Enhanced State Mitigation Plan 2024." https://hazards.utah.gov/state-of-utah-hazard-mitigation-plan/.

Great Depression and coinciding with the same drought period (1930–1936) that caused the "Dust Bowl" on the Great Plains. The longest drought period ranged from 11 years for the North Central region (1953–1963) to 6 years for the Northern Mountains, which occurred twice, from 1900 to 1905 and from 1987 to 1992 (Utah Division of Water Resources 2007a). In 2018, a severe drought plunged virtually the entire state into moderate drought, with many areas in extreme drought. This drought peaked in September 2018 and reached −6.16 on the PDSI scale.

Droughts and water shortages will undoubtedly remain a significant concern for Salt Lake County in the future, particularly with the increasing public demand for water. The expected doubling of the population over the next 20 years makes water shortages a virtual certainty. New zoning ordinances, like the use of secondary water for irrigation and mandatory no watering days, are already in force.

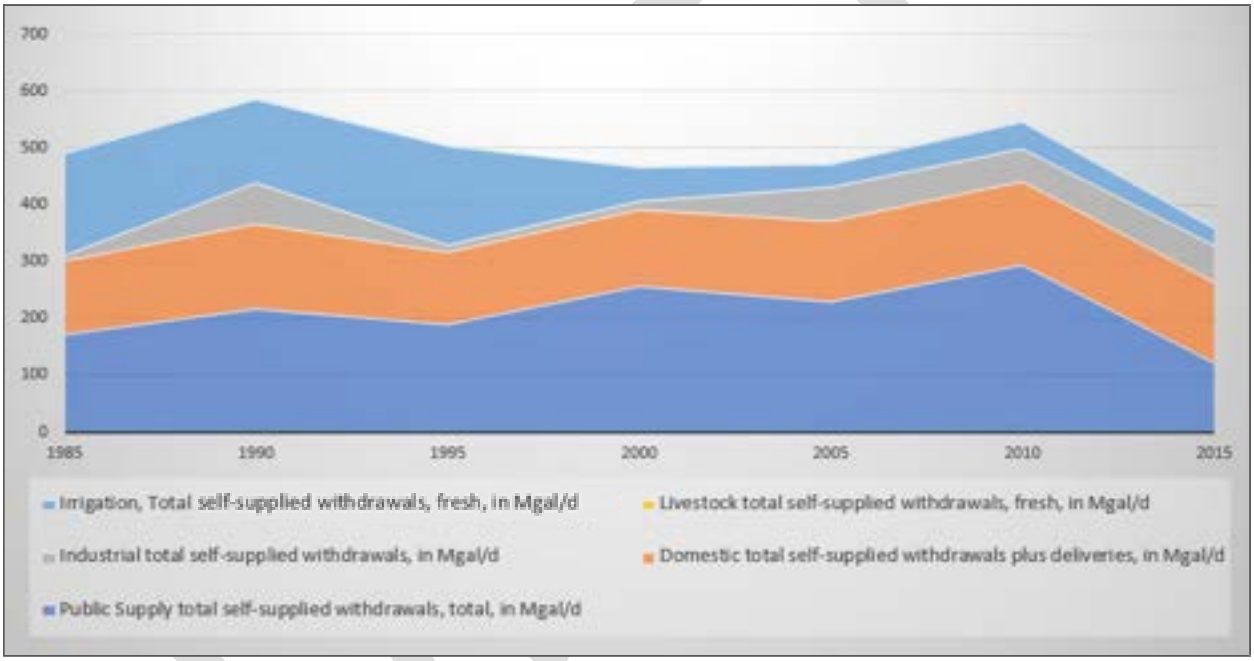


Figure 68: Annual Water Use by Category for Salt Lake County (Based on USGS data)[78]

Table 36: Annual Water Use by Category for Salt Lake County (Based on USGS data)[79]

Year	Public Supply Total Self-Supplied Withdrawals, in Mgal/d	Domestic Total Self-Supplied Withdrawals Plus Deliveries, in Mgal/d	Industrial Total Self-Supplied Withdrawals, in Mgal/d	Livestock Total Self-Supplied Withdrawals, Fresh, in Mgal/d	Irrigation, Total Self-Supplied Withdrawals, Fresh, in Mgal/d
1985	172.9	129.27	10.68	0.21	180.28
1990	218.54	149	72.19	0.15	146.41

[78] United States Geological Survey (USGS), National Water Information System. 2024. https://waterdata.usgs.gov/ut/nwis/water_use/.
[79] Ibid. (Data were not available for this entry, so the average between the 1995 and 2005 amounts was inserted as the best approximate value. Data provided represents the most current available data.)

Year	Public Supply Total Self-Supplied Withdrawals, in Mgal/d	Domestic Total Self-Supplied Withdrawals Plus Deliveries, in Mgal/d	Industrial Total Self-Supplied Withdrawals, in Mgal/d	Livestock Total Self-Supplied Withdrawals, Fresh, in Mgal/d	Irrigation, Total Self-Supplied Withdrawals, Fresh, in Mgal/d
1995	189.95	127.73	11.7	0.43	173.7
2000	258.39	134.125*	15.13	0.19	59.78
2005	231.12	140.52	61.77	0.15	37.83
2010	295.7	146.83	56.08	0.09	47.58
2015	123.69	141.33	65.82	0.09	28.77

Salt Lake Valley is a largely urban area with a growing population. Most of its development uses municipal water sources, principally wells completed in the basin-fill aquifer system. The population growth and concomitant increase in municipal groundwater pumping could significantly decrease the amount of groundwater discharged from the principal aquifer system (where most wells are completed) to the shallow unconfined aquifer system.

The shallow unconfined aquifer overlies confining beds above the principal aquifer system in the central and northern parts of the valley and provides water to springs and approximately 58,000 acres (23,500 hm2) of wetlands in groundwater discharge areas. Decreased recharge to the shallow unconfined aquifer from the principal aquifer due to increased groundwater pumping could reduce water supply to these springs and wetlands. In addition, water supply to the springs and wetlands is affected by climatic conditions and the level of the Great Salt Lake. Drought conditions from 1999 to 2004 reduced groundwater aquifer recharge across the state, including in the Great Salt Lake area, which negatively impacted the Salt Lake Valley wetlands. In 2005 and 2008, the water levels of the Great Salt Lake dropped close to the historic low reached in 1963, causing some parts of the Salt Lake Valley wetlands to dry up.

To evaluate the potential impacts of drought and increased development on the Salt Lake Valley wetlands, researchers used existing data to estimate a water budget and develop regional, three-dimensional, steady-state, and transient MODFLOW models to evaluate changes in the water budgets for wetland areas. These efforts focused on wetlands around the margins of the Great Salt Lake, although the results may apply to all the wetlands in Salt Lake Valley. The modeling suggests that subsurface inflow into the wetland areas would be most affected by decreased subsurface inflow due to long-term (20-year) drought conditions. This decline would also cause changes in Great Salt Lake levels, with subsurface inflow also decreasing due to higher municipal and industrial well withdrawals over the same period. Therefore, the worst-case scenario for the wetlands would be a combination of those conditions. To meet the goal of the U.S. Environmental Protection Agency (EPA) of no net loss of wetlands, the Salt

DRAFT

Lake Valley wetland areas must be managed to maintain their current water budget, estimated at 52,420 acre-feet per year (65 hm3/yr) of recharge in 2010.[80]

The 2012–2016 drought, although less severe, impacted much of the state for 4 straight years. Another drought from 2018–2019 was short-lived but felt across the entire state.

From 2019 to 2023, Utah experienced a statewide record for dryness and warmth. The driest year on record was 2020, and by the end of the year, 90% of the state was in extreme or exceptional drought. Dry conditions since 2000 have resulted in record-low water levels in the Great Salt Lake. The most intense period of drought since 2000 occurred the week of January 26, 2021, where 69.99% of Utah land was categorized as D4.[81]

The drought that began in 2020 has broken many records for its severity, drawing attention not only from Utah's water managers but also the Governor, State Legislature, and the community at large. Drought conditions remained significant through the beginning of 2022, and the drought's impacts continue to be of grave concern.[82]

Figure 69 shows forecasts for total precipitation (left image) and abnormal precipitation (right image) from December 2023 to February 2024 in the Western United States.[83] The map legend indicates that Utah's total precipitation for the observed time frame was between 0 and 10 inches, with abnormal precipitation at 0–2 inches.

DRAFT

[80] Yidana, Sandow, Mike Lowe, and Rich Emerson. "Wetlands in Northern Salt Lake Valley, Salt Lake County, Utah – An evaluation of the threats posed by groundwater development and drought." 2010. https://www.researchgate.net/publication/268257262_Wetlands_in_Northern_Salt_Lake_Valley_Salt_Lake_County_Utah_-_An_evaluation_of_the_threats_posed_by_groundwater_development_and_drought.
[81] U.S. Department of Agriculture, Farm Service Agency. "Disaster Designation Information." https://www.fsa.usda.gov/resources/disaster-assistance-program/disaster-designation-information.
[82] Utah Division of Water Resources. "Drought Response Plans: Triggers and Actions." June 28, 2022. https://water.utah.gov/wp-content/uploads/2022/07/Drought-Response-Plan-070822.pdf.
[83] Utah Climate Center. "Seasonal Drought Forecast For the Intermountain West." Bureau of Reclamation, Utah State University. 2024. https://climate.usu.edu/westernDrought/.

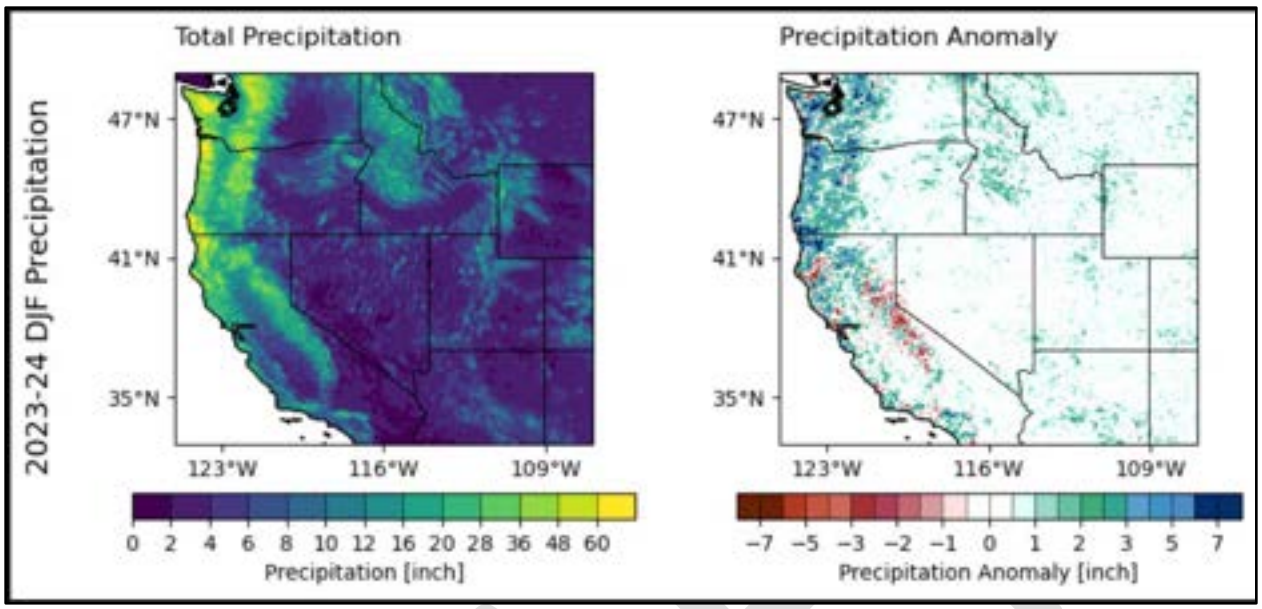


Figure 69: Seasonal Drought Forecast for the Intermountain West, 2023–2024[84]

The National Risk Index reports a frequency of 39.2 events annually for Salt Lake County. Based on these records, probability of future occurrences is highly likely.

Climate Change Considerations

Utah is unique in the amount of natural precipitation it receives. Because drought is an ever-present threat, resilience must be built into planning. Climate change has caused the state to become warmer and drier, highlighting the need to identify areas for improvement to better respond to the challenges and unmet needs caused by drought conditions.[85]

In Salt Lake County, climate change can have a significant impact on the natural hazard of drought. Rising temperatures and shifting precipitation patterns can lead to more frequent and severe droughts in the area. Average temperatures in Utah can rise and reduce snowpack and cause earlier snowmelt—further impacting the availability of water during the year. Higher temperatures can also cause more rain than snow to fall, further reducing the snowpack that many communities may rely on for water.

According to the 2024 Utah Enhanced Hazard Mitigation Plan[86] statement on climate, higher temperatures caused by climate change are expected to exacerbate drought conditions. Estimates of additional temperature changes by 2100 vary, largely depending on global emissions of greenhouse gases. However, temperature increases driven by climate change will almost certainly continue, along with the associated intensification of drought conditions. The Climate Mapping for Resilience and

[84] Ibid.
[85] Utah Division of Water Resources. “Drought Response Plans: Triggers and Actions.” June 28, 2022. water.utah.gov/wp-content/uploads/2022/07/Drought-Response-Plan-070822.pdf.
[86] Utah Department of Public Safety, Utah Hazard Mitigation. “Utah Enhanced State Hazard Mitigation Plan.” https://hazards.utah.gov/state-of-utah-hazard-mitigation-plan/.

Adaptation (CMRA) tool projects an increase in days per year with no precipitation (Figure 70) and the maximum number of consecutive dry days (Figure 71) compared with historical averages.

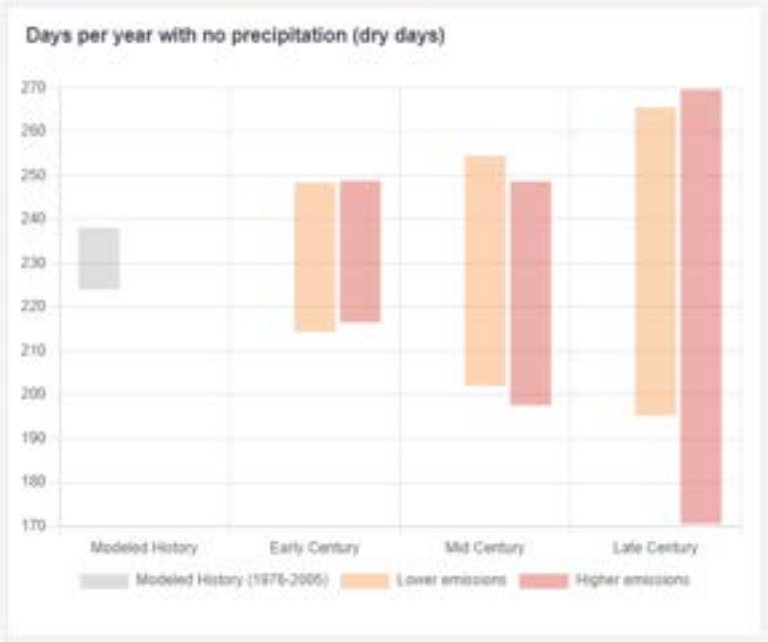


Figure 70: CMRA Projected Days Per Year with No Precipitation[87]

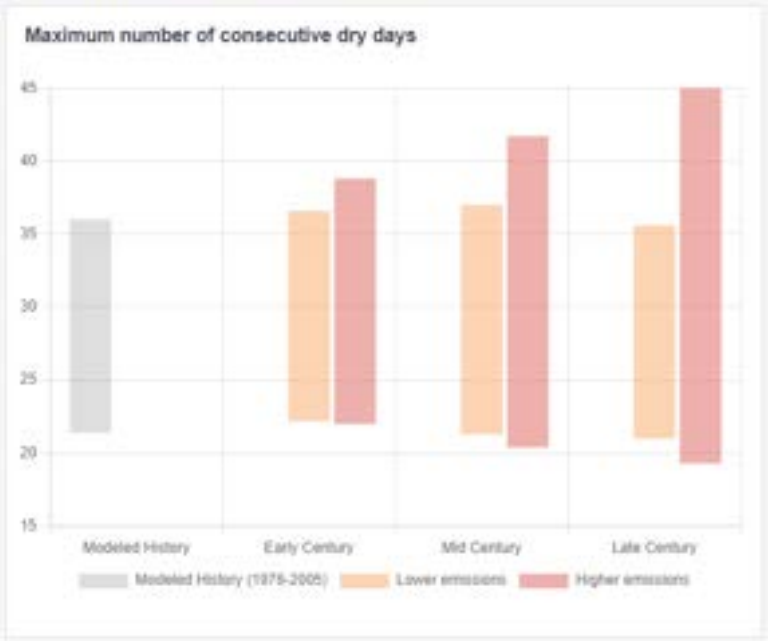


Figure 71: CMRA Projected Maximum Number of Consecutive Dry Days[88]

Figure 72 shows the water-year precipitation changes standardized to reflect climate anomalies. The observed period (blue) reveals the signature cyclic behavior of northern Utah's climate cycle, which can

[87] CMRA = Climate Mapping for Resilience and Adaptation.
[88] CMRA = Climate Mapping for Resilience and Adaptation.

be traced to slow variations in the western tropical Pacific along with jet stream position. The predicted water-year climate anomaly (red) projects wetter-than-average winters by 2020.[89]

DRAFT

[89] Utah State University, Utah Climate Center. “Northern Utah’s Climate Variability and Prediction.” 2024. https://climate.usu.edu/snowForecast.php.

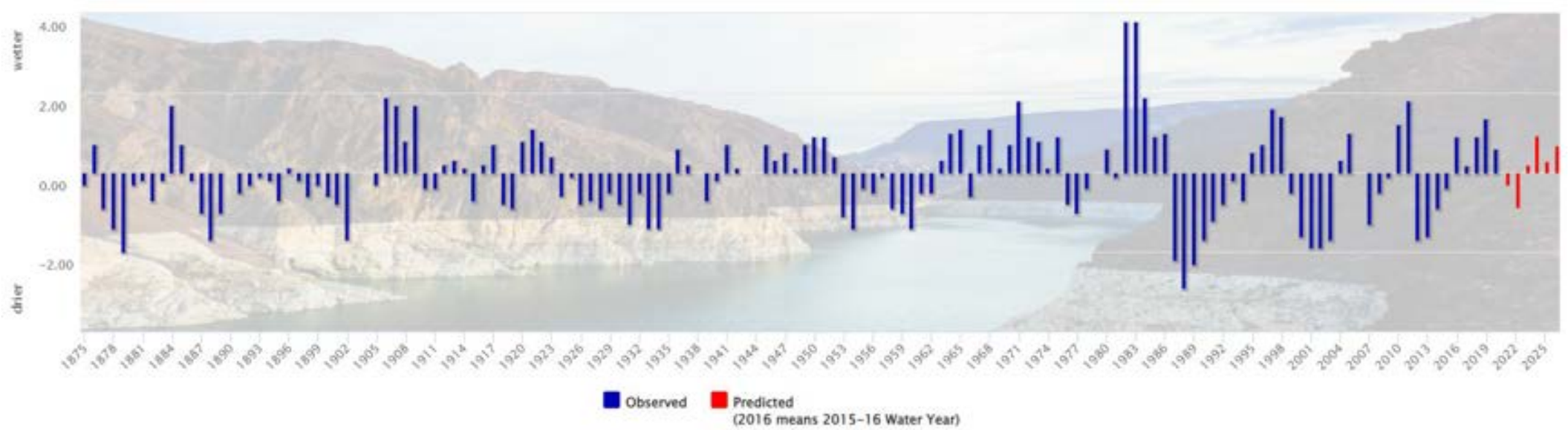


Figure 72: Climate Variability and Prediction for Northern Utah[90]

[90] Ibid.

Secondary Hazards

Wildfires are the most common secondary hazard associated with drought. Prolonged lack of precipitation dries out vegetation, making it increasingly susceptible to ignition and fueling more extreme fire behavior as drought conditions persist. This vulnerability also extends to crops. Loss of forests and trees exacerbates erosion, leading to heavy silting of streams, reservoirs, and rivers, which causes severe damage to aquatic life, irrigation, and power development. Droughts can also create optimal conditions for dust storms, significantly reducing air quality for both humans and animals. Low stream flows can lead to higher temperatures, oxygen depletion, disease, and loss of spawning areas for fish resources. Drought is often accompanied by extreme heat. Temperatures of 90ºF and higher increase the risk of sunstroke, heat cramps, and heat exhaustion in humans and heat-related injuries in pets and livestock.

The Great Salt Lake, partially in the northwest corner of the county, is a significant regional natural, economic, and cultural resource. The lake has lost over half its volume since the 1980s due to prolonged droughts along with variations in precipitation and water consumption. As more of the lakebed is exposed, severe dust storms and reduced air quality become more likely. Contaminants in the soil that may become airborne could also pose health risks to the populations of nearby cities.

Lower water levels in lakes and reservoirs can degrade water quality and promote the growth of harmful cyanobacteria, or algal blooms, which can be lethal to pets and pose health risks to humans.

Vulnerability Assessment

Droughts can have wide-ranging impacts that may affect large areas and cross jurisdictional boundaries. Droughts can last anywhere from a few weeks to several years, with impacts primarily experienced as water shortages and agriculture-related losses. More specifically, droughts can reduce municipal water supplies, lower agricultural yields, damage natural resources and wildlife habitat, and limit recreation opportunities. It is a hazard that can affect all populations, structures, and infrastructure.

Water is a critical resource for everyday household use, including drinking, cooking, and cleaning. It is also critical for day-to-day business operations in manufacturing and agriculture. Drought can lead to water supply shortages for various community activities, resulting in use restrictions or higher costs. These shortages may disproportionately affect low-income households, making it harder for them to afford the increased water expenses.

The 2024 Utah State Hazard Mitigation Plan conducted drought vulnerability rankings for each county in the state, based on local hazard mitigation plans (LHMPs). Each LHMP was reviewed to gather data on how each jurisdiction viewed their vulnerability to drought. The frequencies and severities of drought as reported in the LHMPs were gathered to establish a drought hazard ranking. This ranking is based on a combination of severity and probability/frequency, both categorized from 0 to 4. The numbers were then combined to calculate a ranking from 0 to 8. The map in Figure 73 shows the drought hazard ranking for each county as reported in the LHMPs.

DRAFT

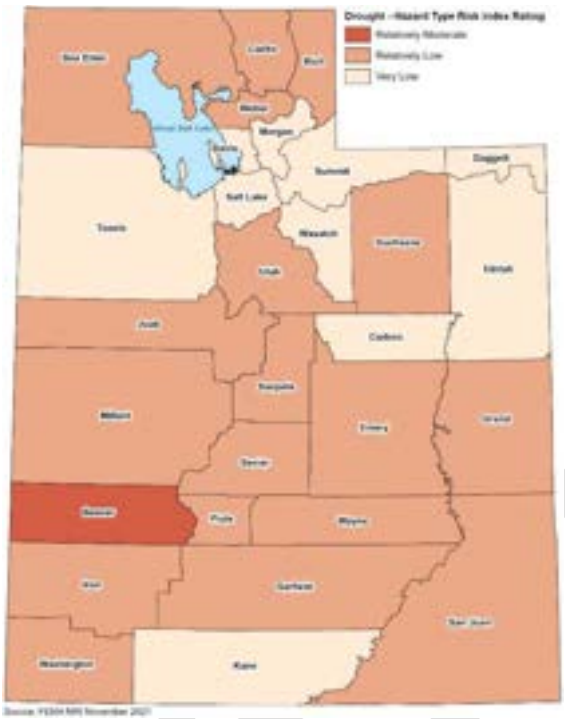


Figure 73: Risk Index Rating for Drought for Utah Counties

Table 37 lists the agriculture statistics for Salt Lake County from the 2023 Agriculture Census, the most current agriculture census data available.

Table 37: Salt Lake County Agricultural Statistics[91]

Farms	Total Acres	Market Value of Products Sold	Estimated Market Value of Land and Buildings (Average per Farm)
592	61,965	24,102,000	1,013,467

The 2019 Utah State Hazard Mitigation Plan also lists 1,463 state-owned facilities in Salt Lake County that are vulnerable to the effects of drought, with an insured value of $7,274,528,270.

ESTIMATED IMPACT AND POTENTIAL LOSSES

Population growth and land use can significantly impact drought conditions by placing a strain on water resources. The demand for water rises as the population increases, which can lead to the over-extraction of water from aquifers, rivers, and lakes. This can exacerbate drought conditions, especially when water is already scarce. Urbanization and agricultural expansion also can place a strain on water reservoirs

[91] National Agricultural Statistics Service Mountain Region, Utah Field Office. "2023 Utah Agricultural Statistics." USDA National Agricultural Statistics Service.gov. https://www.nass.usda.gov/Statistics_by_State/Utah/Publications/Annual_Statistical_Bulletin/2023-Agricultural-Statistics.pdf.

while reducing the natural capacity to retain water, further intensifying drought conditions. Residents and businesses could be affected by water shortages, restrictions, or increases in costs for water.

Drought is unpredictable, making it challenging to identify the areas most threatened and provide loss estimate values. However, historical drought records demonstrate that agriculture is typically the economic sector most impacted by drought. These losses can have repercussions throughout the county and neighboring jurisdictions. For example, the agriculture sector was the hardest hit during the 2002 drought, suffering a loss of 6,110 jobs and almost $120 million in income statewide. It also caused an estimated $100 million drop in livestock sales and $50 million in hay sales. Drought-related fires are thought to have contributed to the $50 million drop in tourism sales. The combined effects of the drought in these three sectors resulted in a loss of over 6,100 jobs and $120 million in income during 2002. Construction, manufacturing, and wholesale trade also were impacted by drought. In its drought report, the Utah Division of Water Resources notes that significant data gaps hinder the quantification of drought impacts in all sectors of the economy and society. It recommends monitoring tax revenues and other economic indicators at all levels of government to improve evaluation methods and gain a clearer understanding of drought impacts.

Drought can also affect local economies by reducing recreation opportunities. Lower stream level flows and declining reservoir and lake levels may limit access to recreation sites, while some have been closed entirely due to algal blooms. Changes in the appearance quality of recreation sites also may decrease demand, leading to fewer visitors and resulting in economic losses for tourism and recreation-related industries. The Great Salt Lake contributes to lake effect snow, which influences snow levels at Utah ski resorts. The lake's reduction in size may limit this lake effect, potentially reducing the snowpack in the nearby mountains. This could lead to less desirable ski conditions, resulting in a significant economic impact on these winter recreation sites.

Drought does not typically damage structures, critical facilities, or infrastructure; however, during severe or prolonged drought, soil may contract due to decreased soil moisture. This contraction could damage structural foundations or building walls.

Many natural systems can be negatively impacted by drought. It can cause higher concentrations of pollutants or other contaminants in water or increased nutrient concentrations and turbidity in the water supply. Algal levels also may increase, and when combined with warm temperatures, this can cause dangerous algal blooms. Reduced water supply and poor water quality also harm habitats for fish and other wildlife. Grass, trees, and other vegetation can dry out, which further alters ecosystems. Drier vegetation also poses wildfire risks, including ignition risk and rate of spread. Drought can also cause soil erosion and contribute to dust storms.

The NRI includes data on the EALs to individual natural hazards, historical loss, and overall risk at a county and census tract level. Salt Lake County's NRI EAL value for drought is $19 million, with a risk score of 40.6 and a rating of Very Low percentile compared with the rest of the United States (Figure 74). This low rating can likely be attributed to relatively low amounts of agricultural production in Salt Lake County, which is typically the source of most drought losses.

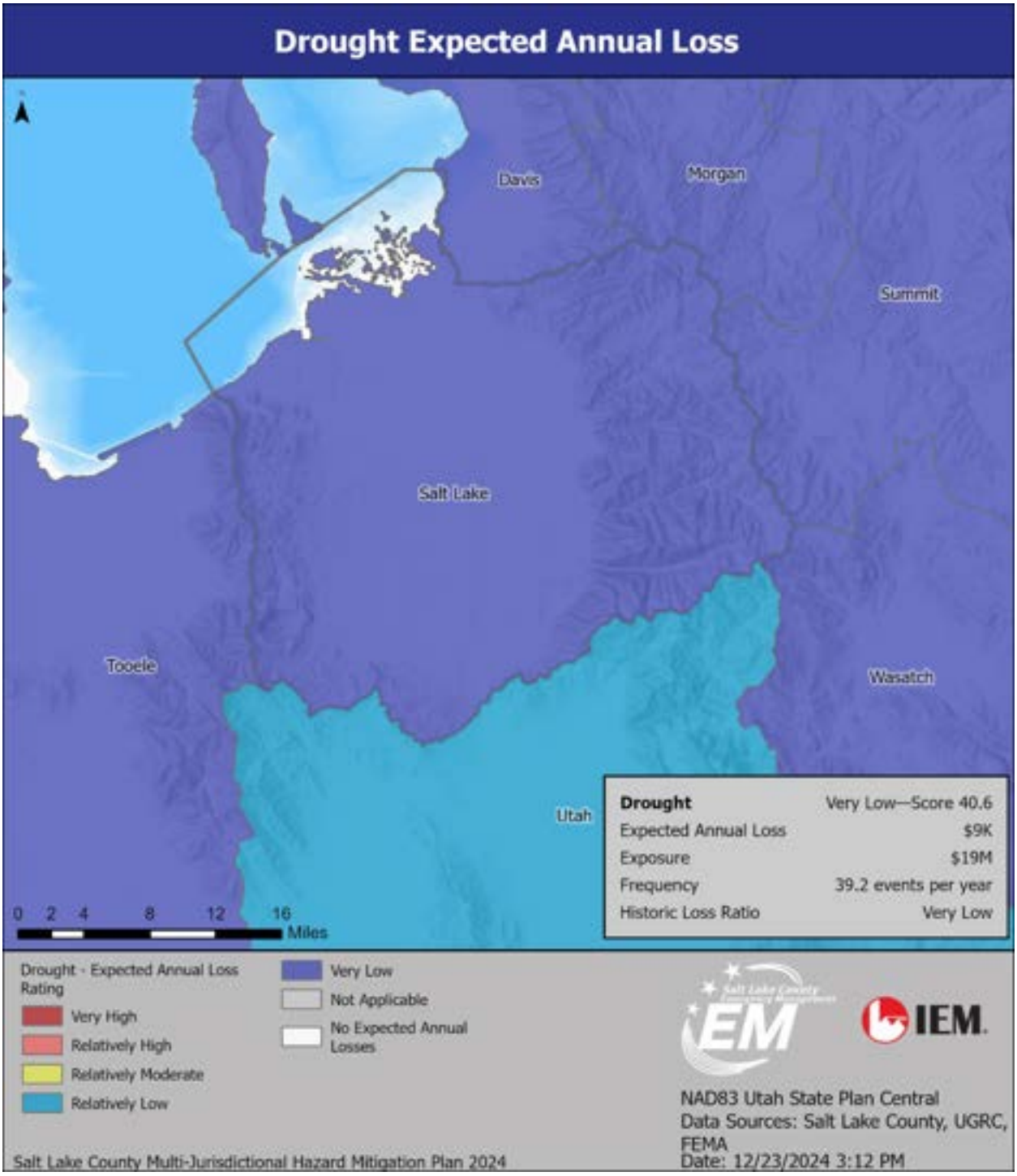


Figure 74: National Risk Index Expected Annual Loss from Drought in Salt Lake County[92]

[92] FEMA, National Risk Index. "Salt Lake County Expected Annual Loss Drought Risk Score, Map and Legend." https://hazards.fema.gov/nri/map.

VULNERABLE POPULATIONS

Drought can impact both surface water and groundwater availability and can have direct, disastrous effects on human populations. The indirect consequences of drought—such as unemployment, lower tax revenues, higher food prices, reduced outdoor recreation opportunities, higher energy costs as water levels in reservoirs decrease and consumption increases, and water rationing—are often not fully known. This complex web of impacts can affect people and economies well beyond the area physically experiencing drought. These impacts may be more significant for some populations, such as lower-income households who may be more strained by increased costs and economic losses. Individuals with underlying health conditions, the elderly, young children, and other medically vulnerable individuals may be more affected by drought-related poor air quality conditions and dust storms.

During a drought, all living organisms, including humans, animals, and crops, require access to essential resources like food, water, and shelter to survive and thrive. Without them, they become stressed and eventually die. Drought also affects shelter, as soil contractions can lead to structural damage in buildings, bridges, and other infrastructure.

COMMUNITY LIFELINES

The main lifelines for drought are food, hydration, shelter, and water systems. Crops and animals require water to thrive and grow; without it, they become stressed and ultimately die. Shelter is also affected, as drought can severely damage structural integrity as the soil pulls away from beams, buildings, bridges, and other structures. Mitigating future droughts will require conservation, creative solutions, and innovation to maintain the standard of living Salt Lake County has come to rely on.

CHANGES IN DEVELOPMENT

Experts agree that a long-term drought strategy is essential to securing Utah's water future, as water demand will continue to rise with population growth. Coupled with climate change, which acts as a magnifier, droughts can become more unpredictable and prolonged. The long-term record of reservoir levels, precipitation inputs, and projected population growth raises growing concerns about Utah's water supply, as shrinking resources face increased demand. In the last five years, Salt Lake County has seen 2.6% growth in population and significant residential and commercial development. New people and businesses put pressure on Salt Lake County's water supply on the demand side, but the county is also facing pressure on the supply side with state reservoirs reflecting wet and dry cycles. Although these fluctuations affect long-term water security and availability, residents may soon face mandatory water conservation measures, highlighting the growing vulnerability to drought.[93]

Potential impacts on the county include a decline in agriculture-related economic opportunities, food scarcity, loss of life or property, and worsened air quality. Changes in population patterns may occur as

[93] Jensen, Marcus. "State Climate Officer Explains the Winter Snow Surge and What it Means for Utah's Water Future." Utah State University, Utah State Today. January 17, 2023. https://www.usu.edu/today/story/?story=state-climate-officer-explains-the-winter-snow-surge-and-what-it-means-for-utahs-water-future.

people relocate seeking improved economic opportunities and quality of life. Changes in land use and development may also lead to changes in agriculture zoning.

VULNERABILITY SCORE

To analyze the county's vulnerability to drought, the NRI was used as a primary tool during the 2024 Hazard Identification and Risk Assessment (HIRA) update. The NRI defines risk as the potential for negative impacts from a natural hazard. It determines a community's risk relative to other communities by examining the EAL and social vulnerability in a given community in relation to that community's resilience. As shown in Figure 75, Salt Lake County has a very low NRI drought risk rating, with a risk score of 36.9.

DRAFT

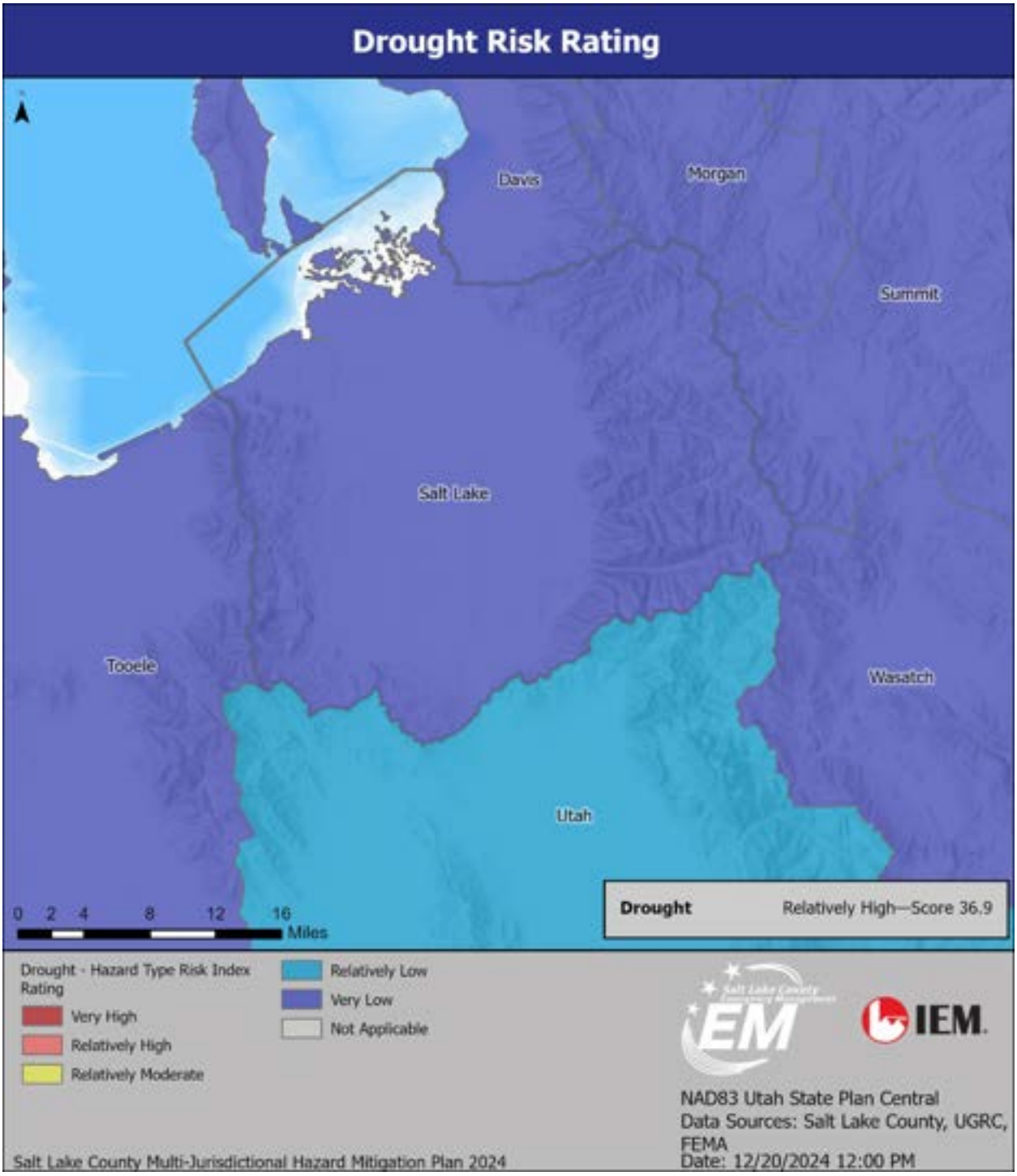


Figure 75: National Risk Index Drought Risk Map, Legend, and Score for Salt Lake County[94]

[94] FEMA, National Risk Index. "National Risk Index Salt Lake County Drought Score, Map and Legend." https://hazards.fema.gov/nri/map.

Earthquake

Hazard Description

The Utah Geologic Survey defines an earthquake as the abrupt, rapid shaking of the earth caused by sudden breakage of rocks that can no longer withstand the stresses building up deep beneath the Earth's surface. The rocks break along zones of weakness, called faults. Seismic waves are then transmitted outward, causing further ground shaking or vibrations.

The Richter scale measures the magnitude of earthquakes on a seismograph. Generally, an earthquake must be at least a magnitude 2.0 to be felt by humans, and about magnitude 5.5 before significant damage occurs. The amount of damage from an earthquake depends on soil type, rock type, groundwater depth, and topography. Other factors include the type of construction in an area and the population density. Figure 77[95] shows the effects of an earthquake on a market in the city of Magna.

Figure 76: Effects of the 2020 Magna Earthquake

GROUND SHAKING

Ground shaking is caused by the passage of seismic waves generated by an earthquake. Shaking can vary in intensity but is the greatest secondary hazard because it affects large areas and stimulates many other hazards associated with earthquakes. Moderate to large earthquake events generally produce trembling for about 10 to 30 seconds. Aftershocks can occur erratically for weeks or even months after the main earthquake event.

Seismic waves move the Earth's surface laterally and vertically and vary in frequency and amplitude. High-frequency, small-amplitude waves cause more damage to short, stiff buildings. Low-frequency, large-amplitude waves have a greater effect on high-rise buildings. The intensity depends on geologic features, such as bedrock and rock type, topography, and the location and magnitude of the earthquake. Other significant factors include groundwater depth, basin shape, sediment thickness, and the degree of sediment consolidation.

[95] Photo courtesy of SLCo EM.

SURFACE FAULT RUPTURE AND TECTONIC SUBSIDENCE

Surface fault rupture is caused by relative movement between blocks in the Earth's crust. In Utah, this results in the formation of scarps or steep breaks in the slope. The 1934 Hansel Valley earthquake resulted in a surface displacement of approximately 1.6 feet. Earthquakes with a magnitude of 6.5 or greater could cause surface faulting with heights of 16 to 20 feet and break segments ranging from 12 to 44 miles long. Surface displacement generally occurs over a zone hundreds of feet wide called the zone of deformation and can cause severe damage to building foundations or lifelines (roads, pipelines, communications lines) that cross the fault. Tectonic subsidence, or down dropping and tilting of the valley floor, generally depends on the amount of surface fault rupture and can cause flooding by tilting lakebeds or dropping the ground surface below the water table. The greatest amount of subsidence will be in the fault zone and will gradually diminish out into the valley.

Hazard Profile

Potential Impact	X	Catastrophic	**Probability**		Highly Likely
		Critical		X	Likely
		Limited			Occasional
		Negligible			Unlikely
Location	Ground shaking will be felt throughout the county. Surface fault rupture can be found in areas of known historic fault movements. Liquefaction can be expected in areas of high to moderate liquefaction potential.				
Seasonal Pattern	None.				
Conditions	Liquefaction potential in areas with shallow groundwater. Soil comprised of old lakebed sediments. Historic movement along faults. Intermountain seismic zone, Wasatch Fault.				
Duration	Actual ground shaking will be under one minute; aftershocks can occur for weeks or even months.				
Secondary Hazards	Fire, landslide, rock falls, avalanche, flooding, hazardous material release, transportation and infrastructure disruptions, essential service disruptions (communications, utilities)				
Analysis Used	Review of hazard analysis plans and other information provided by the University of Utah Seismograph Station, Utah Geological Survey, United States Geological Survey, FEMA, Hazus, Utah Division of Emergency Management, Utah Geospatial Resource Center				

Magnitude/Extent

Currently, the most-used magnitude scale is the moment magnitude (Mw) scale, with the following classifications of magnitude:

- **Great:** Mw > 8
- **Major:** Mw = 7.0–7.9
- **Strong:** Mw = 6.0–6.9
- **Moderate:** Mw = 5.0–5.9

- **Light:** Mw = 4.0–4.9
- **Minor:** Mw = 3.0–3.9
- **Micro:** Mw < 3

Estimates of moment magnitude roughly match the local magnitude scale (ML), commonly called the Richter scale. One advantage of the moment magnitude scale is that, unlike other magnitude scales, it does not saturate at the upper end. That is, there is no value beyond which all large earthquakes have about the same magnitude. For this reason, moment magnitude is now the most frequently used estimate of large earthquake magnitudes.

Another commonly used intensity scale is the Modified Mercalli intensity scale, with ratings defined as follows.[96]

Intensity	Shaking	Description/Damage
I	Not felt	Not felt except by a very few under especially favorable conditions.
II	Weak	Felt only by a few persons at rest,especially on upper floors of buildings.
III	Weak	Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibrations similar to the passing of a truck. Duration estimated.
IV	Light	Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.
V	Moderate	Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.
VI	Strong	Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight.
VII	Very strong	Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken.
VIII	Severe	Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned.
IX	Violent	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.
X+	Extreme	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent.

PERCEIVED SHAKING	Not felt	Weak	Light	Moderate	Strong	Very strong	Severe	Violent	Extreme
POTENTIAL DAMAGE	none	none	none	Very light	Light	Moderate	Moderate/Heavy	Heavy	Very Heavy
PEAK ACC.(%g)	<.17	.17-1.4	1.4-3.9	3.9-9.2	9.2-18	18-34	34-65	65-124	>124
PEAK VEL. (cm/s)	<0.1	0.1-1.1	1.1-3.4	3.4-8.1	8.1-16	16-31	31-60	60-116	>116
INSTRUMENTAL INTENSITY	I	II-III	IV	V	VI	VII	VIII	IX	X+

Figure 77: Earthquake Intensity Scale[97]

[96] USGS. The Modified Mercalli Intensity Scale. https://www.usgs.gov/programs/earthquake-hazards/modified-mercalli-intensity-scale.
[97] Earthquake Hazards Program. "EQ Magnitude, Energy Release, and Shaking Intensity." U.S. Geological Survey. https://www.usgs.gov/media/images/eq-magnitude-energy-release-and-shaking-intensity-3.

The Intermountain Seismic Belt (ISB) contains the Wasatch Fault—one of the longest and most active normal faults in the world—with a potential for earthquakes with a magnitude up to 7.5. The largest earthquakes in Utah occur in the ISB, with at least 35 earthquakes of magnitude 5.0 or greater occurring since 1850.

According to the U.S. Geological Survey (USGS), the range of earthquake magnitude experienced in Salt Lake County since 1962 is .01 to 5.7.

Location

Utah's earthquake hazard is greatest in the ISB, which extends 800 miles from Montana to Nevada and Arizona, and trends from north to south through the center of Utah.[98]

The Wasatch Fault traces along the base of the Wasatch Mountain Range. It comprises 10 segments that act independently, meaning that a part of the fault ruptures separately as a unit during an earthquake. The Salt Lake City segment traverses Salt Lake County from north to south, roughly along the eastern foothills of the Wasatch Mountains. In the Salt Lake City segment of the Wasatch Fault are three smaller segments from north to south known as the Warm Springs Fault, the Virginia Street Fault, and the East Bench Fault. Other faults in Salt Lake County include the West Valley Fault zone and the East Great Salt Lake Fault zone. Each of these fault zones has a much longer return interval (2,500 years or more) and is not expected to produce a major quake in the near future. Table 38 describes the characteristics of these fault zones and Figure 78 shows the location of each in the county.

Table 38: Fault Zones in Salt Lake County

Name	Fault Type	Length (km)	Time of Most Recent Deformation	Recurrence Interval
East Great Salt Lake Fault zone, Antelope Island section	Normal	35	586 201/-241 cal yr B.P.	4,200 years
Wasatch Fault zone, Salt Lake segment	Normal	43	1,300 ± 650 cal yr B.P.	1,300 years
West Valley Fault zone, Granger segment	Normal	16	1,500 ± 200 cal yr B.P.	2,600–6,500 years
West Valley Fault zone, Taylorsville segment	Normal	15	2,200 ± 200 cal yr B.P.	6,000–12,000 years
Cal yr B.P.= calendar years before present				

[98] Utah Geological Survey, 1996. "The Wasatch Fault," Public Information Series 40, pi-40.pdf.

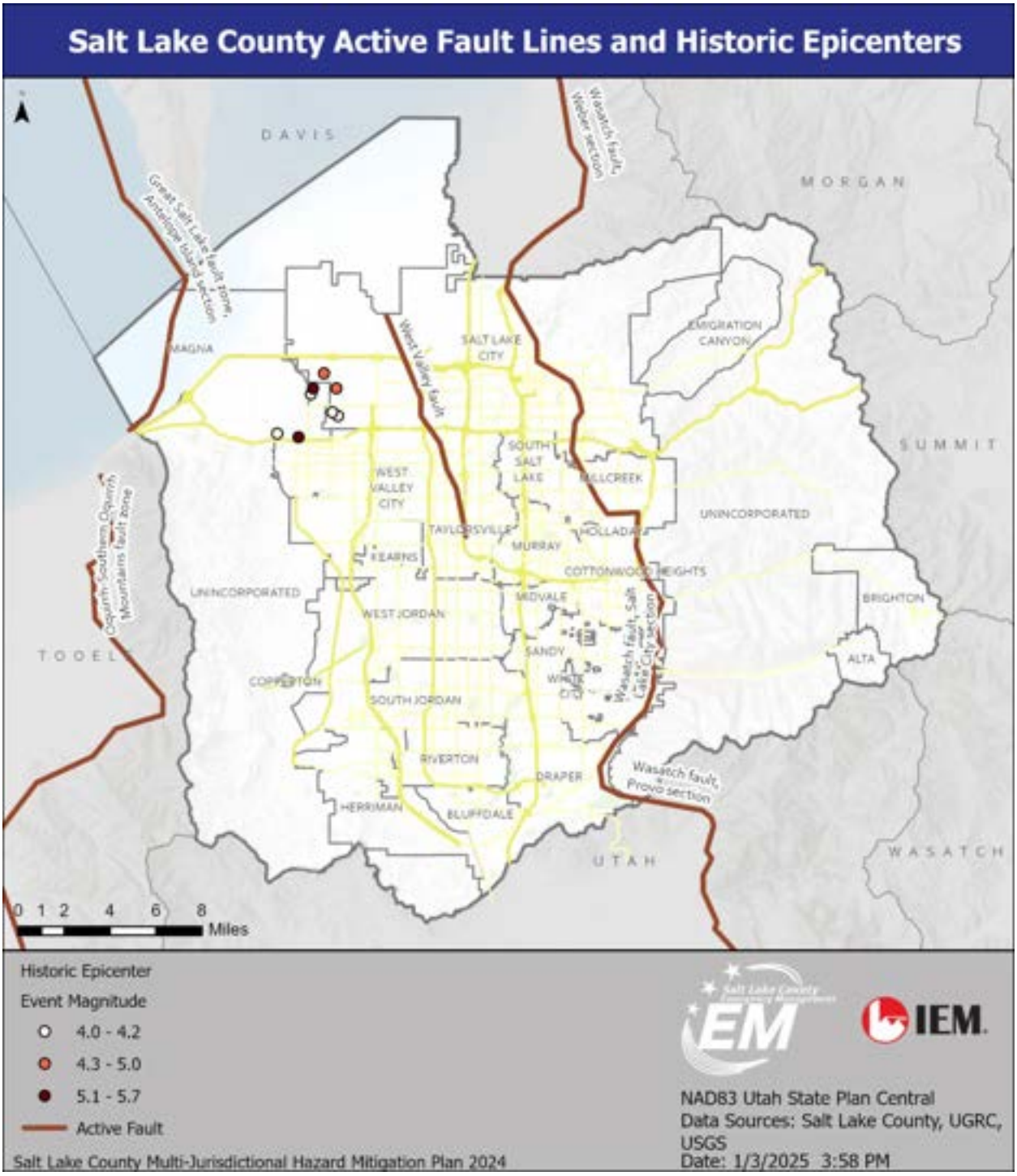


Figure 78: Active Fault Lines and Historic Epicenters in Salt Lake County

Liquefaction is a major hazard associated with earthquakes in Utah. It may occur when ground shaking causes water-saturated sandy soils to lose strength and soil to behave like a viscous liquid rather than a solid. Liquefaction can cause buildings to sink or tilt, underground storage tanks to rise, and other types of slope failures to occur. As shown in Figure 79, the Salt Lake Valley is located atop the ancient Lake Bonneville lakebed, which is made up of unconsolidated sandy soils. Much of the valley is also subject to

shallow groundwater. Both contribute to a large area of the north and central part of the county, where liquefaction potential is moderate to high.

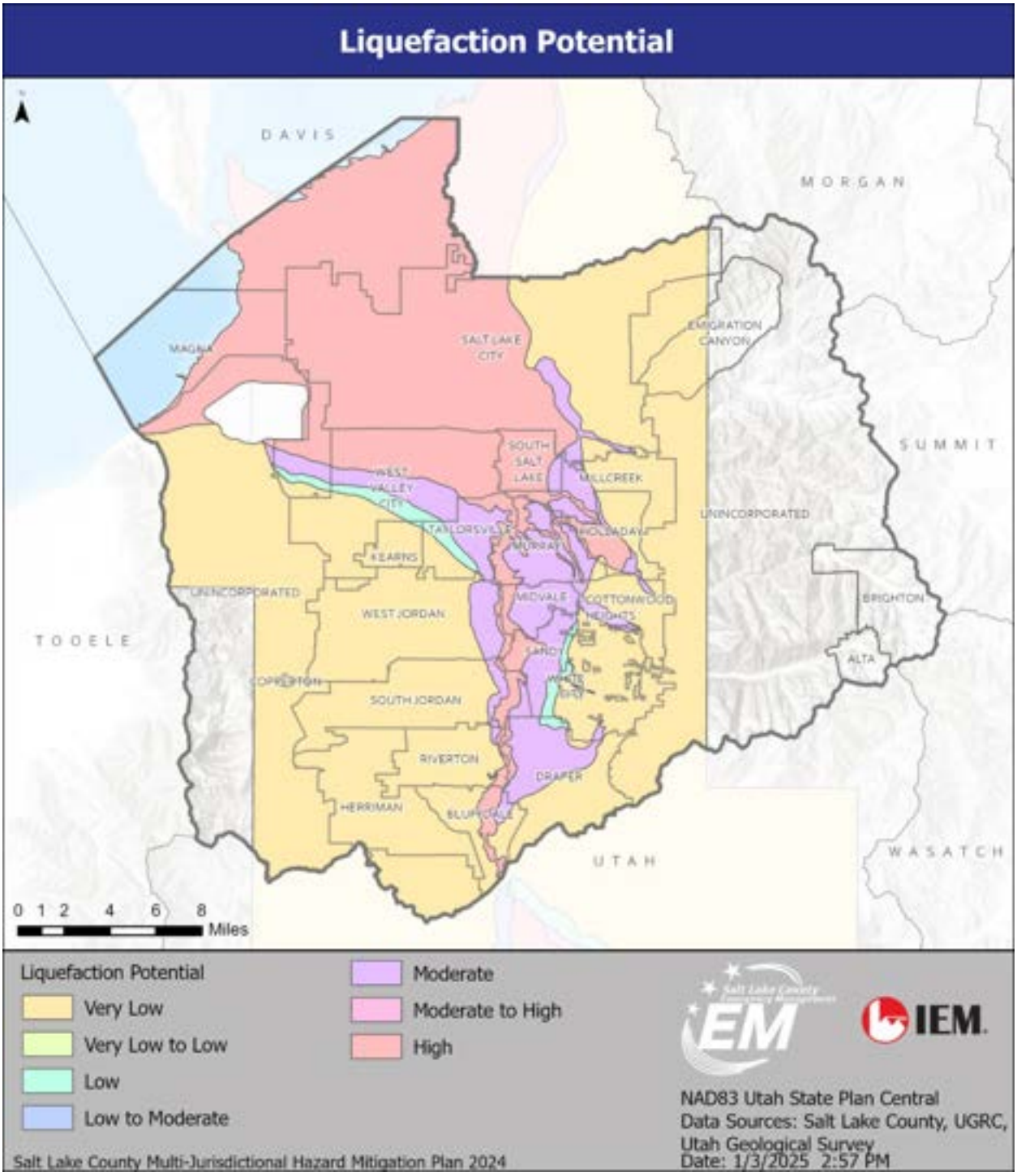


Figure 79: Liquefaction Potential in Salt Lake County

Historical Events and Probability of Future Occurrences

Utah experiences approximately 700 earthquakes each year, approximately six with a magnitude of 3.0 or greater. On average, a moderate, potentially damaging earthquake (magnitude 5.5–6.5) occurs in the state every 10 years. Large earthquakes (magnitude 6.5–7.5) occur on average every 50 years. Based on this recurrence interval, probability is considered to be likely. The history of seismic activity in Utah and along the Wasatch Front suggests that it is not a matter of *if* but *when* an earthquake will occur.

At least 26 large-magnitude (~6.5 or greater), surface-rupturing earthquakes have occurred in the past 6,500 years. On average, a large earthquake occurs every 300 years. The most recent large earthquake took place about 300 years ago in the Nephi segment. The Weber segment experienced a large earthquake about 500 years ago. The Salt Lake City segment has an average recurrence time of about 1,300 years between large earthquakes; however, the last major earthquake affecting most of the Salt Lake City segment occurred about 1,400 years ago. Enough energy has accumulated on the Salt Lake City segment to produce a magnitude 7.0+ earthquake.[99]

Magna Earthquake, March 18, 2020: A 5.7 magnitude earthquake rattled homes from southern Idaho to Millard County, causing significant damage to multiple buildings and displacing some residents. According to the USGS, the quake happened at 7:09 a.m., with the epicenter just north of Magna, between the city and Antelope Island near the edge of the Great Salt Lake. The quake forced the Salt Lake City International Airport to shut down operations for several hours, streets were closed, hazardous materials crews considered evacuating all of Magna due to a chemical leak at Kennecott, and damage was reported to structures in Magna, Kearns, West Valley City, and downtown Salt Lake City. Emergency officials called it the largest earthquake in Utah since a 5.9 magnitude quake hit St. George in 1992. An estimated 2.8 million people felt the shaking.[100]

DRAFT

[99] Utah Seismic Safety Commission, Utah Division of Emergency Management, et al. “Putting Down Roots in Earthquake Country, 2nd Ed.” 2022. https://ugspub.nr.utah.gov/publications/non_lib_pubs/putting-down-roots.pdf.
[100] PBS News.org. “5.7-magnitude quake shakes Utah, Salt Lake airport closed.” March 18, 2020. https://www.pbs.org/newshour/nation/5-7-magnitude-quake-shakes-utah-salt-lake-airport-closed.

Figure 80: Damage Following the Magna Earthquake[101]

Based on the FEMA Disaster Declarations Database, Salt Lake County received an Earthquake and Aftershocks Major Disaster Declaration on December 31, 2020, for the incident period March 18, 2020, to April 17, 2020, and the county was designated for individual and public assistance.

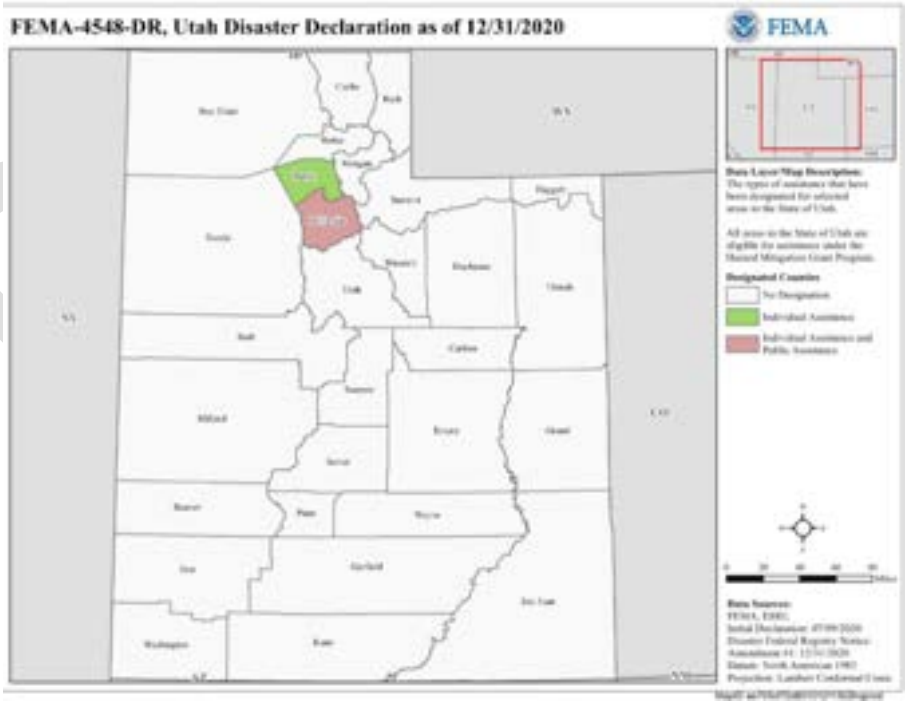


Figure 81: FEMA DR-4548 Utah Disaster Declaration for Earthquake and Aftershocks, December 31, 2020[102]

[101] Photo provided by SLCo EM.
[102] FEMA Disasters and Other Declarations. "Utah Earthquake and Aftershocks: DR-4548-UT." 2024. https://www.fema.gov/disaster/4548.

Figure 82 illustrates <M4 earthquake events occurring in and around Salt Lake County between 2010 and 2024, including the Magna earthquake in 2020.

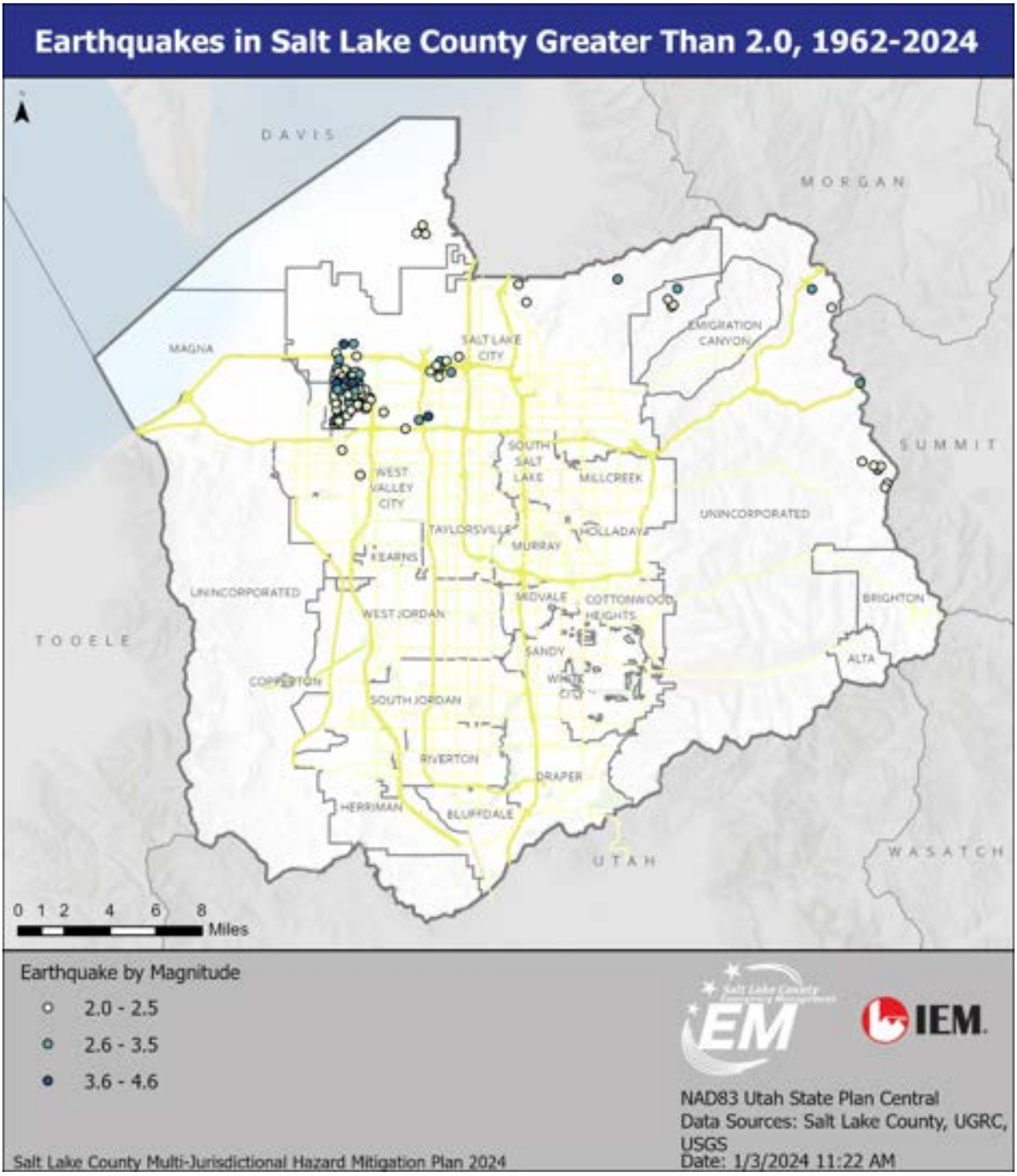


Figure 82: Earthquakes in Salt Lake County Greater than 2.0, 1962–2024

Although no surface-faulting earthquakes have occurred on the Wasatch Fault in recent history, evidence of many prehistoric events exists in the geologic record.[103] The segments between Brigham City and Nephi have a composite recurrence interval (average time between earthquake events) for large surface-faulting earthquakes (magnitude 7.0–7.5) of 300–400 years. The average repeat time on an individual segment is 1,200–2,600 years. The most recent surface-faulting earthquakes occurred about 500 years ago in the Provo and Weber segments, and about 350 years ago in the Nephi segment.

According to USGS records, more than 159 recorded earthquakes of 2.0 magnitude or greater occurred in or immediately around Salt Lake County from 1962 through 2024. Significant earthquakes have occurred in Salt Lake County in the last 50 years. In 1962, a 5.2 Richter magnitude quake jolted the Magna area. In 1992, a magnitude 4.2 quake shook the southern portion of the county.

The two largest measured earthquakes to occur in Utah were the Richfield earthquake of 1901, with a magnitude of 6.5, and the Hansel Valley earthquake of 1934, with a magnitude of 6.6. The Hansel Valley earthquake produced MM intensities of VIII in Salt Lake City, with many reports of broken windows, toppled chimneys, and structures twisted on their foundations. A clock mechanism weighing more than 2 tons fell from the main tower of the Salt Lake City County Building and crashed through the building. The only death that occurred during the event was caused when the walls of an excavation collapsed on a public works employee south of downtown Salt Lake City.

Utah's most damaging earthquake was of a smaller magnitude (5.7), occurring near Richmond in Cache Valley in 1962. This earthquake damaged over 75% of the houses in Richmond, as well as roads and various other structures. The damage was about $1 million (in 1962), which would be about $7,768,300 today with inflation.

The Working Group on Utah Earthquake Probabilities assessed the likelihood of large earthquakes in the Wasatch Front region. The assessment indicates there is an 18% probability of a M6.75 earthquake on the Wasatch Fault in the next 50 years, and a combined 43% probability in the next 50 years based on all faults in the region. For an M6.0 earthquake, the probability is 18% along the Wasatch Fault and 57% in the region.[104] The National Seismic Hazard model shows the potential for peak ground accelerations having a 2% probability of being exceeded in 50 years (Figure 83). The Wasatch Fault is the most active in the region.

[103] Utah Geological Survey, Public Information Series 40. "The Wasatch Fault." 1996. https://ugspub.nr.utah.gov/publications/public_information/pi-40.pdf.
[104] U.S. Geological Survey. "Fact Sheet 2016–3019: Earthquake Forecast for the Wasatch Front Region of the Intermountain West." April 2016. ussc.utah.gov/pages/download.php?direct=1&noattach=true&ref=1279&ext=pdf&k=.

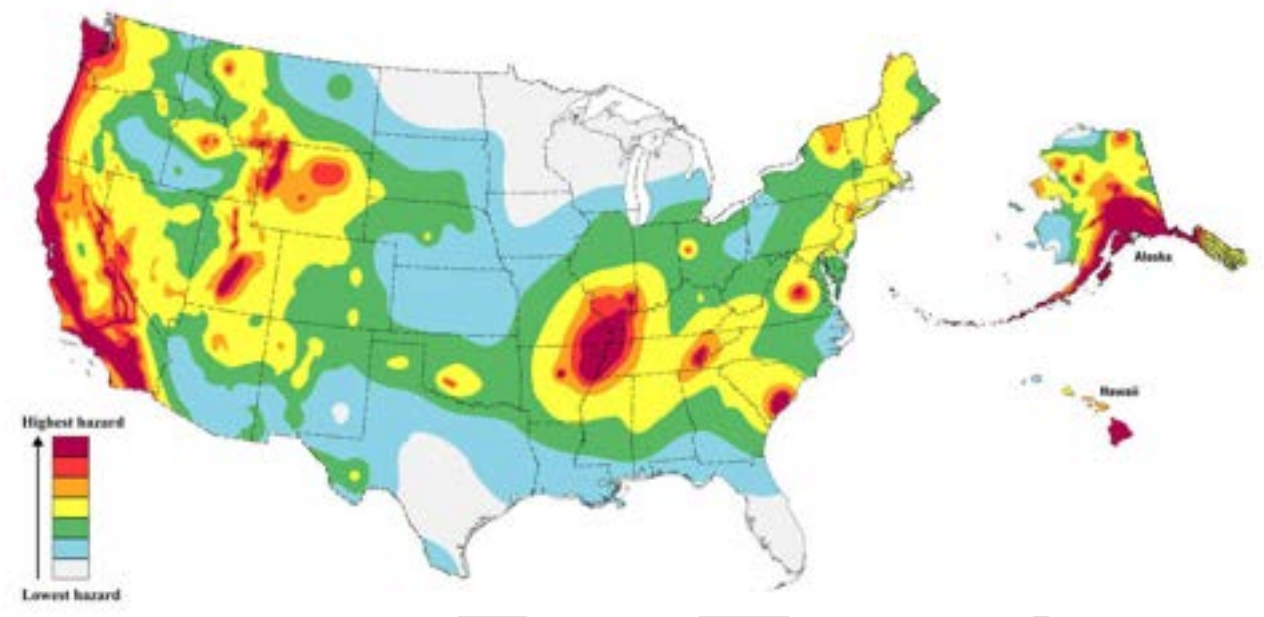


Figure 83: National Seismic Hazard Model[105]

Climate Change Considerations

Recent geological studies have shown that climate change, specifically rising rainfall rates and glacial melting, could exacerbate seismic activity, including earthquakes. Geologists have identified the correlation between the frequency of earthquakes and annual rainfall cycles. Changing climate conditions, such as a warmer atmosphere, can retain more water vapor, leading to higher levels of precipitation. As precipitation levels increase rainfall, the Earth's crust is compressed, both vertically and horizontally, stabilizing it. When this water disappears in the winter, the effective "rebound" destabilizes the region and increases the number of earthquakes that occur.[106]

Secondary Hazards

Secondary hazards from earthquake events can include liquefaction, slope failure, flooding, avalanches, sensitive clays, subsidence, and valley fever.

SOIL LIQUEFACTION

Liquefaction can occur when water-saturated, cohesionless, sandy soils are subjected to ground shaking. The soils "liquefy" or become like quicksand, lose bearing capacity and shear strength, and readily flow on the gentlest of slopes. Liquefaction is common in areas of shallow groundwater and sandy or silty sediments. Liquefaction can produce lateral spreading and flows, where surface soil layers break up and move independently. Displacement of up to three feet may occur, accompanied by ground cracking and

[105] Earthquake Hazards Program. "National Seismic Hazard Model." March 9, 2022. U.S. Geological Survey. https://www.usgs.gov/programs/earthquake-hazards/science/national-seismic-hazard-model.
[106] Blackett, Matthew and The Conversation. "Scientist Find a Possible Connection Between Climate Change and Earthquake Risk." Inverse. February 20, 2024. https://www.inverse.com/science/climate-change-volcano-earthquake-connection.

differential vertical displacement. Soil may move downhill, pulling apart roads, buildings, pipelines, and buried utilities. Bearing capacity will lessen and can cause buildings to settle or tip, while lightweight buoyant structures, such as empty storage tanks may "float" upward. Liquefaction can also cause the foundation materials beneath earthfill dams to liquefy and fail, the flooding of low-lying areas by groundwater, the backup of gravity-fed systems, and the formation of sand boils. Sand boils are deposits of sandy sediment ejected to the surface during an earthquake along fissures. Liquefaction can occur during earthquakes of magnitude 5.0 or greater.

SLOPE FAILURE

Ground shaking can cause rock falls and landslides in mountainous or canyon areas. Rock falls are the most common slope failure and can occur up to 50 miles away from a 6.0 magnitude earthquake. Landslides occur along steep slopes and benches in wet, unconsolidated materials. During a 6.0 magnitude earthquake, landslides typically occur within 25 miles of the source.

FLOODING

Flooding can occur due to tectonic subsidence and tilting, dam failure, seiches (waves generated in standing bodies of water) in lakes and reservoirs, surface-water diversion or disruption, and increased groundwater discharge.

AVALANCHES

Avalanches can be triggered by ground movement. The most vulnerable areas include those with steep terrain, high precipitation, high earthquake potential, high population density, and heavy backcountry use.

SENSITIVE CLAYS

Sensitive clays are a soil type that lose strength and are subject to collapse when shaken. The resulting type of ground failure is similar to liquefaction.

SUBSIDENCE

Subsidence involves a settling or sinking of loose granular materials, such as sand and gravel that do not contain clay. Ground displacement caused by surface fault rupture can cause tectonic subsidence. This is a broad, permanent tilting of the valley floor down toward the fault scarp. This can alter stream flows, cause flooding along lake and reservoir shorelines, and disrupt gravity-flow systems.[107]

VALLEY FEVER

Valley fever is an illness caused by the fungus *Coccidioides*, which grows in soils in areas with low rainfall, high summer temperatures, and moderate winter temperatures, such as the project site. It is found most often in the southwestern United States, especially Arizona, Utah, Texas, and California.

[107] Utah Geological Survey, Geologic Hazards, Utah Faults. https://geology.utah.gov/hazards/earthquakes/utah-faults/#toggle-id-2.

Exposure typically occurs in connection with ground-disturbing activities that release fungal spores, which are then inhaled. Earthquakes disturb soil-enabling spores, allowing them to spread into the air.

Most people who are exposed to the fungus do not develop symptoms or have relatively mild flu-like symptoms. Common symptoms include fever, cough, headache, rash, muscle aches, and joint pain. Symptoms of advanced coccidioidomycosis may include skin lesions, chronic pneumonia, meningitis, and bone or joint infection. Symptoms may appear between one and three weeks after exposure. Some patients have reported having symptoms for six months or longer, especially if the infection is not diagnosed early. Valley fever is not known to spread from person to person or between people and animals.

Vulnerability Assessment

Earthquakes can cause extensive damage to Salt Lake County. Moderate earthquakes have caused costly damage in the past, and there is the potential for stronger earthquakes with even more pronounced effects. A strong earthquake will cause significant structural damage and is likely to damage infrastructure, interrupt other services, and disrupt lives in this and neighboring counties. Structural damage can cause injury or death to building occupants. Widespread damage to buildings and infrastructure will disrupt businesses and other community activities and might lead to significant economic losses. Recovery will take substantial resources and costs and could take years.

The vulnerability of people and infrastructure to earthquake hazards in Salt Lake County was obtained from the modeling program Hazus 6.1. The Hazus earthquake scenario entails a magnitude 6.2 earthquake occurring in Salt Lake County with an epicenter on the Warm Springs Fault in the northern part of the county. The vulnerability and loss estimates in this section are based on this scenario. Hazus evaluates the probability of damage to buildings and infrastructure and impacts on the population based on models of earthquake ground-shaking intensity.

ESTIMATED LOSSES AND POTENTIAL IMPACTS

CRITICAL INFRASTRUCTURE

Critical infrastructure (i.e., schools, emergency operation centers, county facilities, fire stations, hospitals, and police stations) across most of the Salt Lake jurisdiction experienced severe peak ground acceleration based on the Hazus loss estimation model for a magnitude 6.2 earthquake. South Salt Lake and most of Millcreek, Magna, West Valley City, Holladay, Murray, Taylorsville, and Kearns experienced very strong peak ground acceleration in the same model. Areas experiencing strong peak ground acceleration in the Hazus model include western portions of Magna and South Jordan; northern portions of the unincorporated areas of the county, Riverton, and Draper; southern portions of West Valley City, Kearns, Taylorsville, Murray, and Holladay; eastern portions of Emigration Canyon, West Jordan, and Magna; and most of West Jordan, Midvale, Cottonwood Heights, Sandy City, and White City. The remainder of the county experienced moderate peak ground acceleration in the Hazus model. An examination of the building and contents loss scenario for a magnitude 6.2 earthquake shows that most losses will occur in the southern portion of Salt Lake City and the northern portion of West Valley City.

DRAFT

Figure 84–Figure 89 show the locations of the different categories of critical facilities in relation to peak ground acceleration values. Table 39 lists the number of facilities that may be damaged and how long they may lack functionality.

Table 39: Expected Damage to Essential Facilities

Classification	Total	Number of Facilities		
		At Least Moderate Damage > 50%	Complete Damage > 50%	With Functionality > 50% on Day 1
Hospitals	16	7	0	5
Schools	422	146	4	170
Emergency Operations Centers	18	6	0	8
Police Stations	33	16	0	11
Fire Stations	67	22	0	31

DRAFT

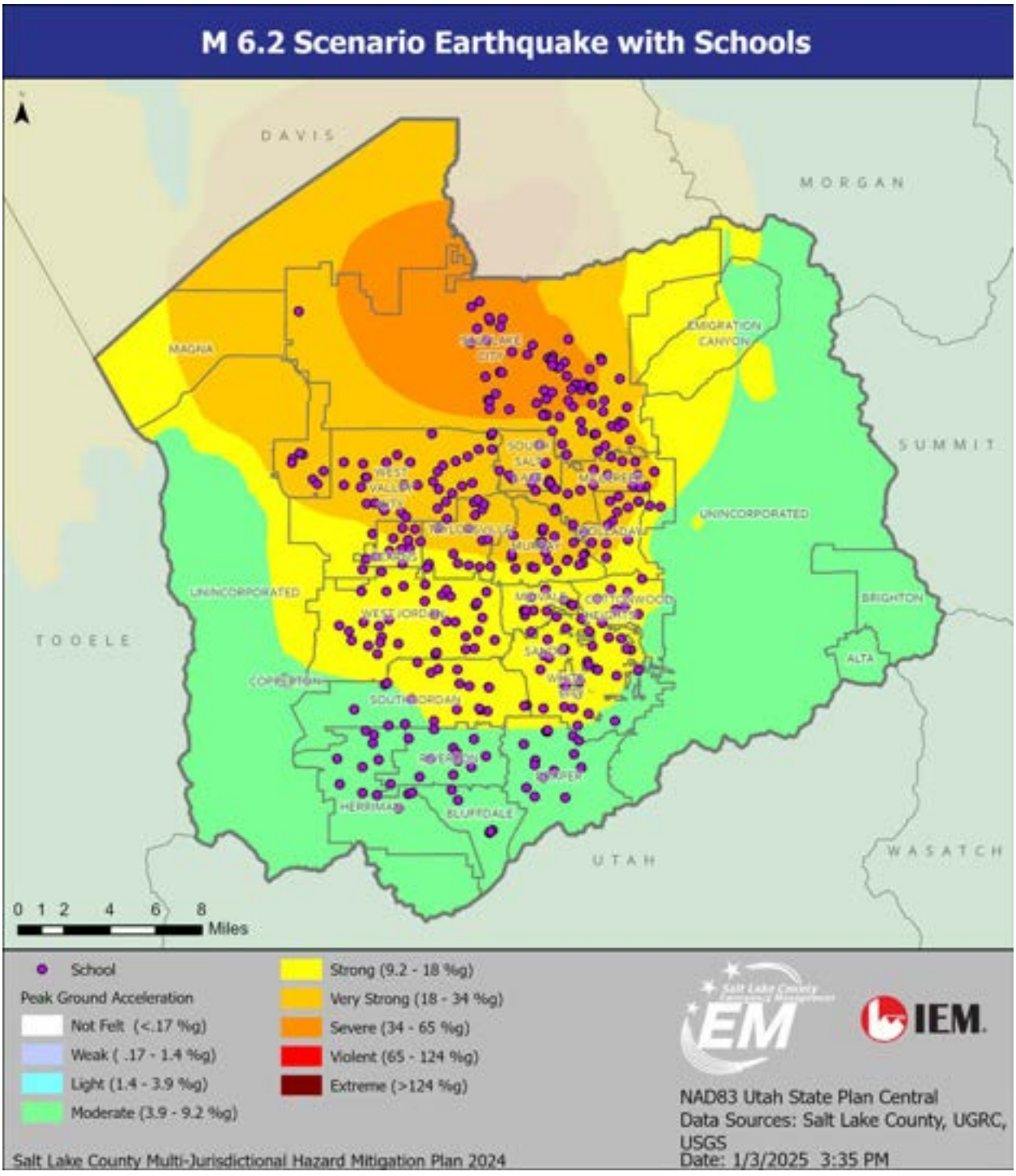


Figure 84: Schools in Salt Lake County in the M 6.2 ShakeMap Scenario

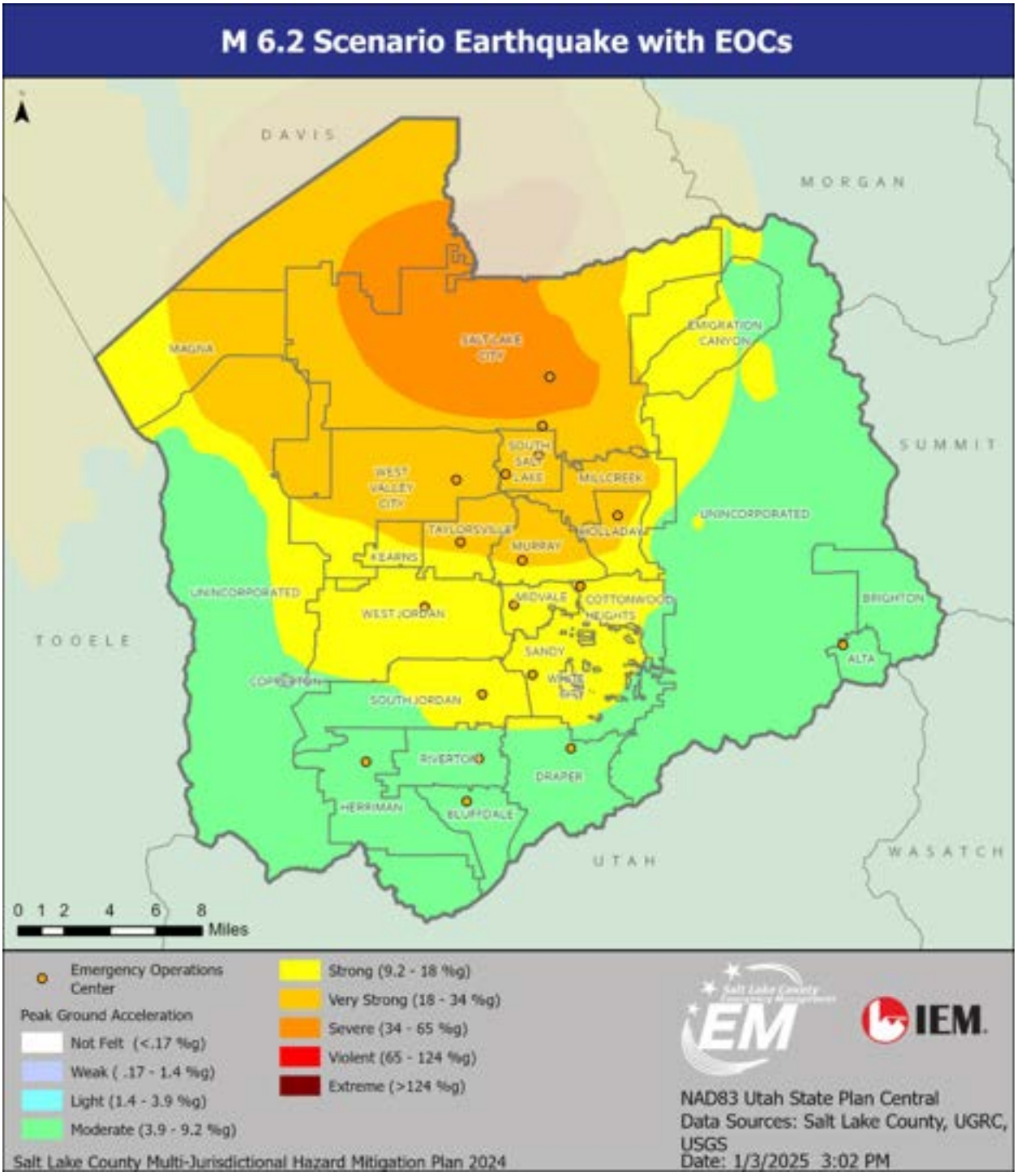


Figure 85: Emergency Operations Centers in Salt Lake County in the M 6.2 ShakeMap Scenario

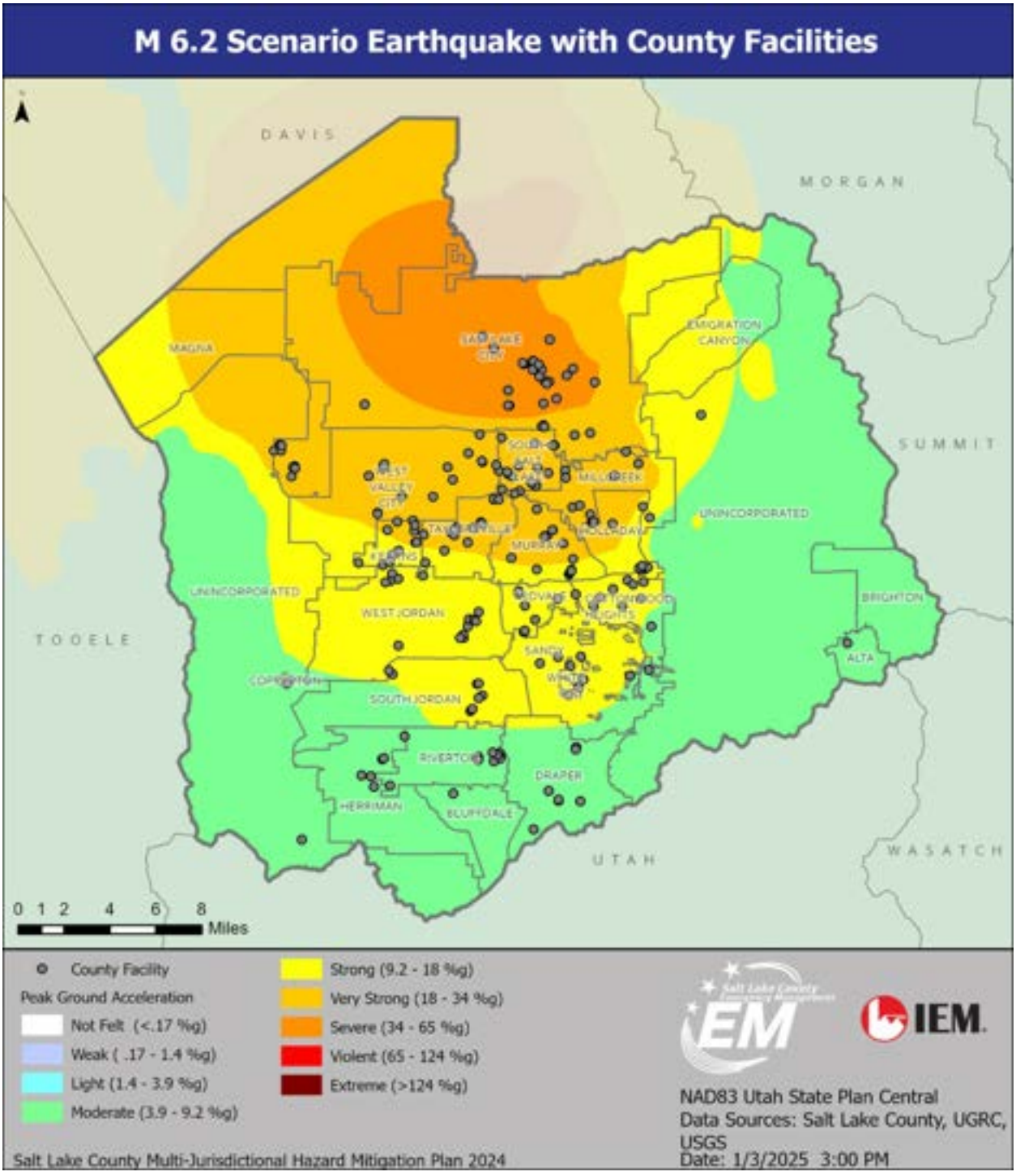


Figure 86: County Facilities in Salt Lake County in the M 6.2 ShakeMap Scenario

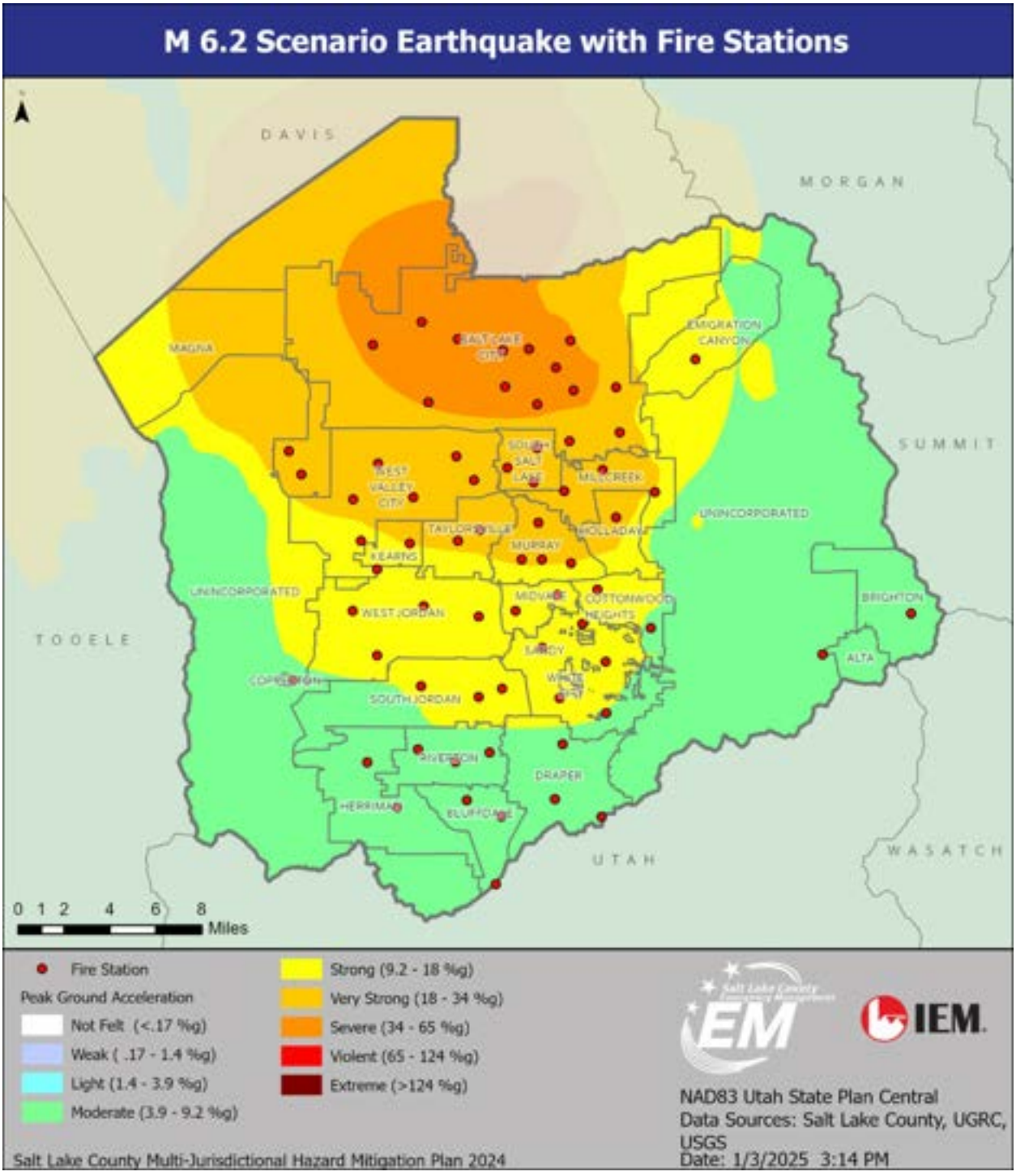


Figure 87: Fire Stations in Salt Lake County in the M 6.2 ShakeMap Scenario

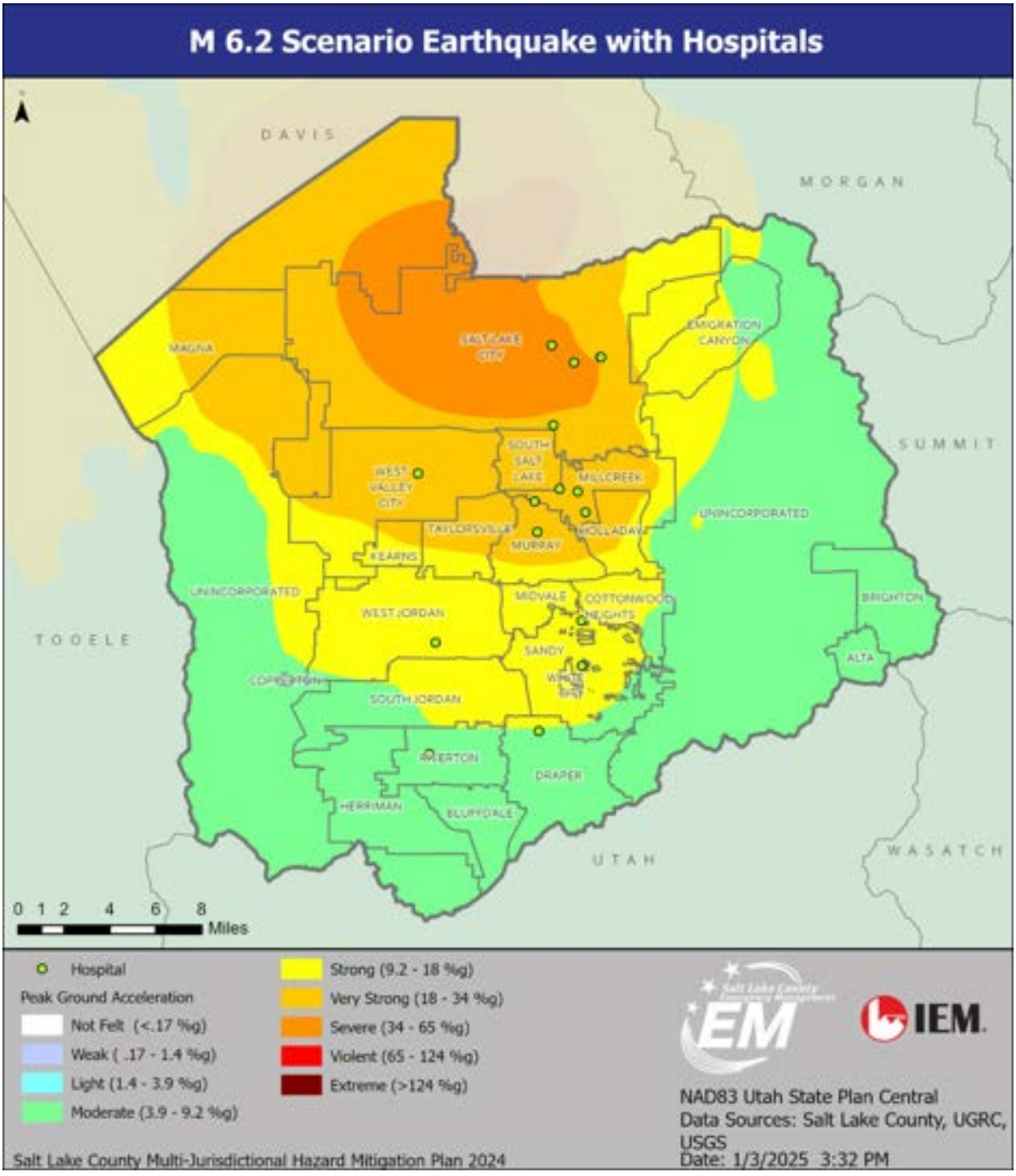


Figure 88: Hospitals in Salt Lake County in the M 6.2 ShakeMap Scenario

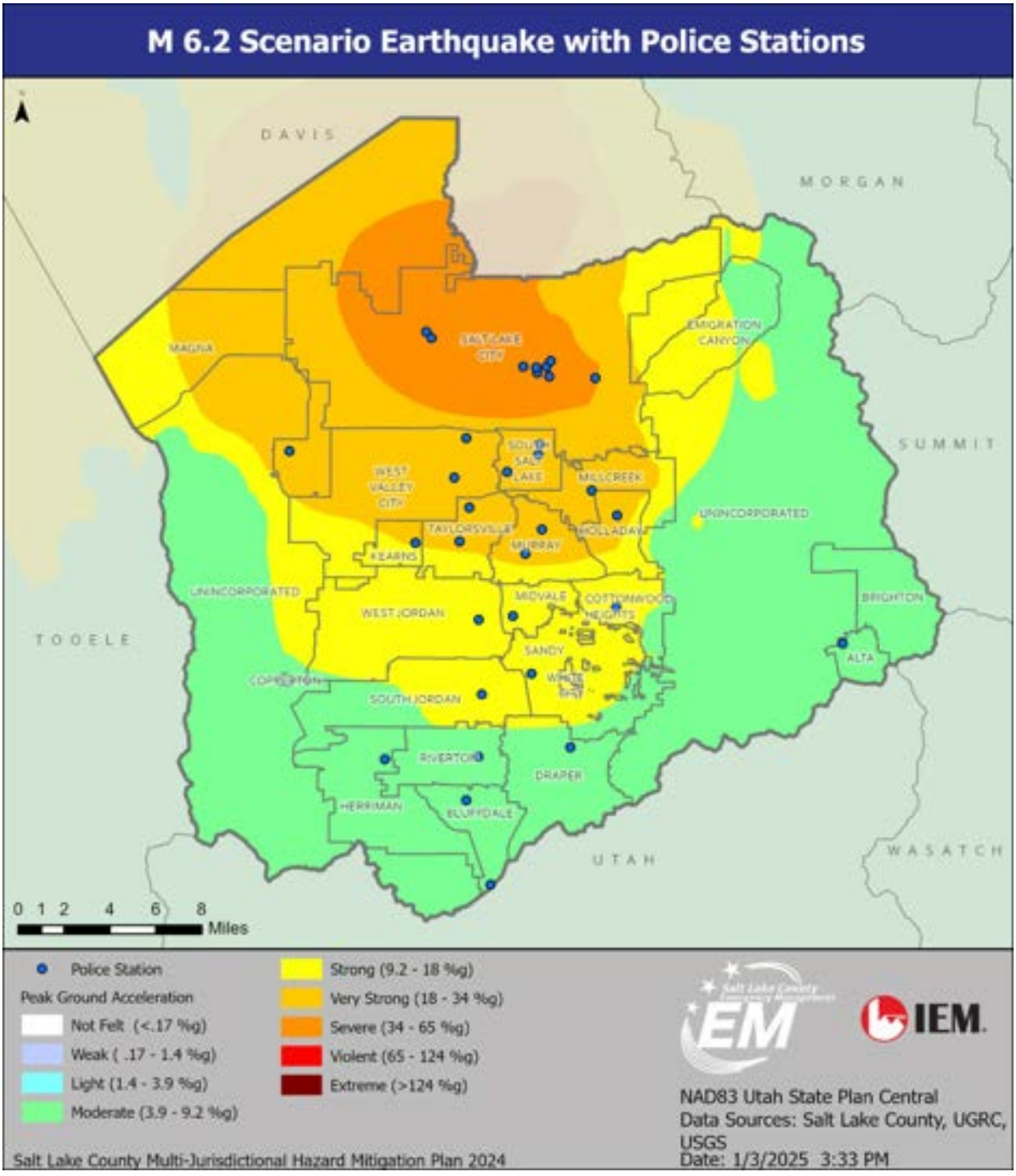


Figure 89: Police Stations in Salt Lake County in the M 6.2 ShakeMap Scenario

STRUCTURAL LOSSES

The economic loss estimated for the earthquake is approximately $13.7 billion, which includes building- and lifeline-related losses based on the region's available inventory. Hazus estimates that there are 360,000 buildings in the county with a replacement value of over $172 billion. An estimated 56,217

buildings will be at least moderately damaged in this scenario, which is over 16% of the buildings in the region. Over 6,000 will be damaged beyond repair. The following sections provide more detailed information about these losses, which can be broadly grouped into three categories: direct building, business interruption, and transportation and utility lifeline losses.

Direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. Business interruption losses are the losses associated with the inability to operate a business due to damage sustained during the earthquake, including temporary living expenses for individuals displaced from their homes by the earthquake. Table 40 shows the direct and indirect losses for the county based on different building occupancy types.

Table 40 summarizes the expected damage and loss. The building-related losses were $12,546,760,000, 22% of which were related to business interruptions in the region. By far, the largest loss was sustained by the residential occupancy category, accounting for 36% of the loss.

Table 40: Building-Related Economic Loss Estimates (in Millions)

Category	Area	Single Family	Other Residential	Commercial	Industrial	Others	Total
Business Interruption Losses	Wage	$0.00	$91.43	$386.44	$33.58	$91.23	$602.68
	Capital-Related	$0.00	$38.87	$344.99	$20.86	$17.44	$422.16
	Rental	$94.93	$176.80	$208.32	$24.11	$56.57	$560.73
	Relocation	$332.75	$98.55	$319.13	$123.22	$297.46	$1,171.10
	Subtotal	**$427.68**	**$405.65**	**$1,258.88**	**$201.77**	**$462.70**	**$2,756.67**
Direct Losses	Structural	$624.74	$209.17	$582.07	$339.12	$255.66	$2,010.76
	Non-structural	$1,445.45	$820.17	$1,334.90	$963.97	$780.28	$5,344.77
	Content	$388.33	$173.04	$641.09	$650.22	$326.17	$2,178.84
	Inventory	$0.00	$0.00	$152.95	$98.82	$3.95	$255.71
	Subtotal	**$2,458.52**	**$1,202.38**	**$2,711.01**	**$2,052.13**	**$1,366.06**	**$9,790.08**
Total		**$2,886.20**	**$1,608.03**	**$3,969.89**	**$2,253.90**	**$1,828.76**	**$12,546.75**

Table 41 shows the potential structural losses for each jurisdiction based on the Hazus model. Large cities and urban areas are the most financially affected by the effects of an earthquake. Major urban areas, such as Salt Lake City and West Valley City, can expect high structural and income losses. Jurisdictions, such as Millcreek, Murray, and Cottonwood Heights can expect structural and building losses with a need for extensive repairs, especially for businesses and residential sectors. Although the model did not project significant structural damage for Alta, Brighton, and Copperton, these communities may be affected by secondary hazards, such as earthquake-induced avalanches, dam failure, or landslides, leading to road closures and the disruption of power and communications services.

The table shows significant losses in the larger urban areas of Salt Lake County, with Salt Lake City experiencing the largest loss at $9,407,870,930, reflecting widespread damage in both the residential and

business sectors. West Valley City reports $851,62,700 in losses, with significant inventory and building losses resulting in a major loss of building assets. Other significantly impacted areas include the jurisdictions of Millcreek and Murray, with Millcreek experiencing significant structural and building losses ($435,019,240) and Murray experiencing a large income loss ($25,011,510).

Jurisdictions, such as Cottonwood Heights, Kearns, Sandy, South Jordan, and Taylorsville, can expect to experience moderate losses per the Hazus loss estimation model, with losses ranging from $35,964.36 to $78,365.44. Although these areas experience a substantial loss across various categories, it is not considered catastrophic. The unincorporated areas of the county experience the lowest total losses in the model, $5,827.50, with minor impacts in categories, such as inventory and wage loss. Unincorporated areas are typically less densely populated, leading to lower overall losses.

Figure 90 and Figure 91 show the areas in the county with the highest losses.

DRAFT

Table 41: Approximated Hazus Loss Estimation by Jurisdiction (in Thousands)

Name	Total Loss	Wage Loss	Structural Loss	Rent Loss	Relocation Loss	Non-structural Loss	Inventory Loss	Income Loss	Content Loss	Building Loss
Alta	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Bluffdale	$2,508.93	$0.63	$151.15	$2.63	$0.00	$726.64	$6.91	$0.19	$318.60	$785.50
Brighton	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Copperton	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Cottonwood Heights	$49,130.52	$35.53	$7,753.55	$115.88	$44.55	$6,841.72	$63.91	$40.30	$2,961.67	$7,608.81
Draper	$13,094.25	$6.28	$735.12	$25.00	$0.86	$2,419.96	$41.15	$7.24	$1,032.62	$2,642.69
Emigration Canyon	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Herriman	$2,665.82	$0.72	$100.28	$3.71	$0.00	$971.05	$4.60	$0.36	$447.94	$1,038.71
Holladay	$146,157.89	$68.77	$28,995.10	$226.65	$221.39	$13,466.27	$145.04	$52.61	$5,482.66	$15,273.70
Kearns	$42,721.10	$38.55	$6,421.93	$110.00	$127.43	$8,506.71	$31.80	$10.14	$3,548.20	$9,613.29
Magna	$45,009.31	$14.76	$6,822.80	$153.78	$267.32	$11,005.88	$102.30	$12.56	$4,584.70	$12,572.39
Midvale	$78,365.44	$43.36	$10,233.31	$145.88	$63.11	$6,611.46	$200.01	$35.45	$2,743.24	$7,354.13
Millcreek	$435,019.24	$535.75	$76,022.84	$709.44	$749.17	$29,323.69	$439.66	$287.67	$13,026.38	$33,067.43
Murray	$311,163.29	$206.48	$51,390.22	$582.91	$499.65	$25,011.51	$548.38	$168.25	$10,583.85	$28,350.81
Riverton	$8,983.12	$4.02	$726.46	$15.81	$3.01	$2,920.66	$24.88	$2.67	$1,259.86	$3,195.75
Salt Lake City	$9,407,870.93	$2,982.29	$1,488,824.51	$5,779.22	$10,294.12	$177,593.20	$5,816.60	$2,629.52	$81,944.58	$201,958.90
Sandy City	$71,489.35	$34.39	$8,523.28	$146.37	$48.02	$13,395.09	$118.74	$34.73	$5,640.83	$14,872.44
South Jordan	$35,964.36	$16.72	$2,402.09	$81.05	$22.09	$11,540.07	$75.86	$16.72	$4,950.44	$12,737.76
South Salt Lake	$736,755.28	$292.53	$131,455.63	$726.88	$808.69	$22,423.04	$1,034.29	$265.50	$10,350.39	$25,230.33
Taylorsville	$205,392.83	$146.45	$27,870.49	$487.39	$467.93	$25,685.85	$285.90	$101.86	$10,388.38	$28,953.34
Unincor-porated	$5,827.50	$0.99	$511.75	$6.99	$4.58	$1,367.53	$3.39	$1.06	$642.52	$1,493.74
West Jordan	$91,720.71	$81.91	$8,957.20	$238.80	$153.31	$22,556.17	$281.66	$45.21	$9,625.33	$25,263.29

DRAFT

Name	Total Loss	Wage Loss	Structural Loss	Rent Loss	Relocation Loss	Non-structural Loss	Inventory Loss	Income Loss	Content Loss	Building Loss
West Valley City	$851,629.70	$481.36	$152,025.55	$1,816.84	$2,333.75	$76,916.91	$1,100.29	$391.64	$32,010.19	$87,186.38
White City	$5,295.40	$1.87	$839.65	$5.41	$1.25	$375.00	$5.63	$1.85	$173.03	$415.50

DRAFT

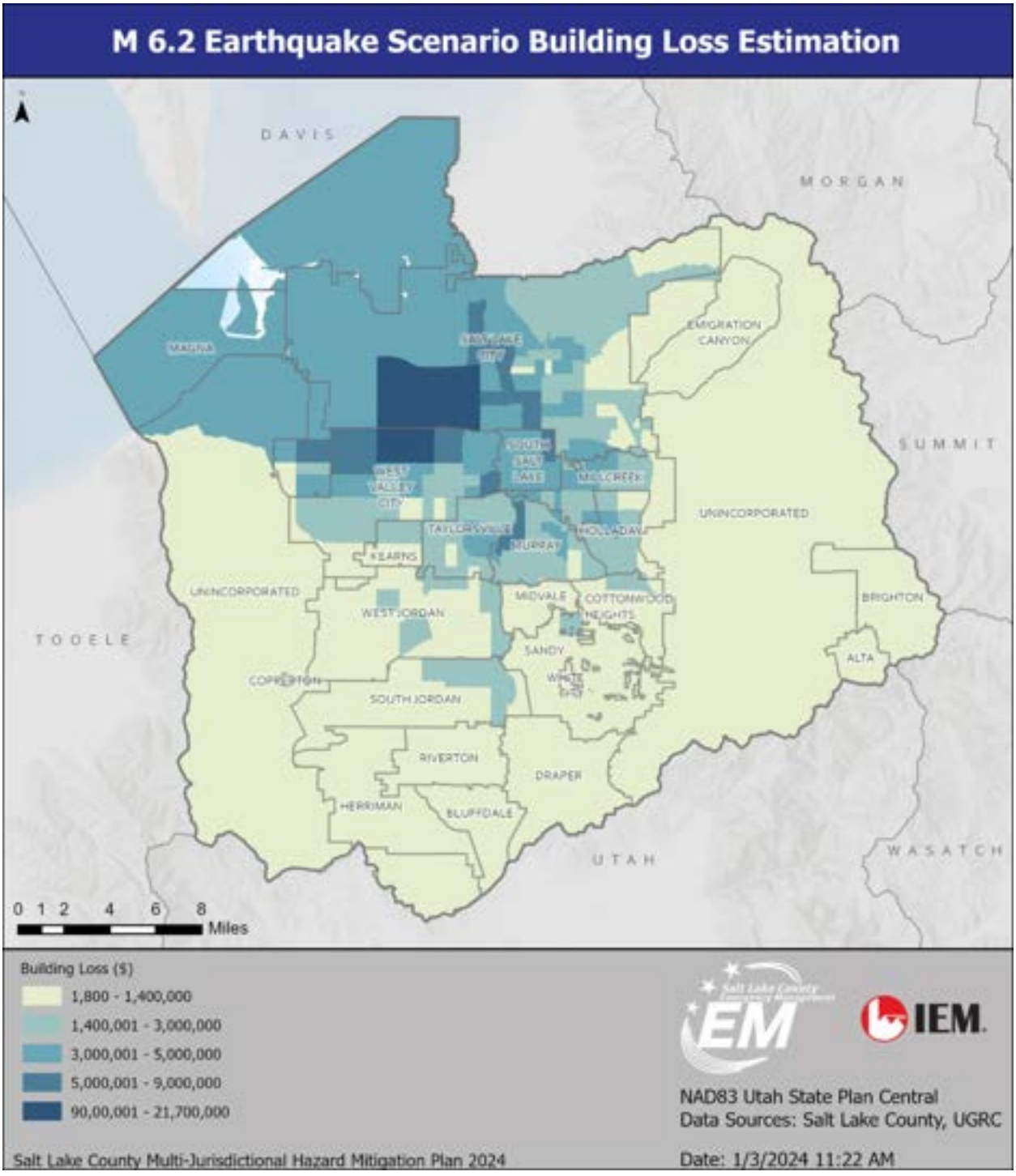


Figure 90: Building Loss Estimates in Salt Lake County in the M 6.2 ShakeMap Scenario

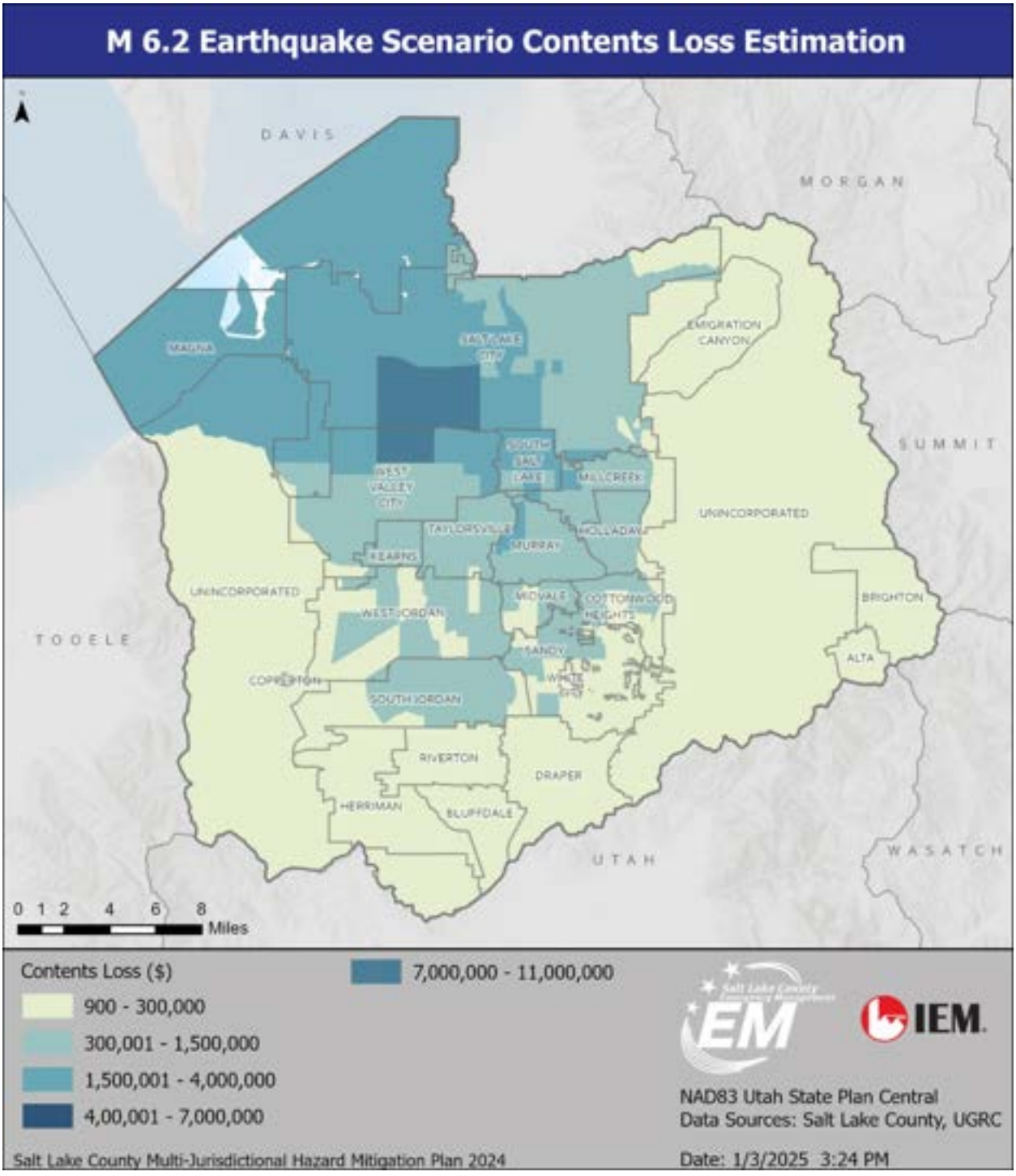


Figure 91: Contents Loss Estimates in Salt Lake County in the M 6.2 ShakeMap Scenario

Table 42 shows the extent of damage expected for different types of structures in the region. Hazus estimates that about 56,217 buildings will be at least moderately damaged. This is over 16% of the buildings in the region. An estimated 6,437 buildings will be damaged beyond repair.

Table 42: Expected Building Damage by Occupancy Type

Occupancy Type	None		Slight		Moderate		Extensive		Complete	
	Count	%	Count	%	Count	%	Count	%	Count	%
Agriculture	246.76	0.10	39.64	0.06	22.89	0.07	11.70	0.07	5.01	0.08
Commercial	10,027.91	4.17	3,245.53	5.10	2,534.53	7.61	1,562.17	9.49	632.85	9.83
Education	269.04	0.11	65.55	0.10	69.19	0.21	39.03	0.24	12.19	0.19
Government	5,134.03	2.14	1,201.71	1.89	962.40	2.89	592.29	3.60	225.57	3.50
Industrial	3,230.14	1.34	1,339.66	2.11	1,339.49	4.02	1,075.74	6.54	417.97	6.49
Other Residential	12,296.04	1.34	5,784.62	9.10	4,554.51	13.67	2,710.81	16.47	950.02	14.76
Religion	733.82	0.31	182.80	0.29	116.31	0.35	91.47	0.56	31.60	0.49
Single Family	208,493.27	86.72	51,734.64	81.35	23,726.53	71.20	10,371.70	63.03	4,161.87	64.65
Total	**240,431**		**63,594**		**33,326**		**16,455**		**6,437**	

POPULATION IMPACTS

Hazus estimates the number of households that are expected to be displaced from their homes due to the earthquake and the number of displaced people that will require accommodation in temporary public shelters. The model estimates that 6,735 households will be displaced due to the earthquake, with 4,458 individuals seeking temporary shelter in public shelters.

Hazus also estimates the number of people that will be injured and killed by the earthquake. The casualties are broken down into four severity levels that describe the extent of the injuries:

- **Severity Level 1:** Injuries will require medical attention, but hospitalization is not needed.
- **Severity Level 2:** Injuries will require hospitalization but are not considered life-threatening
- **Severity Level 3:** Injuries will require hospitalization and can be life-threatening if not promptly treated.
- **Severity Level 4:** Victims are killed by the earthquake.

Table 43 provides a summary of the casualties estimated for this earthquake. The casualty estimates are provided for three times of day: 2:00 a.m., 2:00 p.m., and 5:00 p.m. These times represent the periods of the day when different sectors of the community are at their peak occupancy loads. The 2:00 a.m. estimate considers that the residential occupancy load is maximum, the 2:00 p.m. estimate considers that the educational, commercial, and industrial sector loads are maximum, and 5:00 p.m. represents peak commute time.

DRAFT

Table 43: Salt Lake County Earthquake Scenario Casualty Estimates

Time	Category	Level 1	Level 2	Level 3	Level 4
2 a.m.	**Commercial**	26.97	7.15	1.08	2.13
	Commuting	0.08	0.10	0.17	0.03
	Educational	0.00	0.00	0.00	0.00
	Hotels	2.98	0.73	0.10	0.19
	Industrial	27.01	7.27	1.11	2.18
	Other Residential	1291.46	324.93	46.47	91.27
	Single Family	2749.04	682.78	98.69	194.03
	Total	**4,098**	**1,023**	**148**	**290**
2 p.m.	**Commercial**	1959.21	514.34	78.24	152.75
	Commuting	0.70	0.90	1.56	0.30
	Educational	550.07	132.73	19.33	37.56
	Hotels	0.58	0.14	0.02	0.04
	Industrial	199.45	53.69	8.22	16.01
	Other Residential	431.92	111.30	16.51	31.06
	Single Family	877.87	225.28	33.85	63.68
	Total	**4,020**	**1,038**	**158**	**301**
5 p.m.	**Commercial**	1458.40	379.78	58.19	111.58
	Commuting	15.09	19.47	33.67	6.48
	Educational	81.03	17.48	2.29	4.38
	Hotels	0.89	0.22	0.03	0.06
	Industrial	124.65	33.55	5.14	10.01
	Other Residential	515.62	132.97	19.74	37.14
	Single Family	1109.14	283.62	42.55	80.05
	Total	**3,305**	**867**	**162**	**250**

TRANSPORTATION AND UTILITY LIFELINE LOSSES

For the transportation and utility lifeline systems, Hazus computes the direct repair cost for each component only. Hazus does not compute losses for business interruptions due to lifeline outages. Losses for the transportation and utility systems are displayed separately in Table 44–

Table 49.

DRAFT

Table 44: Expected Damage to Transportation Systems

System	Component	Number of Locations				
		Locations/ Segments	With at Least Moderate Damage	With Complete Damage	With Functionality > 50 %	
					After Day 1	After Day 7
Highway	Segments	368	0	0	368	368
	Bridges	611	9	0	605	605
	Tunnels	0	0	0	0	0
Railways	Segments	287	0	0	287	287
	Bridges	74	0	0	74	74
	Tunnels	0	0	0	0	0
	Facilities	6	0	0	6	6
Light Rail	Segments	4	0	0	4	4
	Bridges	0	0	0	0	0
	Tunnels	0	0	0	0	0
	Facilities	50	0	0	50	50
Bus	Facilities	2	1	0	2	2
Ferry	Facilities	0	0	0	0	0
Port	Facilities	0	0	0	0	0
Airport	Facilities	4	0	0	4	4
	Runways	5	0	0	5	5

Table 45: Transportation System Economic Losses (in Millions)

System	Component	Inventory Value	Economic Loss	Loss Ratio
Highway	Segments	$4,634.60	$0.00	$0.00
	Bridges	$3,442.01	$144.30	$4.19
	Tunnels	$0.00	$0.00	$0.00
	Subtotal	**$8,076.61**	**$144.30**	
Railways	Segments	$4,009.38	$0.00	$0.00
	Bridges	$327.45	$4.38	$1.34
	Tunnels	$0.00	$0.00	$0.00
	Facilities	$15.98	$4.56	$28.54
	Subtotal	**$4,352.81**	**$8.94**	
Light Rail	Segments	$1,106.21	$0.00	$0.00
	Bridges	$0.00	$0.00	$0.00
	Tunnels	$0.00	$0.00	$0.00
	Facilities	$285.50	$83.92	$18.88

DRAFT

System	Component	Inventory Value	Economic Loss	Loss Ratio
	Subtotal	**$1,391.71**	**$83.92**	
Bus	Facilities	$3.55	$0.73	$20.70
	Subtotal	**$3.55**	**$0.73**	
Ferry	Facilities	$0.00	$0.00	$0.00
	Subtotal	**$0.00**	**$0.00**	
Port	Facilities	$0.00	$0.00	$0.00
	Subtotal	**$0.00**	**$0.00**	
Airport	Facilities	$971.61	$270.27	$27.82
	Runways	$79.05	$0.00	$0.00
	Subtotal	**$1,050.67**	**$270.27**	
Total (Millions of Dollars)		**$14,875.35**	**$14,875.34**	**$478.16**

Table 46: Expected Utility System Facility Damage

System	Number of Locations				
	Total #	With at Least Moderate Damage	With Complete Damage	With Functionality > 50%	
				After Day 1	After Day 7
Potable Water	0	0	0	0	0
Wastewater	10	4	0	3	10
Natural Gas	1	0	0	1	1
Oil Systems	2	1	0	1	2
Electrical Power	10	5	0	6	79
Communications	41	4	0	39	41

Table 47: Expected Utility System Pipeline Damage (Site-Specific)

System	Total Pipelines Length (miles)	Number of Leaks	Number of Breaks
Potable Water	4,616	0	0
Wastewater	2,770	0	0
Natural Gas	38	0	0
Oil	0	0	0

Table 48: Expected Potable Water and Electric Power System Performance

System	Total # of Households	Number of Households Without Service				
		At Day 1	At Day 3	At Day 7	At Day 30	At Day 90
Potable Water	405,229	0	0	0	0	0
Electric Power		31,015	18,222	6,502	411	44

Table 49: Utility System Economic Losses (in Millions)

System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Potable Water	Pipelines	$0.00	$0.00	0.00
	Facilities	$0.00	$0.00	0.00
	Distribution Lines	$148.58	$0.00	0.00
	Subtotal	**$148.58**	**$0.00**	
Wastewater	Pipelines	$0.00	$0.00	0.00
	Facilities	$1,337.24	$162.27	12.13
	Distribution Lines	$89.15	$0.00	0.00
	Subtotal	**$1,426.39**	**$162.27**	
Natural Gas	Pipelines	$149.30	$0.00	0.00
	Facilities	$129.54	$0.53	0.41
	Distribution Lines	$59.43	$0.00	0.00
	Subtotal	**$338.27**	**$0.53**	
Oil Systems	Pipelines	$0.00	$0.00	0.00
	Facilities	$0.20	$0.03	14.23
	Subtotal	**$0.20**	**$0.03**	
Electrical Power	Facilities	$1,976.58	$508.30	25.72
	Subtotal	**$1,976.58**	**$508.30**	
Communications	Facilities	$4.02	$0.40	9.97
	Subtotal	**$4.02**	**$0.40**	
Total (Millions of Dollars)		**$3,894.04**	**$671.53**	

FIRE FOLLOWING EARTHQUAKE

Fires often occur after an earthquake. Because of the number of fires and the lack of water to fight them, they can often burn out of control. Hazus uses a Monte Carlo simulation model to estimate the number of ignitions and the amount of burned area. For this scenario, the model estimates five ignitions, burning about 0.02 square miles of the region, displacing approximately 157 people and causing $8 million in building damage.

DRAFT

DEBRIS GENERATION

Hazus estimates the amount of debris that will be generated by the earthquake. The model classifies the debris into two general categories: a) brick/wood and b) reinforced concrete/steel. This distinction is made because of the different types of material-handling equipment required to handle the debris. The model estimates that 2,258,000 tons of debris will be generated—70% reinforced concrete/steel and 30% brick/wood—requiring an estimated 90,320 truckloads (25 tons/truck) for removal.

VULNERABLE POPULATIONS

When buildings collapse, contents fall, or roads and bridges are damaged, people may be trapped or injured, with severe injuries potentially resulting in death. Entire communities may become displaced and emergency services may be strained beyond their capacity. This can cause lasting effects on people's physical and emotional well-being.

Long-term disruption of infrastructure and utility systems, interruption of government services, and lasting economic impacts are difficult for the entire community. However, vulnerable populations may experience more severe effects from these losses. Lower-income households may live in older or less well-maintained housing that may suffer more damage, placing residents more at risk of injury. They may struggle to find temporary housing and lack the financial reserves needed to sustain them through wage losses from business closures or other economic hardships. Elderly or other medically vulnerable populations and people with disabilities might have more difficulty receiving their normal care and services. Language barriers may make it more difficult for some to seek or access recovery services.

COMMUNITY LIFELINES

Any and possibly all community lifelines could be impacted by an earthquake. The immediate concern is for the safety and security of the people in the areas with the highest shaking intensity. It is reasonable to expect that access to food, water, shelter, and healthcare will be compromised for many people. Earthquakes are destructive to power distribution networks, water systems, roadways and railways, and communications systems. The release of hazardous materials is also a possibility.

CHANGES IN DEVELOPMENT

In Salt Lake County, development and population growth can have profound impacts on earthquakes, especially as more people and infrastructure are concentrated in areas prone to seismic activity with the potential for large earthquakes. Increased development will lead to more buildings and a denser population that will become vulnerable to the impacts of an earthquake. This is particularly true for areas located along the Wasatch Fault. Vulnerability to earthquakes partially overlaps with areas of high population growth and development in Salt Lake County. Downtown Salt Lake City and cities and towns in the northwest section of the county, like Magna, have seen large increases in population and are at significant risk of strong earthquakes. The development in southern Salt Lake County is at much lower risk.

DRAFT

Older buildings, typically those built before 1975, used different construction processes that will not hold up during an earthquake. Unreinforced masonry (URM) homes with brick walls and/or a brick chimney are common in Salt Lake County and are particularly susceptible to damage from earthquakes.

On December 22, 2020, FEMA announced an award of more than $3.7 million to Salt Lake City. The funds are the federal cost share for the "Fix the Bricks" mitigation project to address the threat of structural collapse of residential URM structures during an earthquake event.[108] The project funds the seismic retrofitting of 216 residential URM structures, including seismic wall-to-roof retrofits, URM chimney bracing, and marketing efforts to inform the public about the project. This project aims to reduce the likelihood of structural collapse, enabling occupants to escape and reducing injury and loss of life. FEMA is providing a 75% federal cost share for the $5 million project. Funding is provided through FEMA's Pre-Disaster Mitigation grant program, which is designed to assist states, U.S. territories, federally recognized tribes, and local communities in implementing a sustained pre-disaster natural hazard mitigation program. The goal is to reduce overall risk to the population and structures from future hazard events while reducing reliance on federal funding in future disasters.[109]

This program can reduce earthquake vulnerability. However, in 2024, the Fix the Bricks program currently has a three-to-five-year waiting list of homeowners seeking mitigation assistance funding. For these individuals, vulnerability remains the same.

Figure 92: Salt Lake County Building Earthquake Repair Project[110]

[108] SLC.gov. "Fix the Bricks – Salt Lake City Seismic Retrofit." 2024. https://www.slc.gov/housingstability/city-housing-programs/fix-the-bricks/.
[109] FEMA. "FEMA Provides Salt Lake City $3.7 Million for Seismic Retrofitting," Press Release. December 22, 2020. https://www.fema.gov/press-release/20210318/fema-provides-salt-lake-city-37-million-seismic-retrofitting.
[110] SLC.gov. "Fix the Bricks – Salt Lake City Seismic Retrofit." 2024. https://www.slc.gov/housingstability/city-housing-programs/fix-the-bricks/.

VULNERABILITY SCORE

To analyze the county's vulnerability to earthquakes, the NRI was used as a primary tool during the 2024 update. The NRI defines risk as the potential for negative impacts from a natural hazard. It determines a community's risk relative to other communities by examining the EAL and social vulnerability in a given community in relation to that community's resilience. Salt Lake County's NRI earthquake risk rating is shown in Figure 93. Salt Lake County has a relatively high earthquake risk, with a risk score of 99.6.

DRAFT

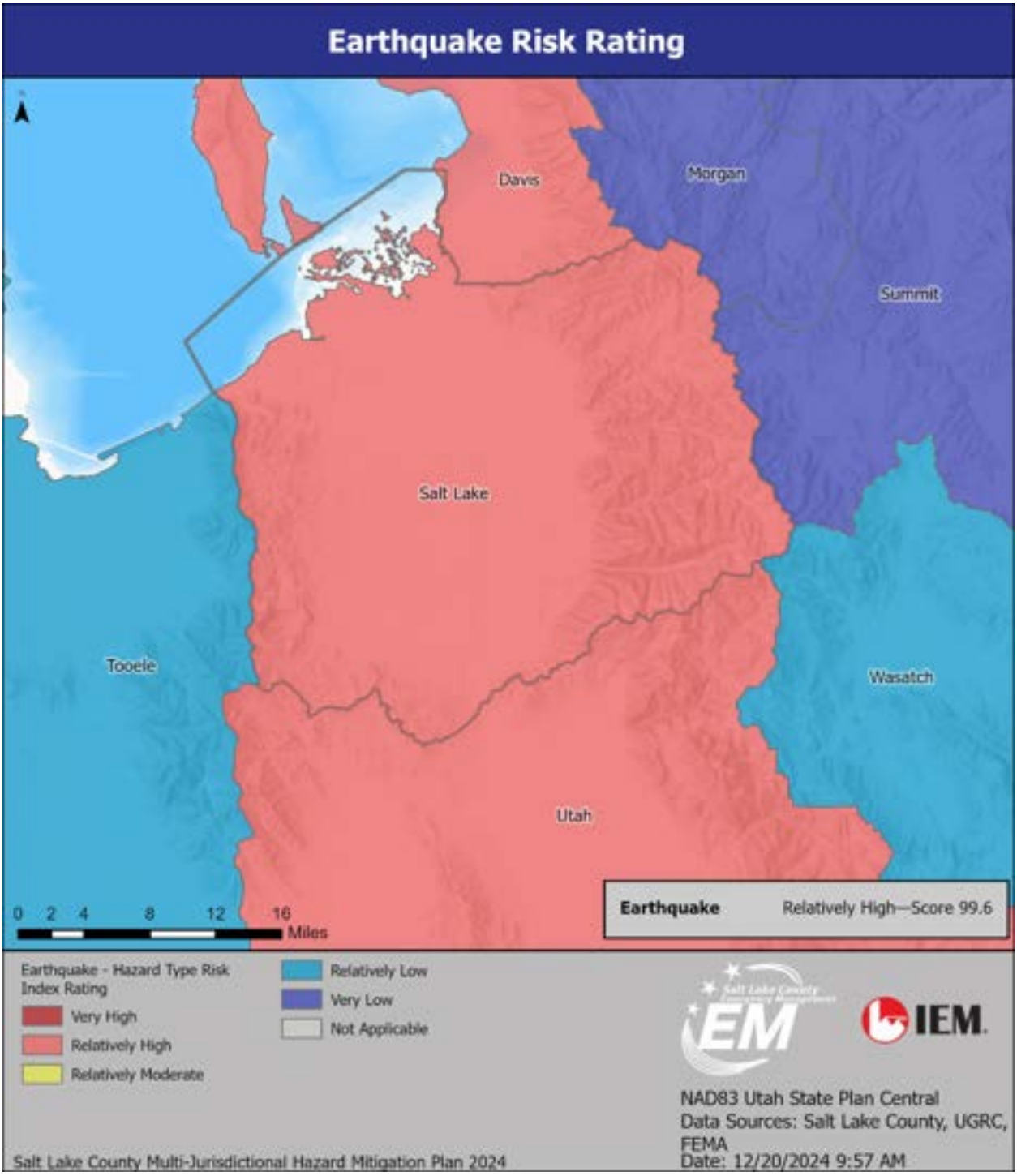


Figure 93: National Risk Index Earthquake Risk Map, Legend, and Score for Salt Lake County[111]

[111] FEMA, National Risk Index. "Salt Lake County Earthquake Score, Map and Legend." https://hazards.fema.gov/nri/map.

Extreme Cold

Figure 94: Image of Salt Lake County in Cold Weather[112]

Hazard Description

Utah frequently experiences extreme temperatures. Winter months often feature temperatures below zero degrees Fahrenheit; however, prolonged periods of extremely cold weather occur infrequently. An exception was January 2013, which was the coldest month on record for Salt Lake City since 1949. Extreme cold in the region can cause hypothermia and frostbite—with the young, elderly, homeless, and animals especially vulnerable—and can also disrupt agriculture, livestock, and crops. Wind chill can enhance the effects of extreme cold.

Hazard Profile

Potential Impact		Catastrophic	**Probability**		Highly Likely
	X	Critical		X	Likely
		Limited			Occasional
		Negligible			Unlikely
Location	Can occur in areas throughout the county				
Seasonal Pattern	Winter months				
Conditions	Vary based on latitude, elevation, aspect, and landforms				
Duration	Extreme cold conditions generally last for several hours; some conditions can persist for days.				
Secondary Hazards	Secondary hazards include transportation disruption and infrastructure damage and failure, including power outages.				
Analysis Used	National Centers for Environmental Information, National Weather Service, Utah Division of Emergency Management, local input, and review of historic events and scientific records				

[112] https://pixabay.com/photos/salt-lake-city-utah-wasatch-vista-4928290/.

Magnitude/Extent

The wind chill temperature is how cold people feel when they are outside based on the rate of heat loss from exposed skin. As wind speed increases, it draws heat from the body, driving down skin temperature and eventually internal body temperature, which makes people feel much colder. The wind chill chart (Figure 95) shows how cold temperatures feel at various wind speeds.[113]

The lowest temperature ever recorded in Salt Lake City was -22ºF on January 25, 1949; the average minimum temperature in January in the county is 23ºF. These temperatures were recorded at the local weather station at the Salt Lake City International Airport. Utah recognizes Code Blue Alerts, which counties issue when temperatures are expected to drop to 18ºF, including wind chill, for 2 or more hours during a 24-hour period.

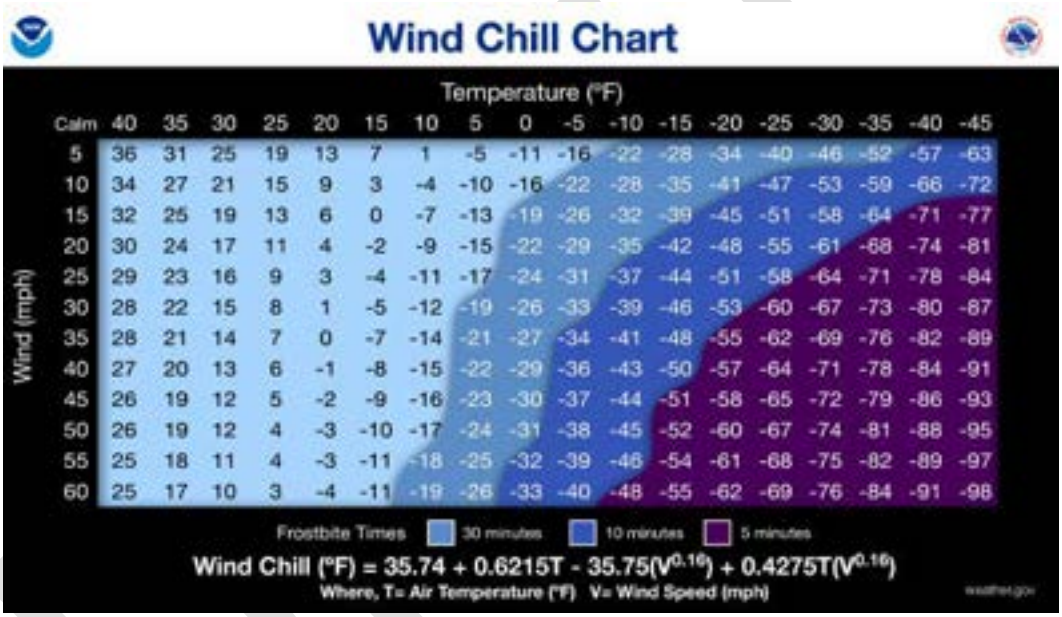


Figure 95: National Weather Service Wind Chill Chart

Location

The entire region of Salt Lake County can be affected by extreme cold events. Temperatures and wind chill conditions vary with elevation and other local differences.

Historical Events and Probability of Future Occurrences

As previously mentioned, the lowest temperature ever recorded in Salt Lake City was -22ºF in 1949. NOAA recorded three cold/wind chill events in Salt Lake County from 1996 to 2024; however, NOAA did not record any deaths, injuries, or property damage as a result of such events. Despite this, it is important to note that these data do not capture all possible deaths or illnesses related to extreme cold. For example, in 2023, a local news article reported that at least 8 unsheltered people had died during the

[113] National Weather Service. "Understanding Wind Chill." https://www.weather.gov/safety/cold-wind-chill-chart.

previous winter.[114] Future occurrences are considered to be likely based on a recurrence interval of one event approximately every 9 years.

According to FEMA's Disaster Declarations for States and Counties, there were no federally declared extreme cold events from January 1, 2019, through June 3, 2025.[115] In addition, no state declarations have been made for the state of Utah due to extreme cold.[116]

Utah Code 35A-16-703, which became effective in 2023, establishes conditions for the Utah Department of Health and Human Services to identify Code Blue events. Code Blue Alerts disseminate details to the public and provide information to assist individuals experiencing homelessness during the event. This may include information regarding expansions of shelter capacity, provisions of temporary shelter (warming centers), or distributions of clothing and blankets.

Climate Change Considerations

Evidence for increasing temperatures from climate change often focuses on extreme heat events. As noted in the Utah Enhanced State Hazard Mitigation Plan, there is also a possibility that future low temperatures may be less cold. Although this may reduce human health impacts from extreme cold, it could have other negative impacts. For example, warmer winters contribute to bark beetle infestations and tree die-off in forests. This is detrimental to various natural ecosystems and can also increase the risk of wildfire.

Climate change can cause higher temperatures which shorten the winter season, resulting in less snowpack for the year. This shift can affect water resources, local ecosystems that thrive on cold weather, and winter recreational activities. This ultimately results in shorter and less severe winters. Although this may reduce some of the health risks associated with extreme cold, it can drastically impact the economy, as Salt Lake County thrives on the ski industry.

Secondary Hazards

Freezing temperatures can lead to various infrastructure disruptions. They can cause insulators to fail and conductors to break. Extreme cold has the added effect of making people turn up their heaters, which can cause a circuit overload and a resulting power outage. People turning on their lights and heaters in anticipation of the power being restored may extend an outage. These activities create high-power demand on fusing that might not be able to handle the stress of the load. Extreme cold can also cause water in pipes to freeze, leading to burst pipes and water damage.

[114] Fredde, Ashley, "Utah Bill Aimed to Prevent Homeless Deaths in Winter Headed to Gov. Cox's Desk," KSL.com, March 8, 2023. https://www.ksl.com/article/50594793/utah-bill-aimed-to-prevent-homeless-deaths-in-winter-headed-to-gov-coxs-desk.
[115] FEMA, "Disaster Declarations for States and Counties." https://www.fema.gov/data-visualization/disaster-declarations-states-and-counties.
[116] Utah Department of Public Safety, "Utah Disaster History." https://dem.utah.gov/utah-disaster-history/.

Vulnerability Assessment

All residents and infrastructure systems in the planning area are vulnerable to extreme cold, which is likely to affect the entire county. Extremely cold conditions may last for hours or even days. People are particularly vulnerable to extreme cold. Prolonged exposure can lead to hypothermia, frostbite, and death. Windy conditions can increase these risks.

Structures are not typically directly affected by extreme cold but may be affected by secondary hazards. Extreme cold can freeze water in pipes, causing them to burst. This can damage water delivery systems and structures and roadways. Extreme cold can also impact power systems through increased demand.

Extreme cold can damage crops or harm livestock, resulting in economic losses. It can also be harmful to wildlife or other natural systems.

ESTIMATED IMPACT AND POTENTIAL LOSSES

Extreme cold can lead to health concerns, especially for the unhoused, outdoor workers, and those who are medically vulnerable due to preexisting conditions or disabilities. Extreme cold can contribute to infrastructure disruption including frozen pipes, damage to water systems, power outages, and disruption to transportation networks. Residents could face hardship from lack of water service or power. Older homes may be less energy efficient. Elderly residents or lower-income households may be more severely affected by service disruptions. Businesses, government offices, and schools might have to close due to power outages or transportation disruptions, which can cause economic losses. People might miss work or school.

The NRI includes data on the EALs due to individual natural hazards, historical losses, and overall risk at the county and Census tract levels. The NRI refers to extreme cold hazards as “cold wave risk.” Salt Lake County’s NRI EAL value for cold waves is $4,000, with a risk score of 32.9 and a rating of “very low” compared with the rest of the United States.

DRAFT

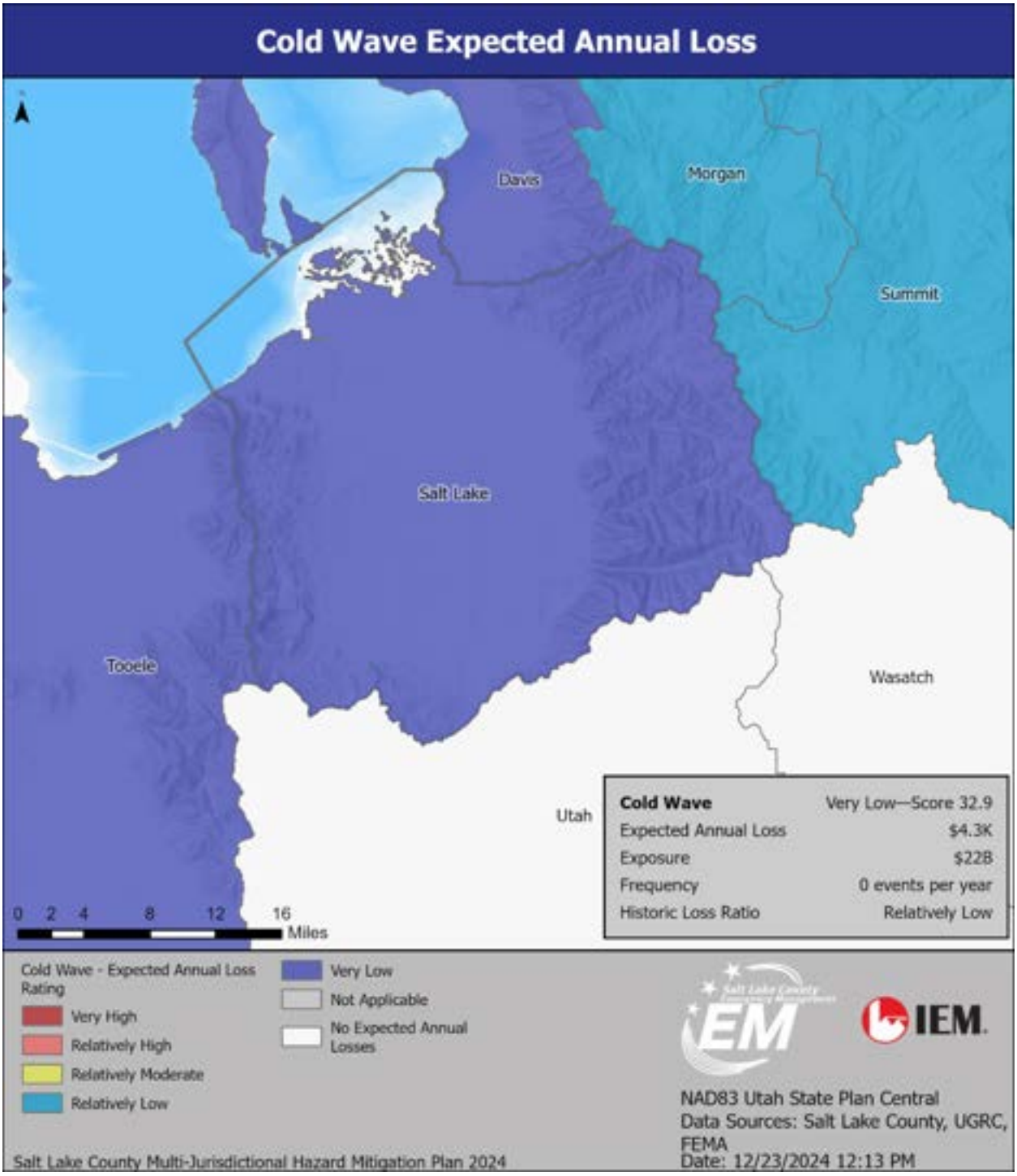


Figure 96: National Risk Index Expected Annual Loss from Extreme Cold in Salt Lake County[117]

[117] Federal Emergency Management Agency. "National Risk Index." 2023. https://hazards.fema.gov/nri/map.

VULNERABLE POPULATIONS

Unhoused populations face the greatest risk of illness or death from exposure to extreme cold. Code Blue Alerts seek to provide emergency shelter for these individuals.

Homebound individuals, such as the elderly or persons with disabilities, who rely on home health supplies or other caregiving services also may be at risk if the power supply or other services are disrupted.

Low-income households are more likely to experience the impacts of extreme cold. They may lack adequate housing or may live in older homes that might have poor heating systems or lack insulation. Residents may be reluctant to use heat systems due to high energy costs. They may also face greater risks from seeking alternative heat sources. About 20% of winter fatalities occur inside the home, primarily when space heaters catch fire or people suffer from carbon monoxide poisoning from using alternative heating devices without proper ventilation.[118]

COMMUNITY LIFELINES

Extreme cold can disrupt services across the safety and security, energy, transportation, and water sectors. The importance of these lifelines cannot be overstated. In a disaster, communities can be left without access to necessities, such as food, water, and shelter. The lifelines help ensure that these needs are met and that people have the resources they need to survive. By providing access to medical care, public health services, and transportation, the lifelines enable people to receive the care they need and safely evacuate if necessary. In addition, the hazardous materials lifeline helps to ensure that dangerous materials are managed safely, reducing the risk of further harm. Community lifelines help create a sense of safety and security in a community. They provide a safety net for individuals who may be struggling and offer comfort and reassurance that help is available when needed. Without these lifelines, communities would be much more vulnerable to crises and emergencies.

CHANGES IN DEVELOPMENT

Since the last plan update, there has been a significant rise in cost of living, coupled with inflation, which has contributed to an increase in the county's unhoused population and made more individuals at risk of homelessness and extreme cold. The overall population size in the county has increased, which represents a rise in the number of people potentially exposed to the hazard. Extreme cold particularly affects unhoused populations, and the Salt Lake County Point-in-Time Count Summary indicates that the overall number of people experiencing homelessness in Salt Lake County has risen since 2018.[119] This also represents an increase in vulnerability to this hazard.

In Salt Lake County, development and population growth can have profound impacts on extreme cold as the growing population is increasing the demand for energy during the winter months, and this might strain the system. This could lead to blackouts or brownouts during periods of extreme cold. The

[118] Utah Department of Public Safety, Division of Emergency Management. "Utah Enhanced State Hazard Mitigation Plan 2024." 2024. https://hazards.utah.gov/state-of-utah-hazard-mitigation-plan/.
[119] Smith, Alex. "Salt Lake County CoC Point-in-Time Count Summary, 2018–2022." End Utah Homelessness, Salt Lake Valley. 2022. https://endutahhomelessness.org/wp-content/uploads/2022/08/SLC-PIT-Summary-2018-2022.pdf.

increased density of buildings and infrastructure may also make it more difficult to clear accompanying snow and ice, impacting both transportation and emergency response times.

An increase in infrastructure due to population growth can exacerbate the negative air quality effects of temperature inversions in the Salt Lake Valley. During an inversion, cold air at the surface gets trapped under a layer of warmer air and pollutants can build up to unhealthy levels near the surface. These inversions are often strongest in winter months and often coincide with periods of extreme cold temperatures. The unique topography and meteorology of the valley are important factors in the formation of temperature inversions, an increase in population, transportation networks, and other development contribute to the levels of emissions and other pollutants in the air.

VULNERABILITY SCORE

In the 2024 update, the NRI was used as the primary tool for analyzing the county's vulnerability to severe winter weather. The NRI defines risk as the potential for negative impacts as a result of a natural hazard and determines a community's risk relative to other communities by examining the EAL and social vulnerability of a given community in relation to that community's resilience. Salt Lake County's NRI cold wave risk rating is shown in. The county has a "very low" cold wave risk rating, and a risk score of 30.2.

DRAFT

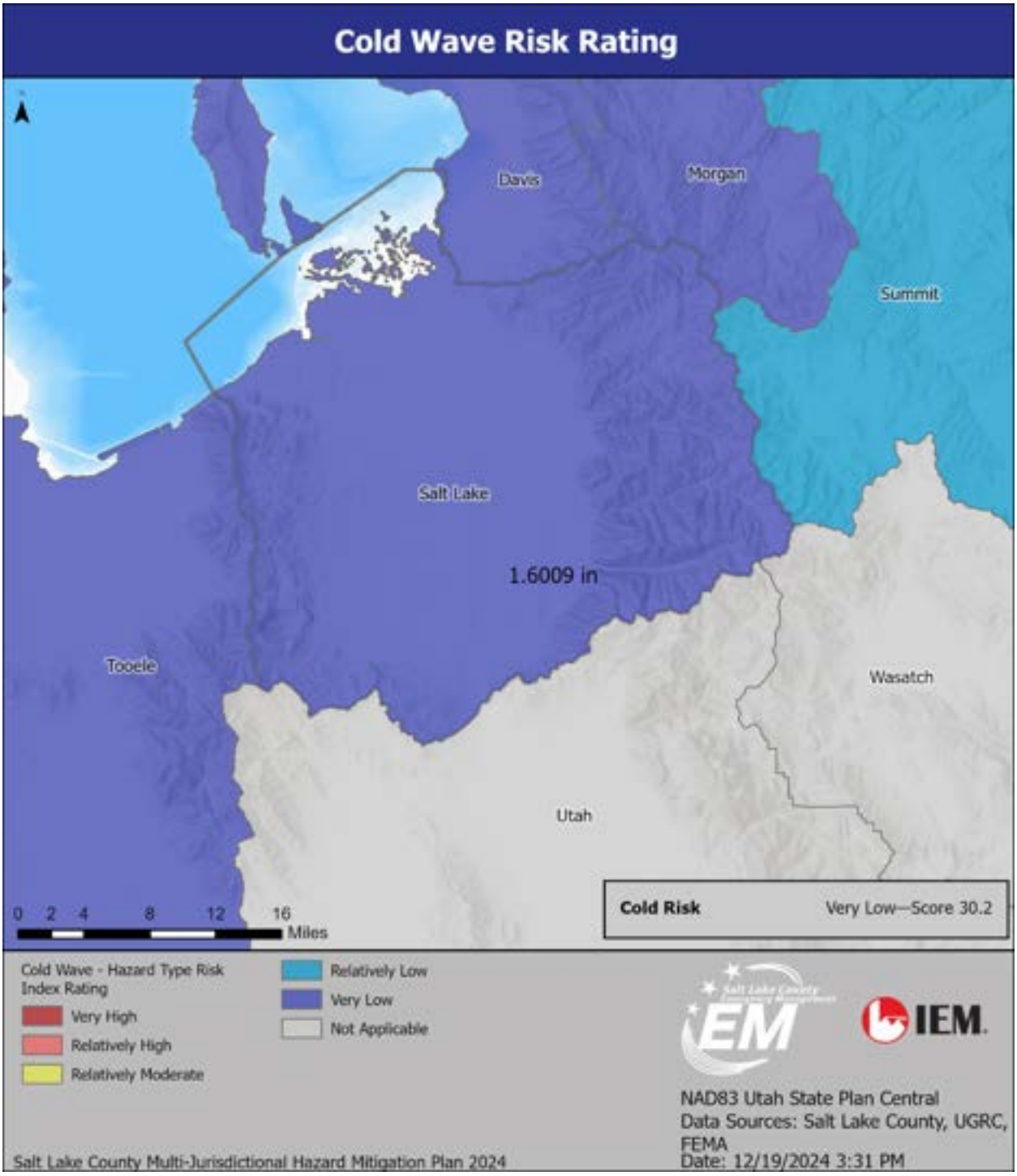


Figure 97: National Risk Index Cold Wave Risk Map, Rating, and Score for Salt Lake County[120]

[120] FEMA. "National Risk Index." 2023. https://hazards.fema.gov/nri/map.

Extreme Heat

Figure 98: Image of Hot Sun[121]

Hazard Description

Temperatures in Utah can be extreme. Summer temperatures are regularly in the 90s and exceed 100 degrees Fahrenheit on many days. Drastic temperature changes also occur, even in a matter of hours. Extreme heat can cause severe physical stress or illness in people.

Extreme heat is summertime weather that is substantially hotter and/or more humid than average for a location at that time of year. Extreme heat causes discomfort and can affect personal health through heat cramps, heat exhaustion, or heat stroke. This can particularly affect vulnerable populations, such as the very young, elderly, poor, and homeless. Extreme heat places a substantial burden on power grids through widespread use of evaporative coolers and air-conditioning. This strain can lead to brownouts or blackouts, leaving many without power.

Hazard Profile

Potential Impact		Catastrophic	**Probability**	X	Highly Likely
	X	Critical			Likely
		Limited			Occasional
		Negligible			Unlikely
Location	Can occur in areas throughout the county				
Seasonal Pattern	Summer months				
Conditions	Vary based on latitude, elevation, aspect, and landforms				
Duration	Extreme heat generally persists for days				
Secondary Hazards	Drought, wildfire, health conditions				

[121] https://pixabay.com/photos/sunset-sun-sky-clouds-orange-2180346/.

Potential Impact		Catastrophic	**Probability**	X	Highly Likely
	X	Critical			Likely
		Limited			Occasional
		Negligible			Unlikely
Analysis Used	National Climate Data Center, National Weather Service, Utah Division of Emergency Management, local input, and review of historic events and scientific records				

Magnitude/Extent

The heat index is a measure of what different temperatures feel like to the human body. It combines air temperature with relative humidity because humidity reduces the body's ability to cool itself through the evaporation of perspiration. Humidity is typically low in Salt Lake County.

The highest temperature ever recorded in Salt Lake City was 107ºF on July 17, 2022. This year also had the highest number of days in one month with a temperature of 100ºF or greater, and 29 days above 95ºF.[122] The average maximum temperature in July in the county is around 91ºF.

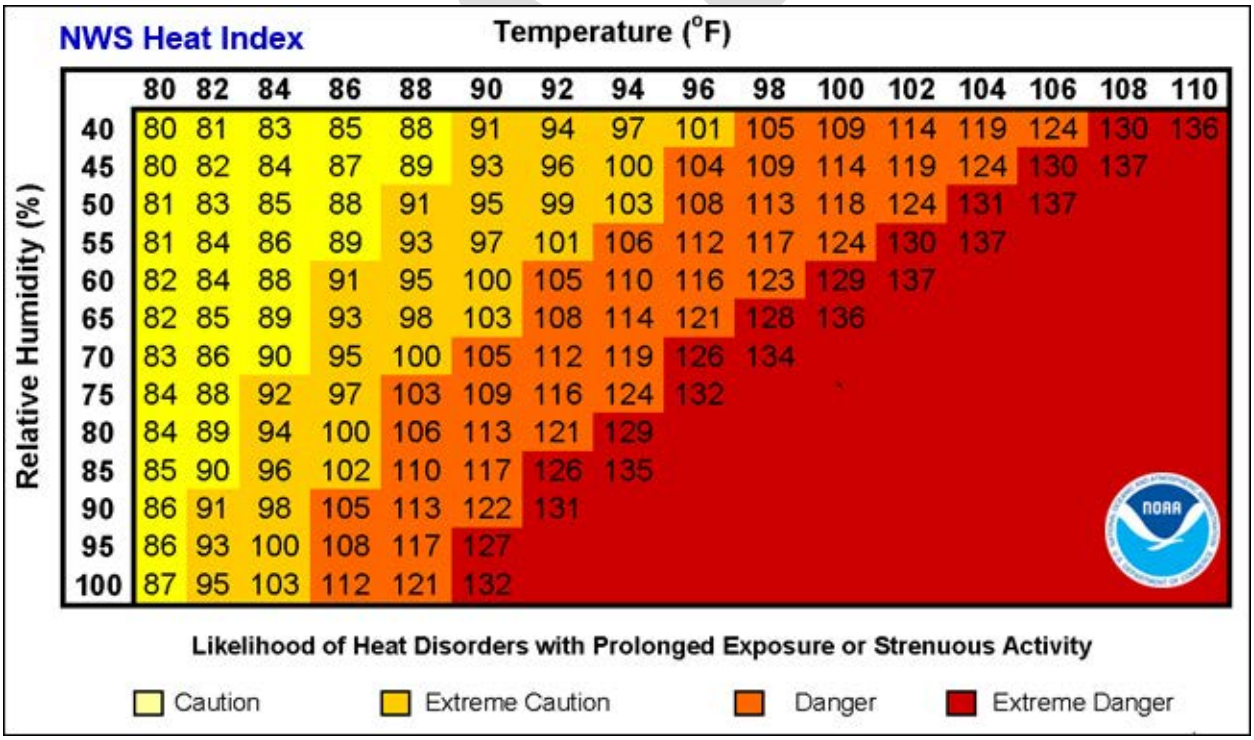


Figure 99: National Weather Service Heat Index Chart

Location

The entire county is at risk of extreme heat events. Most of the development in Salt Lake County has taken place in the central valley. Communities with dense development and with limited open green

[122] National Weather Service. "Salt Lake City Climate Book." 2024. https://www.weather.gov/slc/climatebook#PDFS.

space are at greater risk during extreme heat events. Urban areas tend to absorb more heat and release it slower during the evening than rural areas, leading to overall higher temperatures. This is known as the urban heat island effect. Temperatures tend to be lower at the higher elevations in the mountainous areas of the county, but these areas can be affected when temperatures exceed typical levels.

One cascading impact of extreme heat is wildfire risk. The Wildfire Urban Interface include communities, such as Hi-Country Estates One and Two and Mt. Aire in unincorporated Salt Lake County, Draper, and Emigration Canyon. These areas are at high risk of wildfires that result from drought related to extreme heat.

Historical Events and Probability of Future Occurrences

Based on the FEMA Disaster Declarations Database, Salt Lake County has received no designation for extreme heat disaster declarations since the last plan update. The NCEI Storm Events Database includes two excessive heat events in 2021 affecting the Salt Lake Valley and Great Salt Lake Desert areas. On June 6, 2023, average temperatures were 19 degrees above average.

As previously stated, the highest temperature ever recorded in Salt Lake City was 107ºF in 2022. NOAA has not recorded any extreme heat events or any corresponding deaths or injuries in Salt Lake County. However, mild events have occurred with moderate regularity and will continue to occur. The Climate Risk and Resilience Portal (ClimRR) Heat Index Explorer provides a visual overview of the projected increase in maximum summer heat index values (Figure 100).[123]

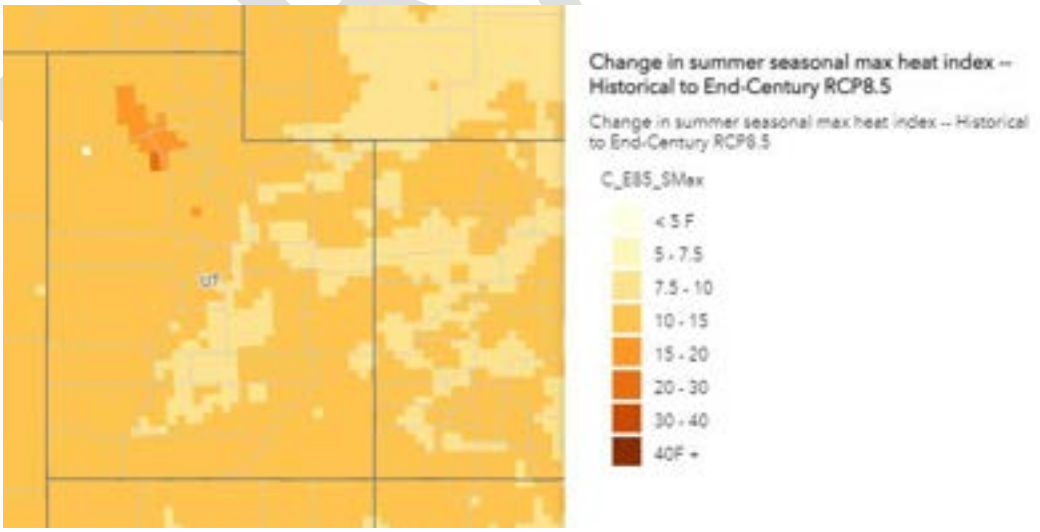


Figure 100: Projected Changes in the Heat Index for Utah Until 2021 by the Climate Risk and Resilience Portal

[123] Argonne National Laboratory. "ClimRR Heat Index Explorer." 2023. Climate change can also have a significant impact directly on the natural hazard of extreme heat. Climate change can cause warmer summer temperatures, which increases the hotter seasons while decreasing colder seasons resulting in less snowpack for the year. This shift can affect water resources, local ecosystems that thrive on cold weather, and winter recreational activities. This ultimately results in shorter and less severe winters, which can drastically impact the economy, as Salt Lake County thrives on the ski industry during the winter months.
https://disgeoportal.egs.anl.gov/portal/apps/webappviewer/index.html?id=06a52da514364cfab2eab106c247f6c3.

Salt Lake County experiences temperatures above 100˚F nearly every summer and 8 days each year on average. The record for the number of days over 100˚F was broken in 2022, with 34 days. The frequency of past events indicates that future probability is highly likely.

Climate Change Considerations

Climate change can also have a significant impact on the natural hazard of extreme heat. Climate change can cause higher summer temperatures, which lengthens the hotter seasons and shortens colder seasons resulting in less snowpack for the year. This shift can affect the availability of water in the summer months.

There is strong evidence that extreme heat will continue to increase with worsening climate change. The CMRA tool provides projections for future conditions of various hazards based on lower and higher emission scenarios for early, mid-, and late century. This tool projects a significant increase in the number of days with maximum temperatures exceeding 100ºF in mid- and late century for both emission models (Figure 101). It also projects an increase in the annual highest maximum temperature and in cooling-degree days, a measure of the energy needed for air-conditioning or refrigeration.[124]

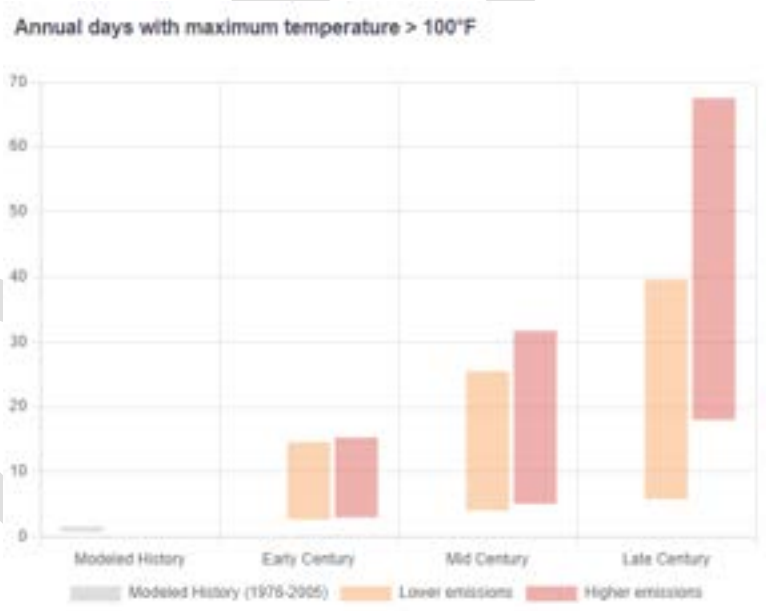


Figure 101: Projected Number of Days Each Year with Temperatures Exceeding 100ºF

Secondary Hazards

One of the most significant secondary hazards associated with excessive heat events is the failure of motorized systems, such as ventilation systems used to control temperatures inside buildings. In other parts of the country, extreme heat has contributed to widespread power outages. Heat can cause roads to buckle and may cause road closures for emergency repairs. Extreme heat can also raise the risk of

[124] NOAA. “Climate Mapping For Resilience and Adaptation.” 2022. https://livingatlas.arcgis.com/assessment-tool/explore/details.

wildfires as vegetation dries out, which allows fires to ignite and spread more rapidly. Furthermore, extreme heat can exacerbate drought conditions.

Vulnerability Assessment

The primary concern with extreme heat is heat-related illnesses, such as dehydration, heat exhaustion, and heat stroke. This is especially concerning for the county in the summer event season. There are many summer events in the county, and if temperatures continue to increase and there are not adequate resources (EMS staff, drinking water, restrooms, shade), it can pose significant health issues. The entire population may be at risk of the effects of heat, but extreme heat might have disproportionate impacts on some populations. Extreme heat can increase demand for power and water resources. Increased demand for healthcare services can put a strain on providers. In addition, the population may not contribute as much to the local economy (eating out, festivals, etc.) because of the heat.

ESTIMATED IMPACT AND POTENTIAL LOSSES

Extreme heat can have significant health impacts on the individuals, including severe sickness and possibly death. Individuals particularly at risk are discussed in the section on Vulnerable Populations.

Heat can cause spikes in energy use as demand for air-conditioning increases. This can strain power grids and may lead to outages during peak use. Increased energy use raises financial costs for residents and businesses. Damage to roadways from heat-related buckling can require costly emergency repairs and may cause secondary disruptions while transportation routes are closed.

Natural systems can also be impacted by extreme heat. Rising temperatures can affect wildlife habitats, diminish the health of vegetation, and disrupt ecosystems. Extreme heat can contribute to an increase in evaporation rates, reduce water availability for agriculture and recreation, and exacerbate the effects of drought. Therefore, heat can lead to agricultural losses.

The NRI includes data on the EALs attributed to individual natural hazards, historical losses, and overall risk at the county and Census tract levels. Salt Lake County's NRI EAL value for heat waves is $2.1 million, with a risk score of 95.3 and a rating of "relatively high" compared with the rest of the United States (Figure 102).

DRAFT

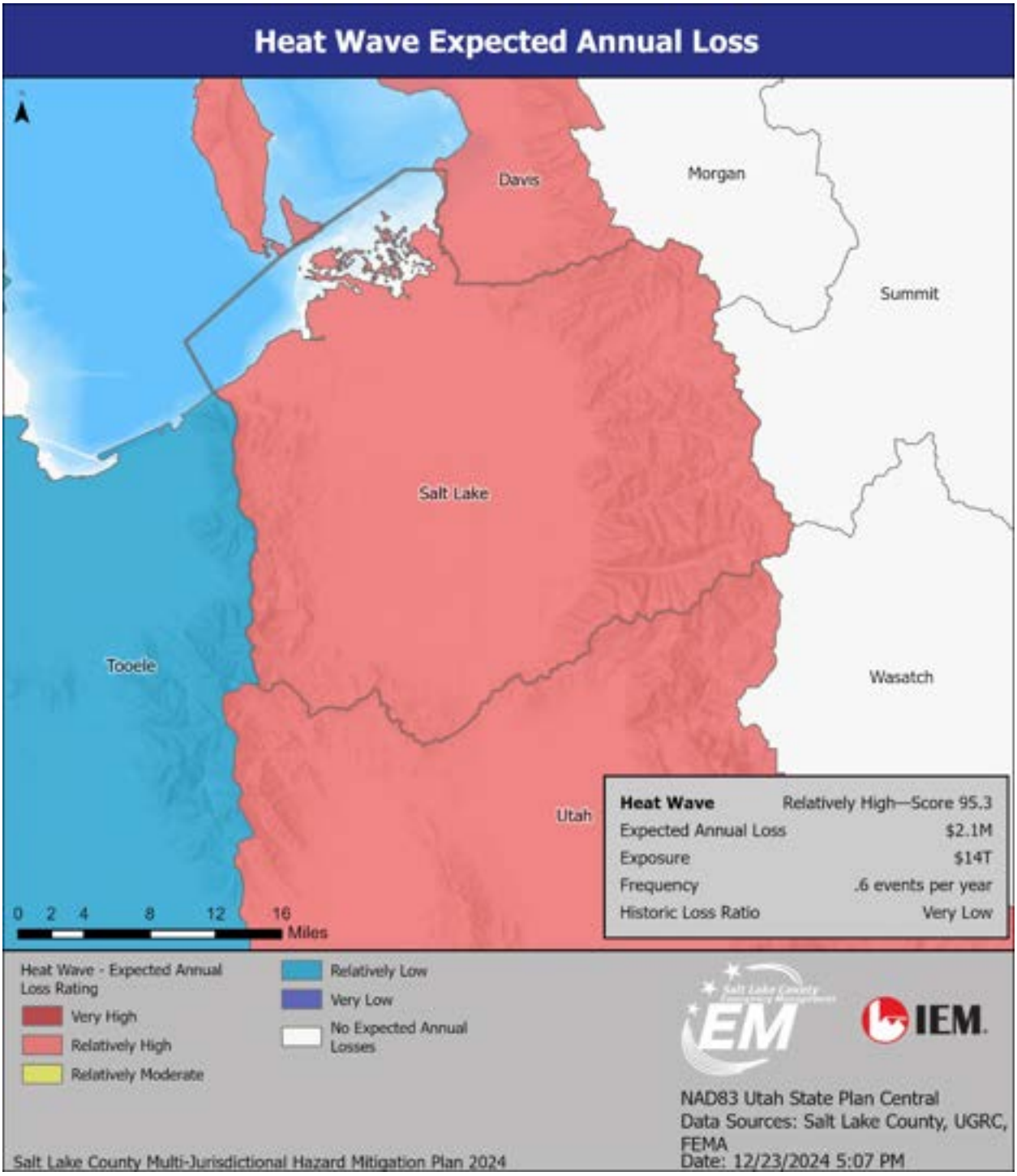


Figure 102: National Risk Index Expected Annual Loss from Heat Waves in Salt Lake County[125]

[125] FEMA. "National Risk Index." 2023. https://hazards.fema.gov/nri/map.

VULNERABLE POPULATIONS

Several populations are more vulnerable to extreme heat events, face isolation and exposure during extreme heat events, or can suffer more secondary effects of the hazard. Young children and the elderly are more susceptible to extreme heat due to their bodies' inability to regulate temperature as effectively. The chronically ill and elderly might have underlying health conditions or take prescription medications that interfere with the body's ability to dissipate heat. Even young and healthy individuals can succumb to heat if they participate in strenuous physical activities during hot weather. Males tend to experience a higher rate of dehydration than females. Outdoor workers may not have enough breaks, adequate hydration, or a place to adequately cool themselves.

Extreme heat can disproportionately affect people with socioeconomic disadvantages. Lower-income households may not have functioning air-conditioning or may be reluctant to use it due to energy costs. Unhoused populations are highly vulnerable to severe weather hazards. These individuals may seek access to public spaces to escape the heat.

COMMUNITY LIFELINES

Extreme heat primarily affects public health, which may impact demands on the health and medical lifeline, but it can also affect the energy and transportation lifelines. The importance of these lifelines cannot be overstated. In a disaster, communities can be left without access to necessities, such as food, water, and shelter. The lifelines help ensure that these needs are met and that people have the resources they need to survive. By providing access to medical care, public health services, and transportation, the lifelines enable people to receive the care they need and safely evacuate if necessary. Community lifelines help create a sense of safety and security in a community. They provide a safety net for individuals who may be struggling and offer comfort and reassurance that help is available when needed. Without these lifelines, communities would be much more vulnerable to crises and emergencies.

CHANGES IN DEVELOPMENT

In Salt Lake County, development and population growth can have profound impacts on extreme heat as the growing population is increasing the demand for energy during the summer months, and that may strain the system. This could lead to blackouts or brownouts during periods of extreme heat. An increase in infrastructure due to population growth can exacerbate the effects of extreme heat by creating urban heat islands, which can lead to more significant temperature fluctuations and more intense heat waves.

High levels of increased development and density, especially in outlying cities and towns like Herriman and South Jordan, can lead to increased temperatures during extreme heat events. Removing vegetation and increasing the amount of pavement and buildings traps heat at ground level, increasing the vulnerability of those who cannot find a place to cool off.

Potential impacts from extreme heat are loss of life/property, poor air quality, and power grid failure. As the population in Salt Lake County continues to grow, the potential for these negative impacts increases. Energy demands also may rise. In addition, the unhoused population has also grown in recent years, which creates more of a challenge to provide enough cooling centers in the county and the staffing

DRAFT

needed to adequately manage the cooling centers. Overall vulnerability to extreme heat has increased since the last plan update.

VULNERABILITY SCORE

In the 2024 update, the NRI was used as the primary tool for analyzing the county's vulnerability to severe weather. The NRI defines risk as the potential for negative impacts as a result of a natural hazard and determines a community's risk relative to other communities by examining the EAL and social vulnerability of a given community in relation to that community's resilience. Salt Lake County's NRI heat wave risk rating is shown in Figure 103. The county has a "relatively moderate" heat wave risk rating, and a risk score of 94.6.

DRAFT

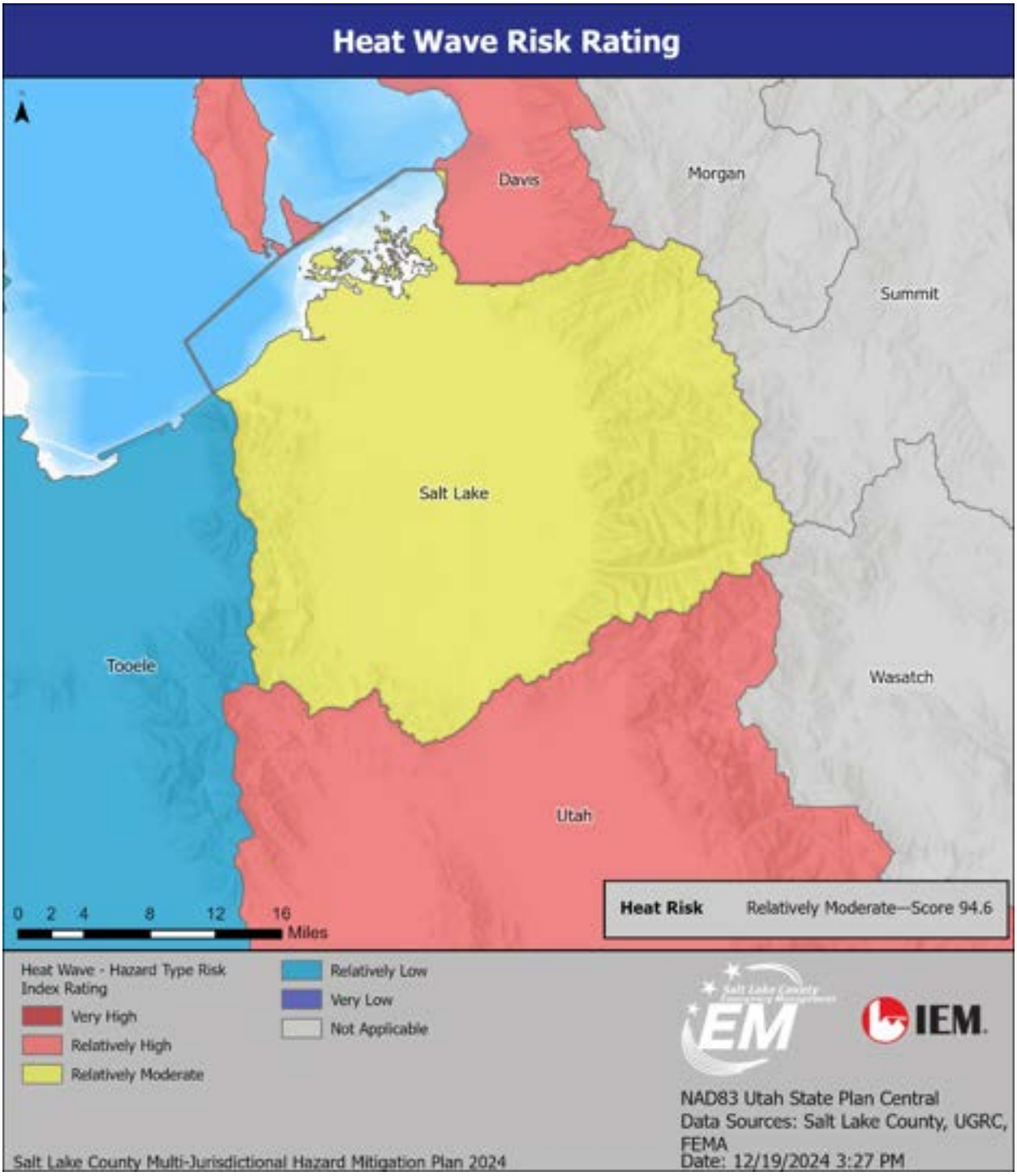


Figure 103: National Risk Index Heat Wave Risk Map, Rating, and Score for Salt Lake County[126]

[126] FEMA. "National Risk Index." 2023. https://hazards.fema.gov/nri/map.

Flooding (Urban/Flash Flooding and Riverine Flooding)

Hazard Description

Floods can be caused by fast snowmelt, heavy rainfall, or failure of natural or engineered impoundments onto riverbanks and adjacent floodplains. Floodplains are lowland areas near rivers, lakes, reservoirs, oceans, and low-terrain urban areas that are subject to recurring floods. Stream flooding occurs when the peak discharge, or rate of flow in cubic feet per second (cfs), is larger than the channel of the river or storm sewer capacity. In Salt Lake County, floods are typically localized events running out of mountain canyons. Urban areas are also prone to flooding because urban development, such as buildings, streets, and parking lots, prevent water infiltration into the soil and greatly increase runoff. Undersized piping, human-made drainage channels, or debris that obstructs passageways may further contribute to flooding. Flood damage includes saturation of land and property, erosion, deposition of mud and debris, and fast-flowing water. Most injuries and deaths occur from fast-moving floodwaters while most property damage results from inundation by sediment-filled water.

Figure 104: Image of Flooded Park[127]

SPRING RUNOFF/SNOWMELT FLOODS

These are caused by rapid spring snowmelt of mountain snowpack. Intense spring rainfall contributes to the flood scenario, causing additional rapid river rises. These events can last for weeks during the spring (generally April–June) and may cause loss of life and extensive damage affecting property owners and municipalities. Snowmelt risk is greatest when snowpack is at or above normal levels and/or accompanied by an abrupt warming trend.

[127] https://pixabay.com/photos/flood-park-bench-flooded-red-123222/.

FLASH FLOODS

Flash floods are caused by intense thunderstorms and the resulting heavy rainfall. Heavy rainfall may occur in areas of sparse vegetation, steep slopes, and impervious surfaces, and is then channeled into smaller waterways or conduits. Once runoff begins to accumulate across the basin, its volume and speed typically increase rapidly. Flash flood events, while often short-lived, are very dangerous for those caught in a confined area, such as a canyon, when the flood occurs. Flash flooding has caused 34 fatalities in Utah since 1950. In 2015, there were 20 fatalities, including seven at Zion National Park.

Areas of localized flooding may occur in urban areas not associated with existing waterways. Rain may accumulate in low-lying areas with no outlet or where storm drains have become overwhelmed. These types of floods and the resulting impacts are difficult to anticipate due to the uncertainty of when and where such storms will occur.

LONG-TERM RAINFALL EVENTS

These rain events typically occur in the fall or winter months. They are produced by large synoptic weather systems originating out of the south, southwest, or west that produce rainfall for an extended period. The rainfall may cause some snow to melt, potentially causing more significant runoff. This occurs mainly in the southern half of the state.

POST-FIRE DEBRIS FLOW FLOODING

Enhanced runoff conditions from a fire-damaged watershed can cause debris flow flooding. As fires burn, they destroy vegetation and leave soil in a hydrophobic state, resulting in greater peak flows. This issue is discussed further in the section on Wildfire.

Hazard Profile

Potential Magnitude		Catastrophic	**Probability**	X	Highly Likely
	X	Critical			Likely
		Limited			Occasional
		Negligible			Unlikely
Location	Largely in and along floodplains; debris flows can cause natural damming of water if nearby streams become blocked				
Seasonal Conditions	Spring, heavy rainfall, and spring snowmelt runoff				
Conditions	Thunderstorms with heavy rainfall, extended wet periods				
Duration	Flooding can last anywhere from hours to days and even months				
Secondary Hazards	Raw sewage/health risk, electrical fires, gas spills				
Analysis Used	Review of Flood Insurance Study, Flood Insurance Rate Maps, U.S. Army Corps of Engineers Flood Study, Hazus				

DRAFT

Magnitude/Extent

Floods can range in magnitude from minor to catastrophic. The frequency and severity of flooding are measured using a discharge probability, which is the probability that a certain river discharge (flow) level will be equaled or exceeded in a given year. Flood studies use historical records to determine the probability of occurrence for the different discharge levels. The flood frequency equals 100 divided by the discharge probability.

- **1% Special Flood Hazard Area – SFHA (1% annual chance of flooding, sometimes referred to as a 100-year flood):** Applies to an area that has a 1% chance, on average, of flooding in a given year. However, a 100-year flood could occur two years in a row, or once every 10 years. This flood hazard area is also referred to as the base flood. Some agencies use the term "1% annual exceedance probability."
- **0.2% Special Flood Hazard Area (0.2% annual chance of flooding, sometimes called a 500-year flood):** A 0.2% floodplain is an area at risk of flooding from a creek or other waterway overflowing during a 0.2% (500-year) flood. Structures in a 0.2% area have a minimum of a 0.2% chance of flooding in a given year.

Location

Flooding in Salt Lake County is typically the result of excessive snowmelt runoff and/or heavy rainfall. Snowmelt flooding is usually the result of rapid melting of snowpack, occurring from April through June along the major existing streams and waterways. High-intensity, short-duration heavy rainfall occurs over a relatively small area in the summer months. However, flooding can also occur due to non-thunderstorm rainfall events.

The major waterways in the county include the Jordan River, Big and Little Cottonwood Creeks, Parley's Creek, Emigration Creek, Red Butte Creek, City Creek, and Millcreek. Smaller waterways include Bingham Creek, Midas Creek, Rose Creek, Corner Canyon Creek, Dry Creek, Wood Hollow, Willow Creek, and Barney's Creek. All can flood. However, significant flood mitigation measures implemented following the major floods of 1983–1984 have greatly reduced the flood threat.

The flow of the Jordan River from Utah Lake into Salt Lake County is controlled, somewhat reducing the flood potential upstream of the major Jordan River tributaries. Parley's Creek has flood storage capacity at Mountain Dell and Little Dell Reservoirs and is routed through a retention basin in Sugarhouse Park. Big and Little Cottonwood Creeks have a number of smaller flood storage lakes and ponds providing some flood protection, such as Wheeler Historic Farm. In Salt Lake City, Emigration Creek and Red Butte Creek come together at 700 East and 1300 South and can be discharged in or bypass Liberty Park pond. Parley's Creek discharges to the 1300 South drain at State Street.

Areas to monitor include 1300 South between 700 East and State Street, 700 West, and North Temple Streets. Retention ponds are also used to store runoff from commercial and residential development areas.

DRAFT

Maps visually showing the probable boundaries of a 100-year (1% annual chance) and 500-year (0.2% annual chance) flood event can be found in the Vulnerability Assessment portion of this hazard profile.

Historical Events and Probability of Future Occurrences

Based on the FEMA Disaster Declarations database, Salt Lake County has received no designation for flooding Disaster Declarations since the last plan update.

According to NOAA data, there have been 44 flood/flash flood events in Salt Lake County since 1996. Property damage was approximately $31.627 million, with an additional $1,000 in crop damage.

Figure 105: Image of a Flooded Road[128]

The following flood events are of notable significance:

- **April 13, 2023:** A State of Emergency was declared for Salt Lake County over the spring runoff flooding that affected the Wasatch Front. The areas most affected by the flooding were along Red Butte Creek, Emigration Creek, City Creek, Big Cottonwood Creek, Little Cottonwood Creek, and Millcreek. Voluntary evacuations along Emigration Creek in downtown Salt Lake City included the evacuation of up to 40 homes.
- **2017:** Thunderstorms producing heavy rainfall moved into the Salt Lake Valley in the early morning hours of July 26 and persisted for three to four hours, producing widespread flash flooding.
- **2015:** Heavy rain caused road, parking lot, and basement flooding in the Sugarhouse and Foothill areas of Salt Lake City.
- **2014:** Heavy rain during the early morning hours of August 20 led to flooding in West Jordan and Murray.
- **2011:** Large snowpack meant larger resulting spring runoff flows.
- **2010:** Spring snowmelt combined with heavy rains caused several streams to overtop their banks.

[128] Pixabay. https://pixabay.com/photos/flooded-road-flood-flooding-storm-5330617/.

- **1987:** Great Salt Lake reached its all-time maximum water level (4,211.6 feet).
- **1983:** Large snowpack was coupled with a rain-on-snow event (City Creek diverted down State Street).
- **1983/1984:** Large snowpack overwhelmed Utah Lake and affected Jordan River downstream, causing the flooding of City Creek in downtown Salt Lake City.
- **1952:** Rapid melt of a large snowpack

Utah has received seven Presidential Disaster Declarations related to flooding: in 1983, 1984, two in 2005 (in Southern Utah), two in 2012, and one in 2017. Following the events of 1983–1984, an enormous amount of mitigation was completed along the urban areas of the Wasatch Front. An advanced water-monitoring network of stream gauges, snow telemetry (SNOTEL

) sites, and automated stream flow gates provided warnings of elevated flows. The State of Utah constructed a county flood control project that installed pumps on the Great Salt Lake to pump excess water into the west desert. Figure 106 shows the Salt Air Resort, now a concert venue called the Great Saltair, on the southeast shore of the Great Salt Lake during the flood years of the 1980s.

Figure 106: Flooding of the Great Salt Lake at the Saltair Resort

During the past 149 years, the Great Salt Lake peaked above 4,211 feet three times: 4,211.60 feet in June 1873, 4,211.50 feet in June 1986, and 4,211.60 feet in June 1987. Figure 107 shows statistical data on Great Salt Lake elevations from 2007 to 2024.

DRAFT

Figure 107: Elevations of the Great Salt Lake, 2007–2024[129]

Depending on the amount of snowfall in the winter and its melting speed, flows can vary dramatically from year to year. Nevertheless, flood mitigation is on every jurisdiction's mind each spring, and a myriad of mitigation plans are in place to prevent damage. There is no question that flooding will continue to occur in the future. As previously stated, NOAA data recorded 32 flooding events from 1996 to 2018, for an average of approximately 1.4 flooding events per year. Salt Lake County is highly likely to experience at least this average amount of flooding going forward.

Climate Change Considerations

Climate change can have a significant impact on flooding. Climate change can alter precipitation patterns and increase the intensity of severe storms. This combined with population growth and urbanization can lead to severe flooding. Higher temperatures can also lead to more precipitation falling as rain rather than snow, which can also cause higher runoff and increased risk of flood. All of these changes can lead to more frequent severe flash floods, especially in urban areas with impervious surfaces that prevent the natural absorption of water.

The 2024 State Enhanced Hazard Mitigation Plan states that for decades, climate change experts, government reports, and academic literature have predicted an increase in precipitation intensity. The theoretical basis for these predictions was strong, though studies of actual trends in precipitation records did not detect significant changes in precipitation in the state of Utah.

[129] Utah.gov, Utah Division of Water Resources. "Great Salt Lake Elevation Chart." 2024. https://greatsaltlake.utah.gov/current-conditions.

One clear trend in precipitation with implications for flooding is the change in snowpack. Since 1955, the snowpack has peaked earlier, with a reduced season length. These trends are expected to continue into the foreseeable future. Due primarily to increasing air temperature, the proportion of precipitation that falls as snow will continue to decline. Warmer conditions are simply less likely to produce snow. Also, warmer conditions cause the snow line, the lowest elevation at which snow falls, to recede. As the snow line moves upward, the area receiving snowfall is reduced.

Secondary Hazards

One of the most problematic secondary hazards for flooding is bank erosion, which in some cases can be more harmful than the flooding itself. This is especially true in the upper courses of rivers with steep gradients, where floodwaters may pass quickly without causing much damage but may scour the banks, edging properties closer to the floodplain or causing them to fall in. This may also occur in areas with soft soils that are prone to erosion. Hazardous materials spills are a secondary hazard of flooding if storage tanks rupture and spill into streams, rivers, or storm sewers. If flooding is severe enough, infrastructure failure can occur, delaying the delivery of vital services. If enough residential structures are impacted, this can put extreme stress on emergency housing and shelter capabilities, not to mention the social fabric of the community.

Vulnerability Assessment

The vulnerability of people and infrastructure to flooding hazards in Salt Lake County was obtained from the modeling program Hazus. The Hazus flooding scenarios, which are the basis for the vulnerability and loss estimates in this section, entail both a 100-year and a 500-year flood occurring in Salt Lake County (1% and 0.2% annual risk, respectively). Hazus uses FEMA FIRM boundaries and digital elevation model data to generate flood depth grids and then uses these depth grids, general building stock data, and damage functions to estimate the level of damage to structures and other social and economic impacts on the region.

Hazus estimates that there are 360,243 buildings in the region with a replacement value of $172 billion. Of the building exposure, 61% is from residential structures. There are 16 hospitals, 67 fire stations, 33 police stations, 18 EOCs, and 422 schools.

ESTIMATED IMPACT AND POTENTIAL LOSSES

ESSENTIAL FACILITY DAMAGE

Hazus estimates that there are 2 fire stations, 3 schools, and 4 county facilities in the area of the 100-year flood scenario (1% annual chance) for Salt Lake County. There is 1 EOC, 22 county facilities, three fire stations, and 13 schools in the 500-year flood scenario (0.2% annual chance). No essential facility is estimated to receive substantial or moderate damage from a 100-year event. For a 100-year event, 3 schools and 2 fire stations are estimated to receive at least moderate damage during the scenario, and 1 fire station and 3 schools are estimated to experience loss of use. For a 500-year event, 1 EOC, 3 fire stations, 2 police stations, and 9 schools are estimated to receive at least moderate damage during the

DRAFT

scenario; 4 schools are estimated to receive at least substantial damage; and 2 fire stations and 8 schools are estimated to experience loss of use.

Table 50 and Table 51 list the facilities in the 1% annual chance and 0.2% annual chance floodplain across various jurisdictions in Salt Lake County. For the 1% annual chance floodplain, most areas, such as Alta, Bluffdale, Brighton, and Copperton, have no facilities at risk. However, Herriman, Millcreek, Salt Lake City, and Sandy City each has one county facility in the 1% annual chance floodplain. Millcreek and Salt Lake City also have one fire station in the 100-year floodplain while West Valley City has three schools at risk.

Much like the 1% annual chance floodplain, the 0.2% annual chance floodplain contains very few jurisdictions with facilities in it. However, Salt Lake City has a significant number of facilities, including 1 fire station, 4 schools, and 6 county facilities. The South Salt Lake area also has a notable presence, with 1 EOC, 1 fire station, 3 schools, and 5 county facilities. Other areas at risk include Millcreek, with 1 fire station and 2 schools, and West Valley City, with 3 schools and 1 county facility. The areas of Cottonwood Heights, Herriman, Murray, Sandy, Taylorsville, and West Jordan each have at least one county facility in the 0.2% annual chance floodplain. Figure 108 to Figure 114 show the locations of these facilities.

School facilities were summarized in the jurisdictions where they are located. No Jordan School District facilities were identified in SFHAs. One school is in the 0.2% SFHA in Draper, which is in the Canyons School District.

Table 50: Facilities in the 1% Annual Chance Floodplain by Jurisdiction

Name	Emergency Operations Centers	Fire Stations	Hospitals	Police Stations	Schools	County Facilities
Alta	0	0	0	0	0	0
Bluffdale	0	0	0	0	0	0
Brighton	0	0	0	0	0	0
Copperton	0	0	0	0	0	0
Cottonwood Heights	0	0	0	0	0	0
Draper	0	0	0	0	0	0
Emigration Canyon	0	0	0	0	0	0
Herriman	0	0	0	0	0	1
Holladay	0	0	0	0	0	0
Kearns	0	0	0	0	0	0
Magna	0	0	0	0	0	0
Midvale	0	0	0	0	0	0
Millcreek	0	1	0	0	0	1
Murray	0	0	0	0	0	0

DRAFT

Name	Emergency Operations Centers	Fire Stations	Hospitals	Police Stations	Schools	County Facilities
Riverton	0	0	0	0	0	0
Salt Lake City	0	1	0	0	0	1
Sandy City	0	0	0	0	0	1
South Jordan	0	0	0	0	0	0
South Salt Lake	0	0	0	0	0	0
Taylorsville	0	0	0	0	0	0
Unincorporated	0	0	0	0	0	0
West Jordan	0	0	0	0	0	0
West Valley City	0	0	0	0	3	0
White City	0	0	0	0	0	0

Table 51: Facilities in the 500-Year (0.2% annual chance) Floodplain by Jurisdiction

Name	Emergency Operations Centers	Fire Stations	Hospitals	Police Stations	Schools	County Facilities
Alta	0	0	0	0	0	0
Bluffdale	0	0	0	0	0	0
Brighton	0	0	0	0	0	0
Copperton	0	0	0	0	0	0
Cottonwood Heights	0	0	0	0	0	3
Draper	0	0	0	0	1	1
Emigration Canyon	0	0	0	0	0	0
Herriman	0	0	0	0	0	1
Holladay	0	0	0	0	0	0
Kearns	0	0	0	0	0	0
Magna	0	0	0	0	0	0
Midvale	0	0	0	0	0	0
Millcreek	0	1	0	0	2	1
Murray	0	0	0	0	0	1
Riverton	0	0	0	0	0	0
Salt Lake City	0	1	0	0	4	6
Sandy City	0	0	0	0	0	1
South Jordan	0	0	0	0	0	0
South Salt Lake	1	1	0	0	3	5

DRAFT

Name	Emergency Operations Centers	Fire Stations	Hospitals	Police Stations	Schools	County Facilities
Taylorsville	0	0	0	0	0	1
Unincorporated	0	0	0	0	0	0
West Jordan	0	0	0	0	0	1
West Valley City	0	0	0	0	3	1
White City	0	0	0	0	0	0

DRAFT

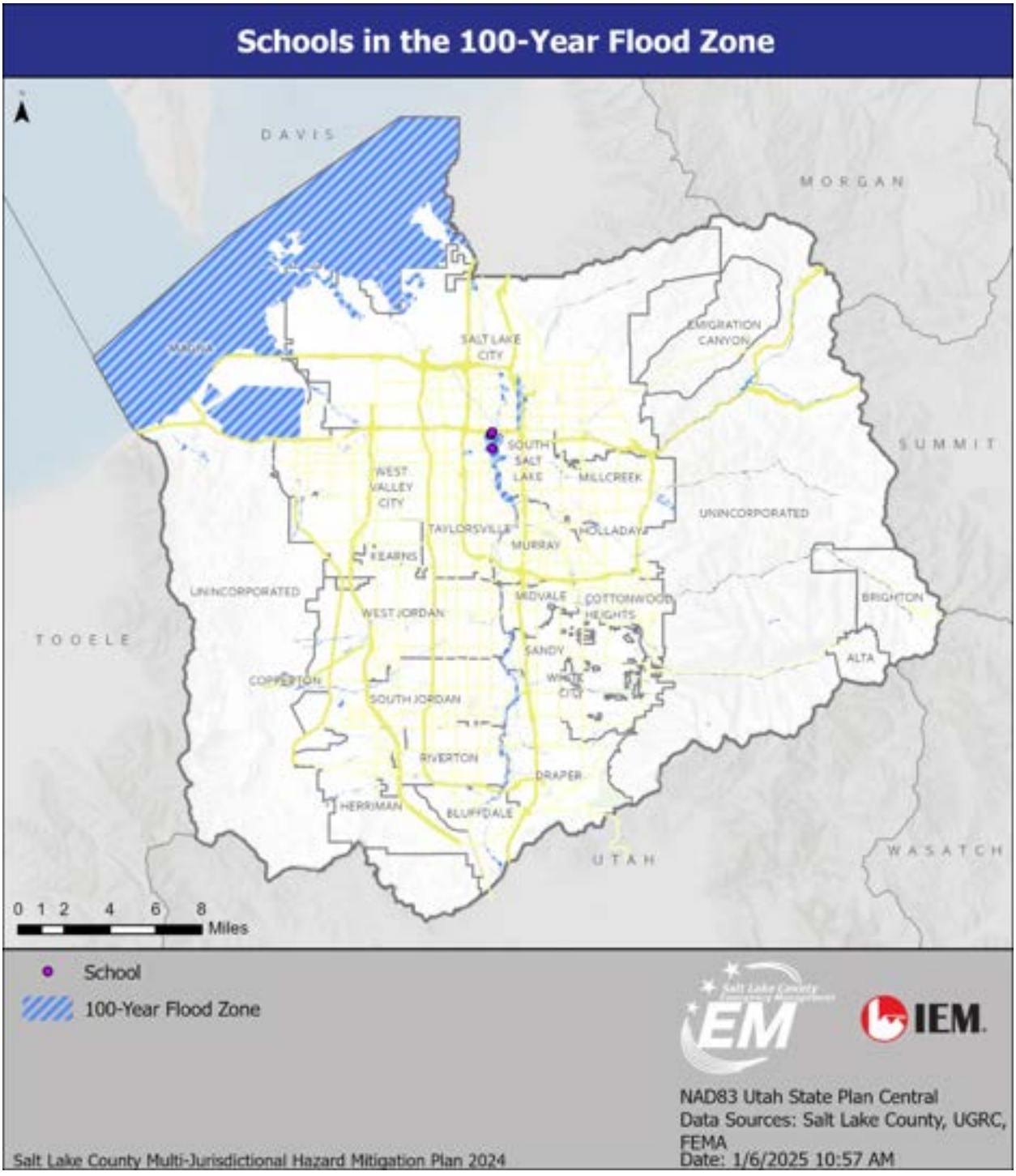


Figure 108: Schools in the 100-Year (1% Annual Chance) Flood Zone

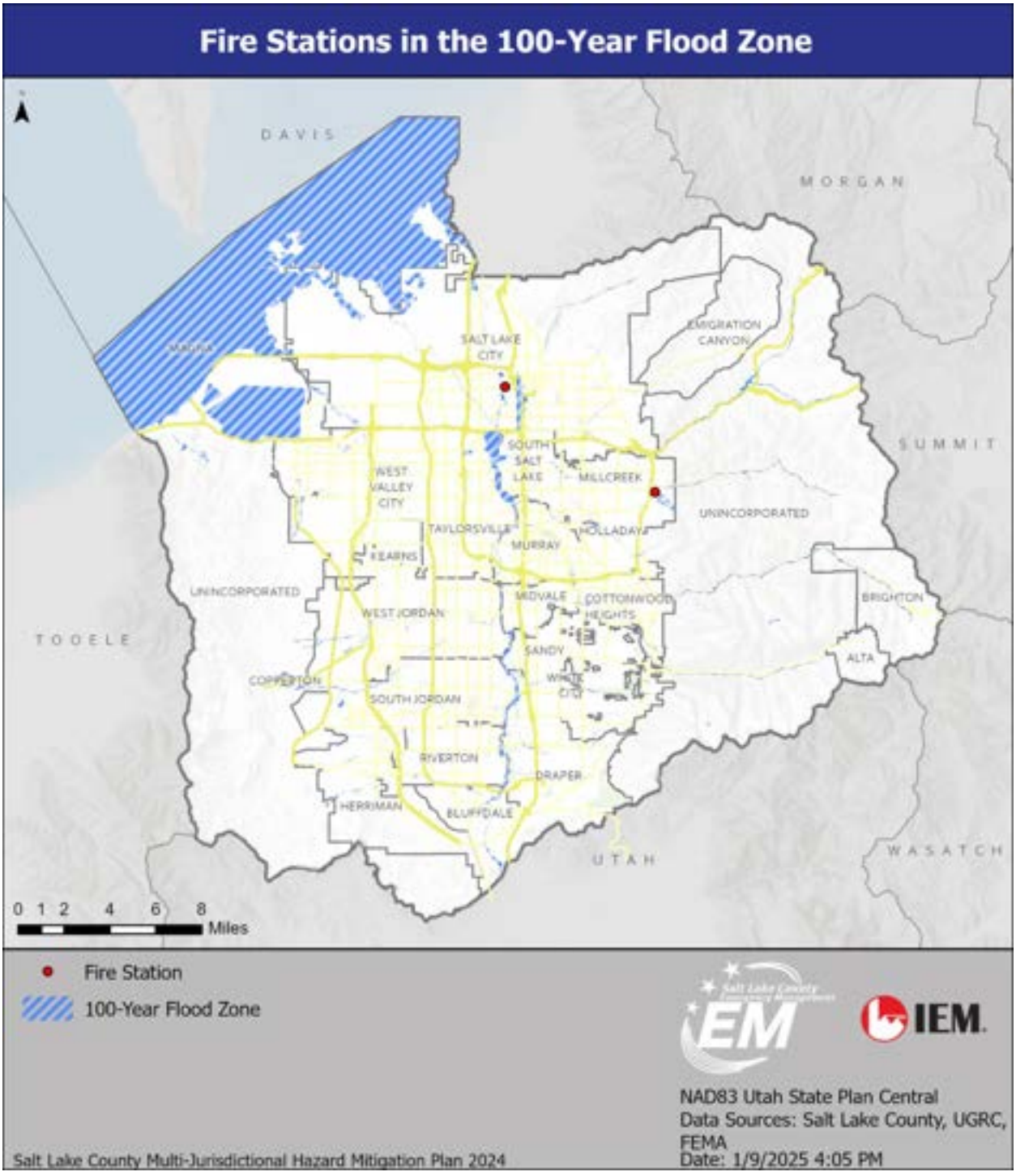


Figure 109: Fire Stations in the 100-Year (1% Annual Chance) Flood Zone

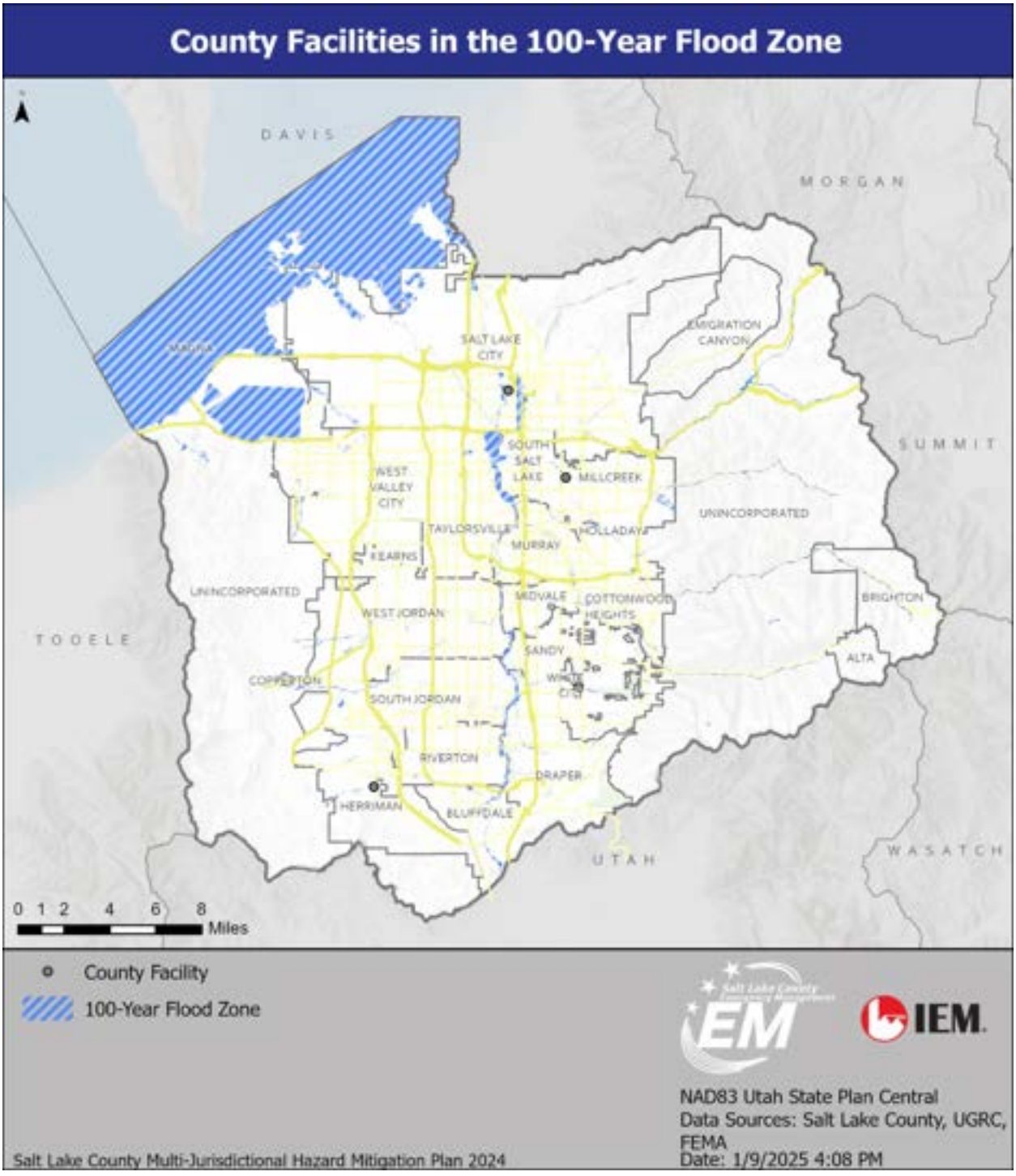


Figure 110: County Facilities in the 100-Year (1% Annual Chance) Flood Zone

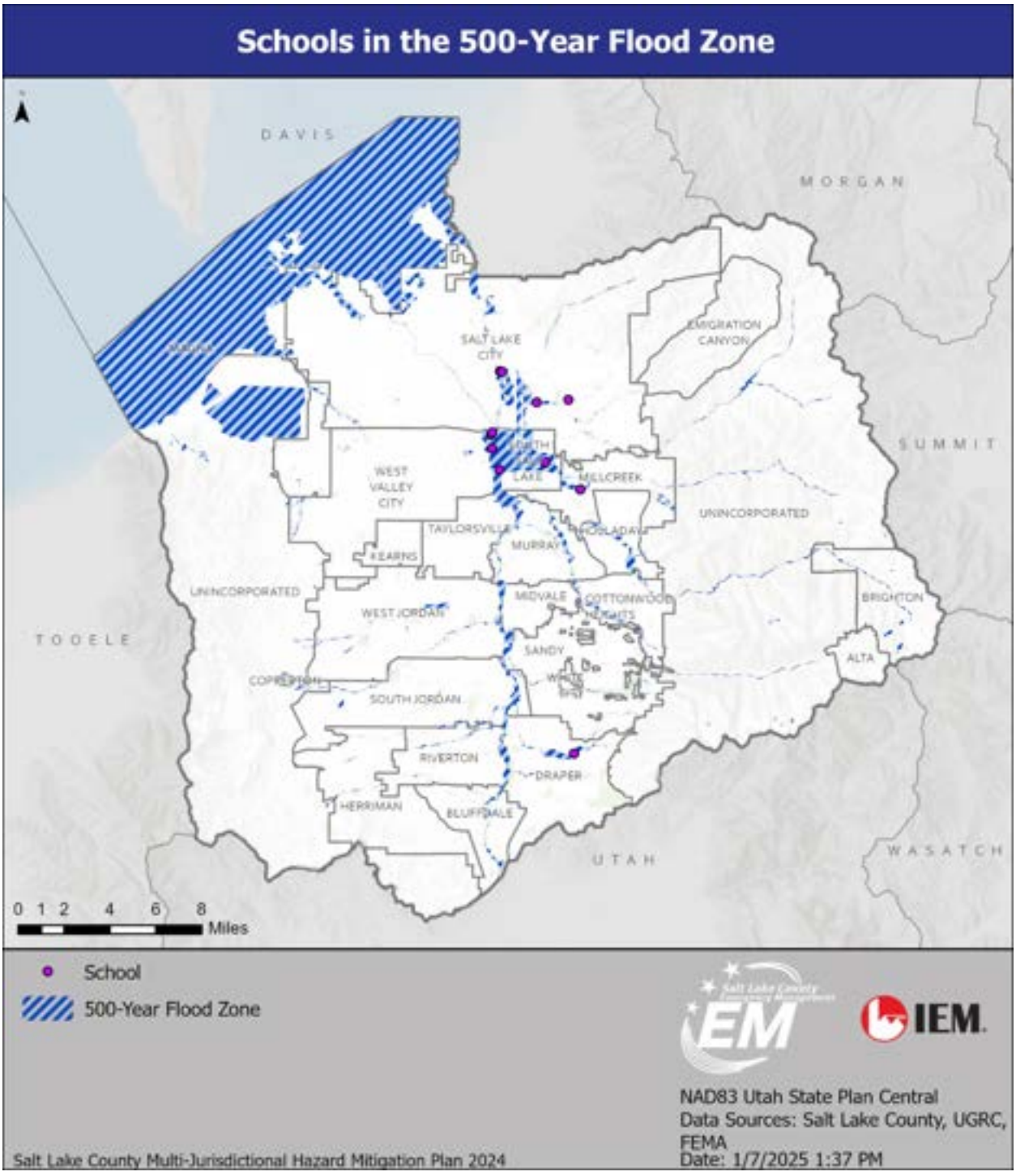


Figure 111: Schools in the 500-Year (0.2% Annual Chance) Flood Zone

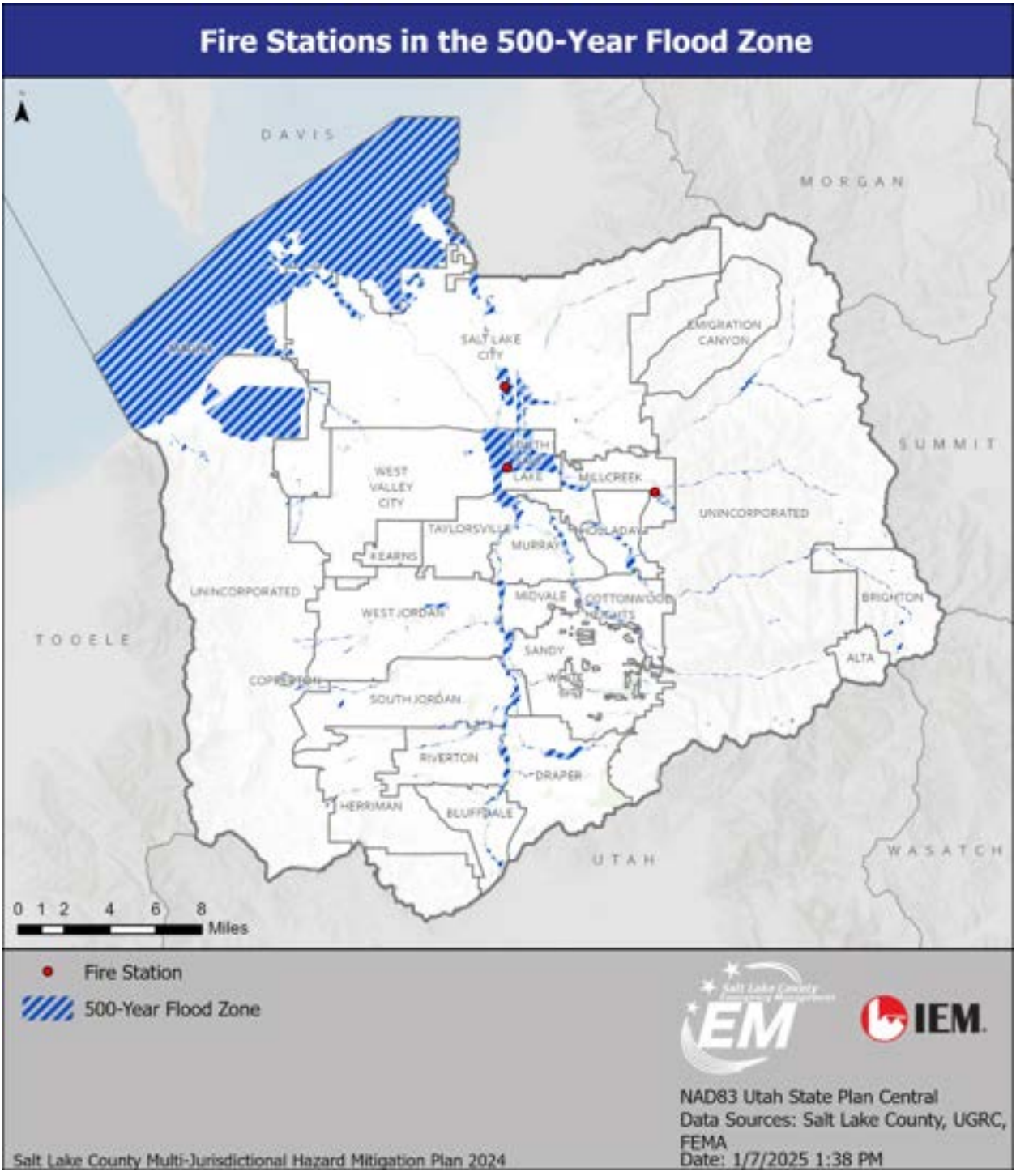


Figure 112: Fire Stations in the 500-Year (0.2% Annual Chance) Flood Zone

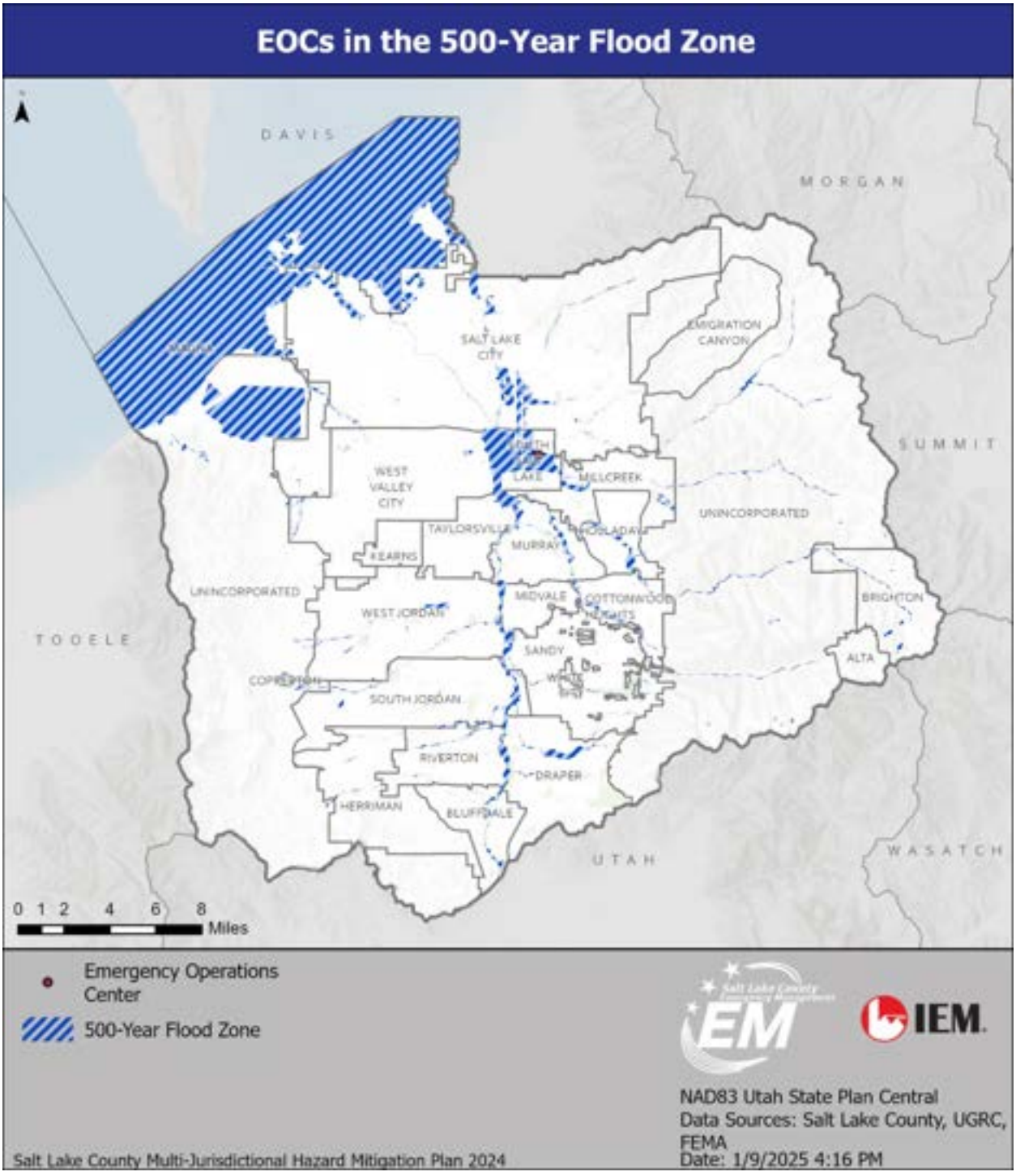


Figure 113: Emergency Operations Centers in the 500-Year (0.2% Annual Chance) Flood Zone

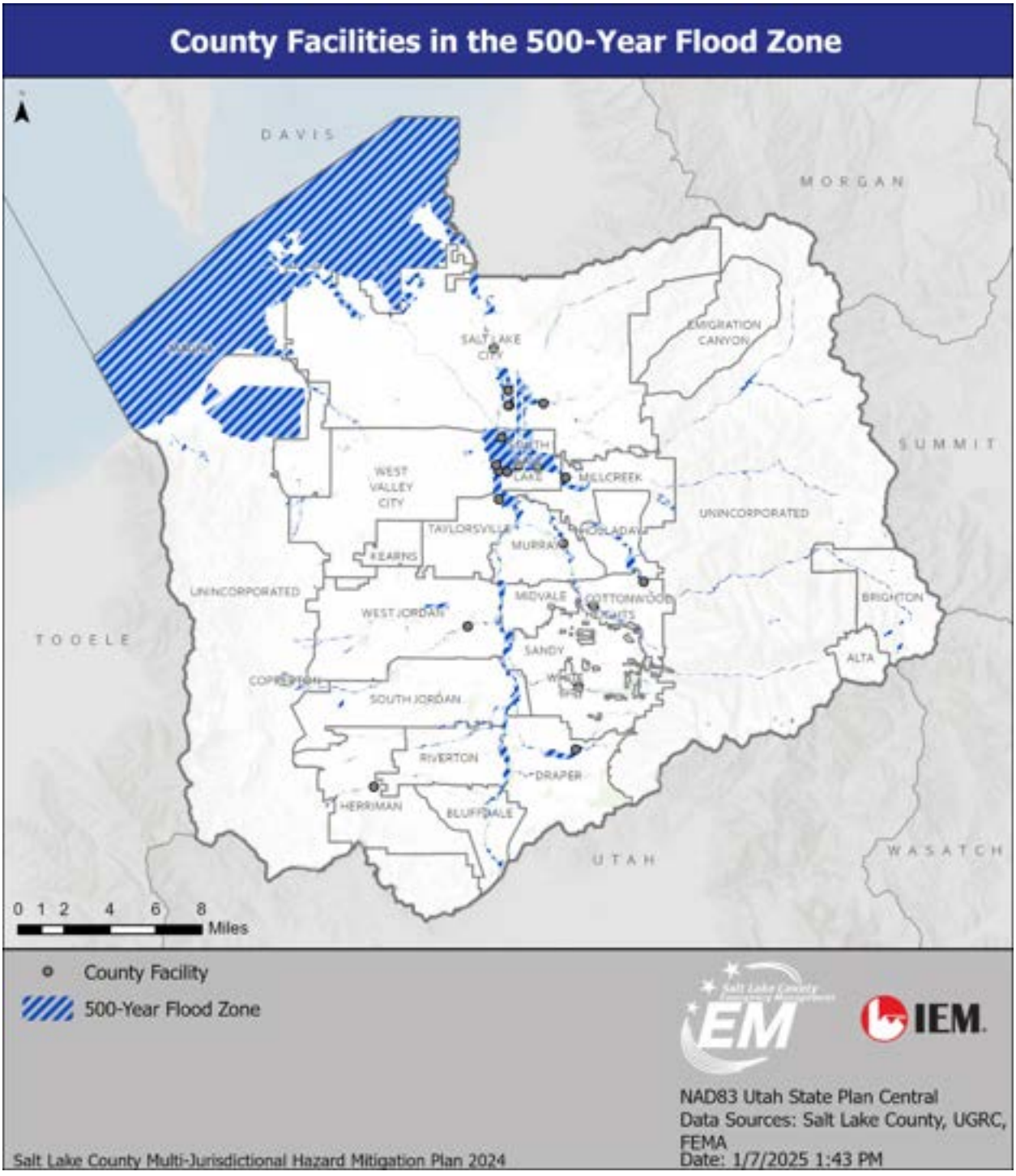


Figure 114: County Facilities in the 500-Year (0.2% Annual Chance) Flood Zone

ECONOMIC LOSS

For a 1% annual chance event, the estimated economic loss is $882 million, which represents 4.08% of the replacement value of the scenario buildings. Residential occupancies make up 21.82% of the losses. For a 0,.2% annual chance event, the estimated economic loss is $3.74 billion, which represents 12.10%

of the replacement value of the scenario buildings. Residences make up 22.46% of the losses for the 500-year scenario.

Economic loss is measured by building losses, which can be broken up into two categories: direct building loss and business interruption loss. Direct building losses are based on the estimated costs to repair or replace damage caused to the building and its contents by flooding. Business interruption losses are those associated with the inability to operate a business because of the damage from the flood. This includes income and wage losses, relocation losses, and rental losses, including temporary living expenses for people displaced from homes because of the flood. Of the estimated losses for the 100-year event, 57% were business-related losses.

The Hazus loss estimation for a 100-year flood shows West Valley City experiencing the highest loss at $240,346,000, with significant losses reported in Millcreek ($62,084,000), Brighton ($60,644,000), and Salt Lake City ($100,225,000). Several areas, such as Alta, Copperton, Kearns, and White City, experienced no losses in the 100-year Hazus loss estimation model. Other notable losses include Cottonwood Heights with $29,283,000, Holladay with $35,703,000, and South Salt Lake with $39,331,000. Less significant losses were noted in areas like Bluffdale ($3,080,000), Draper ($9,938,000), and Riverton ($5,885,000).

The Hazus loss estimation for a 500-year flood shows Draper and South Salt Lake experiencing the highest loss at $344,540,000 and $901,473,000, respectively, with significant losses in Millcreek ($737,529,000), Cottonwood Heights ($169,963,000), and Salt Lake City ($399,620). Much like the 100-flood loss estimation, areas such as Alta, Copperton, and Kearns experienced no losses in the Hazus model. Other notable losses included Bluffdale ($7,534,000) and Magna ($2,728,000).-

Table 52 and Table 53 show the estimated direct losses and business interruption losses for each jurisdiction in the planning area for the 1% annual chance (100-year) and 0.2% annual chance (500-year flood) scenarios, respectively.

DRAFT

Table 52: Loss Estimates for a 100-Year Flood Event (in Thousands)

Name	Building Loss	Content Loss	Inventory Loss	Relocation Loss	Income Loss	Rental Income Loss	Wage Loss	Total Loss
Alta	$0	$0	$0	$0	$0	$0	$0	$0
Bluffdale	$634	$695	$65	$172	$198	$50	$1,266	$3,080
Brighton	$8,715	$14,292	$2	$2,208	$16,790	$1,883	$16,754	$60,644
Copperton	$0	$0	$0	$0	$0	$0	$0	$0
Cottonwood Heights	$9,667	$8,093	$746	$2,133	$2,848	$972	$4,824	$29,283
Draper	$3,837	$2,254	$57	$861	$631	$354	$1,944	$9,938
Emigration Canyon	$2,826	$5,532	$0	$934	$6,910	$717	$6,566	$23,485
Herriman	$3,334	$6,071	$3	$1,390	$918	$476	$16,599	$28,791
Holladay	$10,093	$9,713	$394	$3,042	$3,450	$1,580	$7,431	$35,703
Kearns	$0	$0	$0	$0	$0	$0	$0	$0
Magna	$1,238	$759	$200	$311	$22	$123	$75	$2,728
Midvale	$411	$1,303	$288	$227	$687	$162	$1,080	$4,158
Millcreek	$25,167	$18,638	$1,289	$3,521	$2,279	$1,258	$9,932	$62,084
Murray	$5,863	$11,483	$1,093	$2,089	$4,200	$1,012	$13,046	$38,786
Riverton	$865	$901	$37	$508	$391	$133	$3,050	$5,885
Salt Lake City	$10,477	$18,191	$2,487	$7,703	$14,385	$4,250	$42,732	$100,225
Sandy City	$11,334	$7,561	$471	$1,915	$1,009	$744	$3,769	$26,803
South Jordan	$3,706	$4,677	$270	$1,663	$2,843	$1,287	$5,076	$19,522
South Salt Lake	$3,189	$6,612	$906	$3,018	$4,933	$1,420	$19,253	$39,331
Taylorsville	$2,135	$1,600	$16	$852	$1,521	$867	$1,098	$8,089
Unincorporated	$16,937	$25,802	$3,181	$4,400	$5,727	$2,281	$71,048	$129,376
West Jordan	$2,819	$3,299	$123	$768	$742	$423	$5,578	$13,752
West Valley City	$33,941	$62,987	$3,846	$18,788	$30,131	$11,970	$78,683	$240,346
White City	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$157,188**	**$210,463**	**$15,474**	**$56,503**	**$100,615**	**$31,962**	**$309,804**	**$882,009**

DRAFT

Table 53: Loss Estimates for a 500-Year Flood Event (in Thousands)

Jurisdiction	Building Loss	Content Loss	Inventory Loss	Relocation Cost	Income Loss	Rental Income Loss	Wage Loss	Total Loss
Alta	$0	$0	$0	$0	$0	$0	$0	$0
Bluffdale	$1,595	$1,577	$174	$542	$386	$174	$3,086	$7,534
Brighton	$8,715	$14,292	$2	$2,208	$16,790	$1,883	$16,754	$60,644
Copperton	$0	$0	$0	$0	$0	$0	$0	$0
Cottonwood Heights	$38,301	$44,373	$1,250	$12,791	$27,112	$5,714	$40,422	$169,963
Draper	$80,368	$71,901	$192	$16,635	$16,128	$5,972	$153,344	$344,540
Emigration Canyon	$2,826	$5,532	$0	$934	$6,910	$717	$6,566	$23,485
Herriman	$3,334	$6,071	$3	$1,390	$918	$476	$16,599	$28,791
Holladay	$41,270	$33,656	$4,288	$10,570	$7,289	$4,748	$24,784	$126,605
Kearns	$0	$0	$0	$0	$0	$0	$0	$0
Magna	$1,238	$759	$200	$311	$22	$123	$75	$2,728
Midvale	$3,211	$14,102	$319	$5,122	$17,362	$3,858	$37,532	$81,506
Millcreek	$203,497	$217,414	$4,811	$32,856	$82,354	$19,000	$177,597	$737,529
Murray	$21,193	$30,158	$3,056	$7,790	$12,713	$4,302	$41,161	$120,373
Riverton	$14,305	$9,560	$211	$3,261	$887	$965	$4,551	$33,740
Salt Lake City	$68,217	$88,216	$8,773	$32,548	$48,643	$16,208	$137,015	$399,620
Sandy City	$18,623	$13,667	$812	$3,677	$2,363	$1,493	$9,360	$49,995
South Jordan	$10,843	$14,301	$755	$7,523	$15,558	$4,623	$33,215	$86,818
South Salt Lake	$122,851	$302,803	$47,431	$60,375	$116,217	$35,214	$216,582	$901,473
Taylorsville	$2,731	$2,076	$19	$2,037	$3,328	$2,046	$2,669	$14,906
Unincorporated	$18,272	$26,872	$3,284	$4,652	$5,918	$2,390	$71,360	$132,748
West Jordan	$64,769	$40,332	$1,574	$9,304	$5,587	$4,066	$20,363	$145,995
West Valley City	$39,185	$69,425	$4,003	$22,339	$33,370	$14,350	$88,282	$270,954
White City	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$765,344**	**$1,007,087**	**$81,157**	**$236,865**	**$419,855**	**$128,322**	**$1,101,317**	**$3,739,947**

DRAFT

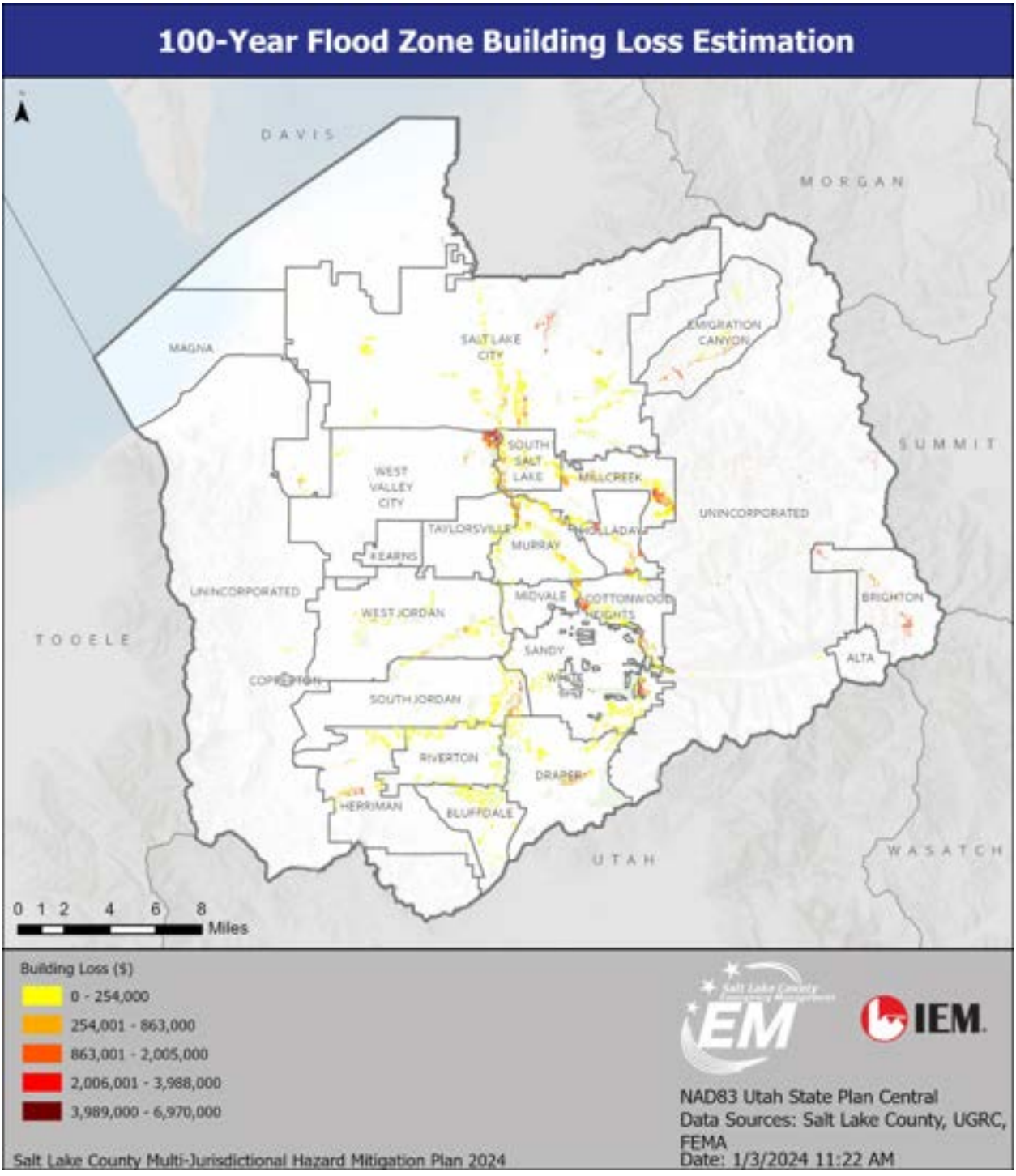


Figure 115: Estimated Building Losses for the 100-Year (1% Annual Chance) Flood Scenario

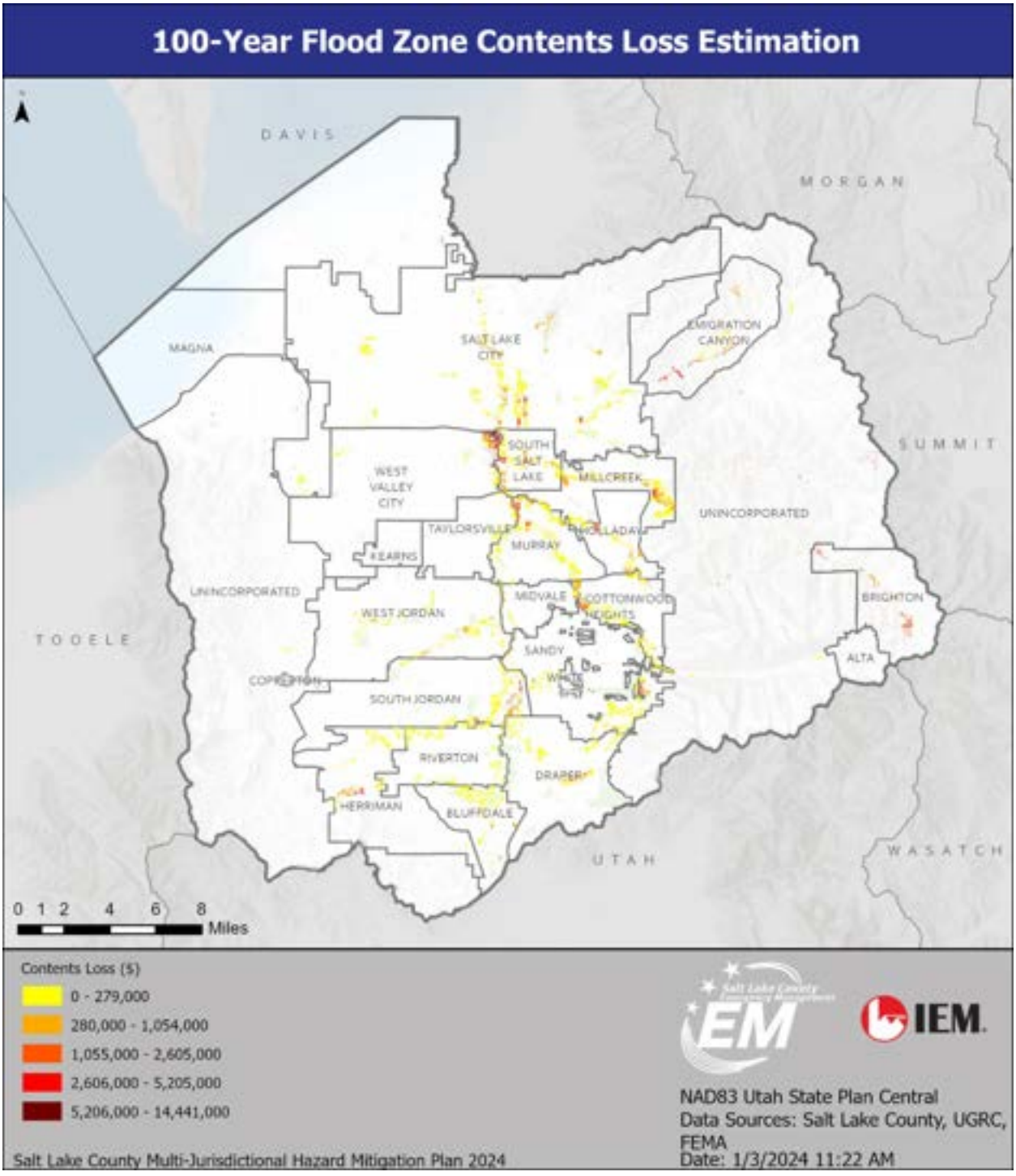


Figure 116: Estimated Contents Losses for 100-Year (1% Annual Chance) Flood Scenario

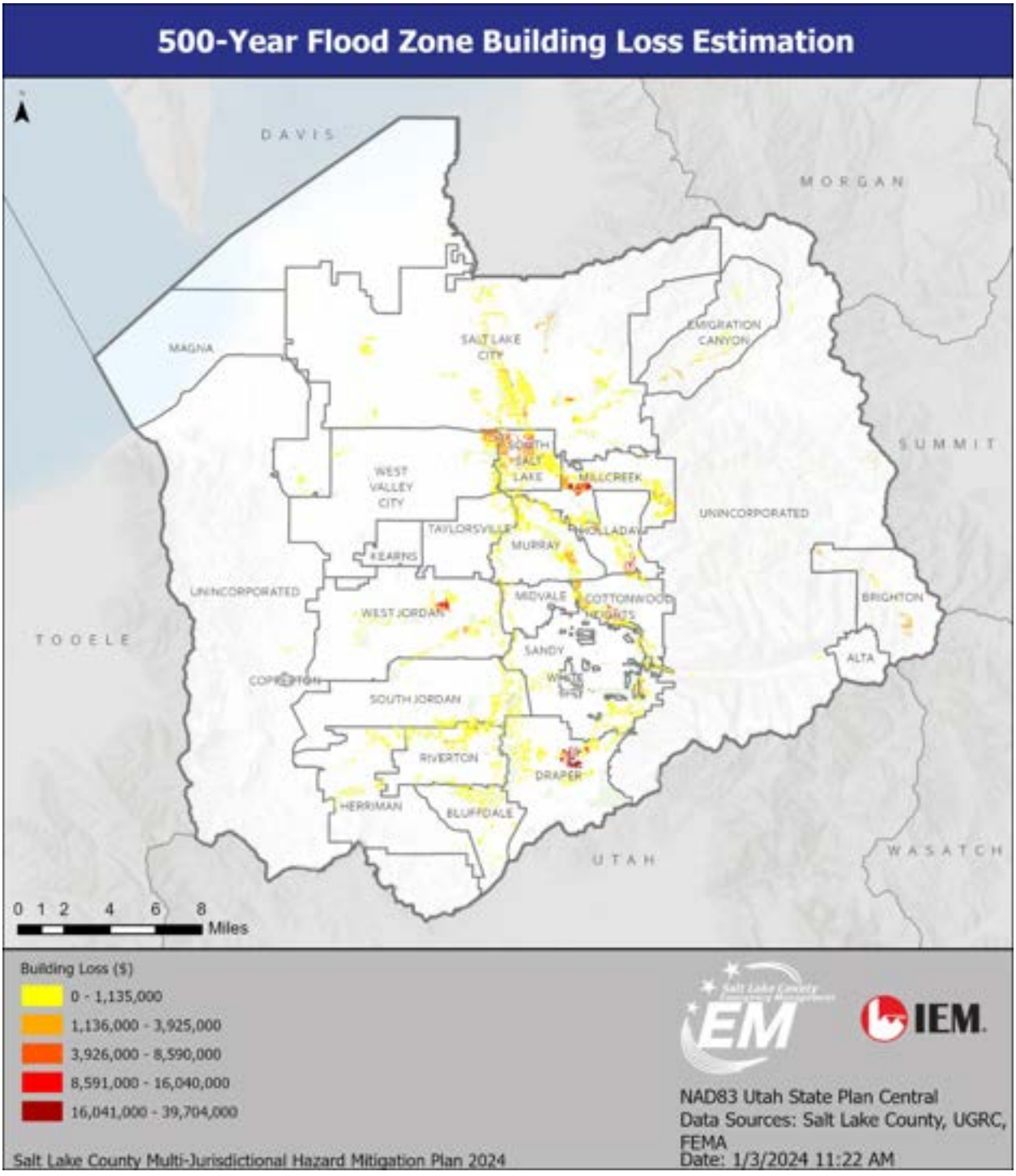


Figure 117: Estimated Building Losses for the 500-Year (0.2% Annual Chance) Flood Scenario

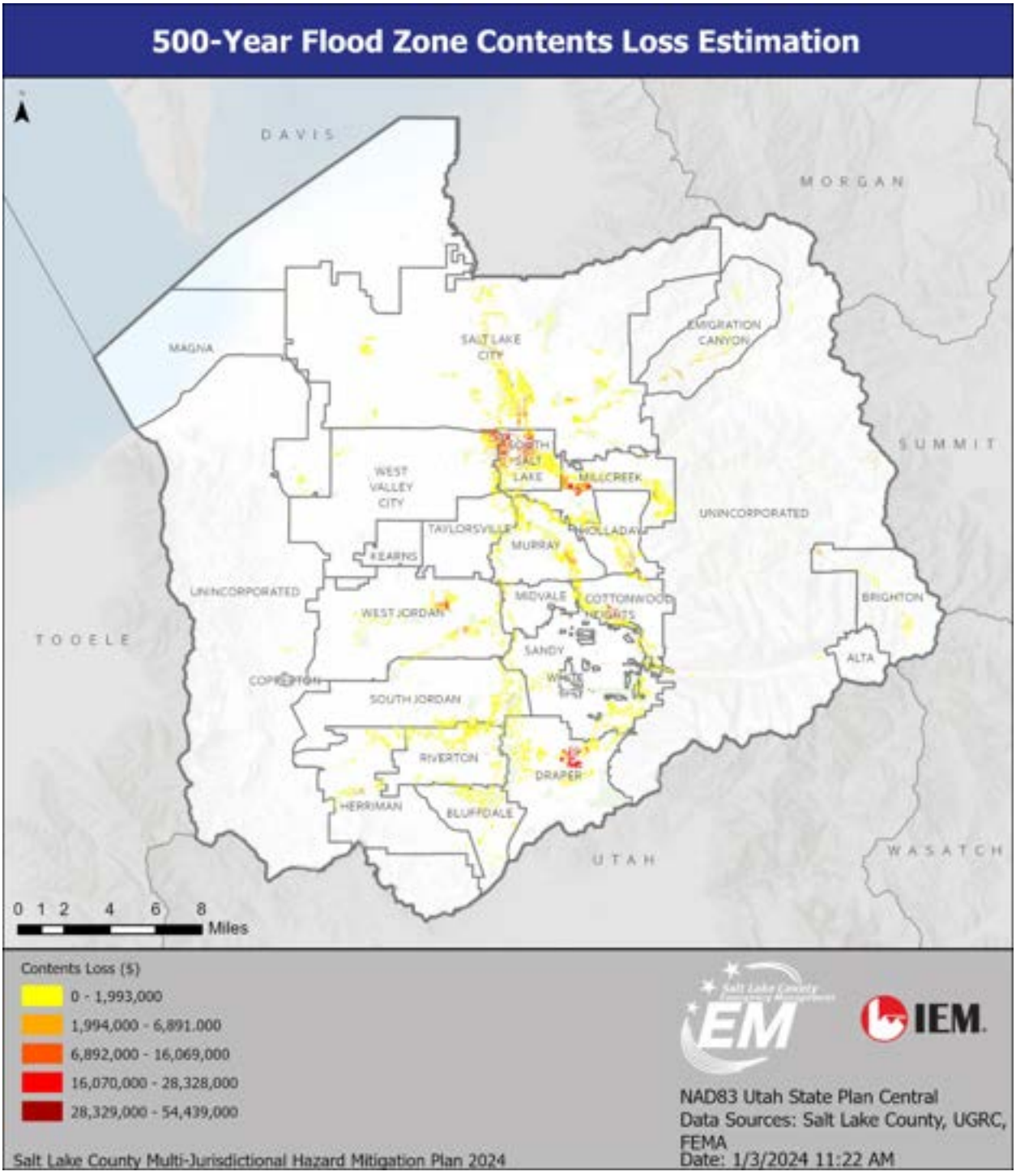


Figure 118: Estimated Contents Losses for the 500-Year (0.2% Annual Chance) Flood Scenario

DIRECT BUILDING DAMAGE AND LOSS

For a 100-year flood scenario, Hazus estimates that about 352 buildings will be at least moderately damaged and 30 will be completely destroyed. For a 500-year flood scenario, Hazus estimates that about 1,773 buildings will be at least moderately damaged and about 806 will be completely destroyed. Table

54–Table 57 show the number of buildings damaged by occupancy type and building type for both the 100-year and 500-year scenarios.

Table 54: Expected Building Damage by Occupancy for the 100-Year Flood Scenario

Occupancy	1–10		11–20		21–30		31–40		41–50		>50	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	1	33	2	67	0	0	0	0	0	0	0	0
Commercial	6	33	7	39	1	6	0	0	0	0	4	22
Education	0	0	0	0	0	0	0	0	0	0	0	0
Government	32	78	5	15	0	0	0	0	0	0	4	10
Industrial	5	45	3	27	3	27	0	0	0	0	0	0
Religion	0	0	0	0	0	0	0	0	0	0	0	0
Residential	81	20	151	37	80	20	49	12	21	5	22	5
Total	**125**		**168**		**84**		**49**		**21**		**30**	

Table 55: Expected Building Damage by Building Type for the 100-Year Flood Scenario

Occupancy	1–10		11–20		21–30		31–40		41–50		>50	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Concrete	15	88	1	6	0	0	0	0	0	0	1	6
Manufactured Housing	12	48	4	16	2	8	0	0	3	12	4	16
Masonry	22	22	39	39	18	18	12	12	3	3	7	7
Steel	9	82	2	18	0	0	0	0	0	0	0	0
Wood	63	20	119	38	62	20	37	12	15	5	16	5

Table 56: Expected Building Damage by Occupancy Type for the 500-Year Flood Scenario

Occupancy	1–10		11–20		21–30		31–40		41–50		>50	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	1	33	2	67	0	0	0	0	0	0	0	0
Commercial	40	26	36	24	2	1	6	4	0	0	69	45
Education	0	0	0	0	0	0	0	0	0	0	0	0
Government	49	65	14	19	0	0	0	0	0	0	12	16
Industrial	114	48	83	35	39	16	2	1	0	0	1	0
Religion	0	0	0	0	0	0	0	0	0	0	0	0
Residential	331	18	376	20	181	10	114	6	112	6	724	39
Total	**535**		**511**		**222**		**122**		**112**		**806**	

DRAFT

Table 57: Expected Building Damage by Building Type for the 500-Year Flood Scenario

Occupancy	1–10		11–20		21–30		31–40		41–50		>50	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Concrete	47	57	22	27	10	12	0	0	0	0	3	4
Manufactured Housing	15	47	4	13	2	6	0	0	3	9	8	25
Masonry	170	23	153	21	67	9	31	4	28	4	277	38
Steel	29	60	14	29	3	6	0	0	0	0	2	4
Wood	263	19	309	22	136	10	88	6	81	6	510	37

As shown in Table 58 and Table 59, the building-related losses for a 100-year flood event were $81.22 million. About 55% of the estimated losses were related to business interruptions in the region. Residential occupancies made up 39.74% of the loss. For a 500-year event, the building-related losses were $227.77 million. About 59% of the estimated losses were related to business interruptions in the region, and residential occupancies made up 36.39% of the loss.

Table 58: Building Related Economic Loss Estimates for a 100-Year Flood Event (In Millions)

Category	Area	Residential	Commercial	Industrial	Other	Total
Building Loss	Building	$94.28	$28.88	$15.64	$18.38	$157.19
	Content	$51.39	$64.12	$38.80	$56.15	$210.46
	Inventory	$0.00	$7.09	$5.58	$2.81	$15.47
	Subtotal	**$145.67**	**$100.09**	**$60.02**	**$77.34**	**$383.12**
Business Interruption	Income	$3.31	$76.59	$1.29	$19.43	$100.62
	Relocation	$21.41	$17.52	$2.03	$15.53	$56.50
	Rental Income	$14.20	$13.15	$0.39	$4.22	$31.96
	Wage	$7.83	$68.51	$1.75	$231.72	$309.80
	Subtotal	**$46.75**	**$175.77**	**$5.46**	**$270.90**	**$498.88**
All	**Total**	**$192.42**	**$275.86**	**$65.48**	**$348.24**	**$882.00**

Table 59: Building-Related Economic Loss Estimates for a 500-Year Flood Event (In Millions)

Category	Area	Residential	Commercial	Industrial	Other	Total
Building Loss	Building	$427.69	$164.16	$98.68	$74.81	$765.34
	Content	$224.19	$361.86	$247.73	$173.31	$1,007.09
	Inventory	$0.00	$42.12	$35.47	$3.57	$81.15
	Subtotal	**$651.88**	**$568.14**	**$381.88**	**$251.69**	**$1,853.58**
Business Interruption	Income	$17.98	$332.38	$6.97	$62.53	$419.86
	Relocation	$80.42	$93.82	$15.00	$47.63	$236.87

DRAFT

Category	Area	Residential	Commercial	Industrial	Other	Total
	Rental Income	$47.33	$66.60	$2.71	$11.66	$128.32
	Wage	$42.33	$397.06	$11.02	$650.91	$1,101.32
	Subtotal	**$188.06**	**$889.86**	**$35.70**	**$772.73**	**$1,886.37**
All	**Total**	**$839.94**	**$1,458.00**	**$417.58**	**$1,024.42**	**$3,739.95**

DEBRIS REMOVAL

Table 60 shows how much debris would be generated by flooding and how many loads it would take to remove it, based on a capacity of 25 tons per load. One truck can likely haul one load per hour. A second debris removal issue is landfill space. At a weight-to-volume ratio of one ton per cubic yard, 50,000 tons would cover more than 10 acres to a depth of three feet.

For a 100-year flood, debris from finishes, structures, and foundations totals 12,464 tons. The debris significantly increases with all category types in a 500-year flood, resulting in 49,267 tons. This highlights the substantial increase in debris and the associated removal efforts required for more severe flood events in the county.

Table 60: Debris Generation and Removal

Category	100-year Flood	500-year Flood
Finishes	4,028	12,861
Structures	4,326	17,967
Foundations	4,110	18,438
Totals	**12,464**	**49,267**

SOCIAL IMPACT

Hazus estimates the number of households expected to be displaced from their homes due to the flood and the associated potential evacuation and how many displaced individuals will require accommodations in temporary public shelters. Displacement includes households evacuated from in or very near the inundated area. For a 100-year flood event, the model estimates that 3,119 households (9,356 individuals) will be displaced due to the flood. Of these, 2,043 individuals will seek temporary shelter in public shelters. For a 500-year flood event, the model estimates that 11,720 households (35,159 individuals) will be displaced due to the flood, with 4,089 individuals seeking temporary shelter.

Major flooding can impact the community by displacing residents and business owners; damaging and disrupting infrastructure, including roads and bridges, water treatment facilities, and wastewater treatment facilities; and causing health risks due to contaminated public water supplies and private wells. Heavy rains, severe flooding, or other types of emergency events could damage sewer systems and cause an overflow of untreated wastewater into communities and the environment. Severe flooding can put drinking water wells at increased risk of contamination from floodwater that may contain sewage. In addition, floodwater and standing water can be dangerous and expose vulnerable populations to infectious

DRAFT

diseases, chemical hazards, and injuries. Flooded homes may be contaminated with mold or sewage, which can cause health risks.[130]

Flooding can also lead to road closures. Banks can erode ground under roadways, which may cause long-term transportation disruptions while roads are rebuilt or repaired. Deaths and injuries typically occur when motorists become trapped in floodwaters. This can, though not always, occur when motorists ignore the advice of officials and drive through flooded areas. Flooding can also damage power, water, or communications infrastructure, causing further disruptions for residents and businesses.

NFIP PARTICIPATION

Salt Lake County and all cities participate in NFIP. Table 61 shows the number of NFIP policies in place for each jurisdiction in the county and the number of past losses and payments. 402 properties have experienced losses totaling $1,727,734.

Table 61: NFIP Policies for Salt Lake County and Jurisdictions

Community	Number of Policies	Total Coverage	Number of Losses	Total Net Payment
Alta	0		0	$0.00
Bluffdale	13	$4,215,000	1	$0.00
Brighton	1	$98,000	0	$0.00
Cottonwood Heights	124	$26,434,000	5	$3,554.26
Draper (Salt Lake County)	79	$26,517,000	11	$156,544.70
Draper (Utah County)	5	NA	0	$0.00
Emigration Canyon	1	$350,000	0	$0.00
Herriman	29	$8,072,000	1	$14,071.50
Holladay	106	$25,804,000	6	$20,061.95
Kearns	1	$350,000	0	$0.00
Magna	1	$350,000	0	$0.00
Midvale	27	$5,756,000	0	$0.00
Millcreek	131	$39,395,000	3	$20,627.98
Murray	212	$48,856,000	54	$256,826.36
Riverton	28	$8,275,000	14	$28,777.17
Salt Lake City	187	$74,054,000	177	$407,411.90
Salt Lake County	99	$28,219,000	100	$751,554.06
Sandy City	45	$14,722,000	9	$41,053.73
South Jordan	52	$16,509,000	6	$1,222.99
South Salt Lake	33	$12,569,000	2	$1,929.33
Taylorsville	35	$17,917,000	2	$4,112.10

[130] Centers for Disease Control and Prevention. Floods, “Guidelines for Septic and Onsite Wastewater Systems.” February 6, 2024. https://www.cdc.gov/floods/safety/guidelines-for-septic-and-onsite-wastewater-systems.html.

Community	Number of Policies	Total Coverage	Number of Losses	Total Net Payment
West Jordan	34	$10,466,000	5	$14,082.83
West Valley City	107	$32,229,000	6	$5,903.28
White City	0		0	$0.00
Total	1,350	$401,157,000	402	$1,727,734.14

Table 62: Repetitive Loss (RL) Statistics for Salt Lake County[131]

Category	Zone A	V Zones	B, C, X Zones	Total Claims
RL Buildings (Total)	1	0	2	3
RL Buildings (Insured)	0	0	2	2
RL Losses (Total)	2	0	4	6
RL Losses (Insured)	0	0	4	4
RL Payments (Total)	$5,301.80	$0.00	$15,681.20	$20,983.00
RL Payments (Insured)	$0.00	$0.00	$15,681.20	$15,681.20

NATIONAL RISK INDEX

The NRI includes data on the EALs to individual natural hazards, historical loss, and overall risk at a county and census tract level. Salt Lake County's NRI EAL value for riverine flooding is $4.5 million, with a risk score of 92.7 and a relatively moderate percentile compared with the rest of the United States (Figure 119).

[131] Provided by the state floodplain program manager, citing the Utah 2024 State Enhanced Hazard Mitigation Plan. "Table 4-36-Flood Insurance Statistics for Utah Counties."

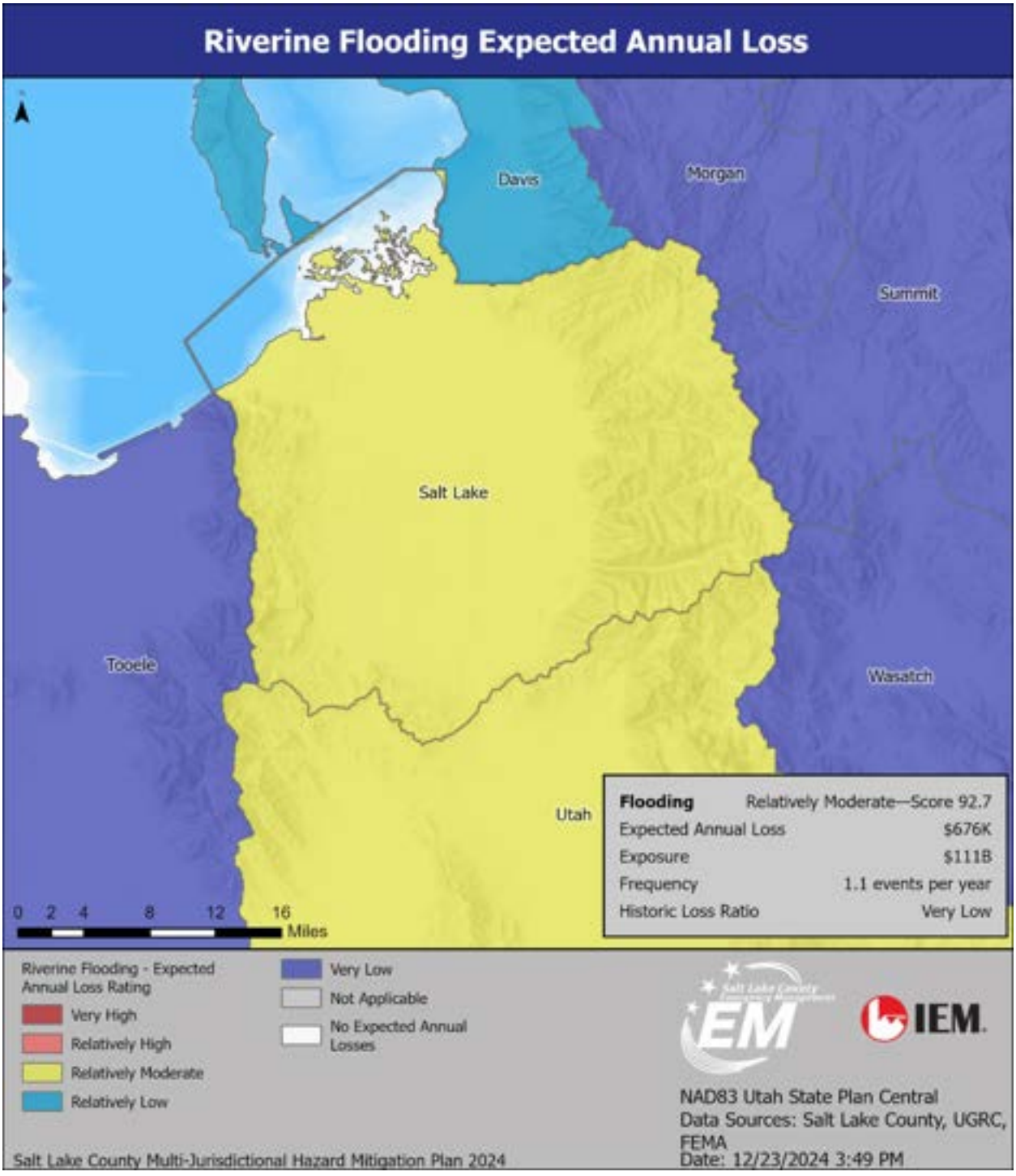


Figure 119: National Risk Index Expected Annual Loss from Riverine Flooding in Salt Lake County[132]

[132] FEMA, National Risk Index. "Salt Lake County Expected Annual Loss Riverine Flooding Risk Score, Map and Legend." https://hazards.fema.gov/nri/map.

VULNERABLE POPULATIONS

The 2024 Utah State Enhanced Hazard Mitigation Plan states vulnerability to the impacts of flooding is not distributed evenly across the population. People living in floodplain areas are most vulnerable to displacement. Perhaps the most extreme example of this is unhoused people taking refuge in floodplain areas. These people are both physically exposed to hazards and defined as socially vulnerable. In addition, the current housing availability crisis and increasing homelessness have exposed a growing number of underserved individuals to this hazard.

Where flood damage is especially severe, it can also disrupt livelihoods. This might have a more significant impact on low-income households with fewer financial resources to sustain them following a disaster. They may also have more difficulty finding temporary living arrangements if displaced by flooding.

Children are notoriously vulnerable to being swept away by floodwaters. Individuals with disabilities or access and functional needs also might have difficulty evacuating areas affected by flooding.

COMMUNITY LIFELINES

All lifelines are assigned to flooding because of the high impact of loss of life and property during these incidents. Law enforcement officers, emergency medical services, and rescue attempts may be delayed or impossible because of road flooding and blockage from debris. Due to these same problems, businesses and stores will be closed, causing food insecurities and preventing access to daily necessities. Power outages may make communication impossible, and some people will not be able to call for help. Hazardous materials may leak into the water and ground, causing current and future problems for people, crops, and livestock.

CHANGES IN DEVELOPMENT

In Salt Lake County, development and population growth can have profound impacts on flooding, as the growing population leads to the creation of impervious surfaces like roads and buildings. This reduces natural water absorption and increases runoff during storms. This can cause higher flood risks, especially in areas with inadequate drainage systems. In addition, an increased population may start to settle in areas that are highly prone to flooding, such as near rivers and streams. This increases the risk and impact of flooding on infrastructure and the population.

The Surplus Canal levee system provides protection for a large portion of Salt Lake City from approximately 2900 S to the Salt Lake City International Airport. The U.S. Army Corps of Engineers (USACE) conducted an inspection of this federally authorized levee system in 2019. Preliminary information suggests similar deficiencies found in the 2012 inspection. These deficiencies resulted in an unacceptable rating for the levee systems in Salt Lake County. Through the Surplus Levee Deficiency Rehabilitation Project, Salt Lake County Flood Control is working to bring the Surplus Canal levee systems back into USACE compliance. To do so, it must address the unacceptable encroachment violations, including those on privately owned property. The project is currently working to identify all encroachments on property owned by the county or other government entities, acquire property within 10

DRAFT

feet of the land-side toe of the levee, relocate fences outside USACE jurisdiction, and remove all encroachments on the newly acquired property. Salt Lake County is taking a phased approach to acquire the property needed to fully address the deficiencies. The project commenced the phased approach in 2017, with initial mapping, project development, and coordination with USACE and local agencies to bring the levee into compliance. The second phase (2018–2021) involved residential property acquisitions. Phase 3 (2021–2025) will conclude the project with commercial property acquisitions.[133] These flood mitigation measures may decrease future vulnerability to flood for the affected areas; however, population increases in the county have heightened vulnerability.

Figure 120: Surplus Levee Right of Way Map for Salt Lake County[134]

VULNERABILITY SCORE

To analyze the county's vulnerability to flooding, the NRI was used as a primary tool during the 2024 HIRA update. The NRI defines risk as the potential for negative impacts as a result of a natural hazard and determines a community's risk relative to other communities by examining the EAL and social vulnerability in a given community in relation to that community's resilience. Salt Lake County's NRI riverine flooding risk rating is shown in Figure 121. Salt Lake County has relatively moderate riverine flooding risk and a risk score of 93.

[133] Salt Lake County. "Flood Control, Surplus Canal Deficiency Rehabilitation Project." 2024. https://www.saltlakecounty.gov/flood-control/surplus-canal-deficiency-rehabilitation-project/.
[134] Salt Lake County. "Surplus Levee Right of Way Map." 2024. https://slco.maps.arcgis.com/apps/webappviewer/index.html?id=ef1f645b00a54ba1931c6d73871495df.

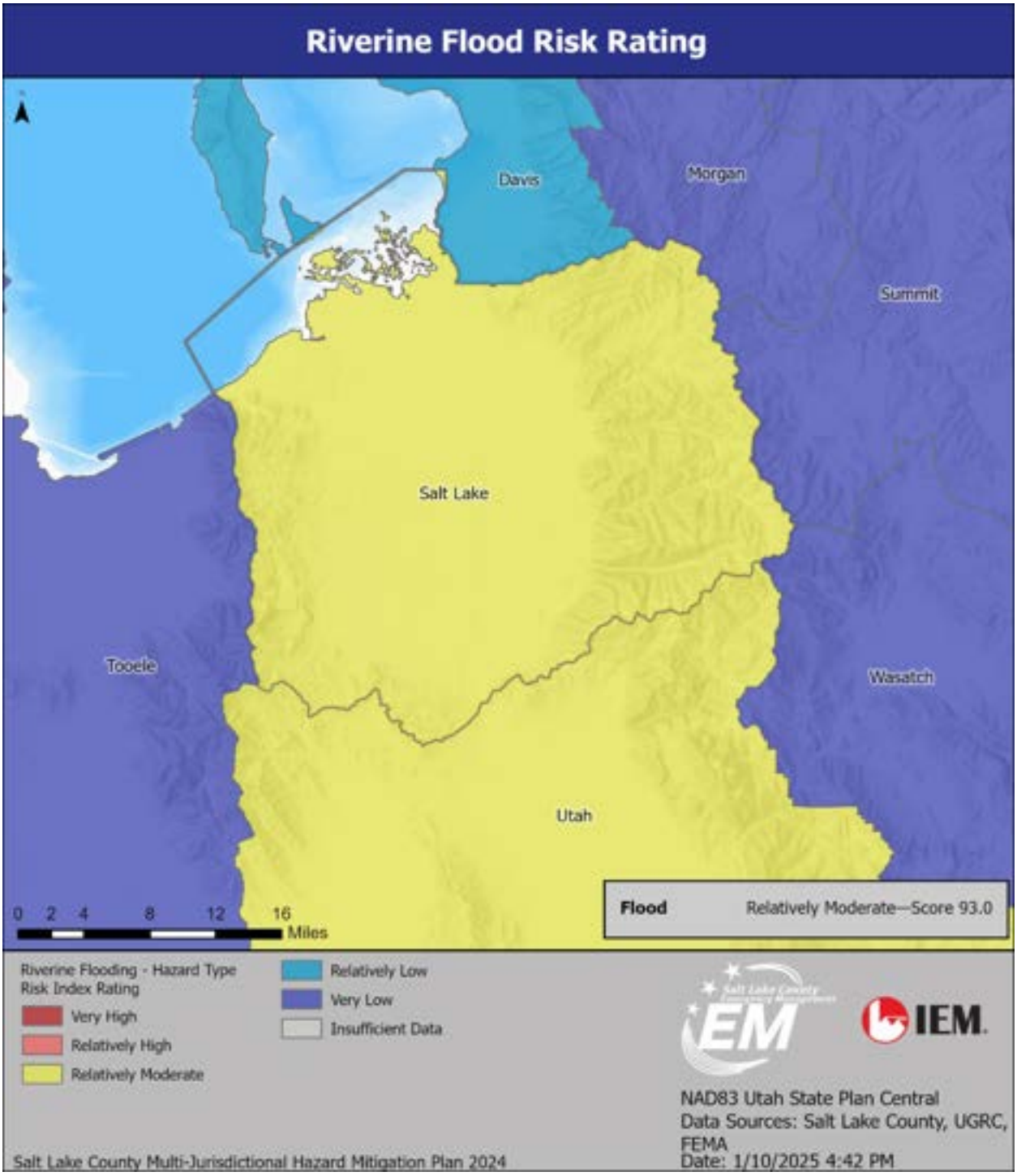


Figure 121: National Risk Index Riverine Flooding Risk Map, Legend, and Score for Salt Lake County[135]

[135] FEMA, National Risk Index. "Salt Lake County Riverine Flooding Score, Map and Legend." https://hazards.fema.gov/nri/map.

Heavy Rain

Hazard Description

Heavy amounts of precipitation from rain can cause flash flood events. The Wasatch Front has been susceptible to these types of storms because of proximity to the mountain ranges. Much of the valley's development has occurred on old alluvial fans from the canyon mouths. During heavy rain events, water and debris collect on these alluvial fans, damaging residential and commercial property and infrastructure. In 2017, near Salt Lake City International Airport, 1.97 inches of rainfall was recorded; this was the wettest day on record for the month of March and the sixth wettest day since records began in 1874.

Figure 122: Image of Heavy Rain[136]

According to NOAA, atmospheric rivers are narrow channels of wind pulling a large, condensed amount of moisture from the ocean before dumping it all once it reaches land. In the western United States, California gets the brunt of the moisture dump. As the storm makes its way over the Sierra Nevada Mountains and further east, Utah will typically see a good amount of precipitation from what is left.[137]

Hazard Profile

Potential Impact		Catastrophic	**Probability**		Highly Likely
	X	Critical		X	Likely
		Limited			Occasional
		Negligible			Unlikely

[136] https://pixabay.com/photos/windshield-rain-glass-surface-5366584/.
[137] Fox, Derick. "What is an Atmospheric River and What can Utahns Expect?" ABC4. February 1, 2024. https://www.abc4.com/utah-weather/utah-weather-stories/atmospheric-river-explained/.

Location	Can occur in areas throughout the county
Seasonal Pattern	Year-round
Conditions	Vary based on latitude, elevation, aspect, and landforms
Duration	Heavy rain generally lasts hours; some conditions can persist for days
Secondary Hazards	Flooding
Analysis Used	National Climatic Data Center, National Weather Service, Utah Avalanche Center, Utah Division of Emergency Management, local input, and review of historic events and scientific records

Magnitude/Extent

The rainfall rate is a measure of the amount of rain that falls during a period, such as millimeters or inches per hour. The Manual of Surface Weather Observation Standards includes the following general categories to classify rainfall intensity.[138]

Table 63: Rainfall Intensity Scale

Description	Rate
Light Rain	Less than 0.1”/hour
Moderate Rain	0.1 to 0.3”/hour
Heavy Rain	0.3 to 2”/hour
Violent Rain	>2”/hour

Location

The entire area of Salt Lake County can be affected by most heavy rain events; however, low-lying areas and valleys are most prone to the effects. Communities with poor, obstructed, or limited stormwater drainage systems are at greater risk during heavy rain events. Heavy rain events occur mostly in the fall or winter months and are produced by large synoptic weather systems originating out of the South, Southwest, or West that produce rainfall for an extended period. Snow may also melt due to rainfall, which primarily occurs in the southern half of the state.

Historical Events and Probability of Future Occurrences

Based on the FEMA Disaster Declarations Database, Salt Lake County has received no designation for heavy rain disaster declarations since the last plan update.

According to the NWS, historical rainfall data for Salt Lake City shows an average of 1.71 inches in October with 13 average rain days, 1.77 inches in November with 16 average rain days, and 2.07 inches in December with 19 average rain days.

[138] “Rain Rate Intensity Classification.” Barani. January 19, 2020. https://www.baranidesign.com/faq-articles/2020/1/19/rain-rate-intensity-classification.

Although rain obviously occurs frequently as part of natural weather processes, rains heavy enough to be classified specifically as “heavy rain” events in the NCEI records have occurred 9 times from 1996 to 2024, approximately 1 event every 3 years, a rate likely to continue. The probability of future occurrences is likely. Property damage from these 9 events was $1,567,000, with $12,000 in crop damage.

On August 13–14, 2024, two days of intense thunderstorms and heavy rainfall caused flooding across the Salt Lake City metro area. UDOT reported flooding across northern Utah. Streets in metro Salt Lake City turned into rivers as many storms brought heavy rain, and hail caused many road closures in Salt Lake and Wasatch counties.

On August 18, 2021, NWS issued a Flood Warning for urban and small stream flooding in the valley, and the downpour caused Utah Highway Patrol to close Interstate 215 East Belt at 3300 South due to “significant flooding” in the area. Crews waded into the nearly knee-high pool of rainwater and used industrial pumps to remove it from the road. Flooding also occurred at the intersection of 3300 South and 700 East.

On March 23, 2017, heavy rain fell across the Salt Lake Valley. At the Sunnyvale Apartments on 3940 South 764 West, two families had to evacuate their apartments due to flooding. Relatively close by at the Salt Lake City International Airport, 1.97 inches of rainfall was recorded; this was the wettest day on record for the month of March and the sixth wettest day since records began in 1874.

On August 8, 2006, about 1.3 inches of rain fell in one hour from Murray to East Millcreek. On several occasions, around 2 inches of rain has fallen at multiple locations in the county.

Climate Change Considerations

Climate change can have a significant impact on heavy rain. Higher temperatures can cause the atmosphere to hold more moisture, leading to more intense and frequent heavy rainstorms. Heavy precipitation can cause flash flooding in Salt Lake County, overwhelming stormwater systems and damaging infrastructure. Climate change can also alter precipitation patterns and increase the intensity of rainstorms, leading to heavy rainstorm events.

The 2024 Utah Enhanced State Hazard Mitigation Plan states climate models consistently indicate that increased convective storms are a likely outcome of climate change, with worsening severe storm activity increasing with worsening climate change.

Secondary Hazards

The most significant secondary hazard associated with heavy rain events is localized flooding. Heavy rain can also be accompanied by high wind, which can cause falling and downed trees, downed power lines, and associated power outages. Rapidly melting snow combined with heavy rain can overwhelm natural and human-made drainage systems, causing overflow and property destruction.

DRAFT

According to Commonwealth Edison (ComEd), “Weather-related events cause 70 percent of all power outages.” Power outages usually last anywhere from a few minutes to a few hours. In extreme cases, power outages have lasted a few days or even weeks. Severe weather-induced power failures may come from rain that damage insulators and other components vital for maintaining a functioning circuit.

Vulnerability Assessment

Weather events are inherently unpredictable, with the severity and precise locations of an event subject to change. Conditions can evolve quickly, making it challenging to pinpoint specific areas, facilities, structures, or systems that may be affected by heavy rain. Due to the broad reach of this hazard, heavy rains can impact all populations, structures, critical facilities, infrastructure, and the economy. All critical facilities are vulnerable, including fire stations, police stations, hospitals, schools, and all 218 county facilities. Utilities, such as power and communications networks and transportation systems and road networks, also are vulnerable. The extent of the impact and the severity of the damage will vary considerably from one event to another.

ESTIMATED IMPACT AND POTENTIAL LOSSES

Heavy rain can cause localized flooding and subsequent water damage to nearby structures. Prolonged heavy rain can overwhelm storm drainage systems, causing further damage. Low-lying areas, such as bridge underpasses, may be more likely to experience flooding. Vehicles may lose traction or be unable to travel roadways safely. Flooding or unsafe driving conditions may require road closures, potentially blocking major transportation routes. Transportation disruptions also may delay emergency response.

Power outages and other service disruptions may occur as a secondary effect of heavy rainstorms. These outages negatively impact county residents and business operations, resulting in economic losses. Critical facilities may require backup power systems to continue operations during power outages.

Attendees at outdoor events, such as sporting or recreation activities, farmers markets, and other community events, might have difficulty finding shelter during fast-moving storm events.

The NRI does not include data on the EALs for heavy rain. Based on the damage recorded in NCEI, $1,579,000 in losses have been incurred in the last 28 years in Salt Lake County. This averages approximately $56,393 per year.

VULNERABLE POPULATIONS

The following populations are most vulnerable to a heavy rain event, face isolation and exposure during these events, or could suffer more secondary effects of the hazard.

Severe weather, like heavy rain, typically affects people who are outdoors. Those without access to shelter, such as outdoor workers in construction or agriculture, are particularly affected. Individuals who are unhoused are especially vulnerable to the dangers posed by heavy rains.

DRAFT

Those dependent on powered medical devices also are particularly vulnerable to power outages caused by severe weather events. Elderly residents or those with disabilities or mobility difficulties might have difficulty seeking shelter or addressing damage caused by heavy rain. Individuals with low incomes may face more significant challenges recovering if their residences are damaged or if they lose wages from business or other economic impacts of storms.

COMMUNITY LIFELINES

Heavy rain can disrupt transportation and energy lifelines. The importance of these lifelines cannot be overstated. In a disaster, communities can be left without access to necessities, such as food, water, and shelter. The lifelines help ensure that these needs are met and that people have the resources they need to survive. By providing access to medical care, public health services, and transportation, the lifelines help ensure that people can receive the care they need and safely evacuate if necessary. In addition, the Hazardous Materials lifeline helps to ensure that dangerous materials are managed safely, reducing the risk of further harm. Community lifelines help create a sense of safety and security in a community. They provide a safety net for individuals who may be struggling and offer comfort and reassurance that help is available when needed. Without these lifelines, communities would be much more vulnerable to crises and emergencies.

CHANGES IN DEVELOPMENT

In Salt Lake County, development and population growth have significant implications for managing heavy rainstorm events. Impervious surfaces like parking lots, buildings, and roads will increase as population grows and this increases water runoff in the county. This can overwhelm stormwater systems and increase the likelihood of urban flooding. Development in flood-prone areas also can increase the risk of being impacted by a heavy rain event. Salt Lake City and communities south along Route 15 already have a high level of impervious surfaces, generally between 50% and 100%, according to the U.S. Environmental Protection Agency. In the past five years, suburban and exurban communities in the western part of the county—like Herriman, West Jordan, and South Jordan, which used to have very low levels of impervious surfaces—have started to add more with increased development. As development continues, so does the chance of increased runoff from heavy rain events.

Potential impact from heavy rains includes loss of life/property and flooding. Rain combined with snowmelt runoff can contribute to potential flooding. In addition, population growth, new construction of homes and businesses, and construction or changes in transportation routes provide new economic opportunities but may also indicate an increase in exposure to heavy rain. Changes in land use and development may be impacted as residential zoning may change for areas experiencing significant precipitation. Overall, vulnerability to heavy rain has increased since the last plan update.

VULNERABILITY SCORE

The NRI does not provide data to define risks associated with a heavy rain hazard.

DRAFT

High Wind

Hazard Description

High wind can occur with or without a storm and are unpredictable. According to NWS, "High wind has sustained winds speeds of 40 miles per hour (mph) lasting for 1 hour or longer, or wind of 58 mph or greater for any duration."[139] Salt Lake County has experienced high winds in the past and can expect future events.

Figure 123: Damage from a High Wind Event in 2020[140]

According to the NWS definition, straight-line winds are defined as "any wind that is not associated with rotation, used mainly to differentiate them from tornadic winds."[141] Straight-line winds are responsible for most thunderstorm wind damage, and their speeds can exceed 125 mph. Other damaging winds originating from thunderstorms include downbursts and microbursts. Utah has also experienced downslope wind events, which occur when wind generated as a deep layer of air is forced over a barrier. According to the NWS, a downslope flow is defined as "a thermally driven wind directed down a mountain slope and usually occurring at night, part of the along-slope wind system."[142] Winds accelerate down mountain slopes and generate high winds in a wave region formed at the base of the terrain. A downslope windstorm in December 2011 generated many reports of 60–80 mph winds, and maximum gusts of 80–100 mph in the Bountiful/Centerville area, resulting in loss of power and significant damage in the region. In October 2020, a severe windstorm with wind gusts reaching up to 89 mph caused extensive damage across Salt Lake County leading to power outages for many residents, with some lasting over a week. The State of Utah declared a state of emergency due to the situation. Tragically, one individual in

[139] National Oceanic and Atmospheric Administration (NOAA), National Weather Service (NWS). "National Weather Service Glossary." https://forecast.weather.gov/glossary.php.
[140] Provided by SLCo EM.
[141] Ibid.
[142] Ibid.

South Salt Lake lost their life. Canyon winds can bring wind gusts greater than 100 mph through the canyon mouths into the populated areas of the Wasatch Front. Winds are usually strongest near the mouths of canyons and have resulted in the loss of power resulting in loss of electricity in homes and businesses. Winds have also damaged roofs, destroyed and knocked down large trees and fences, overturned tractor trailers and railroad cars, and downed small airplanes.

Figure 124: Wind Damage in Salt Lake County Following a Storm in 2020[143]

Hazard Profile

Potential Impact		Catastrophic	**Probability**	X	Highly Likely
	X	Critical			Likely
		Limited			Occasional
		Negligible			Unlikely
Location	High wind can occur in areas throughout the county.				
Seasonal Pattern	High wind can occur year-round.				
Conditions	High winds vary based on latitude, elevation, aspect and landforms.				
Duration	High Wind hazard generally lasts hours; some conditions can persist for days.				
Secondary Hazards	Potential secondary hazards include wildfire and flooding.				
Analysis Used	National Climate Data Center, National Weather Service, Utah Avalanche Center, Utah Division of Emergency Management, local input, and review of historic events and scientific records				

[143] Photo courtesy of SLCo EM.

Extent/Magnitude

The Beaufort Wind Scale was developed to estimate wind speeds based on their effects by visual observations. Initially used by sailors based on sea conditions, it is still in use today to estimate wind strengths.

Table 64: Beaufort Wind Scale[144]

Force	Speed (mph)	Speed (knots)	Description	Specifications
0	0–1	0–1	Calm	Calm; smoke rises vertically
1	1–3	1–3	Light Air	Direction of wind shown by smoke drift, but not by wind vanes
2	4–7	4–6	Light Breeze	Wind felt on face; leaves rustle; ordinary vanes moved by wind
3	8–12	7–10	Gentle Breeze	Leaves and small twigs in constant motion; wind extends light flag
4	13–18	11–16	Moderate Breeze	Raises dust and loose paper; small branches are moved
5	19–24	17–21	Fresh Breeze	Small trees in leaf begin to sway; crested wavelets form on inland waters
6	25–31	22–27	Strong Breeze	Large branches in motion; whistling heard in telegraph wires; umbrellas used with difficulty
7	32–38	28–33	Near Gale	Whole trees in motion; inconvenience felt when walking against the wind
8	39–46	34–40	Gale	Breaks twigs off trees; generally, impedes progress
9	47–54	41–47	Severe Gale	Slight structural damage occurs (chimneypots and slates removed)
10	55–63	48–55	Storm	Seldom experienced inland; trees uprooted; considerable structural damage occurs
11	64–72	56–63	Violent Storm	Very rarely experienced; accompanied by widespread damage
12	72–83	64–71	Hurricane	See Saffir-Simpson Hurricane Scale.

Location

The entire region of Salt Lake County can be affected by most high wind events and their effects. Wind events are most damaging to areas that are heavily wooded and areas with exposed property and aboveground utility lines.

[144] NOAA, NWS. “Beaufort Wind Scale.” https://www.weather.gov/mfl/beaufort.

Historical Events and Probability of Future Occurrences

Based on the FEMA Disaster Declarations Database, one high wind event has occurred during the period of January 1, 2019, through June 3, 2025.[145] The event was declared on January 21, 2021, from events that occurred on September 7 and 8, 2020, and categorized as straight-line winds. A severe windstorm with gusts up to 89 mph caused extensive damage and prolonged power outages in Salt Lake County, leading the State of Utah to declare a state of emergency. About 1,000 trees were knocked down in Salt Lake City alone. As many as 170,000 homes and businesses lost power. Areas with the most power outages included Millcreek, northeast Salt Lake City, South Salt Lake, Murray, Holladay, and northern Taylorsville.[146]

NOAA data records indicate that the highest wind event recorded in the county occurred on January 8, 2005, with gusts up to 99 knots (113.93 mph), This level of wind exceeds the limits of the Beaufort Wind Scale.

According to NCEI data, there have been 264 days with high wind events from 1956 to 2024 (68 years), totaling $10.6 million in property damage and $365,800 in crop damage. These also resulted in 2 deaths and 48 injuries. There were 8 strong wind events that resulted in $36,000 in damage. The NRI defines "strong wind" as consisting of "winds, often originating from thunderstorms that are classified as exceeding 58 mph."[147] 186 thunderstorm wind event days caused 15 injuries and resulted in over $5 million in property damage and $65,600 in crop damage. Damage of $16,127,400 averages to approximately $237,168 in losses per year. The median property damage amount for all high, strong, and thunderstorm wind events is $0, indicating that the data are skewed upwards by a smaller number of higher costing events. For example, three events that took place on August 1, 2006, May 2, 2001, and March 20, 2000, totaled approximately $4,500,000 by themselves, although most events caused little to no property damage.

Since 2019, the time of the last mitigation plan update, 103 wind events have been recorded, totaling $4,929,000 and resulting in 1 death and 12 injuries. Most of these were from a single event in September 2020, described below. Figure 126 shows the location and strength of past wind events in the county. The frequency of events is an indicator that probability of future occurrences is highly likely.

On September 8, 2020, a weather pattern abnormal for September developed, triggering a significant downslope flow wind event. Based on climatology and previous case study findings, this type of event most commonly occurs during the winter months. Downslope wind events are often confined to areas near canyon mouths and usually impact only isolated areas with extreme winds. This event was unusual in both the early fall timing and the extensive spatial coverage of the damage. High winds were reported as far south as the Tooele Valley, with high wind reports all along the Interstate 15 corridor stretching north into the Cache Valley. Because trees still had their full canopy, the tree damage all along the

[145] FEMA, Disaster Declarations for States and Counties." https://www.fema.gov/data-visualization/disaster-declarations-states-and-counties.
[146] Gonzalez, Norma, Taylor Stevens, and Sean P. Means. "Utah declares state of emergency after windstorm knocked down thousands of trees." The Salt Lake Tribune. September 9, 2020. https://www.sltrib.com/news/2020/09/09/utahs-winds-are-dying/.
[147] FEMA, National Risk Index, "Strong Wind." https://hazards.fema.gov/nri/strong-wind.

Wasatch Front was extreme, with an estimated 4,500 trees damaged in Salt Lake County alone. Current estimates put the cost at $8.9 million for the region. The storm led to 1 fatality, 20 direct injuries, and 4 indirect injuries. Over 180,000 power outages were reported along the Wasatch Front, with power restorations taking up to a week in some locations due to extensive damage. Schools and recreation facilities were closed.

Figure 125: Windstorm Damage in Salt Lake County, September 2020[148]

Very strong winds developed across much of Utah on April 16, 2018, ahead of a cold front, with wind damage reported in parts of the Wasatch Front. Maximum recorded wind gusts included 73 mph at SR-201 at I-80, 65 mph at Baccus, 63 mph at Flight Park South, and many other reported gusts in the 50 mph to 62 mph range. The gusts blew down multiple trees, and one fell on a house in Murray. Trampolines became airborne and landed in yards, over fences, and on the roof of a home in one case. Total damage was recorded as $50,000, and more than 7,500 power outages were reported.

On August 1, 2006, severe thunderstorm winds up to 75 mph impacted the southern part of Salt Lake County in conjunction with Utah County Storms. Trees up to 12 inches in diameter snapped in East Millcreek, and large trees were uprooted in the Sugarhouse area. Numerous power poles also were downed in the southern portion of county. According to a regional insurance claim estimate, the reported damage was approximately $2 million.

On May 2, 2001, strong canyon winds developed along the Wasatch Front, lasting until the early morning of May 4. The storm caused an estimated $3 million in property damage between Davis and Salt Lake counties and several hundred thousand dollars damage to trees. The worst damage was reported in Sandy City and Cottonwood Heights. A semi-truck was overturned on I-15 in Centerville on May 3, and a large tree smashed into a house in Farmington. No injuries were reported.

[148] Photo provided by SLCo EM.

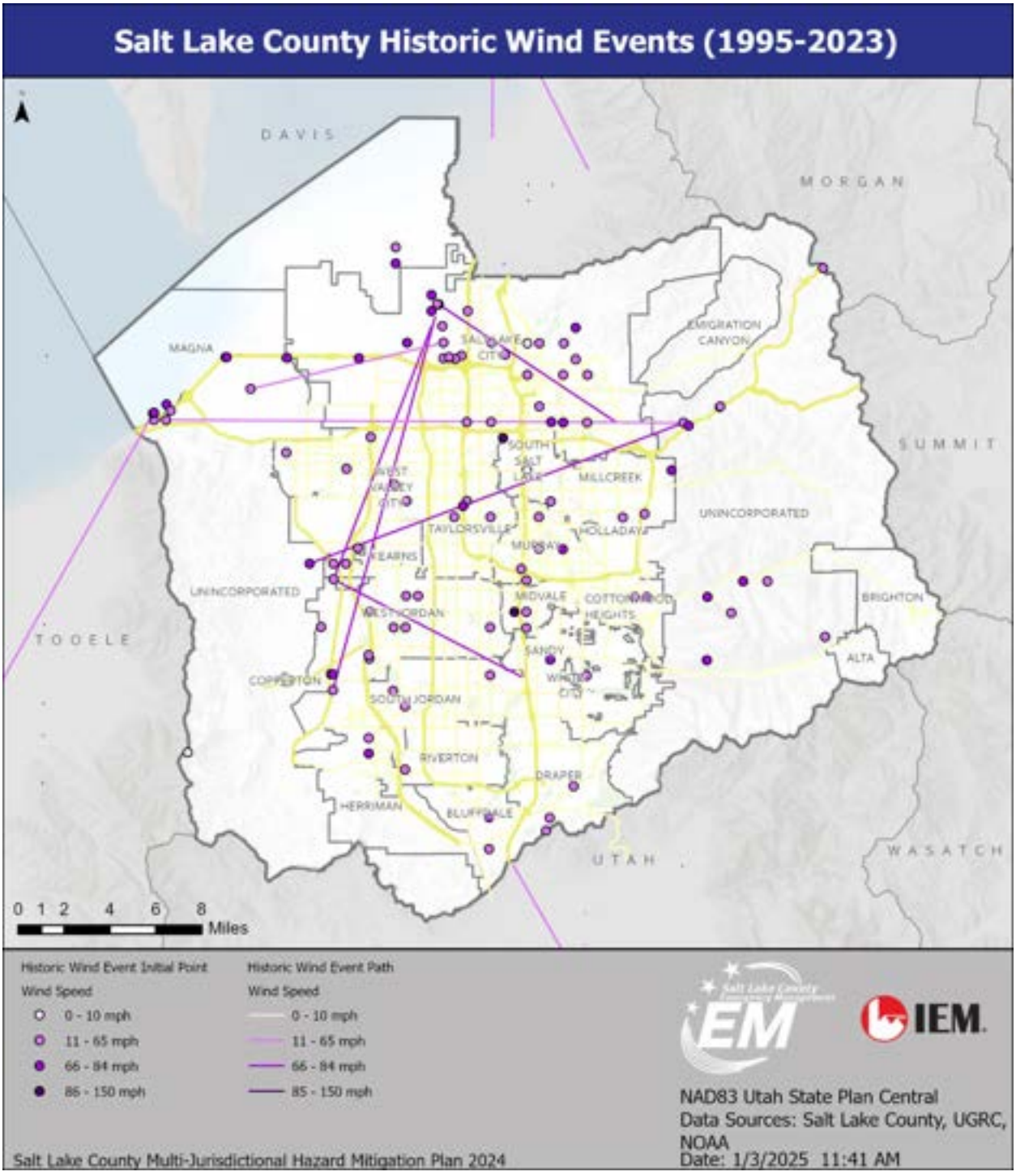


Figure 126: Historic Wind Events in Salt Lake County, 1995–2003

Climate Change Considerations

Climate change can have a significant impact on the natural hazard of high winds. Higher temperatures can cause more intense and frequent weather systems—including high wind events—while increased moisture in the atmosphere can lead to more frequent severe storms, such as thunderstorms, which often

bring high winds. The change in climate will exacerbate the frequency and intensity of high wind events in Salt Lake County.

The 2024 State Enhanced Hazard Mitigation Plan states that research on climate change and its effects on severe weather in Utah does not provide clear evidence of how increased convective activity will impact future wind events. However, climate models consistently indicate that increased convective storms are a likely outcome of climate change, with worsening tornado activity, and strong evidence exists that extreme heat will continue to increase with worsening climate change.

Secondary Hazards

The most significant secondary hazards associated with high winds are fallen trees, downed power lines, and the resulting power outages. According to ComEd, “Weather-related events cause 70 percent of all power outages.” Power outages usually last anywhere from a few minutes to a few hours. In some extreme cases, power outages have lasted a few days or even a few weeks. Severe weather-induced power failures can come from the following sources:

- High and moderate winds lead to power outages by blowing objects into power lines and other components, causing an interruption of services. Both high winds (more than 55 mph) and moderate winds (35–55 mph) may be sufficient to cause power outages.
- Momentary outages may occur if an object, such as a tree limb, is blown onto a power line, disrupting electrical services. If high wind coincides with warm temperatures and low humidity, it can pose an increased risk of fire danger. A Red Flag Warning may be issued to warn fire officials, firefighters, and the public of potentially dangerous fire weather conditions that may affect power lines.

Vulnerability Assessment

High winds can cause widespread damage that affects multiple jurisdictions at the same time. They can cause personal injury and structural damage to homes and business, and they can disrupt service from multiple community lifelines. Due to the widespread and unpredictable nature of severe weather, all populations, structures, and infrastructure are potentially at risk of the impacts of high wind. All critical facilities—such as fire and police stations, hospitals, and schools—are vulnerable. All 218 county facilities are also vulnerable to damage or disruptions. Utilities—such as power and communications networks, transportation systems, and road networks—also are vulnerable.

ESTIMATED IMPACT AND POTENTIAL LOSSES

Residents can face injury or death related to high wind events, most often caused by trees or limbs falling on homes or vehicles. People residing in mobile homes or RV parks are particularly vulnerable to injury or death from high wind events. People outdoors may be harmed by wind-driven debris. Others face isolation and exposure during severe storms, or they could suffer from secondary effects of the hazard.

DRAFT

Trees uprooted by wind or fallen limbs can cause significant damage to homes and other structures and vehicles. Mobile and manufactured homes are particularly vulnerable to damage. High wind can damage roof materials, gutters, or other exterior fixtures. Windows can be broken by windblown debris.

Critical facilities may experience damage by wind-driven debris or downed trees. They may also be affected by wind-driven damage to power lines, producing power outages that cause disruptions to operations. In addition, response times can be delayed by interruptions to transportation networks.

Power infrastructure, particularly aboveground power lines and substations, are particularly vulnerable to damage during high winds. Other utility facilities, such as water or communications systems, may be disrupted while power is out. Debris can block roadways, and power outages can disable traffic signals, which can create difficulty navigating transportation networks. Removing debris after the event can be time-consuming and costly.

Wind-related damage and secondary hazards, such as utility disruption, can also have negative impact on businesses. Significant economic impacts can result from physical damage to structures, building contents, and revenue and wage losses when businesses are inoperable due to power and/or communications outages. Debris removal can be costly to local governments and may strain local resources.

The NRI includes data on the EALs to individual natural hazards, historical loss, and overall risk at a county and census tract level. Salt Lake County's NRI EAL value for strong wind is $741,000 with a risk score of 76.6 and a rating of relatively moderate percentile compared with the rest of the United States (Figure 127).

DRAFT

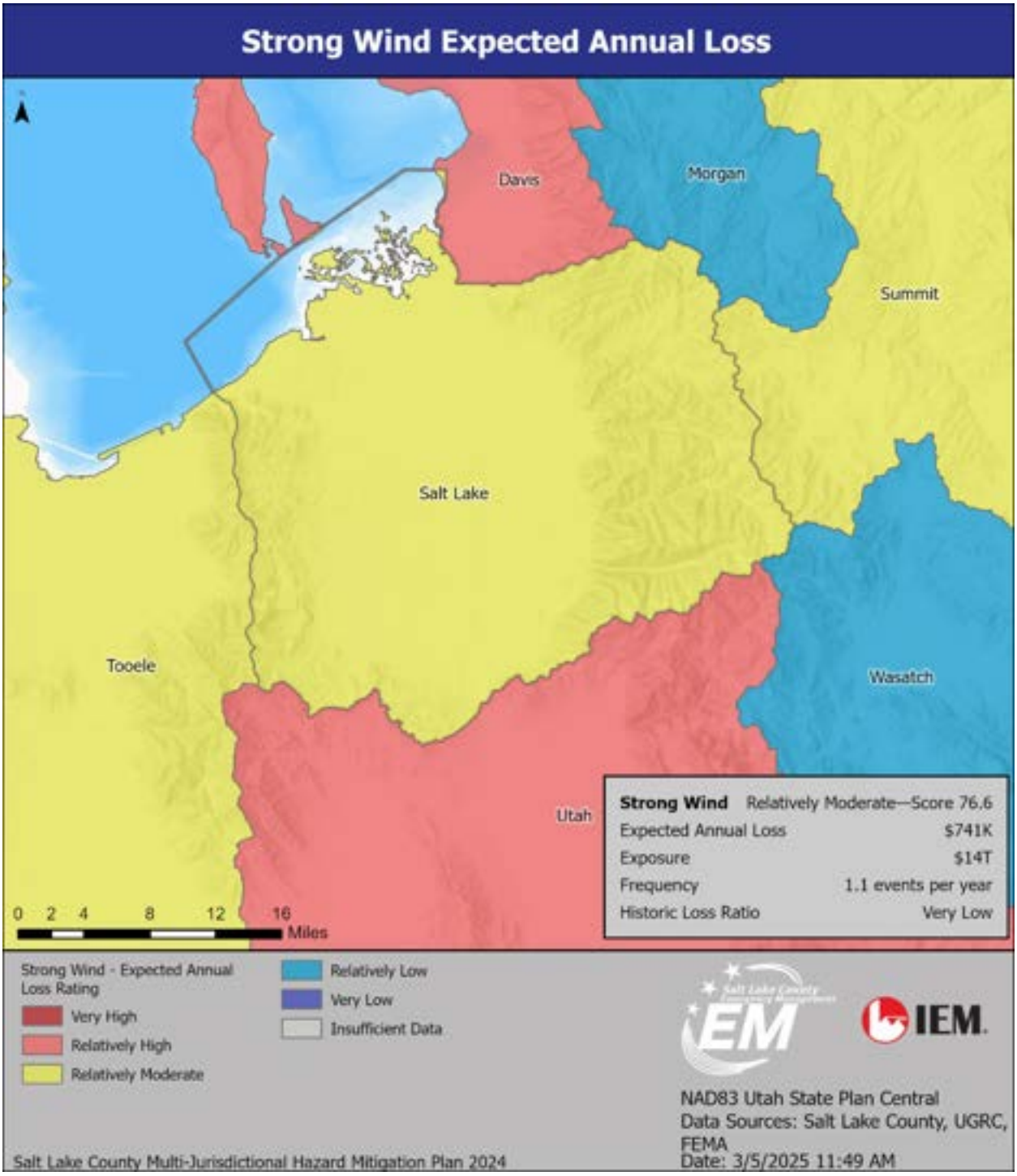


Figure 127: National Risk Index Expected Annual Loss from Strong Wind in Salt Lake County[149]

[149] FEMA, National Risk Index. "Salt Lake County Expected Annual Loss Strong Wind Risk Score, Map and Legend." https://hazards.fema.gov/nri/map.

VULNERABLE POPULATIONS

The 2024 State Enhanced Hazard Mitigation Plan states that people living in less-wind resistant housing, such as mobile homes, are more vulnerable to wind hazard. Outdoor workers, outdoor recreationists, or unhoused populations might have difficulty seeking adequate shelter during a wind event and are vulnerable to injury from wind effects. Elderly residents or people with disabilities may be negatively affected by power outages if they rely on power for medical devices or for ingress and egress to their homes. They may be isolated from critical support services if debris or other damage leads to roadway closures. They might have difficulty addressing debris cleanup.

COMMUNITY LIFELINES

High winds can disrupt safety and security, energy, transportation, and food, hydration and shelter lifelines. The importance of these lifelines cannot be overstated. In a disaster, communities can be left without access to necessities, such as food, water, and shelter. The lifelines help ensure that these needs are met, and that people have the resources they need to survive. By providing access to medical care, public health services, and transportation, the lifelines help ensure that people can receive the care they need and safely evacuate if necessary. In addition, the Hazardous Materials lifeline helps to ensure that dangerous materials are managed safely, reducing the risk of further harm. Community Lifelines help create a sense of safety and security in a community. They provide a safety net for individuals who may be struggling and offer comfort and reassurance that help is available when needed. Without these lifelines, communities would be much more vulnerable to crises and emergencies.

CHANGES IN DEVELOPMENT

In Salt Lake County, development and population growth have significant implications for high wind events. Population growth and development increases infrastructure, such as buildings, roads, and especially powerlines, which can increase the risk associated with high winds. In addition, urbanization can exacerbate these risks by creating wind tunnels which increases the potential for wind damage. The concentration of development in certain areas can also change localized wind patterns, which can lead to higher wind speeds and more frequent wind-related incidents.

Potential impacts from increase in high wind vulnerability include loss of life and property, power failure, and decreased air quality. Overall growth in population and new building construction in Salt Lake County results in a higher number of people potentially exposed to high wind. Changes in local economies may affect whether a community is financially able to recover from a high wind event. In 2020, the county had a high wind event that caused extensive damage in the county with debris in roads, trees down, and power failures (in some areas for over a week), forcing employees to miss work. Changes in land use and development may require stricter building codes for new builds to withstand extreme weather events. Overall vulnerability high wind has increased since the last plan update.

VULNERABILITY SCORE

To analyze the county's vulnerability to severe weather, the NRI was used as a primary tool during the 2024 HIRA update. The NRI defines risk as the potential for negative impacts as a result of a natural

DRAFT

hazard and determines a community's risk relative to other communities by examining the EAL and social vulnerability in a given community in relation to that community's resilience. Salt Lake County's NRI strong wind risk rating is shown in Figure 128. Salt Lake County has relatively moderate strong wind risk and a risk score of 72.6.

DRAFT

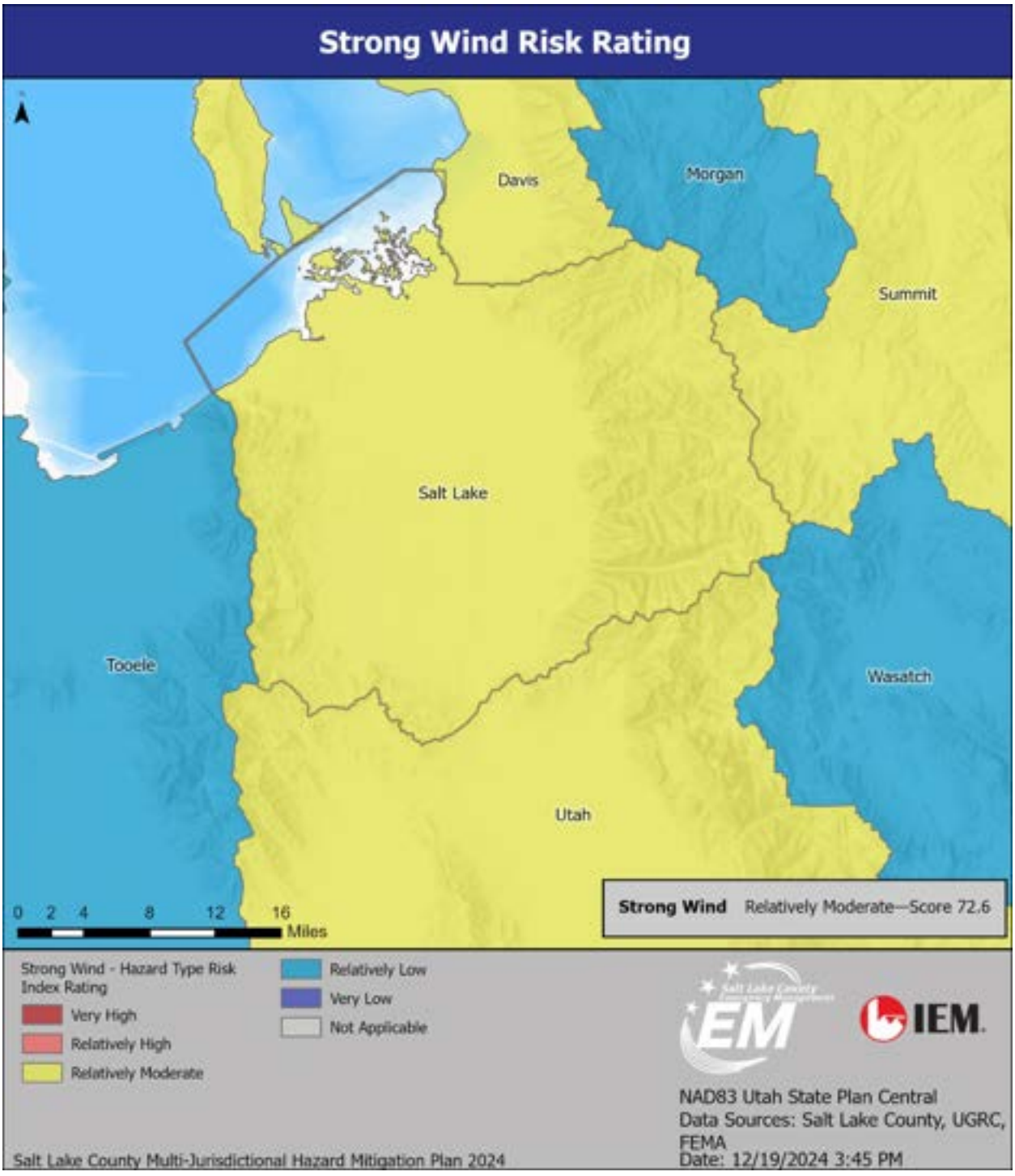


Figure 128: National Risk Index Strong Wind Risk Map, Legend, and Score for Salt Lake County[150]

[150] FEMA, National Risk Index. "Salt Lake County Strong Wind Score, Map and Legend." https://hazards.fema.gov/nri/map.

Landslide/Slope Failure

Hazard Description

Slope failure is any ground disturbance on a sloped surface. Slope failures, also known as landslides, are classified according to the type of movement and material involved. Movement types include falls, topples, slides, lateral spreads, and flows. Materials include rocks, debris (coarse-grained soil), and earth (fine-grained soil). The most common slope failures in Utah include rock falls, rock topples, debris slides, debris flows, earth slides, and earth flows.

Figure 129: Image of a Landslide[151]

A landslide is a mass of earth or rock that moves downslope by flowing, spreading, sliding, toppling, or falling. Landslides are one of Utah's most common natural hazards, primarily in areas with moderate to steep slopes or weak slope materials. Most landslides are associated with precipitation events with sustained above-average precipitation, individual intense rainstorms, or snowmelt events. Erosion, removal of vegetation by wildfires, and earthquake-induced ground shaking increase the likelihood of landslides. Human activities, such as grading slopes or increasing soil moisture through landscape irrigation, can also trigger landslides.

[151] https://unsplash.com/photos/brown-and-gray-rocky-mountain-fsj6Ly_lqOs.

Figure 130: Diagram of an Idealized Landslide with Commonly Used Terminology[152]

Rock falls and topples are downslope movements of loosened blocks or boulders from a bedrock area. These generally occur along steep canyons with cliffs, deeply incised stream channels in bedrock, or steep bedrock road cuts. The most significant damage from rock falls is to roads, railroads, and aboveground pipelines.

Debris slides and flows occur in steep mountainous areas and involve relatively rapid, viscous flows of coarse-grained soil, rock, vegetation, and other surface materials. Debris flows contain more water than slides and are potentially more dangerous because they can form quickly, move at high speeds, and travel long distances. Debris flows generally remain in stream channels but can flow outward from canyon mouths for a considerable distance, potentially damaging buildings, bridges, roads, railroads, and pipelines. Areas impacted by wildfires may be more likely to experience debris flows because vegetation no longer holds soils in place.

Earth slides and flows are composed of fine-grained material; earth slides contain less water than earth flows. Earth slides and flows vary in size, including some of the largest earth slides in Utah's history. Like other landslides, earth slides and flows can damage anything in their path.

Slumps are common along road embankments and river terraces. They slide along a curved plane away from the upper part of a slope, leaving a scarp. They generally do not travel far from the source area.

The distribution of landslides is dependent on geology, topography, and climate. They are most common in the Middle Rocky Mountain's physiographic province and the High Plateaus section of the Colorado Plateau province. As previously mentioned, weak rock types, steep slope gradients, and relatively abundant precipitation are the primary contributors to landslides. Vegetative cover, slope, aspect, and ground shaking from earthquakes can also influence slope stability. Nearly all landslides in Utah are

[152] Beukelman, Gregg. "Landslide Hazards in Utah." Utah Geological Survey. 2011. https://ugspub.nr.utah.gov/publications/public_information/pi-98.pdf.

reactivations of preexisting landslides. Risk can be reduced by avoiding development in areas of known landslide risk and/or stabilizing landslides.

Hazard Profile

Potential Impact		Catastrophic	**Probability**		Highly Likely
		Critical		X	Likely
	X	Limited			Occasional
		Negligible			Unlikely
Location	Typically in canyon mouths and foothills and areas of recent wildfire activity				
Seasonal Pattern	Spring and summer months				
Conditions	Typically caused by the stress release of over-weighted soils or loosening of rock and debris by wind, water, or ground shaking				
Duration	Landslides/rock falls: hours to months; debris flows: instantaneous				
Secondary Hazards	Flooding (natural dams), traffic accidents				
Analysis Used	Information and maps provided by Utah Geological Survey, Utah Division of Emergency Management, Utah Geospatial Resource Center				

Magnitude/Extent

Several factors can influence an area's susceptibility to landslide including the steepness of the slope, the type of soil and rock present, the amount of precipitation the area receives, and impacts from human development. Landslides in Salt Lake County can vary in size and by speed and force of the sliding mass. They can be affected by erosion and landscape changes, or secondary hazards, such as debris flows following a wildfire.

The extent and magnitude of a landslide in Salt Lake County would depend on the size and speed of the landslide and the specific location and elevation of the impacted area. Landslide hazard is primarily located in the mountainous areas of the county. A large portion of the county is in an area of moderate susceptibility to landslide. Landslides may occur in parts of the county where little to no development exists and damage would be negligible. However, some may occur in areas where it can disrupt transportation, damage property, and could lead to injury. The extent of landslide susceptibility is shown in Figure 132–Figure 137.

The Rio Tinto Landslide was the single largest natural disaster in Salt Lake County's history. The North Salt Lake City landslide was categorized as a "major" landslide. Due to the nature of Salt Lake County's topography and development encroaching into steeper areas, the magnitude of damage is likely to increase. Many landslide or slope failure events may be minor and cause little to no damage, but it is also possible that future landslides can cost hundreds of thousands of dollars to hundreds of millions of dollars in damage.

DRAFT

Location

Landslides and debris flows are most common in the foothills along the base of the Wasatch Mountain Range and are caused by wet climatic conditions. Some major landslide areas include the Grand View Peak rockslide in upper City Creek Canyon, the Little Valley Red Rock landslide in Draper, and the shallow disrupted landslides in and near Steep Mountain in Draper. As urbanization spreads into geologically unstable areas of the county, the risk to life and property increases. Figure 132–Figure 137 show the locations of critical facilities in relation to landslide susceptibility in the county.

Figure 131 provides information on the varying scales used in each of the following maps.

Landslide Susceptibility	Susceptibility Description	
High		Areas of existing shallow and deep landslides.* Slope angle and geologic map unit are not considered in this category.
Moderate		Areas that have slopes prone to landsliding based on observed landslide slope angles. The category includes slopes greater than 7° (12%) to greater than 18° (32%) depending on the geologic unit.**
Low		Areas that have slopes that may produce landslides. The category includes slopes from 5 - 7° (9 - 12%) for lower slope-angle threshold ranging up to 13 - 18° (23 - 32%) for the upper slope-angle threshold depending on the geologic unit.**
Very Low		Areas that are unlikely to produce landslides. The category includes slopes less than 5° (9%) to less than 7° (12%) depending on the geologic unit.**

Figure 131: Landslide Susceptibility Scale

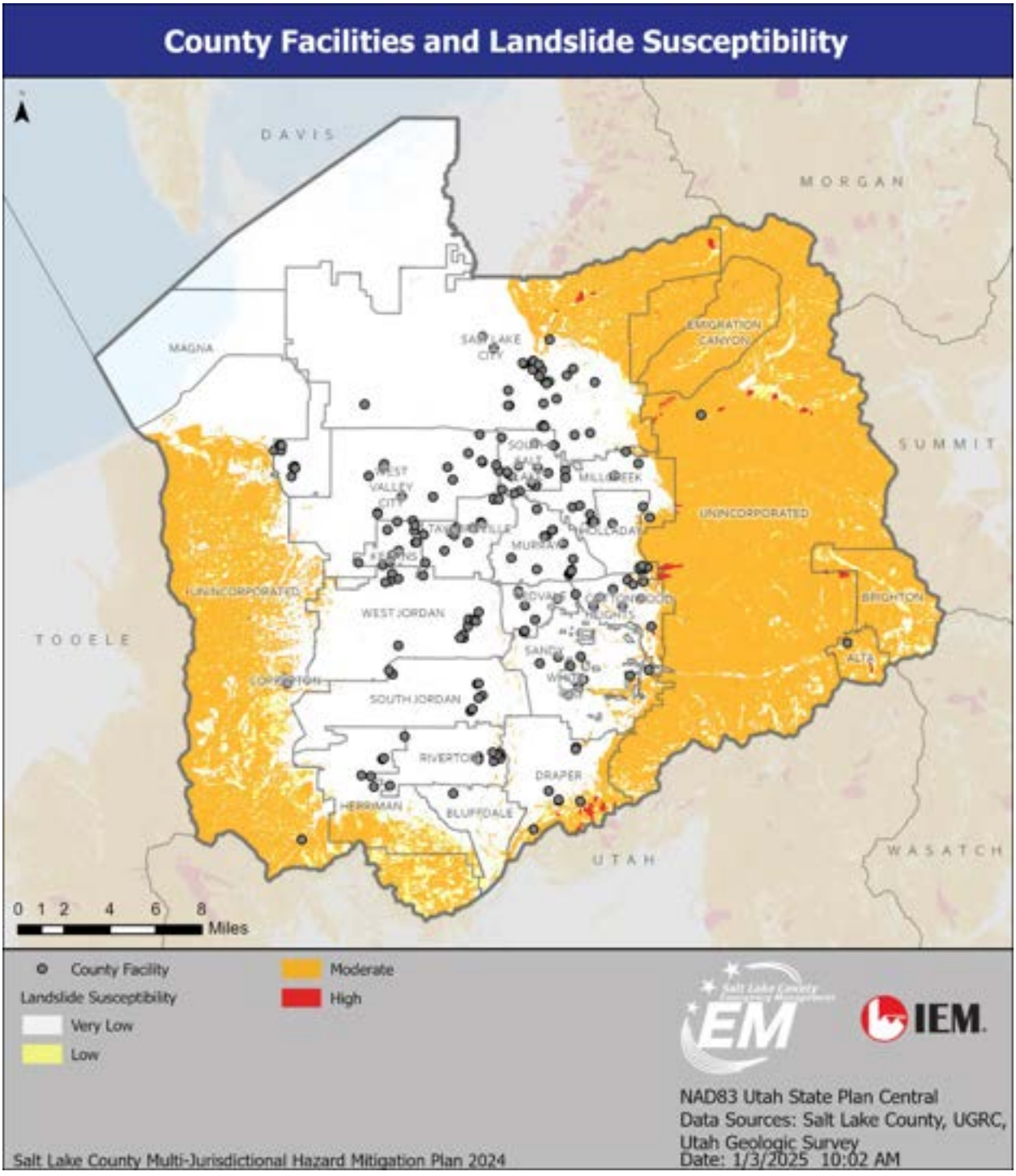


Figure 132: Salt Lake County Facilities in Areas Susceptible to Landslides

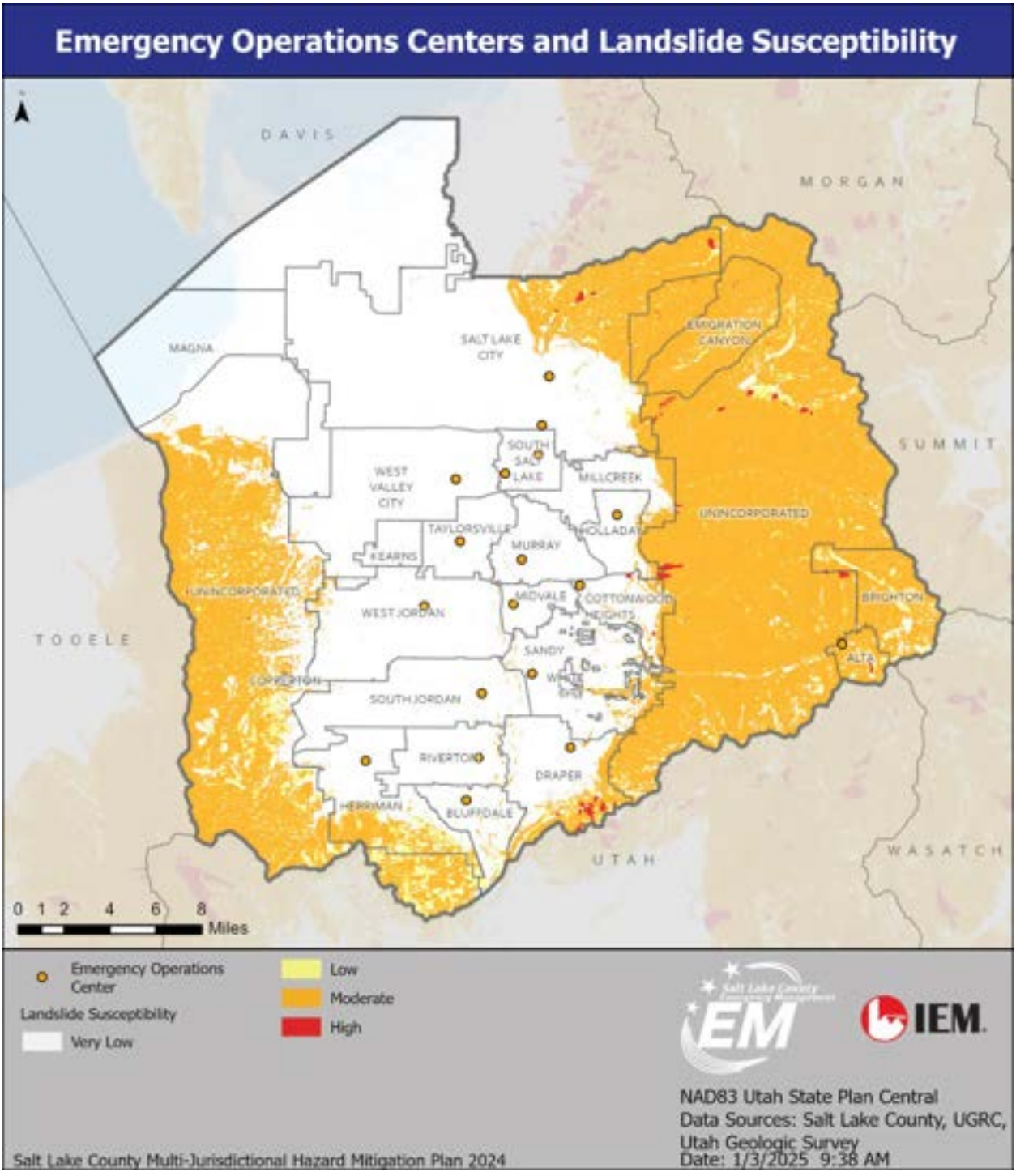


Figure 133: Emergency Operations Centers Areas Susceptible to Landslides in Salt Lake County

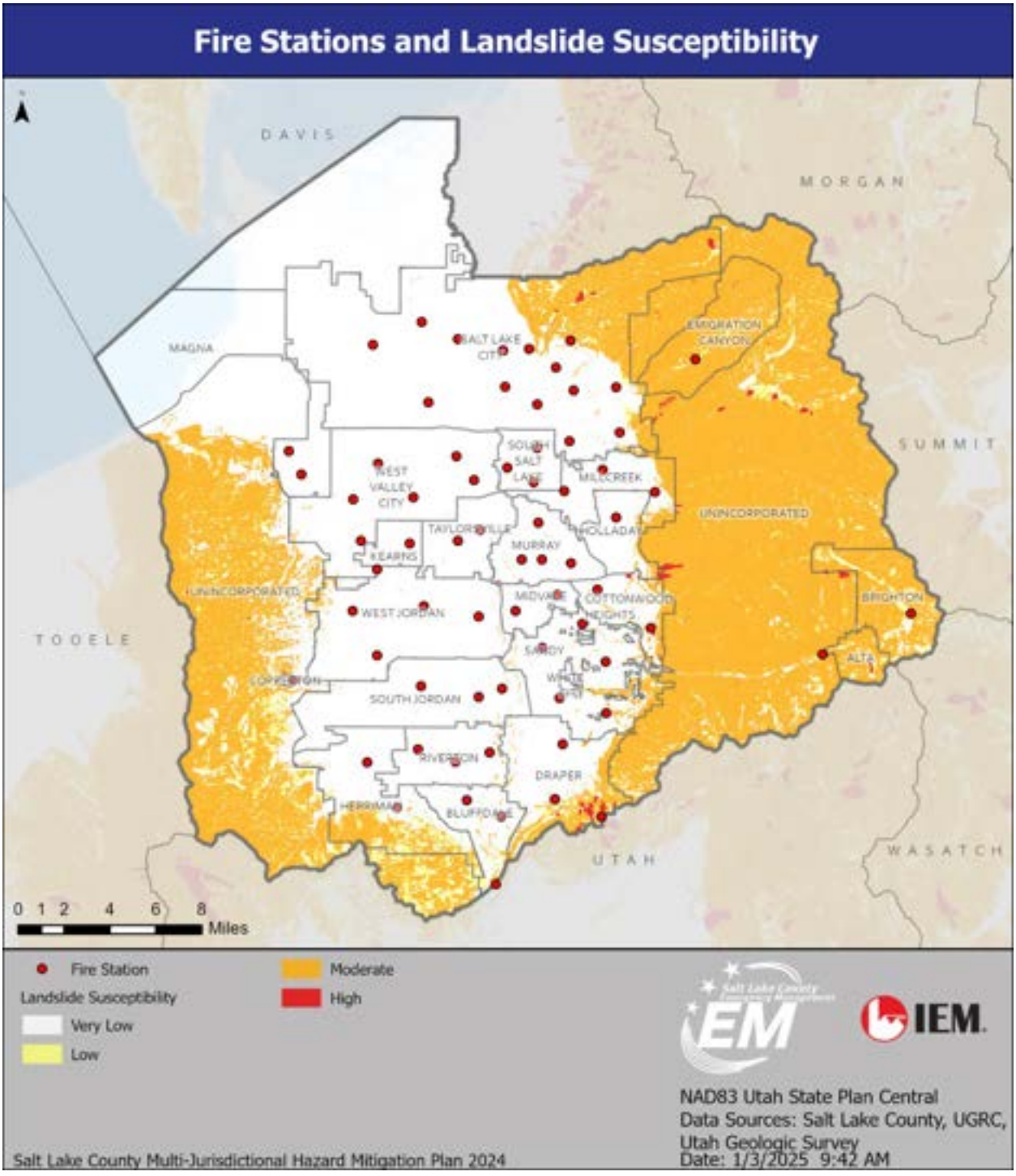


Figure 134: Fire Stations in Areas Susceptible to Landslides in Salt Lake County

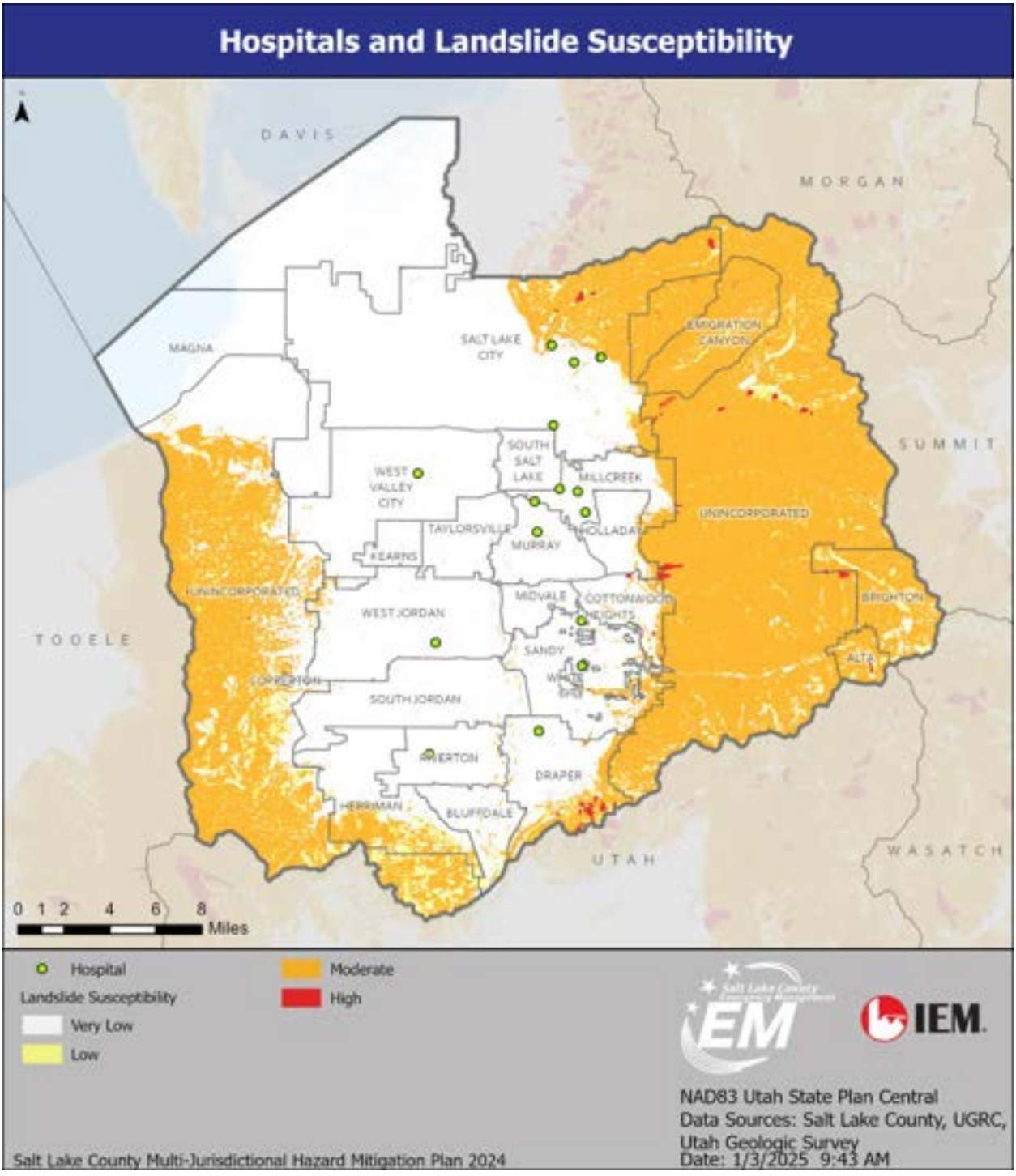


Figure 135: Hospitals in Areas Susceptible to Landslides in Salt Lake County

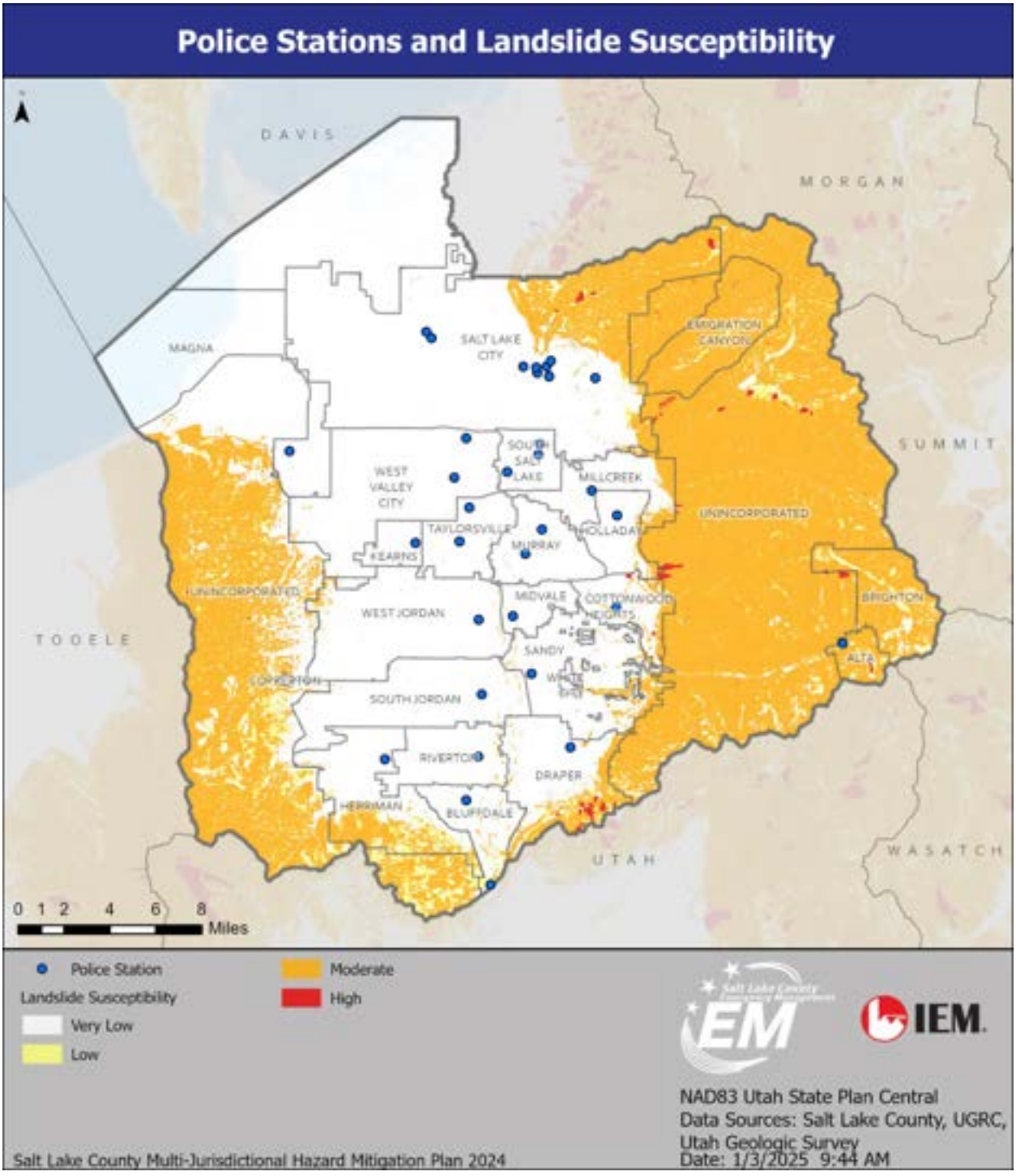


Figure 136: Police Stations in Areas Susceptible to Landslides in Salt Lake County

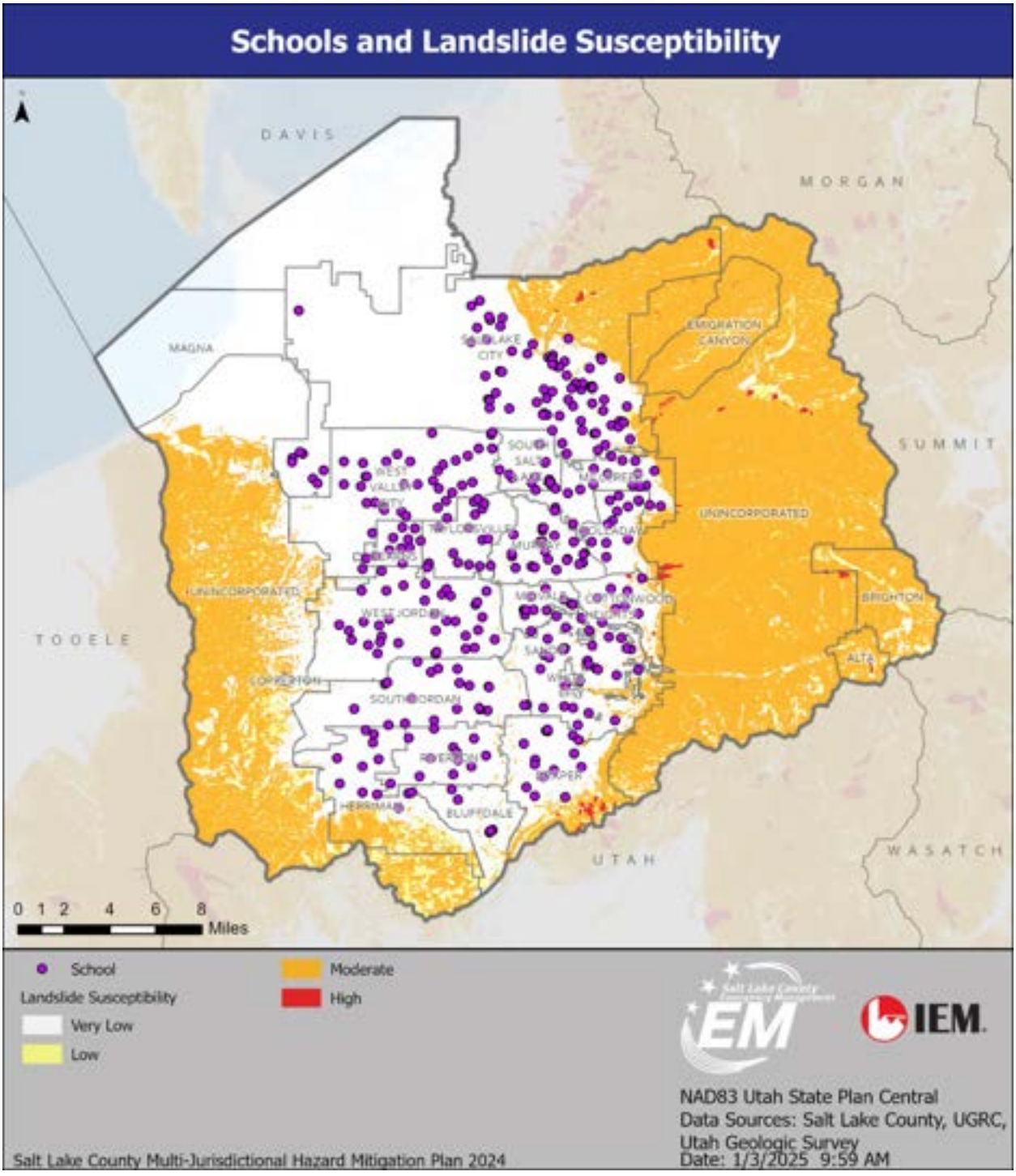


Figure 137: Schools in Areas Susceptible to Landslides in Salt Lake County

According to the 2019 Utah State Hazard Mitigation Plan, 56% of all slope failures in Salt Lake County occurred on hillsides with slopes of 31%–60%. In addition, 1.63 square miles of the county are categorized as “High Hazard” in terms of landslide susceptibility, 320 square miles are “Moderate,” 25 square miles are “Low,” and 373.9 square miles are “Very Low.”

Historical Events and Probability of Future Occurrences

Based on the FEMA Disaster Declarations Database, there have not been any slope failure disaster declarations in Salt Lake County for landslide and slope failure since the last plan update.

Landslides and slope failures are likely to continue to occur periodically in Salt Lake County. In addition, subsidence may occur in City Creek, Emigration, Parley's, and Big Cottonwood Canyons due to the prevalence of dissolvable limestone. Subsidence may also occur in the Avenues area of Salt Lake City and the Taylorsville–Kearns area due to collapsible soils that are compactable upon wetting (Mulvey 1992).

Little Cottonwood Canyon Landslide: A landslide occurred on Tuesday afternoon, May 2, 2023, in Little Cottonwood Canyon, covering the entire roadway on SR-210 near mile marker 7. A second landslide from the same source occurred on top of the first approximately one hour later. The road was closed all day on May 2nd for avalanche mitigation, meaning that no cars were on the road, and therefore no injuries were reported. The type of landslide was debris flow, approximately 100 feet wide and 4 feet deep, according to UDOT. Elevated groundwater levels from the melting of above-normal snowpack led to spring flow at the source. The impacts from the landslide included minor damage to the road and damaged or destroyed guard rails. No people were injured, and no buildings were damaged.

Figure 138: Landslide in Big Cottonwood Canyon, August 2021[153]

Draper Springtime Road Landslide: On Saturday morning, April 22, 2023, a landslide occurred on Springtime Road in Draper, Salt Lake County. Two homes collapsed when the hill they were on slid and fell into the small valley below; fortunately, these homes were evacuated in October 2022 due to unstable slope conditions. The landslide was reported to be the width of two tennis courts at the top, with a length of more than three football fields. The homes were not built on natural slopes, rather they had been

[153] Photograph provided by SLCo EM/Unified Fire Authority.

constructed on building pads engineered to fill the ravine. Besides the two that were damaged, two other homes were ordered to evacuate. The landslide and debris fell onto Ann's Trail, which remains closed.

Emigration Canyon Landslides: Record snowpack and subsequent warmer weather caused flooding and 10–15 landslides through April 2023 in Emigration Canyon, along with several small snow avalanches. A local emergency was declared in the city of Emigration Canyon on April 13th. The earthflow landslide damaged two homes, one of which had considerable damage. Emigration Canyon Road was closed periodically during the spring months of 2023 due to avalanches and landslides.

City Creek Canyon Landslides: A cluster of historical landslides remains visible from the hairpin turn in Bonneville Boulevard in lower City Creek Canyon in Salt Lake City. The Utah Geological Survey and the Salt Lake City Surveyor have monitored the movement of the largest and most destructive of these landslides since June 1998. Over that time, the toe of the landslide has moved intermittently approximately 24 feet, and the main scarp has offset the ground surface by nearly the same amount. Like most recurrently active landslides in northern Utah, movement typically occurs between March and June as groundwater levels rise following the melting of the snowpack. Four houses at the top of the slide are threatened, and efforts to protect one house have cost over $300,000 to date. In 2006, the landslide reactivated again, moving approximately 2 feet, despite drier-than-normal conditions in Salt Lake City.[154]

Bingham Canyon Landslides: Two landslides occurred in 2013 at Rio Tinto's Bingham Canyon Mine. The first occurred on April 10, 2013, at 9:30 p.m. and moved around 65–70 million cubic meters of dirt and rock down the side of the mining pit. Officials at the mine anticipated the slide and took precautions. This is the largest recorded landslide in the United States not connected to volcanism. On September 11, 2013, 100 workers were evacuated when a second, smaller landslide occurred. No injuries occurred during either landslide.[155]

Climate Change Considerations

Climate change can have a significant impact on the natural hazard of landslides. Higher temperatures can cause more intense and frequent weather events, including an increase in precipitation patterns and heat waves. This can lead to more intense and frequent rainfall, which can destabilize slopes and saturate unstable soils. In addition, increased melting of snowpack can raise groundwater levels, reducing slope stability in vulnerable areas.

The 2024 State Enhanced Hazard Mitigation Plan states climate change will continue to alter the landslide risk in Utah. The amount, timing, and type of precipitation in Utah are expected to change during the remainder of the twenty-first century. In general, projections of precipitation suggest that by 2100, northern Utah will receive increased precipitation. More important to landslide risk, the timing and type of precipitation is likely to change. A shift from snow-dominated precipitation to rain-dominated precipitation is well underway and expected to continue. Increased winter temperatures may increase the likelihood of landslides. Warmer winter temperatures reduce the extent of frozen soil, even if the snowpack exists. If

[154] 2019 Utah State Hazard Mitigation Plan.
[155] Ibid.

heavy rain falls on snow at low- to mid-elevations when the snowpack is present and the soil is not frozen, there is a greater landslide risk. In addition, the projected increase in extreme precipitation events, in both summer and winter, will increase the landslide risk.[156]

Secondary Hazards

Landslides can often enter water courses, increasing turbidity and polluting water supplies. Landslides can also block or alter river courses, disrupt large volumes of soil, contaminate the air, and cause long-term forest or other vegetation loss. These environmental changes can lead to an increased risk of vector-borne diseases or bacteria, potentially impacting human health long after the landslide disaster has occurred. Other potential impacts on infrastructure include broken and failed railways, roadways, bridges, and even utility lines, which could lead to loss of power or delay the delivery of vital services to certain parts of the county.

Vulnerability Assessment

Landslides may occur in the Wasatch Mountains in eastern Salt Lake County, the Oquirrh Mountains in the western part of the county, and the Traverse Mountains to the south. As shown in the landslide susceptibility maps, the cities along the east bench of the Wasatch Mountains, including Salt Lake City, Emigration Canyon, Millcreek, Holladay, Cottonwood Heights, Sandy, Draper, the canyon communities of Brighton and Alta, and the southern part of Herriman City, all have areas of moderate to high landslide susceptibility. The western part of the county has less area in incorporated cities at risk of landslides. Smaller areas of susceptibility are found along the Jordan River and creeks in Cottonwood Heights and Sandy City. Structures in these areas are primarily residential; homes and other structures near these areas may be at risk of damage from landslides. Swift-moving slope failures can cause injury or death for those in the affected area.

Landslides can damage homes or other structures, block major transportation routes, and disrupt power and water infrastructure and services. Some landslides affect only small areas that include a few structures. Landslides affecting primary transportation routes can have impacts beyond the immediate area by blocking emergency services and the delivery of goods and services.

Landslide susceptibility is highest in the mountainous areas of the county, which tend to have lower density development and assets. Limited data are available to understand where landslides are most likely to occur, but all structures, populations, and assets in the susceptibility areas should be considered at possible risk to impacts from landslides.

ESTIMATED IMPACT AND POTENTIAL LOSSES

Landslides can damage or block major roadways, including I-80, Emigration Canyon Rd., Highway 190 in Big Cottonwood Canyon, and Highway 210 in Little Cottonwood Canyon. City Creek Canyon Rd, Mill Creek Canyon Rd., or Wasatch Boulevard could also be affected. Several of these routes have only one outlet, so residents or recreationists above the slide could become isolated until roadways are cleared.

[156] 2024 Utah State Hazard Mitigation Plan.

DRAFT

Many residential streets in the foothills are small, dead-end spur roads that may be difficult to access following a landslide; this could cause the emergency response to be delayed due to transportation limitations.

Landslides can also damage aboveground utility infrastructure including power lines or substations, water treatment facilities, or water lines. Disruption of these services can affect residents and businesses beyond the area directly impacted by the landslide. Much of the eastern mountains of Salt Lake County are part of the Salt Lake City watershed; landslides in this area could impact the water supply for residents.

Prolonged closure of roads can have significant economic impacts due to reduced access to recreation areas. Recreation areas, parking lots, trails, and other improvements can also be damaged by landslides. This may reduce tourism to the area and strain budgets to repair amenities.

The 2024 State Enhanced Hazard Mitigation Plan affirms the assessment of the vulnerability of assets to geologic hazards is limited by data availability. Ideally, the vulnerability of assets to geologic hazards would be based on the type, location, construction, height, and age of assets.

The following tables provide the potential estimated impacts on Salt Lake County from landslide and slope failure. These data are taken from the previous plan due to time constraints and the assumption that the change in hazard risk is minimal. Four fire stations and two county facilities are in moderate susceptibility zones. The daytime population in the county in high or moderate landslide-susceptibility areas is approximately 23,573 people; the nighttime population in high or moderate landslide-susceptibility areas is approximately 24,443 people.

Table 65 and Table 66 provide estimated values for infrastructure, populations, and residences vulnerable to landslides, respectively, in incorporated and unincorporated Salt Lake County. The tables include the number of units or total length of the vulnerable infrastructure and the estimated replacement costs as provided by Hazus lost estimation software. The tables also provide estimates for the total area, population, and buildings vulnerable to landslides for individual cities, although not all identifiable areas are specifically listed. Note that replacement costs have likely increased from the time this analysis was completed.

Table 65: Infrastructure Vulnerable to Landslides, Salt Lake County

Item	Length (Miles) or Number of Units	Replacement Cost
Highways/Interstates	46.86 miles	$259,322,175
Highway Bridges	38 bridges	$33,527,413
Railway Segments	4.98 miles	$5,716,617
Railway Bridges	1 bridge	$23,520
Water Distribution Lines	609.38 miles	$19,621,849
Gas Lines	243.64 miles	$7,848,732
Sewer Lines	365.61 miles	$11,773,110

Item	Length (Miles) or Number of Units	Replacement Cost
Total Estimated Infrastructure Replacement Cost		**$337,833,416**

Table 66: Vulnerability Assessment for Landslides, Incorporated Salt Lake County

Incorporated Areas	Acres Affected	Population Affected	Structures in Areas of Moderate or Greater Hazard	
			Residential Structures (Replacement Value)	Commercial Structures (Annual Sales)
Alta	2,477	986	322 ($65,881,200)	0
Bluffdale	1,457	3,626	1,061 ($217,080,600)	1 ($110,705)
Copperton	14,390	510	215 ($43,989,000)	1 ($9,785)
Cottonwood Heights	1,296	5,982	2,014 ($412,064,400)	93 ($38,368,162)
Draper	2,816	8,318	2,380 ($486,948,000)	26 ($7,143,464)
Emigration Canyon	11,281	3,562	1,378 ($281,938,800)	25 ($12,583,730)
Kearns	10	109	31 ($6,342,600)	1 ($85,797)
Herriman	2,508	4,139	1,242 ($254,113,200)	0
Holladay	397	1,721	506 ($103,527,600)	23 ($3,371,052)
Magna	40	254	157 ($32,122,200)	0
Midvale	11	53	18 ($3,682,800)	0
Millcreek	4	54	20 ($4,092,000)	0
Murray	35	258	88 ($18,004,800)	4 ($2,407,223)
Riverton	75	362	88 ($18,004,800)	2 ($120,490)
Salt Lake City	15,701	15,762	6,327 ($1,294,504,200)	176 ($47,480,280)
Sandy City	1,567	8,199	2,301 ($470,784,600)	77 ($15,535,108)

DRAFT

Incorporated Areas	Acres Affected	Population Affected	Structures in Areas of Moderate or Greater Hazard	
			Residential Structures (Replacement Value)	Commercial Structures (Annual Sales)
South Jordan	72	213	60 ($12,276,000)	0
South Salt Lake	0	0	0	0
Taylorsville	19	179	55 ($11,253,000)	2 ($346,531)
West Jordan	368	439	171 ($34,986,600)	0
West Valley City	65	59	17 ($3,478,200)	0
Salt Lake Community College	0	0	N/A	N/A
Canyons School District	0	0	N/A	N/A
Jordan School District	0	0	N/A	N/A

The NRI includes data on the EALs to individual natural hazards, historical loss, and overall risk at the county and Census tract level. Salt Lake County's NRI EAL value for Landslide is $440K with a risk score of 97.3 and a "Relatively High" rating compared with the rest of the United States (Figure 139).

DRAFT

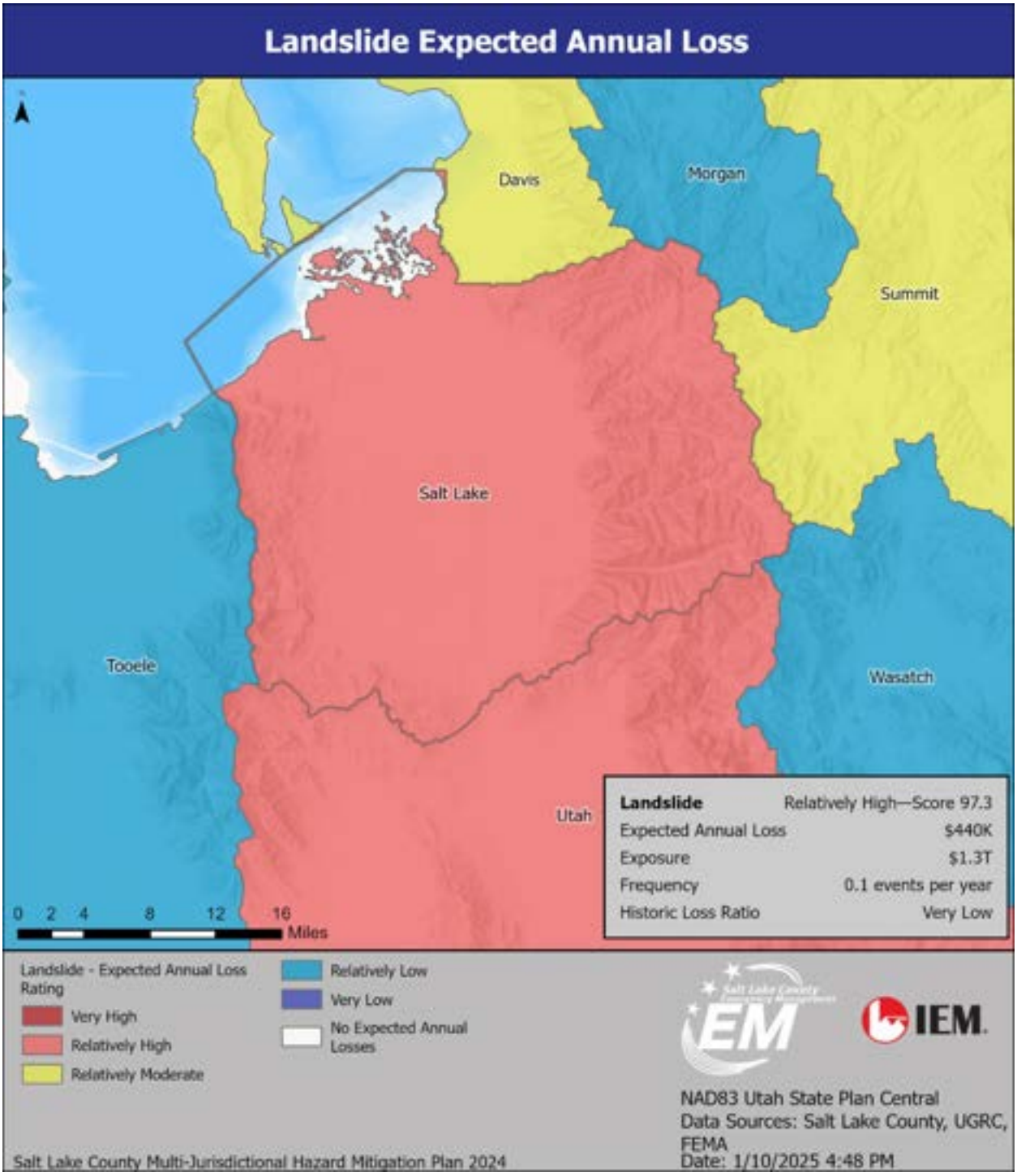


Figure 139: FEMA National Risk Index Salt Lake County Expected Annual Loss from Landslides[157]

[157] FEMA, National Risk Index. https://hazards.fema.gov/nri/map.

VULNERABLE POPULATIONS

All populations in the planning area located near identified hazard areas are at risk. Elderly residents or those with mobility limitations or other disabilities will likely have more difficulty evacuating from an imminent landslide.

COMMUNITY LIFELINES

Landslides can disrupt food, hydration, and shelter if a slide damages residences. Transportation, energy, water, and communications lifelines can also be impacted. These lifelines are of critical importance. In a disaster, communities may lose access to necessities, such as food, water, and shelter. Lifelines help ensure that these needs are met, and that people have the essential resources they need to survive. By providing access to medical care, public health services, and transportation, the lifelines help ensure that people receive the care they need and safely evacuate if necessary. In addition, the Hazardous Materials Lifeline helps to ensure that dangerous materials are managed safely, reducing future risk.

CHANGES IN DEVELOPMENT

Salt Lake County's development and population growth can have significant impacts on the hazard of landslides. Population growth may increase the amount of infrastructure that must be constructed on or near slopes prone to landslides, and this can destabilize the soil and increase the likelihood of landslides. Urbanization can also lead to changes in natural water drainage patterns, causing increased runoff and erosion—further destabilizing slopes and contributing to landslide occurrences. These increases in vulnerability are most prominent in the foothills of the Oquirrh Mountains to the west of Salt Lake County. Developments in western Herriman and South Jordan in these foothills add structures and infrastructure that could be damaged in landslides.

The population of Salt Lake County is predicted to grow over the next 30 years, reaching almost 5 million by 2050. This growth necessitates the development of key infrastructure elements guided by long-range planning. To address the challenges of population growth on housing availability, many communities have updated their plans and implemented the Wasatch Choice Vision (previously known as Wasatch Choices 2040 and Wasatch Choice 2050) in unique and meaningful ways, including coordinating the planning and location of land use, housing, transportation, economic development, and open space to increase the quality of life. These efforts may reduce the risk of landslide and slope failure and the county's future vulnerability in areas of new development.[158] However, risk remains where development has already occurred, and it is not always known where landslides may occur before development. Due to population growth and new construction, the overall vulnerability to landslide and slope failure has increased since the last plan update.

VULNERABILITY SCORE

To analyze the county's vulnerability to landslides, the NRI was used as a primary tool during the 2024 HIRA update. The NRI defines risk as the potential for negative impacts as a result of a natural hazard and determines a community's risk relative to other communities by examining the EAL and social

[158] Wasatch Choice Vision, 2024. https://wasatchchoice.org/.

vulnerability in a given community in relation to that community's resilience. Salt Lake County's NRI landslide risk rating is shown in Figure 140. Salt Lake County has a relatively high landslide risk and a risk score of 95.9.

DRAFT

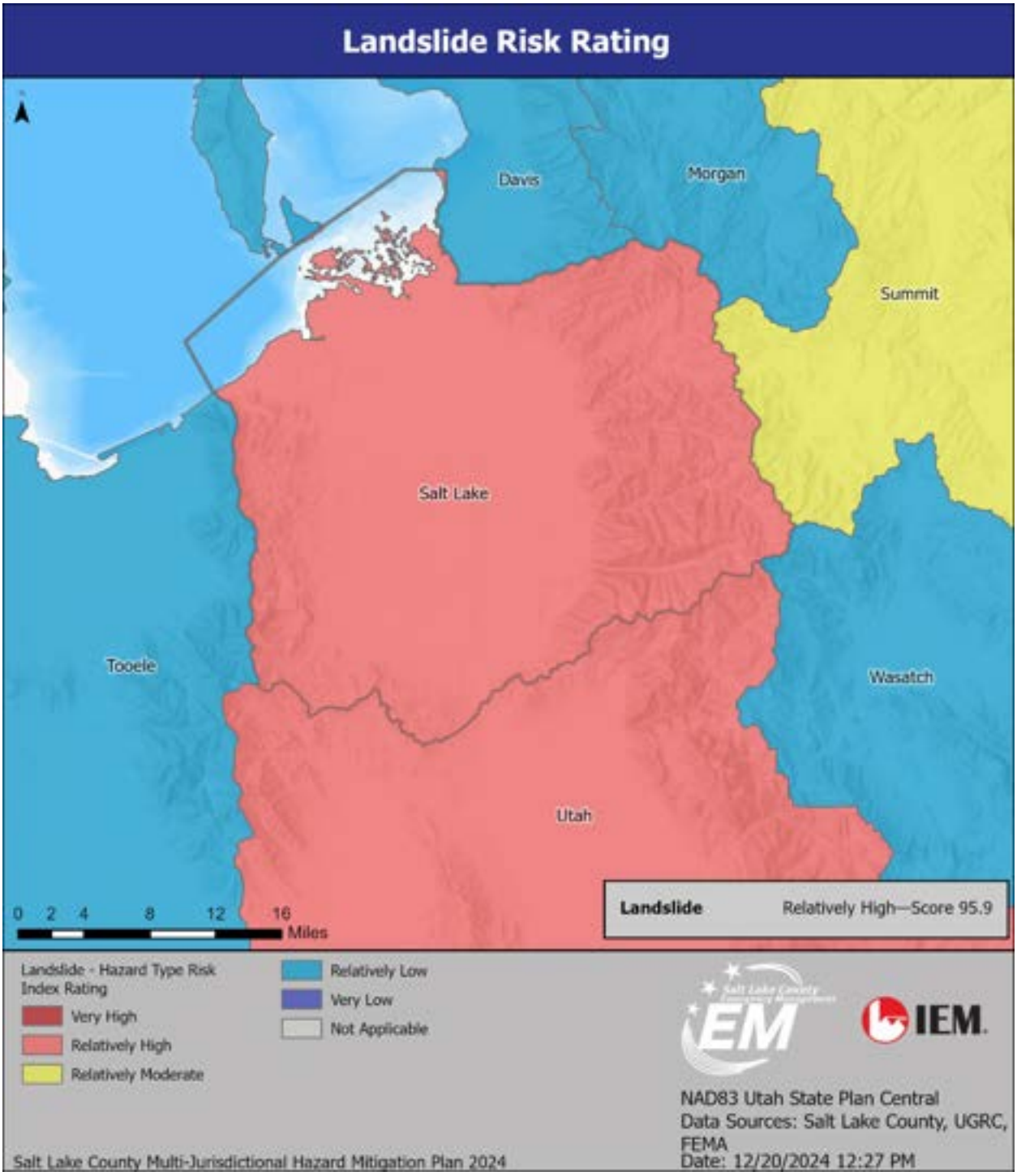


Figure 140: National Risk Index Landslide Risk Map and Score for Salt Lake County[159]

[159] FEMA, National Risk Index. "National Risk Index Salt Lake County Landslide Score, Map and Legend." https://hazards.fema.gov/nri/map.

Lightning

Hazard Description

Lightning is the discharge of atmospheric electricity from a thunderstorm. It can travel at speeds up to 140,000 mph and reach temperatures approaching 54,000 degrees Fahrenheit.[160] Lightning is often perceived as a minor hazard. According to NWS, lightning is a major cause of storm-related deaths in the United States. NWS Storm Data recorded an average of 43 reported lightning fatalities per year in the United States between 1989–2018.[161] In addition, lightning can produce damage to infrastructure and buildings.

Figure 141: Image of lightning[162]

Hazard Profile

Potential Impact		Catastrophic	**Probability**	X	Highly Likely
	X	Critical			Likely
		Limited			Occasional
		Negligible			Unlikely
Location	Can occur in areas throughout the county				
Seasonal Pattern	Year-round				
Conditions	Vary based on latitude, elevation, aspect and landforms				
Duration	Severe weather hazards generally last hours; some conditions can persist for days				

[160] International Association of Wildland Fire. “Advise on Lightning Safety and Firefighting.” https://www.iawfonline.org/article/advice-on-lightning-safety-and-firefighting-2/.
[161] National Weather Service (NWS). “How Dangerous Is Lightning?” https://www.weather.gov/safety/lightning-odds.
[162] https://pixabay.com/photos/summer-thunder-storm-lightning-storm-3465247/.

Potential Impact		Catastrophic	**Probability**	X	Highly Likely
	X	Critical			Likely
		Limited			Occasional
		Negligible			Unlikely
Secondary Hazards	Wildfire, power outage				
Analysis Used	National Climate Data Center, National Weather Service, Utah Avalanche Center, Utah Division of Emergency Management, local input, and review of historic events and scientific records				

Magnitude/Extent

Lightning can occur anywhere in the county. Although more common in the summer, lightning can strike at any time of year. Lightning strikes can cause severe injury or death in this area. Lightning routinely occurs without causing significant damage. However, in 1997, lightning resulted in $300,000 in property damage in Salt Lake County. Damage of this magnitude is considered rare and has not occurred since. Table 67 provides information on lightning activity levels (LALs).

Table 67: Lightning Activity Scale[163]

Level	Description
LAL 1	No thunderstorms.
LAL 2	Isolated thunderstorms. Light rain will occasionally reach the ground. Lightning is very infrequent, with 1 to 5 cloud-to-ground strikes in a 5-minute period.
LAL 3	Widely scattered thunderstorms. Light to moderate rain will reach the ground. Lightning is infrequent, with 6 to 10 cloud-to-ground strikes in a 5-minute period.
LAL 4	Scattered thunderstorms. Moderate rain is commonly produced. Lightning is frequent, with 11 to 15 cloud-to-ground strikes in a 5-minute period.
LAL 5	Numerous thunderstorms. Rainfall is moderate to heavy. Lightning is frequent and intense, with greater than 15 cloud-to-ground strikes in a 5-minute period.
LAL 6	Dry lightning (same as LAL 3 but without the rain). This type of lightning has the potential for extreme fire activity and is normally highlighted in fire weather forecasts with a Red Flag Warning.

Location

The entire region of Salt Lake County can be affected by lightning events. Utah ranks 31st in total lightning count and 39th in lightning density in the Vaisala 2024 Annual Lightning Report. Although the number of strikes is relatively low, lightning does occur regularly in the planning area.

[163] National Weather Service, "LALs (L)ightning (A)ctivity (L)evels Numbered 1 through 6." https://www.weather.gov/media/rnk/fire/LAL.pdf

Historical Events and Probability of Future Occurrences

Based on the FEMA Disaster Declarations Database, Salt Lake County has received no designation for lightning disaster declarations since the last plan update.

Lightning routinely strikes without causing significant damage, but 11 events recorded from 1996 to 2018 have caused significant damage, injury, or death. During this time span, NCEI[164] recorded 4 deaths, 10 injuries, and $351,200 in property damage. NCEI did not indicate any new events since the last plan update in 2019. It is certain that lightning events will continue to strike routinely in the county. Based on a recurrence interval of one significant event every two years, future probability is highly likely.

"On May 24, 2000, an 11-year-old girl was killed, and six other children were injured when lightning struck them as they were leaving Midvalley Elementary School in Midvale. The children were walking across the playground, heading for their bus, when the lightning struck. The victim was still alive as she was transferred to the hospital but died later from her injuries. One other child was hospitalized but recovered." The other children suffered minor injuries. Shortly afterward, also in Midvale, a 36-year-old man was injured by lightning as he left the shelter of his home for his car.[165]

On August 13, 1997, lightning struck a chimney and sparked a fire in the Aix La Chapelle Condominiums in Holladay. Several units received heavy fire damage, $300,000 in total.[166]

Climate Change Considerations

Climate change may influence the occurrence of lightning by altering atmospheric conditions. This may create favorable conditions for thunderstorms, which are accompanied by lightning. The increased frequency and intensity of thunderstorms due to higher temperatures could lead to more lightning events.

The 2024 State Enhanced Hazard Mitigation Plan[167] states that research related to climate change and impacts on severe weather in Utah present no clear indications about the impact of increased convective storm activity on the frequency of lightning.

Secondary Hazards

Lightning often occurs along with wind and heavy rain associated with thunderstorms. The most significant secondary hazards associated with these severe storms are falling and downed trees, downed power lines, and power outages.

According to the Edison Electric Institute, "70% of power outages in the U.S. are weather related."[168] Power outages usually last anywhere from a few minutes to a few hours. In some extreme cases, power

[164] NOAA, NCEI. Storm Events Database. "Salt Lake City." https://www.ncdc.noaa.gov/stormevents/eventdetails.jsp?id=5178474.
[165] Ibid.
[166] Ibid.
[167] Utah Enhanced State Mitigation Plan. 2024. https://hazards.utah.gov/state-of-utah-hazard-mitigation-plan/.
[168] Generator Source. "The Many Causes of Power Failure." https://www.generatorsource.com/Causes_of_Power_Failures.aspx.

outages have lasted a few days or even a few weeks. Thunderstorms increase the chance of lightning striking a vital part of a power grid. Rain may damage components vital for maintaining a functioning circuit.

Lightning can also ignite wildfires, particularly if vegetation is dried out due to drought or extreme heat. Utah experiences a monsoon season from July into September, during which seasonal wind and pressure changes cause warm, moist air to flow into Utah. Hot, unstable air rises and can cause thunderstorms along with lightning. Monsoon season coincides with wildfire season. Hot summer temperatures begin to dry out fuels which can easily be ignited by a lightning strike.

Vulnerability Assessment

Lightning strikes only impact a small area, but it is impossible to know where ahead of time. A large area is at risk of a lightning strike during every thunderstorm. If thunder can be heard, lightning is close enough to strike and shelter should be sought. Because it is impossible to know where lightning will strike, all people, structures, and infrastructure are considered vulnerable to lightning. All residents are at risk, but those who are recreating or working outdoors and those who are unhoused, face a higher likelihood of harm from lightning. All critical facilities, including all 218 county facilities, are also vulnerable to damage or disruption from lightning. Utilities, such as power and communications networks and transportation systems and road networks, also are vulnerable.

The 2024 State Enhanced Hazard Mitigation Plan states that lightning is one of the deadliest severe weather events in Utah, cumulatively killing more people than any other hazard and injuring roughly twice as many people as any other severe weather hazard.

ESTIMATED IMPACTS AND POTENTIAL LOSSES

The primary concern for lightning is risk of injury or death. Most injuries and deaths associated with lightning strikes occur when people are outdoors. This can affect outdoor workers, outdoor recreationists, or those without stable housing. However, almost one-third of lightning-related injuries occur indoors. Males are four times more likely than females to be struck by lightning, and the average age of a person struck by lightning is 37 years.[169]

Lightning can contribute to damage to power lines and other power infrastructure. Power outages can affect operations for emergency responders, medical facilities, and homes and businesses. Critical facilities may experience damage to electrical systems from power surges due to lightning. Lightning can also damage communications towers and antennas, which can disrupt signals and hinder the operations of government services, emergency responders, and businesses. Lightning can damage trees, and resulting debris may obstruct roadways.

[169] Center for Disease Control (CDC). “Lightning Strike Victim Data.” April 2024. https://www.cdc.gov/lightning/data-research/index.html.

The NRI includes data on the EALs to individual natural hazards, historical loss, and overall risk at a county and census tract level. Salt Lake County's NRI EAL value for lightning is $676K with a risk score of 92.0 and a rating of "relatively high" compared with the rest of the United States (Figure 142).

DRAFT

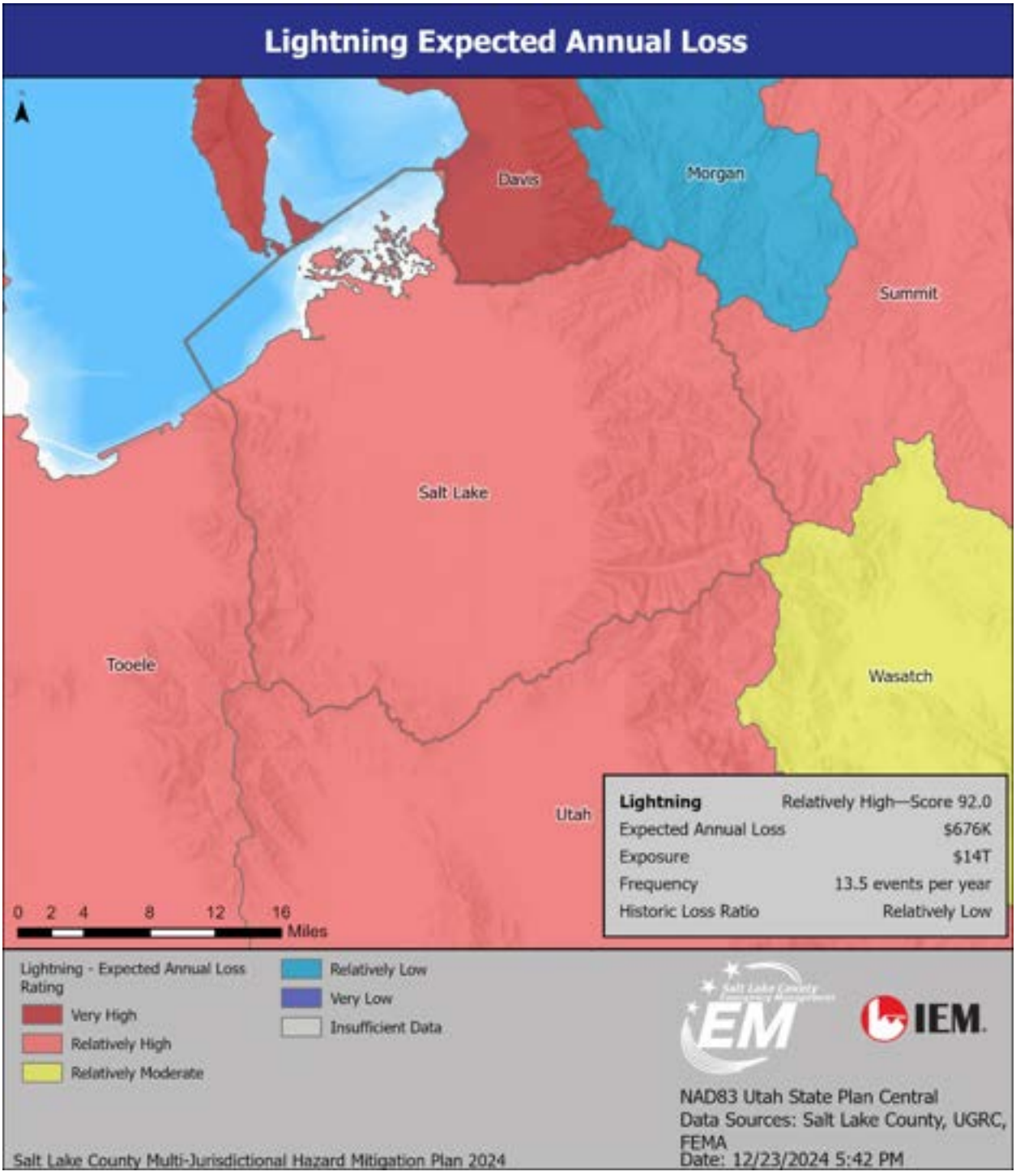


Figure 142: FEMA National Risk Index Salt Lake County Expected Annual Loss from Lightning[170]

[170] FEMA. National Risk Index. "Salt Lake County Expected Annual Loss Lightning Risk Score, Map and Legend." https://hazards.fema.gov/nri/map.

VULNERABLE POPULATIONS

Besides outdoor workers and other people without shelter during a storm, individuals with disabilities may face challenges seeking shelter during storms, and the elderly may require additional support and assistance during and after the storm.

COMMUNITY LIFELINES

Lightning can impact several FEMA Community Lifelines. Safety and Security may be compromised due to potential injury from lightning and disruption to emergency response in the case of power outages. Health and Medical services also may be affected by power outages, which can disrupt medical facilities and individuals reliant on electricity-powered medical equipment. Lightning also can disrupt the Energy lifeline by contributing to power outages, which impacts services for residents and businesses. The Communications lifeline can be affected by lightning producing damage to infrastructure, including 911, dispatch, and responder communications abilities.[171]

CHANGES IN DEVELOPMENT

Salt Lake County's development and population growth can have significant impacts on the hazard of lightning. Urbanization can lead to the construction of taller structures, increase population density, and concentrate infrastructure, attracting lightning and increasing the potential for damage and injury from lightning strikes. Larger cities that are continuing to develop, like West Valley City and West Jordan, are starting to build taller structures that are at higher risk from lightning strikes. Increased outdoor activities and recreational areas due to population growth can also lead to higher exposure to the hazard of lightning.

Potential impacts from an increase in vulnerability to lightning could cause loss of life/property and power failure from increase in severe storms related to climate change. Increased population patterns may lead to more people recreating outdoors, thus increasing vulnerability to lightning strikes. Overall vulnerability to lightning has remained the same since the last plan update.

VULNERABILITY SCORE

To analyze the county's vulnerability to severe weather, the NRI was used as a primary tool during the 2024 HIRA update. The NRI defines risk as the potential for negative impacts because of a natural hazard and determines a community's risk relative to other communities by examining the EAL and social vulnerability in a given community in relation to that community's resilience. Salt Lake County's NRI lightning wave risk rating is shown in Figure 143. Salt Lake County has relatively high lightning risk, and a risk score of 90.3.

[171] FEMA. "Community Lifelines Implementation Toolkit," Version 2.0. November 2019. https://www.fema.gov/sites/default/files/2020-05/CommunityLifelinesToolkit2.0v2.pdfv.

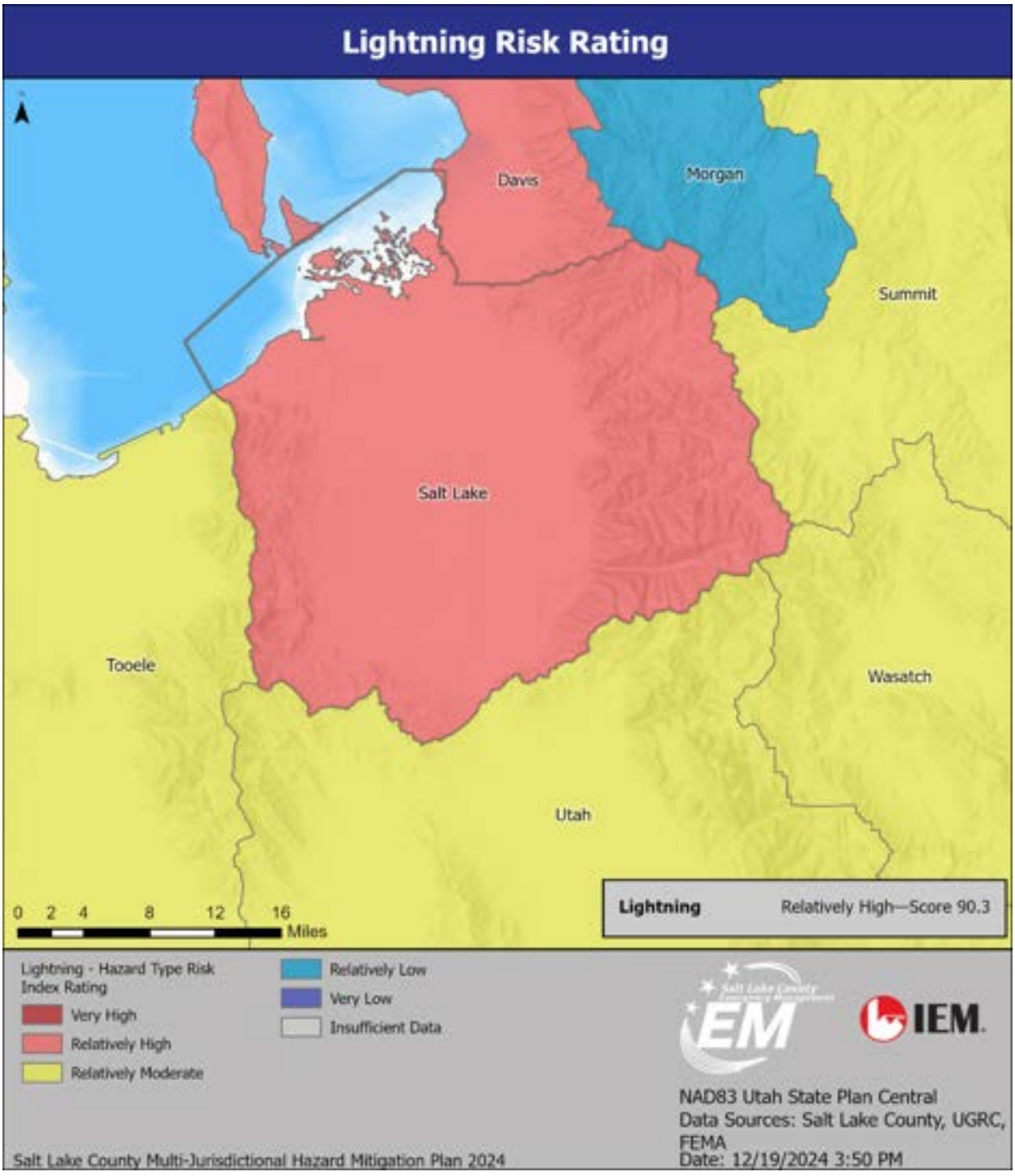


Figure 143: National Risk Index Lightning Risk Map, Legend, and Score for Salt Lake County[172]

[172] FEMA, National Risk Index. "Salt Lake County Lightning Score, Map and Legend." https://hazards.fema.gov/nri/map.

Public Health/Epidemic/Pandemic

Hazard Description

An epidemic is a sudden increase in disease cases above what is typically expected in a specific geographic area. It often occurs in a community or region and can spread quickly among the population.

Figure 144: Testing During the COVID-19 Pandemic[173]

A pandemic is an epidemic that has spread over multiple countries or continents, affecting many people. It typically involves a new infectious agent against which the population has little or no immunity, leading to widespread transmission.

Based on their characteristics and ability to spread, the following human diseases could also contribute to a severe epidemic or pandemic and should be noted:

- Methicillin-resistant staphylococcus
- West Nile virus
- H1N1 influenza
- Severe acute respiratory syndrome
- Measles
- Hepatitis
- Tuberculosis
- E. coli
- Lyme disease

[173] https://unsplash.com/photos/people-standing-near-white-table-during-daytime-zRGqHTHP-HQ.

- Hantavirus
- Leptospirosis
- COVID-19

Hazard Profile

Potential Impact	X	Catastrophic	**Probability**		Highly Likely
		Critical		X	Likely
		Limited			Occasional
		Negligible			Unlikely
Location	The entire county could be affected. Higher-density areas may be more vulnerable.				
Seasonal Pattern	Some are seasonal, such as West Nile Virus in warmer months, while others may occur year-round.				
Conditions	Disease may spread faster in areas where people congregate. Some populations may be more susceptible or experience more severe consequences.				
Duration	Outbreak can last weeks, months, or years.				
Secondary Hazards	Supply chain interruption and/or shortages and economic losses; healthcare systems and supplies may be overwhelmed.				
Analysis Used	Review of historic events, hazard analysis plans, local input, and other information provided by the Utah Division of Emergency Management				

Magnitude/Extent

The potential magnitude of pandemics or epidemics in Salt Lake County can vary widely depending on the disease's transmissibility, population density, and public health measures in place. In mild cases, effective interventions and vaccination could limit the impact on a few hundred manageable cases. However, a moderate outbreak might lead to thousands of infections, strain healthcare services, and increase morbidity. In severe scenarios, a highly transmissible and lethal pathogen could overwhelm the healthcare system, resulting in tens of thousands of cases and significant fatalities, prompting quarantines and long-term economic disruptions. Beyond immediate health impacts, such events can have lasting effects on mental health, job stability, and access to healthcare, highlighting the importance of preparedness and community cooperation in addressing public health crises.

The Pandemic Severity Index (PSI) measures the severity of pandemics and their potential global health impact, focusing primarily on influenza. It assesses diseases based on factors like the severity of illness caused, the transmissibility of the virus, and the impact on healthcare systems.

DRAFT

	Pandemic Severity Index		
Interventions by Setting	**1**	**2 and 3**	**4 and 5**
Home			
Voluntary isolation of ill at home (adults and children); combine with use of antiviral treatment as available and indicated	Recommend	Recommend	Recommend
Voluntary quarantine of household members in homes with ill persons (adults and children); consider combining with antiviral prophylaxis if effective, feasible, and quantities sufficient	Generally not recommended	Consider	Recommend
School			
Child social distancing –dismissal of students from schools and school-based activities, and closure of child care programs	Generally not recommended	Consider: ≤ 4 weeks	Recommend: ≤ 12 weeks
–reduce out-of-school contacts and community mixing	Generally not recommended	Consider: ≤ 4 weeks	Recommend: ≤ 12 weeks
Workplace/Community **Adult social distancing**			
–decrease number of social contacts (e.g., encourage teleconferences, alternatives to face-to-face meetings)	Generally not recommended	Consider	Recommend
–increase distance between persons (e.g., reduce density in public transit, workplace)	Generally not recommended	Consider	Recommend
–modify, postpone, or cancel selected public gatherings to promote social distance (e.g., stadium events, theater performances)	Generally not recommended	Consider	Recommend
–modify workplace schedules and practices (e.g., telework, staggered shifts)	Generally not recommended	Consider	Recommend

Figure 145: Pandemic Severity Index

Location

Epidemics and pandemics can emerge in various locations, often influenced by several factors that affect susceptibility. In Utah, specific locations may be more susceptible to epidemics and pandemics due to population density, travel patterns, and healthcare access. Urban centers, such as Salt Lake City, Provo, and Ogden have higher population densities, making them more vulnerable to the rapid spread of infectious diseases, especially during crowded events. College campuses, such as the University of Utah and Salt Lake Community College, can also be hotspots for outbreaks due to the concentration of students in communal living spaces. In addition, popular tourist areas, such as Park City and Zion National Park, face increased risks from visitors who may introduce various pathogens. Regions with fewer healthcare facilities may struggle to manage outbreaks effectively, while rural areas, despite lower population densities, could face challenges due to limited access to medical resources. Lastly, transportation hubs near significant highways or airports can facilitate individual interactions, increasing the risk of disease transmission.

Historical Events and Probability of Future Occurrences

Table 68 provides information on historical health outbreaks in Utah.[174]

Table 68: Historical Health Incidents, Utah

Disease	Date	Deaths/Cases	Etiology
Diphtheria	1880	749 deaths	*Corynebacterium diphtheriae*; poor hygiene practices
Spanish Flu[175]	1918	2915 deaths	H1N1 virus with genes of avian origin
Rheumatic Fever	1985–1986	136 cases	Streptococcus bacteria; untreated strep throat
Hantavirus	1993–2017	38 cases	Infected rodents
West Nile Virus[176]	1999–2023	497 cases	Mosquitos
Measles	2011	13 cases	Morbillivirus
Hepatitis C	2013	4800 potentially exposed, seven infected	Exposure to blood from unsafe injection practices; unsafe healthcare; unscreened blood transfusions; injection drug use; sexual practices that lead to exposure to blood
Hepatitis A	2018	295 cases, two deaths	Ingestion of food or water contaminated by an infected person's feces

[174] DeBry, Robert J. & Associates. "7 Serious Disease Outbreaks in Utah History." KSL.com. March 19, 2020. https://www.ksl.com/article/46727920/7-serious-disease-outbreaks-in-utah-history.
[175] Fields, Lauren. "The 1918 Spanish Flu Killed 50 Million People Worldwide. Here's How it Affected Utah." Deseret News. December 22, 2018. https://www.deseret.com/2018/12/23/20661936/1918-flu-utah-spanish-influenza-pandemic/.
[176] Centers for Disease Control and Prevention. "West Nile Virus." https://www.cdc.gov/west-nile-virus/data-maps/historic-data.html.

Disease	Date	Deaths/Cases	Etiology
COVID-19[177]	2020–2022	1,090,346 cases, 5,293 deaths	Exposure to coronavirus2, also called SARS-CoV-2

Salt Lake County Specific: Like many other US cities during the late 19th and early 20th centuries, Salt Lake City was a hotbed for **typhoid**. People hunted, camped, picnicked, and polluted near the seven mountain streams that provided the city with most of its water. Sheep and cattle grazed near the watershed, barnyards were built near water sources, and flies had easy access to the open privies and manure piles.

Typhoid was also quickly passed by finger contamination when an ill person or even a recovered victim handled food and did not wash his or her hands carefully after using the restroom. In 1923, a Salt Lake City woman working in a delicatessen was ill with what was later diagnosed as “walking typhoid.” She had diarrhea and was getting weaker, but she did not want to leave her boss shorthanded; she also needed the money. She stayed on the job, serving food between her frequent trips to the lavatory and her less frequent or thorough handwashing. One day, four adults and two young people came into town from their westside farm to see a double feature at a movie theater. Afterward, they visited the delicatessen and bought some food to take home for their evening meal. The young people left on dates while the adults shared the deli food. The four adults came down with typhoid, and two died.

Some 188 cases of typhoid (13 deaths) were traced to the woman carrier, but no one knows for sure how many people contracted the disease, took it home, possibly to another state, and spread it even further. The problem was compounded by the fact that a drugstore near Salt Lake City’s tourist district bought food from the delicatessen and served it to countless people. Eventually, the deli was tracked down as the outbreak’s source and quarantined. Reports of typhoid soon subsided.

Before 1900, doctors had seen more typhoid fever than any other disease and treated it in various ways. Some felt it was best to starve the patient; others felt hot water was the cure. Salt Lake City Cemetery records from 1850 to 1894 record 924 deaths due to typhoid, but the actual number was probably higher. Many deaths among typhoid-prone adolescents and young adults who died in the summer and fall when typhoid is most common were attributed to “diarrhea” or “fever.” Many people recognized the connection between typhoid and contaminated food and drink, but little action was taken until health boards were established. Even then, educating the public to take simple precautions was difficult.

When the housefly was implicated as a typhoid carrier in the late 19th century, Dr. Theodore B. Beatty, state health commissioner, began a crusade against the pest. He distributed literature, gave talks and demonstrations at schools, and helped make “Swat the Fly” a standard greeting. A contest offered prizes to whoever killed the most flies. The winner brought in 707 quarts of dead flies, an estimated 9.5 million, and received the $1,000 prize donated by a Salt Lake City businessman; in one year, Utahns captured

[177] Johns Hopkins University and Medicine. “Coronavirus Resource Center.” https://coronavirus.jhu.edu/region/us/utah.

3,715 quarts of flies. The fly menace was lessened, but real progress was made when attention gradually turned to eradicating their breeding grounds.

Following the example of some eastern cities, Salt Lake City instituted a water chlorination program in 1915. It gradually expanded until 1927, when daily testing of chlorinated water was done at all city water intake points. Reactions to chlorination varied. Mothers worried when they could not taste the chlorine, fearing that the water they gave their children was unsafe. Others said chlorine made the water unpalatable and killed their goldfish. During the prohibition era, some complained that it ruined the taste of their home brew and bathtub gin.

Gradually, with increasing use of sanitary methods—improved sewer systems, purer water, and laws regulating the handling and dispensing of foods—plus the use of a vaccine discovered by Almoth Wright of London in 1906–1907, typhoid was controlled.[178]

The **1918 influenza outbreak**, known as the Spanish Flu, significantly impacted communities worldwide, including Salt Lake City. The pandemic, which emerged in the final stages of World War I, reached Salt Lake City in the autumn of 1918 when the region was still recovering from the war.

The first cases were reported in late September, and by October, the virus had spread rapidly, particularly affecting healthy young adults. Influenza often led to pneumonia, resulting in high mortality rates due to the limited medical resources of the time.

Local health officials launched a public health campaign promoting mask-wearing, social distancing, and gathering restrictions. Schools and theaters closed, and strict quarantine measures were implemented. Despite these efforts, the city faced thousands of cases and over 500 deaths, overwhelming the healthcare system.

The pandemic also caused economic disruption as businesses and schools closed and communities united to support one another. As the outbreak waned in early 1919, Salt Lake City reflected on the importance of public health preparedness and effective communication.

The legacy of the 1918 influenza outbreak remains a poignant reminder of community resilience in the face of public health challenges.[179]

In 1985, Salt Lake County faced an outbreak of acute rheumatic fever (ARF), a serious condition stemming from untreated streptococcal throat infections that notably affected children and adolescents. The 99 verified cases were in 20 of Utah's 29 counties; the most significant outbreaks occurred in Salt Lake County and Utah County. ARF can lead to severe complications, including rheumatic heart disease, emphasizing the need for early diagnosis and treatment of strep throat.

[178] Murphy, Miriam B. "Salt Lake City Had Its Typhoid Mary." History to Go, History Blazer. April 1996. https://historytogo.utah.gov/typhoid-mary/.
[179] University of Michigan Center for the History of Medicine and Michigan Publishing, University of Michigan Library. "Influenza Encyclopedia: Salt Lake City, UT." https://www.influenzaarchive.org/cities/city-saltlakecity.html.

Local health officials, schools, and healthcare providers collaborated to identify cases and educate the community about the symptoms of strep throat and the importance of antibiotic treatment to prevent ARF. This outbreak highlighted the necessity of monitoring communicable diseases and ensuring proper healthcare access to prevent serious complications associated with bacterial infections. As a result, measures were reinforced to guarantee that children received appropriate medical attention for throat infections.[180]

Beginning in late 2016, communities across the United States reported a significant increase in **hepatitis A** infections, with over 22,000 cases documented nationwide by July 2019. Although some areas continue to face this outbreak, Utah officially declared its outbreak over in February 2019 after nearly 300 cases had been recorded. This success was primarily attributed to innovative strategies implemented by the Salt Lake County Health Department (SLCo HD). Of the cases in Utah, about 200 were reported in Salt Lake County, primarily among individuals experiencing homelessness or using illicit drugs, which complicated efforts to provide treatment.[181]

The first case of COVID-19 in Utah was documented in early March 2020. By November 2023, Salt Lake County had experienced 419,514 confirmed cases, 18,930 hospitalizations, and 1,909 deaths during the pandemic.[182] COVID-19 demonstrated how disease outbreaks can evolve rapidly and have wide-ranging public health impacts, disrupt supply chains, and contribute to economic losses.

Several interrelated factors shape the probability of future occurrences of epidemics and pandemics. Globalization and increased travel enable the rapid spread of disease across borders, while urbanization creates densely populated environments where infections can thrive. Climate change also plays a role, as shifting climates may expand the habitats of vectors like mosquitoes, potentially increasing diseases, such as malaria and dengue fever. In addition, zoonotic diseases—those that jump from animals to humans—become more likely as humans encroach on wildlife habitats. Antimicrobial resistance further complicates matters, making infections more challenging to treat and control. The strength of public health infrastructure is crucial, as more robust systems can effectively contain outbreaks. With these various elements at play, the risk of future epidemics and pandemics remains significant, highlighting the need for proactive global health measures and improved surveillance to mitigate potential threats.

Figure 146 displays a list of priority pathogens that could cause the next pandemic. The list was compiled by more than 200 scientists from 50 countries. Although these pathogens may not currently be active in the United States, they could emerge or reemerge due to various modes of travel and transportation.

[180] Centers for Disease Control and Prevention. 1987. “Acute Rheumatic Fever – Utah.” *MMWR*. 36(8);108–10,115. https://www.cdc.gov/Mmwr/preview/mmwrhtml/00000880.htm.
[181] Shapiro, Michelle. “Field Notes: Salt Lake County Stops Hepatitis A Outbreak.” National Association of County & City Health Officials. September 30, 2019. https://www.naccho.org/blog/articles/field-notes-salt-lake-county-stops-hepatitis-a-outbreak.
[182] Utah Coronavirus Dashboard. https://coronavirus-dashboard.utah.gov/overview.html.

Figure 146: Emerging or Reemerging Priority Pathogens[183]

Climate Change Considerations

Climate change significantly influences the incidence of pandemics and epidemics through various interconnected ways. As climate shifts alter habitats, humans come into closer contact with wildlife, increasing the risk of zoonotic diseases. Higher temperatures and changing precipitation patterns expand the ranges of disease-carrying vectors like mosquitoes and ticks, introducing new diseases to vulnerable populations. Furthermore, climate-induced migration from rural to urban areas often results in crowded living conditions where infections can spread quickly. Extreme weather events disrupt public health infrastructure, exacerbating disease transmission, while food insecurity linked to climate change can heighten susceptibility to infections. These factors create an environment where infectious diseases can emerge and spread more readily, highlighting the urgent need for integrated public health strategies considering climate impacts.

Secondary Hazards

Epidemics and pandemics often generate a range of secondary hazards that can exacerbate the initial health crisis. One significant issue is the impact on mental health, as individuals may experience increased anxiety, depression, and stress due to isolation and fear of the disease. Economic disruption is another primary concern; job losses and business closures can lead to heightened poverty and financial instability. Healthcare systems can become overwhelmed, resulting in diminished care quality for infected individuals and those with other medical needs. Supply chain disruptions may cause shortages of essential items, while social unrest can arise from economic hardship and misinformation. Vulnerable populations often face more significant risks during these times, experiencing heightened challenges in access to healthcare and essential resources. In addition, environmental concerns may arise from inadequate waste management practices, and educational disruptions can hinder children's development, particularly in low-income families. All these secondary hazards were evident during the recent COVID-19 pandemic. The combination of these secondary hazards underscores the interconnectedness of public health crises and highlights the need for comprehensive strategies to mitigate their far-reaching impacts.

Vulnerability Assessment

In Salt Lake County, certain areas and populations are particularly vulnerable to public health outbreaks and epidemics. Low-income communities often face limited access to healthcare, preventive services, and health education, making them more susceptible. Housing conditions, especially in crowded areas, can facilitate the spread of infectious diseases due to increased close contact among residents. High population density, particularly in urban centers like downtown Salt Lake City, further contributes to this risk. In addition, the elderly, who might have compromised immune systems, and children in schools—frequent sites for outbreaks—are at increased risk. Uninsured or underinsured individuals may delay seeking medical help due to financial constraints, exacerbating their vulnerability. Furthermore, specific

[183] Sarukhan, Adelaida. "A New List of Priority Pathogens that Could Cause the Next Pandemic." IS Global Barcelona Institute for Global Health. August 29, 2024. https://www.isglobal.org/en/healthisglobal/-/custom-blog-portlet/a-new-list-of-priority-pathogens-that-could-cause-the-next-pandemic.

ethnic and racial groups may experience disparities in health access, while individuals with preexisting health conditions face higher susceptibility to severe outcomes during health crises.

ESTIMATED IMPACTS AND POTENTIAL LOSSES

In the event of an epidemic or pandemic, Salt Lake County could face significant challenges impacting public health, the economy, and social structures. Healthcare facilities might become overwhelmed, leading to shortages of critical resources, such as beds and medical equipment, which could increase morbidity and mortality rates. Economically, local businesses—especially in hospitality, retail, and services—could suffer considerable losses due to forced closures and reduced customer traffic, resulting in higher unemployment rates. The education sector might also be affected, with school closures disrupting learning and exacerbating disparities between high- and low-income families. Mental health issues could arise as individuals deal with the stress and anxiety associated with illness and financial strain. In addition, demand for social services might increase, stretching resources and support systems thin. Public transportation could see reduced ridership, complicating access to essential services, while public safety resources might be tasked with enforcing public health measures. Overall, the multifaceted impacts of an epidemic or pandemic could create lasting challenges for the community.

VULNERABLE POPULATIONS

In Salt Lake County, certain populations are particularly vulnerable during public health outbreaks. Children are at higher risk due to their developing immune systems and close interactions in schools and childcare settings. The elderly also face significant threats, as age often correlates with increased severity of illness. Individuals with chronic health conditions, such as diabetes, heart disease, or respiratory ailments, are more susceptible to complications from infections. Low-income communities may struggle with limited access to healthcare, nutritious food, and stable housing, further increasing their risk. In addition, people with compromised immune systems, including those undergoing medical treatments, are at increased danger. Those experiencing homelessness often lack proper hygiene and healthcare access, increasing their vulnerability. Minority communities may also face unique cultural and socioeconomic challenges that impact their health during outbreaks. Lastly, while essential for response efforts, healthcare workers face a heightened risk of exposure due to their front-line roles.

COMMUNITY LIFELINES

In Salt Lake County, various FEMA community lifelines could be significantly impacted by an epidemic or pandemic. The Safety and Security lifeline may face strain as public health concerns limit the capacity of law enforcement and emergency services, impacting their response to other emergencies. The Health and Medical lifeline is directly affected as healthcare systems become overwhelmed with increased patient loads, shortages of medical supplies, and healthcare worker fatigue. The Food, Hydration, and Shelter lifeline may experience disruptions in supply chains, leading to food shortages and challenges in providing clean water. The Energy lifeline could also suffer from workforce shortages in the energy sector, affecting power supplies. Communication become crucial as the need for accurate public health information increases, putting pressure on communication systems to counter misinformation. The Transportation lifeline may be disrupted by travel restrictions, complicating logistics for healthcare and

DRAFT

essential services. Lastly, due to the need for proper disposal of medical waste and personal protective equipment (PPE), the functioning of the Hazardous Waste Community Lifeline becomes a concern.

CHANGES IN DEVELOPMENT

Epidemics and pandemics can significantly shape Salt Lake County development trends through various channels. For instance, public health crises often prompt increased funding for healthcare infrastructure, leading to facility enhancements and better emergency preparedness. This, in turn, influences urban planning and resource allocation. Economically, such events can disrupt local businesses, particularly in sectors like tourism, resulting in shifts in real estate development and job markets. Changes in population dynamics may occur as people relocate for better opportunities or living conditions, further impacting housing and urban growth. In addition, the rise of remote learning during health crises can drive investments in technology infrastructure in educational institutions. As communities reassess transport needs, there might be a shift toward sustainable mobility solutions. Greater emphasis may be placed on mental health and community support services, affecting funding for related facilities and public spaces.

Epidemics and pandemics can significantly reshape land use development by prioritizing public health and community resilience. For instance, an increased demand for open spaces may prompt cities to improve parks and recreational areas, promoting social distancing and overall well-being. In addition, the rise in remote work could lead to a decline in traditional office spaces, encouraging developers to repurpose commercial properties for residential or collaborative work environments. There may also be a surge in the construction of healthcare facilities, with zoning regulations adjusted to support this need. Communities might focus on mixed-use developments to create vibrant neighborhoods that minimize commuting and encourage local living. Furthermore, urban planning could incorporate sustainable practices and infrastructure to withstand future health crises better. These changes aim to foster healthier, more adaptable communities that can effectively respond to emerging public health challenges.

In addition, a pandemic or epidemic can significantly reshape future land development by introducing various challenges and shifts in priorities. Economic slowdowns often accompany such crises, leading to reduced investment in real estate and delayed projects due to financial uncertainty. Public health concerns can also prompt governments to implement new regulations that alter zoning laws. Developers might favor locations that minimize reliance on crowded infrastructure as commuting patterns evolve. Moreover, the construction industry could face supply chain disruptions, increasing project costs and timelines.

Salt Lake County’s development and population growth can have significant impacts on public health especially pandemics and epidemics as increased population density can facilitate the spread of infectious disease as people are more likely to come into contact with each other. Urbanization is especially problematic where healthcare resources may be stretched to its limits especially in the context of pandemics. Population growth might also have an impact on public health as the influx of population may strain public health services.

Salt Lake County plans several future land development initiatives to accommodate its growing population and enhance community well-being. Key projects include transit-oriented developments

DRAFT

encouraging public transportation by creating mixed-use spaces near transit hubs. In addition, there is a strong focus on affordable housing initiatives to tackle the housing crisis through partnerships with developers. The county is also investing in expanding parks and recreational facilities to improve the quality of life for residents. Urban renewal projects are in place to revitalize targeted neighborhoods, while sustainable development practices are being integrated into new projects. Furthermore, transportation improvements and designated economic development zones aim to enhance infrastructure and attract businesses, fostering job creation in the region. For the latest updates, consulting the Salt Lake County planning department or local government resources is advisable.

VULNERABILITY SCORE

Given Salt Lake County's moderate social vulnerability, high EAL, and high community resilience to overall hazards, its vulnerability to an epidemic or pandemic may still be significant.[184] Although the high community resilience can help in the aftermath of a public health crisis, the high EAL indicates that the potential impact of an infectious disease outbreak is substantial. In addition, the moderate social vulnerability suggests that there are underlying factors that could exacerbate the impact of a public health crisis.

DRAFT

[184] FEMA. "National Risk Index." https://hazards.fema.gov/nri/map.

Radon

Hazard Description

Radon is a radioactive gas released from the nuclear decay process of uranium and radium, which are trace elements of many soils. Small particles of uranium in rocks and soil decay into radium, which, breaks down further into radon. Alpha, beta, and gamma radiation are emitted. Radon is odorless, colorless, and tasteless. As it moves up through the ground, radon can enter a home through cracks and gaps in walls and floors, cavities inside walls, and gaps around service pipes and water supply connections. Though relatively harmless at low levels, radon is classified by the EPA as a known human carcinogen and is considered the leading cause of non-smoking lung cancer in the United States. Small radioactive particles are inhaled and become lodged in the lungs, damaging DNA. Because radon is tasteless, odorless, and invisible, it presents unique challenges in minimizing daily exposure to this naturally occurring radiation.

Figure 147: Image of How Radon Enters Homes[185]

Nearly 18,000 deaths in the United States each year are caused by radon gas, according to the Huntsman Cancer Institute and other cancer centers. Since 2005, the Office of the Surgeon General has warned the public of the dangers of radon, especially its cancer-causing abilities. Radon can be detected through an inexpensive test and can be mitigated through proper ventilation of excessive radon and installation of systems to prevent radon from entering the home. Thirty-three percent of Utah homes have

[185] https://www.epa.gov/system/files/styles/huge/private/images/2021-10/how-radon-enters-home.jpg?itok=yhnoFgEF. Radon Media Resources for Partners and Stakeholders | US EPA indicates these infographics are available to use for public education.

dangerously high levels of radon. Radon is the leading cause of lung cancer in nonsmokers. Smokers living in high radon homes have nine times the risk of lung cancer.[186]

Utah also has high levels of uranium, the source of radon, in the ground, leading to high levels of gas in the state. Found in most Utah homes, radon can enter a home through cracks and gaps in walls and floors if not properly vented. In fact, 21,000 Americans and an estimated 200–300 Utahns die annually from radon-induced lung cancer.[187]

The danger of high exposure to radon in mines was known back in the 1500s, yet the presence of radon in indoor air was not documented until 1950. In 1970, research was initiated to address sources of indoor radon, determinants of concentration, health effects, and approaches to mitigation. A widely publicized incident in Salt Lake County escalated the problem of indoor radon in 1984, and investigation intensified, with the EPA taking a strong lead to educate states through its State Indoor Radon Grant.

EPA's grant has been partially funding the Indoor Radon Program at the Utah Division of Radiation Control (DRC), which enables the DRC to respond to a continuous stream of public telephone and email inquiries, provide education to homeowners and professionals, conduct "target area" indoor radon assistance and surveys, and offer individualized assistance to homeowners and public agencies concerning all aspects of the indoor radon hazard problem. The DRC's primary goal is to ensure that radiation exposure to individuals is kept to the lowest practical level. A vital mechanism in reducing radiation exposure and potentially saving lives is the Indoor Radon Program. Radiation risk to the American public from radon gas is undisputed. Radon is the leading environmental cause of cancer mortality in the United States and the seventh leading cause of cancer mortality overall. The Harvard School of Public Health in the Center for Risk Analysis has ranked radon as the highest of ten risks of death in homes in the United States, ahead of falls and home fires. Radon awareness in Utah has grown steadily in the past decade.

Hazard Profile

Potential Impact		Catastrophic	**Probability**	X	Highly Likely
		Critical			Likely
	X	Limited			Occasional
		Negligible			Unlikely
Location	Region wide				
Seasonal Conditions	Year-round, continuous				
Conditions	Buildings over top of soils containing high amounts of decaying uranium, which is commonly found in Utah				
Duration	Years				
Secondary Hazards	Unknown				
Analysis Used	Information and maps provided by the Utah Geological Survey and the Utah Division of Radiation Control				

[186] UtahRadon.org. "Working to Protect Utahns from the Dangers of Radon." 2024. https://utahradon.org/.
[187] Ibid.

Magnitude/Extent

Radiation is measured in curies. A curie is a rate of disintegration of 1 gram of radium. Radon is measured in picocuries per liter, shown as pCi/L. The 2019 Utah State Hazard Mitigation Plan maps the counties in the state according to radon, pCi/L, which shows the range of magnitude that can be found in the county (Figure 148).

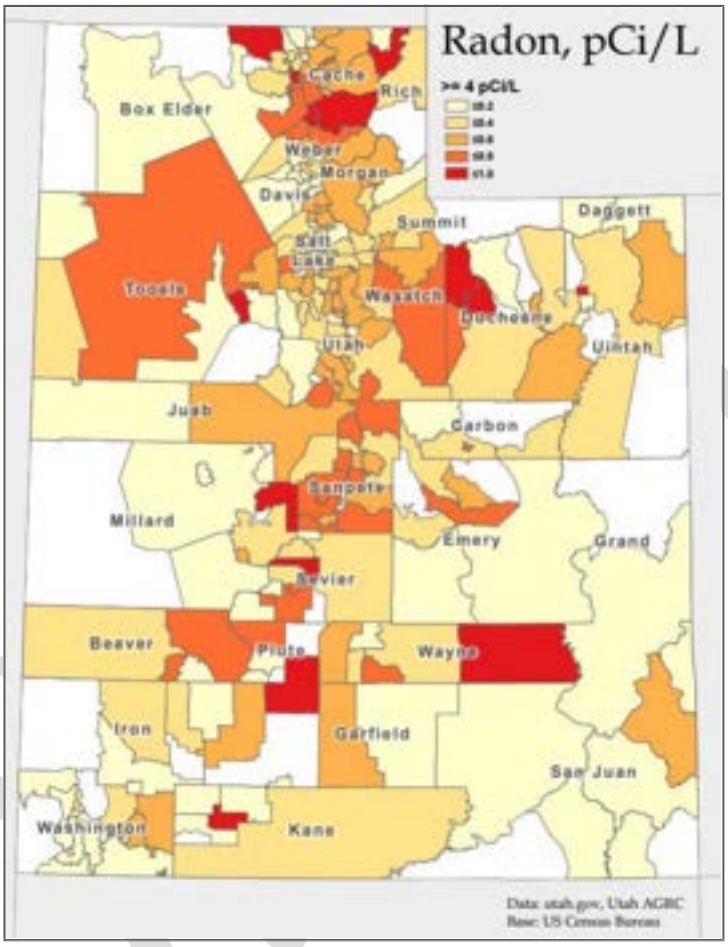


Figure 148: Radon, pCi/L Range of Magnitude by County in Utah

The 2024 Utah State Enhanced Hazard Mitigation Plan maps the counties in the state according to radon geological hazard significance ranking in LHMPs. Salt Lake County hazard ranking for radon is moderate (Figure 149).

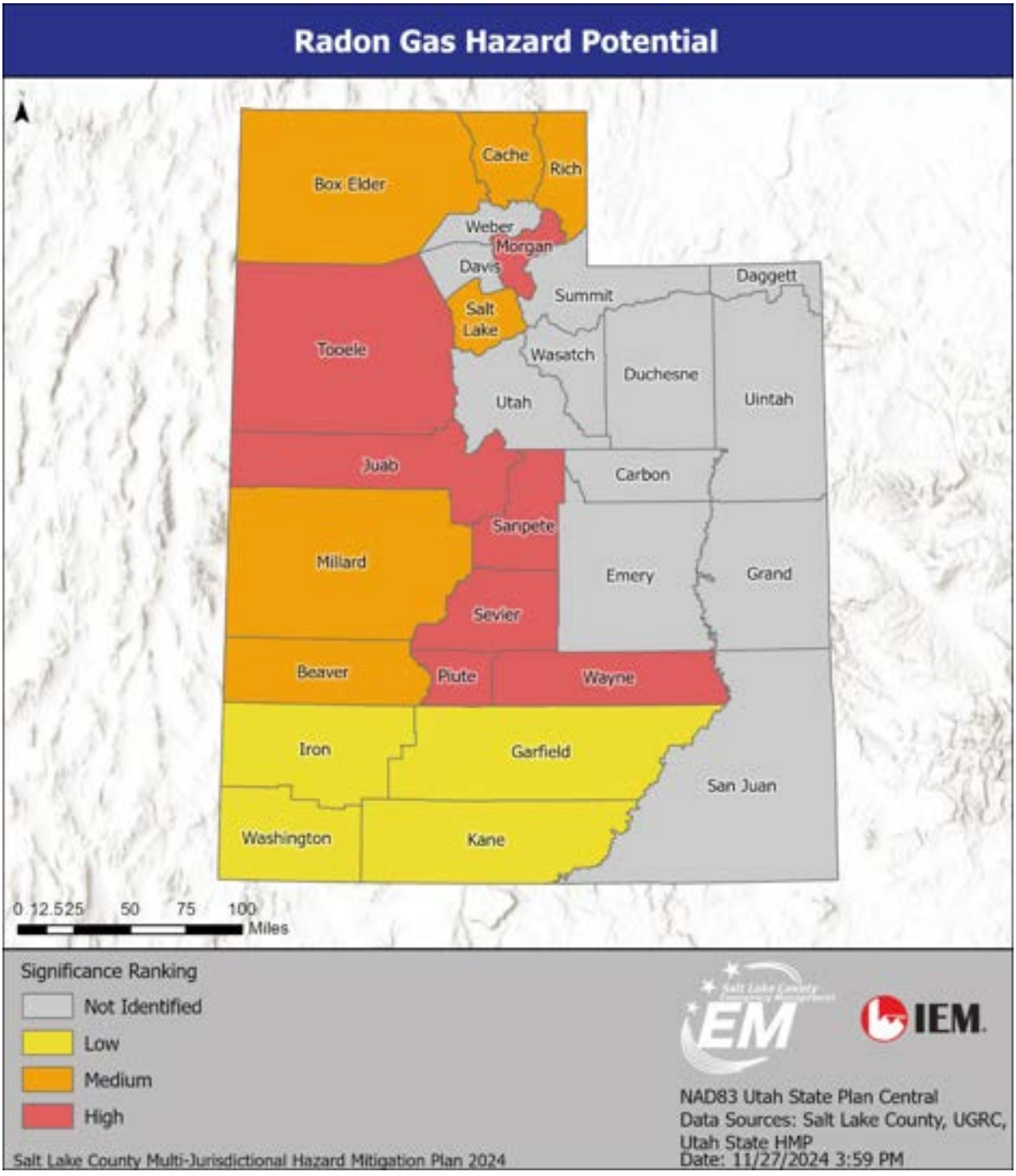


Figure 149: Radon Hazard Ranking in Local Mitigation Plans by County in Utah

Location

Due to the types of geologic formations found in Salt Lake County, radon gas is likely present in higher concentrations in homes in the Wasatch and Oquirrh Mountains and their foothills. Sites further from the mountains and foothills generally have lower concentrations of radon. Radon does not pose a threat to

infrastructure. Through collections of tests performed by various households in the county, households containing higher levels of radon were indeed found to roughly follow the patterns predicted by geologic formation. One exception is the area just south of Interstate 80 in western Salt Lake City. Utah Department of Environmental Quality provides data on radon test results summarized by zip code. Figure 150 shows the average radon score by zip code in Salt Lake County. Homes confirmed to have 4 pCi/L or higher are considered to have elevated radon levels and are recommended to take action. Figure 151 shows the percentage of homes with elevated radon levels.

DRAFT

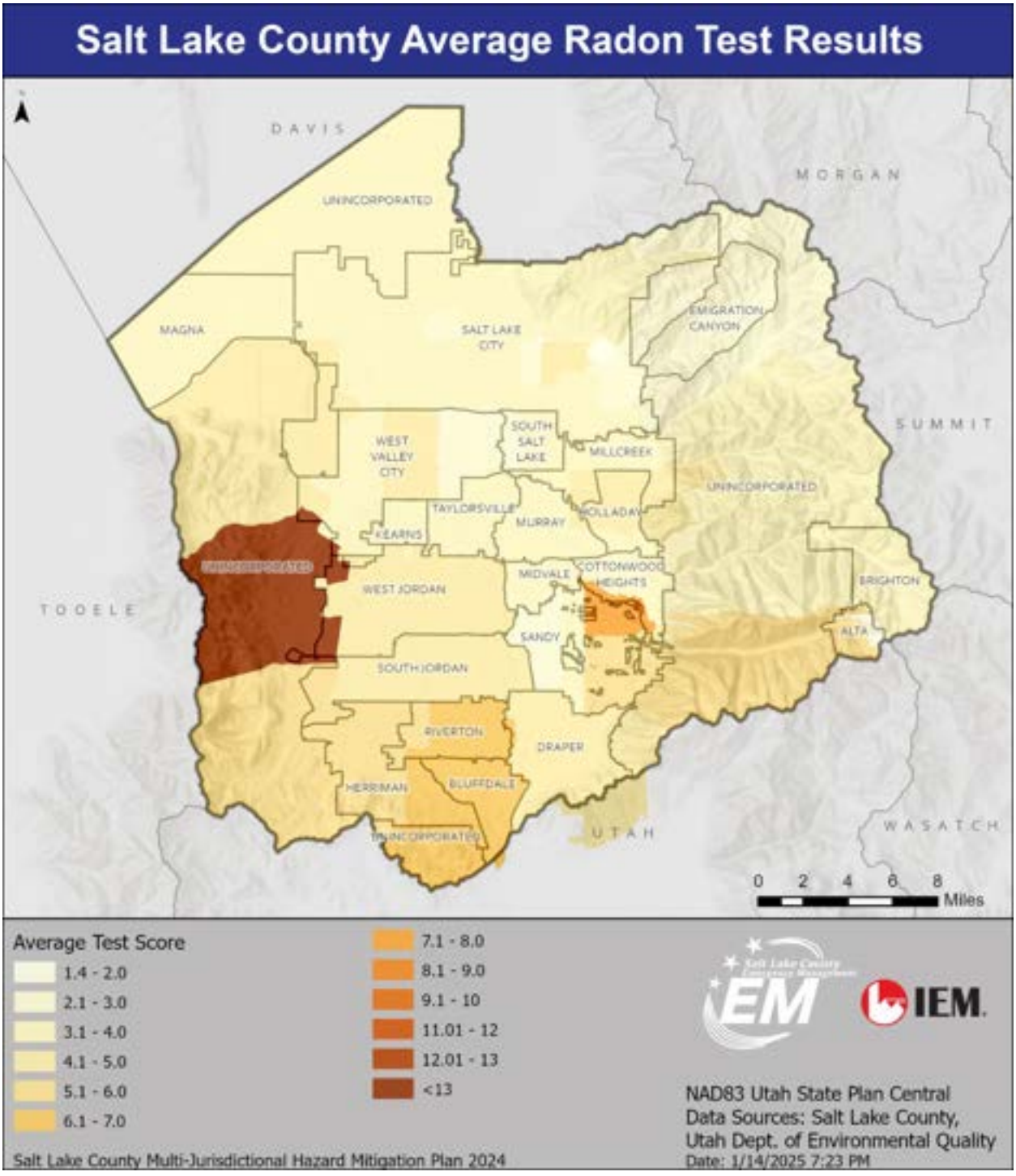


Figure 150: Average Radon Test Results for Salt Lake County

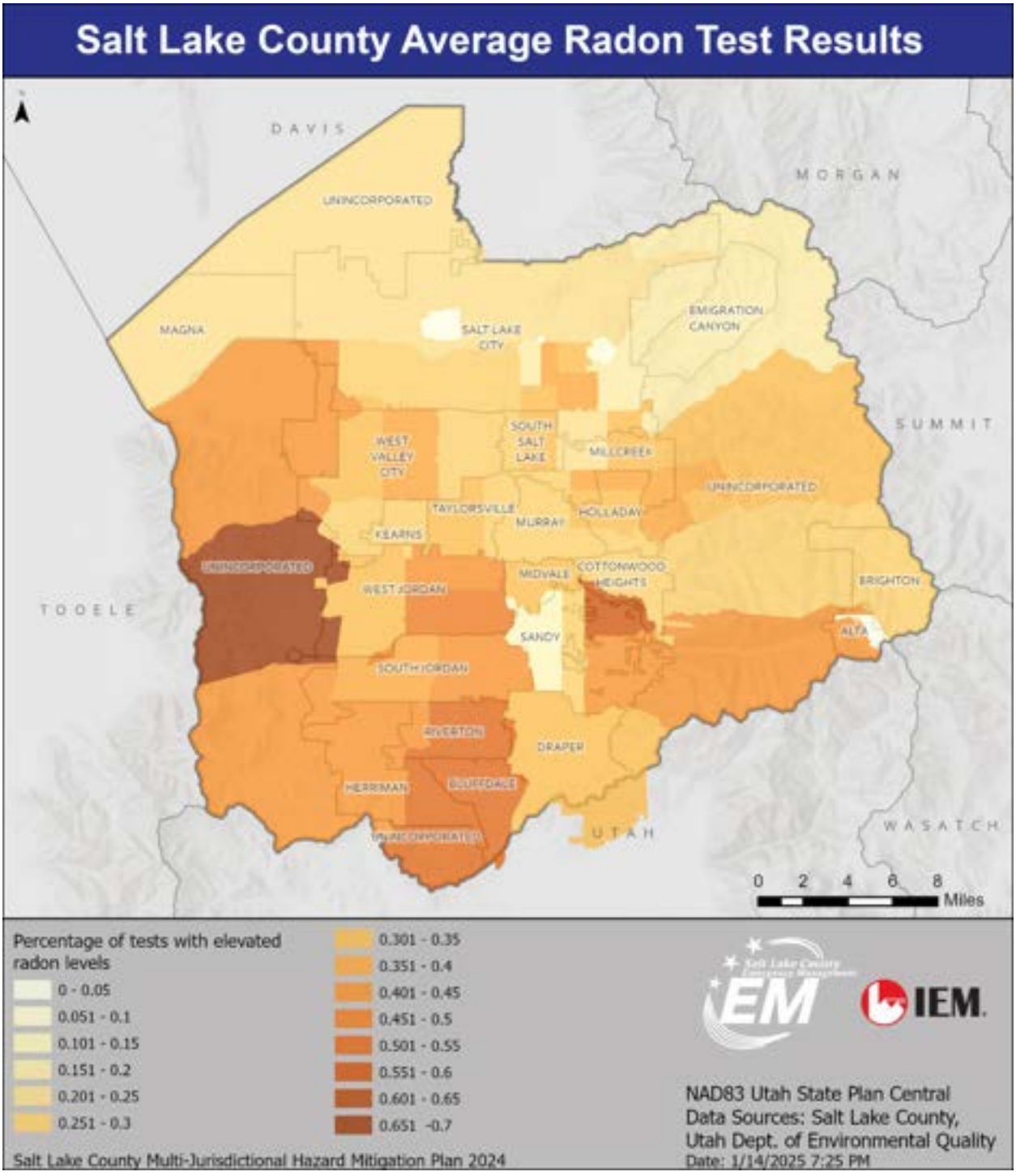


Figure 151: Percentage of Tests in Salt Lake County with Elevated Radon Levels

Historical Events and Probability of Future Occurrences

According to FEMA's Disaster Declarations for States and Counties, there were no federally declared radon disasters from January 1, 2019, through June 4, 2025.[188] In addition, no state declarations have been made for the state of Utah due to radon.[189]

According to the EPA, nearly 1 in 3 homes checked in seven states and on three tribal lands had screening levels over 4 pCi/L, the EPA's recommended action level for radon exposure.

A family whose home has radon levels of 4 pCi/L is exposed to approximately 35 times as much radiation as the Nuclear Regulatory Commission would allow if that family was standing next to the fence of a radioactive waste site (25 millirem limit, 800 millirem exposure).

An elementary school student that spends 8 hours per day and 180 days per year in a classroom with 4 pCi/L of radon will receive nearly 10 times as much radiation as the Nuclear Regulatory Commission allows at the edge of a nuclear power plant (25 mrem limit, 200 mrem exposure).

The Utah Department of Public Health tracks the results for indoor radon levels in each county every year. Figure 152 shows the percentage of radon tests performed per year from 2006 to 2021, and the test result by category. The chart categories are blue, indicating results less than 2 pCi/L; yellow, indicating 2 to 3.9 pCi/L, and red, indicating greater or equal to 4 pCi/L. The 2021 radon test results showed 34.7 percent of results were greater or equal to 4 pCi/L, 30.4 percent of results were between 2 to 3.9 pCi/L, and 34.9 percent of results were less than 2 pCi/L.

DRAFT

[188] FEMA, "Disaster Declarations for States and Counties." https://www.fema.gov/data-visualization/disaster-declarations-states-and-counties.
[189] Utah Department of Public Safety, "Utah Disaster History." https://dem.utah.gov/utah-disaster-history/.

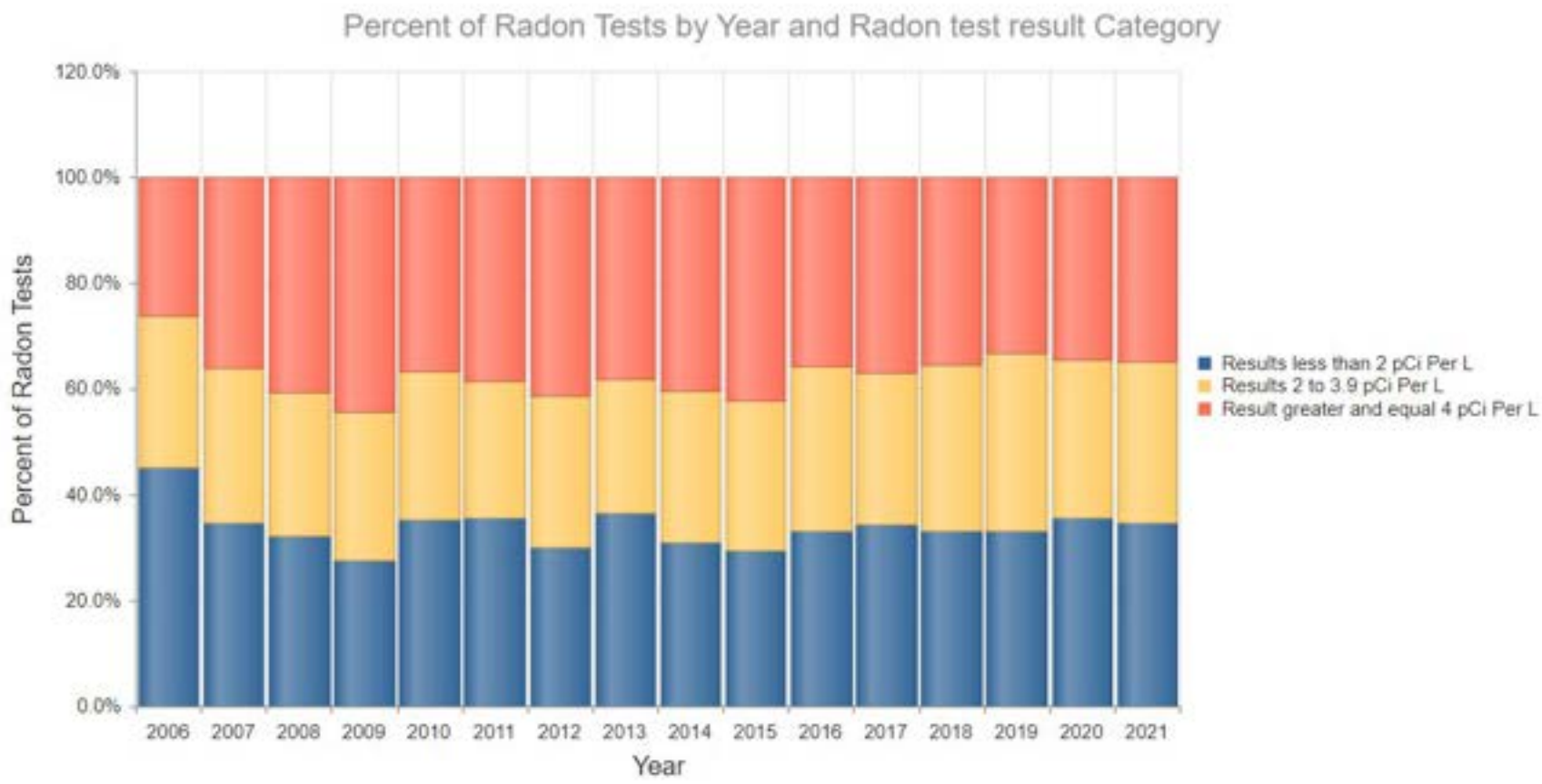


Figure 152: Salt Lake County Radon Test Results, 2006–2021[190]

[190] Utah Environmental Public Health Tracking. "Salt Lake County Results (2006–2021)." 2024. https://ibis.utah.gov/epht-view/query/result/radon/RadonNumberTest/Percent.html.

The Salt Lake County Board of Realtors is currently maintaining a database of radon readings in homes. County ordinances require homes with unacceptable radon levels to undergo mitigation procedures before sale. This should eventually make all homes safe; however, the county will continue to experience radon exposure for the foreseeable future. Because radon is always present in the soil, the probability of future occurrences is highly likely.

Climate Change Considerations

There has been study in arctic climates that thawing of the permafrost layer that normally acts as a barrier to radon can lead to increased vulnerability. However, the effects of climate change on radon exposure in Utah are not well understood.

Climate change can have an impact on radon levels in Salt Lake County by altering soil and atmospheric conditions as higher temperatures and changes in precipitation patterns can affect the movement of radon gas in the soil. Increased rainfall can lead to higher groundwater levels, which can increase radon movement especially into buildings.

Secondary Hazards

No secondary hazards from radon are known at this time.

Vulnerability Assessment

Radon does not impact infrastructure, but all humans and households exposed in the county are at risk. These figures can be seen in the Salt Lake County Demographics portion of this plan. As previously stated, radon decays into radioactive particles that can be trapped in the lungs when inhaled. These particles release small bursts of energy that damage lung tissue and may lead to lung cancer. Most EPA lifetime safety standards for carcinogens are established based on a 1 in 100,000 risk of death. Most scientists agree that the risk of death for radon at 4 pCi/L is approximately 1 in 100. At the 4 pCi/L EPA action guideline level, radon carries approximately 1,000 times the risk of death as any other EPA carcinogen. It is important to note that the action level is not a safe level because there are no “safe” levels of radon gas. Radon is the second leading cause of lung cancer in the United States. Only smoking causes more deaths from lung cancer, and smoking combined with radon is a particularly serious health risk. Chances of getting lung cancer are higher from the combination of smoking and radon than from either source alone. Although not every individual exposed to radon will develop lung cancer, the likelihood of developing it increases with higher radon concentrations and prolonged exposure. The amount of time between exposure and onset of the disease is usually many years.

ESTIMATED IMPACT AND POTENTIAL LOSSES

The most pronounced impact of radon is the health impacts on the population. Radon exposure contributes to chronic disease and death. According to the Utah State Hazard Mitigation Plan, radon gas is estimated to have caused 5,630 deaths between 1973 and 2015 and is considered Utah’s most deadly geologic hazard.

DRAFT

Although radon does not cause direct structural losses to buildings or infrastructure, it does have a societal cost. Treatment of lung cancer or other healthcare costs for affected individuals are significant. The Utah Geological Survey reported that the estimated 5,630 fatalities in Utah lung cancer cases caused by radon would have an estimated cost of between $2.7 to 3.6 million.[191]

Residences, government offices and other public buildings, schools, businesses, and other structures across the county are vulnerable to radon. The concentration may vary by location, soil characteristics, and construction characteristics. Installation of radon mitigation systems in existing buildings or including them in new construction will incur costs to building owners, but these costs may offset potential later health costs.

VULNERABLE POPULATIONS

All populations in Salt Lake County can be exposed to radon gas and are considered vulnerable. However, some may be exposed to higher concentrations, exposed for longer durations, or have other characteristics that put them at greater risk to radon-related illness. People who live in rented housing may be less aware of their exposure and might have restrictions on installing mitigation systems. Lower-income families may not have access to financial resources to address radon concentrations in their homes. Language barriers may limit some individuals' awareness of the effects of radon. Other social vulnerability characteristics may affect individuals' decisions about seeking medical care for radon-related illness, such as limited income or lack of access to health insurance.

Children may be more vulnerable, because their lungs are smaller, still developing, and they tend to breathe more rapidly. Elderly individuals might have underlying health conditions or weakened immune systems that may contribute to vulnerability to radon. They also might have physical limitations, particularly if they have a disability or limited mobility, and might have more prolonged exposure to radon. They might have challenges adequately ventilating their homes, which may contribute to radon buildup.

Individuals who have a history of smoking face compounded risks from radon exposure and are more likely to develop cancer than either smoking or radon alone.

COMMUNITY LIFELINES

Radon is not likely to disrupt the day-to-day operations of Community Lifelines.

CHANGES IN DEVELOPMENT

Salt Lake County's development and population growth can have impacts on radon exposure, as construction can disturb the ground and release radon gases trapped in the soil. Increased urbanization can also lead to changes in soil ventilation and water drainage patterns, affecting the movement of radon gases. This urbanization is happening most acutely in northwest, south, and southwest Salt Lake County.

[191] Utah Geological Survey, Geologic Hazards. "Costs of Geologic Hazards." https://geology.utah.gov/hazards/info/costs/#tab-id-4.

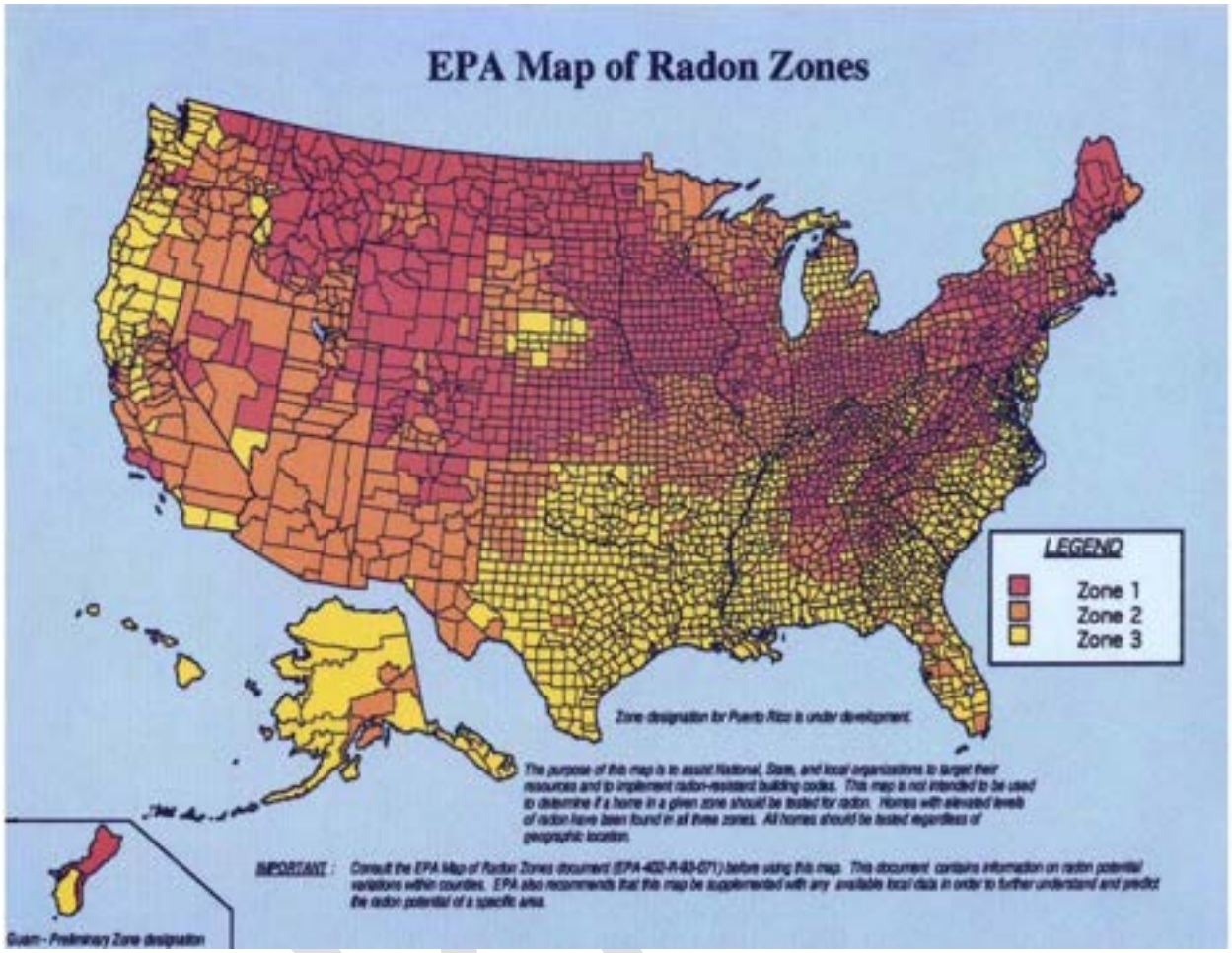
Potential impacts from increased vulnerability to radon exposure is loss of life and decreased air quality and soil erosion. Changes in population patterns may lead to populations seeing an increase in health issues for radon exposure. People may move to an area with lower or no levels of radon. Changes in land use and development can lead to changing building inspection requirements to prevent radon exposure. Overall vulnerability to radon exposure has stayed the same since the last plan update.

VULNERABILITY SCORE

The NRI does not include any data on the relative risk of radon. The EPA created a map (Figure 153) to identify radon potential across the country.[192] Salt Lake County is in Zone 2, which has moderate potential for elevated radon levels, with averages between 2 and 4 pCi/L.

DRAFT

[192] U.S. Environmental Protection Agency. “Radon Zones Map.” May 2024. https://www.epa.gov/system/files/documents/2024-05/radon-zones-map_text_link.pdf.



	Zone 1 (red zones)	Highest potential; average indoor radon levels may be greater than 4 pCi/L (picocuries per liter)
	Zone 2 (orange zones)	Moderate potential; average indoor radon levels may be between 2 and 4 pCi/L
	Zone 3 (yellow zones)	Low potential; average indoor radon levels may be less than 2 pCi/L

Figure 153: EPA Map of Radon Zones in the United States

Severe Winter Weather

Figure 154: Snowplow Clearing Road After a Heavy Snow[193]

Hazard Description

Severe winter weather in Salt Lake County includes heavy snow, lake effect snow, snow squalls, and blizzards. Significant snowstorms are characterized by the rapid accumulation of snow, often accompanied by high winds, cold temperatures, and low visibility.

Heavy snow generally means snowfall accumulating 4" or more in depth in 12 hours or less, or snowfall accumulating 6" in depth in 24 hours or less.[194] Salt Lake County also experiences lake effect snow. As cold air moves over the warmer water of the Great Salt Lake, warmth and moisture are transferred into the lowest portion of the atmosphere. The air rises and clouds form and grow into narrow bands that produce heavy snow downwind of the lake.

A snow squall is often associated with a strong cold front. Snow squalls move in and out quickly and typically last less than an hour. Although they typically do not lead to large accumulations of snow, the combination of gusty winds, white-out conditions, and cold temperatures can create icy roads in just a few minutes. Reduced visibility and slick roads create extremely dangerous conditions for motorists.

A blizzard is categorized as a snowstorm with winds of 35 mph or greater and/or visibility of less than one-quarter mile for 3 or more hours. The strong winds during a blizzard blow about falling and already existing snow, creating poor visibility and impassable roadways. Blizzards can cause property damage. Blizzard conditions not only cause power outages and loss of communication but also make

[193] https://pixabay.com/photos/road-cleaning-blizzard-snow-drifts-2582429/.
[194] National Weather Service Forecast Glossary. https://forecast.weather.gov/glossary.php?word=HEAVY%20SNOW.

transportation difficult. Blowing snow can reduce visibility to less than one-quarter mile, and the resulting disorientation makes even travel by foot dangerous if not deadly.

Figure 155: Snow in the Wasatch Mountains[195]

Hazard Profile

Potential Impact		Catastrophic	**Probability**	X	Highly Likely
	X	Critical			Likely
		Limited			Occasional
		Negligible			Unlikely
Location	Can occur in areas throughout the county				
Seasonal Pattern	Winter months				
Conditions	Vary based on latitude, elevation, aspect, and landforms				
Duration	Severe weather hazards generally last hours; some conditions can persist for days				
Secondary Hazards	Secondary hazards can include the potential for avalanches, flooding, transportation failure, and infrastructure damage and failure, including power outages				
Analysis Used	National Centers for Environmental Information, National Weather Service, Utah Avalanche Center, Utah Division of Emergency Management, local input, and review of historical events and scientific records				

Magnitude/Extent

Although many of these events occur and cause little to no significant impact, there have been several occasions in the state's history that demonstrate the potential magnitude of these hazard events. There have been many other occasions where significant ice buildup has occurred, or 2 to 3 feet of snow has fallen along with gusts over 70 mph. In the Blizzard of 1997, up to 4 feet of snow fell in some places,

[195] Pixabay. https://pixabay.com/photos/snow-mountain-winter-nature-3304547/.

many avalanches were triggered, and gusts of up to 77 mph were experienced, resulting in 50 injuries, several deaths, and approximately $40 million in damage in the state.

The NWS Winter Storm Severity Index is a tool to assist forecasters in describing the possible significance of weather-related impacts of winter storms. It aims to convey the complexities and hazards associated with winter storms and the potential societal effects on the public. The classification tool and description of potential impacts are shown in Figure 156.

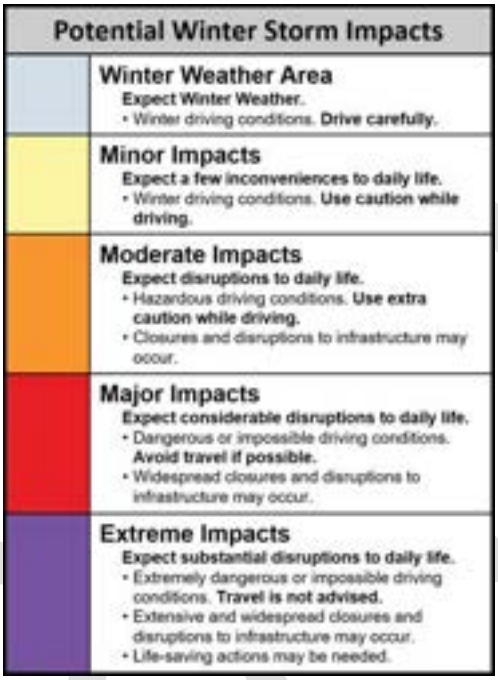


Figure 156: Winter Storm Severity Index

Location

Salt Lake County can be affected by severe winter weather events. A storm could affect the entire county or only a portion of it. Snow accumulation totals and other conditions vary with elevation, aspect, landforms, and other local variations.

Historical Events and Probability of Future Occurrences

Based on the FEMA Disaster Declarations Database, Salt Lake County has received no severe winter weather disaster declarations since the last plan update.

According to NOAA data from 1996 to 2024, there have been 477 days with a blizzard, ice storm, winter weather, or winter storm event, totaling 13 deaths, 267 injuries, and $47,096,000 in damage. However, 3 of the deaths, 50 of the injuries, and $40,000,000 of the damage occurred in one event on January 11, 1997. If this outlier is removed from the data, there is an average of approximately 0.43 deaths, 9.43 injuries, and $308,522 in property damage per year, although these averages are likely still skewed

upwards by a small number of high-impact events. Based on the frequency of past events, future occurrences are highly likely.

On January 9, 2024, snow squalls developed and moved southward through Northern Utah during the evening hours on January 9 and January 10, impacting the evening commutes. Utah Highway Patrol reportedly responded to 101 vehicle accidents on January 9, and 143 vehicle accidents on January 10. A portion of these were included in estimates of $75,000 in property damage. Surprisingly, no injuries were reported with these accidents.

On March 7, 2002, a ferocious cold front moved across Northern Utah with lightning, small hail, and heavy snow. Very heavy snow along with strong winds made driving treacherous several hours after the frontal passage. Around 200 accidents occurred in the Salt Lake Valley on the 8th, with 2 weather-related traffic fatalities and about 50 injuries. Approximately $140,000 in damage were recorded. Some of the snow totals in the mountains included 31" at Alta, 26" at Snowbird, 25" at Solitude, 15" at Trial Lake, and 12" at Sundance. Snowfall in the valleys and benches included 8" in Holladay and Olympus Cove, 7" in Sandy City and Laketown, 6" in Centerville and Brigham City, and 5" at the Salt Lake City International Airport.

In the Blizzard of 1997, up to 4 feet of snow fell in some places, many avalanches were triggered, and gusts of up to 77 mph were experienced, resulting in 50 injuries, several deaths, and approximately $40 million in damage in the state. There have been many other occasions where significant ice buildup has occurred, or 2 to 3 feet of snow has fallen along with gusts over 70 mph.

HEAVY SNOW/LAKE EFFECT SNOW

According to NOAA data from 1996 to 2024, there have been 243 days with a reported heavy or lake effect snow event. There were 6 deaths, 161 injuries, and $3,272,950 in property damage from these hazards during this period. This averages to approximately one death every four years and seven injuries and $142,302 in property damage per year. However, most events cause no death, injury, or significant property damage and these averages are influenced by a small number of high-impact events.

On March 24, 2023, the snowpack in Salt Lake City was measured at 26", tying a decades-long record and making the winter of 2022–2023 one of the wettest in Utah's history, according to Natural Resources Conservation Service data. NWS reported the snowstorm delivered 4" in the valleys, with nearly 2 feet at the top of Little Cottonwood Canyon, and lake effect snow bands along the northern Wasatch Front and in parts of Salt Lake County.[196]

On February 18, 2018, the Salt Lake and Tooele Valleys saw widespread heavy snowfall. Snowfall totals included 25" in Sandy City, 23" in Cottonwood Heights, 17.5" in Tooele, 15" in Olympus Cove, and 14" in Taylorsville. On February 19, Tooele recorded 13" of snow, which broke the calendar day record of 8" set in 1945.

[196] Dunphey, Kyle. "The snowiest winter in decades continues, with more storms on the way." Deseret News. March 24, 2023. https://www.deseret.com/utah/2023/3/24/23655000/utah-friday-storm-snowpack-record/.

On December 5, 1996, a storm system combined with a moist westerly flow to spread heavy snow to much of the state. The valleys received from 6 to 11", while the mountains received from 1 to 2 feet of snow. The highest total for the mountains was at the Park City ski resort in neighboring Summit County, where 23" accumulated. The wet snow helped trigger 6 avalanches during and shortly after the storm. A 37-year-old man snowmobiling near Bountiful Peak in neighboring Davis County was killed when he was overcome by one of these slides. There were also about 100 traffic accidents with 20 known injuries during this storm.

Climate Change Considerations

Utah State University Researcher and Assistant State Climatologist Jon Meyer stated that the jet stream—the fast and narrow current of air flowing from west to east that directs storms across the Western United States—has returned. After several years of the jet stream pushing many storms to the north or east of Utah, the jet stream has shifted and has had a major impact on winter weather conditions. The stronger winter storms are consistent with research undertaken by the Utah Climate Center that identified atmospheric dynamics that exist in the Western Pacific and define 6-year dry and wet phases for Northern Utah's weather. The winter storms begin as a Pacific low-pressure system, with moisture concentrated into narrow bands, which scientists refer to as atmospheric rivers—narrow corridors of much higher atmospheric humidity than in typical storms.[197]

Climate change can have a significant impact on severe winter weather in Salt Lake County by shortening the winter season due to higher temperatures. As temperatures rise, winters become milder, leading to fewer days with extreme cold temperatures and more precipitation falling as rain rather than snow. This shift will have an effect on water resources, as decreased snowpack will lead to a decline in the water supply. Milder winters will also have an impact on local ecosystems and winter recreational activities.

Secondary Hazards

The most significant secondary hazards associated with severe winter weather include structural damage from snow loads, wind damage, impacts on life safety, disruption of traffic, economic impact, loss of ability to evacuate, taxing first-responder capabilities, and disruption of services, such as power, water, and communications. Snow accumulation is often accompanied by a heightened risk of avalanche in the days following the storm.

Vulnerability Assessment

All residents, structures, and infrastructure systems in the planning area are vulnerable to severe winter weather. Winter storms occur frequently in Salt Lake County but with varying levels of severity and impacts.

[197] Jensen, Marcus. "State Climate Officer Explains the Winter Snow Surge and What It Means for Utah's Water Future." Utah State University, Utah State Today. January 17, 2023. https://www.usu.edu/today/story/?story=state-climate-officer-explains-the-winter-snow-surge-and-what-it-means-for-utahs-water-future.

The 2023 State Enhanced Hazard Mitigation Plan states that winter storms are considered deceptive killers because most deaths are indirectly related to the storm. Fatalities occur to individuals involved in traffic accidents caused by slick roads and are also the result of heart attacks brought on by the exertion of shoveling snow and hypothermia due to prolonged exposure to the cold. The NOAA reports that of all fatalities related to ice and snow, about 70% occur in automobiles and 25% are a result of people caught out in the elements. Most winter storm fatalities occur in males over age 40. Fifty percent of all exposure-related deaths are people over age 60 and more than 75% of victims are male. Some winter fatalities occur inside the home, primarily when people leave space heaters on, which then catch fire. Others die of carbon monoxide poisoning from furnaces or other heating devices that are not properly ventilated.[198]

All critical facilities are vulnerable to damage or reduced functionality due to severe winter weather, including all 218 county facilities, fire stations, police stations, schools, hospitals, and EOCs. Utilities, such as power and communications networks and transportation systems and road networks also are vulnerable.

ESTIMATED IMPACT AND POTENTIAL LOSSES

Disruptions to transportation networks from snowy, slick conditions or poor visibility are common during winter months. These can cause traffic delays throughout the valley. Vehicle collisions and slide offs are possible and may lead to injury. Emergency response can be delayed by traffic and poor driving conditions. Canyons and foothill areas tend to have higher snow accumulations due to higher elevation and roads may become impassable.

Severe storms may also contribute to power outages if distribution systems are damaged by wind or heavy snow and ice accumulation. Outages can be life-threatening to individuals who depend on electricity for life support. They can also disrupt operations for other utility services and communications networks and affect emergency response and other critical facilities. In addition, power outages can cause life-threatening situations if residents use alternative means to heat their homes without the use of proper ventilation.

Transportation delays from severe winter storms can have economic impacts by slowing the delivery of goods and services, delaying employees to report to work, and other reductions in business operations. Furthermore, power outages may contribute to losses if businesses cannot open until power is restored.

The NRI includes data on the EALs to individual natural hazards, historical loss, and overall risk at a county and census tract level. Salt Lake County's NRI EAL value for winter weather is $1.1 million with a risk score classified as very high (97.9), compared with the rest of the United States (Figure 157). This value is primarily due to population loss (injuries or fatalities), monetized into a population equivalence value.

[198] Utah State Enhanced Hazard Mitigation Plan. 2024.

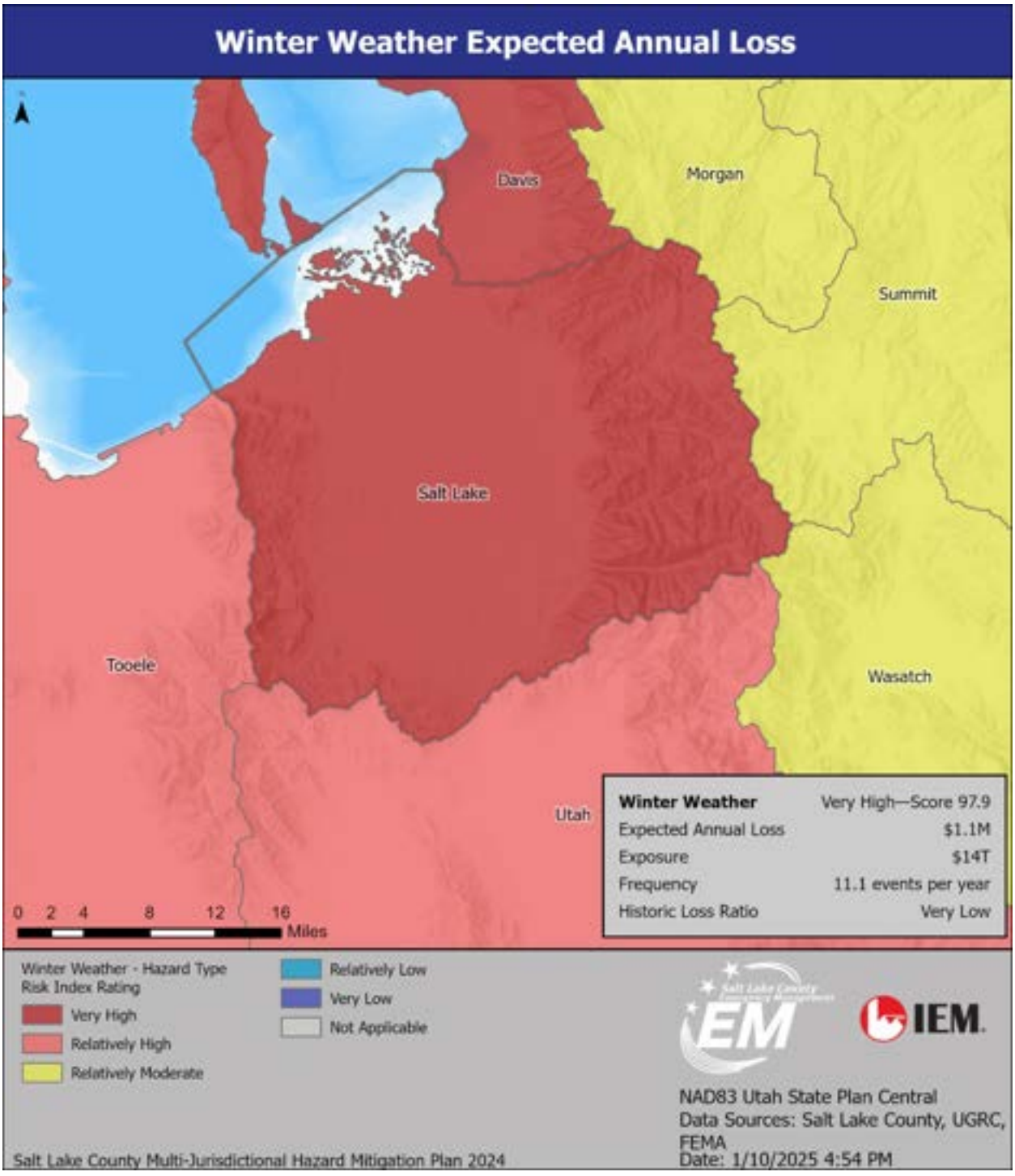


Figure 157: National Risk Index Expected Annual Loss from Winter Weather in Salt Lake County[199]

[199] FEMA, National Risk Index. "Salt Lake County Expected Annual Loss Winter Weather Risk Score, Map and legend." https://hazards.fema.gov/nri/map.

VULNERABLE POPULATIONS

Unhoused individuals and others without adequate shelter may be especially vulnerable to hypothermia or frostbite if exposed to the cold and wet conditions of winter storms. Motorists may become stranded in poor driving conditions and can also experience hypothermia if isolated for long periods, particularly if they leave their vehicles.

Some residents in canyon communities or on the benches may become isolated due to limited transportation routes, which may become impassable during or immediately following a storm. The elderly and persons with disabilities or life-threatening illnesses are particularly vulnerable if they depend on caregivers who cannot travel through winter storms. Power outages can be life-threatening to those dependent on electricity for life support.

Low-income households, linguistically isolated populations, and other disadvantaged groups tend to suffer greater losses during hazard events. They may be more severely impacted by interruption of services, economic losses, or lack of access to needed resources. Table 69 provides a breakdown of vulnerable populations for which data were available.

Table 69: Salt Lake County Vulnerable Populations[200]

Population Under 5	Population Over 65	Foreign Born	Language Other than English	Population with Disability	No Health Insurance	Population in Poverty
79,892	133,703	12.9%	21.6%	11.4%	9%	9.4%

COMMUNITY LIFELINES

Severe winter weather particularly disrupts transportation lifelines, and can also disrupt energy, communications, food, hydration and shelter, and safety and security lifelines. The importance of these lifelines cannot be overstated. In a disaster, communities can be left without access to necessities, such as food, water, and shelter. The lifelines help ensure that these needs are met and that people have the resources they need to survive. By providing access to medical care, public health services, and transportation, the lifelines help ensure that people can receive the care they need and safely evacuate if necessary. In addition, the Hazardous Materials lifeline helps to ensure that dangerous materials are managed safely, reducing the risk of further harm. Any or all of these lifelines could be disrupted following a severe winter storm. The severity of the storm may determine how long it will take to restore the various services. Community lifelines help create a sense of safety and security in a community. They provide a safety net for individuals who may be struggling and offer comfort and reassurance that help is available when needed. Without these lifelines, communities would be much more vulnerable to crises and emergencies.

[200] United States Census Bureau. “American Community Survey Data, Health.” 2023. https://data.census.gov/profile/Salt_Lake_County,_Utah?g=050XX00US49035#health.

CHANGES IN DEVELOPMENT

Salt Lake County's development and population growth can increase the potential for damage and disruptions from severe winter weather. As the population grows, so does the demand for heating during the winter months, which can place a strain on the energy grid. An overall population increase in the county represents an increase in potential exposure to this hazard.

VULNERABILITY SCORE

The NRI was used as a primary tool during the 2024 HIRA update to analyze the county's vulnerability to severe winter weather. The NRI defines risk as the potential for negative impacts as a result of a natural hazard and determines a community's risk relative to other communities by examining the EAL and social vulnerability in a given community in relation to that community's resilience. Salt Lake County's NRI winter weather risk rating is shown in Figure 158. Salt Lake County is rated as having a very high winter weather risk, with a score of 97.4.

DRAFT

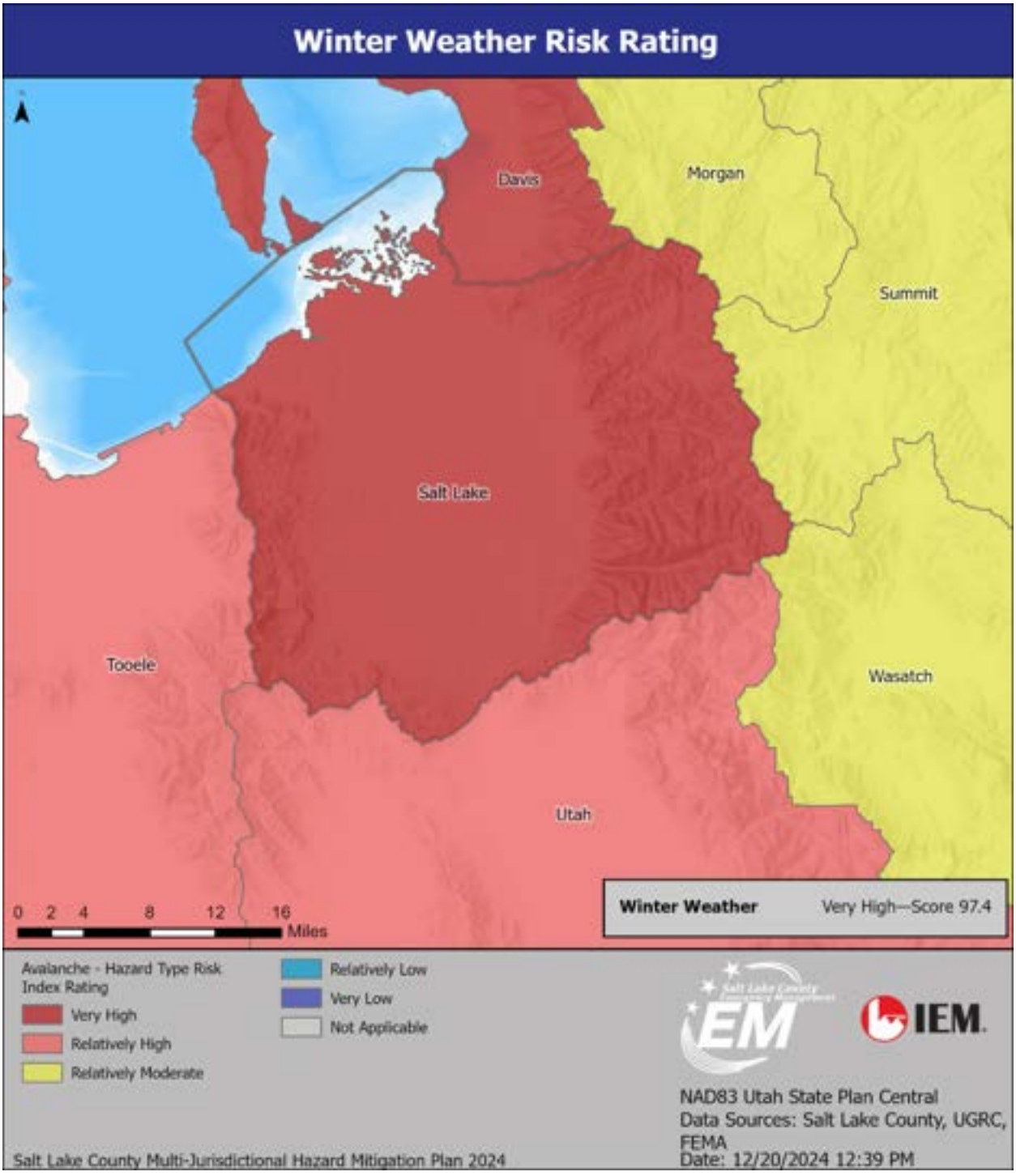


Figure 158: National Risk Index Winter Weather Risk Map, Rating, and Score for Salt Lake County[201]

[201] FEMA, National Risk Index. "Salt Lake County Winter Weather Score, Map, and Legend." https://hazards.fema.gov/nri/map.

Tornado

Figure 159: Image of a Tornado[202]

Hazard Description

A tornado is a narrow, violently rotating column of air that extends from the base of a cumulonimbus cloud to the ground. The visible sign of a tornado is the dust and debris that is caught in the rotating column made up of water droplets. Tornadoes are the most violent of all atmospheric storms. The following are common elements in tornado formation:

- Very strong winds in the mid- and upper levels of the atmosphere
- Clockwise turning of the wind with height (i.e., from southeast at the surface to west aloft)
- Increasing wind speed in the lowest 10,000 feet of the atmosphere (e.g., 20 mph at the surface and 50 mph at 7,000 feet)
- Very warm, moist air near the ground with unusually cooler air aloft
- A forcing mechanism, such as a cold front or leftover weather boundary from previous shower or thunderstorm activity

Tornadoes can form from individual cells in severe thunderstorm squall lines or from an isolated super-cell thunderstorm. Weak tornadoes can sometimes form from air that is converging and spinning upward, with little more than a rain shower occurring in the vicinity. The most extreme tornadoes can attain wind

[202] https://en.wikipedia.org/wiki/File:Stovepipe_Tornado_near_Yuma,_Colorado.jpg.

speeds of more than 300 mph, stretch more than 2 miles across, and stay on the ground for dozens of miles.

Types of tornadoes include landspouts, multiple vortex tornadoes, and waterspouts. Other tornado-like phenomena that exist in nature include dust devils, fire whirls, and steam devils. Downbursts are frequently confused with tornadoes, though their actions are dissimilar.

Hazard Profile

Potential Impact		Catastrophic	**Probability**		Highly Likely
		Critical		X	Likely
	X	Limited			Occasional
		Negligible			Unlikely
Location	A tornado event is possible anywhere in the county.				
Seasonal Pattern	Most of tornado and funnel cloud activity in the county has occurred during the late spring to early fall period of the year.				
Conditions	Tornadoes can often form from individual cells in severe thunderstorm squall lines.				
Duration	Tornadoes can last from a few seconds to an hour, although most last less than 10 minutes.				
Secondary Hazards	Potential secondary hazards include hazardous material releases, structural fires, and infrastructure failure if key facilities are damaged.				
Analysis Used	National Centers for Environmental Information, local input, and review of historic events and scientific records.				

Magnitude/Extent

Tornadoes were originally categorized using the Fujita Scale (F-Scale) or Pearson Fujita Scale, introduced in 1971, based on a relationship between the Beaufort Wind Scales (B-Scales) (measure of wind intensity) and the Mach scale (measure of relative speed). The Fujita Scale is used to rate the intensity of a tornado by examining the damage caused by the tornado after it has passed over a human-made structure. The F-Scale categorizes each tornado by intensity and area. The scale is divided into six categories, F0 (Gale) to F5 (Incredible). Table 70 outlines each of the F-Scale categories.

Table 70: Fujita Tornado Damage Scale[203]

Scale	Wind Speed (mph)	Typical Damage
F0	<73	Light damage: Some damage to chimneys; branches broken off trees; shallow-rooted trees pushed over; sign boards damaged
F1	73–112	Moderate damage: Peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos blown off roads

[203] National Oceanic and Atmospheric Administration (NOAA) Storm Prediction Center. “Fujita Tornado Damage Scale.” https://www.spc.noaa.gov/faq/tornado/f-scale.html.

Scale	Wind Speed (mph)	Typical Damage
F2	11–57	Considerable damage: Roofs torn off frame houses; mobile homes demolished; boxcars overturned; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground
F3	15–06	Severe damage: Roofs and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted; heavy cars lifted off the ground and thrown
F4	20–60	Devastating damage: Well-constructed houses leveled; structures with weak foundations blown away some distance; cars thrown and large missiles generated
F5	26–18	Incredible damage: Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 meters (109 yards); trees debarked; incredible phenomena

The primary limitations of the F-Scale rating system are a lack of damage indicators, no account of construction quality and variability, and no definitive correlation between damage and wind speed. These limitations have led to the inconsistent rating of tornadoes and, in some cases, an overestimate of tornado wind speeds. These limitations led to the development of the Enhanced Fujita Scale (EF-Scale) by the Texas Tech University Wind Science and Engineering Center and a national forum of meteorologists and wind engineers. The EF-Scale takes into account more variables than the original F-Scale did when assigning a wind speed rating to a tornado. The EF-Scale became operational on February 1, 2007.

Because the EF-Scale was revised from the original F-Scale to better reflect examinations of tornado damage, it considers how most structures are designed. Tornado ratings are assigned based on estimated wind speeds and related damage. When tornado-related damage is surveyed, it is compared with a list of Damage Indicators and Degree of Damage, which help better estimate the range of wind speeds produced by the tornado. From that, a rating is assigned, with six categories from EF0 to EF5, representing increasing degrees of damage. Table 71 lists the six categories of the EF-Scale.

The EF-Scale offers a set of wind estimates (not measurements) based on damage. Its uses three-second gusts estimated at the point of damage based on a judgment of eight levels of damage to the 28 indicators listed in Table 71. These estimates vary with height and exposure. Standard measurements are taken by weather stations in open exposures. Table 71 also describes the EF-scale ratings.

Table 71: Enhanced Fujita Scale for Tornado Damage[204]

EF-Scale Number	Intensity Phrase	Wind Speed (mph)	Type of Damage Done
EF0	Light tornado	65–85	Light damage: Peels surface off some roofs; some damage to gutters or siding; branches broken off trees; shallow-rooted trees pushed over

[204] NOAA. Enhanced Fujita Scale for Tornado Damage. https://www.spc.noaa.gov/efscale/ef-scale.html.

EF-Scale Number	Intensity Phrase	Wind Speed (mph)	Type of Damage Done
EF1	Moderate tornado	85–110	Moderate damage: Roofs severely stripped; mobile homes overturned or badly damaged; loss of exterior doors; windows and other glass broken
EF2	Significant tornado	111–135	Considerable damage: Roofs torn off well-constructed houses; foundations of frame homes shifted; mobile homes completely destroyed; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground
EF3	Severe tornado	136–165	Severe damage: Entire stories of well-constructed houses destroyed; severe damage to large buildings, such as shopping malls; trains overturned; trees debarked; heavy cars lifted off the ground and thrown; structures with weak foundations blown away some distance
EF4	Devastating tornado	166–200	Devastating damage: Well-constructed houses and whole frame houses completely leveled; cars thrown and small missiles generated
EF5	Incredible tornado	>200	Incredible damage: Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 meters (109 yards); high-rise buildings have significant structural deformation; incredible phenomena

Location

Some tornadoes can have wind speeds greater than 250 mph with a damage zone 50 miles long and greater than a mile wide. Currently, the most intense tornado in Utah's history has been an F3 on August 11, 1993, in the Uinta Mountains. No recorded tornado has been greater than an F2 in Salt Lake County specifically. However,. Although they are less common in the Intermountain Region, an average of three tornadoes per year occur in Utah. Examples are the Salt Lake City tornado August 11, 1999, and the Manti tornado in 2002. Most tornadoes in Utah typically have winds of less than 110 mph (F2 or smaller), are no wider than 60 feet, and are on the ground for no longer than a few minutes.

Tornado distribution for the region suggests many tornadoes are funnel clouds aloft encountering the increasing elevation of the region's foothills and mountains, as can be seen in Figure 160. Several of the tornadoes impacting Salt Lake County have specifically struck Magna City. A tornado event is possible anywhere in or immediately around the planning region, however.

Historical Events and Probability of Future Occurrences

Based on the FEMA Disaster Declarations Database, Salt Lake County has received no designation for tornado disaster declarations since the last plan update.

According to National Oceanic Atmospheric Administration (NOAA) data from 1965 to 2024 (60 years), there have been 1 death, 80 injuries, and $170,165,000 in property damage in Salt Lake County from 18 tornado or funnel cloud events—an average of one event every 3 years. However, the most recent

DRAFT

recorded event occurred in 2001. This would indicate that, although a tornado remains possible in a given year, the expected frequency of this hazard for the near future is likely to be less than one event every 3 years. Based on this recurrence interval, the probability of a future tornado is likely.

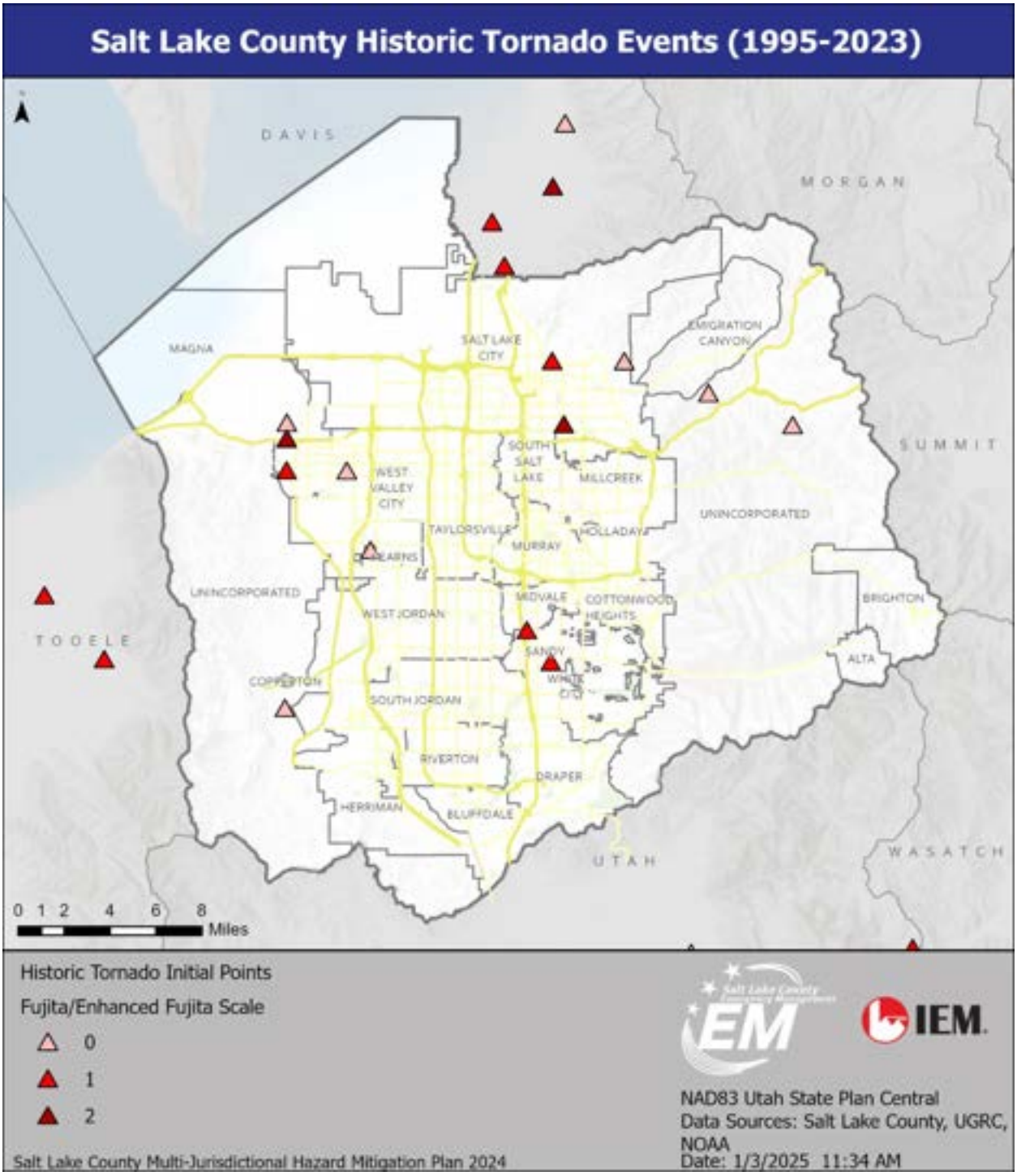


Figure 160: Tornadoes in Salt Lake County, 1995–2023

Historically, atmospheric conditions have not been favorable for tornado development in Utah due to a dry climate and mountainous terrain. Despite this fact, interactions of the relatively cool air of the Great Salt Lake and relatively warm air of urban areas could create situations more favorable for tornado development. This phenomenon possibly contributed to the formation of the August 11, 1999, Salt Lake City tornado.[205] Around lunch time, a tornado touched down in the southwest portions of Salt Lake City. The tornado intensified to an F2 on the Fujita scale and moved northeast through the metropolitan area of Salt Lake City. It caused widespread damage at the Delta Center, then ripped across an outdoor retailer's convention tent, where the lone fatality occurred along with many of the injuries. After blowing out many windows in the Wyndham Hotel, the tornado continued its northeast track, knocking down scaffolding and shearing off a crane where the Assembly Hall of the Church of Jesus Christ of Latter-Day Saints (LDS) was being constructed. Next, it skirted the Capitol, ripping out several large trees there and in historic Memory Grove. It then moved into the residential area known as The Avenues, damaging hundreds of trees and ripping the roofs off of several homes, before finally lifting back into the clouds. All told, there was 1 fatality, 80 injured, and 300 buildings and homes sustained damage, with 34 homes deemed uninhabitable. At least 500 trees were totally destroyed, with 300 more damaged. Many vehicles were damaged or totaled as well. The $170 million in damage caused by this tornado makes it the costliest disaster in Salt Lake County history. This event caused the only human losses to tornado events ever recorded in Salt Lake County.

Figure 161: Explosion of a Power Substation During a Tornado in Salt Lake City, August 11, 1999

[205] American Meteorological Society (AMS). "Tornadogenesis and Operational Considerations of the 11 August 1999 Salt Lake City Tornado as Seen from Two Different Doppler Radars." August 1, 2001. https://journals.ametsoc.org/view/journals/wefo/16/4/1520-0434_2001_016_0377_taocot_2_0_co_2.xml.

Figure 162: Path of a Tornado Across Salt Lake City, August 11, 1999[206]

Climate Change Considerations

The 2024 State Enhanced Hazard Mitigation Plan concludes that an ongoing trend in worsening tornado activity especially in this century is clearer, but little information exists to describe likely consequences for Utah.

Climate change can impact the frequency and intensity of tornadoes in Salt Lake County by altering atmospheric conditions. As temperatures increase, so do evaporation and moisture in the atmosphere. This creates favorable conditions for the formation of thunderstorms and tornadoes. The potential for tornado activity may increase due to climate change.

Secondary Hazards

Tornadoes can lead to widespread utility failure, thus exposing vulnerable populations to extreme temperatures. Tornado events may also be accompanied by strong thunderstorms, straight-line winds, and heavy rain, which can also cause significant property damage.

Vulnerability Assessment

Tornadoes are not confined to specific areas in the county, but they are generally more likely in the valley than in the mountains. Areas not directly impacted by a tornado can experience the disruption of water,

[206] https://en.wikipedia.org/wiki/1999_Salt_Lake_City_tornado#/media/File:1999_Salt_Lake_City_Tornado_path.jpg.

transportation, and communications systems and economic losses. All populations, structures, critical facilities, and infrastructure are vulnerable to the dangers posed by tornadoes. Tornadoes pose a significant threat to the safety of county residents. Individuals exposed to the storm can be struck by flying debris, falling limbs, or downed trees, causing serious injury or death. Tornadoes can cause significant structural damage and can destroy critical facilities and infrastructure.

ESTIMATED IMPACT AND POTENTIAL LOSSES

Tornadoes can cause substantial structural damage. Even lower intensity or magnitude tornadoes can damage roofs, siding, gutters, windows. Stronger tornadoes can completely destroy residences and other structures. Manufactured homes are more vulnerable than site-built structures and are likely to suffer extensive damage. Structures can also be damaged or crushed by falling trees, resulting in physical harm to the occupants. Tornadoes can destroy or make residential structures uninhabitable, and displaced residents may require public shelter or relocation. Large or intense tornadoes may result in a dramatic population fluctuation because people cannot return to their homes or jobs and must seek shelter and/or work outside the affected area.

Significant debris and downed trees can block roads and make it impossible for emergency response vehicles to access areas of the community. Downed power lines may make roadways unsafe, preventing first responders from answering calls for assistance or rescue.

Tornadoes often cause widespread power outages, increasing the risk to more vulnerable portions of the population who rely on power for health and/or life safety. Extended power outages can increase structure fires and/or carbon monoxide poisoning as individuals attempt to cook or heat their home with alternate, unsafe cooking or heating devices, such as grills.

First responders must enter the damaged area shortly after the tornado passes to begin rescue operations and to organize cleanup and assessment efforts; therefore, they are exposed to downed power lines, unstable debris, hazardous materials, and generally unsafe conditions, elevating the risk of injury to first responders and potentially diminishing emergency response capabilities. Damaged facilities, loss of communications, and damaged emergency vehicles and equipment may significantly impact emergency operations and services. When the community is affected by significant property damage, funding will be required for infrastructure repair and restoration, temporary services and facilities, overtime pay for responders, and day-to-day operating expenses. City or county departments may be damaged or destroyed, delaying response and recovery efforts for the entire community.

Tornadoes can lead to significant economic losses related to structural damage and disruption to services. Businesses that are uninsured or underinsured might have difficulty reopening, resulting in a net loss of jobs for the community and a potential increase in the unemployment rate. Extended restoration of roads and utilities may further slow economic recovery. Displaced residents may not be able to return to work immediately, further slowing economic recovery. Lost wages contribute to hardship for the population and affect lower-income households more severely.

DRAFT

Private sector entities that the city and its residents rely on, such as utility providers, financial institutions, and medical care providers, may not be fully operational and require assistance from neighboring communities until full services can be restored. Economic disruption negatively impacts the programs and services the community provides due to short- and long-term losses in revenue. Damage to infrastructure may slow economic recovery since repairs may be extensive and lengthy. Residential structures destroyed by a tornado may not be rebuilt for years, reducing the community's tax base.

Recreation activities may be unavailable, and tourism can be unappealing for years following a large tornado that has devastated directly related local businesses.

The economic and financial impacts of a tornado event on the community will depend on the scale of the event, what is damaged, costs of repair or replacement, lost business days in impacted areas, and how quickly repairs to critical components of the economy can be implemented. The level of preparedness and pre-event planning done by government, businesses, and citizens will contribute to the overall economic and financial conditions in the aftermath of a tornado event.

Critical facilities are the buildings, land, equipment, and activities provided on the public's behalf by government and/or private organizations. These facilities are important components to a municipality's quality of life. Critical Facilities are necessities for the health, safety, well-being, and stability of communities. Critical infrastructure systems are essential for life safety and economic viability, including transportation, power, communications, and water and wastewater systems (Figure 163). Any of these facilities and their associated functions can be damaged or disrupted by a tornado.

DRAFT

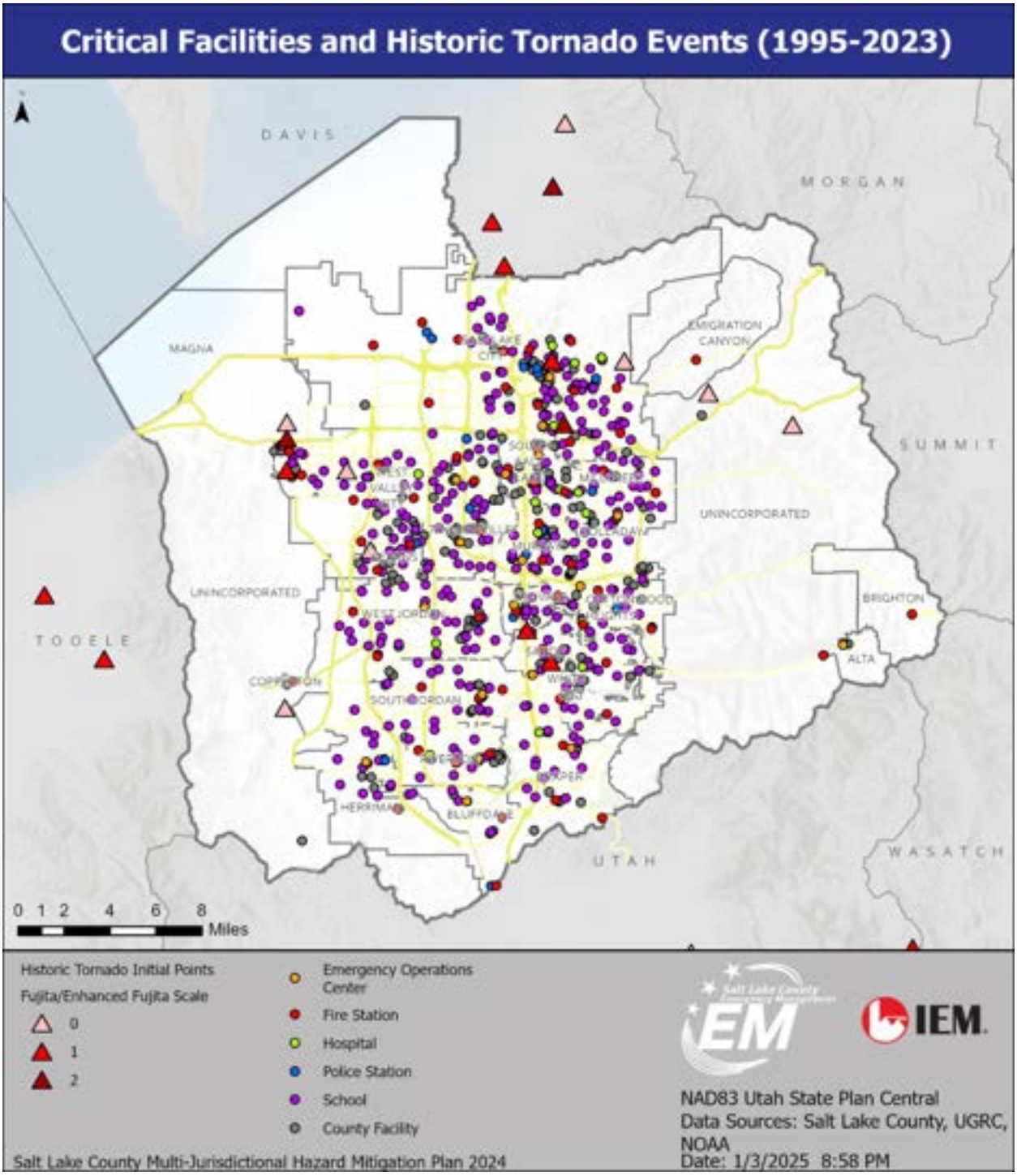


Figure 163: Critical Facilities in Relation to Tornadoes in Salt Lake County, 1995–2023

The NRI includes data on the EALs to individual natural hazards, historical loss, and overall risk at a county and census tract level. Salt Lake County's NRI EAL value for Tornado is $3.4 million with a risk score of 81.4 and a rating of "relatively moderate" compared with the rest of the United States (Figure 164).

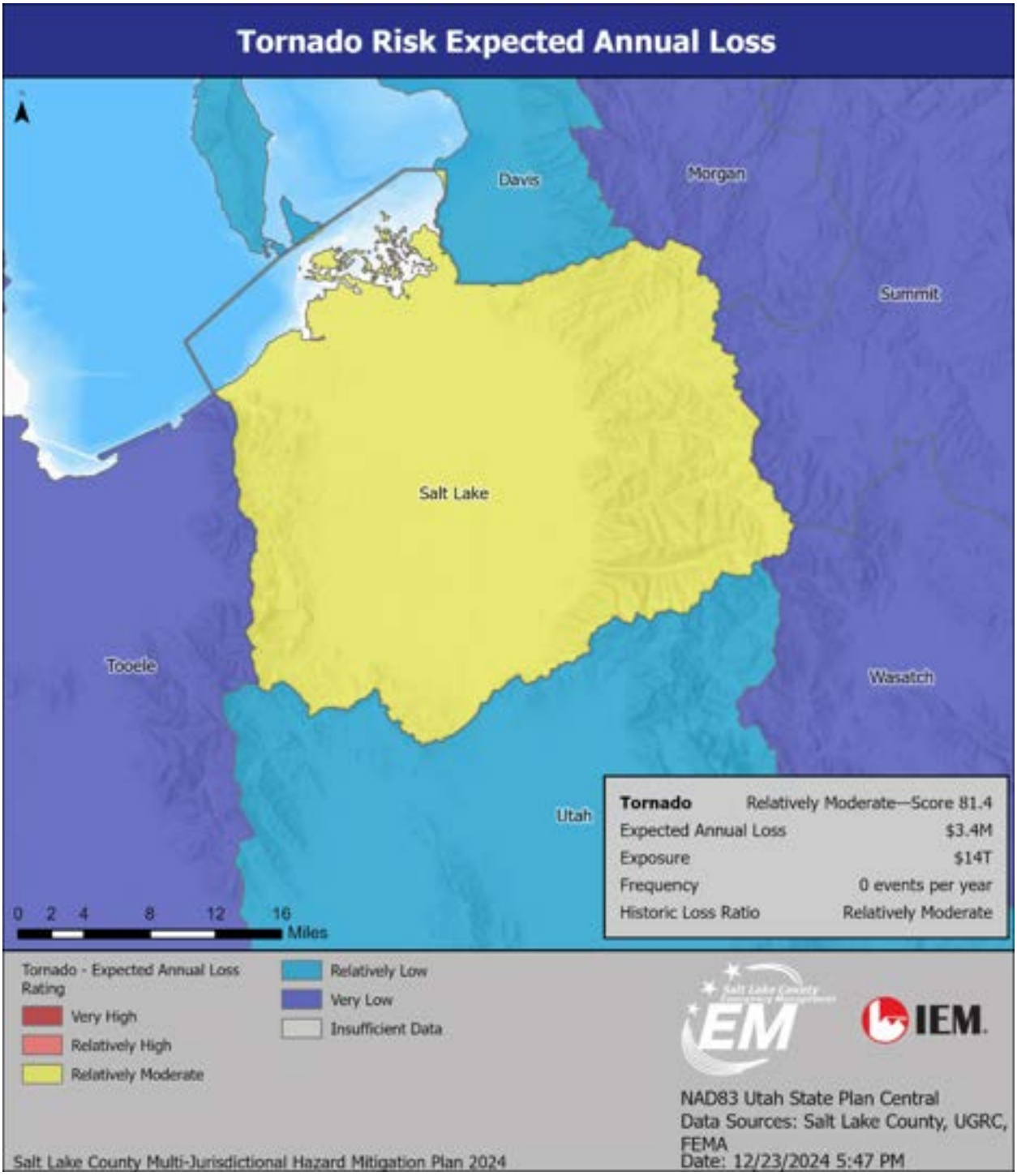


Figure 164: National Risk Index Expected Annual Loss from Tornadoes in Salt Lake County[207]

[207] FEMA, National Risk Index. "Salt Lake County Expected Annual Loss Tornado Risk Score, Map and Legend." https://hazards.fema.gov/nri/map.

VULNERABLE POPULATIONS

FEMA defines vulnerability as susceptibility to physical injury, harm, damage, or economic loss. Tornadoes can pose a significant risk to the population and can create dangerous situations. Providing and preserving public health and safety is often difficult. Impacts to vulnerable populations can include greater susceptibility to tornado impact, injuries and even death due to limited mobility and decreased ability to respond rapidly to tornado warnings or evacuate. Other barriers include the lack of a safe place to go during tornadoes.

The following populations are most vulnerable to a severe weather event, face isolation and exposure during severe storms, or could suffer more secondary effects of the hazard. The elderly and functional needs populations are considered most vulnerable because they require extra time or outside assistance to seek shelter and are more likely to seek or need medical attention, which may not be available due to isolation during or after an event. Those with a language barrier who might not be able to follow warning messages would be vulnerable as well. Those living in mobile homes would be especially vulnerable to injury from heavy winds and tornado activity. Table 72 provides a breakdown of vulnerable populations.

Table 72: Salt Lake County Vulnerable Populations[208]

Population Under 5	Population Over 65	Foreign Born	Language Other Than English	Population with Disability	No Health Insurance	Population in Poverty	Population in Mobile Homes
79,892	133,703	12.9%	21.6%	11.4%	9%	9.4%	7,199

The population in a car at the time of a tornado would also be vulnerable. According to the 2023 American Community Survey, 23.1 percent of the population in Salt Lake County transported to work by car, truck, or van.

COMMUNITY LIFELINES

Any or all of the lifelines could be disrupted following a tornado. The severity of the tornado may determine how long it takes to restore the various services. The importance of these lifelines cannot be overstated. In a disaster, communities can be left without access to necessities, such as food, water, and shelter. The lifelines help ensure that these needs are met, and that people have the resources they need to survive. By providing access to medical care, public health services, and transportation, the lifelines help ensure that people can receive the care they need and safely evacuate if necessary. In addition, the Hazardous Materials lifeline helps to ensure that dangerous materials are managed safely, reducing the risk of further harm. Any or all these lifelines could be disrupted following a tornado. Community lifelines help create a sense of safety and security in a community. They provide a safety net for individuals who may be struggling and offer comfort and reassurance that help is available when needed. Without these lifelines, communities would be much more vulnerable to crises and emergencies.

[208] U.S. Census Bureau. “American Community Survey Data.” 2023. https://data.census.gov/profile/Salt_Lake_County,_Utah?g=050XX00US49035#health.

CHANGES IN DEVELOPMENT

The changes in development that would increase vulnerability of Salt Lake County to tornadoes would be increase in population since the last plan update. As more people and infrastructure are concentrated in the area, the potential for damage and disruption of services from tornadoes can increase. Urbanization can also create wind tunnels and increase the potential for wind damage in high-density areas.

The 2024 State Enhanced Hazard Mitigation Plan states Salt Lake County is one of the fastest growing counties in the state in terms of percent increase, and because of this, more and more people and assets are being exposed to severe weather hazards, thus potentially increasing vulnerability to certain hazards.[209] Although the likelihood of a tornado is unchanged, an increase in population represents an increase in vulnerability to tornadoes since the last plan update.

VULNERABILITY SCORE

To analyze the county's vulnerability to tornadoes, the NRI was used as a primary tool during the 2024 Hazard Identification & Risk Assessment (HIRA) update. The NRI defines risk as the potential for negative impacts because of a natural hazard and determines a community's risk relative to other communities by examining the EAL and social vulnerability in each community in relation to that community's resilience. Salt Lake County's NRI Tornado risk rating is shown in Figure 165. Salt Lake County has relatively moderate Tornado risk and a risk score of 78.5.

DRAFT

[209] Utah 2024 State Enhanced Hazard Mitigation Plan.

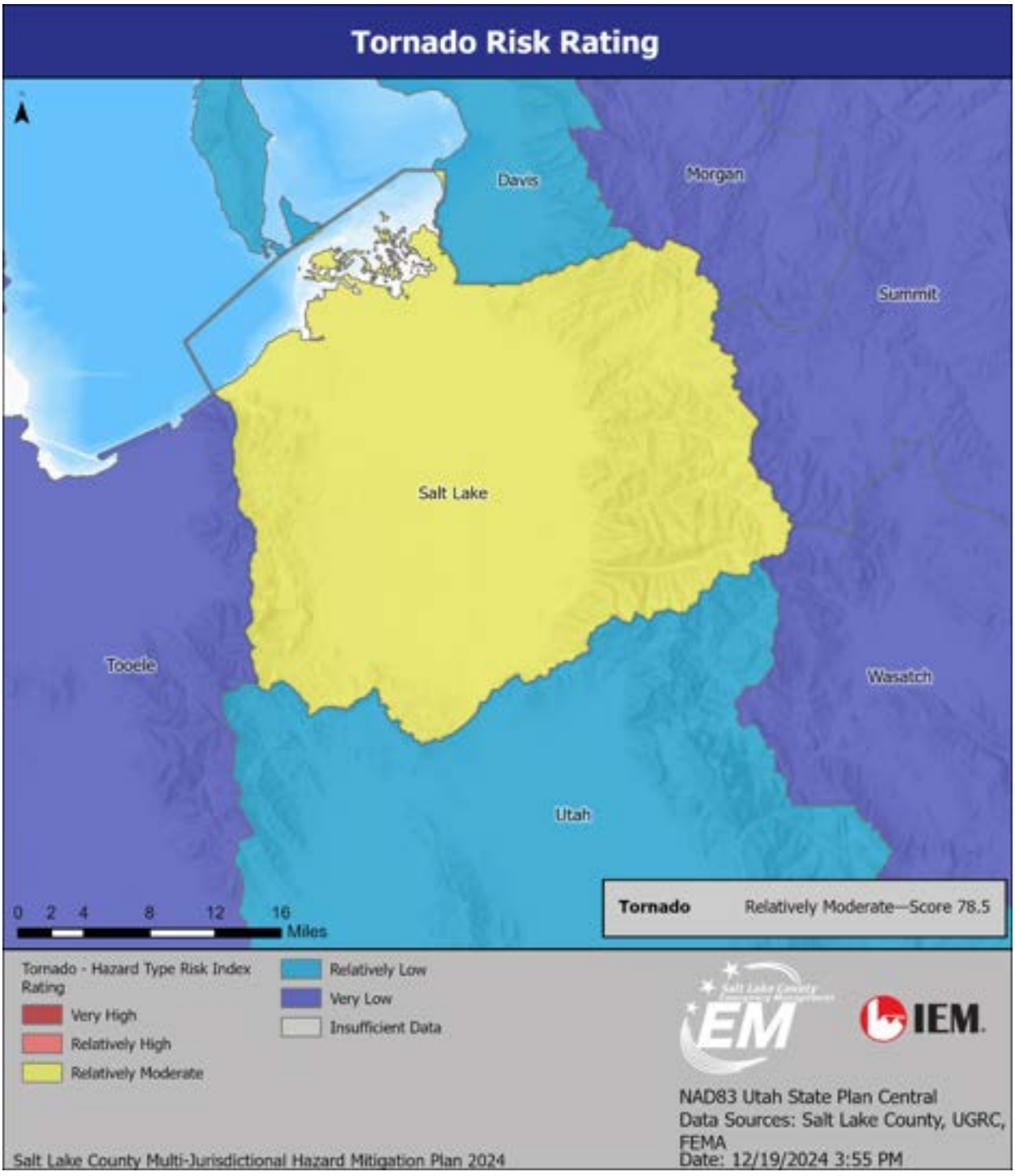


Figure 165: National Risk Index Tornado Risk Map, Legend, and Score for Salt Lake County[210]

[210] FEMA, National Risk Index. "Salt Lake County Tornado Score, Map and Legend." https://hazards.fema.gov/nri/map.

Wildfire

Hazard Description

Figure 166: Wildland Firefighters at Work

Fire is a natural process in wildland areas. However, wildfires are particularly concerning in the wildland–urban interface (WUI). The WUI is the line, location, or zone where structures or other human development meet or intermingle with undeveloped wildland or vegetative fuel. Examples include homes, storage sheds, recreational facilities, transmission lines, and other buildings. Significant human development has occurred in the WUI in Salt Lake County, leading to many residents occupying fire-prone areas. Approximately 65 percent of Utah's wildfires are started by lightning, although 35 percent are initiated by human activity.

Wildfire removes vegetation that protects soil from excessive rainfall and the resulting runoff. It also damages soil by making it hydrophobic or water-repellent. These conditions contribute to the depletion of wildlife resources, soil erosion, water runoff, and, in some cases, severe slope failures and debris flows. Past wildfires in Salt Lake County have also significantly impacted watersheds. State and local agencies have worked together to enhance ordinances and other measures to protect watersheds in the county.

Providing adequate fire protection in the WUI can be difficult. Local suppression methods and resources may not be suited to wildfire suppression, and personnel can become easily overwhelmed when multiple structures are threatened simultaneously. The energy output from a wildfire can make protecting homes nearly impossible and pose tremendous danger to firefighters and homeowners.

The three conditions that affect fire behavior are topography, vegetation, and weather.

- **Topography:** Topography includes factors, such as slope, aspect, and elevation. Fires spread faster upslope due to the proximity of fuel to flames. Aspect also influences fuel moisture content. Fuels tend to be drier on south- and west-facing slopes. Higher elevations are associated with cooler temperatures, higher relative humidity, and changes in vegetative fuel types.
- **Vegetation:** The type of surrounding vegetation significantly influences how quickly a fire will spread. For example, light grasses burn rapidly, whereas heavy, dense fuels like Douglas Fir burn slowly but more intensely. Different fuels vary in their rates of spread, intensity, and resistance to control.

Size, continuity, and compactness also affect the fuel's rate of spread. Large fuels do not burn as readily as small fuels and take more heat to ignite. Small fuels ignite more easily, allowing fire to spread rapidly. Continuity describes how a fuel is arranged horizontally. Fuel broken up in patches burns unevenly and more slowly than uniform fuels. Compactness refers to how fuel is placed vertically. Compact fuels burn more slowly than tall, deep fuels, which have greater access to oxygen.

- **Weather:** Weather (temperature, humidity, precipitation, and wind) affects how easily a fuel ignites, how intensely it burns, and how easy it is to control. High temperatures heat fuels and reduces water content, which increases flammability. A decrease in relative humidity causes a proportionate reduction in fuel moisture, promoting easier ignition and more intense burning. The wind carries the heat from a fire into unburned fuels, drying them out and causing them to ignite more easily. The wind can also blow embers into unburned areas ahead of the primary fire, potentially starting spot fires.

Figure 167 illustrates the key factors contributing to an area's wildfire vulnerability: vegetation and fuel sources, topography, and weather conditions.[211] Possible ignition sources should also be considered. Many wildfires in Utah are caused by lightning, but more are due to human influences. Most human-caused wildfires are accidental ignition from faulty electrical systems or damaged power lines, sparks from vehicles or machinery, improperly extinguished campfires, or weed burning. Wildfire can also be caused by intentional acts of arson.

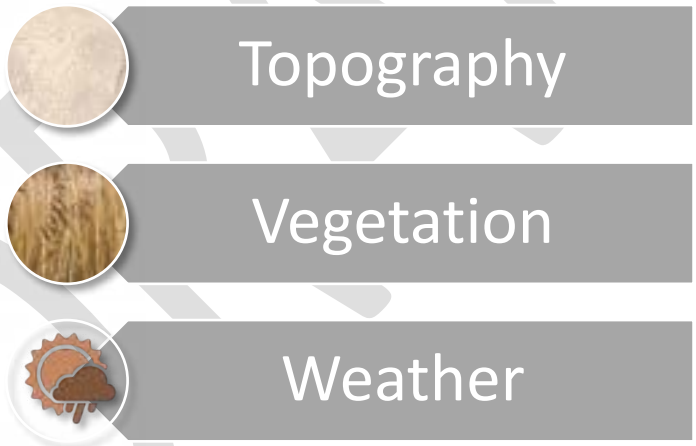


Figure 167: Key Factors of an Area's Vulnerability to Wildfire

Hazard Profile

Potential Impact		Catastrophic	**Probability**	X	Highly Likely
	X	Critical			Likely
		Limited			Occasional
		Negligible			Unlikely
Location	Wildland–urban interface (WUI) zones near the foothills and in forested areas; WUI in canyons in the Wasatch, Oquirrh, and Traverse Mountains;				

[211] First Street. "Does Salt Lake County have Wildfire Risk?" https://firststreet.org/county/salt-lake-county-ut/49035_fsid/fire.

	undeveloped areas along the Jordan River; and undeveloped islands in urban areas (Dimple Dell)
Seasonal Pattern	June–October
Conditions	Areas affected by drought, heavily overgrown and dry brush and debris, lightning, and human triggers
Duration	Days to months, depending on the climate, fuel load, and available resources (financial, manpower) to extinguish the fire
Secondary Hazards	Debris flows, erosion, traffic accidents, air pollution, destruction of natural resources
Analysis Used	Review of plans and data provided by the US Forest Service, Utah Division of Forestry, Fire, and State Lands, FEMA, Utah Geospatial Resource Center, Utah Wildfire Risk Assessment Portal, and Utah Division of Emergency Management

Magnitude/Extent

Utah uses the following fire danger rating scale:[212]

- **Low:** Grasses and brush are not easily ignited by small firebrands. Dead and down timber fires spread slowly along the ground with little danger of spotting.
- **Moderate:** Fire in open grasslands can burn briskly and spread rapidly on windy days. Timber fires spread at a slow to moderate pace.
- **High:** Fires can ignite easily from various causes. Unattended brush and campfires are prone to escape, and fire spreads rapidly, with short distance spotting common.
- **Very High:** Fires ignite easily from any cause, spreading rapidly immediately after ignition and intensifying quickly. Spot fires that start new fires are a constant danger.
- **Extreme:** All fires are potentially serious because they ignite, spread, and burn intensely. It is often too dangerous for firefighters to use direct attack suppression tactics.

Location

The areas of Salt Lake County most likely to experience significant destruction from a wildland fire include the foothills and bench areas on or near the Wasatch Range, Traverse Mountain, and the Oquirrh's. These WUI areas are most susceptible due to the amount of forested lands and the increasing population growth spreading into the foothills. Another area concern is vegetation type, such as sagebrush, mountain scrub oak, cheatgrass, pinyon and juniper trees, and riparian vegetation. Sagebrush and mountain shrubs in the county burn hot and fast and spread quickly. During prime burning conditions (hot, dry, and windy), the pinyon-juniper class is also prone to burning.

As population growth continues, the pressure to develop in WUI areas will likely increase the threats associated with wildfire. To reduce these threats, mitigation measures must be identified and enforced. The Risk to Potential Structures map (Figure 168) represents the likelihood of a wildfire and fire intensity,

[212] Utah Fire Info. "Fire Danger." https://utah-fire-info-utahdnr.hub.arcgis.com/pages/fire-danger.

with generalized consequences for a home on each pixel. For every location on the landscape, it poses the hypothetical question, “What would be the relative risk to a house if one existed here?” This allows for comparing wildfire risk between areas with existing homes and areas where new construction may be proposed.[213]

DRAFT

[213] Utah Wildfire Risk Assessment, Salt Lake County Summary Report. https://wildfirerisk.utah.gov/.

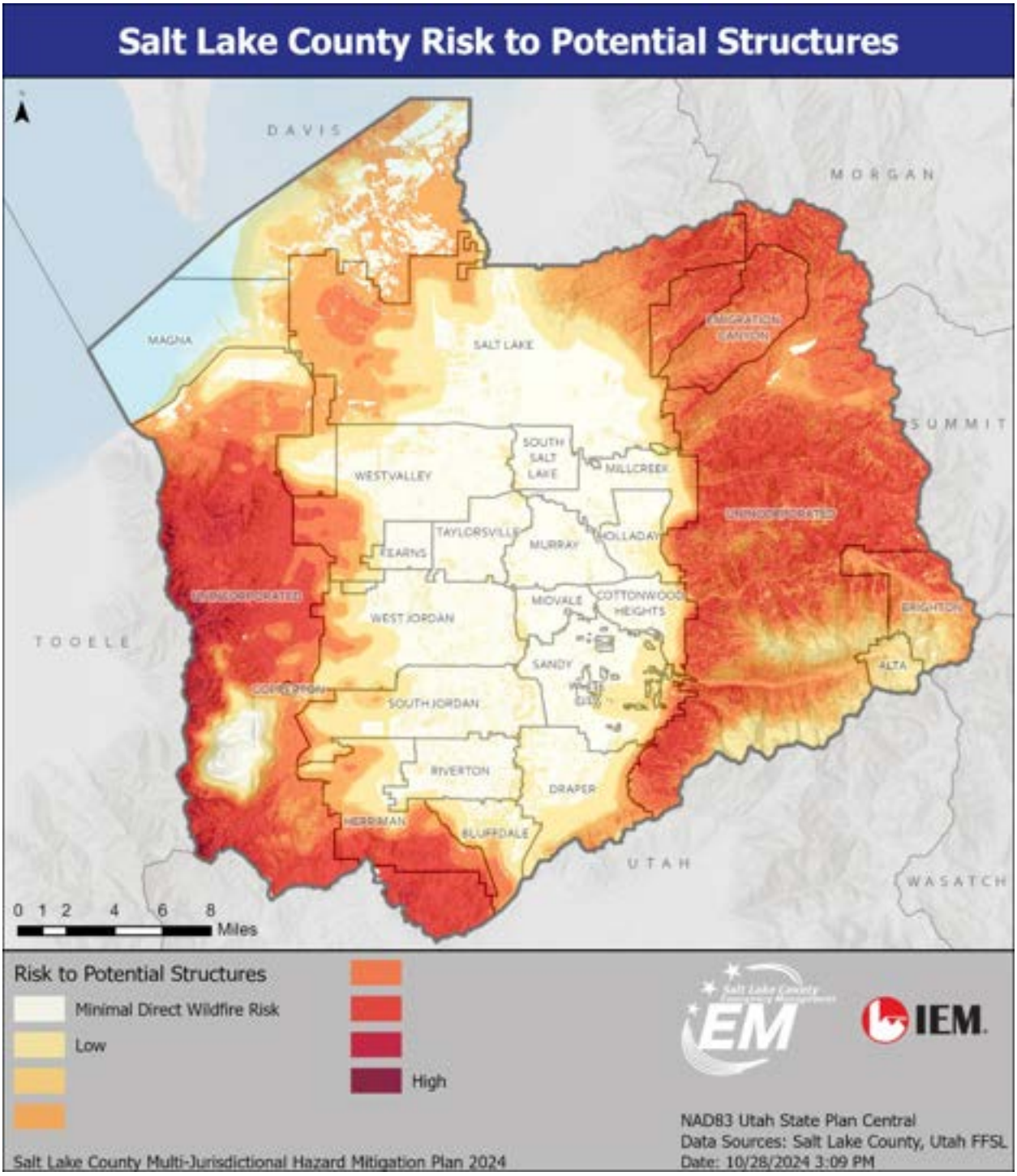


Figure 168: Wildfire Risk to Potential Structures

Figure 169 shows the wildfire hazard potential for Salt Lake County, based on the Utah Wildfire Risk Explorer. This index quantifies the relative potential for wildfires that may be difficult to control and can be used to prioritize areas where fuel treatments are needed.

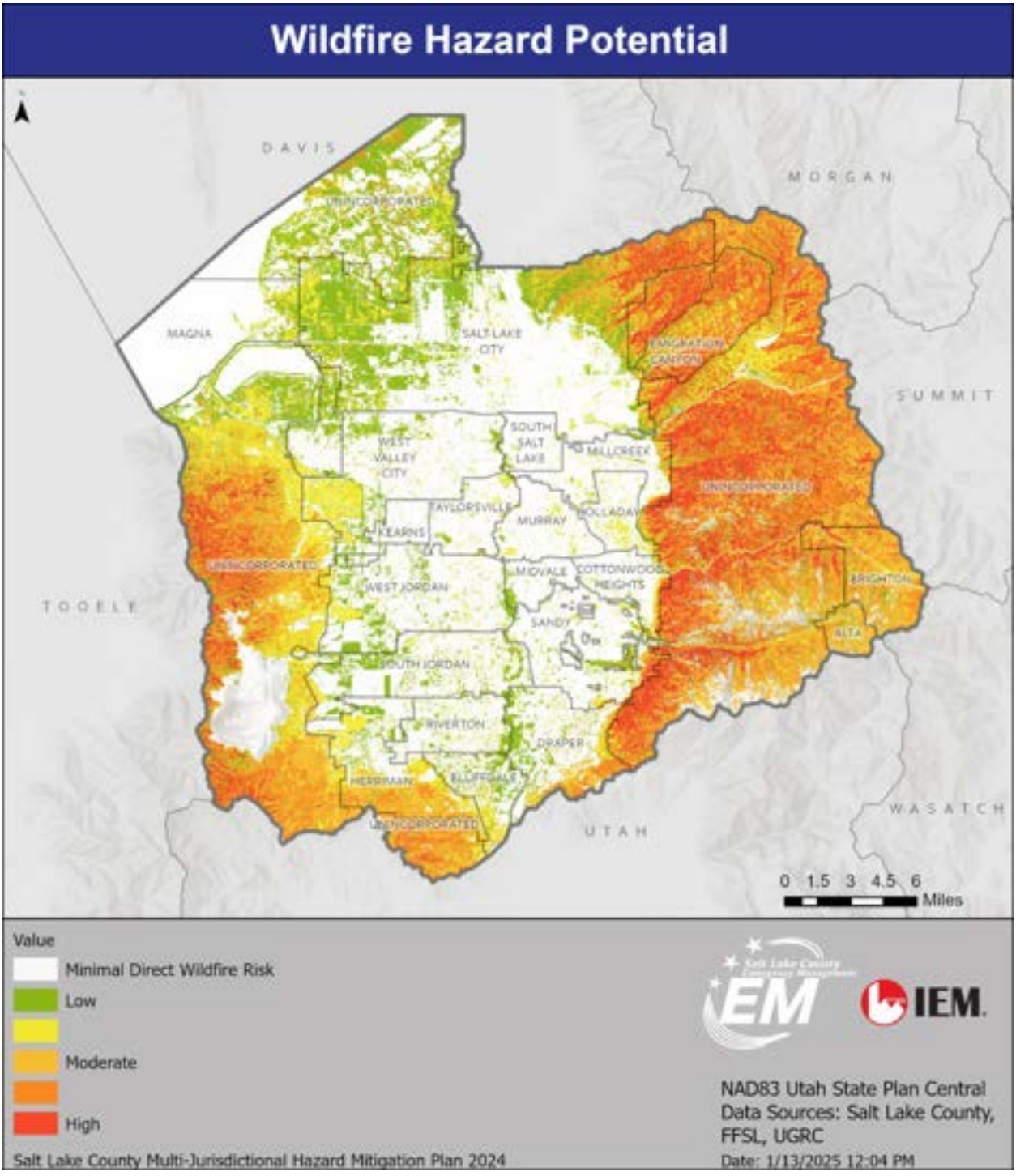


Figure 169: Wildfire Hazard Potential[214]

[214] Ibid.

Table 73: Wildfire Hazard Potential Area by Category

	Wildfire Hazard Potential Category	Acres	Percent
	Minimal Direct Wildfire Impacts	223,886	43.3 %
	Very Low	0	0.0 %
	Low	6,231	1.2 %
	Moderate	51,345	9.9 %
	High	122,449	23.7 %
	Very High	112,591	21.8 %
	Total	**516,502**	**100.0 %**

Historical Events and Probability of Future Occurrences

According to FEMA's Disaster Declarations database, Salt Lake County experienced one federally declared wildfire disaster on August 14, 2021.[215] According to NOAA, there have been 18 wildfire events in Salt Lake County from 2010 to 2024 (Salt Lake and Tooele Valleys, Great Salt Lake Desert and Mountains, Wasatch Mountains I-80 North, Wasatch Mountains South of I-80, Great Salt Lake Desert and Mountains, Salt Lake Valley, Wasatch Mountains I-80 North, Wasatch Mountains South of I-80). Figure 170 shows additional data from Utah Forestry Fire and State Lands, including fire perimeters and fire origin points from 1999 to 2020.

DRAFT

[215] FEMA, Disaster Declarations for States and Counties." https://www.fema.gov/data-visualization/disaster-declarations-states-and-counties.

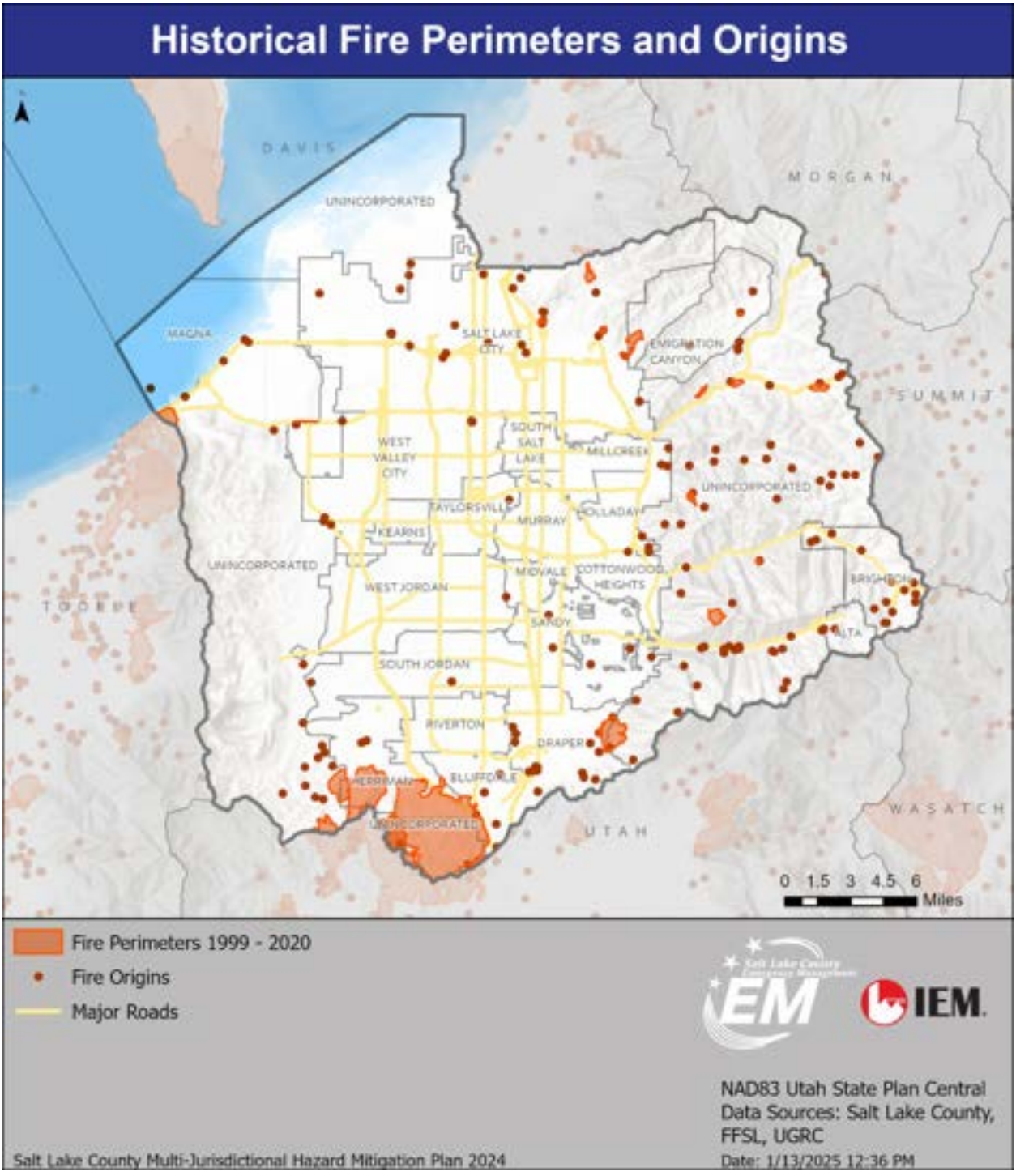


Figure 170: Historical Fire Perimeters and Origin Points

Figure 171 presents data on human-caused wildfires and the number of fires from October to May by year. Figure 172 shows the frequency of fires by month and whether a local, state, or federal agency reported them.

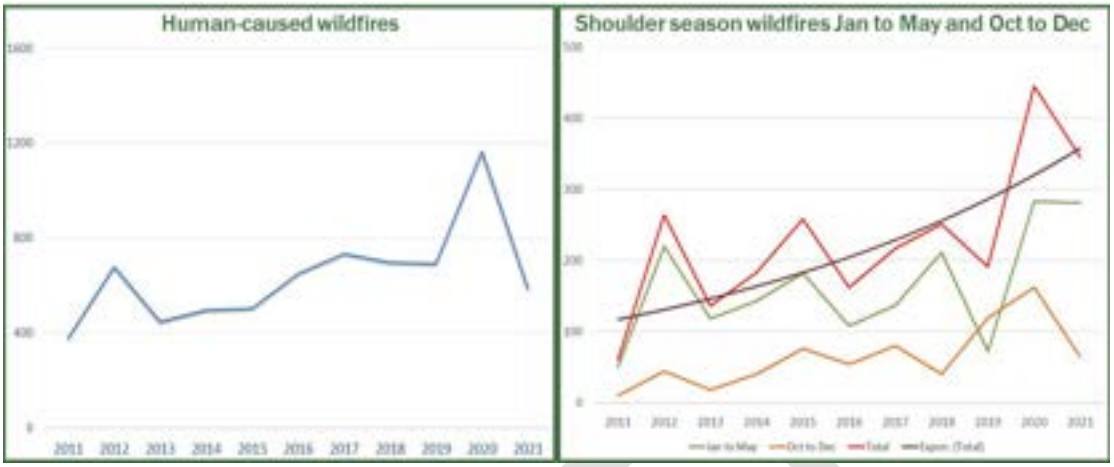


Figure 171: Wildfire Data for Utah, 2011–2021[216]

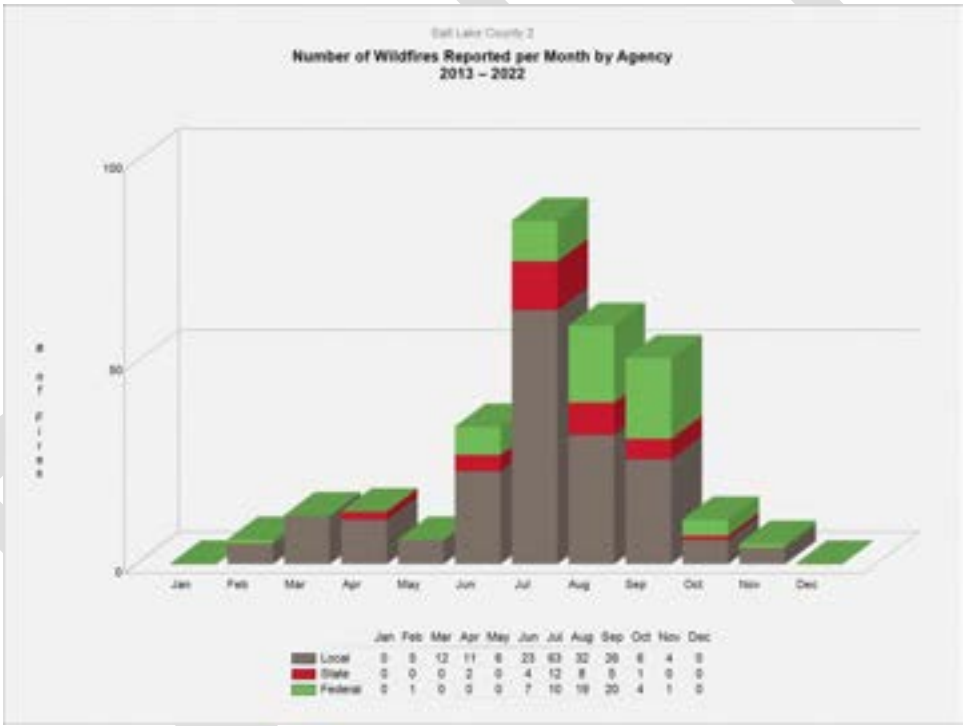


Figure 172: Number of Wildfires Reported per Month by Agency[217]

Several notable wildfires have occurred in Salt Lake County recently. On July 20, 2024, the Sandhurst Fire began near Ensign Peak above the Utah Capitol building in northern Salt Lake City. Several roads were closed to allow emergency response crews access. Twenty-two homes were evacuated, and several radio towers and the City Creek watershed protection were a concern. The fire burned 203 acres before it was contained.

[216] Utah Division of Forestry, Fire, and State Lands. "Fire Program Overview and Strategic Plan." 2022. https://ffsl.utah.gov/fire/catastrophic-wildfire-risk-reduction/.
[217] Utah Wildfire Risk Explorer. "Area of interest summary report for Salt Lake County." https://wrap.wildfirerisk.utah.gov/.

On August 14, 2021, sparks from a vehicle started a fire in Parley's Canyon. Thousands of homes were evacuated near Lambs Canyon, Mill Creek Canyon, and Summit Park in neighboring Summit County. Interstate I-80 was temporarily closed to traffic. The fire was initially estimated at over 2,000 acres, but more accurate mapping indicated that the fire burned 538 acres. No structures were destroyed.

The Neff's Canyon fire in the Mount Olympus Wilderness area burned from September through October 2020, scorching over 60 acres. The timber and oak brush fire started about 1 mile up the Neff's Canyon trail when a lightning strike ignited underground embers, which smoldered for days before spreading to nearby foliage. More than 150 firefighters were involved in the initial efforts to combat the fire, creating firebreaks and clearing debris.

Containment of the fire was slow in the early weeks, primarily due to the difficult terrain of the canyon, which made it challenging for fire managers to access steep and rocky areas with equipment and personnel. Ultimately, the fire was extinguished in October, aided by a rainstorm.[218] In April 2015, a brush fire occurred in the Avenues area of Salt Lake City. Another fire occurred in Herriman City in 2016, destroying two homes and causing evacuations. In neighboring Tooele County, the Dollar Ridge Fire destroyed 90 homes. These fires prompted significant fire responses, required many citizens to evacuate, and created the threat of debris flows in the following years. The Dollar Ridge Fire received a Fire Management Assistance Declaration.

According to historical averages, there is a nearly 100 percent chance of a wildfire occurrence in the next year. As previously stated, NOAA data indicate that there have been 14 recorded days with a wildfire event in Salt Lake County from 2010 to 2024. This averages out to approximately one wildfire event every year. The USDA Forest Service ranks the wildfire potential for most of Salt Lake County as "Very High" or "High" (see Figure 173).

DRAFT

[218] The City Journals, "Neff's Canyon Fire Awakens Residents to Dangers of the Wildland Urban Interface." https://www.holladayjournal.com/2020/10/26/332713/neff-s-canyon-fire-awakens-residents-to-dangers-of-the-wildland-urban-interface.

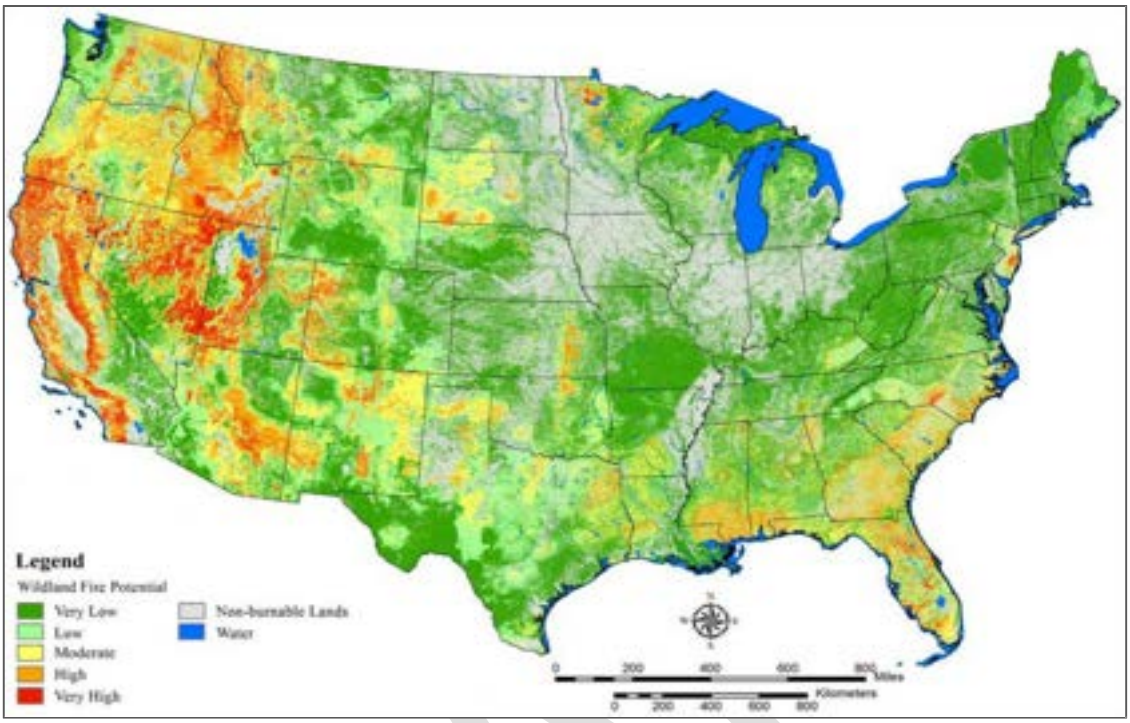


Figure 173: Wildland Fire Potential in the United States[219]

Figure 174 shows another measure of fire probability based on the Utah Wildfire Risk Assessment. Burn probability is the annual probability of a wildfire burning in a specific location. It is based on fire behavior models that simulate thousands of possible fire seasons. These simulations are based on past observations and include factors, such as the probability of a fire occurring, weather, topography, and ignition. It does not predict or forecast fire danger conditions nor represent information about the potential intensity of a fire if one occurs.[220]

[219] From Dillon, Greg, et al. "Fire Potential: A Tool for Assessing Wildfire Risk and Fuel Management Needs." Proceedings of the Large Wildland Fires Conference. US Forest Service. 2015. https://www.fs.usda.gov/rm/pubs/rmrs_p073/rmrs_p073_060_076.pdf.

[220] Utah Wildfire Risk Explorer. "Area of interest summary report for Salt Lake County." https://wrap.wildfirerisk.utah.gov/Map/Pro#map-themes.

DRAFT

Figure 174: Burn Probability in Salt Lake County

Table 74: Burn Probability Categories and Acreage[221]

	Burn Probability Category	Acres	Percent
	Minimal Direct Wildfire Impacts	147,845	28.6 %
	0 to 1-in-46,425	45,128	8.7 %
	1-in-46,425 to 1-in-10,000	6,906	1.3 %
	1-in-10,000 to 1-in-4,643	9,294	1.8 %
	1-in-4,643 to 1-in-2,154	13,335	2.6 %
	1-in-2,154 to 1-in-1,000	21,691	4.2 %
	1-in-1,000 to 1-in-464	33,454	6.5 %
	1-in-464 to 1-in-215	62,428	12.1 %
	1-in-215 to 1-in-100	128,477	24.9 %
	1-in-100 to 1-in-10	47,728	9.2 %
	> 1-in-10	215	0.0 %
	Total	**516,501**	**100.0 %**

The probability of extreme fire behavior (Figure 175) represents the likelihood of flame lengths exceeding 11 feet, considered the threshold for extreme fire behavior during fire operations.[222]

[221] Ibid.
[222] Utah Wildfire Risk Explorer. https://wrap.wildfirerisk.utah.gov/Map/.

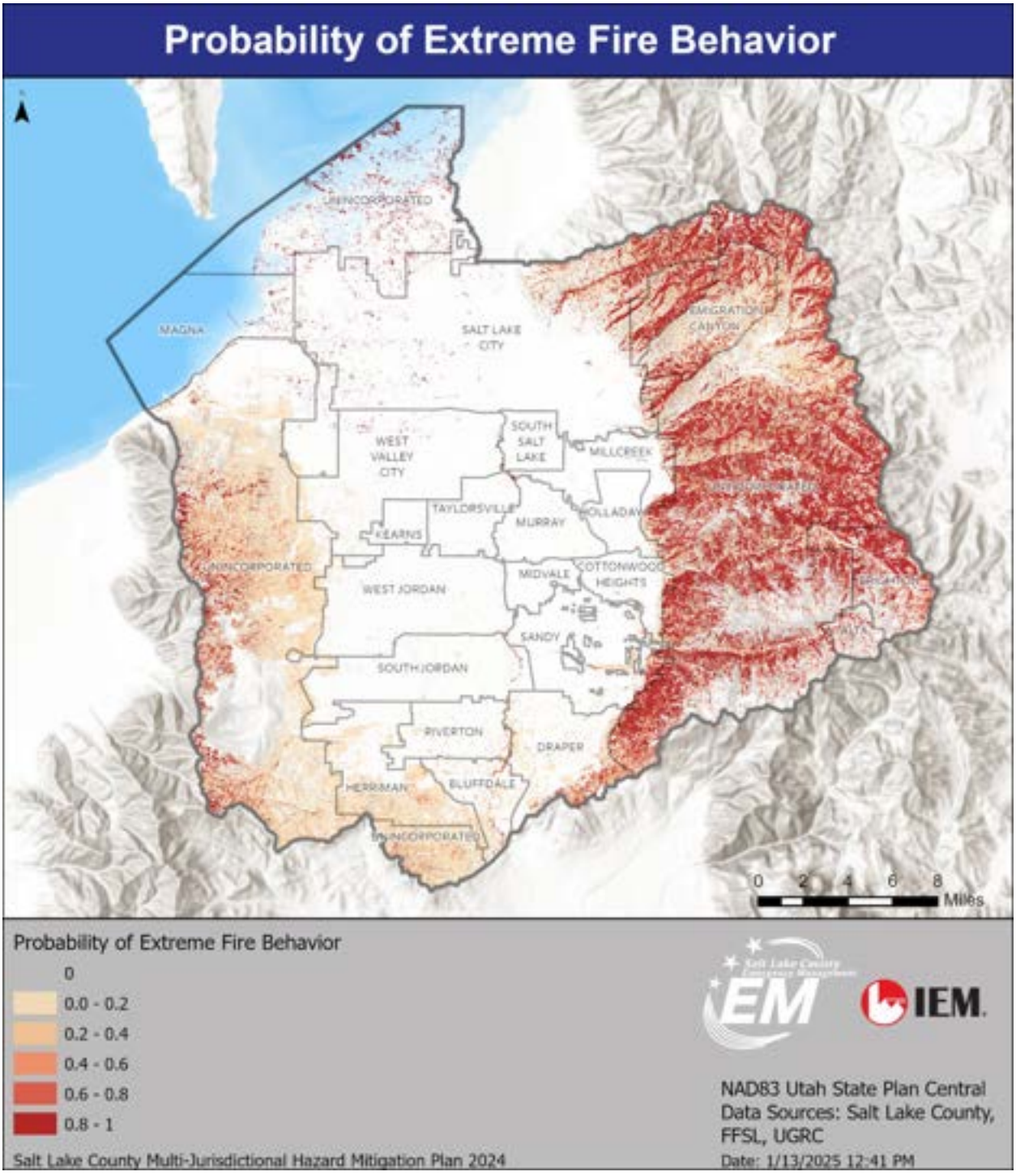


Figure 175: Potential for Extreme Fire Behavior in Salt Lake County

Climate Change Considerations

Climate change can have a significant impact on wildfires in Salt Lake County by creating conditions that are more conducive to wildfires. As temperatures rise, the potential for prolonged droughts also

increases, making vegetation more flammable and conducive to the start of wildfires. Changes in precipitation patterns can also lead to longer fire seasons and more intense fire behavior.

As climate conditions have warmed, wildfires have become more intense and destructive, especially in the western United States. Fire can play an important role in ecosystems, and forest management policies have shifted to allow more natural fire cycles. However, rising temperatures and periods of drought, which contribute to changes in fuels and create dangerous fire conditions, have complicated this natural cycle. Higher temperatures also allow invasive species like the bark beetle to thrive. These beetles have killed thousands of square miles of trees, making them more susceptible to wildfire and increasing the likelihood of faster-spreading fires.[223]

Since the early 20th century, Utah's temperature has increased by more than 2.5°F. The 2024 Utah Enhanced State Hazard Mitigation Plan projects that warming temperatures and increasing drought incidents in the western United States will increase the number of acres burned by wildfires. In addition, early spring onsets, snowmelts, and reduced seasonal snowpacks are projected to heighten fire risk.[224]

Secondary Hazards

The most direct impacts of a wildfire are damage or complete loss of property, injury, or even death. Secondary impacts can include poor air quality due to smoke in nearby areas. This can be particularly harmful for elderly individuals or others with chronic heart or lung conditions. Damage to the environment, wildlife, and natural resources also are significant. Much of the mountainous area in western Salt Lake County is a watershed, and fire can impact the quality of the water supply. As the area is a major outdoor recreation and tourism hub, a major fire can also have significant economic impacts. The risk of debris flows after a fire in mountainous areas is high for several years after a fire until vegetation is reestablished.

Vulnerability Assessment

The risk of wildfire to the people and property of Salt Lake County is a significant concern. The county has large areas of forested land, with high fuel loads near developed areas. Of the 516,502 acres in Salt Lake County, 235,040 (46%) are in High or Very High Wildfire Hazard Potential areas. These factors—combined with compounding weather conditions, such as high heat, drought, and high wind—create the potential for natural and human-caused fires that can lead to property damage and loss of life.

In the risk assessment framework (Figure 176), wildfire hazard is measured by two primary factors: 1) burn probability (or likelihood of burning), and 2) fire intensity (measured as flame length, fire line intensity, or similar measures). Figure 168–Figure 175 and Table 74 provide various examples of probability and intensity. This section aims to identify assets potentially exposed to wildfire hazards to assess vulnerability.

[223] USGS. "Wildfire and Climate Change." https://www.usgs.gov/science-explorer/climate/wildfire.
[224] Utah Hazard Mitigation. "Climate Change Considerations." 2024 Utah State Hazard Mitigation Plan. https://hazards.utah.gov/state-of-utah-hazard-mitigation-plan/.

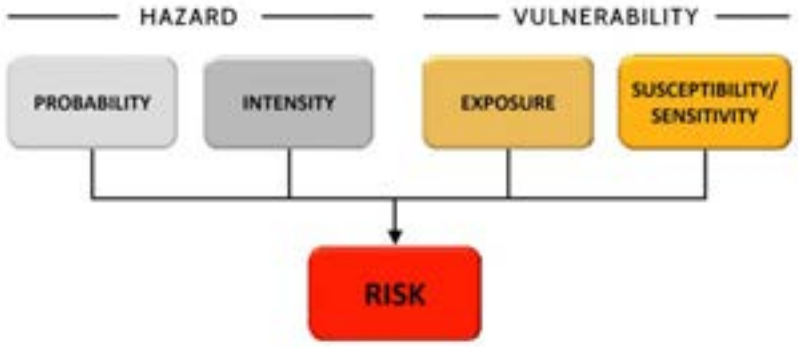


Figure 176: Fire Risk Assessment Framework[225]

An analysis based on the Utah Wildfire Risk Assessment Portal was conducted to identify each county's wildfire threat risk. The results show the threat based on the percentage of land falling under various threat categories, ranging from VVL (Very, Very Low) to VVH (Very, Very High). Seven Utah counties have 25 percent or more of their land classified as a high wildfire threat, with Salt Lake County having the highest percentage, at 59.8 percent.

Table 75: Salt Lake County Wildfire Threat, 2024[226]

VVL%	VL%	L%	LM%	M%	HM%	H%	VH%	VVH%	High Totals
1.2%	8.9%	6.2%	9.5%	14.3%	18.0%	15.3%	11.2%	15.4%	59.8%

Growing counties are recommended to follow FEMA's Firewise construction recommendations for all new development areas to minimize wildfire risk. The Firewise program encourages and supports neighborhoods in mitigating wildfire hazards. There are currently 28 Firewise communities in Utah.

Table 76: Firewise Communities in Salt Lake County[227]

Title	Number of Residents	First Year
Emigration Canyon	850	2002
Hi-Country Estates Phase 1	88	2016
Mt. Aire	100	2017
Town of Brighton	299	2021

In 2005, Utah identified almost 600 communities and their surrounding natural resources as "at risk" from wildland fire. The annually updated list comprises communities in Utah that wildland fire officials have determined to be at risk from wildland fire. The "Overall Score" represents the sum of multiple risk factors analyzed for each community. Risk factors include fire history, local vegetation, and firefighting

[225] Utah Department of Natural Resources, Forestry, Fire, and State Lands. "Utah Wildfire Risk Assessment." https://ffsl.utah.gov/fire/utah-wildfire-risk-assessment/.
[226] 2024 Utah State Hazard Mitigation Plan.
[227] Firewise USA. 2024, Interactive Map. nfpa.maps.arcgis.com/apps/Viewer/index.html?appid=c4a788340df748f18d98d8363145bb67.

capabilities. The Overall Score can range from 0 (no risk) to 12 (extreme risk). This score allows Utah's fire prevention program officials to assess relative risk and create opportunities for communication with communities on the list.

Table 77: Communities at Risk – Forestry, Fire, State Lands (2019)[228]

Community at Risk	Fire Occurrence	Structure Hazard	Fuel Hazards	Values Protected	Fire Protection Capability	Overall Score
Alta	1	2	1	2	2	6
Bluffdale	2	1	1	2	0	6
Brighton	2	2	2	3	1	10
Copperton	1	0	1	2	0	4
Cottonwood Heights	1	0	1	2	0	4
Draper (see Suncrest)	NA	NA	NA	NA	NA	NA
Emigration Canyon	2	1	3	3	0	9
Herriman	2	0	1	2	0	5
Hi-Country Estates I	2	0	1	2	0	5
Holladay	1	0	1	2	0	4
Lambs Canyon	2	2	2	2	0	8
Little Cottonwood	1	2	2	2	0	7
Mount Aire	2	1	2	2	0	7
Olympus Cove	1	0	1	2	0	4
Salt Lake City	2	0	1	2	0	5
Sandy City	1	0	1	2	0	4
Suncrest (Draper)	1	0	2	3	0	6

Access to some areas in the WUI can be challenging for emergency response. Some communities have private roads with limited access. Some roads are unimproved and may be impassable during winter months. Others are single lane, so access for large heavy vehicles like fire engines is difficult. Some are dead-end spur roads with limited ability to turn around.

The 2019 Salt Lake County Wildfire Preparedness Plan estimate the following properties at risk and their estimated value.

- Residential Land: $41,698,494,520
- Residential buildings: $72,369,023,500
- Commercial Land: $19,878,556,430

[228] Utah Department of Natural Resources, Forestry, Fire, and State Lands. "2019 Communities at Risk." https://ffsl.utah.gov/fire/wildfire-community-preparedness/communities-at-risk/https://ffsl.utah.gov/fire/wildfire-community-preparedness/communities-at-risk/, https://drive.google.com/file/d/1VQeWa63cO1eydm9uvuPDqdGnyzLIQLue/view.

DRAFT

- Commercial Buildings: $52,976,176,180

ESTIMATED IMPACT AND POTENTIAL LOSSES

Fire can damage or destroy structures, including homes, businesses, critical facilities, and other community assets. In strong winds, embers can travel several miles from the main fire and may ignite secondary fires when they encounter flammable dry vegetation, rooftops, or debris.

Residents closest to the fire may be evacuated; longer-term displacements are likely if residences are damaged. Some households may need to seek public shelter. Homes in the foothills may be on dead-end spur roads that may be more difficult to navigate in an evacuation due to narrow lanes and higher traffic volumes. These areas may also be more problematic for fire trucks to reach. Individuals closest to the wildfire are at risk of burns, other injuries, or death. Poor air quality and smoke inhalation can affect individuals across a large area and are particularly harmful to those with underlying health conditions.

Fires can damage utility systems, such as power lines and substations, communications towers, water treatment facilities, and other infrastructure systems. Roads and other transportation networks may require closure, which can cause widespread disruption as people seek alternative routes. Some canyon communities only have one major access road, which may leave residents isolated from services and, during an evacuation, may cause traffic delays. Emergency response may be delayed by power or communications disruptions if roadways are inaccessible or responding agencies are overwhelmed.

Wildfires can also have significant economic consequences. Businesses can experience direct damage to facilities, inventory, or equipment. Fire can also disrupt power, communications, other utility services, and transportation networks, which can further interrupt business operations. Businesses closed by evacuations or other interruptions will experience a loss in revenue. Businesses that remain open may be short-staffed due to employees' inability to report to work. The canyons and forests are vital to Salt Lake County's recreation and tourism industries. Fires restrict access to these areas during the event and may lead to long-term reductions in visits to the affected areas. The cost of fire suppression, repairs to damaged facilities, and economic losses can all make recovery difficult for a community. A large-scale fire can strain the community's financial resources and further slow economic recovery.

As one might expect, the effect of wildfires on the environment is typically devastating. Significant vegetation and wildlife habitats can be destroyed, requiring a long time to regenerate. Ash and debris can diminish water quality and affect the water supply. Furthermore, when land is stripped of vegetation, soil stability is reduced and erosion increases, which could further threaten structures or impact water supplies and quality. This also contributes to secondary hazards, such as slope failure or debris flows.

The NRI includes data on the EALs from individual natural hazards, historical loss, and overall risk at a county and census tract level. Salt Lake County's NRI EAL value for wildfire is $24 million, with a risk score of 99.4 and a rating of Relatively High percentile compared with the rest of the United States (Figure 177).

DRAFT

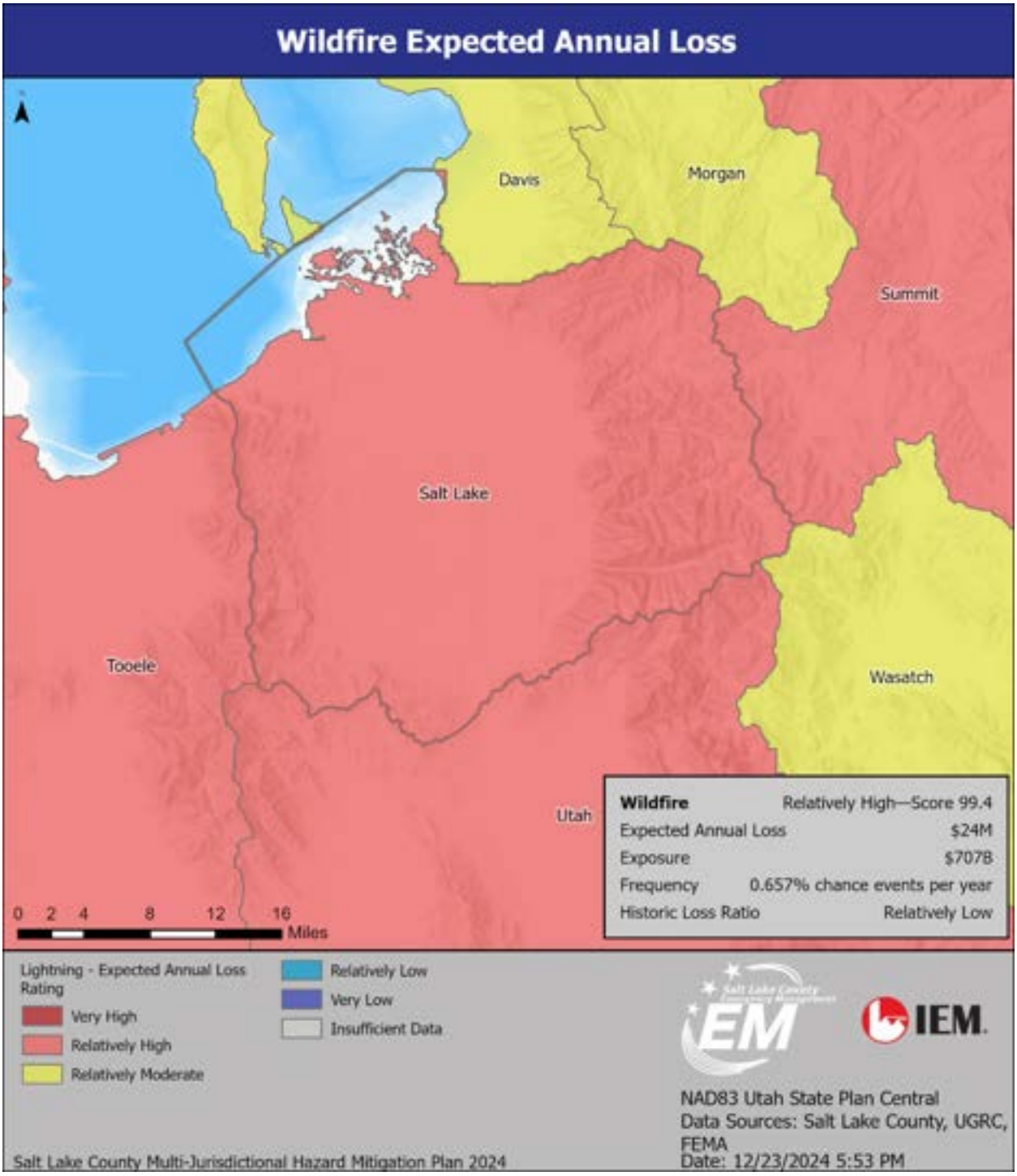


Figure 177: National Risk Index Expected Annual Loss from Wildfires in Salt Lake County[229]

[229] FEMA, National Risk Index. "Salt Lake County Expected Annual Loss Wildfire Risk Score, Map and Legend." https://hazards.fema.gov/nri/map.

VULNERABLE POPULATIONS

Social vulnerability is an indicator of an individual's ability to cope with and recover from trauma. For a given exposure, populations with high social vulnerability tend to experience impacts more severely. Social and economic factors can make it more difficult for some people to prepare for, respond to, and recover from wildfires. Vulnerable populations may lack access to resources, experience cultural and institutional barriers, have limited mobility, or have medical conditions exacerbated by stress or smoke conditions.

People over the age of 65 and individuals with disabilities are more susceptible to air pollution and particulates associated with wildfire smoke. These individuals also may experience challenges if evacuations are required. Language barriers can make it difficult to follow directions during an evacuation or to access support after a disaster. Race and ethnicity are strongly correlated with disparities in health and access to aid and resources. Wildfires disproportionately impact people with low incomes due to factors, such as inadequate housing and a diminished ability to evacuate or afford relocation expenses.

Diminished air quality is an environmental impact that can result from a wildfire and pose potential health risks. Smoke plumes from wildfires can contain potentially inhalable carcinogenic matter. Particles of soot and ash that are too small for the respiratory system to filter can cause immediate and possibly long-term health effects. Older adults or those with compromised respiratory systems may be more vulnerable to diminished air quality after a wildfire event.

In addition, fire protection in WUI areas is difficult because the tactics used for wildfire suppression cannot be used for structure protection and suppression. The energy emitted from a wildfire is hazardous to firefighters and homeowners, making protecting homes almost impossible. One-third of all firefighter deaths occur while fighting wildfires. Many believe that WUI areas significantly increase firefighter risks. Legally, federal wildland protection agencies are seldom responsible for protecting structures. State forestry agencies' legal responsibility for protecting structures in non-federal wildlands varies widely.

Table 78 provides statistics on vulnerable populations living in Salt Lake County. Figure 178 illustrates the areas in Salt Lake County with vulnerable populations, based on the indicators under 5 years old, limited English proficiency, and over 65 years old.

DRAFT

Table 78: Salt Lake County Vulnerable Populations at Risk of Wildfire[230]

Indicator	Number	Percent
Families in poverty	14,238 ±1,027	5.1% ±0.4%
People with disabilities	116,735 ±2,910	9.9% ±0.3%
People over 65 years	133,703 ±2,776	11.3% ±0.3%
People under 5 years	79,892 ±2,713	6.8% ±0.2%
People of color	364,456 ±15,081	30.9% ±1.3%
Black	21,531 ±2,346	1.8% ±0.2%
Native American	10,243 ±1,394	0.9% ±0.1%
Hispanic	225,177 ±7,575	19.1% ±0.7%
Difficulty with English	38,373 ±2,383	3.5% ±0.2%
Households with no car	21,291 ±1,297	5.2% ±0.3%
Mobile homes	7,151 ±719	1.8% ±0.2%

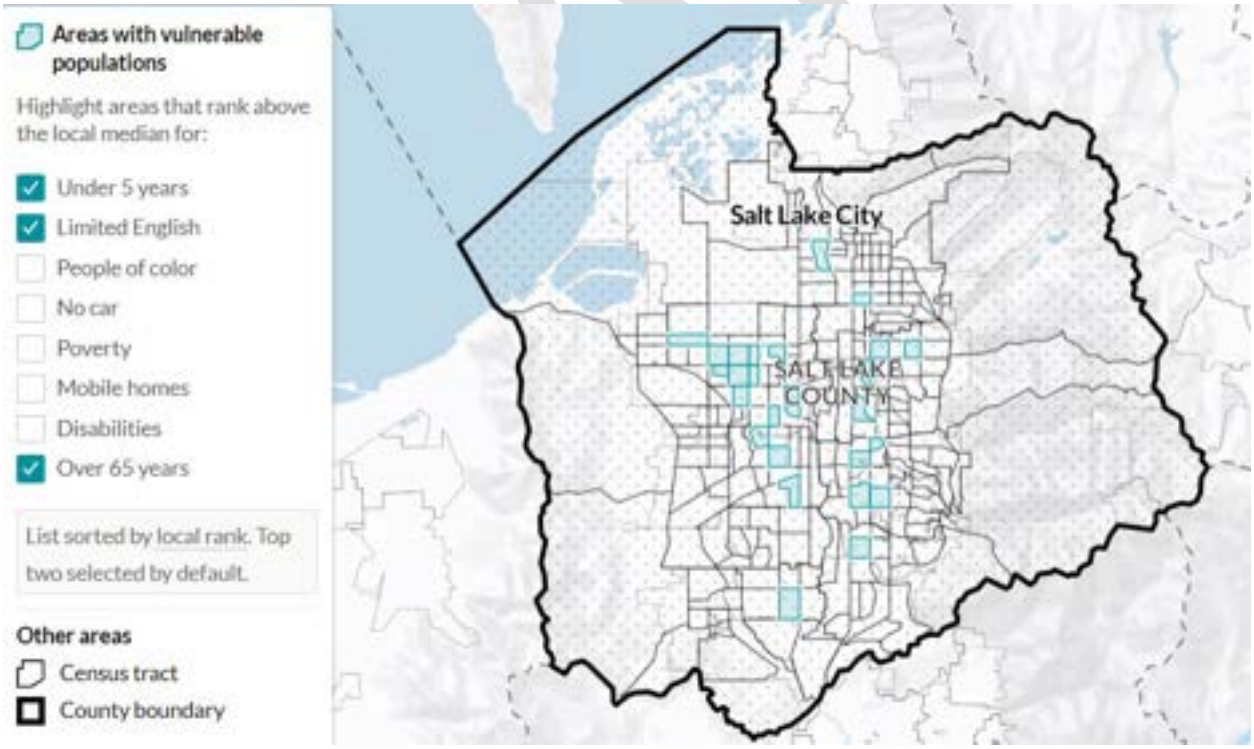


Figure 178: Three Populations Vulnerable to Wildfire in Salt Lake County[231]

COMMUNITY LIFELINES

Wildfires can strain food, hydration, and shelter lifelines for those evacuated. Safety and security lifelines also may be strained when responding to the fire and enacting evacuation procedures. Damage caused by the fire may also disrupt energy, transportation, communications, and water systems.

CHANGES IN DEVELOPMENT

Salt Lake County's development and population growth can have significant impacts on wildfires. Population increases will lead to more demands for housing and infrastructure. This need can lead to more development in wildfire-prone areas, increasing the risk of wildfires on infrastructure and the populace.

Salt Lake County continues to experience growth and development in the WUI. According to the U.S. Census, it was the most populous county in the state, with a population of 1,185,813 in 2023, reflecting steady growth over the past 13 years. However, the estimated 2024 population is slightly lower at 1,185,057, with a growth rate of -0.06 percent in the past year, according to the latest census data. Since 2010, when the population was 1,032,997, Salt Lake County has grown 14.72 percent.[232]

Growth increases vulnerability to wildfire, as the county's high projected population growth coincides with significant wildfire threats. These wildfire threats are most acute near the Wasatch and Oquirrh Mountains, where fires can quickly start and grow. Development is happening particularly quickly along the southwest border of Salt Lake County, where it meets the Oquirrh Mountains and where a significant wildfire risk exists. This growth is also increasing residents' exposure to wildfires and may leave many newcomers to Salt Lake County unaware of the risk. Besides direct risk, this growth could lead to more disruptions associated with evacuations, air quality, and public health concerns. Overall, vulnerability to wildfire has increased since the last plan update.

VULNERABILITY SCORE

The NRI was used as a primary tool during the 2024 update to analyze the county's vulnerability to wildfire. The NRI defines risk as the potential for negative impacts from a natural hazard. It determines a community's risk relative to other communities by examining the EAL and social vulnerability in a given community in relation to its resilience. Salt Lake County's NRI wildfire risk rating is shown in Figure 179. Salt Lake County has a relatively high wildfire risk, with a risk score of 99.2.

[230] Wildfire Risk. "Salt Lake County Vulnerable Populations at risk from Wildland Fire." 2024. https://wildfirerisk.org/explore/vulnerable-populations/49/49057/.
[231] Wildfire Risk. "Wildfire Risk Vulnerable Populations Map, Salt Lake County by Three Indicators." 2024. https://wildfirerisk.org/explore/vulnerable-populations/49/49057/.
[232] World Population Review.com. 2024. https://worldpopulationreview.com/us-counties/utah/salt-lake-county.

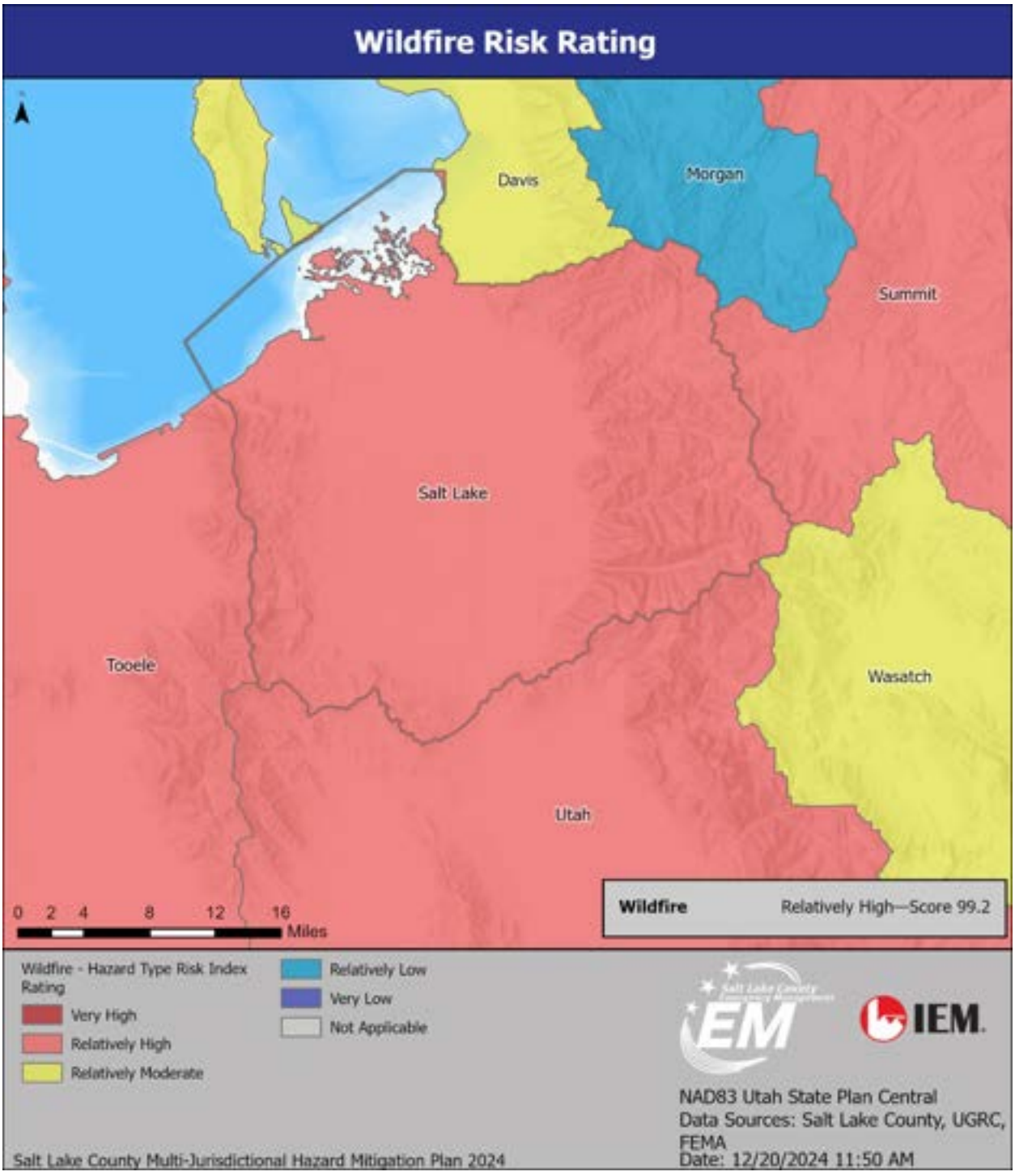


Figure 179: National Risk Index Wildfire Risk Map, Legend, and Score for Salt Lake County[233]

[233] FEMA, National Risk Index. "Salt Lake County Wildfire Score, Map and Legend." https://hazards.fema.gov/nri/map.

Civil Disturbance

Figure 180: Civil Unrest, Salt Lake City, 2020[234]

Hazard Description

Civil disturbance or disorder is a wide-ranging phenomenon encompassing any incident involving large groups of individuals participating in activities that disrupt public order and put the safety of the public, businesses, or critical infrastructure at risk. This can include rioting, looting, and violent demonstrations or protests.

Civil disorder can be the spontaneous impact of a triggering event, such as the looting seen following disasters (e.g., 2005 Hurricane Katrina in New Orleans), or it can be a specific hazard unrelated to any other hazard (e.g., 1999 World Trade Organization riots in Seattle). It can arise from peaceful events, gatherings, or demonstrations or be preplanned and intentional. Civil disturbances are rooted in highly complex social, economic, and political interactions.

The right of public assembly is protected by the First Amendment of the United States Constitution; accordingly, emergency managers must be careful to protect the rights of their citizenry. Individuals participating in civil disorder will exploit actual or perceived infringements on this right to gain public sympathy for their cause. Therefore, the most effective way to reduce politically motivated civil disorder is to stop it before it occurs. This involves significant planning by emergency managers and robust intelligence from law enforcement entities.

[234] Photo courtesy of SLCo EM.

Once civil disorder erupts, responders have access to a range of nonlethal tools designed to manage riots effectively. These include equipment, such as helmets, body armor, and gas masks, which are essential for protecting against physical harm and tear gas. Crowd control tools, such as batons, shields, and pepper spray, can be used to manage and disperse crowds if necessary. Communications devices like two-way radios and earpieces are crucial for maintaining contact and coordination among first responders. Nonlethal weapons, such as rubber bullets, bean bag rounds, and stun grenades can be used for crowd control and dispersal, while armored vehicles can be used to transport and protect first responders in volatile situations. Finally, to ensure the safety of the public, first responders, and other protesters, lethal force may be considered as a last resort.

CIVIL DISTURBANCE DURING DISASTERS

Civil disorder, primarily in the form of looting, often occurs during or immediately after a disaster. Other types of civil disorder, such as rioting, are exceedingly rare after a disaster.

Civil disorder during disasters arises from a range of motivating factors. One factor contributing to civil disorder during disasters is the disruption of environmental and social norms, which creates an atmosphere of chaos. This can lead to the rationalization of acts that would normally be considered unacceptable. This behavior change, combined with a displaced or overburdened police force, can escalate civil disorder after disasters. Another factor contributing to disaster-related civil disorder is resource scarcity when individuals either lack basic supplies or fear losing access to them. Disasters often disrupt a community's ability to provide citizens with food, clothing, and potable water. Fearing for their survival, people may loot to obtain these necessities. Lastly, it has been argued that civil disorder during disasters stems from social inequalities. There is a strong correlation between lower socioeconomic status and crime, with evidence suggesting that these conditions are worsened during and immediately following disasters, leading to an increase in crime rates and incidents of looting.

Differing opinions exist regarding the frequency of looting during disasters. Some argue that the scale of looting is often exaggerated, with perceptions of widespread looting influenced by misinterpreted behavior, misunderstandings over property ownership, exaggerated claims, and sensational media coverage. In addition, it is widely observed that in the aftermath of disasters, prosocial behaviors, such as citizens volunteering to help and feed one another, far outweigh antisocial behavior like looting. Nonetheless, looting does exist in many disasters to some degree. Looting can be traced back to various social issues but is likely influenced by a combination of factors. Although looting is often seen as opportunistic theft during chaotic events, its historical and cultural contexts play a significant role in understanding its roots.

Due to the stress caused by the impacts of a disaster, the affected populace is already under considerable duress. Therefore, responders and emergency managers must exercise caution when responding to these events. Shifting search and rescue operations to trained strike teams could help free up police resources, allowing law enforcement to focus on preventing looting. Establishing disaster recovery operations quickly and efficiently is crucial for meeting the basic needs of residents. In addition, public information campaigns are vital for informing citizens and alleviating fears.

DRAFT

POLITICALLY MOTIVATED CIVIL DISORDER

Politically motivated civil disorder occurs when a large group of individuals disturb public order to bring about political or social change. This can be preplanned in response to a significant social event or happen spontaneously at large gatherings. This type of civil disorder can lead to rioting, looting, or unauthorized gatherings that disrupt public order.

Politically motivated civil disorder can arise for various reasons, such as attempts to address socioeconomic inequalities, advocate for changes in laws, exploit chaotic situations, or pursue anarchist objectives. It can occur in the following scenarios, among others: peaceful marches and parades, planned summits and major political events, and large gatherings at concerts and sports arenas.

In politically motivated civil disorder, the initial targets often serve as symbolic acts of defiance against institutions seen as upholding the societal norms participants wish to change. This includes destructive behavior toward police forces and their equipment, firefighters and their equipment, and other symbols of law and order. This destructive behavior often morphs into crimes of opportunity, such as looting and theft, and finally, aggression toward the public and peacekeepers.

In recent years, politically motivated civil disorder and those who participate in it have become increasingly organized. These individuals often attach their cause to otherwise innocuous or peaceful demonstrations, seeking to exploit a police force already stretched thin with other responsibilities. Anarchist groups like the Black Bloc incorporate guerilla tactics into their operations, such as concealing their identities and using misdirection to evade police, to maximize the opportunity to cause damage. Another tactic used by these groups is inciting violence in the larger crowd. Exploiting existing tensions surrounding various issues—such as hunger, unemployment, lack of community services, poor housing, and labor issues—can elevate tensions in a large group. When tensions are high, a seemingly minor incident, rumor, or act of injustice can quickly incite a crowd to violence**.**

Magnitude/Extent

The magnitude or extent of civil disturbances in Utah can vary depending on the situation. Like any other area, Salt Lake County can experience a range of civil disturbances, from peaceful protests and demonstrations to more severe incidents, such as riots or civil unrest. Factors, such as population size, current social and political issues, and law enforcement response, can play a role in the extent of civil disturbances in Salt Lake County.

Location

Though civil unrest can occur anywhere, it is more likely in locations with high levels of inequality, lack of access to education and economic opportunities, political instability, ethnic or religious tensions, and a history of unresolved conflicts. In addition, issues, such as police brutality, government corruption, and lack of trust in institutions, can also make a community more vulnerable to civil disturbances.

DRAFT

Historical Events and Probability of Future Occurrences

Although civil disturbances and riots of significant magnitude are not highly likely in a given year, they remain a possibility in Salt Lake County. For instance, in February 2016, a civil disturbance arose following an altercation between police and a teenage male, which resulted in the teen being shot. A crowd soon gathered and began to throw rocks and yell obscenities at the police. This led to the arrest of four people who failed to obey commands to evacuate. In another example, at a rowdy celebration during the 2002 Winter Olympics in Salt Lake City, a crowd attempted to force its way into a beer tent and evade security. The situation escalated, requiring 75 to 100 police in full riot gear to regain control of the area. At least 30 people were arrested.

On June 1, 2020, Salt Lake City experienced significant protests in response to police brutality and the death of George Floyd. The protests began peacefully during the day but escalated as night fell. Demonstrators marched through the streets, chanting slogans and holding signs calling for justice and an end to racial inequality. However, as the evening progressed, tensions rose, and clashes between the police and protesters resulted in vandalism and destruction of property. A 7-11 store, the State Capitol building, City Creek Mall, a police station, and other locations were vandalized. The National Guard was deployed to help restore order.[235]

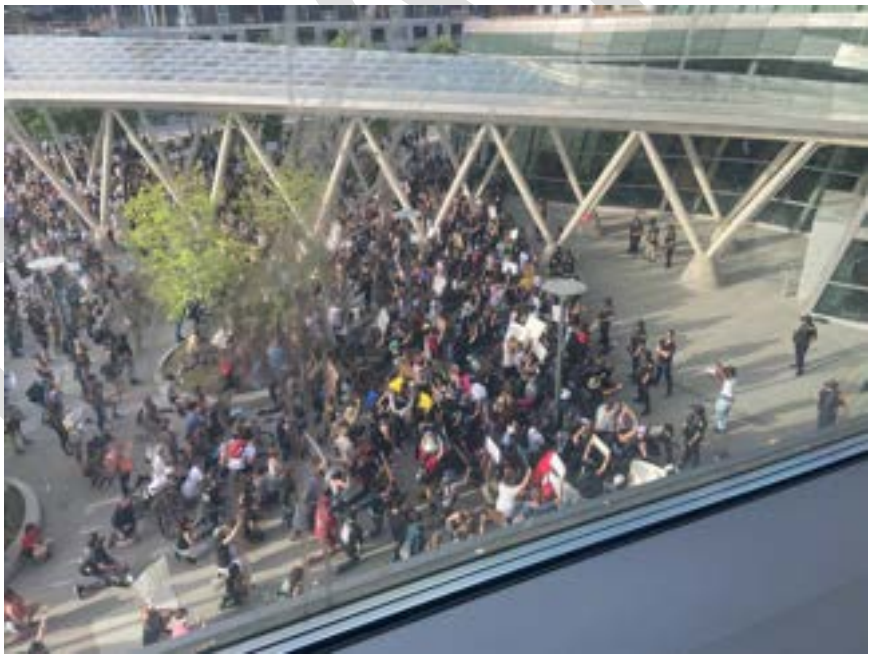


Figure 181: Protest Outside Salt Lake City Public Safety Building, June 2020[236]

On April 29, 2024, an Israel–Hamas protest took place at the University of Utah. Over 200 protestors gathered and set up tents. Officers from the University of Utah, Salt Lake City, West Valley City, Utah Highway Patrol, and the UPD dispersed the crowd and cleaned up the tents, pallets of water, toilet paper,

[235] McGurk, Nick. "Salt Lake DA: 40–50 Arrested, Police and Protester Actions Being Examined." ABC 4. June 1, 2020. https://www.abc4.com/news/salt-lake-city-protests/salt-lake-district-attorney-40-50-arrested-police-and-protestor-actions-being-examined/.
[236] Photo courtesy of SLCo EM.

buckets of human waste, and other debris left by the protestors. More than 21 people were arrested for trespassing, disorderly conduct, failure to disperse, and resisting arrest. The protestors violated the Utah State Law Administrative Code and the University of Utah Speech Policy by setting up structures overnight on campus.[237]

According to the Southern Poverty Law Center, as of 2023, 20 hate and antigovernment groups were being tracked in Utah, including five with a significant presence in Salt Lake City: The Active Club, Eagle Forum, Mom Army Salt Lake City, Utah Constitutional Militia, and Utah Patriots.[238] In addition, seven groups are statewide. Although civil disturbances could arise from any contentious situation or gathering of predisposed people, Salt Lake County needs to remain aware of groups with the potential to spark these events.

Climate Change Considerations

Civil disturbances and violent protests or riots can have localized short-term environmental impacts, such as damage to buildings and infrastructure, leading to increased waste and emissions from fires. However, in the larger context of climate change, the direct impact of civil disturbances and violent riots is relatively minor. Although civil disturbances and violent riots can have immediate environmental consequences, their effects on climate change are minimal compared with other human activities.

Secondary Hazards

Civil disturbances can have far-reaching impacts on the climate through secondary or cascading events. These disturbances can disrupt crucial infrastructure, such as power plants, transportation networks, and industrial facilities, leading to increased emissions of greenhouse gases and other pollutants. In addition, civil disturbances can contribute to deforestation through land clearing and illegal logging, reducing the capacity of forests to absorb carbon dioxide and thereby increasing levels of greenhouse gases in the atmosphere. The displacement of populations due to civil disturbances can also lead to increased demand for resources and energy in host communities, putting pressure on natural resources and contributing to environmental degradation and climate change. Furthermore, the economic impacts of civil disturbances, such as damage to businesses and infrastructure, loss of livelihoods, and increased poverty, can further exacerbate pressure on natural resources and contribute to environmental degradation and climate change. These examples highlight the interconnectedness of civil disturbances and their potential impact on the climate.

Vulnerability Assessment

Although civil disorder is inherently a threat to the public, its many hazardous impacts also threaten public safety. Salt Lake County, like any other area, has the potential for civil disturbances. Social tensions, public demonstrations, and other forms of civil unrest can contribute to the county's vulnerability by

[237] University of Utah Communications. "University of Utah Campus Protest Recap." The University of Utah. May 1, 2024. https://attheu.utah.edu/facultystaff/university-of-utah-campus-protest-recap/.
[238] Southern Poverty Law Center. "In 2023, 20 Hate and Antigovernment Groups were Tracked in Utah." https://www.splcenter.org/states/utah.

creating social tensions, disrupting public order, and potentially leading to unrest and conflict. Public demonstrations and other forms of civil unrest can strain resources and infrastructure, impacting the community's safety and security. In addition, civil disturbances can affect the functioning of essential services and disrupt daily life, making it necessary for residents to stay informed and prepared to follow guidance from local authorities.

ESTIMATED IMPACTS AND POTENTIAL LOSSES

IMPACT ON SALT LAKE COUNTY RESIDENTS

During a civil disturbance, residents can be impacted in several ways. They may experience disruptions to essential services, such as transportation, healthcare, and utilities. There is also potential for property damage, personal injury, and emotional distress. Civil disturbances can also lead to economic repercussions, including loss of income and damage to businesses. Injuries and fatalities also are possible.

IMPACT ON ESSENTIAL FACILITIES AND OTHER PROPERTY

Essential facilities may be impacted if they are near or the target of civil disorder or riots. Businesses are often the focus of civil disruption, as individuals will target these establishments for looting and vandalism. In addition, in scenarios where supplies are limited, these businesses are often looted for their goods. Any building/edifice where the riot or disorder occurs may be vulnerable to damage.

IMPACT ON CRITICAL INFRASTRUCTURE

Civil disturbances can lead to various impacts and losses to a community's critical infrastructure. This can include damage to transportation systems, such as roadways, bridges, and public transit facilities, and disruption to communications networks, including phone lines and internet services. In addition, civil disturbances can damage power plants, electrical grids, and water supply systems, leading to power outages and water supply disruptions. These disruptions can significantly impact the daily lives of community members and hinder the delivery of essential services.

IMPACT ON OPERATIONS

First responders are particularly at risk during civil disruptions. They are often the first individuals on the scene, which puts them in direct danger of injury. In addition, responders are seen as part of the authority being protested, making them potential targets. Civil disturbances can also overwhelm local emergency response services, impacting their ability to manage the situation effectively. This can lead to increased call volumes, communications challenges, physical damage to facilities, and the need for heightened security measures. Emergency operation centers may need to coordinate with law enforcement and other agencies to effectively manage civil disturbances.

IMPACT ON ENVIRONMENT

Civil disturbances can have several impacts on the environment. These include increased pollution from burning vehicles, buildings, and other materials and the use of chemical agents to disperse crowds.

DRAFT

Habitat destruction is also a concern, as unrest can destroy natural habitats, such as forests and wetlands. In addition, large gatherings during civil disturbances can increase the generation of waste, including litter and potentially hazardous materials. Furthermore, civil disturbances can disrupt ecosystems and wildlife, leading to the displacement of animals and the destruction of natural resources.

VULNERABLE POPULATIONS

The populations most vulnerable to social disturbances generally include marginalized communities, such as low-income individuals, ethnic minorities, refugees, and people with disabilities. These groups often face systemic barriers and discrimination, making them more susceptible to the negative impacts of social disturbances. In addition, individuals who lack access to education, healthcare, and social support systems are also at heightened risk during times of social unrest. However, all individuals and infrastructures near a civil disorder are vulnerable to injury or damage.

COMMUNITY LIFELINES

Civil disturbances can impact several community lifelines, including safety and security, food, hydration, shelter, health and medical services, energy, communications, and transportation. These disturbances can disrupt law enforcement and emergency services, compromising public safety. In addition, they can cause shortages of essential resources, such as food, water, and shelter due to damaged infrastructure or restricted access. Health and medical services may be overwhelmed, while energy distribution and communications networks can be disrupted, leading to power outages and compromised access to information. Furthermore, transportation systems may be delayed, hindering the movement of goods, services, and people and emergency response and evacuation efforts.

CHANGES IN DEVELOPMENT

Civil disturbances can significantly impact future land use and development in a community. These disturbances can lead to damage to infrastructure, businesses, and residential properties, which may cause a decline in property values. As development and population increase in Salt Lake County more structures, property, and lives are at risk of damage and loss from civil disturbances. As a result, developers and investors may be hesitant to invest in the affected areas, leading to a slowdown in development and revitalization efforts. Civil disturbances can also create a sense of insecurity and instability, which may discourage businesses and residents from moving into the area. This can alter land use patterns, with certain regions being abandoned or repurposed for other uses. Overall, civil disturbances can hinder the long-term growth and development of a community, requiring significant time and effort to rebuild and restore trust with investors and developers.

VULNERABILITY SCORE

The county’s diverse population, including various political and social viewpoints, can lead to tensions and potential conflicts. In addition, large public gatherings and events may present opportunities for civil disturbances. Recent social and political movements have created conditions that can lead to civil unrest.

DRAFT

Based on Salt Lake County's moderate social vulnerability, high EAL, and high community resilience to overall hazards, the community's vulnerability to civil disturbance is moderate to high. Although its moderate social vulnerability may help mitigate some impacts, the high EAL and high community resilience to overall hazards suggest that the community may still be significantly vulnerable to civil disturbances.

DRAFT

Hazardous Materials

Figure 182: Image of Hazardous Materials in Storage[239]

Hazard Description

Hazardous materials, also known as HAZMAT, threaten human health, safety, and the environment and are classified as physical or health hazards. Physical hazardous materials can explode, catch fire easily, or react dangerously with water or other substances. They include explosives, flammable gases and liquids, organic peroxides, oxidizers, pyrophoric materials, and unstable/reactive materials. Health hazard materials are those that can cause harm to human health if ingested, inhaled, or absorbed through the skin. They include toxic, highly toxic, and corrosive substances. These materials come in various forms, including gases, liquids, and solids. HAZMAT can be found in many settings, such as workplaces, homes, and transportation systems. Hazardous materials are classified based on the National Fire Protection Association (NFPA) codes and standards.

- HAZMAT Incident—**Fixed Site** is defined as an uncontrolled release of hazardous material originating from a building, structure, or fixed equipment that can pose a risk to life, health, safety, property, or the environment.
- HAZMAT Incident—**Transportation** is defined as the uncontrolled release of a hazardous material during transport that can pose a risk to life, health, safety, property, or the environment.

Magnitude/Extent

Hazardous materials can have a devastating and enduring impact on communities. Exposure to these substances may lead to various health issues, ranging from minor irritations to serious illnesses or even fatalities. In addition, HAZMAT spills can severely damage the environment by contaminating the air, soil,

[239] https://unsplash.com/photos/a-large-group-of-red-barrels-sitting-next-to-each-other-ETgEwZXbooU.

and water. Cleanup can take weeks, months, or even years to complete, depending on the extent of the spill.

Beyond their physical impact, HAZMAT incidents can lead to considerable psychological and economic harm in a community. Evacuations, property loss, and interruptions to everyday life can significantly affect individuals and families. In addition, these incidents can have a ripple effect on the local economy, reducing productivity and revenue for businesses and industries. Information on various HAZMAT incident levels can be found in Table 79.

Table 79: HAZMAT Incident Levels[240]

Incident Level	Type	Description
Incident Level 1	Minor Hazard	The hazardous material poses a low risk and can usually be handled by the local fire department or HAZMAT team without extra assistance.
Incident Level 2	Moderate Hazard	The hazardous material poses a moderate threat to human health and the environment. Additional resources and specialized equipment may be required to manage the situation.
Incident Level 3	Serious Hazard	A hazardous material significantly threatens human health and the environment. These situations often require a large-scale response with multiple agencies and specialized equipment.
Incident Level 4	Severe Hazard	A significant threat to humans and the environment requires a massive response from multiple agencies, specialized equipment, and significant resources.
Incident Level 5	Catastrophic Hazard	The hazardous material poses an extreme threat to human health and the environment.

The seriousness of a hazardous material incident is assessed based on several factors, including the type and number of hazardous materials involved, the location and scale of the release or spill, and the potential effects on human health, the environment, and property. Other influencing factors include weather conditions, population density, and how quickly emergency services can respond. Generally, these incidents can vary in severity from minor spills that can be rapidly contained and cleaned to significant events that might have enduring and devastating impacts on the surrounding area.

Location

Hazardous materials incidents occur more frequently than commonly thought and can occur anywhere worldwide. Certain regions are particularly susceptible due to factors, such as industrial facilities dealing with hazardous substances, natural disasters, and individuals' mistakes. Such incidents can lead to serious damage to property and infrastructure, disturb everyday life, and, tragically, even loss of life.

For example, regions with a high density of industrial facilities that manage hazardous materials are more vulnerable to incidents, including spills, leaks, or explosions. Such events can cause environmental harm,

[240] Lone Star HAZMAT. "What is Meant by the Different HAZMAT Incident Levels?" https://lonestarhazmat.com/what-is-meant-by-the-different-hazmat-incident-levels/.

injuries, fatalities, and disruptions to the local economy and community. Salt Lake County contains several chemical plants, as detailed in Table 80, which put the area at risk of incidents involving hazardous materials and potential contamination. In addition, the county has many pipelines transporting natural gas, natural gas liquids, condensate, crude oil, petroleum, and petrochemical products.

Table 80: Petrochemical Companies in Salt Lake County[241]

Corporation	
Ecolab	Tata Chemicals
Linde	Solenis
Air Liquide	Kao Corporation
Johnson Matthey	Alpha Plastics
PPG	Rentech
Huntsman Corp	Hempel
Wurth	Headwaters
Solvay	Brody Chemical
Daikin	Tronox
Innophos	ChemTreat
IFF	Chemtrade
PPG Industries	Incitec Pivot
Bridgestone Global	Asphalt Materials
INVISTA	Western Explosive Systems

Figure 183 shows the gas transmission and hazardous liquid pipelines in Salt Lake County.

DRAFT

[241] Glassdoor. “Top Chemical Manufacturing Companies in Salt Lake City, UT.” https://www.glassdoor.com/Explore/browse-companies.htm?overall_rating_low=3.5&page=1&locId=755&locType=M&locName=Salt%20Lake%20City,%20UT&industry=200068&filterType=RATING_OVERALL.

Figure 183: Pipelines That Carry Gas and Hazardous Liquids in Salt Lake County[242]

Historical Events and Probability of Future Occurrences

From January 1, 2018, to October 28, 2024, at the time of writing, Salt Lake County experienced 2,368 HAZMAT incidents. Fortunately, there were no injuries, fatalities, or evacuations. However, eleven incidents were considered serious, as detailed in Table 81.[243]

Table 81: HAZMAT Transportation Incidents, Salt Lake County[244]

Report Number	Carrier	Incident City	Date	Commodity	Hazardous Class	Shipper
2018030143	Jackson Energy	Midvale	01/18/2018	Diesel fuel, Gasoline, Casinghead	3	Chevron Products

[242] National Pipeline Mapping System. "Public Viewer." https://pvnpms.phmsa.dot.gov/PublicViewer/.
[243] Pipeline and Hazardous Materials Safety Administration. "Incident Report Database." https://portal.phmsa.dot.gov/analytics/saw.dll?Portalpages&PortalPath=%2Fshared%2FPublic%20Website%20Pages%2F_portal%2FHazmat%20Incident%20Report%20Search.
[244] N.O.S. = not otherwise specified.

Report Number	Carrier	Incident City	Date	Commodity	Hazardous Class	Shipper
2018100372	Saia Motor Freight Line, LLC	Salt Lake City	10/05/2018	Hydrochloric acid	8	Univar USA Inc.
2019060242	Quality Carriers	Salt Lake City	03/02/2019	Flammable liquids N.O.S.	3	Akzo Nobel
2021070759	Tesoro Corporation	Salt Lake City	07/12/2020	Petroleum crude oil	3	Tesoro Corporation
021010605	FedEx Freight, Inc.	Salt Lake City	12/30/2020	Corrosive liquid, acidic, inorganic, N.O.S.	8	Steen Research LLC
2021120260	Tesoro Refining & Marketing Company	Salt Lake City	10/13/2021	Petroleum crude oil	3	Tesoro Corporation
2022050252	YRC Inc.	West Valley City	11/27/2021	Paint including paint, lacquer, enamel, stain, shellac, varnish, polish, liquid filler, and liquid lacquer base	3	Sumter Coatings Inc.
2022040362	FedEx Freight, Inc.	Salt Lake City	03/30/2022	Combustible liquid, N.O.S.	2	PAK Technologies
203010095	FedEx Freight, Inc.	Salt Lake City	12/23/2022	Corrosive liquid, acidic, Inorganic N.O.S.	8	Applied Specialty Inc.
2023010542	FedEx Freight, Inc.	Salt Lake City	01/03/2023	Corrosive liquid, base, organic, N.O.S.	8	BPC, Seatex (C8)
2024020576	FedEx Freight, Inc.	Salt Lake City	02/06/2024	Flammable liquids, N.O.S.	3	Baker Petrolite LLC.

SUPERFUND SITES

A Superfund site is a location identified by the EPA as contaminated by hazardous waste. These areas seriously threaten human health and the environment, often containing toxic chemicals, heavy metals, and other harmful substances.

The presence of a Superfund site in a community can have serious repercussions. Residents may be exposed to harmful contaminants, which can lead to various health issues, such as cancer, birth defects, respiratory problems, and neurological conditions. Moreover, the pollution can negatively affect local ecosystems, endangering wildlife and disrupting the natural environment.

DRAFT

Superfund site cleanup tends to be complicated, lengthy, and costly. It may include activities, such as digging up contaminated soil, purifying polluted water, and disposing of hazardous waste. Generally, taxpayers pay the expenses; the entire process can span years or even decades.

Table 82: Superfund Sites, Salt Lake County

Site	City	NPL[245] Status	Description
700 South 1600 East PCE Plume	Salt Lake City	Final	The 700 South 1600 East PCE Plume site is near the George E. Wahlen U.S. Department of Veterans Affairs (VA) Medical Center in Salt Lake City, Utah. In the late 1970s and early 1980s, the VA operated a dry-cleaning service that used tetrachloroethylene (PCE), leading to soil and groundwater contamination through improper disposal. PCE was first detected in the groundwater at 32 µg/L in the 1990s, exceeding the drinking water standard of 5.0 µg/L. This prompted EPA investigations in 1999, finding concentrations between 11 and 320 µg/L. By 2010, dissolved PCE was found in residential springs. On September 18, 2012, officials supported listing the site on the National Priorities List (NPL) due to exposure concerns. It was officially added to the Superfund NPL in May 2013, with the VA responsible for cleanup.[246]
Davenport and Flagstaff Smelters	Sandy City	Deleted	The Davenport and Flagstaff smelters site is about 15 miles southeast of Salt Lake City, Utah, at the mouth of Little Cottonwood Canyon. Established around 1870, the smelters processed lead and silver ore from nearby Alta, Utah, leading to soil contamination. Both smelters were decommissioned by 1879, and the area transitioned from agricultural use to residential and commercial development in the 1970s and 1980s. Cleanup efforts are ongoing at the site.[247]
Kennecott North Zone/Tailings	Magna	Proposed	The Kennecott North Zone is an industrial area at the northern edge of the Oquirrh Mountains, near Magna and the Great Salt Lake. Major transport routes, including I-80, pass through the site. Since 1906, the area has processed ores, such as copper, lead, and gold, producing hazardous waste that has contaminated soils, water, and wetlands. Key contaminants include arsenic, cadmium, lead, and selenium. On January 18, 1994, the EPA proposed adding the North Zone to the NPL. A 1995 agreement between Rio Tinto Kennecott Copper (RTKC), the EPA, and Utah Department of Environmental Quality (UDEQ) allowed RTKC to undertake cleanup projects while deferring the NPL listing. The 2002 Record of Decision (ROD) outlined a cleanup strategy targeting surface materials threatening workers and wildlife. It included long-term efforts to treat groundwater and

[245] National Priorities List.
[246] U.S. Environmental Protection Agency. “700 South 1600 East PCE Plume Salt Lake City, UT.” https://cumulis.epa.gov/supercpad/cursites/csitinfo.cfm?id=0800743.
[247] U.S. Environmental Protection Agency. “Davenport and Flagstaff Smelters Sandy, UT.” https://cumulis.epa.gov/supercpad/SiteProfiles/index.cfm?fuseaction=second.Cleanup&id=0801257#bkground.

Site	City	NPL[245] Status	Description
			remediate inaccessible waste. The ROD included detailed summaries of the necessary actions.[248]
Kennecott South Zone/Bingham	Copper-ton	Non-NPL, Superfund Alternative Approach	The Kennecott South Zone, located 25 miles southwest of Salt Lake City in the Oquirrh Mountains, includes the Bingham Mining District, the Bingham Canyon open pit mine, waste rock dumps, and the Copperton Mill. Mining began in the 1860s and continues today, resulting in hazardous waste that contaminates soils, sludge, surface water, and groundwater, impacting nearby wetlands and the Great Salt Lake. Cleanup efforts are ongoing. Although not on the NPL, the site is considered NPL-caliber and is being managed through the Superfund Alternative Approach.[249]
Midvale Slag	Midvale	Deleted NPL	The 446-acre Midvale Slag site in Midvale and Murray City, Utah, hosted five lead and copper smelters from 1871 to 1971. After the facilities were demolished in the 1970s, the area was contaminated with heavy metals, and ongoing cleanup and maintenance efforts continue.[250]
Murray Smelter	Murray City	Proposed NPL	The 142-acre Murray Smelter site in Murray City, Utah, was once the largest lead smelter in the U.S. Owned by ASARCO, it operated two smelters: the Germania Smelter (1872–1902) and the Murray Smelter (1902–1949). Smelting byproducts include slag, arsenic, and cadmium, leading to contamination of soil, sediment, and groundwater with heavy metals. The cleanup is complete, and ongoing maintenance activities are in place.[251]
Petrochem/ Ekotek	Salt Lake City	Deleted NPL	The 7-acre Petrochem Recycling Corp./Ekotek site in northern Salt Lake City, Utah, has a history of oil refining, hazardous waste management, and used oil recycling. Improper practices contaminated the groundwater and soil with hazardous substances. After cleanup, the EPA removed the site from NPL in 2003, but groundwater monitoring is ongoing.[252]
Portland Cement	Salt Lake City	Final NPL	The 71-acre Portland Cement site in Salt Lake City, Utah, was used from 1963 to 1983 to deposit approximately 500,000 cubic yards of cement kiln dust, which contains heavy metals, such as arsenic, lead, and chromium. The site also saw the disposal of chromium-bearing bricks, leading to soil, air, and groundwater contamination. Cleanup has occurred, and ongoing maintenance activities are in place.[253]

[248] U.S. Environmental Protection Agency. "Kennecott (North Zone) Magna, UT." https://cumulis.epa.gov/supercpad/SiteProfiles/index.cfm?fuseaction=second.Cleanup&id=0800636#bkground.
[249] U.S. Environmental Protection Agency. "Kennecott (South Zone) Copperton, UT." https://cumulis.epa.gov/supercpad/SiteProfiles/index.cfm?fuseaction=second.Cleanup&id=0800601#bkground.
[250] U.S. Environmental Protection Agency. "Midvale Slag, Midvale, UT." https://cumulis.epa.gov/supercpad/SiteProfiles/index.cfm?fuseaction=second.Cleanup&id=0800641#bkground.
[251] U.S. Environmental Protection Agency. "Murray Smelter Murray City, UT." https://cumulis.epa.gov/supercpad/SiteProfiles/index.cfm?fuseaction=second.Cleanup&id=0800697#bkground.
[252] U.S. Environmental Protection Agency. "Petrochem Recycling Corp./Ekotek Plant Salt Lake City, UT." https://cumulis.epa.gov/supercpad/cursites/csitinfo.cfm?id=0800649.
[253] U.S. Environmental Protection Agency. "Portland Cement (KILN Dust 2 & 3) Salt Lake City, UT." https://cumulis.epa.gov/supercpad/cursites/csitinfo.cfm?id=0800690.

Site	City	NPL[245] Status	Description
Rose Park Sludge Pit	Salt Lake City	Deleted NPL	The Rose Park Sludge Pit is in Rosewood Park, Salt Lake City, Utah. From the 1930s to 1957, the Utah Oil and Refining Company disposed of acidic waste in an unlined pit, covering around 5 acres and reaching depths of 20 feet. This waste contaminated the soil and groundwater. After cleanup, the EPA removed the site from the NPL in 2003, and maintenance continues.[254]
Sharon Steel	Midvale	Deleted NPL	The 470-acre Sharon Steel Corp. (Midvale Tailings) site in Midvale, Utah, operated as a smelting and ore milling facility from 1906 to 1971, producing lead, copper, and zinc. In 1982, UDEQ intervened after discovering residents were using contaminated tailings in gardens and sandboxes. Testing revealed high levels of lead and arsenic in the groundwater. Contamination impacted air, soil, and water. After cleanup efforts, the EPA removed the site from the NPL in 2004.[255]
Utah Power & Light	Salt Lake City	Final NPL	The 2.2-acre Utah Power & Light/American Barrel Co. site in Salt Lake City operated from 1870 to 1987 for barrel storage, wood treatment, and coal gasification. These activities produced hazardous byproducts, contaminating soil and groundwater. Cleanup has been completed, and maintenance activities continue.[256]
Wasatch Chemical	Salt Lake City	Final NPL	The 18-acre Wasatch Chemical Co. site in Salt Lake City, Utah, was used from 1957 to 1971 for warehousing and producing industrial chemicals. From the 1970s to 1992, it blended and packaged pesticides, herbicides, and fertilizers, discharging wastewater on-site and contaminating the soil and groundwater. The cleanup is complete, but operation and maintenance activities are ongoing.[257]

Climate Change Considerations

Climate change may increase the likelihood and intensity of hazardous waste incidents. Extreme weather events, such as tornadoes, floods, and wildfires, can damage infrastructure, disrupt waste management systems, and lead to hazardous materials leaking into the environment. In addition, rising temperatures can intensify chemical reactions that produce hazardous waste and raise the volatility of certain substances. Furthermore, climate change can modify ecosystems, create new pathways for hazardous waste to enter the food chain, and impact human and animal health. Therefore, it is essential to

[254] U.S. Environmental Protection Agency. "Rose Park Sludge Pit Salt Lake City, UT." https://cumulis.epa.gov/supercpad/SiteProfiles/index.cfm?fuseaction=second.Cleanup&id=0800663#bkground.
[255] U.S. Environmental Protection Agency. "Sharon Steel Corp. (Midvale Tailings) Midvale, UT." https://cumulis.epa.gov/supercpad/SiteProfiles/index.cfm?fuseaction=second.Cleanup&id=0800694#bkground.
[256] U.S. Environmental Protection Agency. "Utah Power & Light/American Barrel Co. Salt Lake City, UT." https://cumulis.epa.gov/supercpad/cursites/csitinfo.cfm?id=0800680.
[257] U.S. Environmental Protection Agency. "Wasatch Chemical Co. (Lot 6) Salt Lake City, UT." https://cumulis.epa.gov/supercpad/SiteProfiles/index.cfm?fuseaction=second.Cleanup&id=0800596#bkground.

incorporate climate change considerations into a comprehensive strategy to prevent and address hazardous waste incidents, safeguarding public health and the environment.

Secondary Hazards

Secondary hazards from hazardous materials incidents can significantly amplify the risks associated with the initial event. One major concern is the potential for fires and explosions, especially if flammable materials are involved, which can extend the danger beyond the original site. In addition, chemical reactions can produce toxic gases, contaminate the air, and pose serious health risks to first responders and nearby residents. Environmental contamination is another critical issue, as hazardous substances can seep into soil and waterways, leading to long-term ecological damage and affecting drinking water supplies. The health of emergency personnel can also be compromised during their response efforts. Evacuations may be necessary, causing panic and posing logistical challenges. Increased traffic from fleeing citizens and arriving emergency responders can create further hazards and accidents. In addition, structural damage from the incident can cause dangerous collapses. Public panic fueled by misinformation can also complicate response efforts.

Vulnerability Assessment

Salt Lake County is significantly vulnerable to hazardous materials in various locations, including industrial sites, transportation routes, and waste management facilities. The proximity of residential areas to these sites increases the risk of exposure to toxic substances in the event of accidental releases or spills. The effects of hazardous materials incidents include physical harm from inhalation or coming into contact with released substances. If substances ignite or explode, injury or property damage may result. The county's geographical features along the Wasatch Range, coupled with emissions from the US Magnesium refinery, cause air quality concerns, including ground-level ozone particle pollution.[258] According to a 2023 report by the American Lung Association, the Salt Lake City region experienced more unhealthy air pollution in three categories: ozone, short-term particle pollution, and annual particle pollution. This report listed Salt Lake City among the nation's most air-polluted cities, ranking it 10th for ozone and 19th for short-term particle pollution.[259] Salt Lake County's geography, coupled with emissions from refineries, results in an increased potential impact of hazardous materials on public health and the environment.

ESTIMATED IMPACTS AND POTENTIAL LOSSES

In a significant hazardous materials incident in Salt Lake County, the estimated losses could be substantial, affecting the local economy and community health. The immediate financial impact may include emergency response costs, damage to infrastructure, and the potential for long-term environmental rehabilitation. In addition, businesses nearby might face temporary closures, leading to job losses and decreased revenue. The public health ramifications could be severe, with possible evacuation

[258] NOAA Research. "One Facility Makes a Big Contribution to Salt Lake's Winter Brown Cloud." January 25, 2023. https://research.noaa.gov/one-facility-makes-a-big-contribution-to-salt-lakes-winter-brown-cloud/.
[259] NOAA Chemical Sciences Laboratory. "Finding Helps Explain Salt Lake City's Persistent Air Quality Problems." January 25, 2023. https://csl.noaa.gov/news/2023/368_0125.html.

orders, health-related emergencies, and long-term effects on air and water quality. This incident could also strain local resources and emergency services, highlighting the need for robust preparedness and response protocols to mitigate such risks.

VULNERABLE POPULATIONS

Populations vulnerable to hazardous materials incidents often include those living near industrial facilities, transportation routes for hazardous goods, and areas prone to natural disasters. Communities with lower socioeconomic status may face heightened risks due to inadequate emergency preparedness and response resources. In addition, children, senior citizens, and individuals with preexisting health conditions are particularly susceptible to the adverse effects of hazardous materials exposure, as their physical resilience may be compromised. Furthermore, marginalized groups might experience barriers in accessing timely information and medical care during incidents, amplifying their vulnerability and potential health impacts.

COMMUNITY LIFELINES

Several of community lifelines can be significantly impacted in a hazardous materials incident, affecting the overall response and recovery efforts. The Safety and Security lifeline may be strained as authorities work to protect the public from exposure and containment of hazardous materials. Meanwhile, the Health and Medical lifeline could become overwhelmed as hospitals and medical facilities are forced to handle potential casualties requiring immediate care due to exposure or contamination. The Food, Hydration, and Energy lifelines also may be disrupted if the incident involves contamination of local water supplies or facilities producing critical resources. Lastly, the Transportation lifeline may face challenges as roadways are restricted or closed for cleanup and safety measures, hampering emergency responders and the flow of supplies needed for recovery efforts. The interconnected nature of these lifelines highlights the need for a coordinated response to minimize the impact of such incidents on the community.

CHANGES IN DEVELOPMENT

Salt Lake County's development and population growth have significant impacts on the release of hazardous materials, since the increase in infrastructure can raise the potential for accidents to occur. Urbanization can also lead to increased population near areas where hazardous materials are present, increasing the likelihood of accidental exposure. In northwest Salt Lake County, there is a combination of hazardous waste sites and population growth that could expose more individuals to hazardous material spills or contamination.

Future development in Salt Lake County may face significant challenges due to the risks associated with hazardous materials incidents. The presence of industrial facilities and transportation routes for hazardous substances poses a potential threat to public safety and the environment. Such incidents can lead to long-term consequences, including contamination of land and water resources, which may deter new investments and slow down redevelopment efforts. Zoning regulations may become more stringent because of past incidents, leading to restrictions on where certain businesses can operate. In addition, community concerns about safety could push policymakers to prioritize environmental assessments and disaster preparedness, ultimately reshaping development plans.

DRAFT

Future land development in Salt Lake County could be significantly impacted by incidents involving hazardous materials. Such events can contaminate soil and water resources, limiting land usability for residential, commercial, or recreational purposes. Areas that have experienced spills or accidents may be designated as hazardous zones, leading to increased regulatory scrutiny and potentially costly remediation processes. Developers may face restrictions on building permits, and the perception of risk can deter investment and development in affected regions. In addition, prioritizing environmental safety measures may lead to more stringent planning and development guidelines, potentially reshaping community layouts and infrastructure design. As awareness of environmental issues grows, future projects may increasingly require comprehensive risk assessments and sustainable practices to mitigate the effects of any hazardous incidents.

VULNERABILITY SCORE

The vulnerability score is likely moderate to high for a community experiencing frequent minor HAZMAT incidents alongside several petrochemical plants and hazardous pipelines. This assessment considers several key factors. First, the high EALs suggest significant financial impacts that can strain community resources and hinder long-term resilience strategies. Although the community exhibits moderate social vulnerability, indicating some degree of cohesion and support, existing disparities can foster tensions. However, the community's high resilience to overall hazards provides a crucial buffer, suggesting that it has robust infrastructure and preparedness measures.[260] Ultimately, while risks remain elevated due to industrial presence and historical incidents, high resilience may mitigate these vulnerabilities, leading to a complex but manageable risk profile.

DRAFT

[260] FEMA. "National Risk Index." https://hazards.fema.gov/nri/map.

Terrorism

Hazard Description

FEMA defines terrorism as "the use of force or violence against persons or property in violation of the criminal laws of the United States for purposes of intimidation, coercion, or ransom."[261] This definition encompasses various violent acts, including those committed by individuals, groups, or governments, intended to instill fear and achieve political or ideological goals. Terrorists use threats to create fear, spread propaganda, and gain attention. Terrorism includes international terrorism, domestic terrorism, transnational terrorism, and cyberterrorism. For this plan, this hazard definition includes active shooter situations, which may be either randomly or intentionally directed and could impact significant numbers of people. Figure 185 shows a stack of newspapers after a terrorist event.[262]

Figure 184: Newspapers After a Car Bombing

- **International Terrorism:** Violent, criminal acts committed by individuals and/or groups who are inspired by or associated with designated foreign terrorist organizations or nations (state-sponsored). Activities transcend national boundaries or are sponsored by international groups.
- **Domestic Terrorism:** Committed by homegrown groups who have no ties or connections outside the United States. These groups are generally motivated by political, racial, ethnic, economic, health, and other grievances.
- **Transnational Terrorism:** Actions in which victims, perpetrators, and sites of violence represent different states and nationalities, such as the current war between Israel and Palestine.[263]
- **Cyberterrorism:** Any premeditated, politically motivated attack against information systems, programs, and data that threatens violence or results in violence.[264]

[261] FEMA. "Terrorism," in Are You Ready? – A Guide to Citizen Preparedness. Homeland Security Advisory System. Last updated April 25, 2023. https://www.fema.gov/pdf/areyouready/terrorism.pdf.
[262] Stock photo from https://ieminc4.sharepoint.com/design.
[263] Crenshaw, Martha. "Rethinking Transnational Terrorism." United States Institute of Peace. February 2020. https://www.usip.org/sites/default/files/2020-02/pw_158-rethinking_transnational_terrorism_an_integrated_approach.pdf.
[264] Awati, Robert, et al. "Cyberterrorism." TechTarget Network. Last updated February 2024. https://www.techtarget.com/searchsecurity/definition/cyberterrorism#:~:text=Cyberterrorism%20is%20usually%20defined%20as,violence%20or%20results%20in%20violence.

- **Active Shooter:** An emergency scenario in which an individual or individuals are actively engaged in killing or attempting to kill people in a populated area.[265] This type of situation is extremely dangerous and requires immediate action to ensure the safety and security of everyone involved.

Magnitude/Extent

Terrorist events typically, but not always, aim to impact large numbers of people. The extent of damage or casualties can vary widely, depending on terrorist intent, the setting, victim response, and law enforcement response time. Even those who are not directly impacted by the event may still be psychologically affected through fear, concern for safety, and reduced activity. Therefore, a terrorist or active shooter event in Salt Lake County may directly or indirectly have an impact on the community's citizens.

Location

Terrorists employ various methods to enter a country, including air travel, border crossings, waterways, and illicit means like human trafficking or smuggling. Terrorism can occur anywhere, but certain types of terrorism are more prevalent in specific locations.

International terrorism typically occurs in locations with high-value targets, such as military or civilian government facilities, international airports, major cities, and prominent landmarks. In addition, terrorists may target large public gatherings, water and food supplies, utilities, and corporate centers. International terrorists can also spread fear by sending explosives or chemical or biological agents through the mail.

Historically, domestic terrorism usually occurs in cities with high levels of poverty and racial tension, which are more prone to civil unrest.

Transnational terrorism is a global threat that can occur in various parts of the world, such as the Middle East, South Asia, Africa, Europe, and North America. Terrorist groups often cross borders and employ various tactics like bombings, kidnappings, assassinations, and cyberattacks to achieve their goals. Their operations pose a significant threat to multiple countries and their citizens, necessitating international cooperation and intelligence sharing to counter these threats effectively.

It is crucial to recognize that any entity or individual using technology is vulnerable to cybersecurity threats. However, certain areas are more susceptible than others. For instance, cybercriminals often target organizations that handle sensitive data, such as financial records, medical information, or personally identifiable information (PII). The finance, healthcare, and government sectors are frequent targets due to the sensitive nature of the data they manage. Cyberattacks can also impact small businesses and individuals, emphasizing the importance of safeguarding devices and information.

[265] Emergency Services and Continuity Planning. "Active Shooter Response." Sonoma State University. https://emergency.sonoma.edu/emergency-procedures/active-shooter-response.

Active shooter situations can occur in various locations, such as schools, workplaces, shopping malls, concert venues, and places of worship. These locations are often targeted because they are usually crowded and might have limited security measures in place.

Historical Events and Probability of Future Occurrences

The most recognized forms of terrorism include:

1. Religious terrorism
2. Political terrorism
3. Ideological terrorism
4. State-sponsored terrorism
5. Criminal terrorism

Acts of terrorism include threats of terrorism, assassinations, kidnappings, hijackings, bomb scares and bombings, cyberattacks, and the use of chemical, biological, nuclear, and radiological weapons.[266]

The following tables provide information on terrorism and active shooter incidents in Salt Lake County.[267]

Table 83: Salt Lake County Terrorism Incidents

Date	Location	Perpetrator Group	Deaths	Injuries	Target Type
11/03/2016	Draper	White supremacists/ nationalists	0	1	Private citizens and property
07/01/2010	Sandy City	Animal Liberation Front (ALF)	0	0	Business
05/05/2010	Salt Lake City	ALF	0	0	Business
06/14/2004	West Jordan	Earth Liberation Front (ELF)	0	0	Business
05/15/1995	Murray	ALF	0	0	Business
06/10/1995	Salt Lake City	ALF (suspected)	0	0	Business
02/20/1987	Salt Lake City	Anti-technology extremists	0	1	Business
10/08/1981	Salt Lake City	Anti-technology extremists	0	0	Educational institution
08/20/1980	Salt Lake City	White supremacists/ nationalists	2	1	Private citizens and property
09/05/1975	Salt Lake City	Weather Underground, Weathermen	0	0	Business
05/13/1970	Salt Lake City	Left-wing militants	0	0	Military

[266] Awati, Robert, et al. “Cyberterrorism.” TechTarget Network. Last updated February 2024. https://www.techtarget.com/searchsecurity/definition/cyberterrorism#:~:text=Cyberterrorism%20is%20usually%20defined%20as,violence%20or%20results%20in%20violence.

[267] University of Maryland National Consortium for the Study of Terrorism and Responses to Terrorism. “Global Terrorism Database.” https://www.start.umd.edu/gtd/search/Results.aspx?search=Salt+Lake+City&sa.x=30&sa.y=17.

Table 84: Active Shooter Incidents in Salt Lake County[268]

Date	Location	Event Description
02/12/2007[269]	Salt Lake City	One notable incident occurred at the Trolley Square Mall in Salt Lake City in 2007, where a gunman opened fire, resulting in five casualties and four injured. No motive was determined.
04/15/1999[270]	Salt Lake City	The LDS Family History Library shooting took place on April 15, 1999, in Salt Lake City. A man entered the library and randomly shot and killed two people and wounded at least five before being apprehended by police. The incident was a tragic and shocking event for the community and highlighted the importance of security and safety measures in public spaces.
01/14/1999[271]	Salt Lake City	The Triad Center shooting took place in Salt Lake City on January 14, 1999. A gunman opened fire at the Triad Center office complex, resulting in multiple casualties. The incident shocked the local community and prompted discussions about improving security measures to prevent such tragic events.

Probability: The increase in political disturbances, both foreign and domestic, is a cause for concern in the United States as it could increase the chances of terrorism and active shooter incidents in the future. Political tensions can often lead to violent acts and extremist ideology, which could lead to terrorism.[272] Moreover, the global rise of populist movements has fueled anti-immigrant and anti-minority sentiment, which can increase the risk of domestic terrorism.

Foreign interference in domestic politics can also pose a serious threat. It is not uncommon for foreign powers to fund extremist groups or carry out attacks in other countries to destabilize their governments. Such actions can cause significant harm and increase the likelihood of retaliatory attacks.

Salt Lake County has several community assets that could be at risk of terrorism. These include major events and venues, such as the Salt Palace Convention Center and the University of Utah; expo centers; amphitheaters and other concert venues; chemical plants and refineries, Salt Lake International Airport, extensive waterways, and power plants. Currently, the chance of a terrorist attack is low. However, due to population density, economic activity, and political climate, areas with larger populations or higher levels of economic activity may be considered more attractive targets for terrorist groups and active shooters.

[268] LDS = Church of Jesus Christ of Latter-Day Saints.
[269] LaPlante, Matthew D., et al. “Emotionless Killer Gunned Down Victims Randomly.” The Salt Lake Tribune. February 13, 2007. https://archive.sltrib.com/article.php?id=5218341&itype=NGPSID.
[270] Deseret News staff. “LDS Library Shooting Leaves Three Dead, Including Suspect.” Deseret News. April 15, 1999. https://www.deseret.com/1999/4/15/19440335/lds-library-shooting-leaves-three-dead-including-suspect/.
[271] Dobner, Jennifer, et al. “KSL Shooter Known to Police; She Has History of Mental Troubles.” Deseret News. January 15, 1999. https://www.deseret.com/1999/1/15/19423490/ksl-shooter-known-to-police-br-she-has-history-of-mental-troubles/.
[272] Doxsee, Catrina, et al. “Pushed to Extremes: Domestic Terrorism amid Polarization and Protest.” Center for Strategic & International Studies. May 17, 2022. https://www.csis.org/analysis/pushed-extremes-domestic-terrorism-amid-polarization-and-protest.

Climate Change Considerations

Although terrorism itself does not cause climate change, with the possible exception of nuclear explosions, its indirect effects can contribute to it. Active shooter events have no impact on climate change. However, there is the potential for climate change to be a driver of future terrorism. Climate change can affect access to basic resources, such as water, food, and shelter and lead to economic hardships.[273] Policies, regulations, or other limitations causing reduced access to these resources may contribute to political contention.[274] Control of or access to these resources could lead to violent conflict or acts of terrorism. The indirect effects of terrorism are outlined in the Secondary Hazards section.

Secondary Hazards

Nuclear events, such as nuclear explosions or nuclear accidents, can significantly impact the climate. The most immediate and direct effect is the release of large amounts of energy, which can cause localized heating and cooling effects. However, the more significant long-term effects are due to the release of radioactive particles into the atmosphere. These particles can travel long distances and significantly impact the Earth's climate, particularly in the area downwind of the event. Radioactive particles can absorb and scatter sunlight, which can lead to a cooling effect on the Earth's surface. The particles can also absorb and emit heat, warming the atmosphere. The exact climate effects of a nuclear event depend on various factors, including the size and location of the event, the type of nuclear material involved, and the weather conditions at the time of the event.

Biological toxins, or biotoxins, are toxic substances produced by living organisms, such as bacteria, fungi, and plants. Although these toxins do not directly contribute to climate change, their release into the environment can indirectly impact the climate and the environment. For example, releasing biotoxins into water sources can lead to the growth of harmful algal blooms, which can deplete the oxygen in the water and harm aquatic life. Similarly, the release of biotoxins into soil can have negative impacts on soil quality and crop production. The use of biotoxins as weapons can also have indirect effects on the climate by contributing to political instability and conflict, which can lead to displacement, migration, and changes in land use. These changes can, in turn, impact the Earth's climate and the environment. In addition, the spread of infectious diseases caused by biotoxins can lead to changes in human behavior and land use, which can indirectly impact the climate. Although biotoxins do not directly affect the Earth's climate, their release and use can indirectly impact the environment and climate.

Chemical releases of sarin and ricin are highly toxic chemical compounds that can devastate human health but do not directly affect the Earth's climate. These chemicals are not greenhouse gases and do not deplete the ozone layer. However, their release into the environment can indirectly impact the climate and the environment. For example, if released into water sources, they can contaminate the water and harm aquatic life. Similarly, if released into the soil, they can contaminate crops and other plants. Using

[273] Spadaro, Paola Andrea. 2020. "Climate Change, Environmental Terrorism, Eco-Terrorism and Emerging Threats." *Journal of Strategic Security*. 13(4). https://www.jstor.org/stable/26965518?seq=3.
[274] Silke, Andrew and John Morrison. 2022. "Gathering Storm: An Introduction to the Special Issue on Climate Change and Terrorism." *Terrorism and Political Violence*. 34(5), 883–893. https://www.tandfonline.com/doi/full/10.1080/09546553.2022.2069444.

these chemicals can also indirectly impact the climate by contributing to political instability and conflict, leading to displacement, migration, and changes in land use. These changes can, in turn, impact the Earth's climate and the environment. However, it is important to note that the primary impact of sarin and ricin is on human health and safety rather than the climate or the environment.

Radiological dispersion, which refers to the release of radioactive material into the environment, can indirectly impact the Earth's climate, causing shifts in atmospheric conditions that lead to changes in weather patterns and temperatures. In addition, these particles can absorb and scatter sunlight, which can lead to a cooling effect on the Earth's surface. However, it is important to note that radiological dispersion primarily affects human health and safety rather than the climate or environment. The release of radioactive material can have significant short-term and long-term impacts on human health, the environment, and ecosystems.

In the immediate aftermath of 9/11, there were some short-term effects on the climate. The attacks resulted in the collapse of the World Trade Center towers, which released large amounts of dust and debris into the air. This dust and debris contained various pollutants, including asbestos, lead, and other toxic materials, which can negatively impact air quality and public health. In addition, the burning of jet fuel and other materials at the attack site released large amounts of carbon dioxide and other greenhouse gases into the atmosphere, which can contribute to long-term climate change. However, these climate effects were relatively minor compared with the overall impacts of the attacks on human life, infrastructure, and the economy.

Vulnerability Assessment

It is crucial to understand that a community's vulnerability to terrorist attacks depends on several factors, including social and economic inequality, political instability, and religious or ideological tensions. The availability of weapons and resources also affects terrorists' ability to carry out attacks.

DRAFT

Table 85: Terrorism Vulnerability[275]

Hazard	Application Mode	Hazard Duration	Extent of Effects: Static/Dynamic	Mitigating and Exacerbating Conditions
Conventional Bomb	Detonation of explosive device on or near the target; delivery is by person, vehicle, or projectile	Instantaneous; additional secondary devices may be employed, extending the duration of the hazard until the attack site is deemed clear	The extent of damage is determined by the type and quantity of explosive material. The effects are typically static, except for cascading consequences, incremental structural failures, etc.	Energy declines logarithmically as a function of distance from the seat of the blast. Terrain, forestation, structures, etc., can provide protection by absorbing and/or deflecting energy and debris. Exacerbating conditions include ease of access to the target, lack of barriers/shielding, poor construction, and ease of concealment of the device.
Chemical Agent	Liquid/aerosol contaminants can be dispersed using sprayers or other aerosol generators. Liquids can also vaporize from puddles/containers or munitions.	Chemical agents may pose viable threats for hours or weeks, depending on the agent and conditions.	Contamination can spread from the initial target area through people, vehicles, water, and wind. If not remediated, chemicals may be corrosive or cause long-term damage.	Air temperatures can affect the evaporation of aerosols. Ground temperatures affect the evaporation of liquids. Humidity can enlarge aerosol particles, reducing inhalation hazards. Precipitation can dilute and disperse agents, but dispersed vapors can also enlarge the target area. The micro-meteorological effects of buildings and terrain can alter the travel and duration of agents. Shielding in the form of sheltering in place can protect people and property from harmful effects.
Biological Agent	Liquid or solid contaminants can be dispersed using sprayers/aerosol generators or by point-of-line sources, such as munitions, covert deposits, and moving sprayers.	Biological agents may pose viable threats for hours to years depending on the agent and conditions.	Depending on the agent used and the effectiveness of deployment, contamination can be spread by wind and water. Infection can also be transmitted by human or animal vectors.	The altitude at which the release agent is used, along with the effectiveness of deployment, can affect aboveground contamination and dispersion. Sunlight destroys many bacteria and viruses, while light to moderate winds can break up aerosol clouds. The micro-meteorological effects of buildings and terrain can influence aerosolization and how agents travel. Enclosed structures extend the lifespan of biological agents due to the lack of ultraviolet radiation.
Radiological Agent	Radioactive contaminants can	Contaminants may remain	Initial effects will be localized to the site of the	Radiation exposure depends on the duration of exposure, distance from the source, the radiation level,

[275] Salt Lake County Hazard Mitigation Plan. 2021.

DRAFT

Hazard	Application Mode	Hazard Duration	Extent of Effects: Static/Dynamic	Mitigating and Exacerbating Conditions
	be dispersed using sprayers/aerosol generators or by point-of-line sources, such as munitions, covert deposits, and moving sprayers.	hazardous for seconds to years depending on the isotope used.	attack. Depending on meteorological conditions, subsequent behavior or radioactive contaminants may be dynamic.	and the degree of shielding between the source and the target.
Nuclear Bomb	Detonation of nuclear device underground, on the surface, in the air, or at high altitude	Light/heat flash and blast/shock wave lasts for seconds; nuclear radiation and fallout hazards can persist for years. The electromagnetic pulse from a high-altitude detonation lasts for seconds and affects only unprotected electronic systems.	Initial light, heat, and blast effects of a subsurface, ground, or air burst are static and are determined by the device's characteristics and employment; the fallout of radioactive contaminants may be dynamic depending on meteorological conditions.	The harmful effects of radiation can be reduced by minimizing the duration of exposure. Light, heat, and blast energy decrease logarithmically as a function of distance from the seat of the blast. Terrain, forestation, structures, etc. can provide shielding by absorbing and/or deflecting radiation and radioactive contaminants.

DRAFT

ESTIMATED IMPACTS AND POTENTIAL LOSSES

During a terrorist attack, a community's infrastructure and residents could face various impacts. Infrastructure, such as transportation systems, communications networks, and utilities may be damaged, leading to disruptions in daily life. Access to essential and critical emergency services may be impeded. People may experience physical harm, emotional trauma, and loss of life or property. It could also incite widespread fear, anxiety, and a sense of insecurity among community members. The attack could also lead to economic repercussions, affecting businesses and disrupting the overall productivity of the community. Overall, a terrorist attack event can have far-reaching and long-lasting impacts on a community, affecting the physical and emotional well-being of residents and the functionality of the infrastructure.

The impacts of an active shooter event on a community can be profound and long-lasting. The immediate effects may include loss of life, physical injuries, and emotional trauma for those directly involved. In addition, the community may experience fear, anxiety, and a sense of vulnerability. Individuals and the community can experience long-term psychological effects and economic impacts due to decreased property values and potential loss of business activity. Rebuilding a sense of safety and security can take time and require significant resources, including mental health support, community outreach, and efforts to prevent future incidents.

VULNERABLE POPULATIONS

Specific populations in Salt Lake County are more vulnerable to terrorist attacks, including active shooter situations. These populations include children and students in schools and educational institutions; employees and customers in public places, such as shopping malls, restaurants, and entertainment venues; residents in densely populated urban areas; individuals in healthcare facilities, such as hospitals and clinics; participants in large public events and gatherings; individuals in religious institutions, such as churches, mosques, and synagogues; the homeless population; and individuals in temporary shelters. However, anyone can become a victim of terrorism or an active shooter, regardless of race, religion, ethnicity, or nationality.

COMMUNITY LIFELINES

During a terrorist event, all lifelines—safety and security, food, hydration and shelter, health and medical, energy (power and fuel), communications, transportation, water systems, and hazardous materials—are all at risk. Explosives, radiological devices, and nuclear bombs can cause substantial damage to structures and infrastructures, blocking evacuation routes and complicating access to essential and critical emergency services, law enforcement, medical aid, and essential items like food and water. Biological and chemical assaults can also destroy crops, poison livestock, and contaminate water supplies and soil, making food production challenging for years. Explosives can cause power outages, disrupting transportation, communications, and fuel supplies. Therefore, protecting citizens and critical assets from these worst-case scenarios in the United States is crucial.

DRAFT

CHANGES IN DEVELOPMENT

Terrorism and active shooters can profoundly impact community development. These acts of violence can create fear, distrust, and instability, hindering economic growth, discouraging investment, and disrupting social cohesion. Unfortunately, as areas in Salt Lake County grow, they could be increasingly attractive targets for those looking to harm people and property. Growing communities in the county, particularly those growing quickly, like Magna and Herriman, should be aware of this risk. The aftermath of such events often leads to increased security measures, which can limit public access to essential services and public spaces. In addition, the psychological trauma experienced by individuals and communities can impede progress and development.

Table 86 provides information on population, household, and employment projections from 2025 to 2065 in Salt Lake County, all of which could be affected by terrorism or active shooter incidents.

Table 86: Future Development Projections for Salt Lake County [276]

2025	2035	2045	2055	2065	Absolute Change 2025–2065	Percent Increase Change 2025–2065
Population Projections						
1,249,961	1,361,099	1,470,574	1,594,804	1,693,513	443,552	35%
Household Projections						
454,929	521,352	579,472	635,143	689,490	234,561	52%
Employment Projections						
1,053,362	1,182,092	1,293,225	1,385,240	1,454,567	401,205	38%

Terrorism and active shooter events can significantly impact population growth, household growth, and employment growth in a community. These events can create an atmosphere of fear and uncertainty, potentially hindering population growth as individuals may be reluctant to move to or remain in the affected area. Household growth also may be impacted as families choose to relocate to safer areas, leading to a decrease in new households in the community.

Regarding employment growth, terrorism and active shooter incidents can lead to declining business investment and economic activity in the affected area. This can lead to job losses and fewer employment opportunities, impacting overall employment growth in the community. In addition, businesses may be hesitant to establish or expand operations in an area that has experienced such events, further impacting employment growth.

Terrorism can significantly impact future land use and development trends in a community. In the aftermath of a terrorist attack, there may be increased emphasis on security measures and considerations in future land use planning and development. This could lead to stricter building codes, stronger security infrastructure requirements, and limitations on certain types of development in high-risk

[276] Salt Lake County Hazard Mitigation Plan. 2021.

areas. In addition, zoning regulations may be changed to enhance security and protect critical infrastructure. As a result, future growth may be influenced by the need to mitigate security risks, which could impact the layout and design of communities.

VULNERABILITY SCORE

Given Salt Lake County's moderate social vulnerability, high EAL, and high community resilience to overall hazards,[277] its vulnerability to a terrorist attack or active shooter event remains significant. Although its high community resilience can be beneficial in the aftermath of an attack, its high EAL indicates that the impact of an attack could be substantial. In addition, its moderate social vulnerability suggests the existence of underlying factors that could exacerbate the impact of a terrorist attack. Therefore, despite the resilience of the county, addressing its underlying vulnerabilities and their potential impact is vital to enhancing overall preparedness and response capabilities.

DRAFT

[277] FEMA. "National Risk Index." https://hazards.fema.gov/nri/map.

Capability Assessment

The capability assessment allows each jurisdiction to evaluate its current programs, funding, staffing, and other resources that can support the accomplishment of the mitigation strategy. A thorough understanding of existing capabilities helps decision makers identify feasible mitigation actions. This assessment also provides an opportunity to identify gaps in capabilities and consider ways to expand and improve policies and programs.

The assessment evaluates four types of capabilities:

1. **Planning and Regulatory:** The codes, ordinances, policies, laws, plans, and programs that guide growth and development.
2. **Administrative and Technical:** The staff, skills, and tools that implement resources and mitigate actions. This may include the private sector, community-based organizations, and other partner agencies.
3. **Financial:** The funding resources available for mitigation.
4. **Education and Outreach:** Programs and processes used to communicate risks and encourage risk reduction.

All participating jurisdictions conducted an assessment of their capabilities. Some of the findings are presented in through , with additional details available in the jurisdictional annexes.

Planning and Regulatory

Jurisdictions have the authority to create policies, programs, and regulations that protect and serve their residents. Local policies are typically outlined in community plans, enacted through local ordinances, and enforced by governmental bodies. Many communities have developed plans specifically aimed at enhancing disaster resistance. A major goal of these plans is to coordinate existing activities so that individual objectives are integrated into a comprehensive course of action.

Table 87: Assessment of the Planning and Regulatory Capabilities of Salt Lake County

Plan	Does it address hazards? (Y/N)	How can it be used to implement mitigation actions?	When was it last updated? When will it next be updated?
General Plan	Y	Incorporate goals identified in this plan into the county's Hazard Mitigation Plan (HMP) update.	May 10, 2022, reviewed annually.
Capital Improvement Plan (CIP)	Y	Incorporate goals identified in this plan into the county's HMP update.	Salt Lake County (SLCo) Flood Control CIP is updated annually.

DRAFT

Plan	Does it address hazards? (Y/N)	How can it be used to implement mitigation actions?	When was it last updated? When will it next be updated?
Climate Change Adaptation Plan	N/A	N/A	N/A
Community Wildfire Protection Plan	Y	Incorporate goals identified in this plan into the county's HMP update, specifically with the wildland–urban interface (WUI). It can also shed light on WUI building codes and/or development, since there are significantly more people living and/or building in these areas than in 2019.	December 1, 2019. Update planned for 2025.
Economic Development Plan	N/A	N/A	N/A
Land Use Plan	Y	Incorporate land use planning ideas into potential mitigation actions.	June 2020 and July 2017 (Wasatch Canyons Plan and Resource Management Plan). Reviewed annually.
Local Emergency Operations Plan	Y	Incorporate actions from the county level into mitigation actions in the county's HMP update.	2022. Reviewed annually.
Stormwater Management Plan	Y	Primarily incorporates information on hazardous waste, which can be used to develop mitigation actions for the plan update. Municipal Services District (MSD) is responsible for Unincorporated Salt Lake County stormwater.	May 2020. Reviewed annually.
Transportation Plan	Y	Can incorporate historical context to aid in new mitigation actions. MSD is responsible for Unincorporated Salt Lake County transportation.	May 2020 and May 2022. Reviewed annually.
Substantial Damage Plan	Y	It can include EM/activation information to improve coordination between agencies and jurisdictions.	2022. Reviewed annually.
Other? (Describe)	Y, Regional Hydrology and Hydraulics Study	Unknown	March 2020 for the Southwest and Northwest quadrants of SLCo. In progress for Eastside SLCo in 2024.

Jurisdictions manage land use by adopting and enforcing zoning laws, subdivision regulations, land development ordinances, building codes, building permit requirements, and stormwater management ordinances. When well-prepared and effectively administered, these regulations can help mitigate hazards.

DRAFT

Table 88: Assessment of the Regulations and Ordinances of Salt Lake County

Regulations and Ordinances	Does it effectively reduce hazard impacts?	Is it adequately administered and enforced?	When was it last updated? When will it next be updated?
Building Code	Y. Salt Lake County has adopted the International Building Code (IBC 2021) and the International Residential Code (IRC 2021), along with any amendments, as adopted by the state.	Y	2025
Flood Insurance Rate Maps	Y	No	November 19, 2021
Floodplain Ordinance	Y	No	August 3, 2021
Subdivision Ordinance	N/A	N/A	N/A
Zoning Ordinance	N/A	N/A	N/A
Natural Hazard-Specific Ordinance (Stormwater, Steep Slope, Wildfire)	Y	Unknown	August 3, 2021
Acquisition of Land for Open Space and Public Recreation Use	N/A	N/A	N/A
Prohibition of Building in At-Risk Areas	Y	Y	
Other? (Describe)	None		

Administrative and Technical Capabilities

Although legal, regulatory, and fiscal capabilities provide the foundation for effectively developing a mitigation strategy, successful implementation depends on the presence of appropriate personnel. Administrative and technical capabilities emphasize the availability of human resources responsible for executing all aspects of hazard mitigation. These resources include technical experts, such as engineers and scientists and personnel with specialized skills in areas like grant writing and project management.

Table 89: Assessment of the Administrative Capabilities of Salt Lake County

Administrative Capability	In Place? (Y/N)	Is staffing adequate?	Is staff trained on hazards and mitigation?	Is coordination between agencies and staff effective?
Chief Building Official	Y	No, there is a shortage of building inspectors statewide. MSD manages this.	Yes, but additional training is needed.	Yes
Civil Engineer	Y	Yes, SLCo Flood Control operates countywide.	Yes	Yes

DRAFT

Administrative Capability	In Place? (Y/N)	Is staffing adequate?	Is staff trained on hazards and mitigation?	Is coordination between agencies and staff effective?
Community Planner	Y	See MSD staffing levels.	Yes, but more training is needed.	Yes
Emergency Manager	Y	No. The statewide mandate for local jurisdictions to have emergency managers has resulted in many local jurisdictions having an emergency manager who wears multiple hats or only works part-time.	Yes, but more training is needed.	Yes, but improvements could always be made.
Floodplain Administrator	Y	SLCo Flood Control operates countywide.	Yes	Yes
Geographic Information System (GIS) Coordinator	Y	Yes, though additional staff with expertise in emergency management would be beneficial.	Yes, but there are gaps at the county level. Currently, we have one GIS Specialist for county EM. Other county GIS staff are not as familiar with EM and corresponding workflows.	Yes, but there is room for improvement.
Planning Commission	Y	No, there are vacancies on the planning commission boards.	They may be familiar with local risks, but because these are volunteer boards, more formal training would help.	No, it could be improved for better situational awareness.
Fire Safe Council	Y	Yes	Valley fire chiefs are aware of risks but may focus more on fire-related hazards. More extensive training would be beneficial.	Yes, though better communication across agencies and jurisdictions is needed.
CERT (Community Emergency Response Team)	Y	Varies by jurisdiction in terms of engagement. A revamp is underway to improve coordination and set more precise expectations.	Yes, though more training would be helpful.	Yes, but participation varies by jurisdiction.
Active VOAD (Voluntary Agencies Active in Disasters)	Y	Staffing shelters can sometimes be challenging due to the voluntary nature.	Yes, though additional training would be helpful.	Yes, but it is always possible to improve relationships.
Other? (Please describe)	None			

DRAFT

Table 90: Assessment of the Technical Capabilities of Salt Lake County

Technical Capability	In Place? (Y/N)	How has it been used to assess/mitigate risk in the past? (Answer or N/A)	How can it be used to assess/mitigate risk in the future?
Mitigation Grant Writing	Y	We have applied for mitigation funds with assistance from the Salt Lake County Division of Emergency Management and the county's grant writer.	We can use the county grant writer and geographic information system (GIS) staff to help with future grant applications. GIS staff can provide the demographic and mapping data to support the geographic needs, while the county grant writer can craft the narrative for the grant application.
Hazard Data and Information	Y	In the past, we have used Hazus and various GIS tools to identify local hazards in the county.	This data can be used to track mitigation progress over time, ensuring that it is an ongoing process rather than just a review every 5 years.
GIS	Y	We use GIS in various ways to identify, monitor, and prepare for hazards. Local dashboards, WebEOC, and Crisis Track, are integrated to track and share information.	More data integration is needed to track mitigation activities over time. Improved situational awareness for all local jurisdictions, agencies, and partners is crucial so everyone is aligned on expectations.
Mutual Aid Agreements	Y	Mutual aid agreements help in scenarios where local jurisdictions are overwhelmed or need additional resources.	These agreements should be reviewed more frequently to ensure that no overlap exists with other jurisdictions.
Other? (Please describe)	None		

Financial Capabilities

Identifying current and potential funding sources is critical to the mitigation planning process. Planning partners can select and implement financially viable actions to reduce future disaster risks by exploring, identifying, and assessing various funding options.

FEMA's Hazard Mitigation Assistance (HMA) grants are available to fund eligible mitigation measures to reduce future disaster losses. Eligible applicants include state agencies, local governments, special districts, federally recognized tribes, and private nonprofit organizations.

This plan adheres to federal guidelines to ensure that participants remain eligible for specific mitigation funds. As outlined in the Code of Federal Regulations (CFR) Title 44, Part 201.6 (§201.6), local governments must have a Federal Emergency Management Agency (FEMA)-approved plan to apply for and receive hazard mitigation project grant funds. These funds support various hazard mitigation programs, including the following:

- Hazard Mitigation Grant Program (HMGP)
- HMGP Post Fire Program (HMGP-PF)
- Building Resilient Infrastructure and Communities (BRIC)
- Flood Mitigation Assistance (FMA)
- Safeguarding Tomorrow Revolving Loan Fund Program

It is essential to consider multiple funding sources, as mitigation actions can and should be financed through various avenues. Potential funding opportunities include federal agencies; state, local, and tribal programs; and private funding sources. lists federal, state, and local funding opportunities.

Table 91: Assessment of the Financial Capabilities of Salt Lake County[278]

Funding Resource	In Place? (Y/N)	Has it been used in the past and for what types of activities?	Could it be used to fund future mitigation actions?	Can this be used as the local cost match for a federal grant?
Capital Improvement Project Funding	Y	Yes, Flood Control Improvement Projects	Y	Y
General Funds	Y	Countywide UPDES/ MS4 Program	Y	Y
Hazard Mitigation Grant Program (HMGP/404)	Y	Yes, Flood Control Improvement Projects	Y	Y
Building Resilient Infrastructure & Communities (BRIC)	Y	Levee Stability Study	Y	
Flood Mitigation Assistance (FMA)	Y	Yes, Flood Control Improvement Projects	Y	Y
Public Assistance Mitigation (PA Mitigation/406)	N/A	N/A	Y	N
Community Development Block Grant (CDBG)	Y	Yes, Stormwater Improvement Projects	Y	Y
Natural Resources Conservation Services (NRCS) Programs	Y	Yes, Flood Control Improvement Projects	Y	Y
U.S. Army Corps (USACE) Programs	Y	Federal Recognized Levee System	Unknown	Unknown
Property, Sales, Income, or Special Purpose Taxes	Y	Flood Control Levee	Unknown	Unknown

[278] MSD = Municipal Services District, SLCo = Salt Lake County, UPDES = Utah Pollution Discharge Elimination System.

Funding Resource	In Place? (Y/N)	Has it been used in the past and for what types of activities?	Could it be used to fund future mitigation actions?	Can this be used as the local cost match for a federal grant?
Stormwater (SW) Utility Fee	N	No, it would be implemented by the MSD. SW Utility Fee Study conducted in 2018.	N/A	N/A
Fees for Water, Sewer, Gas, or Electric Services	N/A	N/A	Unknown	Unknown
Impact Fees from New Development and Redevelopment	N	No, it would be implemented by the MSD. SW Utility Fee Study conducted in 2018.	N/A	N/A
General Obligation or Special Purpose Bonds	Y	Implemented by SLCo Flood Control and MSD	Y	Y
Federal-funded Programs (Please describe)	Unknown	N/A	Y	N
Private Sector or Nonprofit Programs	N/A	N/A	Unknown	Unknown
Other?	None			

Education and Outreach Program Capabilities

Regular engagement with the public on hazard mitigation issues offers a valuable opportunity to directly connect with community members. Assessing this outreach and educational capability highlights the important relationship between the government and the community, promoting a two-way dialogue. Such interactions help build a more resilient community, grounded in education and active public involvement.

Table 92: Assessment of the Education and Outreach Capabilities of Salt Lake County[279]

Education and Outreach Capability	In Place? (Y/N)	Does it currently incorporate hazard mitigation?	Could it be used to support mitigation in the future?
Community Newsletter(s)	Y	Yes, newsletters were used during the 2023 spring runoff emergency response.	Yes

[279] CERT = Community Emergency Response Team, EM = Emergency Management, MSD = Municipal Services District, SLCo = Salt Lake County.

Hazard Awareness Campaigns (such as Firewise, StormReady, Severe Weather Awareness Week, and School Programs)	Y	Yes. StormReady outreach was used during the 2023 spring runoff emergency response.	Yes
Public Meetings/Events (Please describe.)	Y	Yes. Public meetings/events used during the 2023 spring runoff emergency response.	Yes
Emergency Management Listserv	Y	Yes	Yes
Local News	Y	Yes. Used during the 2023 spring runoff emergency response.	Yes
Distributing Hard Copies of Notices (e.g., public libraries, door-to-door outreach)	Y	Yes. Door-to-door outreach was used during the 2023 spring runoff emergency response. SLCo EM has various mitigation materials that are handed out during outreach events, like preparedness events and CERT activities.	Yes
Insurance Disclosures/ Outreach	N/A	N/A	Yes
Organizations that Represent, Advocate for, or Interact with Underserved and Vulnerable Communities (Please describe.)	Y	SLCo EM has various mitigation materials that are handed out during outreach events, like preparedness events and CERT activities.	Yes
Social Media (Please describe.)	Y	Yes, social media was used during the 2023 spring runoff emergency response. We distribute hazard mitigation information through SLCo EM's social media pages, including Facebook, X, and Instagram.	We could leverage social media by posting more frequently, creating videos, etc.
Other? (Please describe.)	None		

Opportunities to Expand and/or Improve Capabilities

Actions that can expand and improve existing authorities, plans, policies, and resources for mitigation include budgeting for mitigation actions, passing policies and procedures for mitigation actions, adopting and implementing stricter mitigation regulations, approving mitigation updates, and making additions to existing plans as new needs are recognized. Table 93 lists the opportunities for the Salt Lake County.

DRAFT

Table 93: Opportunities to Expand and/or Improve the Capabilities of Salt Lake County

Capability Type	Opportunity to Expand and/or Improve
Planning and Regulations	The community wildfire protection plan will be updated in 2025. Areas in Draper have repeatedly flooded every year.
Administrative and Technical	The building official needs more staff to address inspections with the statewide shortage. County employees have to be better integrated into EM so requiring certain FEMA courses during the onboarding process would help, especially in the event of an activation.
Financial	The county grant writer could get more training/knowledge on EM-specific grants so they know what is needed as far as the narrative, data, and additional information for a successful grant application.
Education and Outreach	The public does not seem to be fully aware of what county EM does vs. a local EM so spreading that awareness/knowledge, whether that is at local preparedness fairs, special events, or social media would help with clarifying that. In addition, we would like mitigation to be a discussion more frequently instead of just when the plan update occurs. We would like to have information posted on our website to track mitigation efforts, get public feedback, and engage the community in mitigation efforts for situational awareness.

Jurisdictional Capabilities

Each participating jurisdiction also completed a detailed assessment of its planning and regulatory, administrative and technical, financial and educational and outreach capabilities. The jurisdictional annexes in Volume 2 provide the details regarding these capabilities.

National Flood Insurance Program (NFIP) Capabilities

Flooding is the costliest natural hazard in the United States, and recent federal regulations have led to rising flood insurance premiums for homeowners nationwide. Community participation in the National Flood Insurance Program (NFIP) allows access to additional grant funding to address flood-related issues. By assessing a jurisdiction's current NFIP status and compliance, planners can better understand local flood management efforts, identify areas for improvement, and explore available grant funding opportunities.

Salt Lake County currently participates in the NFIP. The designated Floodplain Administrator is the Director of Planning and Development. The Great Salt Lake Municipal Services District (MSD) Grading, Floodplain & Stormwater Manager implements the provisions of the NFIP on behalf of the unincorporated county, in addition to the communities of Brighton, Copperton, Emigration Canyon, Kearns, Magna, and White City. MSD staff are knowledgeable in current trends and stay apprised of the latest bulletins, including taking training like the National Disaster & Emergency Management University (formerly the Emergency Management Institute)'s course 273: Managing Floodplain Development Through the NFIP. Other MSD staff, including engineering/permitting staff, could use the 273 course. In addition, the Grading, Floodplain & Stormwater Manager is in the process of becoming a Certified Floodplain Manager

(CFM). CFMs play a crucial role in managing and mitigating flood risks by promoting floodplain management regulations in adherence to local, state, and federal best practices and requirements.

The most recent Flood Damage Prevention Ordinance was adopted on November 22, 2022. It includes the higher standard that structures must be built 1 foot above the Base Flood Elevation (BFE). The MSD is responsible for implementing this ordinance. In addition, the latest update included a clear reference to the migratory bird production area (MBPA) in the county. The latest Community Assistance Visit, during which FEMA audited the county's program, was in June 2022. During that visit, FEMA identified that the ordinance could be enforced more effectively in MBPAs. According to Utah law, duck clubs must approve ordinances that make changes in MBPAs. The MSD is working with the duck clubs to get their approval for an ordinance change that would allow for wetproofing so that they do not have to apply for a variance to perform wetproofing when they want to improve their structures. In addition, the ordinance could be updated to include more specific language regarding enforcement and inspections.

MSD is also responsible for issuing development permits in the special flood hazard area. This includes reviewing proposals for subdivisions to ensure that they minimize flood damage and reduce exposure to flood damage. The Engineering Division conducts the technical review using an electronic permitting portal. The portal automatically indicates whether a parcel is approximately in the regulatory floodway or the Special Flood Hazard Area (SFHA). In addition, staff are trained in how to flag parcels as some parcels particularly in the canyon area may not be mapped accurately. If anywhere on the parcel touches the floodplain, developers are required to obtain a floodplain permit. Prior to issuing a permit, the Grading, Floodplain & Stormwater Manager reviews all permits and ensures compliance with floodplain management regulations. GIS supports the identification of parcels and can track the number of buildings in the SFHA.

The Grading, Floodplain & Stormwater Manager is responsible for making substantial damage/substantial improvement determinations. This process occurs as part of the permitting process. MSD reviews the scope of a project during the permit process. When proposed costs are within 40–60% of the cost of the structure itself, the MSD uses the assessed value of the structure from the Salt Lake County assessor and requests a cost estimate for all labor and materials to make a substantial damage/substantial improvement determination. These estimates are compared with the cost of the structure, and a determination is made based on the value of the structure, not the land, before any damage. If structures are declared substantially damaged/substantial improvements, they must be brought into compliance or a variance may be issued. Variances are typically only issued in the duck club areas. Staff are always actively pursuing additional opportunities, both in-house and through in-person training, on how to make substantial damage/substantial improvement determinations.

The latest Flood Insurance Rate Map (FIRM) became effective on November 19, 2021. MSD also supports floodplain mapping, including Risk MAP and Letters of Map Amendment or Revisions as needed. FEMA is currently in the process of revising the BFE around Salt Lake to include V Zones. The Grading, Floodplain & Stormwater Manager and the SLCo Flood Control Engineering support flood insurance outreach and public awareness about the availability of flood insurance. The MSD advocates for obtaining flood insurance through conversations during permit applications, including conversations on the statistics of flooding during a 30-year mortgage and the likelihood of flood events. Additional outreach

DRAFT

could be conducted to promote flood insurance across the unincorporated county. Obtaining flood insurance is one way to reduce the exposed risk to flooding.

The NFIP's Community Rating System (CRS) is a voluntary program that recognizes and incentivizes community floodplain management activities that exceed the minimum NFIP requirements. Communities participating in the CRS receive discounted flood insurance premiums, reflecting the reduced flood risk from their proactive flood management efforts. The CRS has three main goals: to reduce flood damage to insurable properties, reinforce and enhance the insurance aspects of the NFIP, and encourage a comprehensive approach to floodplain management. Currently, according to the FEMA Community Status Book Report, no Salt Lake County planning jurisdictions currently participate in the National Flood Program, and they do not qualify for discount premiums based on the CRS class.

DRAFT

Mitigation Strategy

The heart of the mitigation plan is the mitigation strategy, which serves as the long-term blueprint for reducing the potential losses identified in the risk assessment. The mitigation strategy describes how the community will accomplish the overall purpose, or mission, of the planning process. In this section, mitigation goals were reevaluated and updated, and mitigation actions/projects were updated/amended, identified, evaluated, and prioritized.

Plan participants assessed and included a comprehensive range of hazard mitigation strategies/actions, including strategies from FEMA documents, strategies from the 2019 Salt Lake County Hazard Mitigation Plan, and suggestions from participating communities and their respective stakeholders during workshops and meetings with individual agencies that took place throughout the county in the fall of 2024.

Mitigation Goals

The mitigation planning team has organized resources, assessed hazards and risks, and documented mitigation capabilities. The resulting goals, objectives, and mitigation actions were developed based on these tasks. The team held a series of meetings designed to develop mitigation strategies as described further in this section. The goals for this mitigation plan are statements that accomplish the following:

- Represent the desires of the entire community
- Include all members of the community, both public and private
- Are achievable in the future, whether near-term or long-term

Goals form the basis for objectives and actions to be taken and are not dependent on implementation feasibility. The following are Salt Lake County's goals, listed in order of priority:

- **Goal 1:** Protect the lives, health, and safety of the county's citizens before, during, and after a disaster.
- **Goal 2:** Protect and eliminate and/or reduce damage and disruptions to critical facilities, structures, and infrastructure from hazards.
- **Goal 3:** Enhance and protect the communications and warning systems in the county.
- **Goal 4:** Promote education and awareness programs, campaigns, and efforts designed to encourage citizens and both public and private entities to mitigate and become more resilient to disasters.
- **Goal 5:** Ensure and promote ways to sustain government and private sector continuity of services during and after a disaster.
- **Goal 6:** Advocate, support, and promote the continued coordination and integration of disaster planning efforts throughout the county.

DRAFT

- **Goal 7:** Advocate, support, and promote the use of laws and local regulations and ordinances aimed at mitigating hazards and enhancing resilience.
- **Goal 8:** Preserve and protect natural systems, natural resources, and other environmental assets against the effects of hazards.

Mitigation Action Plan

The action plan helps prioritize mitigation initiatives according to a benefit/cost analysis of the proposed projects (44 Code of Federal Regulations [CFR], Section 201.6(c)(3)(iii)). The action plan also provides a framework for how the proposed projects and initiatives will be implemented and administered over the next five years. Countywide mitigation actions will be listed using this table in Volume 1: Mitigation Strategies, while actions for each participating jurisdiction will be listed in their respective annexes in Volume 2. Each mitigation project identified during the 2025 plan update for the county and its jurisdictions has been organized based on the following parameters.

Mitigation Action Benefit Parameters

Benefit ratings were defined as follows:

- **High:** Project will provide an immediate reduction of risk exposure for life and property.
- **Medium:** Project will have a long-term impact on the reduction of risk exposure for life and property or provide an immediate reduction in the risk exposure for property.
- **Low:** Long-term benefits of the project are difficult to quantify in the short term.

Mitigation Action Cost Estimate Parameters

Although the preference is to provide definitive costs (dollar figures) for each mitigation strategy/action, this is not possible for every mitigation strategy/action. Therefore, the estimated costs for the mitigation initiatives identified in this plan were identified as high, medium, or low, using the following ranges:

- **High:** Existing funding will not cover the cost of the project; implementation would require new revenue through an alternative source (for example, bonds, grants, and fee increases). (Estimated over $500,000)
- **Medium:** The project could be implemented with existing funding but would require a reapportionment of the budget or a budget amendment, or the cost of the project would have to be spread over multiple years. (Estimated $50,000–$500,000)
- **Low:** The project could be funded under the existing budget. It is part of or can be part of an ongoing existing program. (Under $50,000)

DRAFT

Mitigation Funding Sources

Potential mitigation funding sources, such as grants, are referenced for each action; however, these are not intended to be an exhaustive list of funding opportunities. As efforts to complete actions progress, the best available funding sources will be evaluated and pursued. When grant funding may be suitable, specific grants are listed. Many actions involve efforts that fall within the regular functions of county and municipal governments and the duties of their staff. The terms city budget or local budget, which refer to local funds and operating budgets, may be utilized where appropriate. Additional relevant funding sources are listed where applicable (denoted by “staff time” or “applicable operating budgets”).

The planning team acknowledges that BRIC was abolished on April 4, 2025. However, as federal policy was actively changing during the development of this plan, references to BRIC were still included in the mitigation actions tables for the county (Table 95) and individual jurisdictional annexes in Volume 2. If BRIC is replaced in the future, projects identified with BRIC should be reviewed for application to the replacement program.

Mitigation Action Time Frame Parameters

Although the preference is to provide definitive project completion dates, this is not possible for every mitigation strategy/action. Therefore, the parameters for the timeline (projected completion date) are as follows:

- **Short Term:** To be completed in 1–3 years.
- **Medium:** To be completed in 3–5 years.
- **Long Term:** To be completed in more than 5 years.
- **Ongoing**: Currently being implemented under existing programs but without a definite completion date.

Mitigation Action Prioritization Process

The action plan must be prioritized according to a benefit/cost analysis of the proposed projects (44 CFR, Section 201.6(c)(3)(iii)). The benefits of proposed projects were weighed against estimated costs as part of the project prioritization process. The benefit/cost analysis was not as detailed as required by FEMA for project grant eligibility under the Hazard Mitigation Grant Program (HMGP) and Pre-Disaster Mitigation (PDM) grant program. A less formal approach was used because some projects may not be implemented for up to 10 years, and associated costs and benefits could change dramatically in that time. Therefore, for each project, a review was conducted of the apparent benefits versus the apparent cost. Parameters were established for assigning subjective ratings (high, medium, and low) to the costs and benefits of these projects.

The priorities are defined as follows:

DRAFT

- **High Priority:** A project that addresses many goals or hazards, has benefits that exceed costs, has funding secured or is an ongoing project, and meets eligibility requirements for the HMGP or PDM grant program. High-priority projects can be completed in the short term (1–5 years).
- **Medium Priority:** A project that addresses multiple goals and hazards, has benefits that exceed costs, and is grant-eligible under HMGP, PDM, or other grant programs, although funding has not yet been secured. The project can be completed in the short term once funding is secured. Medium-priority projects will become high-priority projects once funding is secured.
- **Low Priority:** A project that addresses few goals, mitigates the risk of one or few hazards, has benefits that do not exceed costs or are difficult to quantify, lacks secured funding, is not eligible for HMGP or PDM grant funding, and has a long-term timeline for completion (1–10 years). Low-priority projects may be eligible for other sources of grant funding from other programs.

For many of the strategies identified in this action plan, the partners may seek financial assistance under the HMGP or HMA programs, both of which require detailed benefit/cost analyses. These analyses will be performed on projects at the time of application using the FEMA benefit/cost model. For projects not seeking financial assistance from grant programs that require detailed analysis, the partners reserve the right to define "benefits" according to parameters that meet the goals and objectives of this plan.

Mitigation Strategies and Alternatives

When completing forms for this plan update, participants were also asked to document alternative mitigation actions that were considered. Alternatives considered for Salt Lake County include the following:

Construct avalanche sheds.

Develop a wildfire early warning system.

Develop a countywide emergency management communication system.

Develop green flood protection systems in annual flood areas.

Increase the size of bridges and culverts.

Review of Previous Mitigation Actions

The planning process includes an opportunity to evaluate mitigation actions identified in the last mitigation plan. This enables participants to identify successes of previous actions, challenges that might have impeded progress, and opportunities to expand future mitigation projects. Because the implementation of this plan is critical to creating greater community resilience, the completion of mitigation actions is an important indicator of implementation and activity in the county. Table 94 presents all mitigation actions from the 2015 and 2019 multijurisdictional hazard mitigation plans (MJHMPs) and identifies (a) actions have been completed, (b) those that are either ongoing or are incomplete and will be carried forward into the 2025 mitigation actions, and (c) any that are no longer relevant and will be deleted.

DRAFT

In this section, mitigation actions/projects were updated/amended, identified, evaluated, and prioritized. This section is organized as follows:

- **Status Update of Previous Mitigation Actions:** Table 94 presents a review of mitigation actions and their status from the 2015 and 2019 MJHMPs:
  - **Completed:** Project has been completed in full.
  - **Ongoing:** Work on this action has been initiated and will be continued in 2025.
  - **Incomplete:** Work on this action has not begun due to funding or other limitations and will be carried forward into the Mitigation Action Plan.
  - **Deleted:** This action was not completed and was deleted. These might have been deemed no longer relevant or unfeasible. Some were rewritten as new mitigation actions to address changes in approach.

2025 Mitigation Actions

Table 95 identifies actions carried forward from the previous mitigation plan and new actions identified during this 2025 update process. Actions that have been carried forward might have minor revisions to address new funding sources, new partnerships, changes in priority, or additional clarification.

DRAFT

Table 94:Status of Previous Mitigation Actions from the 2015 and 2019 Multijurisdictional Hazard Mitigation Plans[280]

Action	Hazard(s)	Lead Agency	Support Agency(ies)	Status	Is this action carried forward to the 2025 Mitigation Action Plan?
Develop an enhanced emergency notification communication system for the county.	All hazards	SLCo EM	Local jurisdiction emergency management	Ongoing. SLCo EM preparing IPAWS (Integrated Public Alert and Warning System) templates and identifying streamlined communications platforms.	Yes
Coordinate conservation, preservation, and mitigation actions with community development and community planning divisions to ensure integration of programs across all communities.	Dam/levee failures, drought, earthquakes, floods, hazardous materials incidents (transportation and fixed facility), wildfires	SLCo PW & Municipal Services, MSD	SLCo EM, all participating jurisdictions	Ongoing.	Yes
Enhance security at critical public safety and technology infrastructure sites. Develop and implement a critical infrastructure and key resources (CIKR) security/hardening program.	All hazards	SLCo EM, local jurisdiction emergency management	SLCo PW Operations	Ongoing; have completed security updates to the Emergency Coordination Center (ECC) with card access and cameras. SLCo EM is in the process of creating a new access and lobby management policy. Ongoing; SLCo PW Operations has increased the number and quality of security cameras at public works yards.	Yes, reworded in 2025 action plan
Enhance interoperable radio communications systems throughout the county.	All hazards	SLCo EM, local jurisdiction emergency management	All jurisdictions in the county	Ongoing; SLCo PW Operations is in the process of upgrading two-way radios.	Yes
Elevate and/or mitigate roadways in low-lying areas prone to overland flooding.	Floods (flash and riverine)	SLCo PW & Municipal Services, local PW/engineering departments, MSD		Ongoing; SLCo PW Operations road maintenance/ improvements are ongoing for local jurisdictions.	Yes
Conduct flood-specific impact studies (Eastside Canal and Creek Study).	Floods (flash and riverine), severe thunderstorms	SLCo PW & Municipal Services, local PW/engineering departments, MSD		In progress; 80% complete.	Yes
Work with communities not currently in the National Flood Insurance Program (NFIP) to adopt the program.	Floods (flash and riverine)	SLCo PW & Municipal Services, MSD	SLCo EM, local jurisdiction emergency management	Complete; all newly incorporated cities have joined the NFIP.	No; complete
Develop a countywide program to purchase repetitive loss properties and develop a program to monitor locations of buyouts; encourage local jurisdictions to institute a buyout plan for flood-prone structures or those susceptible to landslides and other geological concerns.	Floods (riverine), earthquakes, landslides	SLCo PW & Municipal Services, MSD	SLCo EM, local jurisdiction emergency management	Incomplete.	Yes
Develop and implement a water conservation plan.	Drought, extreme heat incidents	SLCo Office of Regional Development, SLCo PW & Municipal Services, MSD	SLCo EM, local jurisdiction emergency management	Incomplete.	Yes
Provide information to property owners in flood-prone areas, including the need for NFIP coverage.	Floods (flash and riverine)	SLCo EM, SLCo PW & Municipal Services, local emergency management	Local jurisdictions	Ongoing; SLCo Flood Control maintains Runoff Ready website and social media posts.	Yes

[280] BRIC = Building Resilient Infrastructure and Communities, Department of Natural Resources, EM = Emergency Management, IPAWS = Integrated Public Alert and Warning System, MSD = Municipal Services District, , NFIP = National Flood Insurance Program, NRCS = Natural Resources Conservation Service, PW = Public Works, SLCo = Salt Lake County, UDOT = Utah Department of Transportation, UFA = Unified Fire Authority, UPDES = Utah Pollution Discharge Elimination System

Action	Hazard(s)	Lead Agency	Support Agency(ies)	Status	Is this action carried forward to the 2025 Mitigation Action Plan?
Develop and implement public education programs on disaster awareness.	All hazards	SLCo EM, local jurisdiction emergency management		Ongoing. SLCo EM has conducted earthquake preparedness education campaigns for the public through the Great Utah ShakeOut drill that is held annually.	Yes
Procure generators and transfer switches for schools, public facilities, and critical facilities, including generators/redundant backup power at traffic signals in key locations.	All hazards	SLCo EM, local jurisdiction emergency management	SLCo PW & Municipal Services	Ongoing; UFA did some BRIC work for seismic upgrades that included generators. Generators were installed at stations 103, 107, and 113. Seismic upgrades were completed at stations 107, 109, 110, 112, 115, and 116. Nonstructural upgrades were completed at 20 stations. PW Operations: ongoing. We have a few portable generators but need more.	Yes
Assess and prioritize burying utilities (especially in areas where new development is occurring).	Dam failures, floods (flash and riverine), high winds and tornadoes, landslides, severe thunderstorms, severe winter storms, wildfires	SLCo PW & Municipal Services, MSD	Local jurisdiction PW/ Engineering	Incomplete.	Yes
Commodity flow allocation study for rail and road transportation.	Hazardous materials incidents	SLCo EM, Local Emergency Planning Committee (LEPC)	SLCo Office of Regional Development	Incomplete.	Yes
Move electrical panels, mechanical, and generators above base flood elevation (BFE) in facilities in flood-prone areas.	Floods (flash and riverine)	SLCo PW & Municipal Services, local PW/engineering departments, MSD		Incomplete.	Yes
Enhancement and expansion of green space.	Floods (flash and riverine)	SLCo PW & Municipal Services, local PW/engineering departments, MSD		Incomplete; lack of funding.	Yes
Emergency operations center enhancements for situational awareness and coordination.	All hazards	SLCo EM		Ongoing; WebEOC and Crisis Track integration.	Yes
Integrate WebEOC and other technological enhancements and integration throughout the county.	All hazards	SLCo EM, local jurisdiction emergency management		Ongoing; implementing Crisis Track and WebEOC training for local jurisdictions/agencies.	Yes
Construct snow sheds for avalanche mitigation in Little Cottonwood Canyon.	Avalanches	SLCo PW & Municipal Services, SLCo EM	UDOT	Ongoing; Phase 2 of UDOT's work.	Yes
Enhance and continue to promote the implementation of the community emergency response teams (CERTs) and other related programs.	All hazards	SLCo EM, local jurisdiction emergency management		Ongoing.	Yes
Establish functional and access needs registry or similar program.	All hazards	SLCo EM, local jurisdiction emergency management	Salt Lake County Department. of Human Services	Ongoing; with the Special Needs Registry dissolving, SLCo EM needs to establish a system.	Yes
Mutual aid agreement development and/or updates.	All hazards	SLCo EM, local jurisdiction emergency management	All participating jurisdictions in the county	Ongoing; PW has a mutual aid interlocal agreement; all Salt Lake County municipalities and Salt Lake County have signed it.	Yes
Develop and implement countywide green infrastructure plan.	All hazards	SLCo PW & Municipal Services, MSD	All participating jurisdictions in the county	Incomplete.	Yes

DRAFT

Action	Hazard(s)	Lead Agency	Support Agency(ies)	Status	Is this action carried forward to the 2025 Mitigation Action Plan?
Evaluate capability and capacity for all local governments to provide and sustain emergency power to critical infrastructure resources under their control.	All hazards	SLCo EM, local jurisdiction emergency management	All participating jurisdictions in the county	Ongoing.	Yes
Continue implementing and improving Salt Lake County's disaster recovery program by developing and updating key plans, strategies, and recovery protocols.	All hazards	SLCo EM	All participating jurisdictions in the county	Ongoing.	Yes
Retrofit critical facilities and infrastructure to withstand avalanches.	Avalanches	SLCo PW & Municipal Services, MSD, local governments, ski resorts, private owners	SLCo EM, local jurisdiction emergency management	Ongoing; UDOT installed 16 new remote avalanche control systems (RACS) on Mt. Superior in Little Cottonwood Canyon in summer 2024.	Yes
Bring deficient high-hazard dams up to current industry standards.	Floods (flash and riverine), dam failures	Salt Lake County and all participating jurisdictions	Salt Lake County, local governments, and dam owners	In progress. HHPD grant was used to help rehabilitate the Lake Mary-Phoebe Dam.	Yes
Increase the size of culverts and bridges.	Floods (flash and riverine)	SLCo PW & Municipal Services, local PW/engineering departments, MSD, canal districts		In progress but lacks funding.	Yes
Remove debris and vegetation from floodway and drainage structures through a systematic maintenance program.	Floods (flash and riverine)	SLCo PW & Municipal Services, local PW/engineering departments, MSD, canal districts		Ongoing; lack of funding and personnel. SLCo PW Operations assists.	Yes
Improve flood resistance through enhancement of wing walls, flood barriers, foundations, etc. at likely flood impact points.	Floods (flash and riverine)	SLCo PW & Municipal Services, local PW/engineering departments, MSD, canal districts		Incomplete.	Yes
Construct debris basins, flood retention ponds, and energy flow dissipaters to control the flow and release of floodwaters.	Floods (flash and riverine)	SLCo PW & Municipal Services, local PW/engineering departments, MSD, canal districts		Incomplete; lack of funding.	Yes
Construct temporary debris traps and other flood-mitigating structures in wildfire-burned areas.	Floods (flash and riverine), wildfires	SLCo PW & Municipal Services, local PW/engineering departments, MSD	Utah Department of Natural Resources (DNR), NRCS, UDOT	Incomplete.	Yes
Retrofit critical facilities and infrastructure to withstand earthquakes and other geologic hazards.	Earthquakes	SLCo PW & Municipal Services, local PW/engineering departments, MSD, owners of facilities		UFA station retrofits are ongoing; SLCo PW Operations: master plan for update of PW yard is complete but needs funding to move forward.	Yes
Retrofit businesses, residential structures, infrastructure, and public buildings (especially in historic districts) to withstand moderate earthquakes and other geologic hazards.	Earthquakes	Owners of facilities, SLCo PW & Municipal Services, local PW/ engineering departments, MSD		Incomplete.	Yes
Use flexible piping when extending water, sewer, or natural gas service.	Earthquakes	Utility companies, SLCo PW & Municipal Services, local PW/engineering departments, MSD		Incomplete.	Yes
Install shutoff valves and emergency connector hoses where water mains cross fault lines.	Earthquakes	Utility companies, SLCo PW & Municipal Services, local PW/ engineering departments, MSD		Incomplete.	Yes

DRAFT

Action	Hazard(s)	Lead Agency	Support Agency(ies)	Status	Is this action carried forward to the 2025 Mitigation Action Plan?
Encourage all new construction to meet enhanced standards for wind loading, snow loading, and other weather-related hazards.	Severe weather	Facility owners, SLCo PW & Municipal Services	Local PW/ engineering departments, MSD	Incomplete.	Yes
Plan for and maintain adequate road and debris clearing capabilities.	Severe weather	SLCo PW & Municipal Services	Local PW/ engineering departments, MSD	Ongoing; SLCo PW Operations has an emergency action plan to respond to disasters, including road and debris clearing.	Yes
Install pump stations in strategic locations to mitigate flooding.	Floods (flash and riverine)	SLCo PW & Municipal Services, canal districts	Local PW/ engineering departments, MSD	In progress; currently bidding out City Drain Pump Station.	Yes
Collaborate with private canal companies to mitigate drainage, leakage, and capacity issues.	Floods (flash and riverine)	SLCo PW & Municipal Services, local PW/engineering departments, MSD, canal districts		Incomplete; lack of funding and personnel.	Yes
Conduct levee upgrades and certification.	Floods (flash and riverine)	SLCo PW & Municipal Services	Local PW/ engineering departments, MSD	Ongoing; making progress on the accreditation of the Surplus Canal levee system.	Yes
Assess high-pressure pipelines to ensure that they meet seismic standards; conduct upgrades as needed.	Earthquakes	Utility companies, SLCo PW & Municipal Services	Local PW/ engineering departments, MSD	Incomplete.	Yes
Promote Firewise initiative and develop community wildfire protection plans (CWPP) in at-risk communities.	Wildfires	Salt Lake County UFA	All participating communities in the county	Ongoing.	Yes
Promote the Fix the Bricks program throughout the county.	Earthquakes	Salt Lake County and all participating jurisdictions	State of Utah	Incomplete; Salt Lake City, the State of Utah, and FEMA use the “Fix the Bricks” program to fund residential retrofits of unreinforced masonry dwellings (URMs) in an effort to mitigate the effects of a large-scale earthquake by minimizing the risk of post-earthquake personal injury and reducing the need for outside assistance. Currently this program is primarily focused on Salt Lake City. A similar program or expansion of the existing program would be beneficial to other jurisdictions in the county with URMs.	No
Help county jurisdictions procure Flood Mitigation Assistance (FMA) grants.	Floods	SLCo EM	All participating jurisdictions in the county	Incomplete.	Yes
Assist Emergency Managers in designing pandemic mitigation programs.	Public health epidemics/pandemics	SLCo EM, Salt Lake County Health Department	All participating jurisdictions in the county	Complete; County Health Department updates plans annually for pandemics and infectious diseases. SLCo EM has developed a Public Health Annex as part of its Comprehensive Emergency Management Plan to address pandemics and infectious diseases.	No
Conduct seminar to assist Emergency Managers in public education about radon kits.	Radon	SLCo EM	Salt Lake County Health Department	Incomplete; was not a priority during COVID-19 and there has not been a discussion on radon education since.	Yes

DRAFT

2025 Mitigation Action Plan

Table 95: 2025 Mitigation Action Plan[281]

#	Action	Hazard(s)	Goals	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source	Time Frame	Priority	New or Carried Forward	Comments
1	Enhance interoperable radio communications systems throughout the county.	Avalanches, civil disturbances, dam failures, drought, earthquakes, extreme heat, floods, hazardous materials incidents, heavy rain, high winds, landslides, lightning, public health epidemics, radon, severe winter weather, terrorism, tornadoes, wildfires	2, 3, 5	SLCo Fleet Services, UFA Communications Division, Utah Communications Authority	Partners include but are not limited to the MSD, SLCo EM, UPD, State of Utah, NGO partners, Sheriff's Office	Improved communication between different agencies, common operating platform	Medium	General funds, HSGP grants	Short term	Medium	Carried forward	Additional efforts are needed to continue improving interoperable communications throughout the county and to create redundant systems should the primary communications infrastructure fail. Additional efforts include but are not limited to ensuring enhanced interoperability with local participating jurisdictions, agencies, and key partners. This is especially important for communities in remote or isolated areas.
2	Develop an enhanced emergency notification communication system for the county.	Avalanches, civil disturbances, dam failures, drought, earthquakes, extreme heat, floods, hazardous materials incidents, heavy rain, high winds, landslides, lightning, public health epidemics, radon, severe winter weather, terrorism, tornadoes, wildfires	1, 3	SLCo EM	Partners include but are not limited to the MSD, UFA, UPD, local jurisdiction emergency management, State of Utah, Sheriff's Office, UDOT	Early notification of impending wildfire to decrease loss of life, improved relationships with the public and stakeholders, provide faster delivery of information with templates and plans ready for use	Medium	General funds, HSGP grants, BRIC grant	Short term	High	Carried forward	Estimation of $1 million, with costs shared between local jurisdictions/ agencies and the county. SLCo EM has been working on developing IPAWS templates and identifying streamlined communication.
3	Develop and implement public education programs on disaster awareness.	Avalanches, civil disturbances, dam failures, drought, wildfires, earthquakes, extreme heat, floods, hazardous materials incidents, heavy rain, high winds, landslides, lightning, public health epidemics, radon, severe winter weather, terrorism, tornadoes, wildfires	1, 4, 6, 7, 8	SLCo EM	Partners include but are not limited to local jurisdiction emergency management, UFA, UPD, Sheriff's Office, SLCo PW, State of Utah, local hospitals, local utilities, NGO partners	Improved understanding of local resources, improved relationships with the public and stakeholders, outlined plans/standard operating procedures (SOPs) for programs, improved education and understanding for the public on local hazards and ways in which they can prepare themselves, their home, and loved ones	Low	General funds, HSGP grants, SHSP grant	Short term	Medium	Carried forward	

[281] CERT = Community Emergency Response Team, CWPP = community wildfire protection plan, DNR = Division of Natural Resources, ECC = Emergency Coordination Center, EMPG = Emergency Management Performance Grant, ESPG = energy storage and power generation, HAZMAT = Hazardous materials, HHPD = High Hazard Potential Dam, HMA = Hazard Mitigation Assistance, HSGP = Homeland Security Grant Program, EM = Emergency Management, IT – Information Technology, MSD = Municipal Services District, NGO = Nongovernmental Organizations, NWS = National Weather Service, PW = Public Works, SAIC = Statewide Information & Analysis Center, SHSP = State Homeland Security Program, SLC = Salt Lake City, SLCo = Salt Lake County, Utah DEM = Utah Division of Emergency Management, UDOT = Utah Department of Transportation, UFA = Unified Fire Authority, UPD = Unified Police Department USACE = U.S. Army Corps of Engineers

#	Action	Hazard(s)	Goals	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source	Time Frame	Priority	New or Carried Forward	Comments
4	Integrate WebEOC, Crisis Track, Geographic Information System (GIS), and other technological enhancements throughout the county.	Avalanches, civil disturbances, dam failures, drought, wildfires, earthquakes, extreme heat, floods, hazardous materials incidents, heavy rain, high winds, landslides, lightning, public health epidemics, radon, severe winter weather, terrorism, tornadoes, wildfires	1, 2, 3, 4, 5, 6	SLCo EM	Partners include but are not limited to local jurisdiction emergency management, UFA, UPD, SLCo PW, SLCo Health Department, State of Utah, UDOT, local hospitals, local utilities	Common operating platform for stakeholders, increased situational awareness, improved response time	Low	General funds, HSGP grants, Emergency Operations Center Grant Program	Long term	Medium	Carried forward	Existing software requiring updates to documentation/ training. Revised to include Crisis Track and GIS as additional technologies to consider.
5	Enhance and continue to promote the implementation of CERT and SAFE Hubs.	Avalanches, civil disturbances, dam failures, drought, wildfires, earthquakes, extreme heat, floods, hazardous materials incidents, heavy rain, high winds, landslides, lightning, public health epidemics, radon, severe winter weather, terrorism, tornadoes, wildfires	1, 4, 5	SLCo EM	Local jurisdiction emergency management, State of Utah, NGO partners	Improved awareness of local resources, coordination across jurisdictions and agencies	Low	General funds, municipal budgets	Short term	Medium	Carried forward	Revised to include SAFE Hubs (previously S.A.F.E. Neighborhoods), a rebrand with a new public awareness campaign and information for all partners.
6	Establish access and functional needs registry and improve incorporation of those with access and functional needs in plans.	Avalanches, civil disturbances, dam failures, drought, wildfires, earthquakes, extreme heat, floods, hazardous materials incidents, heavy rain, high winds, landslides, lightning, public health epidemics, radon, severe winter weather, terrorism, tornadoes, wildfires	1, 4	SLCo EM	Partners include but are not limited to local jurisdictions, MSD, UFA, UPD, Sheriff's Office, SLCo Aging and Adult Services, SLCo Health Department	Improved situational awareness for the public and stakeholders, greater understanding of resources available for those with access and functional needs	Low	General funds, HSGP grants	Short term	High	Carried forward	The State of Utah's Access and Functional Needs Registry is dissolving in 2025. The county needs a way to account for those with access and functional needs, including incorporation into plans/SOPs.
7	Implement Emergency coordination center enhancements for situational awareness and coordination.	Avalanches, civil disturbances, dam failures, drought, wildfires, earthquakes, extreme heat, floods, hazardous materials incidents, heavy rain, high winds, landslides, lightning, public health epidemics, radon, severe winter weather, terrorism, tornadoes, wildfires	1, 2, 5	SLCo EM	UFA	Improved situational awareness, improved building security to prevent bad actors, and a shared understanding across different agencies of ECC expectations by position for activations	Medium	General funds, HSGP grants, Emergency Operations Center Grant Program	Ongoing	High	Carried forward	Enhancements may include technological and communication improvements in the Joint Information Center (JIC), Call Center, Plans Room, and Operations Room. The Salt Lake County ECC requires significant enhancements to ensure situational awareness and improved coordination across the valley. These improvements include enhancing our building security, improving situational awareness on various monitors throughout the building, and positioning checklists/ guides for those entering the ECC for an activation.
8	Develop mutual aid agreements and/or updates for sheltering, points of distribution (PODs), and public works.	Avalanches, civil disturbances, dam failures, drought, wildfires, earthquakes, extreme heat, floods, hazardous materials incidents, heavy rain, high winds, landslides, lightning, public health epidemics,	5, 6, 7	SLCo EM	Partners include but are not limited to local jurisdiction emergency management, SLCo Parks and Recreation, SLCo PW	Common understanding of resources available, the regular review of the agreement ensures that it is updated with the latest information and the agreement is in place	Low	General funds	Ongoing	Medium	Carried forward	SLCo PW has established a mutual aid interlocal agreement, signed by all Salt Lake County municipalities and the County PW department itself, to ensure coordinated support and resource sharing. The county also aims to update and initiate memorandums of understanding (MOUs) PODs and facility use for

DRAFT

#	Action	Hazard(s)	Goals	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source	Time Frame	Priority	New or Carried Forward	Comments
		radon, severe winter weather, terrorism, tornadoes, wildfires				before an incident takes place						emergency sheltering to strengthen preparedness and response capabilities.
9	Evaluate capability and capacity for all local governments to provide and sustain emergency power to critical infrastructure resources under their control.	Avalanches, civil disturbances, dam failures, drought, wildfires, earthquakes, extreme heat, floods, hazardous materials incidents, heavy rain, high winds, landslides, lightning, public health epidemics, radon, severe winter weather, terrorism, tornadoes, wildfires	2, 3, 5, 6	SLCo EM	Partners include but are not limited to local jurisdictions emergency management, local utilities, local hospitals, NGO partners	Ensures emergency plans are in place, tests systems before an incident occurs to identify and resolve issues	Medium	General fund, SLCo EM budget, EMPG	Long term	High	Carried forward	
10	Continue implementing and improving Salt Lake County's Disaster Recovery Program by developing and updating key plans, strategies, and recovery protocols.	Avalanches, civil disturbances, dam failures, drought, wildfires, earthquakes, extreme heat, floods, hazardous materials incidents, heavy rain, high winds, landslides, lightning, public health epidemics, radon, severe winter weather, terrorism, tornado, wildfire	1, 5	SLCo EM	Partners include but are not limited to local jurisdiction emergency management, MSD, SLCo PW, SLCo Health Department, SLCo IT, SLCo Sheriff's Office, UPD, UFA, NGO partners, Utah DEM	A recovery program with updated plans and policies will facilitate quicker recovery, minimize long-term social and economic impacts, and provide a unified response and recovery support for incidents through the Emergency Support Functions and Recovery Support Functions to stabilize community lifelines and maintain continuity of essential functions.	Medium	SLCo EM budget, EMPG	Ongoing	High	Carried forward	SLCo EM needs to develop a formal Recovery Plan and collaborate with local, private, and NGO partners. The plan should include training, exercises, and implementation strategies to test and continuously improve its effectiveness.
11	Construct snow sheds for avalanche mitigation in Little Cottonwood Canyon.	Avalanche	1, 2	UDOT	SLCo EM, local jurisdictions, UFA, UPD, State of Utah, local utilities	Diminish road closure time, preserve life and safety from avalanches (personal injuries, car/infrastructure damage, injury to first responders and UDOT staff)	High: $72–$90 million	HMA, general funds	Long term	Medium	Carried forward	
12	Retrofit critical facilities and infrastructure to withstand avalanches.	Avalanche	1, 2	SLCo PW & Municipal Services	Partners include but are not limited to the MSD, local jurisdictions emergency management, ski resorts, private owners, UDOT, SLCo EM, local utilities, State of Utah	Ensures resilience for critical infrastructure in the event of an avalanche, facilitates safe egress/ingress for visitors and first responders on roads, provides shelter in the event of an avalanche	Medium	PDM, ski resort revenue, private funds	Long term	Medium	Carried forward	UDOT installed 16 new Remote Avalanche Control Systems (RACS) on Mt. Superior in Little Cottonwood Canyon, summer 2024.
13	Develop a countywide single source of information-sharing/gathering for intelligence.	Civil disturbance, terrorism	1, 2, 3, 5, 6, 8	SLCo EM	Partners include but are not limited to local jurisdiction public safety agencies, SLCo Sheriff's Office, UPD, SIAC	Improved coordination between local agencies/ jurisdictions	Medium	HSGP grant, general funds	Short term	Medium	New	Have one common operating platform to be used by all agencies in Salt Lake County to collect suspicious activity reports; develop a public awareness campaign to educate the public on how and what to report. $100K

DRAFT

#	Action	Hazard(s)	Goals	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source	Time Frame	Priority	New or Carried Forward	Comments
14	Coordinate conservation, preservation, and mitigation actions with community development and community planning divisions to ensure integration of programs across all communities.	Dam/levee failure, drought, earthquake, flood, hazardous materials incident (transportation and fixed facility), wildfire	1, 4, 5, 6	SLCo EM SLCo PW & Municipal Services, MSD	Partners include but are not limited to local jurisdictions, UFA, UPD, Sheriff's Office, State of Utah, local utilities, local hospitals, local school districts	Common understanding of mitigation efforts, tracking of mitigation efforts over time	Medium	General fund, PDM, BRIC	Ongoing	High	Carried forward	
15	Assess and prioritize the burying of utilities especially in areas where new development is occurring).	Dam failure, flood (flash and riverine), high wind and tornado, landslide, severe thunderstorm, severe winter storm, wildfire	1, 2, 3, 5	SLCo PW & Municipal Services, local utility owners	Partners include but are not limited to the MSD, local PW/ engineering departments, UDOT, State of Utah, local utilities, local hospitals, local school districts	Prevents costly utility damage, lower maintenance costs, aesthetic improvements for Salt Lake County's natural scenery, increased energy capacity	High	Private sector funds, HMA grants	Long term	Medium	Carried forward	
16	Bring deficient high hazard dams up to current industry standards.	Dam failure	1, 2	Dam owners/ water companies, SLCo Flood Control Engineering	Partners include but are not limited to SLCo EM, local jurisdiction emergency management, Utah Dam Safety Section, Utah DEM, Salt Lake City public utilities	Life and safety (personal injuries, safety of first responders), damage to critical infrastructure	High	General funds, HHPD Grant	Long term	High	Carried forward	Salt Lake City completed work on Mountain Dell Dam (5 miles east of Salt Lake City next to Interstate 80) to mitigate existing leaks. Seismic activity is a threat to all of the dams in the county, and retrofitting may be needed to decrease the risk of failure due to an earthquake.
17	Rehabilitate Lake Mary-Phoebe Dam Structure.	Dam Failure	1, 2	Salt Lake City Corporation	Salt Lake County EM, Utah Division of Water Rights Dam Safety Section, Salt Lake City Public Utilities, Local Governments	Reinforce the dam structure, including addressing spalling and deterioration as indicated in dam inspection reports to decrease the risk of failure.	High	Salt Lake County General Fund, HHPD Grant, HMGP Grant	Short term	High	Carried forward from Addendum	
18	Enhance Spillway Capacity of Lake Mary-Phoebe Dam Structure.	Dam Failure	1, 2	Salt Lake City Corporation	Salt Lake County EM, Utah Division of Water Rights Dam Safety Section, Salt Lake City Public Utilities, Local Governments	Upgrade spillway capacity to manage extreme flood events, as suggested in the dam safety inspection and construction reports and reduce potential losses from failure.	High	Salt Lake County General Fund, HHPD Grant, HMGP Grant	Short term	Medium	Carried forward from Addendum	
19	Implement seepage control measures for Lake Mary-Phoebe Dam.	Dam Failure	1, 2	Salt Lake City Corporation	Salt Lake County EM, Utah Division of Water Rights Dam Safety Section, Salt Lake City Public Utilities, Local Governments	Implement pressure grouting to reduce seepage, as outlined in the Lake Mary–Phoebe Dam inspection and annual reports.	Medium	Salt Lake County General Fund, HHPD Grant,	Short term	High	Carried forward from Addendum	
20	Coordinate a project with Brighton Ski Resort and the U.S. Forest Service to improve the downstream channel	Dam Failure	1, 2, 8	Salt Lake City Corporation	Salt Lake County, Local Governments, Salt Lake City Corporation, Utah Division of Water Rights Dam Safety Section, Salt Lake City Public Utilities,	Work is needed on outlet channel to facilitate testing of outlet gates and prevent debris from entering spillway.	High	Salt Lake County General Fund, HHPD Grant, PDM grant	Long term	High	Carried forward from Addendum	According to Lake Mary – Phoebe Dam Annual Engineer Inspection reports, Salt Lake City Public Utilities is unable to release more than 15 cfs under normal conditions from the dam due to downstream limitations.

DRAFT

#	Action	Hazard(s)	Goals	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source	Time Frame	Priority	New or Carried Forward	Comments
	of Lake Mary–Phoebe Dam.				Brighton Ski Resort, U.S. Forest Service							Flows higher than 15 cfs would blow out culverts and severely damage the access trail. This needs to be resolved so that the outlet gates can be tested over their full range annually. Watershed crews will continue to remove debris from the spillway and downstream channel. Special attention needs to be paid to maintaining the log boom so that debris does not enter the spillway. Significant work is needed for the outlet channel as woody vegetation continues to encroach on the channel and has potential to obstruct flows.
21	Conduct risk studies or engineering assessments to determine approaches to address issues identified in dam safety inspection reports.	Dam Failure	1, 2	SLCo EM	Salt Lake County Public Works Flood Control Engineering, Utah Division of Water Rights Dam Safety Section, Salt Lake City Public Utilities, Local Governments	Reduce potential losses from failure of HHPDs.	Medium	Salt Lake County General Fund, HHPD Grant, HMGP Grant	Medium	Medium	New	HHPDs with a safety condition rating of fair: SLCO Chandler Drive #13, SLCO Scott Ave., SLCO Shriners #12, SLCO Federal Heights #1a, SLCO Creekside Park, SLCO Rotary Glen Park, SLCO Big Cottonwood, White Pine, Jordan Valley Water Purification Upper, and Sandy City Storm Mountain. HHPDs with a safety condition rating of poor: Lake-Mary Phoebe, Red Pine, and Mountain Dell.
22	Rehabilitate or complete other safety projects for high hazard dams based on dam safety reports or risk studies.	Dam Failure	1, 2	SLCo EM	Salt Lake County Public Works Flood Control Engineering, Utah Division of Water Rights Dam Safety Section, Salt Lake City Public Utilities, Local Governments	Reduce potential losses from failure of HHPDs.	High	Salt Lake County General Fund, HHPD Grant, HMGP Grant	Long term	High	New	See above.
23	Xeriscape government-owned properties.	Drought	2, 8	SLCo Facilities Management	Partners include but are not limited to water companies/ districts, local jurisdictions, MSD, State of Utah, UFA, UPD, Sheriff's Office, local utilities	Decreased cost of landscape irrigation, decreased water use	High	General funds, SLCo Facilities Management, State of Utah, local jurisdictions, MSD	Short term	Low	New	
24	Develop and implement a water conservation plan.	Drought, extreme heat	2, 4, 5	SLCo PW	Partners include but are not limited to SLCo PW & Municipal Services, MSD, SLCo EM, SLCo Office of Regional Development, local jurisdictions, State of Utah, UFA, UPD, local hospitals, local utilities, local school districts	Decreased water use, improved tracking/ understanding of where water is going, and greater education on how water can be conserved on an individual, department, or agency level	Low	General funds	Short-term	Medium	Carried forward	A Water Element is being added to the General Plan, which might integrate with a water conservation plan. SLCo Regional Planning and Transportation Director would be a point of contact for this.
25	Develop and implement countywide plan to track green	Drought, extreme heat, flood, heavy rain	2	SLCo Office of Regional Development	Partners included but are not limited to the MSD, SLCo PW, Municipal	Central repository of information on green infrastructure projects in	High	General funds, HMA grants	Long term	Medium	Carried forward	Revised from 2019 plan to include tracking of green infrastructure projects in an effort to improve

DRAFT

#	Action	Hazard(s)	Goals	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source	Time Frame	Priority	New or Carried Forward	Comments
	infrastructure projects and improve energy efficiency throughout the county.			(Environmental Sustainability), Facilities Management	Services District, local jurisdictions, State of Utah, UFA, UPD, local hospitals, local utilities, local school districts	Salt Lake County, improved energy efficiency, improved water and air quality						energy efficiency throughout the county.
26	Retrofit critical facilities and infrastructure to withstand earthquakes and other geologic hazards.	Earthquake	1, 2, 5	MSD	Partners include but are not limited to local PW/engineering departments, facility owners, UFA, SLCo EM, UPD, State of Utah, local hospitals, local utilities, local school districts	Improved facility/ infrastructure resilience, expanded lifespan, maintaining building codes/standards, saves lives, can maintain essential services in the event of an incident, reduces economic impact if it were to go down	High	PDM, HMGP, capital improvement budgets, bonds, state and local funds		High	Carried forward	Ongoing UFA fire station retrofits. For SLCo PW Operations, the master plan for the update of the yard is complete but more funding is needed to move forward.
27	Retrofit businesses, residential structures, infrastructure, and public buildings (especially in historic districts) to withstand moderate earthquakes and other geologic hazards.	Earthquake	1, 2, 5	MSD, Municipal Governments	Partners include but are not limited to facility owners, local PW/ engineering departments, local utilities, local hospitals, local school districts, State of Utah, Salt Lake Chamber of Commerce	Improved facility/ infrastructure resilience, expanded lifespan, maintaining building codes/standards, saving lives, maintaining essential services in the event of an incident, reducing economic impact	High	PDM, HMGP, capital improvement budgets, bonds, state and local funds	Ongoing	High	Carried forward	
28	Use flexible piping when extending water, sewer, or natural gas service to reduce damage from ground motion.	Earthquake	1, 2, 5	SLCo PW & MSD	Partners include but are not limited to the local utility companies, water districts, local PW/ engineering departments, UFA, UPD, State of Utah, SLCo EM, local hospitals,	Easier installation, versatility, reduced leak potential, durability, cost savings	High	PDM, HMGP, capital improvement budgets, bonds, state and local funds, utility companies	Ongoing	High	Carried forward	
29	Consider funding sources and development of programs for retrofitting unreinforced masonry structures, similar to Salt Lake City's "Fix the Bricks" program.	Earthquake	1, 2	MSD	Partners include but are not limited to the State of Utah, UFA, UPD, local jurisdictions, SLCo, local utilities, local hospitals, local school districts	Reduce structural damage, reduce personal injury from structural damage in an earthquake, reduce need for outside assistance post-earthquake	High	BRIC, PDM, HMGP, Community Development Block Grant Mitigation (CDBG-MIT)	Ongoing	High	New	Salt Lake City, the State of Utah, and FEMA use the "Fix the Bricks" program to fund residential retrofits of URMs in an effort to mitigate the effects of a large-scale earthquake by minimizing post-earthquake personal injury and requirement for outside assistance. Currently this program is primarily focused on Salt Lake City. A similar program or expansion of an existing program would be beneficial to other jurisdictions in the county with URMs.
30	Install shutoff valves and emergency connector hoses where water mains cross fault lines.	Earthquake	1,2, 5	Local Water Districts	Partners include but are not limited to the SLCo PW, Municipal Services, MSD, utility companies, local PW/ engineering departments, local utilities, local school districts, State of Utah, local hospitals	Backup of water supply, prevents water waste if a pipe were to be damaged, ensures that valves and connector hoses are up to code	High	PDM, HMGP, capital improvement budgets, bonds, state and local funds, utility companies	Ongoing	High	Carried forward	

DRAFT

#	Action	Hazard(s)	Goals	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source	Time Frame	Priority	New or Carried Forward	Comments
31	Assess high-pressure pipelines to ensure that they meet seismic standards, and conduct upgrades as needed.	Earthquake	1, 2, 3, 5	Local pipeline companies, MSD Engineering Division	Partners include but are not limited to the SLCo PW, MSD, local utility companies, local PW/ engineering departments	Ensures pipelines are up to code and regularly reviewed, identifies a way to perform inspections and track pipelines over time for everyone's awareness	High	Private sector funds, HMA grants	Long term	Medium	Carried forward	
32	Procure generators and transfer switches for schools, public facilities, and critical facilities.	Extreme heat, extreme cold	2, 5	SLCo EM	Partners include but are not limited to SLCo Facilities Management, local school districts, NGO partners, local utilities, local hospitals, water districts, MSD, State of Utah, UFA, UPD, Sheriff's Office	Provides backup generators for cooling centers and code blue centers, accurate inventory of what the county must provide to other agencies or jurisdictions as needed	Medium	General funds, HMA grants	Long term	Medium	Carried forward	
33	Elevate and/or mitigate roadways in low-lying areas that are prone to overland flooding.	Flooding (flash and riverine)	2, 5	SLCo PW, UDOT, Office of Regional Development	Partners include but are not limited to the MSD, local PW/ engineering departments, State of Utah, SLCo EM, water districts	Keeps roads open for locals and emergency services, ensures adequate egress/ingress, increases resilience in the event of flooding	High	PDM, HMGP, FMA, NRCS, capital improvement budgets, bonds, state and local funds	Long term	High	Carried forward	SLCo PW Operations road maintenance/ improvements are ongoing for local jurisdictions.
34	Conduct flood-specific impact studies (Eastside Canal and Creek Study).	Flooding (flash and riverine), severe thunderstorm	1, 2, 4, 6	SLCo PW & Municipal Services Flood Control and Engineering	Partners include but are not limited to local PW, SLCo EM, water districts, local utilities	Improves understanding of flood impacts on areas throughout the county, provides blueprint for mitigation activities in those areas for improved resilience	Medium	PDM, HMGP, FMA, NRCS, capital improvement budgets, bonds, state and local funds		High	Carried forward	
35	Provide information and the need for NFIP coverage to property owners in flood-prone areas.	Flooding (flash and riverine)	4	SLCo EM	Partners include but are not limited to SLCo PW & Municipal Services, MSD, local jurisdiction emergency management	Improved education and resilience in flood-prone areas, greater understanding of flood risk by locals, managed inventory of who does or does not have NFIP coverage	Low	General funds, HMA grants		Medium	Carried forward	
36	Move electrical panels, mechanical equipment, and generators above base flood elevation (BFE) in facilities in flood-prone areas.	Flooding (flash and riverine)	2, 5	SLCo Facilities Management, SLC0 PW & Municipal Services	Partners include but are not limited to the MSD, local PW/ engineering departments, local school districts, local hospitals, local utilities, State of Utah, SLCo EM	Improved resilience in flood-prone areas, better educated on flood-proofing critical infrastructure/ facilities	Medium	PDM, HMGP, FMA, capital improvement budgets, bonds, state and local funds	Short term	High	Carried forward	
37	Enhance and expand green space, particularly in areas of past flooding.	Flooding (flash and riverine), heavy rain	1, 2	Salt Lake County Real Estate	Partners include but are not limited to the SLCo PW, Municipal Services Flood Control Engineering division, MSD, local PW/ engineering departments, SLCo EM, UFA, UPD, State of Utah, water districts, local utilities,	Reduced costs (from not having to rebuild the area post-flooding), improved tracking/ monitoring of areas prone to flooding	High	General funds, HMA grants	Long term	Medium	Carried forward	

#	Action	Hazard(s)	Goals	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source	Time Frame	Priority	New or Carried Forward	Comments
					local school districts, local hospitals							
38	Improve flood resistance through enhancement of wing walls, flood barriers, foundations, etc. at likely flood impact points.	Flooding (flash and riverine)	1, 2	SLCo PW & Municipal Services Flood Control and Engineering	Partners include but are not limited to the MSD, local PW/ engineering departments, canal districts, water districts, local school districts, local hospitals, local utilities, State of Utah, UDOT	Erosion control/ support ensures that roads are clear for emergency services and locals near flood-prone areas, reduces likelihood of costly repairs, easy to install, long-lasting	High	PDM, HMGP, FMA, capital improvement budgets, bonds, state and local funds	Long term	High	Carried forward	
39	Construct temporary debris traps and other flood-mitigating structures in wildfire-burned areas.	Flooding (flash and riverine), wildfire, heavy rain	1, 2	SLCo PW & Municipal Services Flood Control and Engineering	Partners include but are not limited to the MSD, local PW/ engineering departments, canal districts, Utah DNR, NRCS, UDOT, local school districts, local utilities, UFA, local fire departments, State of Utah	Keeps roads open for emergency services, ensures adequate egress/ingress, improves community resilience, prevents further damage to areas downstream from flooding, reduces recovery/damage costs	High	PDM, HMGP, FMA, capital improvement budgets, bonds, state and local funds	Long term	High	Carried forward	Example: constructing a diversion at Millcreek to a drainage area.
40	Increase the size of culverts and bridges in areas SLCo has identified as past or potential flooding concerns.	Flooding and Heavy Rain	1, 2	SLCo PW & Municipal Services Flood Control Engineering	Partners include but are not limited to SLCo EM, local PW/ engineering departments, water districts, local utilities, MSD, State of Utah, UDOT	Allows for larger runoff during spring melt season, reduces the amount of debris buildup	High	PDM, HMGP, FMA, NRCS, capital improvement budgets, bonds, state and local funds	Long term	Medium	Carried forward	
41	Help local jurisdictions procure FMA grants.	Flooding	1, 2, 4, 6	SLCo EM, Utah DEM	Local jurisdictions, SLCo PW, MSD, local school districts, local hospitals, State of Utah, water districts, local utilities, private dam owners, SLCo EM	Improved understanding of available grants and how money can be used for mitigation efforts	Low	FMA	Long term	Medium	Carried forward	SLCo EM will track mitigation activities on their website for the public and local agencies/ jurisdictions to see what work is underway. This will help in seeing what has occurred over time for the next plan update.
42	Conduct Surplus Canal rehabilitation to address deficiencies.	Flooding		SLCo PW & Municipal Services–Flood Control Engineering	FEMA, State of Utah, Salt Lake City, MSD, Salt Lake City airports, SLCo EM, water districts, local utilities	Improve the 300 deficiencies identified in 2017	High: $500K+	FEMA's BRIC grant, State of Utah, SLCo, local jurisdictions	Long term	High	New	SLCo Flood Control is working to bring the Surplus Canal levees back into USACE compliance, determine all encroachments on property currently owned by the county or other government entities, acquire property within 10 feet of the landside toe of the levee, relocate fences outside USACE jurisdiction, and remove all encroachments on the newly acquired property.
43	Remove debris and vegetation from floodway and drainage structures through a systematic maintenance program.	Flooding	1, 2	SLCo PW & Municipal Services Flood Control Engineering	Partners include but are not limited to the MSD, local PW/ engineering departments, canal districts, State of Utah, local utilities, water districts, SLCo EM	Improved tracking/ maintenance of debris and vegetation in floodway/ drainage structures	Medium	PDM, HMGP, FMA, capital improvement budgets, bonds, state and local funds	Ongoing	Medium	Carried forward	Lack of funding and personnel. SLCo PW Operations assists.

DRAFT

#	Action	Hazard(s)	Goals	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source	Time Frame	Priority	New or Carried Forward	Comments
44	Install pump stations in strategic locations to mitigate flooding.	Flooding	1, 2	SLCo PW & Municipal Services Flood Control and Engineering	Partners include but are not limited to the MSD, local PW/ engineering departments, canal districts	Redundancy, prevents further damage, reduces recovery costs	Medium	PDM, HMGP, FMA, NRCS, capital improvement budgets, bonds, state and local funds	Ongoing	High	Carried forward	SLCo PW currently bidding out City Drain Pump Station.
45	Construct debris basins, flood retention ponds, and energy flow dissipaters to control the flow and release of floodwaters.	Flooding (flash and riverine)		SLCo PW & Municipal Services Flood Control and Engineering	Local PW/ engineering departments, MSD, canal districts, water districts, local utilities, SLCo EM	Redundancy, prevents further damage, reduces recovery costs	High	FMA, capital improvement budgets, HMGP, PDM	Ongoing	Medium	Carried forward	
46	Collaborate with private canal companies to mitigate drainage, leakage, and capacity issues.	Flooding, dam failure, levee failure	1, 2	SLCo PW & Municipal Services Flood Control and Engineering	MSD, local PW/ engineering departments, canal districts, water districts, State of Utah, private dam owners, SLCo EM	Prevents further damage, reduces recovery costs, enables a common understanding of the issues between relevant parties	High	PDM, HMGP, FMA, NRCS, capital improvement budgets, bonds, state and local funds	Ongoing	High	Carried forward	Lack of funding and personnel.
47	Conduct levee upgrades and certification.	Flooding, dam failure (levee failure)	1, 2	SLCo PW & Municipal Services Flood Control and Engineering	MSD, local PW/ engineering departments, SLCo EM, State of Utah, water districts, local utilities, UDOT	Reduces flooding, keeps roads open for emergency services, preserves critical infrastructure/ historical structures, lowers recovery costs	High	PDM, HMGP, FMA, NRCS, capital improvement budgets, bonds, state and local funds	Long term	High	Carried forward	Making progress and the accreditation of the Surplus Canal levee system. The levees along the Surplus Canal do not currently meet FEMA levee certification criteria as defined in the CFR Section 65.10 using the current effective FEMA base flood magnitude of 4,500 cfs. Levee upgrades and improvements include, but are not limited to: Storm drainpipes that penetrate the levees should be provided with closure devices per FEMA standards to prevent river water from flooding land behind levee enclosures. This action should be given a high priority to increase levee performance during a flood event and to facilitate certifying the levees. In certain locations, channel dredging activities have destabilized the toe of the canal banks, which has destabilized the reaches of the canal banks. To stabilize the canal banks, the canal banks should be modified and future channel dredging should be performed in a manner that will not destabilize the banks.

DRAFT

#	Action	Hazard(s)	Goals	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source	Time Frame	Priority	New or Carried Forward	Comments
48	Conduct public awareness campaign on Tier 2 reporting software for chemical reporting.	Hazardous materials incidents	1, 2, 4, 5, 6, 7, 8	SLCo EM, LEPC	Partners include but are not limited to UFA, UPD, local jurisdictions, Sheriff's Office, Rio Tinto, State of Utah, SLCo Health Department, Utah Department of Environmental Quality, water districts, local utilities, local school districts, local fire departments	Improved understanding of Tier 2 reporting and how local agencies/ jurisdictions can find and submit information, a common operating platform for hazardous materials reporting	Low	General funds, SLCo EM, LEPC, local jurisdictions, State of Utah	Long term	Medium	New	
49	Conduct a commodity flow allocation study for rail and road transportation.	Hazardous materials incidents	2, 5	SLCo EM, LEPC	Partners include but are not limited to local jurisdiction emergency management, SLCo Planning and Transportation, SLCo Housing and Community Development, SLCo Economic Development, UFA, UPD, local fire departments, State of Utah, local utilities, water districts, SLCo Health Department	Improved situational awareness, greater preparation in the event of a HAZMAT incident, improved response plans	Medium	General funds, HSGP grants	Short term	Low	Carried forward	A commodity flow allocation study will help identify potential sources of hazardous materials and where incidents may occur. It will also address the communication gap between intelligence groups, fire agencies, and local jurisdictions. The study will improve coordination between different agencies, which will then strengthen emergency response plans throughout the county.
50	Ensure that all new construction meets enhanced standards for wind loading, snow-loading, and other weather-related hazards.	High wind, heavy snow, heavy rain, tornado.	1, 2, 5	MSD and SLCo Public Works & Municipal Services	MSD, utility companies, local public works/engineering departments, local school districts, State of Utah, UFA, UPD	Ensure that new construction is up to code, increased community resilience, reduced recovery costs	Medium	General funds, HMA grants	Ongoing	Medium	Carried forward	
51	Enact countywide regulations and codes for development to reduce landslide and slope failure damage to critical infrastructure and buildings.	Landslides, slope failures	1, 2, 4, 7, 8	MSD	SLCo EM, UFA, SLCo Office of Regional Development, local jurisdictions, local fire departments, local utilities, school districts	Reduce the likelihood of landslides and critical infrastructure/ building damage, ensure that future development is up to code and follows policy to avoid repetitive loss properties	Medium	SLCo, MSD, State of Utah	Long term	Medium	New	
52	Leverage WebEOC and GIS to track the spread of contagious disease.	Public health epidemics/ pandemics	1, 2, 5, 6, 8	SLCo Health Department	SLCo EM, UFA, MSD, UPD, Sheriff's Office, local jurisdictions	Use GIS and WebEOC software to maintain situational awareness and track illnesses throughout the county	Low	SLCo EM, local jurisdictions, SLCo Health Department, UT Department of Environmental Quality	Short term	Medium	New	County/local jurisdictions already have existing software; improved training/documentation required.

DRAFT

#	Action	Hazard(s)	Goals	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source	Time Frame	Priority	New or Carried Forward	Comments
53	Create public awareness campaigns and public education programs on radon risks and increase public support for home testing for radon.	Radon	1, 2, 4, 8	SLCo EM, SLCo Health Department	Partners include but are not limited to Aging & Adult Services, SLCo Health Department, local jurisdictions, State of Utah	Decrease radon-caused cancer deaths, increase engagement/ understanding with the public on what SLCo can do or help with	Low	SLCo Health Department, local jurisdictions, State of Utah	Short term	Low	New	
54	Conduct seminar to assist Emergency Managers in public education about radon kits.	Radon	1, 4	SLCo EM, SLCo Health Department	State of Utah, local jurisdictions, Aging & Adult Services	Increased understanding of radon risk and ways in which emergency management agencies can assist/educate the public	Low	SLCo EM operating budget	Short term	Low	Carried forward	SLCo EM will conduct a half-day seminar to help Emergency Managers educate their citizens about procuring radon testing kits. Salt Lake County Health Department will provide a presentation. This goal wasn't a priority for the SLCo Health Department during the COVID-19 pandemic, and there has not been a discussion on radon education since.
55	Develop a road resurfacing project that includes permeable pavement for areas with rain-based flooding to reduce roadway flooding.	Heavy Rain	1, 2, 5, 8	SLCo PW & Municipal Services, MSD	SLCo Parks and Recreation, local jurisdictions, UDOT, State of Utah	Reduce pollutants discharged in runoff, reduce road maintenance time/costs, improve traction on roads	High	SLCo, UDOT, FMA, HMGP	Long term	Low	New	
56	Create a public education program for property owners to learn about tree maintenance and high-strength windows.	High Winds	1, 4	SLCo EM	Partners include but are not limited to Aging & Adult Services, SLCo PW, UFA, local jurisdictions, MSD, State of Utah, NWS	Reduce damage to critical infrastructure during high wind events, prevent personal injuries (people driving on roads or walking in the neighborhood), improve relationships with stakeholders and the public	Low	SLCo PW, SLCo EM, UFA	Short term	Low	New	
57	Plan for and maintain adequate road and debris clearing capabilities.	Severe weather: high wind, heavy rain, tornado	1, 2, 5	SLCo PW & Municipal Services	MSD, local PW/ engineering departments, UDOT	Ensures roads are open for emergency services	Medium	General funds, HMA grants, state funds, UDOT	Ongoing	Medium	Carried forward	SLCo PW Operations has an emergency action plan to respond to disasters, including road and debris clearing.
58	Develop a severe winter weather mitigation program to maintain access to primary roadways and evacuation routes.	Severe winter weather: heavy snow, blizzards	1, 2, 5, 8	SLCo PW & Municipal Services, MSD	SLCo EM, local jurisdictions, UDOT	Emergency services (e.g., police, fire, and paramedics) can utilize roads to provide their services	Medium	MSD, local jurisdictions	Short term	High	New	A severe winter storm with heavy snowfall requires roadway clearance for the public and emergency vehicles. The primary efforts will be to keep the roads open by clearing snow.

DRAFT

#	Action	Hazard(s)	Goals	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source	Time Frame	Priority	New or Carried Forward	Comments
59	Improve communication to the public and stakeholders on available resources when a Code Blue alert is in effect during severe winter weather.	Severe winter weather	1, 3, 4, 6, 7	SLCo EM, SLCo Office of Homelessness and Criminal Justice Reform	Partners include but are not limited to local jurisdiction emergency management, MSD, State of Utah, NWS	Prevent further damage to critical infrastructure, ensure that homeless individuals have warming resources available, reduce pressure on local homeless resource providers with standard protocols to follow during a Code Blue alert	Low	SLCo EM, SLCo Health Department, State of Utah	Short term	Low	New	
60	Conduct public awareness campaign about lightning safety.	Severe weather: lightning	1, 2, 4	SLCo EM	Partners include but are not limited to NWS, SLCo Parks and Recreation, UFA, SLCo PW, local jurisdictions, MSD, State of Utah	Lightning strike awareness for the public	Low	SLCo, MSD, local jurisdictions, NWS	Short term	Low	New	
61	Enhance security at critical public safety and technology infrastructure sites.	Terrorism	1, 2, 3, 5, 6	SLCo EM	Local jurisdictions, UPD, UFA, MSD, SLCo IT, SLCo PW, SLCo Clerk's Office, Sheriff's Office	Increased security protocols (in both technology and policy) for staff/first responders, clear expectations/ understanding for local jurisdictions and the public	Medium	SLCo EM, local jurisdictions, UPD, Sheriff's Office, UFA, MSD, general funds, HSGP grants	Short term	Medium	Carried forward	Revised verbiage from previous mitigation action that addressed the CIKR Security/Hardening Program.
62	Improve outreach for "see something, say something" QR code to deter terrorist acts.	Terrorism (including cyberattacks)	1, 2, 4, 5, 6, 7, 8	SLCo EM,	Partners include but are not limited to SLCo Sheriff's Office, UPD, UFA, MSD, local jurisdictions, SLCo IT	Ensure that residents and local agencies/ jurisdictions are aware of local intelligence resources and how to report suspicious activity, encourage QR code use/ outreach at special events in the county	Low	SLCo EM, local jurisdictions	Short term	Medium	New	
63	Develop a countywide intelligence group/ division to monitor and analyze threats in advance of an incident.	Terrorism (including cyberattacks)	1, 2, 4, 5, 6, 7, 8	SLCo EM	Local jurisdictions, SLCo Sheriff's Office, SIAC, Department of Homeland Security (DHS), Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF), Federal Bureau of Investigation (FBI)	Central group to collect and analyze information, development of SOPs for intelligence, greater collaboration	Low	Energy Storage and Power Generation (ESPG) grant, SHSP	Short term	Medium	New	This would be a core group of stakeholders who meet on a regular basis to share and collaborate on intelligence data.
64	Review critical infrastructure facilities to ensure that building materials are up to code and tornado resistant.	Tornadoes	1, 2, 5, 7, 8	MSD	Partners include but are not limited to the SLCo EM, local jurisdictions, SLCo PW, State of Utah, UFA, UPD, SLCo Facilities Management	Ensure that critical infrastructure facilities are operational/ functional in the event of a disaster, preserve life and safety	Medium	SLCo EM, MSD, local jurisdictions, UFA	Short term	Low	New	
65	Promote the Firewise initiative and regularly review/update the community wildfire protection plans (CWPPs) for at-risk communities.	Wildfires	1, 2, 4, 6	Salt Lake County Fire Warden	Partners include but are not limited to UFA, SLCo EM, local jurisdictions, State of Utah	Increased awareness of plans (for the public and stakeholders), improved eligibility for grants/other funding sources, regular review of CWPP	Low	SLCo EM, MSD, local jurisdictions, Community Wildfire Assistance Grant, Fire Prevention and Safety Grant	Short term	Medium	Carried forward	

DRAFT

NFIP-Specific Mitigation Actions and Implementation

The following mitigation strategy demonstrates Salt Lake County and its participating jurisdictions' continued support and compliance with National Flood Insurance Program (NFIP) requirements, as appropriate.

- Countywide Action—Help County Jurisdictions Procure FMA Grants

Other priorities in Salt Lake County related to NFIP participation include:

1. Increased Community Rating System (CRS) participation throughout the county
2. Increase in the number of flood insurance policies
3. Increased number of Certified Floodplain Managers (CFMs) in the county
4. Post-flood damage estimate training for county and municipal staff
5. Acquisition of severe repetitive loss and repetitive loss properties
6. Higher regulatory standards, including higher freeboard, cumulative substantial damage and substantial improvement threshold, and enforcing floodplain regulations in areas of known urban, typically shallow depth, flooding.

NFIP participation, compliance, and status information for each participating jurisdiction can be found in Volume 2 in the respective capability assessments.

DRAFT

Plan Implementation and Maintenance

Evaluating, updating, and monitoring this plan are critical to maintaining its value and success in the county's hazard mitigation efforts. A hazard mitigation plan must present a plan maintenance process that includes the following (44 Code of Federal Regulations [CFR] Section 201.6(c)(4)):

- A section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan over a five-year cycle
- A process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate
- A discussion on how the community will continue public participation in the plan maintenance process

This section details the formal process that will ensure that the Salt Lake County Multi-Jurisdictional Hazard Mitigation Plan remains an active and relevant document and that the planning partners maintain their eligibility for applicable funding sources. The plan's format allows sections to be reviewed and updated when new data become available, resulting in a plan that will remain current and relevant.

Plan Implementation

The effectiveness of the hazard mitigation plan depends on its implementation and incorporation of its action items into partner jurisdictions' existing plans, policies, and programs. Salt Lake County Emergency Management will assume lead responsibility for **implementation** and **monitoring** of this plan maintenance strategy. Although the county will have primary responsibility, plan implementation and **evaluation** will be a shared responsibility among all planning partners and agencies identified as lead agencies in the mitigation action plans. Completion of this strategy is the responsibility of each planning partner. This was conveyed to each planning partner as an expectation at the beginning of the planning process. Many of the mitigation actions developed by the participating jurisdictions include elements of mitigation implementation including the National Flood Insurance Program (NFIP), the Utah Wildland-Urban Interface Code, the Building Code Effectiveness Grading System (BCEGS), and Community Rating System (CRS), all of which have been implemented.

Incorporation into Other Planning Mechanisms

Plan integration is the process by which the prior and current mitigation plans are incorporated into other planning mechanisms. These can include efforts to manage local land use development and community decision-making, such as budgets, comprehensive plans, capital improvement plans, economic development plans, and other long range or strategic plans.

The plan participants identified which planning mechanism the 2019 mitigation plan was integrated into in the jurisdictional annexes. Salt Lake County identified previous plan integration as shown in Table 96.

DRAFT

Table 96: Previous Plan Integration for Salt Lake County

Plan	Description
Comprehensive Emergency Management Plan (CEMP)	The CEMP incorporated information from the previous HMP update as far as operations, planning, and coordination between various departments/agencies. The HMP update will also inform additional annexes of the CEMP for damage assessments, terrorism, etc.
Salt Lake County West General Plan	The West General Plan included information on hazards specific to the west side of Salt Lake County as far as land use, housing, the environment, water, transportation, utilities, and the economy.

Once the Salt Lake County Multi-Jurisdictional Hazard Mitigation Plan is promulgated, participating jurisdictions will include this plan's information in existing programs and plans. These could include the general or master plan, emergency response or operations plans, municipal codes, capital improvements plan, or community design guidelines, among others. All municipal planning partners are committed to creating a linkage between this hazard mitigation plan and their jurisdiction-specific plans. The jurisdictional annexes in Volume 2 provide additional detail regarding into which local plans the participants have incorporated information from the previous mitigation plan, and those in which they may incorporate information from this updated mitigation plan. Potential future integration options for Salt Lake County are in Table 97.

Table 97: Future Plan Integration for Salt Lake County[282]

Plan	Description
Community Wildfire Protection Plan (CWPP) Update	The HMP update can be integrated into the 2025 update of the CWPP to incorporate mitigation actions. This will help in accountability and the continuous discussion of mitigation. SLCo EM and the UFA's wildland division will be the main points of contact.
Comprehensive Emergency Management Plan – Damage Assessment Annex	Hazard information along with key stakeholders/agencies identified in the HMP update can inform the damage assessment annex to provide a framework for city/county program integration. SLCo EM will be the main point of contact.
County General Plan – Water Element	SB passed in 2022 and SB 76 passed in 2023 require counties to develop a water use and preservation element that is integrated with their land use planning and development (General Plan). This could integrate information or actions relating to drought.
Salt Lake County Resource Management Plan	Identifies goals and objectives for managing natural resources on public lands and potential mitigation actions for hazards.
Wasatch Canyons General Plan	Long range plan for the development of communities in the Wasatch Canyon areas of Salt Lake County.

The information on hazard, risk, vulnerability, and mitigation in this plan is based on the best science and technology available at the time this plan was prepared. The comprehensive plans of participating jurisdictions are considered to be integral parts of this plan. The county and partner municipalities have

[282] SLCo EM = Salt Lake County Emergency Management, UFA = Unified Fire Authority.

also planned for the impact of natural hazards through adoption of zoning ordinances. The plan development process provided the county and the municipalities with the opportunity to review and expand on policies in these planning mechanisms. The planning partners used their comprehensive plans (when applicable) and the hazard mitigation plan as complementary documents that work together to achieve the goal of reducing risk exposure to the citizens of the planning area. An update to a comprehensive plan may trigger an update to the hazard mitigation plan.

Some action items do not have to be implemented through regulation. Instead, they may be implemented through the creation of new educational programs, continued interagency coordination, or increased public participation. As information becomes available from other planning mechanisms that can enhance this plan, that information will be incorporated through the update process.

Maintenance Schedule and Evaluation Process

Periodic monitoring and updates of this plan are required to ensure that the plan's goals are kept current and that local mitigation strategies are being carried out. This portion of the plan outlines the procedures for completing revisions and updates. The plan will also be revised to reflect lessons learned or to address specific hazard incidents arising from a disaster.

Annual Review Procedures

County jurisdictions will be responsible for annual reviews of the mitigation strategies described in this plan, as required by Utah DEM, or as situations dictate, such as following a disaster declaration. Salt Lake County Emergency Management, which will regularly monitor the plan, is responsible for making revisions and updates to Volume 1 of this plan. SLCo EM will notify plan participants when annual reviews will take and provide opportunity for them to participate. This process may include the county organizing a mitigation planning committee composed of individuals from the jurisdictions and organizations responsible for implementing the described mitigation strategies. Each participating jurisdiction will be responsible for tracking the status of mitigation actions identified in their annex.

Progress toward the completion of the strategies will be assessed and adjustments may be made, as needed. If Salt Lake County Emergency Management, the participating jurisdictions, or Utah DEM determines that a modification of the plan is warranted, an amendment to the plan may be initiated as described below.

PLAN EFFECTIVENESS EVALUATION

Appendix D has a form for supporting plan maintenance. The participating jurisdictions of the mitigation plan can use this form to evaluate the effectiveness of the plan during the five-year update cycle. If recommended changes are identified, plan participants can amend the plan or integrate the finding into the next plan update.

DRAFT

Plan Amendments

The Salt Lake County Emergency Management Hazard Mitigation Officer, the Local Mitigation Committee, or the Mayor/City Manager of an affected community will initiate amendments and updates to the Plan.

Upon initiation of an amendment to the plan, Salt Lake County Emergency Management will forward information on the proposed amendment to all interested parties including but not limited to all affected city or county departments, residents, and businesses. Depending on the magnitude of the amendment, the full planning committee may be reconstituted.

At a minimum, the information will be made available through public notice in a newspaper of general circulation or on the Salt Lake County Emergency Management website. The review and comment period for the proposed plan amendment will last for no less than 30 days.

At the end of the comment period, the proposed amendment and all review comments will be forwarded to participating jurisdictions for consideration. If no comments are received from the reviewing parties in the specified review period, such will be noted accordingly. Salt Lake County Emergency Management will review the proposed amendment along with comments received from other parties and submit a recommendation to the Utah State Hazard Mitigation Officer and FEMA in 60 days of the end of the comment period.

In determining whether to recommend approval or denial of a plan amendment request, the following factors will be considered:

- There are errors or omissions made in the identification of issues or needs during the preparation of the plan.
- New issues or needs have been identified which were not adequately addressed in the plan.
- There has been a change in information, data, or assumptions from those on which the plan was based.
- The nature or magnitude of risks has changed.
- There are implementation problems, such as technical, political, legal, or coordination issues with other agencies.

Upon receiving the recommendation of Salt Lake County Emergency Management, a public hearing will be held. Salt Lake County Emergency Management will review the recommendation (including the factors listed above) and any oral or written comments received at the public hearing. Following that review, Salt Lake County Emergency Management will take one of the following actions:

1. Adopt the proposed amendment as presented.
2. Adopt the proposed amendment with modifications.
3. Defer the amendment request for further consideration and/or hearing.

DRAFT

4. Reject the amendment request.

Five-Year Plan Review

Local hazard mitigation plans must be reviewed, revised if appropriate, and resubmitted for approval to remain eligible for benefits under the Disaster Mitigation Act (44 CFR, Section 201.6(d)(3)). The planning partnership intends to update the hazard mitigation plan on a five-year cycle from the date of initial plan adoption. This cycle may be accelerated to less than five years based on the following triggers:

- A Presidential Disaster Declaration that impacts the planning area
- A hazard event that causes loss of life
- A comprehensive update of the county's or participating municipality's comprehensive plan

Typically, the same process that was used to create the original plan will be used to prepare the update. The update will, at a minimum, include the following elements:

- The update process will be convened through a steering committee.
- The hazard risk assessment will be reviewed and, if necessary, updated using best available information and technologies.
- The action plans will be reviewed and revised to account for any actions completed, dropped, or changed and to account for changes in the risk assessment or new partnership policies identified under other planning mechanisms (such as the comprehensive plan).
- The draft update will be sent to appropriate agencies and organizations for comment.
- The public will be given an opportunity to comment on the update before adoption.
- The partnership governing bodies will adopt their respective portions.

Continued Public Involvement

Public involvement in the planning process has been and will be critical to the development of the plan and its updates. The plan will be available on the Salt Lake County Emergency Management website to provide opportunities for public participation and comment. The plan will also be available for review at the office of Salt Lake County Emergency Management.

Salt Lake County Emergency Management has been designated as the lead agency in preparing and submitting the Salt Lake County Multi-Jurisdictional Hazard Mitigation Plan, which includes coverage for all areas in Salt Lake County. Limited resources make it difficult to identify and individually contact all the people and agencies that may stand to benefit from the plan. Because of this, the following course of action has been established and will include all jurisdictions and special districts in the planning area.

- **Step 1:** Salt Lake County Emergency Management will publicly advertise all requests for input and meetings directly related to the mitigation planning process. Meetings of the Mitigation Planning Team where plan items are discussed and where actions are taken will not receive special notifications as

they are already advertised according to set standards. All interested parties are welcome and invited to attend such meetings and hearings, because they are public and open to all.

- **Step 2:** The county has established a mailing list of many local agencies and individuals that might have an interest in the plan. Each identified agency or person will be mailed a notice of the hearings and open houses.
- **Step 3:** Comments, both oral and written, will be solicited and accepted from any interested party. Comments, as far as possible, will be included in the final draft of the plan. However, Salt Lake County Emergency Management reserves the right to limit comments that are excessively long, due to the size of the plan.
- **Step 4:** Specific to risk assessment and hazard mitigation, needs analysis, and capital investment strategies, Salt Lake County Emergency Management will also make initial contact and solicitation for input from each incorporated jurisdiction in the region. All input is voluntary. Staff time and resources may not allow personal contact with other agencies or groups; however, comments and strategies are welcomed as input to the planning process from any party by regular mail, fax, email, and phone call. In addition, every public jurisdiction advertises and conducts public hearings on their planning and budget, where most of these mitigation projects are initiated. Input can be received from these prime sources by the region as well.

Each plan participant will be responsible for advertising this opportunity to continue to participate in the plan maintenance and update process. SLCo EM will send out biannual outreach reminders to the plan participants and discuss this component of the plan maintenance process in the county emergency managers meeting, which includes all city, county, school, and special district emergency managers. At a minimum, the plan participants will share information on social media. The plan participants will evaluate if any of the information should be incorporated into the plan during the annual review process and the plan update process (see Table 98).

Table 98: Strategies for Continued Public Involvement by Plan Participants

Plan Participant	Continued Public Involvement Methodology
Salt Lake County	• Maintain the mitigation plan on the Salt Lake County website, including specific information for the public on how to provide input on the plan to the Salt Lake County Emergency Management. • Remind plan participants biannually via email and at the county emergency managers meeting to solicit public input on the mitigation plan. • Work with the PIO associates from participating cities and stakeholders to coordinate social media post information and resources. • Twice a year, use social media to share the link to the hazard mitigation plan, including the public feedback contact information. • Publish a StoryMap to educate the public about hazards and provide updates on the mitigation action status. • Share wildfire information and encourage feedback on the hazard mitigation plan at classes on WUI mitigation, including defensible space and home hardening.

Plan Participant	Continued Public Involvement Methodology
	• Work with the Salt Lake County Health Department to develop and host public education campaigns for vulnerable populations, including classes and posting flyers in public locations, and document feedback.
Town of Alta	• Twice a year, use social media or the website to share the link to the hazard mitigation plan, including the feedback email address. • Incorporate the hazard mitigation plan and the opportunity to provide feedback into public awareness and education campaigns on weather-related hazards. • Once a year, post notices about the hazard mitigation plan in an email newsletter used to communicate with residents.
Town of Brighton	• Twice a year, use social media, the website, or community newsletter to share the link to the hazard mitigation plan, including the public feedback contact information. • Share the mitigation plan link and request feedback during public education awareness campaigns on extreme cold or other hazards. • Share the hazard mitigation plan and request feedback in the town email newsletter.
Bluffdale	• Twice a year, use social media (Facebook) or the website to share the link to the hazard mitigation plan, including the public feedback contact information. • Share information about the hazard mitigation plan and opportunities to provide feedback through Bluffdale's Prep & Prosper preparedness classes.
Copperton	• Twice a year, use social media, the website, or community newsletter to share the link to the hazard mitigation plan, including the public feedback contact information. • Share information about the hazard mitigation plan, including the request for public feedback at Copperton Town Days or a similar event.
Cottonwood Heights	• Twice a year, use social media or the website to share the link to the hazard mitigation plan, including the public feedback contact information. • Add information on hazards, including linking to the hazard mitigation plan and requesting public feedback, in the city newsletter.
Draper City	• Twice a year, use social media (Facebook), the website, or community newsletter (Draper Forward) to share the link to the hazard mitigation plan, including the public feedback contact information. • Share information with homeowners and renters as part of the hazard public education campaign for weather-related hazards.
Emigration Canyon	• Twice a year, use social media or the website to share the link to the hazard mitigation plan, including the public feedback contact information. • Promote mitigation, including soliciting feedback on the mitigation plan during community wildfire prevention events and outreach campaigns to residents.
Herriman	• Twice a year, use social media (Facebook), the website, or community newsletter to share the link to the hazard mitigation plan, including the public feedback contact information. • Share public education about hazards and the opportunity to submit feedback on the mitigation plan through the Herriman Connection newsletter included in the utility bill.

DRAFT

Plan Participant	Continued Public Involvement Methodology
Holladay	• Twice a year, use social media (Facebook, Instagram) or the website to share the link to the hazard mitigation plan, including the public feedback contact information. • Share the hazard mitigation plan at CERT trainings and during the annual emergency preparedness fair and solicit feedback. • Share public education campaign information through the city e-newsletter or the Emergency Preparedness website and monthly messages and provide an opportunity for public feedback.
Kearns	• Twice a year, use social media or the website to share the link to the hazard mitigation plan, including the public feedback contact information. • Share the hazard mitigation plan and request public feedback through public education and awareness campaigns in the city newsletter.
Magna	• Twice a year, use social media or the website to share the link to the hazard mitigation plan, including the public feedback contact information. • Share the link to the hazard mitigation plan and information on how to provide feedback via the monthly online newsletter.
Midvale	• Twice a year, use social media (Facebook, Instagram), the website, or City Journal newsletters to share the link to the hazard mitigation plan, including the public feedback contact information. Share the mitigation plan and request public feedback via the public awareness program.
Millcreek	• Twice a year, use social media (Facebook, Instagram, and X) or the website to share the link to the hazard mitigation plan, including the public feedback contact information. • Share mitigation information, including a link to the hazard mitigation website, which includes the request for public feedback, in either the weekly e-newsletter or the monthly Millcreek News mailed to residents. • Encourage public feedback on the mitigation plan at community trainings with Unified Fire Authority, St. Mark's Hospital, University of Utah Health, and CERT classes. • Share the mitigation plan and request public feedback via the public awareness program for hazards, such as drought, extreme heat, and radon.
Murray	• Twice a year, use social media (Facebook, Instagram, etc.), the website, or a community newsletter to share the link to the hazard mitigation plan, including the public feedback contact information. • Share the mitigation plan and solicit feedback through public awareness campaigns on weather hazards, dam failure, wildfires, and more. This can include the city newsletter, social media, or in-person training such as CERT. • Share mitigation information and solicit feedback on the current plan during the Emergency Operations Plan update, community outreach, and at an Emergency Fair.
Riverton	• Twice a year, use social media to share the link to the hazard mitigation plan, including the public feedback contact information. • Share the mitigation plan and solicit feedback on the plan through an education campaign conducted via social media, the Riverton Connect App, the Riverton Recap email newsletter, and the Riverton Review included in the utility bill, and include information about hazards, such as

Plan Participant	Continued Public Involvement Methodology
	dam failure, earthquake, extreme cold, high wind, lightning, radon, severe winter weather, tornado, and wildfire.
Salt Lake City	• Twice a year, use social media or the website to share the link to the hazard mitigation plan, including the public feedback contact information. • Use a monthly Featured News post on the website to share information about the hazard mitigation plan with residents, including options to provide feedback. • Include the hazard mitigation plan link at public training events such as CERT classes.
Sandy City	• Twice a year, use social media, the website, and a community newsletter (Sandy Journal) to share the link to the hazard mitigation plan, including the public feedback contact information. • Share information about the mitigation plan through Be Ready Sandy and encourage feedback.
South Salt Lake	• Twice a year, use social media or the website to share the link to the hazard mitigation plan, including the public feedback contact information. • Use city "On the Move" newsletter and the Emergency Management "Monthly Preparedness Tips" to share information about the hazard mitigation plan and public education campaigns for hazards • Include a link to the hazard mitigation plan and feedback information at CERT and amateur radio classes.
Taylorsville	• Twice a year, use social media (X, Facebook, Instagram) or the website to share the link to the hazard mitigation plan, including the public feedback contact information. • Share information about the hazard mitigation plan and educational materials about hazards, such as drought, earthquake, flooding, and severe weather in an email newsletter and the printed Taylorsville Newsletter mailed with the City Journal.
West Jordan	• Provide a link to the hazard mitigation plan and request for feedback via social media (Facebook) and the website. Share a reminder at least twice a year. • Share information about the hazard mitigation plan at Citizen Readiness Corps meetings.
White City	• Twice a year, use social media (Facebook) or the website to share the link to the hazard mitigation plan, including the public feedback contact information.
West Valley City	• Twice a year, use social media (Facebook and X) or the website to share the link to the hazard mitigation plan, including the public feedback contact information. • Share information about the mitigation plan via the Neighborhood Network newsletter or at an in-person event like WestFest.
Salt Lake Community College	• Twice a year, use social media or the website to share the link to the hazard mitigation plan, including the public feedback contact information. • Share the mitigation plan and request public feedback on the SLCC Mobile app during a public education campaign on earthquake, wildfire, and other hazards. • Integrate hazard mitigation information as part of other

DRAFT

Plan Participant	Continued Public Involvement Methodology
Jordan School District	• Twice a year, use social media (Facebook, Instagram, and X) or the website to share the link to the hazard mitigation plan, including the public feedback contact information. • Twice a year, use the parent portal (Skyward) or Jordan School Safety to conduct a public awareness campaign and include the hazard mitigation plan link and information with the request for public feedback to be sent to Salt Lake County Emergency Management. • Use the Skyward parent portal and district website (Jordan School Safety) to share hazard mitigation information with parents and students.
Canyons School District	• Twice a year, use social media, the website, and the newsletter to share the link to the hazard mitigation plan, including the public feedback contact information. • Use Parent Square email, text, app notifications and in-person meetings with Community Councils or via the S.A.F.E. Neighborhoods Program to share hazard mitigation information with parents and students. • Share information on how to promote safety at home and school via social media.

Overarching Policies

The following policies will guide Salt Lake County Emergency Management staff in making access and input to the Salt Lake County Multi-Jurisdictional Hazard Mitigation Plan as open and convenient as possible.

PARTICIPATION

All citizens of the region are encouraged to participate in the planning process, especially those who may reside in identified hazard areas. Salt Lake County Emergency Management will take whatever actions possible to accommodate individuals including the impaired, non-English speaking, persons of limited mobility, and others with special needs.

ACCESS TO MEETINGS

Adequate and timely notification to all area residents will be given as outlined above to all hearings, forums, and meetings.

ACCESS TO INFORMATION

Citizens, public jurisdictions, agencies and other interested parties will have the opportunity to receive information and submit comments on any aspect of the plan, and/or any other documents prepared for distribution by Salt Lake County Emergency Management that may be adopted as part of the plan by reference. Salt Lake County Emergency Management may charge a nominal fee for printing of documents that are longer than three pages.

DRAFT

TECHNICAL ASSISTANCE

Residents and local jurisdictions may request assistance in accessing the program and interpretation of mitigation projects. Salt Lake County Emergency Management staff will assist to the extent practical; however, limited staff time and resources may prohibit staff from giving all the assistance requested. Salt Lake County Emergency Management will be the sole determiner of the amount of assistance given all requests.

FUTURE REVISIONS

Future revisions of the plan shall include the following:

- Continuation of the search for more specific mitigation actions
- An analysis of progress of the plan as it is revised

DRAFT

THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT

Appendix A: List of Acronyms

Appendix A: List of Acronyms

Acronym	Meaning
ALF	Animal Liberation Front
ARF	acute rheumatic fever
ATF	Bureau of Alcohol, Tobacco, Firearms and Explosives
BCEGS	Building Code Effectiveness Grading System
BFE	Base Flood Elevation
BOR	Bureau of Reclamation
BRIC	Building Resilient Infrastructure in Communities
CDA	Community Development Area
CDBG	Community Development Block Grant
CDC	Centers for Disease Control and Prevention
CEMP	Comprehensive Emergency Management Plan
CERT	Community Emergency Response Team
CFM	Certified Floodplain Manager
CFR	Code of Federal Regulations
CIKR	critical infrastructure and key resources
CIP	Capital Improvement Plan
ClimRR	Climate Risk and Resilience Portal
CMRA	Climate Mapping for Resilience and Adaptation
ComEd	Commonwealth Edison
COVID	Coronavirus disease
CPI	Consumer Price Index
CPI-U	Consumer Price Index for All Urban Consumers
CPRI	Calculated Priority Risk Index
CRA	Community Reinvestment Area
CRS	Community Rating System
CWPP	Community Wildfire Protection Plan
DEM	Division of Emergency Management
DHS	U.S. Department of Homeland Security
DMA 2000	Disaster Mitigation Act of 2000
DMR	Digital Mobile Radio
DNR	Division of Natural Resources
DRC	Utah Division of Radiation Control
EAL	Expected annual loss
EAP	Emergency Action Plan
ECC	Emergency Coordination Center
ELF	Earth Liberation Front
EM	Emergency management

DRAFT

Acronym	Meaning
EMPG	Emergency Management Performance Grant
EMS	Emergency Medical Services
EOC	Emergency Operations Center
EOP	Emergency Operations Plan
EPA	U.S. Environmental Protection Agency
ESPG	Energy Storage and Power Generation
FBI	Federal Bureau of Investigation
FEMA	Federal Emergency Management Agency's
FIRM	Flood Insurance Rate Map
FMA	Flood Mitigation Assistance
GIS	Geographic Information System
HAZMAT	Hazardous materials
Hazus	Hazards United States
HHPD	High Hazard Potential Dam
HIRA	Hazard Identification and Risk Assessment
HMA	Hazard Mitigation Assistance
HMGP	Hazard Mitigation Grant Program
HMGP-PF	HMGP Post Fire Program
HMP	Hazard Mitigation Plan
HSGP	Homeland Security Grant Program
IBC	International Building Code
IPAWS	Integrated Public Alert and Warning System
IRC	International Residential Code
ISB	Intermountain Seismic Belt
IT	Information Technology
JIC	Joint Information Center
LAL	Lightning Activity Level
LDS	Church of Jesus Christ of Latter-Day Saints
LEPC	Local Emergency Planning Committee
LHMP	Local Hazard Mitigation Plan
LTR	Logic Trunked Radio
MBPA	Migratory Bird Production Area
MDS	Municipal Services District
MJHMP	Multi-Jurisdictional Hazard Mitigation Plan
ML	Local magnitude scale
MOU	Memorandum of Understanding
MSD	Municipal Services District
NCEI	National Centers for Environmental Information

DRAFT

Acronym	Meaning
NFIP	National Flood Insurance Program
NFPA	National Fire Protection Association
NGO	Nongovernmental Organization
NID	National Inventory of Dams
NOAA	National Oceanic and Atmospheric Administration.
NPL	National Priorities List
NRCS	Natural Resources Conservation Service
NRI	National Risk Index
NWS	National Weather Service
NXDN	Next Generation Digital Narrowband
PA	Public Assistance
PCE	Tetrachloroethylene
PDM	Pre-Disaster Mitigation
PDSI	Palmer Drought Severity Index
PHIBIS	Public Health Indicator Base Information System
PII	Personally Identifiable Information
PIO	Public Information Officer
POD	Point of Distribution
PPE	Personal Protective Equipment
PSI	Pandemic Severity Index
PW	Public Works
RACS	Remote Avalanche Control System
RDA	Regional Development Area
RL	Repetitive Loss
ROD	Record of Decision
RTKC	Rio Tinto Kennecott Copper
RTP	Regional Transportation Plan
SAIC	Statewide Information & Analysis Center
SAIPE	Small Area Income & Poverty Estimates
SFHA	Special Flood Hazard Area
SHSP	State Homeland Security Program
SIAC	Statewide Information & Analysis Center
SLC	Salt Lake City
SLCo	Salt Lake County
SLCoEM	Salt Lake County Emergency Management
SNOTEL	Snow Telemetry
SOP	Standard Operating Procedure
SVI	Social Vulnerability Index

DRAFT

Acronym	Meaning
TOD	Transit-Oriented Development
TRBO	(a digital radio format developed by Motorola)
UAC	Utah Avalanche Center
UDEM	Utah Division of Emergency Management
UDEQ	Utah Department of Environmental Quality
UDOT	Utah Department of Transportation
UFA	Unified Fire Authority
UPD	Unified Police Department
UPDES	Utah Pollution Discharge Elimination System
URM	Unreinforced masonry
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USFS	U.S. Forest Service
USGS	U.S. Geological Survey
UTA	Utah Transit Authority
VA	U.S. Department of Veterans Affairs
VOAD	Voluntary Agencies Active in Disasters
VVH	Very, Very High
VVL	Very, Very Low
WFRC	Wasatch Front Regional Council
WUI	Wildland–Urban Interface

DRAFT

THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT

Appendix B: Meeting Documentation

Appendix B: Meeting Documentation

See attachment.

DRAFT

Appendix C: Public Outreach Survey Documentation

Appendix C: Public Outreach Survey Documentation

See attachment.

DRAFT

Appendix D: Plan Effectiveness Evaluation Form

Appendix D: Plan Effectiveness Evaluation Form

Plan Section	Question	Comments
Planning Process	Have there been local staffing changes or additional staff that should be invited to join the mitigation planning team?	
	Are there additional partners or stakeholders that should be invited to participate in the hazard mitigation planning process? List organization, title, and name if applicable.	
	Has there been any public outreach or feedback from the community on hazard mitigation or the hazard mitigation plan?	
	Have you integrated the current hazard mitigation plan into any other planning mechanisms? List and describe if so.	
Hazard Profiles	Has a natural and/or human-caused disaster occurred in this reporting period? If so, describe it and suggest next steps.	
	Are there natural and/or human-caused hazards that have not been addressed in this plan which should be?	
	Are additional maps/data or new hazard studies available? If so, what have they revealed?	
	Have there been changes in development patterns that could influence the effects of hazards or create additional risks?	
	How has the vulnerability analysis changed as a result of implementing mitigation actions?	
Mitigation Strategy	What different or additional resources (financial, technical, and human) are available now for mitigation planning and action?	
	Must the goals be adjusted?	
	Should new mitigation actions be added to the Mitigation Action Plan?	

DRAFT

Plan Section	Question	Comments
	What mitigation actions have been implemented? Any success stories or lessons learned?	
	Should the mitigation actions in the Mitigation Action Plan be reprioritized, deleted, or revised?	
	Are the available resources sufficient for performing the mitigation actions in the Mitigation Action Plan? If not, what additional resources are needed?	

DRAFT

THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT

Salt Lake County Emergency Management
EM
Unified Fire Authority

Multi-Jurisdictional Hazard Mitigation Plan

Salt Lake County | Volume 2: Jurisdictional Annexes

2025

Salt Lake County
Emergency Management

3380 South 900 West
Salt Lake City, UT 84119

SALT LAKE COUNTY

THIS PAGE INTENTIONALLY LEFT BLANK

Town of Alta

Jurisdictional Annex to the
Salt Lake County Hazard Mitigation Plan

Month XXXX | Draft X.X

DRAFT

THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT

Table of Contents

Town of Alta Annex 1

Planning Process Contact Information 1
Jurisdiction Profile 1
Date of Incorporation 1
Location and Description 1
Population 2
Demographics 2
Brief History 2
Climate 2
Public Services 3
Governing Body 3
Development Trends 3
Jurisdiction-Specific Hazards and Risk 3
Hazard Event History 6
National Flood Insurance Program Summary 8
Jurisdiction-Specific Vulnerabilities and Impacts 9
Jurisdiction-Specific Changes in Vulnerability 26
Additional Public Involvement 36
Plan Integration 36
Capability Assessment 38
Planning and Regulatory Capabilities 38
Administrative and Technical Capabilities 39
Financial Capabilities 40
Education and Outreach Capabilities 42
Opportunities to Expand and/or Improve Capabilities 42
Mitigation Strategy 44

List of Figures

Figure 1: Social Media Post (*left*) and Email Newsletter (*right*) for the Hazard Mitigation Survey 36

DRAFT

Figure 2: Flyer Posting of the Hazard Mitigation Survey 36

List of Tables

Table 1: Contact Information for the Town of Alta 1
Table 2: Participant List for the Town of Alta 1
Table 3: Calculated Priority Risk Index Values for the Town of Alta 4
Table 4: Criteria for the Calculated Priority Risk Index 5
Table 5: History of Hazard Events in the Town of Alta 7
Table 6: National Flood Insurance Program Status for the Town of Alta 8
Table 7: National Flood Insurance Policies for the Town of Alta 9
Table 8: Jurisdiction-Specific Vulnerabilities and Impacts in the Town of Alta 9
Table 9: Jurisdiction-Specific Changes in Vulnerability in the Town of Alta 27
Table 10: Integration of Previous Plans by the Town of Alta 37
Table 11: Opportunities for Integration with Future Plans for the Town of Alta 37
Table 12: Assessment of the Planning Capabilities of the Town of Alta 38
Table 13: Assessment of the Regulations and Ordinances of the Town of Alta 39
Table 14: Assessment of the Administrative Capabilities of the Town of Alta 39
Table 15: Assessment of the Technical Capabilities of the Town of Alta 40
Table 16: Assessment of the Financial Capabilities of the Town of Alta 41
Table 17: Assessment of the Education and Outreach Capabilities of the Town of Alta 42
Table 18: Opportunities to Expand or Improve the Capabilities of the Town of Alta 43
Table 19: Mitigation Action Alternatives for the Town of Alta 45
Table 20: Status of the 2019 Mitigation Actions of the Town of Alta 46
Table 21: 2025 Mitigation Action Plan for the Town of Alta 51

DRAFT

Town of Alta Annex

To participate in this multi-jurisdictional hazard mitigation plan (MJHMP) update for Salt Lake County (SLCo), the governing body of the town of Alta passed a formal resolution, a copy of which is maintained at the local government offices.

Planning Process Contact Information

Table 1 provides information on the point of contact during the updating of the MJHMP.

Table 1: Contact Information for the Town of Alta

Name	Contact Information
Name: Molly Austin/Chris Cawley	**Phone**: Molly Austin/Chris Cawley **email:** molly@townofalta.utah.gov /ccawley@townofalta.utah.gov

The town of Alta has a fully integrated approach to hazard mitigation planning and program implementation. During the 2024 update process, the MJHMP participation roles in Table 2 were recorded.

Table 2: Participant List for the Town of Alta

Name	Title	Jurisdiction
Molly Austin	Assistant Town Manager	Town of Alta
Chris Cawley	Town Manager	Town of Alta
Mike Morey	Town Marshal	Town of Alta

Jurisdiction Profile

Date of Incorporation

August 1970

Location and Description

The town of Alta is a small mountain community in Little Cottonwood Canyon in the Wasatch–Cache National Forest. The town is 4.5 square miles in area and is between 7,500 and 9,500 ft. above sea level. It is accessed via State Highway 210, a designated scenic byway. Much of Alta is public lands, part of the Uinta–Wasatch–Cache National Forest. The Lone Peak Wilderness and Twin Peaks Wilderness Areas are nearby. Alta is also in the Salt Lake City watershed area. The town administration recognizes the importance of protecting natural resources and supports protection of the watershed while facilitating

DRAFT

nearby recreation opportunities through interpretive signs, restroom facilities, personnel, and trail maintenance.

Population

The 2022 American Community Survey 5-Year Estimate from the U.S. Census Bureau records the population of the town of Alta as 337 people.

Demographics

Most of the 337 residents are between the ages of 20 and 34, with a median age of 30.2; 289 are male (approximately 86%) and 48 are female (14%)[1]. English is the primary language in 98.1% of homes, with 1.9% other Indo-European languages.[2]

Brief History

Alta was founded to house miners when silver claims were staked in Little Cottonwood Canyon during the 1860s. By 1872, several thousand seasonal residents lived in the community. Economic factors and natural disasters, including wildfire and avalanches, led to a decline in the settlement. In 1927, resident George Watson deeded 1800 acres of his land for the development of a ski area, which opened its first lift in 1938. The town was officially incorporated in 1970 with Lee Bronson as the first “president” of the town for 2 years. He was elected Mayor in 1972 when the Alta Planning Commission was appointed. The town also established an emergency dispatch center, a Marshal’s Office, and a Justice Court. A culinary water system was added in 1978. In 1984 the Alta Fire Station was completed to house the volunteer fire department, which is now staffed by the Unified Fire Authority (UFA). The Alta Ski Area is the centerpiece of Alta’s economy and is one of the world’s foremost skiing destinations.

Climate

Alta fluctuates between a humid continental and a subalpine climate. Due to its high elevation, it receives an average of 500 inches of snowfall, typically between November and May. This snowfall is influenced by the Great Salt Lake, which can generate heavy “lake effect” snow. Average annual precipitation is 47.08 inches, predominantly occurring in the winter months. January temperatures range from an average daily low of 15°F to an average daily high of 30.7°F. Summer temperatures are mild, with an average low of 50.3°F and average high of 72.9°F.

[1] U.S. Census Bureau, Alta Town, Utah Profile. https://data.census.gov/table/ACSDP5Y2023.DP05?g=160XX00US4900650.
[2] U.S. Census Bureau, QuickFacts, Alta Town, Utah. https://data.census.gov/table/ACSDP5Y2023.DP05?g=160XX00US4900650.

DRAFT

Public Services

The Alta Marshal's Office is the law enforcement agency for the town. Alta Central Dispatch provides emergency dispatch services. Fire, EMS and HazMat response are contracted through UFA. Alta Ski Patrol also provides first aid response to guests of the ski area.

Salt Lake County Service Area #3 (SA3) is a government water/sewer district in Little Cottonwood Canyon at Snowbird. SA3 provides drinking water and wastewater services to Snowbird Ski Resort and many residences along the Alta Bypass Road. It also manages the Town of Alta's water system through an interlocal agreement. Other partner agencies include Salt Lake County, the Utah Department of Transportation (UDOT), the Utah Avalanche Center, Salt Lake City Public Utilities, the Salt Lake Valley Health Department, Uinta–Wasatch–Cache National Forest Salt Lake Ranger District, Salt Lake County Sheriff's Office, the Cottonwood Canyons Foundation, the Central Wasatch Commission, and the Utah Transit Authority.

Governing Body

The governing body of the town consists of a Mayor and a four-member Town Council. This council serves as the municipal/local government, performing executive functions of different natures. Members of this governing body are elected by the people.

Development Trends

The Town of Alta is not experiencing residential growth. The 2016 Commercial Core Plan expresses interest in commercial development to support the creation of an identifiable Town Center to enhance year-round commercial activity. Significant discussion regarding transportation development in Little Cottonwood Canyon has occurred. UDOT studies of transportation demand in Little Cottonwood Canyon have considered enhanced bus service, tolling or other restrictions on single-occupancy vehicles, improvements in trailhead and roadside parking, and a possible gondola.

Jurisdiction-Specific Hazards and Risk

The Calculated Priority Risk Index (CPRI) is a comprehensive assessment tool for evaluating and prioritizing risks in a given context. It considers various factors, such as probability, impact, and urgency, to determine the level of risk associated with events or situations. The results for each hazard, including its risk factor (RF) value, are shown in Table 3. The results are based on the criteria in Table 4 and the equation that follows it. The CPRI helps organizations and individuals make informed decisions about risk management and mitigation strategies. It provides a systematic approach to identifying and addressing potential issues, allowing for a more efficient allocation of resources and proactive risk prevention. With the CPRI, stakeholders can prioritize their focus on the most critical risks, leading to more effective risk management and, ultimately, better outcomes.

DRAFT

Table 3: Calculated Priority Risk Index Values for the Town of Alta

Type of Hazard Event	Probability of Future Events	Spatial Extent	Severity of Life/ Property Impact	Warning Time	Duration	Response Capacity	Risk Factor Value
Avalanche	4	1	3	4	2	2	3
Drought	3	4	2	1	2	2	2.4
Earthquake	3	3	2	4	2	1	2.5
Extreme Heat	2	3	2	1	1	1	1.8
Extreme Cold	4	3	3	2	1	2	2.9
Flooding	2	1	2	2	1	1	1.7
Landslide/ Slope Failure	2	1	2	4	1	2	2
Radon	4	4	1	1	4	1	2.5
Heavy Rain	4	3	3	2	2	1	2.9
High Wind	4	3	3	3	2	1	3
Lightning	4	2	3	4	2	1	3
Heavy Snow/ Blizzard	4	4	4	3	4	2	3.7
Tornado	1	2	1	4	2	2	1.6
Wildfire	3	1	2	2	2	1	2.1
Dam Failure	1	2	2	4	1	2	1.8
Civil Disturbance	1	1	1	2	2	2	1.3
Cyberattack	2	1	1	4	1	1	1.6
Hazardous Materials Incident (Transportation & Fixed Facility)	3	1	2	4	1	1	2.2
Public Health Epidemic/ Pandemic	3	4	3	1	3	1	2.7
Terrorism	1	1	2	4	2	1	1.7

DRAFT

Table 4: Criteria for the Calculated Priority Risk Index

Risk Index Factor	Degree of Risk Level		Criteria	Factor Weight for Degree of Risk Level
Probability of Future Events	1	Unlikely	Less than 1 percent probability of occurrence in the next year or a recurrence interval of greater than every 100 years.	30%
	2	Occasional	1 to 10 percent probability of occurrence in the next year or a recurrence interval of 11 to 100 years.	
	3	Likely	11 to 90 percent probability of occurrence in the next year or a recurrence interval of 1 to 10 years.	
	4	Highly Likely	91 to 100 percent probability of occurrence in the next year or a recurrence interval of less than 1 year.	
Spatial Extent	1	Limited	Less than 10% of the planning area could be impacted.	10%
	2	Small	10%–25% of the planning area could be impacted	
	3	Significant	25%–50% of the planning area could be impacted.	
	4	Extensive	50%–100% of the planning area could be impacted.	
Severity of Life/Property Impact	1	Negligible	Less than 5% of the affected area's critical and non-critical facilities and structures are damaged/destroyed. Only minor property damage and minimal disruption of life. Temporary shutdown of critical facilities.	30%
	2	Limited	More than 5% and less than 25% percent of property in the affected area is damaged/destroyed. Complete shutdown of critical facilities for more than one day but less than one week.	
	3	Critical	More than 25% and less than 50% of property in the affected area was damaged/destroyed. Complete shutdown of critical facilities for over a week but less than one month.	
	4	Catastrophic	Over 50% of critical and non-critical facilities and infrastructures in the affected area are damaged/ destroyed. Complete shutdown of critical facilities for more than one month.	
Warning Time	1	Self-defined	More than 24 hours	10%
	2	Self-defined	12 to 24 hours.	
	3	Self-defined	6 to 12 hours.	
	4	Self-defined	Less than 6 hours.	
Duration	1	Brief	Up to 6 hours.	10%
	2	Intermediate	Up to one day.	

DRAFT

Risk Index Factor	Degree of Risk Level		Criteria	Factor Weight for Degree of Risk Level
	3	Extended	Up to one week.	
	4	Prolonged	More than one week.	
Response Capacity	1	High	Significant resources and capability to respond to this kind of event; staff are trained, experienced, and ready.	10%
	2	Medium	Some resources and capability to respond to this kind of staff; some staff may be trained, experienced, and ready while others may need additional support.	
	3	Low	Limited resources and capability to respond to this kind of event; additional staff or staff training needed.	
	4	None	No resources and capability to respond this kind of event; additional outside support would be required.	

RISK FACTOR (RF) EQUATION

RF Value = [(Probability x 0.30) + (Spatial Extent x 0.10) + (Severity of Life/Property Impact x 0.30) + (Warning Time x 0.10) + (Duration x 0.10) + (Response Capacity x 0.10)]

Hazards with an RF value greater than or equal to 2.5 are considered high risk. Those with RF values of 2.0 to 2.4 are considered moderate risk hazards, and those with an RF value less than 2.0 are considered low risk. The highest possible RF value is 4.

Hazard Event History

Examining hazard event histories provides valuable insights to inform decision making and help prioritize resources for risk prevention and response efforts. For almost all hazard events, the most significant vulnerability in the town of Alta is the potential for isolation from the rest of the Salt Lake Valley. Alta sits at the top of Little Cottonwood Canyon—a box canyon accessible only by SR-210. With only one road into and out of Alta (which is frequently affected by various weather conditions), the town runs the risk of isolation from partner agencies, leaving it in standalone operations with very limited resources. The elderly and medically fragile populations are most at risk, as there are very limited medical resources in the town, but all residents, commuters, and visitors are affected if the supply of medical care, food, fuel, and other essential supplies is cut-off.

Table 5 lists the hazard events impacting the town of Alta planning area since the 2019 plan update.

DRAFT

Table 5: History of Hazard Events in the Town of Alta[3]

Type of Hazard Event	FEMA Disaster #	Date(s)	Damage or Impacts	Description
Avalanche		Regularly occurring over the last 5 years, highlighted by the winter season of 2022–2023 which produced historic avalanche events and hazards in Alta.	Generally negligible, except one instance in which an avalanche (triggered as a result of mitigation work) impacted a private residence and injured an occupant of the building. Another significant event was a roof slide avalanche that resulted in the full burial of a minor. The community is impacted by the need to shelter in place. These occurrences have significant financial impacts on the business community and regularly strain the resources of the first responder staff. Another impact is being isolated from critical support like medical care, ambulances, food, fuel, and supplies during avalanche closures. These times of isolation also cut the town off from partner agencies in the valley, leaving it in standalone operations.	Avalanche mitigation is a regular occurrence in Alta that results in intentionally triggered/ managed avalanches. Naturally occurring avalanches are less common. However, both types present a significant risk of property damage, injury, and loss of life.
Drought			The town monitors along with county ECC, but is not directly impacted	
Earthquake	DR-4548-UT	March 18, 2020	Monitors along with county ECC, no direct impacts	
Extreme Heat			NA	NA
Extreme Cold			Occurrence coincides with avalanche problem	
Flooding			Some instances of localized heavy rain (see below)	
Landslide/ Slope Failure			Heavy rains can affect SR-210. Mitigation is done alongside UDOT. Can impact access in and out of town and some residential areas.	
Radon				

[3] ECC = Emergency Coordination Center, SLC = Salt Lake City, UDOT = Utah Department of Transportation

DRAFT

Type of Hazard Event	FEMA Disaster #	Date(s)	Damage or Impacts	Description
Heavy Rain		Multiple	Debris flow in roadway (See Landslide)	
High Wind			Occurs regularly; no catastrophic events observed	
Lightning			Localized lightning strikes with minimal/no impacts	
Heavy Snow/ Blizzard		Multiple	Occurs frequently! (See Avalanche.) Some structures have been compromised by snow load.	
Tornado		N/A	N/A	NA
Wildfire			Occurs frequently; sporadic localized wildfires	
Dam Failure		Cecret Lake Dam	Structural issues addressed and repairs completed by SLC Public Utility.	
Civil Disturbance		N/A		
Cyberattack		N/A		
Hazardous Materials Incident (Transporta-tion & Fixed Facility)			Numerous natural gas leaks, mostly associated with snow load	
Public Health Epidemic/ Pandemic	DR-4525-UT	COVID-19 pandemic	Affected local businesses and ski resorts in the canyon	
Terrorism		N/A		

National Flood Insurance Program Summary

The town of Alta participates in the Nation Flood Insurance Program (NFIP). Table 6 and Table 7 present statistics related to the NFIP. The town of Alta does not participate in the Community Rating System.

Table 6: National Flood Insurance Program Status for the Town of Alta[4]

Init FHBM Identified	Initial FIRM Identified	Current Effective Map Date	Adopted Date	Date Joined NFIP	Tribal
N/A	09/21/01	9/25/2009 (NSFHA)	N/A	12/02/09	No

[4] FIRM = Flood Insurance Rate Map, FHBM = Flood Hazard Boundary Map, NSFHA = Non-Special Flood Hazard Area

DRAFT

Table 7: National Flood Insurance Policies for the Town of Alta

Community ID	Number of Losses	Total Net Payment	Active Policies	Total Coverage
490251	0	$0	0	$0

The Town Manager is appointed as the floodplain administrator for Alta. The town's Flood Damage Prevention Ordinance was adopted 3/11/2010 and amended 4/12/2023. The current effective FIRM is dated 9/25/2009. There is no identified Special Flood Hazard Area (SFHA). Therefore, Alta does not issue permits in the SFHA. If a SFHA were to be identified in the future, the Building Department would be responsible for issuing permits in accordance with the specifications outlined in the Flood Damage Prevention Ordinance. Since there is no SFHA, Alta also cannot issue substantial damage or substantial improvement determinations given that both of these terms are applicable only to structures in the SFHA.

Jurisdiction-Specific Vulnerabilities and Impacts

Table 8 provides information on the vulnerable assets in the town of Alta, including its critical facilities, highlighting the town's vulnerability to identified hazards. By understanding the risks associated with these assets, local authorities can develop proactive strategies to mitigate vulnerabilities and ensure that the safety and functionality of these important assets during hazard events. These data are invaluable for decision-making and prioritizing resources for emergency response and preparedness efforts, ultimately contributing to more effective risk management and greater resilience in the community.

Assets vulnerable in the Town of Alta include facilities such as the Town Marshal's office, the Town EOC, the town library, and UFA Station 113, which lies just outside of the city boundary but serves the town and canyon areas. A one-room classroom is located within the Goldminer's Daughter Lodge and is served by Granite School District. Little Cottonwood Canyon Road/SR 210 is the only access road to the town and connects it to the rest of Salt Lake County. Two ski resorts, Alta and Snowbird, and associated businesses are significant to the economy within the town and the region. The area has many trails for summer recreation as well. The natural resources include forest and other vegetation, Little Cottonwood Creek and tributaries, wildlife, and the scenic appeal of the mountains.

Table 8: Jurisdiction-Specific Vulnerabilities and Impacts in the Town of Alta[5]

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
Avalanche	People	Alta is world renowned for a variety of winter recreation activities in the area and backcountry skiing. People are widely dispersed and frequently subject to snow instability. Avalanche rescue is resource heavy and time consuming, and it frequently results in loss of life. Skiers and other outdoor recreationists, ski patrol, and resort staff may be at risk. Residents are also at risk from roof avalanches which are big slabs of snow sliding off of steep roofs. UDOT workers and other officials may be at risk while clearing Highway 210.

[5] UDOT = Utah Department of Transportation

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Structures	Potential for catastrophic and complete damage to structures from natural and human-made avalanches. According to the Utah State Hazard Mitigation plan, Alta has 95 structures in avalanche paths: 56 are commercial (worth $54,647,250), 1 is government ($183,696), and 38 are residential ($2,869,264)
	Economic Assets	The community is heavily dependent on access to winter recreation. Naturally occurring avalanche cycles can result in prolonged closures for local business and government, leaving them highly vulnerable economically.
	Natural, Historic, and Cultural Resources	Wildlife habitats and forested areas can suffer from habitat destruction and erosion when avalanches occur. Historic sites and structures, often lacking modern protections, also are at risk if they are in avalanche-prone regions.
	Critical Facilities and Infrastructure	Communications: police, fire, EMS, and public utility infrastructure can be threatened by avalanche conditions.
	Community Activities	Activities like skiing, snowboarding, and snowmobiling are vulnerable to avalanches due to heavy snowfall and participants' lack of safety knowledge. Backcountry hiking and community events in winter sports areas also increase risk. In addition, residential areas near mountains face threats from snow-laden hillsides. Highway 210 also has the highest avalanche hazard rating of any major roadway in the country. At times when UDOT and Alta agree that conditions are unsafe, the town goes into an Interlodge Alert, meaning all occupants of the town (including visitors and residents) must remain indoors until conditions are deemed safe. During large storm cycles, an Interlodge alert can last days until the storm cycle is over and proper avalanche control work has been performed.
Drought	People	*Vulnerability*: All residents are vulnerable to drought. *Impacts*: Drought can lead to decreased water quantity and quality and increased incidence of illness and and/or disease. Drought can have adverse effects on air quality and increase people's risk during recreational activities.
	Structures	*Vulnerability*: Structures are vulnerable to drought, leading to potential restrictions to growth. *Impacts*: Due to Utah's climate, drought can significantly impact structures. Foundations can crack due to drying and contracting soil, leading to potential issues like uneven floors, misaligned doors and windows, and damage to sewer pipes. This is particularly concerning in areas with expansive soils, which shrink and swell with changes in moisture levels.
	Economic Assets	*Vulnerability*: Skiing-oriented businesses are highly vulnerable to drought. *Impacts*: Economic costs from drought can be impacted by supply and demand. Utah is one of the fastest-growing states in the U.S., and this has put a strain on local water management and increased the risk of drought. This can drive up costs, including fixing and updating structures damaged by drought. Drought can adversely impact visitation and spending in and near national parks; regional

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		businesses such as ski resorts, hotels, and restaurants; and job creation in the private sector.
	Natural, Historic, and Cultural Resources	*Vulnerability*: Vegetation, wildlife, habitat, and ecosystems are vulnerable to reduced snowfall and stream flow. *Impacts*: Drought can weaken trees, making them more susceptible to pests and disease. Dry conditions can increase the risk of wildfires, which can destroy forests, trails, and infrastructure. Many plant and animal species in Alta's high-altitude environment rely on consistent moisture, and prolonged drought can lead to a decline in species. Alta is also known for its abundant snowfall, which supports recreation and water resources. A decline in snowpack can impact the water supply and reservoir storage that supports the Salt Lake valley and ski tourism. Historical buildings, such as old mining structures and lodges in Alta, can suffer from foundation cracks, and dry conditions may accelerate erosion around historic sites.
	Critical Facilities and Infrastructure	*Vulnerability*: In Utah, drought can impact critical infrastructure, such as water treatment plants, wastewater systems, power generation facilities, and fire suppression capabilities. *Impacts*: Water systems may be affected by decreased water supply and water quality. Reduced water supply may affect hydropower facilities. Fire departments may struggle with wildfire management due to increased risk and limited water resources.
	Community Activities	*Vulnerability*: Recreation, outdoor events, and landscaping are vulnerable to drought. *Impacts*: Recreational spaces may be affected. Households and businesses may encounter restrictions and costs for landscaping and pools. Drought affects skiing, hiking, and tourism, which are central to Alta's identity and economy. Drought can lead to shorter ski seasons, creating economic challenges. Events, festivals, and traditions that rely on Alta's natural setting can be disrupted.
Earthquake	People	*Vulnerability*: All residents are vulnerable to earthquakes. *Impacts*: Residents could be injured by objects shaking or falling during an earthquake or if buildings collapse. People would also be affected by disruptions to water, communications, and power systems.
	Structures	*Vulnerability*: Earthquake vulnerability may differ in the canyon communities compared to the valley. Ground shaking may not be as severe in the Town of Alta, but structures are still vulnerable. *Impacts*: Older buildings and those not designed to resist seismic activity in the Town of Alta could suffer partial or complete collapse. Even well-built structures may experience cracked foundations, broken windows, and damaged roofs and driveways. Alta is in a mountainous area, making buildings or houses on steep slopes vulnerable to landslides triggered by seismic shaking. Alta's ski lodges and resort infrastructure, such as chairlifts and gondolas, could be damaged or become inoperable. Shaking could also trigger avalanches, endangering skiers, damaging ski runs and blocking access to roads. Retaining walls may collapse or require repair. Rockfalls from canyon walls could damage homes and roads. Ground shaking could trigger

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		landslides or other slope failures or avalanches, which may create additional vulnerability for structures or infrastructure.
	Economic Assets	*Vulnerability*: An earthquake on the Wasatch Fault could have major economic consequences because of the town's reliance on tourism and skiing. *Impacts*: Damage to ski resorts and lodges could lead to temporary or long-term closures impacting the local economy. Visitors may cancel trips due to safety concerns or unavailable activities, reducing revenue for local businesses. Rebuilding critical infrastructure and facilities could take months or even years, requiring significant investments. Alta's economy is heavily dependent on skiing. If an earthquake damages lodges, ski lifts, or runts it could shut down operations leading to millions in lost revenue. The number of visitors could plummet due to safety concerns or road closures, impacting hotels, resorts, restaurants, and shops. Ski resort employees could face job losses or reduce income if businesses are forced to close for repairs or are completely damaged. State route 210, the main road into Alta, could suffer landslides, cracks, or complete failure, cutting off access to tourists and workers. Powerlines and water systems may need expensive repairs, delaying economic recovery. Limited access could also increase the cost of supplies and labor needed for rebuilding. Homeowners, businesses, and resorts could see a decline in their property values if an earthquake caused extensive damage. Restaurants, retail shops, and service providers rely on tourism. A prolonged drop in visitors could force some businesses to close permanently. State or federal aid may be necessary, but delays in funding could prolong economic hardship. A major disaster could also lead to stricter building codes and regulations, increasing costs for future construction.
	Natural, Historic, and Cultural Resources	*Vulnerability*: Vegetation, soil, water resources, and wildlife habitat are vulnerable to earthquakes. Historical sites and mining sites are also vulnerable. *Impacts*: Earthquake-induced avalanches can reshape ski slopes, damage forests, and block critical transportation routes such as SR-210. Ground shaking could rupture pipelines or trigger soil erosion, contaminating water resources. Wildlife in Little Cottonwood Canyon, including moose, deer, and mountain lions, could endure losses of their habitats due to landslides, falling trees, and altered landscapes. Alta was also originally a silver mining town, and remnants of the mining operations could collapse or be buried. Houses or historical sites containing mining and skiing memorabilia could experience loss or damage due to the earthquake shaking, fires, and structural failure.
	Critical Facilities and Infrastructure	*Vulnerability*: Transportation networks, power systems, water systems, gas lines, communication systems, and healthcare are all vulnerable to earthquakes. *Impacts*: An earthquake could damage State Route 210 from landslides or rockfalls, blocking access for emergency responders. Road cracks, buckling, or collapse could make it unsafe for travel. Chairlifts and gondolas could suffer structural damage, halting ski resort operations. Electrical and mechanical failures could also make the ski lifts inoperable. Utility systems could be impacted, leading to

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		power outages and—depending on the severity of the earthquake—restoring electricity in mountainous areas could take days, weeks, or even months. Water systems could fail if underground water pipes rupture, leading to the loss of clean water and localized flooding. Damaged gas lines pose a fire risk, especially in homes, lodges, and restaurants. Gas accumulated in confined spaces could explode. Communications systems and cell towers could be damaged, cutting off emergency communications systems and internet access and delaying rescue/emergency response and coordination efforts. Alta does not have a hospital, so serious injuries would require transport to Salt Lake City. If roads are inoperable, access to urgent medical care could be delayed. Alta clinics or first aid stations could be damaged or lack power, limiting their ability to treat injuries. If the fire station is structurally compromised, emergency response could be delayed. Broken sewage pipes could contaminate water sources. Depending on the severity of the earthquake, rebuilding critical infrastructure could take months to years.
	Community Activities	*Vulnerability*: Recreation and community access are vulnerable to earthquakes. *Impacts*: Transportation in and out of the canyon may be affected if roads are damaged near the valley. Depending on the damage, skiing and outdoor recreation could be disrupted, and ski resorts might have to close. Backcountry skiing and hiking could be unsafe, and popular trails might be closed because of earthquake-induced avalanches and landslides. SR-210 could become impassible, preventing access to ski areas and trails. Ski events, festivals, and local meetings and gatherings could be postponed or canceled.
Extreme Heat	People	*Vulnerability*: Extreme heat is unlikely in Alta, but physically vulnerable populations (the elderly, pregnant individuals, and those with respiratory conditions, etc.) are at risk from extreme heat. *Impacts*: Vulnerable populations can be more susceptible to heat-related illnesses, such as dehydration, heat exhaustion, or heat stroke when combined with the high elevation.
	Structures	*Vulnerability*: Structures throughout Alta could be vulnerable to damage from extreme heat. *Impacts*: Heat can strain electrical wiring, causing shorts and power outages, and may cause fires in buildings and other infrastructure. Houses and lodges built with wood can dry out, crack, or warp from extreme heat. Shingles and other roofing materials can degrade faster. Heat can also lead to thermal expansion in materials like concrete, leading to cracks in building foundations, sidewalks, and roads.
	Economic Assets	*Vulnerability*: Businesses throughout Alta are vulnerable to the impacts from extreme heat. *Impacts*: Buildings may need better cooling systems to adapt to rising temperatures. If extreme heat becomes more frequent, snow may melt earlier in the season, reducing ski tourism and impacting Alta's economy. Resorts, restaurants, and lodges may need to upgrade cooling systems, leading to higher operational costs.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Natural, Historic, and Cultural Resources	*Vulnerability*: Forest and vegetation health are vulnerable to extreme heat, which also increases the risk of wildfire. Water resources are vulnerable to the effects of extreme heat. *Impacts*: Extreme heat can contribute to increased wildfire risk. Drier forests and vegetation in Little Cottonwood Canyon could ignite more easily, threatening homes, ski lodges, and wildlife. Alta relies on heavy snowfall for skiing, but extreme heat could cause earlier snowmelt, shortening the ski season. Less snow and higher temperatures could affect local water sources, impacting drinking water supply and alpine ecosystems. Some alpine plant species and animals are adapted to cold weather and may struggle to survive in hotter conditions
	Critical Facilities and Infrastructure	*Vulnerability*: Power supply, water supply, and transportation networks are vulnerable to the impacts of extreme heat. *Impacts*: If residents and businesses rely heavily on conditioning or cooling systems, it can strain the power supply. Extreme heat can evaporate water from reservoirs and pipelines, reducing water pressure and availability. With drought, water restrictions could impact homes and businesses. High temperatures can also cause the asphalt to soften and buckle, creating potholes and cracks in the road. Metal parts in ski lifts may expand, affecting stability and requiring maintenance.
	Community Activities	*Vulnerability*: Outdoor recreation, hiking, and summer events are vulnerable to extreme heat. *Impacts*: Temperatures are typically lower in Alta due to its higher elevation; however, hiking and other outdoor recreations are popular summer activities. Hiking at elevation combined with higher temperatures can increase the risk of heat exhaustion, heat stroke, and dehydration. If extreme heat cuts short ski activities, the town could try to promote summer tourism activities. However, extreme heat could make these outdoor activities less enjoyable or even dangerous in the high-altitude terrain. Outdoor activities may also be moved to early morning hours or held indoors to avoid the extreme heat of midday, disrupting traditional schedules and reducing participation. Community events could also be rescheduled or canceled because of high temperatures
Extreme Cold	People	*Vulnerability*: Residents in older homes, unhoused individuals, and lower-income households are vulnerable to the effects of extreme cold. *Impacts*: Extreme cold raises health and safety concerns, such as hypothermia and frostbite. Socially vulnerable populations may be more susceptible to cold-related illnesses. Those who are unhoused, those in older homes with less-efficient heating, and lower-income households that may have difficulty paying heating costs may experience more negative effects from extreme cold.
	Structures	*Vulnerability*: All structures in Alta are vulnerable to damage from extreme cold. *Impacts*: Extreme cold can lead to frozen pipes, building damage, and more frequent breakdowns in infrastructure like roads, power lines, and heating systems.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Economic Assets	*Vulnerability*: Travel-related businesses are vulnerable to extreme cold. *Impacts*: Increased demand for heating can drive up energy costs. Extreme cold, if it leads to dangerous travel conditions like road closures, can discourage tourists from visiting. A decline in visitors would affect ski resorts, hotels, and local shops that rely on tourism. Tourists who do visit may alter their spending behavior. Businesses and residents will incur higher maintenance and repair costs to keep properties and infrastructure operational. Extreme cold can coincide with severe winter weather. The additional fuel and labor to clear roads and maintain access to Alta could be costly. Businesses and residents will also face higher energy costs to keep buildings heated. The increased demand for energy during extreme cold spells can drive up the cost of electricity, gas, and heating, affecting both residents and businesses. Extreme cold, if it leads to dangerous travel conditions like road closures, can discourage tourists from visiting. A decline in visitors would affect ski resorts, hotels, and local shops that rely on tourism. Tourists who visit may alter their spending behavior. People may also avoid going out, resulting in lower daily sales and income for businesses that depend on customers visiting in person.
	Natural, Historic, and Cultural Resources	*Vulnerability*: Cultural events are vulnerable to the effects of extreme cold. *Impacts*: Extreme cold may limit participation in outdoor cultural events, such as ski competitions and festivals like Oktoberfest which bring tourists to the town.
	Critical Facilities and Infrastructure	*Vulnerability*: Water delivery, power systems, and emergency response services are vulnerable to extreme cold. *Impacts*: Below-freezing temperatures can cause water pipes to burst, leading to water shortages and property damage. Extreme cold can lead to power failures due to frozen lines or damage to electrical infrastructure. Power outages can also impact heating systems. Cold weather combined with snow and ice can make it difficult for emergency services to reach people in need if roads are impassible. Also, Alta is in a relatively remote area, and its emergency services may be limited during extreme weather, resulting in increased response times
	Community Activities	*Vulnerability*: Recreation and events are vulnerable to extreme cold. *Impacts*: Given the local focus on skiing and outdoor recreation in the winter, people are more likely to be outside in Alta during extreme cold events than they might be in other jurisdictions. Extreme cold can disrupt local events and traditions in the town of Alta and at the ski resorts.
Flooding (and Heavy Rain)	People	*Vulnerability*: Residents and visitors to Alta are vulnerable to flooding near waterways or low-lying areas. *Impacts*: Due to Alta's steep terrain, heavy rain can quickly lead to flash floods, especially in areas with poor drainage or snowmelt runoff. Fast-moving water can be dangerous for hikers, skiers, and drivers, increasing the risk of injuries or fatalities.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Structures	*Vulnerability*: There are no special flood hazard areas in the town of Alta. No structures are known to be at risk from flooding. *Impacts*: Localized flooding may occur during heavy rain events. Basements and lower floors are vulnerable in areas with poor drainage.
	Economic Assets	*Vulnerability*: Tourism-related businesses are vulnerable to flooding impacts. *Impacts*: Hazardous travel conditions or damage to infrastructure could deter visitors, leading to revenue losses for resorts and local businesses. Washed-out roads or infrastructure damage can delay the delivery of food, fuel, and other necessary items, impacting business and life-safety operations.
	Natural, Historic, and Cultural Resources	*Vulnerability*: Soil, vegetation, wildlife habitats, and water quality are vulnerable to flooding and heavy rain. *Impacts*: Heavy rain can cause soil erosion and landslides, damaging the natural alpine environment and disrupting wildlife habitats. Flooding and heavy rain can introduce pollutants into local rivers and streams, such as those in Little Cottonwood Canyon, and negatively impact the watershed and surrounding ecosystems.
	Critical Facilities and Infrastructure	*Vulnerability*: Road networks, stormwater systems, power distribution systems, and communication systems are vulnerable to flooding and heavy rain. *Impacts*: Flooding can erode roads such as SR-210, leading to expensive repairs and restricting access to the town. Flooding and heavy rain can also overwhelm drainage systems, leading to contamination and costly repairs. Damage to power lines and internet services can impact businesses, emergency services, and the overall economic stability of the town of Alta.
	Community Activities	*Vulnerability*: Recreation and community events are vulnerable to flooding and heavy rain. *Impacts*: Little Cottonwood Creek runs alongside popular hiking/walking trails and the main pedestrian thoroughfare. Hiking, skiing, and other outdoor activities may be canceled or limited due to unsafe conditions or damage. Local events and community meetings may be postponed or relocated. Resources may be diverted to deal with the flooding and/or heavy rain event that results in damage, reducing the town's ability to respond to other community needs.
Landslide/ Slope Failure	People	*Vulnerability*: Most of Alta is in a moderate to high landslide susceptibility area. All residents are vulnerable to landslides. *Impacts*: Landslides can damage and bury homes and buildings and cause injuries and fatalities. In the steep mountain terrain, landslides can behave like avalanches—moving downhill and trapping people. The remote location and high altitude may delay emergency response rescue efforts, and road closures could isolate residents, workers, and visitors.
	Structures	*Vulnerability*: Many structures in Alta are in moderate to high susceptibility areas and are vulnerable to landslides. *Impacts*: Landslide paths are likely to mirror avalanche paths, leaving some municipal structures vulnerable.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Economic Assets	*Vulnerability*: Ski industries and outdoor recreation businesses are vulnerable to landslides and slope failures. *Impacts*: Landslides and slope failures could impact ski slopes, hiking trails, and scenic areas, which could lead to a decline in visitor numbers, affecting the local economy. The town and local businesses may need to invest in rebuilding infrastructure and stabilizing slopes.
	Natural, Historic, and Cultural Resources	*Vulnerability*: Soil stability, water quality, and wildlife habitats are vulnerable to landslides and slope failures. *Impacts*: Landslides can disturb soil and introduce debris into the local watershed, affecting the quality of drinking water. The altered landscape from a landslide or slope failure could also alter ecosystems and force wildlife out of their natural habitats.
	Critical Facilities and Infrastructure	*Vulnerability*: Road and utility networks are vulnerable to landslides. *Impacts*: Landslides could impact Highway 210 and disrupt transportation in and out of the canyon to Alta. They could also impact power, water, and communications systems.
	Community Activities	*Vulnerability*: Outdoor activities and recreation are vulnerable to landslides and slope failures. *Impacts*: Landslides and slope failures could disrupt outdoor recreation activities, blocking or destroying trails and limiting access to recreational areas. Unstable slopes may make certain backcountry areas unsafe for outdoor activities. Depending on the time of year, local events, festivals, and town meetings may be canceled or relocated if key venues or roads are inaccessible.
Radon	People	*Vulnerability*: Between 37% and 54% of homes tested in Alta have dangerous levels of radon gas. Alta's mountainous geographic location and geology contribute to elevated natural radon levels, especially in residential areas developed along slopes or with limited ventilation. *Impacts*: Radon exposure increases the risk of lung cancer. Given the area's cold climate, homes and lodges are often adequately sealed during the winter months, increasing the potential for indoor radon accumulation.
	Structures	*Vulnerability*: Older structures and buildings with crawl spaces or basements are vulnerable to radon exposure. *Impacts*: Buildings in Alta, such as ski lodges, rental cabins, and employee housing, may have been constructed before radon mitigation was common practice. Structures built on hillsides or with crawl spaces/basements are especially vulnerable. This may increase occupants' exposure to radon.
	Economic Assets	*Vulnerability*: Tourism businesses are vulnerable to the effects of radon. *Impacts*: Alta's economy relies heavily on tourism. If radon is identified as a widespread concern, it could cause tourism in the area to decline and impact rental occupancy rates. Testing and mitigation efforts in commercial buildings may also represent a significant burden for small business owners.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Natural, Historic, and Cultural Resources	*Vulnerability*: Groundwater and historic or cultural sites are vulnerable to radon exposure. *Impacts*: Alta's natural environment, including Albion Basin and surrounding watersheds, could be impacted by radon leaching into the soil or groundwater. Confined groundwater pathways and soil under trails or campgrounds may pose localized risks. The integrity of historic lodges and cultural sites may also be at risk if structural ventilation upgrades are required for mitigation.
	Critical Facilities and Infrastructure	*Vulnerability*: Water and utility infrastructure are vulnerable to radon accumulation. *Impacts*: Underground infrastructure is limited in Alta, but includes key components such as utility lines, crawl spaces, and potentially aging water or stormwater infrastructure. These confined underground spaces may accumulate radon gas if not ventilated.
	Community Activities	*Vulnerability*: Radon is not likely to cause immediate disruptions to recreational or municipal activities. However, its long-term health implications warrant community education in Alta.
High Wind	People	*Vulnerability*: All Alta residents are vulnerable to the effects of high winds. *Impacts*: Flying debris, falling trees, and damaged structures can pose direct risks to residents, workers, and visitors. People could end up without electricity, heat, or emergency communications systems. Strong winds can cause respiratory issues by stirring up dust and pollen, worsening air quality, and affecting those with respiratory issues.
	Structures	*Vulnerability*: All structures are vulnerable to high winds. *Impacts*: High wind can break windows and damage roofs, and other structural elements. Falling trees can contribute to structural damage.
	Economic Assets	*Vulnerability*: Ski-related businesses are vulnerable to high winds. *Impacts*: High winds can disrupt ski lift operations and extended high wind events could result in economic losses. Strong winds can shut down ski lifts, deterring visitors and leading to revenue losses. Increased claims for wind damage could lead to higher insurance rates and financial burdens for property owners.
	Natural, Historic, and Cultural Resources	*Vulnerability*: Trees, wildlife, and soil are vulnerable to high winds. *Impacts*: High winds can uproot trees, disrupt wildlife, and contribute to erosion. Older buildings may be more susceptible to wind damage. High winds can also damage trails and make outdoor areas unsafe for public use.
	Critical Facilities and Infrastructure	*Vulnerability*: Communication systems, transportation access, and power lines are vulnerable to high winds. *Impacts*: Communications towers are generally situated in wind-protected areas, but they are not immune to high-wind events. Communications could be compromised if towers sustain damage from high winds. Wind-driven debris and fallen trees can block SR-210, limiting access to Alta. High winds can damage power lines and cause power outages

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		in homes, businesses, and critical facilities. Ski lifts may have to shut down, and other infrastructure could be damaged.
	Community Activities	*Vulnerability*: Outdoor events and recreation are vulnerable to high winds. *Impacts*: Outdoor events and festivals may be canceled or postponed due to safety concerns. Strong winds may lead to ski lift closures.
Lightning	People	*Vulnerability*: All populations are equally affected, but hikers and other outdoor recreationists are at greater risk from lightning strikes. *Impacts*: Lighting can cause injury or death to those close to a strike.
	Structures	*Vulnerability*: All buildings may be vulnerable to lightning. *Impacts*: Lightning could cause localized wildfires, which may compromise nearby property. Electrical systems could be damaged by power surge.
	Economic Assets	*Vulnerability:* All businesses are vulnerable to lightning-related impacts. *Impacts*: Some communications infrastructure is on exposed ridgelines, potentially making it more susceptible to lightning strike. Power outages or fire damage can halt operations, leading to financial losses for the Town of Alta and its local ski resorts.
	Natural, Historic, and Cultural Resources	*Vulnerability*: Forests, ecosystems, and cultural artifacts are vulnerable to lightning *Impacts*: Lightning is a major cause of wildfires, which can destroy forests, ecosystems, and cultural artifacts.
	Critical Facilities and Infrastructure	*Vulnerability*: Communication systems, electrical systems, and emergency response are vulnerable to lightning. *Impacts*: Communications towers and internet systems may be temporarily knocked out, affecting emergency response and everyday communication. Lightning can also strike electrical grids and power lines, which can lead to power outages and wildfires.
	Community Activities	*Vulnerability*: Outdoor events and recreation are vulnerable to lightning risks. *Impacts*: Outdoor gatherings, festivals, and sports events may be postponed or canceled due to lightning risks.
Severe Winter Weather	People	*Vulnerability*: All Alta residents are vulnerable to severe winter weather. *Impacts*: Heavy snow/blizzard conditions can result in shelter-in-place protocols, cutting people off from outside resources like food, medicine, and fuel. Power outages or reliance on indoor heating methods (e.g., generators, wood stoves) can increase the risk of carbon monoxide poisoning. Cold, dry air conditions combined with the high altitude can exacerbate respiratory illnesses. People can be injured in falls or experience coronary health problems from the exertion of shoveling heavy snow.
	Structures	*Vulnerability*: All buildings in Alta are vulnerable to severe winter weather.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		Impacts: Water pipes could freeze, leading to water damage, and ice buildup on roofs can pose danger to people and cause water infiltration, leading to structural issues. Heavy snow accumulation can weaken roofs and cause buildings to collapse, particularly in older structures. Air vents, natural gas lines, and power lines can become damaged or disrupted by heavy snow and significant snow loads.
	Economic Assets	*Vulnerability*: All businesses in Alta, particularly those involved in winter recreation tourism, are vulnerable to severe winter weather. *Impacts*: The town's economy is reliant on consistent snowfall, but it is possible to have "too much of a good thing." The heavy snowfall year of 2022–2023 led to dangerous spring-time avalanche conditions, resulting in nearly complete closure of SR 210 for several weeks. These closures greatly impacted ski area visitation and caused major economic losses for the town's largest businesses.
	Natural, Historic, and Cultural Resources	*Vulnerability*: Vegetation and wildlife habitat are vulnerable to severe winter weather. *Impacts*: Heavy snow and ice can cause tree limbs to break, disrupt ecosystems, and damage local wildlife habitats.
	Critical Facilities and Infrastructure	*Vulnerability*: Transportation, power and water infrastructure, and emergency response are vulnerable to severe winter weather. *Impacts*: Snow accumulation and avalanche threats can shut down SR 210, cutting off access to Alta. Heavy snow can also bring down power lines, leaving homes and businesses without heat and electricity if they do not have backup generators or enough fuel to get through the canyon closure. Frozen pipes and infrastructure damage could lead to water shortages and sanitation issues. First responders, medical clinics/personnel, and snow removal crews may be stretched thin or tapped out during a severe winter weather event.
	Community Activities	*Vulnerability:* There is low risk to community events from severe winter weather. *Impacts:* Given the local focus on skiing and outdoor recreation in the winter, people are more likely to be outside during heavy snow/blizzard events than they might be in other jurisdictions.
Tornado	People	*Vulnerability*: Although tornadoes are rare in the town of Alta, they are not impossible. All residents are vulnerable tornadoes if one occurs. *Impacts*: A tornado could cause injuries and fatalities, displace residents and tourists, and take a psychological and emotional toll on residents, tourists, and businesses.
	Structures	*Vulnerability*: The likelihood is low, but all structures in Alta would be at risk if a tornado occurs. *Impacts*: Tornadoes can severely damage homes, hotels, ski lodges, and public or critical facilities. High winds can break windows and compromise building integrity.
	Economic Assets	*Vulnerability*: The risk is low, but all businesses in Alta would be vulnerable if a tornado occurs. *Impacts*: Tornado damage could close ski resorts, restaurants, and hotels, harming the local economy. The financial burden of repairs and insurance claims could strain homeowners and business owners.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Natural, Historic, and Cultural Resources	*Vulnerability*: Trees and habitats are vulnerable to tornadoes. *Impacts*: Tornadoes can uproot trees, destroy habitats, and disrupt the town of Alta's alpine ecosystem.
	Critical Facilities and Infrastructure	*Vulnerability*: Transportation, including SR-210, power and communication systems, and emergency response are vulnerable to tornadoes. *Impacts*: Downed power lines could leave the town without electricity. Debris could block SR-210, cutting off access to the town. Communications towers and internet infrastructure could be damaged, disrupting emergency services and communication. Infrastructure damage could compromise access to clean water and wastewater treatment.
	Community Activities	*Vulnerability*: Community events and competitions are vulnerable to tornado impacts. *Impacts*: Tornado damage could postpone or cancel community activities, such as ski competitions, festivals, and other public gatherings.
Wildfire	People	*Vulnerability*: Wildfire risk in Alta is moderate to high, and all residents are vulnerable to wildfires. *Impacts*: The potential for wildfire affecting SR210 and blocking access/egress is the biggest vulnerability. Evacuation could be problematic. Smoke can cause respiratory problems, particularly for children, the elderly, and those with pre-existing conditions like asthma. Losing homes and businesses could lead to long-term psychological trauma.
	Structures	*Vulnerability*: Structures throughout Alta could be vulnerable to wildfires, particularly those with flammable materials or lacking defensible space. *Impacts*: Localized property loss could occur during wildfire events.
	Economic Assets	*Vulnerability*: Businesses throughout Alta are vulnerable to wildfire impacts. *Impacts*: Same applies to local businesses and the economy. Wildfires could lead to long-term closures of ski resorts, hiking trails, and lodges significantly impacting the local economy. Homeowners, businesses, and the government would face high costs for rebuilding and repairing damaged areas.
	Natural, Historic, and Cultural Resources	*Vulnerability*: Vegetation, wildlife habitat, soil, water quality, and scenic value are vulnerable to wildfires. *Impacts*: Alta is situated on National Forest Land—a wildfire could impact the forest flora and fauna, affecting habitats. Burned vegetation leaves soil exposed, increasing erosion and the risk of landslides and water contamination. The town's cultural connection to skiing and outdoor recreation could suffer if natural landscapes and infrastructure are destroyed.
	Critical Facilities and Infrastructure	*Vulnerability*: Power infrastructure, roads, and emergency response are vulnerable to wildfires. *Impacts*: Wildfires can damage power lines, leading to blackouts and impacting emergency services, businesses, and homes. If roads like

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		SR-210 become impassable due to fire, fallen trees, or debris, first responders and evacuations can be delayed. Firefighters, police, and medical personnel may be overwhelmed or exhausted, leading to increased response times for other emergencies.
	Community Activities	*Vulnerability*: Outdoor recreation is vulnerable to wildfire impacts. *Impacts*: Wildfires could shut down Alta's ski resorts, hiking trails, and outdoor recreational areas for months. If homes and businesses are lost, some may be forced to leave permanently, altering the town's population and culture.
Dam Failure	People	*Vulnerability*: Alta lies downstream of Cecret Lake Dam, an earthen dam that was upgraded in 2018 using concrete and grout. The town could also be affected by the failure of Red Pine Lake Dam. *Impacts*: A sudden release of water could create flash flooding, which is a threat to the safety of individuals in the inundation area. Contaminated waters from dam failure could also spread disease. Red Pine Dam inundation maps show that Little Cottonwood Canyon Road would be impacted at the mouth of the canyon, which could close SR-210 for an unknown period of time. This would disrupt transportation into and out of Alta.
	Structures	*Vulnerability*: Ski area base facilities could be inundated in a catastrophic dam failure of Cecret Lake Dam, but other businesses and residences are unlikely to be affected. *Impacts*: Ski facilities could be damaged or destroyed.
	Economic Assets	*Vulnerability*: All businesses in Alta are vulnerable to the effects of a dam failure. *Impacts*: A complete closure of SR 210 in the canyon could greatly impact Alta Ski Area visitation, resulting in major economic losses for Alta's largest businesses.
	Natural, Historic, and Cultural Resources	*Vulnerability*: A dam failure could flood Little Cottonwood Creek and impact natural resources. *Impacts*: Excessive sediment, debris, and pollutants from the flood could harm the local watershed and impact water quality.
	Critical Facilities and Infrastructure	*Vulnerability*: Transportation routes, power infrastructure, and water treatment facilities are vulnerable to dam failure. *Impacts*: SR-210, Little Cottonwood Canyon Road, the primary access route to Alta, could be washed out or blocked by the failure of Red Pine Lake Dam, cutting off the town from emergency services and supplies like food and fuel. Damage to electrical infrastructure could also occur, leaving residents and businesses without power for an extended period. Floodwaters could overwhelm local water treatment systems, leading to shortages and contamination, and first responders may struggle to access affected areas. Cecret Lake Dam does not have a mapped inundation area. However, due to its smaller size and capacity, it is not anticipated to cause damage to roadways or other infrastructure.
	Community Activities	*Vulnerability*: Community events and festivals are vulnerable to dam failure impacts.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		Impacts: Events could be postponed or canceled due to damage or unsafe conditions.
Civil Disturbance	People	The local police department is small and has limited resources to respond to a major civil disturbance. A timely response from law enforcement partners in the valley would be essential, but several hazards noted above could impact transportation through the canyon.
	Structures	Civil disturbance could involve damage to private and public property.
	Economic Assets	Although a civil disturbance is less common in a small, tourism-based town like Alta, it could still have significant effects on the local economy. Any civil unrest, such as a protest or labor strike, could deter tourists and reduce revenue for local businesses and ski resorts.
	Natural, Historic, and Cultural Resources	Protests or riots could involve damage to local businesses and natural/historic sites.
	Critical Facilities and Infrastructure	Local emergency services would be strained. But as noted above, a timely response from law enforcement partners in the valley would be essential.
	Community Activities	Community events could be canceled because of safety concerns, impacting residents, visitors, and workers. A civil disturbance could also create tension amount residents, reducing participation in community events.
Cyberattack	People	A cyberattack on the government of Alta could have significant consequences for the people in the community. Such attacks can shut down essential services like dispatch/emergency response (911), transportation, and utilities (water and electricity) and compromise sensitive personal information in government databases. If the government fails to protect citizens' data or services, people may lose confidence and trust. Cyberattacks on critical infrastructure (power grids, water treatment plants) could endanger lives.
	Structures	A cyberattack can damage public and private buildings. If private buildings or businesses use HVAC & Smart Building systems, cybercriminals can control heating, ventilation, and security systems making them unsafe or unusable. If 911 systems are compromised, responses to medical emergencies and crimes can be delayed, leading to property damage or loss of life. If a cyberattack triggers a failure in gas, water, or electrical systems, it could lead to fires, flooding, or other property damage as cascading effects.
	Economic Assets	Financial exploitation of local government and businesses may occur. Businesses relying on government contracts or infrastructure (like a shuttle bus service) may suffer financial losses. Government and local businesses in Alta may struggle with transactions, payroll, or supply chain disruptions. A cyberattack on local government systems can shut down services like business licensing, utility billing, and public records access, delaying community operations.
	Natural, Historic, and	

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Cultural Resources	
	Critical Facilities and Infrastructure	Disruptions to public safety communications/infrastructure. Limited response capabilities could occur. A cyberattack on the electrical grid can cause widespread blackouts, affecting homes, businesses, clinics, and emergency services. Cyberattacks can also manipulate water treatment facilities, leading to contamination of water or water shortages. Attacks on transportation systems can impact traffic signals and public transit which can create chaos, accidents, or delays.
	Community Activities	If a cyberattack affects online ticketing, security systems, or venue operations, local festivals/events like Octoberfest might be postponed or canceled.
Hazardous Materials Incident (Transporta-tion & Fixed Facility)	People	Exposure to toxic chemicals, flammable substances, or other hazardous materials can cause respiratory issues, burns, poisoning, or long-term health complications whether caused by a transportation accident or a fixed facility release. A spill or gas leak may require evacuations, resulting in the relocation of residents and visitors.
	Structures	Hazardous substances could result in the infiltration of homes, businesses, and public buildings, making them unsafe to occupy. Certain chemicals are also highly flammable and could cause structural damage if ignited.
	Economic Assets	Buildings and/or infrastructure exposed to toxic materials may require extensive cleanup. If an incident results in contamination or road closure, visitors may avoid Alta, resulting in revenue losses for ski resorts, restaurants, and other local businesses. Businesses or transportation companies responsible for the incident may face lawsuits, fines, or compensation claims from affected parties.
	Natural, Historic, and Cultural Resources	Hazardous spills or chemical exposure could harm plants, animals, and fish, affecting local water sources, soil quality, and ecosystems.
	Critical Facilities and Infrastructure	A HazMat spill on SR-210 could shut down the primary access route to Alta, isolating the town and delaying emergency response services. Contamination of local water supplies or power infrastructure could lead to service disruptions for residents, tourists, and businesses. A large-scale exposure incident could overwhelm the limited medical services there.
	Community Activities	Community events such as ski events, festivals, and other gatherings may be postponed or canceled due to safety concerns. Residents and businesses may face restrictions on outdoor activities or water usage due to contamination risks.
Public Health Epidemic/ Pandemic	People	Residents' visitors and workers could face illness, hospitalization, and potential fatalities, especially if healthcare resources are limited. Isolation, anxiety, and financial stress from business closures and potential job losses could lead to increased mental health issues. Illness, quarantines, and travel restrictions could reduce the availability of people to work in ski resorts and hospitality.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Structures	Lodges, restaurants, and public buildings may be temporarily or permanently closed due to public health concerns. Buildings may require frequent deep cleanings and ventilation upgrades to reduce the spread of disease. If businesses or public buildings close for extended periods, maintenance and upkeep may be delayed, leading to deterioration.
	Economic Assets	Travel restrictions and fear of the spread of disease could reduce the number of visitors to Alta, impacting the local economy. Local restaurants, ski resorts, and other businesses may experience financial strain, leading to layoffs or permanent closures. Job losses and financial hardships could make it hard for residents to pay rent or mortgages. Delays in food, medical supplies, and other essential goods could make it hard for businesses and residents to obtain necessary items.
	Natural, Historic, and Cultural Resources	Restrictions on gatherings and travel could prevent access to historic sites and cultural events. The Alta Community Center and Library (which also houses the Alta Historical Society Exhibit) would be affected.
	Critical Facilities and Infrastructure	First responders and medical staff may be overwhelmed, leading to slower responses and reduced capacity. Shuttle services, road maintenance, and snow removal efforts may be affected by workforce shortages or funding cuts.
	Community Activities	Festivals, ski competitions, and other public gatherings may be canceled or significantly limited. If schools or childcare facilities close, working parents may face challenges balancing work and home responsibilities.
Terrorism	People	An attack on public places, ski resorts, or transportation systems could result in casualties.
	Structures	Explosions, fires, or other forms of attack could destroy or severely damage public buildings, lodges, etc.
	Economic Assets	Alta's economy relies heavily on tourism. A terrorist attack or even the perception of risk could deter visitors, leading to revenue losses for hotels, restaurants, and ski resorts.
	Natural, Historic, and Cultural Resources	Explosions, fires, or deliberate environmental sabotage could harm Alta's natural environment.
	Critical Facilities and Infrastructure	Attacks on utilities could leave residents and businesses without essential services. A terrorism event would also place significant demand on police, fire, medical personnel, and clinics, potentially overwhelming local resources.
	Community Activities	Large gatherings such as ski races, festivals, and other community celebrations could be canceled or require increased security.

DRAFT

Jurisdiction-Specific Changes in Vulnerability

Hazard events can impact communities, infrastructures, and ecosystems. The severity of these impacts can be influenced by climate change, population patterns, and land use developments. Understanding these factors is crucial for the town of Alta to develop a resilient community and minimize the impacts of hazards. Table 9 displays the unique changes within the community and the related effects on each identified hazard affecting the town of Alta.

DRAFT

Table 9: Jurisdiction-Specific Changes in Vulnerability in the Town of Alta

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
Avalanche	Higher temperatures can lead to more rain, destabilizing snowpack and increasing the risk of wet avalanches. In addition, changes in snowfall can cause denser snow layering on slopes, making them more prone to sliding. Climate change can lead to more frequent or higher intensity snowstorms, which can help destabilize the snowpack and increase avalanche risk.	Residents and tourists are attracted by the high seasonal snowfall totals in Alta and Little Cottonwood Canyon. Residents typically accept avalanche risk as part of the way of life in Alta. Tourists and other seasonal visitors may be less familiar with the risks.	The majority of development in the town of Alta is done by Alta Ski Resort. According to Alta Ski Resort's 2023 master development plan, building development was limited to a couple of storage buildings and two expansions of lodges in Alta. These buildings have been approved by the U.S. Forest Service for implementation and are not at risk from avalanches.	Stayed the same.
Drought	Climate change affects drought incidents by altering precipitation patterns and increasing temperatures. Warmer weather can lead to longer dry periods and more severe droughts, while changes in rainfall can reduce snowpack in nearby mountains, crucial for summer water supply. Higher temperatures also increase evaporation rates, further straining local water resources.	Drought can significantly influence population patterns by impacting economic opportunities and the quality of life. Water scarcity often leads to reduced agricultural productivity, prompting residents to migrate to areas with more stable job prospects. Increased water costs can make living less affordable, driving some residents away. Conversely, efforts to address drought, such as sustainable development or improved water management, may attract newcomers, resulting in changes in the community's demographic composition over time.	Development in the town of Alta is driven by Alta Ski Resort. According to Alta Ski Resort's 2023 Master Development Plan, there has been no excessive development in the past five years that would impact drought. Expansions of the Albion and Watson lodges would primarily provide more seating at restaurants and additional storage, neither of which will impact drought.	Increased
Earthquake	Rising temperatures can lead to glacial melting, which affects pressure on tectonic plates and	Earthquakes can significantly alter population patterns by prompting residents to leave for	The small amount of new development in the town of Alta since the previous plan update	Stayed the same

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	may trigger seismic activity through isostatic rebound. In addition, increased rainfall and flooding can erode soils, weakening structural integrity and heightening vulnerability during earthquakes. Although the direct links between climate change and earthquakes are still under investigation, environmental effects may impact the region's seismic risk.	safer areas after a seismic event. This migration can lead to changes in population density and attract new residents and businesses during the rebuilding process. The perception of the area as a safe place to live may shift, impacting long-term demographics, as some residents return to rebuild while others relocate permanently.	has been constructed in accordance with the 2021 Utah State Building Code. This building code requires that new buildings be adequately protected from earthquake risks.	
Extreme Heat	Climate change significantly impacts extreme heat by increasing the frequency and intensity of heatwaves. Rising global temperatures lead to longer and hotter summers, affecting residents and local infrastructure while heightening health risks, especially for vulnerable populations. Urban heat islands resulting from reduced vegetation and extensive pavement further amplify these effects.	By causing residents to relocate due to damaged homes or safety concerns. Some may move to areas perceived as safer or seek better job opportunities elsewhere. The economic impact and infrastructure damage can also make certain neighborhoods less desirable, leading to shifts in demographics and the socioeconomic landscape as new residents with different backgrounds move in.	Development in the town of Alta has been minimal since the previous plan update, and it is not significantly impacting the town's extreme heat risk.	Increased
Extreme Cold	By increasing the intensity of winter storms. Higher atmospheric temperatures allow for more moisture, resulting in heavier snowfall and potentially lower temperatures during these events. In addition, fluctuations in weather patterns may disrupt seasonal cycles, leading to unpredictable periods of	By driving some residents to relocate to warmer areas. Harsh winters can hinder economic activities and deter new residents and businesses, influencing housing demand and the attractiveness of certain neighborhoods. This may disproportionately affect lower-income families, leading to	Development in the town of Alta has been minimal since the previous plan update, and it is not significantly impacting the town's extreme cold risk.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	extreme cold mixed with warmer spells.	changes in demographics and socioeconomic stratification in the community.		
Flooding	Higher temperatures increase the frequency and intensity of extreme weather events and alter precipitation patterns. They lead to more intense rainstorms and accelerated snowmelt from nearby mountains, raising water levels in rivers and streams. This combination raises the risk of flooding, especially in areas with inadequate drainage and urban development in flood-prone zones, heightening the potential for damage to homes and infrastructure.	Flooding can significantly alter population patterns by displacing residents from affected areas, leading them to seek shelter elsewhere. This may cause a population decline where flooding occurs, as individuals might hesitate to return due to ongoing risks or property damage. As neighborhoods become less desirable, people may migrate to safer areas, changing demographic trends and putting pressure on housing in those regions. Over time, these shifts can influence urban planning and development, as local governments address flooding risks and changing population needs.	Development in the town of Alta has been minimal since the previous plan update, and it is not significantly impacting the town's risk of flooding. The storage buildings and lodges that have been expanded at the Alta Ski Resort are not near Little Cottonwood Creek, the main source of flooding in the town.	Decreased
Landslide/ Slope Failure	Climate change increases the risk of landslides through heavier rainfall and temperature fluctuations. Intense rain saturates soil, destabilizing slopes, while freeze–thaw cycles weaken the ground. Changes in vegetation can also reduce stability, leading to a higher potential for landslides.	Landslides and slope failures can impact population patterns by making some areas unsafe, leading to displacement and lower property values. This prompts residents to move to safer regions, thereby increasing density in more stable areas. Concerns about future landslides may also deter newcomers from high-risk zones, shaping long-term demographic trends.	Development in the town of Alta has been minimal since the previous plan update, and it is not significantly impacting the town's landslide risk.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
Radon	Climate change can affect radon levels by altering soil temperatures and moisture conditions. Higher temperatures may increase radon emissions from the ground, while heavy rainfall can change groundwater and soil saturation, impacting radon migration into buildings.	Radon exposure can influence population patterns as increased health awareness may drive families to move away from areas with high radon levels. This shift could particularly affect vulnerable groups, changing demographics and demand in the housing market. Homes with lower radon levels may become more sought after, and public health campaigns can encourage community action, making previously undesirable areas more attractive once mitigation measures are implemented.	Development in the town of Alta has been minimal since the previous plan update, and it is not significantly impacting the town's radon risk.	Stayed the same
Heavy Rain	Climate change increases the frequency and intensity of heavy rain, as higher temperatures allow the atmosphere to hold more moisture. This leads to stronger storms, flash flooding, and overwhelmed drainage systems.	Heavy rain can shift population patterns by pushing residents out of flood-prone areas and attracting them to safer neighborhoods. Frequent flooding may lead to evacuations and economic disruptions, prompting relocations. Over time, ongoing heavy rains can affect housing demand and community stability, altering the town's population distribution.	Development in the town of Alta has been minimal since the previous plan update, and it is not significantly impacting the town's heavy rain risk.	Increased
High Wind	Climate change affects high winds by altering atmospheric patterns and increasing extreme weather events. Rising temperatures may lead to more substantial, unpredictable winds and more frequent	High winds can alter population patterns by making certain areas less desirable. Frequent damage may drive residents to safer neighborhoods, deter newcomers, and slow growth in affected regions.	Development in the town of Alta has been minimal since the previous plan update, and it is not significantly impacting the town's high wind risk.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	thunderstorms, posing risks to infrastructure and air quality.			
Lightning	Climate change increases temperatures and alters precipitation, leading to more intense thunderstorms and frequent lightning strikes. Urbanization can enhance this effect, posing risks to public safety and infrastructure.	Lightning can influence population patterns by causing property damage and wildfires, leading some residents to relocate. Areas with higher lightning activity may deter new residents, while safer locations could increase migration as people seek protection from severe weather.	Development in the town of Alta has been minimal since the previous plan update, and it is not significantly impacting the town's lightning risk.	Increased
Severe Winter Weather	Climate change impacts severe winter weather by altering precipitation patterns. Higher temperatures can lead to more rain than snow, affecting snowpack levels. In addition, increased storm intensity results in heavier, more unpredictable snowfall.	Increased population equals an increased number of people needing to get to work and quicker snow removal. Heavy snow or blizzards can impact population patterns by influencing where people live and work. Transportation disruptions may lead residents to seek housing closer to jobs, increasing density in some areas while depopulating others. Families might also avoid regions with frequent heavy snowfall, shifting demand to milder areas. Over time, these trends can alter community demographics and economic activity, prompting adjustments in town planning and resource allocation.	Development in the town of Alta has been minimal since the previous plan update, and it is not significantly impacting the town's severe winter weather risk.	Increased
Tornado	Climate change may increase the frequency and intensity of tornadoes. Higher temperatures lead to more moisture in the air,	Tornadoes can influence population patterns by prompting residents to move to safer areas after damage occurs. This can	Development in the town of Alta has been minimal since the previous plan update, and it is	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	creating conditions for severe thunderstorms. Changes in wind patterns and precipitation can also heighten tornado risks, resulting in more destructive storms and greater threats to infrastructure and communities.	decrease density in affected neighborhoods while increasing the demand for housing in safer regions. New residents may also move in for recovery opportunities, altering demographics. Over time, repeated tornado threats might push long-term residents to areas with better disaster preparedness, reshaping the town's population distribution.	not significantly impacting the town's tornado risk.	
Wildfire	By raising temperatures and creating drier conditions, prolonged droughts lead to more dry vegetation, which serves as fuel for fires. Erratic seasons extend the growing period, while more lightning strikes can ignite wildfires. These factors heighten the threat to ecosystems and community safety.	Displaced individuals often seek safer areas, shifting demographics, while declining property values might deter newcomers. Conversely, some may be drawn to rebuilding efforts, impacting long-term growth and community dynamics.	Development in the town of Alta has been minimal since the previous plan update, and it is not significantly impacting the town's wildfire risk.	Increased
Dam Failure	Climate change raises the risk of dam failure by causing heavier rainfall and rapid snowmelt. These changes can overwhelm dams and compromise their integrity, highlighting the need for urgent safety assessments and upgrades to protect communities downstream.	Dam failure tornadoes can impact population patterns by displacing residents and altering demographics. Evacuations can lead to an influx in safer areas, while destruction may deter new residents and contribute to a population decline. Fear of future disasters may also prompt remaining individuals to relocate, changing the community's composition and affecting	Development in the town of Alta has been minimal since the previous plan update, and it is not significantly impacting the town's dam failure risk.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
		population density and economic activity.		
Civil Disturbance	Climate change can increase civil disturbances by intensifying environmental stresses and social tensions. Rising temperatures may lead to droughts, wildfires, and poor air quality, particularly affecting vulnerable communities. Resource scarcity, especially water, can spark conflicts and protests. In addition, an influx of migrants from harder-hit areas may strain local resources, further escalating tensions. This cycle of unrest is driven by the impacts of climate change on the environment and community dynamics.	By encouraging residents to move for safety, leading to outflows and new arrivals. These events can reveal social issues, impacting community dynamics, employment, and property values, ultimately reshaping demographics, and social cohesion.	Development in the town of Alta has been minimal since the previous plan update, and it is not significantly impacting the town's civil disturbance risk.	Increased
Cyberattack	Possible attack on the industry, which is seen as producing large amounts of greenhouse gases and burning fossil fuels. Climate change can heighten cyberattack risk by increasing vulnerabilities during extreme weather. Disruptions like power outages offer cybercriminals opportunities, but focusing on emergency responses can weaken cybersecurity measures. As organizations adopt new technologies to cope with climate impacts, they may	Cyber-attacks can change population patterns by eroding trust in essential services. Compromised systems may cause residents to leave due to safety concerns, while high-profile incidents can deter businesses, leading to job losses. This perception of vulnerability may also make the town less appealing to newcomers, resulting in demographic shifts and affecting local development.	Development in the town of Alta has been minimal since the previous plan update, and it is not significantly impacting the town's cyberattack risk.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	unintentionally introduce additional vulnerabilities.			
Hazardous Materials Incident (Transporta-tion & Fixed Facility)	Climate change elevates the risk of hazardous materials incidents by increasing extreme weather events like heavy rain and wildfires. These events can breach storage tanks and heighten material volatility. Vulnerable infrastructure can lead to more spills or accidents, while climate shifts may also introduce new challenges for managing hazardous substances and public health.	By causing evacuations and temporary declines in density. In the long run, unsafe areas may deter new residents, affecting growth and diversity. In addition, negative perceptions can lower property values and economic prospects, leading families to relocate, which impacts local demographics.	Development in the town of Alta has been minimal since the previous plan update, and it is not significantly impacting the town's risk from hazardous materials.	Increased
Public Health Epidemic/ Pandemic	By increasing the spread of vector-borne diseases and raising the risk of waterborne illnesses due to flooding or drought. Worsening air quality can also exacerbate respiratory conditions like asthma, especially in vulnerable populations.	By prompting migration for safety and better healthcare. Vulnerable groups may move to areas with improved services, while economic instability can drive people to seek new employment opportunities. In addition, restrictions like quarantine measures can limit movement and social interactions, reshaping the community's demographics and impacting local economies.	Development in the town of Alta has been minimal since the previous plan update, and it is not significantly impacting the town's pandemic/ epidemic risk.	Increased
Terrorism	Terroristic activity is sometimes centered around climate change. Climate change impacts terrorism incidents by creating conditions of resource scarcity and social unrest. Increased competition for essential resources, such as water, can	Terrorism incidents can alter population patterns by instilling fear and prompting residents to relocate to perceived safer areas, resulting in demographic shifts and potential declines in property values. Some neighborhoods may see an outflow of residents, while others could experience an	Development in the town of Alta has been minimal since the previous plan update, and it is not significantly impacting the town's terrorism risk.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	fuel tensions, making communities more vulnerable to extremist ideologies. Extreme weather events may disrupt social order and infrastructure, offering terrorist groups opportunities to exploit crises. In addition, climate-driven population displacement can heighten tensions in receiving areas, raising the risk of domestic terrorism. Law enforcement's focus on climate-related challenges can also limit its capacity to address terrorism threats. Ultimately, while climate change may not directly cause terrorism, its effects can create an environment conducive to extremist activities.	influx of people seeking refuge from violence. In addition, increased security measures may deter businesses and residents from certain locations, leading to long-term changes in population density and urban development patterns.		

DRAFT

Additional Public Involvement

The town of Alta provided several opportunities for public participation in the plan. A flyer with a link to the public survey was posted in the city office, and links to the survey were shared on social media and through the community email newsletter. Figure 1 and Figure 2 present examples of public outreach.

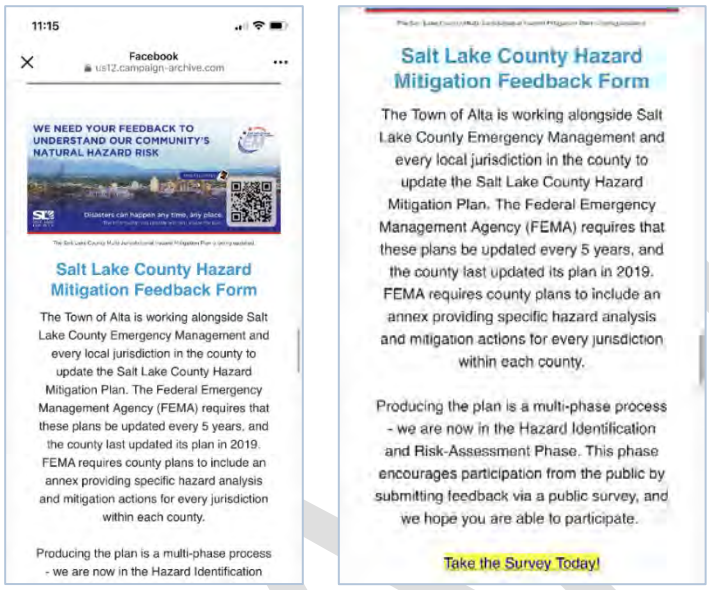


Figure 1: Social Media Post (*left*) and Email Newsletter (*right*) for the Hazard Mitigation Survey

Figure 2: Flyer Posting of the Hazard Mitigation Survey

Plan Integration

Incorporating the underlying principles of the Hazard Mitigation Plan and its recommendations into other plans is a highly effective and low-cost way to expand their influence. All plan participants will use existing

methods and programs to implement hazard mitigation actions where possible. As previously stated, mitigation is most successful when it is incorporated into the day-to-day functions and priorities of government and public service. This plan builds on the momentum developed through previous and related planning efforts and mitigation programs, and it recommends implementing actions where possible through these other program mechanisms. These existing mechanisms include the following:

- Regularity Capabilities
- Administrative Capabilities
- Fiscal Capabilities

Respective planning stakeholders will conduct implementation and incorporation into existing planning mechanisms and will be done through the routine actions of:

- Monitoring other planning/program agendas
- Attending other planning/program meetings
- Participating in other planning processes; and
- Monitoring community budget meetings for other community program opportunities.

The successful implementation of this plan will require constant and vigilant review of existing plans and programs for coordination and multi-objective opportunities that promote a safe, sustainable community. Regular efforts should be made to monitor the progress of mitigation actions implemented through other planning mechanisms. Where appropriate, priority actions should be incorporated into planning updates. Table 11 lists the opportunities for integrating elements of this plan into other plans.

Table 10 lists existing planning mechanisms in which the Hazard Mitigation Plan has been integrated. Table 11 lists the opportunities for integrating elements of this plan into other plans.

Table 10: Integration of Previous Plans by the Town of Alta

Plan	Description
Alta Ski Area Master Development Plan[6]	Addresses avalanche mitigation in ski areas to reduce risk and improve public safety.

Table 11: Opportunities for Integration with Future Plans for the Town of Alta

Plan	Description
Comprehensive Emergency Management Plan	Framework for how the city will prepare for, respond to, recover from, and mitigate hazards.
Community Wildfire Protection Plan	Addresses vulnerabilities and steps to minimize wildfire risk
General Plan	The General Plan was last updated in 2013. New hazard risk information could be incorporated when it is next updated.

[6] Atla Master Development Plan. 2023. https://www.alta.com/about/future-plans.

DRAFT

Capability Assessment

Local mitigation capabilities are existing authorities, policies, programs, and resources that reduce hazard impacts or could help carry out hazard mitigation activities.

Planning and Regulatory Capabilities

Planning and regulatory capabilities are the plans, policies, codes, and ordinances that prevent and reduce the impacts of hazards.

Table 12: Assessment of the Planning Capabilities of the Town of Alta

Plan	Does it address hazards? (Y/N)	How can it be used to implement mitigation actions?	When was the last update? When is the next update?
General Plan	Yes		2005.Amendment in 2013. Next update unknown
Capital Improvement Plan (CIP)	Yes	As part of the CIP, the town is undergoing both a Facilities Master Planning project and a Water/Sewer Master Planning project. The outcomes of these projects can inform us of vulnerabilities in our facilities and utilities and recommend actions to address hazards. The CIP also includes updates to our communications systems to improve our response capabilities.	
Climate Change Adaptation Plan	N/A	N/A	N/A
Community Wildfire Protection Plan	Yes		Last updated by the town 2022. Now the Unified Fire Authority manages and maintains it for state compliance.
Economic Development Plan	No		
Land Use Plan	Yes		2013 last updated
Local Emergency Operations Plan	Yes		Due to be updated.
Stormwater Management Plan	No		
Transportation Plan	Yes – Wasatch Canyons General Plan	Addresses transportation for Little Cottonwood Canyon/Hwy 210	2020
Substantial Damage Plan	No		

DRAFT

Plan	Does it address hazards? (Y/N)	How can it be used to implement mitigation actions?	When was the last update? When is the next update?
Other? (Describe)			

Table 13: Assessment of the Regulations and Ordinances of the Town of Alta

Regulation/Ordinance	Does it effectively reduce hazard impacts?	Is it adequately administered and enforced?	When was the last update? When is the next update?
Building Code	Yes – Alta has adopted the state version of the International Building Code (IBC 2021, with amendments)	Yes	
Flood Insurance Rate Maps	N/A	N/A	N/A
Floodplain Ordinance	N/A	N/A	N/A
Subdivision Ordinance	Yes	Yes	Nov. 13, 2024
Zoning Ordinance	Yes	Yes	Amendments since inception in 1972
Natural Hazard Specific Ordinance (Stormwater, Steep Slope, Wildfire)	Yes – Steep slope & avalanche design requirement	Yes	2023
Acquisition of Land for Open Space and Public Recreation Use	No		
Prohibition of Building in At-Risk Areas	No		
Other? (Describe)			

Administrative and Technical Capabilities

Administrative and technical capabilities include staff and their skills. They also include tools that can help you carry out mitigation actions.

Table 14: Assessment of the Administrative Capabilities of the Town of Alta

Administrative Capability	In Place? (Y/N)	Is staffing adequate?	Are staff trained on hazards and mitigation?	Is coordination between agencies and staff effective?
Chief Building Official	Yes	Yes	Yes	Yes
Civil Engineer	Yes	Yes	Yes	Yes
Community Planner	Yes	Yes	Yes	Yes
Emergency Manager	Yes	Yes	In Training	Yes

DRAFT

Administrative Capability	In Place? (Y/N)	Is staffing adequate?	Are staff trained on hazards and mitigation?	Is coordination between agencies and staff effective?
Floodplain Administrator	No	N/A	N/A	N/A
Geographic Information System (GIS) Coordinator	No	N/A	N/A	N/A
Planning Commission	Yes	Yes	No	Yes
Fire Safe Council	No	N/A	N/A	N/A
CERT (Community Emergency Response Team)	No	N/A	N/A	N/A
Active VOAD (Voluntary Agencies Active in Disasters)	No	N/A	N/A	N/A
Other? (Please describe.)				

Table 15: Assessment of the Technical Capabilities of the Town of Alta

Technical Capability	In Place? (Y/N)	How has it been used to assess/mitigate risk in the past?	How can it be used to assess/mitigate risk in the future?
Mitigation Grant Writing	Yes	No	
Hazard Data and Information	N/A		
GIS	No		
Mutual Aid Agreements	Yes – Some		
Other? (Please describe.)			

Financial Capabilities

Financial capabilities are the resources to fund mitigation actions. Talking about funding and financial capabilities is important to determine what kinds of projects are feasible, given their cost. Mitigation actions like outreach programs are lower cost and often use staff time and existing budgets. Other actions, such as earthquake retrofits, could require substantial funding from local, state, and federal partners. Partnerships, including those willing to donate land, supplies, in-kind matches, and cash, can be included.

DRAFT

Table 16: Assessment of the Financial Capabilities of the Town of Alta

Funding Resource	In Place? (Y/N)	Has it been used in the past and for what types of activities?	Could it be used to fund future mitigation actions?	Can it be used as the local cost match for a federal grant?
Capital Improvement Project Funding	Yes		Yes	
General Funds	Yes			
Hazard Mitigation Grant Program (HMGP/404)	No			
Building Resilient Infrastructure & Communities (BRIC)	No			
Flood Mitigation Assistance (FMA)	No			
Public Assistance Mitigation (PA Mitigation/406)	No			
Community Development Block Grant (CDBG)	No			
Natural Resources Conservation Services (NRCS) Programs	No			
U.S. Army Corps (USACE) Programs	No			
Property, Sales, Income, or Special Purpose Taxes	Yes			
Stormwater Utility Fee	No			
Fees for Water, Sewer, Gas, or Electric Services	Yes			
Impact Fees from New Development and Redevelopment	No			
General Obligation or Special Purpose Bonds	No			
Federal-funded Programs (Please describe)	Yes	Sisk Act[7] funding for the Alta Marshal's Office to patrol roads in the summer.		
Private Sector or Nonprofit Programs				
Other?				

[7] 16 U.S. Code § 484a – Exchange of lands in national forests to control by a local government or school district.

DRAFT

Education and Outreach Capabilities

Education and outreach capabilities are programs and methods that could communicate about and encourage risk reduction. These programs may be run by a participant or a community-based partner. Partners, especially those who work with underserved communities, can help identify additional education and outreach capabilities.

Table 17: Assessment of the Education and Outreach Capabilities of the Town of Alta

Education and Outreach Capability	In Place? (Y/N)	Does it currently incorporate hazard mitigation?	Could it be used to support mitigation in the future?
Community Newsletter(s)	Yes	Yes	Yes
Hazard Awareness Campaigns (such as Firewise, Storm Ready, Severe Weather Awareness Week, School Programs)	No	N/A	Yes
Public Meetings/Events (Please describe.)	Yes – Annual "Chipper Days" event to mitigate wildfire hazard. Seasonal sandbag events when needed to address potential flooding concerns.	Yes	Yes
Emergency Management Listserv	Yes	Yes	Yes
Local News	No	No	
Distributing Hard Copies of Notices (e.g., public libraries, door-to-door outreach)	Sometimes	Sometimes – Example, we posted the Hazard Mitigation Survey as part of this process	Yes
Insurance Disclosures/ Outreach	No	N/A	N/A
Organizations that Represent, Advocate for, or Interact with Underserved and Vulnerable Communities (Please describe.)	Yes – Safe Place Program	No	No
Social Media (Please describe.)	Yes – Town of Alta and Alta Central	Yes	Yes
Other? (Please describe.)			

Opportunities to Expand and/or Improve Capabilities

Actions that can expand and improve existing authorities, plans, policies, and resources for mitigation include budgeting for mitigation actions, passing policies and procedures for mitigation actions, adopting

and implementing stricter mitigation regulations, approving mitigation updates, and making additions to existing plans as new needs are recognized. Table 18 lists the opportunities for the town of Alta.

Table 18: Opportunities to Expand or Improve the Capabilities of the Town of Alta

Capability	Opportunity to Expand and/or Improve
Planning and Regulation	• Explore adopting Wildland Urban Interface code • Update vegetation management ordinance • Update our development regulations pertaining to Avalanche Hazards • Update wind and snow loading criteria Improvement of local knowledge and capabilities will occur with ongoing exploration and review of unknowns in the context of planning and regulations. A culture of continuous learning and capacity building among local officials, planners, and community members will occur. Alta does not have any ordinances or land use regulations specifically for avalanche hazards. It is beginning to implement avalanche analysis into construction design, and the new Town Hall building was constructed to withstand a 1% annual chance avalanche hazard. The update to Alta Ski Lifts Master Plan does have considerations for avalanche mitigation. This represents an important first step for the town and ski area as their current methods (firing artillery shells) are becoming outdated. In addition, these methods might not be available to them soon—and they are 100% dependent on this method to function as a town and from an economic standpoint. The town has received communication from the U.S. Department of Defense informing them that they must consider alternative methods for control work, as artillery will soon be unavailable.
Administrative and Technical	• Updated GIS data To address the unknowns in administrative and technical capabilities, a thorough assessment of current staffing levels and expansion can be considered. For the Chief Building Official, it is essential to determine if the current levels are adequate. In addition, providing specialized training on hazards and mitigation strategies and enhancing coordination through regular interagency meetings would be beneficial. For the Civil Engineer, evaluating the current workload and staffing needs is crucial. Offering targeted training programs focused on hazard identification and mitigation techniques and enhancing coordination through collaborative projects could improve capabilities. The Community Planner's effectiveness can be boosted by assessing staffing adequacy, implementing continuous professional development programs on hazard and mitigation planning, and fostering better interagency coordination through joint task forces or working groups. For the Emergency Manager, reviewing staffing levels, ensuring that staff are trained on the latest hazard mitigation practices, and creating a centralized communication system to streamline coordination are key steps. The Floodplain Administrator's capabilities can be enhanced by performing a staffing review, introducing training modules covering flood hazards and mitigation measures, and organizing inter-departmental workshops to improve coordination. Hiring or training staff to manage GIS functions effectively, facilitating training sessions on GIS tools, and establishing clear protocols and regular meetings for improved coordination can strengthen the capabilities of the GIS Coordinator role.
Financial	• Pursue Grant Opportunities

DRAFT

Capability	Opportunity to Expand and/or Improve
	• MOU's with ski area and local hotels for feeding and sheltering folks in emergency to have their costs covered To address the unknowns in financial capabilities, several opportunities for improvement and expansion can be considered. It is essential to conduct a comprehensive assessment to identify existing funding resources and their past use. This assessment will provide a clear understanding of which resources have been used for specific activities and can fund future mitigation actions.
Education and Outreach	• Work on increasing our Newsletter Subscriber List • Continue to use Newsletters to share mitigation actions that residents can take • Use new communication tool on new website to increase reach To address the unknowns in education and outreach capabilities, there are several opportunities for improvement and expansion. First, it is essential to conduct an in-depth assessment of current insurance disclosures and outreach practices to understand the integration of hazard mitigation information. Collaborating with insurance companies, including mitigation-related content in their communications to policyholders, can increase awareness and preparedness. Next, identifying and engaging with organizations that represent, advocate for, or interact with underserved and vulnerable communities is crucial. Partnering with these organizations can help tailor hazard mitigation messages to the specific needs of these communities, ensuring that critical information reaches those most at risk. This collaboration can lead to the development of targeted outreach programs and initiatives that effectively address the unique challenges faced by these communities. For social media, a comprehensive strategy should be developed to leverage various platforms. This strategy should include regularly updating content, engaging with the community through interactive posts, and using social media analytics to measure the effectiveness of outreach efforts. Expanding the use of social media to other platforms can also increase the reach and impact of hazard mitigation messages.

Mitigation Strategy

Mitigation strategies provide proactive measures that are designed to minimize the impacts of hazards on the town of Alta. Table 19 shows mitigation action alternatives, and

Table 20 shows the status of previous mitigation activities. Alta plans to retain and carry forward the ongoing or incomplete actions from the previous plan. Table 21 is the 2025 mitigation action plan for the town of Alta.

DRAFT

Table 19: Mitigation Action Alternatives for the Town of Alta[8]

Action	Type of Action	Selected for inclusion in the plan?	If not selected, why not?
Continue to support and collaborate with UDOT and other local orgs that help manage avalanche hazard in Little Cottonwood Canyon		No	Not specific
Research and explore funding opportunities to partner with UDOT on technologies like slope-monitoring radar	Structure and Infrastructure Projects	No	Selected other priority actions.
Monitor compliance with construction regulations for new developments	Local Plans and Regulations	No	Existing capability
Update Ordinance 10-7-22 Avalanche Building Regulations	Local Plans and Regulations	Yes	
Interagency communications		No	Not specific
Routine review of the Interlodge travel restriction ordinance	Local Plans and Regulations	Yes	Non-mitigation
Baseline capabilities assessments of Interlodge		No	Non-mitigation
Conduct avalanche assessment hazards of TOA facilities and incorporate results into facilities planning	Structure and Infrastructure Projects	Yes	
More streamlined information channels throughout town business and properties	Education and Awareness Programs	Yes	Non-mitigation
Avalanche/Interlodge educational videos to be available to town residents and visitors	Education and Awareness Programs	No	Considering other education options
Explore the concept of developing a local ordinance to allow us to impose fire restrictions	Local Plans and Regulations	Yes	
Consider adopting the WUI Code – defensible space landscaping requirements construction materials requirement – inspections	Local Plans and Regulations	Yes	
Pursue Firewise community designation	Education and Awareness Programs	No	Selected other priority wildfire actions
Partner with UFA to conduct community fire awareness/preparedness presentations	Education and Awareness Programs	No	Selected other priority wildfire actions
Assess water system for appropriate fire flows/make enhancements as needed (ongoing)	Structure and Infrastructure Projects	No	Maintenance

[8] TOA = Town of Alta, UDOT = Utah Department of Transportation, UFA = Unified Fire Authority, WUI = Wildland–Urban Interface

Action	Type of Action	Selected for inclusion in the plan?	If not selected, why not?
Support revegetation efforts in areas prone to slope failure	Natural Systems Protection	Yes	
Support ongoing maintenance of storm drain infrastructure in Alta	Structure and Infrastructure Projects	No	Maintenance
Pursue seismic upgrades to TOA facilities	Structure and Infrastructure Projects	Yes	
Get an updated dam failure inundation map including the new Cecret Lake Dam	Natural Systems Protection	No	Other jurisdiction
Update snow load building department requirements	Local Plans and Regulations	Yes	
Continued coordination with UDOT to maintain accessible transportation corridors	Structure and Infrastructure Projects	No	Maintenance
Identify and correct insufficiencies in culinary water infrastructure (drought)	Structure and Infrastructure Projects	Yes	
Provide information and resources to residents about radon testing	Education and Awareness Programs	Yes	
Get TOA facilities tested for radon	Education and Awareness Programs	Yes	

Table 20: Status of the 2019 Mitigation Actions of the Town of Alta[9]

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update
Update TOA Ordinance to promote fuel mitigation and structural defensibility	Wildfire	TOA	UFA	Incomplete. Deleted due to lack of support. Revised action added to 2025 mitigation actions.
Support UFA fuels mitigation on residential/commercial properties	Wildfire	UFA	TOA	Ongoing – Annual chipper days w/ UFA wildland crew

[9] BOR = Bureau of Reclamation, DNR = Department of Natural Resources, SLC = Salt Lake City SLCo = Salt Lake County, SLCo EM = Salt Lake County Emergency Management, SLCo SA#3 = Salt Lake County Service Area #3, TOA = Town of Alta, UDOT = Utah Department of Transportation, UFA = Unified Fire Authority, UGS = Utah Geological Survey, USFS = United States Forest Service, USGS = United States Geological Survey, WSMP = Water and Sewer Master Plan.

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update
Maintain/improve water storage and distribution system	Wildfire, drought, earthquake, etc.	TOA	SLCo SA#3	Ongoing – Small improvements under BOR grant in 2020–2022, WSMP
Improve culverts along SR 210, Michigan City Road, additional stormwater management features	Landslide/ Severe Weather	TOA/ UDOT	USFS	Ongoing – UDOT
Seek best available data regarding the severity shaking during major earthquake	Earthquake	TOA	UGS/FEMA, SLCo EM	Ongoing
Support UDOT Remote Avalanche Control System (RACS) implementation	Avalanche	UDOT	Town, ski areas	Ongoing – UDOT has installed RACS in most major avalanche paths affecting TOA and SR 210 thru Alta
Support UDOT avalanche detection system improvements	Avalanche	UDOT	Town, ski areas	Ongoing – UDOT installed radar facing Mt. Superior, evaluating other options for remote detection
Seek new inundation map for improved Cecret Lake Dam	Dam Failure	SLC/ DNR	Utah Division of Water Resources, Dam Safety Section	Incomplete
Acquire, upgrade, and/or integrate communications equipment and systems as determined by coordinating group	All hazards	TOA	Utah Communications Authority	Ongoing
Identify and implement additional hazard monitoring capabilities. **Install remote avalanche explosive capability in the Canyon.**	All hazards	TOA	State of Utah	Complete UDOT RACS
Compile inventory of mutual aid agreements and MOUs and identify deficiencies	All hazards	TOA		Incomplete
Coordinate with existing public education programs, such as the American Red Cross, Utah Living with Fire, Be Ready Utah, and the National Weather Service	All hazards	TOA		Ongoing CPR class

DRAFT

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update
Continue to encourage water conservation utilizing and promoting outreach material from all water districts in the county	Drought	TOA		Incomplete
Repair, maintain and improve water distribution infrastructure to prevent loss from leakage, breaks, etc.	Drought	TOA	County	Ongoing WSMP
Address identified problems through construction of debris basins, flood retention ponds, energy dissipaters or other flood control structures	Flooding	TOA	Contractors	Incomplete and deleted TOA does not own any infrastructure for flood control etc. or any land to put it on.
Establish maintenance and repair programs to remove debris, improve resistance and otherwise maintain effectiveness of stormwater and flood control systems	Flooding	TOA	Contractors	Incomplete and deleted – see above
Identify and assess structures for deficiencies	Flooding	TOA	Contractors	Incomplete and deleted – see above
Modify structures as needed to address deficiencies	Flooding	TOA	Contractors	Incomplete and deleted – see above
Assist Forest Service Utah Avalanche Forecast Center and other organizations in promoting avalanche hazard awareness for backcountry users	Severe Weather	TOA		Ongoing
Coordinate with the Utah Geological Survey and other agencies to understand current slope failure threats/ potential	Slope Failure	TOA	USGS	Incomplete
Utilize recommendations provided by the State Geological Hazards Working Group to address land use and planning for new developments	Slope Failure	TOA	USGS	Incomplete
Provide waste removal, such as chipping of green waste by public works, following designated fuel clearing day/week	Wildland Fire	TOA	Contractor	Deleted. Combined with other fuel reduction action in 2025 plan – UFA Chipper Days

DRAFT

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update
Work with experts and communities to develop or update evacuation plans	Wildland Fire	TOA	County and state transportation	Incomplete/ ongoing – participating in SLCo evacuation plan
Evaluate transportation network and address needed improvements to facilitate evacuation and emergency response	Wildland Fire	TOA	County and state transportation	Incomplete –See above
Support Current Avalanche Hazard Mitigation Interagency Partnerships	Avalanche	TOA		Ongoing

DRAFT

THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT

Table 21: 2025 Mitigation Action Plan for the Town of Alta[10]

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
1	Test town of Alta (TOA) facilities for radon to protect citizens from the adverse effects of the gas.	Radon	TOA EM	Utah DEQ, SLCo Health Department	Determine radon risk in city facilities and potential action needed to reduce health impacts.	Low	Town of Alta General Fund	Short	High	
2	Update Ordinance 10-7-22 Avalanche Building Regulations to ensure the viability and stability of building in an avalanche prone area.	Avalanche	TOA Town Council	UDOT, MSD	Stronger building codes may reduce structural damage and injuries caused by avalanche.	Low	Town of Alta General Fund	Medium	Medium	
3	Identify and correct insufficiencies in culinary water infrastructure (drought).	Drought	TOA EM	Hansen, Allen & Luce (water system engineering firm)	Reduce water loss to conserve culinary water supply.	Medium	Town of Alta Capital projects fund	Medium	Medium	Ongoing with current Water and Sewer Master Plan
4	Update snow-load building department requirements.	Severe Winter Weather, (Heavy Snow, Blizzard)	TOA	Town Engineer	Increased snow-loading capabilities may minimize structural damage and potential injuries following heavy snow. New construction will be required to be built in compliance with the new snow load requirement.	Low	Town of Alta General Fund	Medium	Medium	
5	Conduct avalanche assessment hazards of TOA facilities and incorporate results into facilities planning.	Avalanche	TOA EM		Less structural damage and fewer injuries caused by avalanches in TOA facilities.	Medium	Town of Alta Capital projects fund	Long	Medium	
6	Consider adopting the WUI code which may include defensible space landscaping requirements or construction materials requirements and conduct inspections.	Wildfire	TOA EM	UFA	Increased preparedness against property damage from wildfire.	Low	Town of Alta General Fund, CWDG	Long	Low	
7	Consider adoption of local ordinance to allow us to enforce fire restrictions.	Wildfire	TOA Town Council	UFA	Enhanced ability to enforce fire restrictions to reduce risky fire behavior.	Low	Town of Alta General Fund	Medium–Long	Medium	
8	Conduct stormwater management infrastructure maintenance and evaluate where improvements/ upgrades may be needed.	Heavy Rain/Flooding	UDOT	TOA	Reduced risk of road flooding.	Medium	UDOT operational budget, Town of Alta General Fund, FMA	Medium	Medium	
9	Complete inventory of mutual aid agreements and MOUs.	All hazards	TOA EM	USFS, UDOT, UFA, Alta Ski Lifts, etc.	Enhanced preparedness to respond to incidents.	Low	Town of Alta General Fund	Short	High	
10	Support revegetation efforts in areas prone to slope failure.	Landslide/ Slope Failure	USFS	TOA	Reduced risk of landslide.	Low	Town of Alta General Fund	Ongoing	Low	
11	Conduct routine review of our Interlodge travel restriction ordinance.	Avalanche, Severe Winter Weather	TOA EM	Ski resorts	Increase safety and enforcement during periods of heavy snow/blizzard/avalanche risk	Low	Town of Alta General Fund	Short	Low	

[10] ARC = American Red Cross, BOR = Bureau of Reclamation, BRIC = Building Resilient Infrastructure and Communities, CWDG = Community Wildfire Defense Grant, DEM = Division of Emergency Management, DEQ = Department of Environmental Quality, DNR = Department of Natural Resources, DPS = Department of Public Safety, DWR = Division of Water Resources, EM = Emergency Management, FEMA = Federal Emergency Management Agency, HSGP = Homeland Security Grants Program, MSD = Municipal Services District, NWS = National Weather Service, RACS = Remote Avalanche Control System, SLC = Salt Lake City, SLCo = Salt Lake County, SLCo EM = Salt Lake County Emergency Management, TOA = Town of Alta, UAC = Utah Avalanche Center, UDOT = Utah Department of Transportation, UFA = Unified Fire Authority, UGS = Utah Geological Survey, USFS = United States Forest Service, USGS = U.S. Geological Survey, WSMP = Water and Sewer Master Plan.

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
12	Identify and pursue seismic upgrades to TOA facilities.	Earthquake	TOA EM		May reduce structural damage from earthquakes.	Medium-High (contingent on rebuilds)	Town of Alta Capital Projects fund, BRIC	Medium	Medium	
13	Continue monitoring and participation through SIAC partnership for terrorisms, cyberattacks, etc.	Terrorism	TOA EM	DPS, SLCo EM	Increased preparedness to respond to cyberattacks/terrorism.	Low	Town of Alta General Fund	Ongoing	Low	
14	Conduct public outreach programs like “See something, Say something.”	Terrorism	TOA EM	SLCo EM	Community response preparedness.	Low	Town of Alta General Fund, HSGP	Short term	Low	
15	Create public awareness campaigns to educate about risks from severe weather and other hazards. Share via newsletter, website, social media, or in-person town events.	Dam Failure, Extreme Heat, Extreme Cold, Heavy Rain, High Wind, Lightning, Tornado, Severe Winter Weather	TOA EM	SLCo EM, NWS, utilities	Improved education and understanding by the public of local hazards and ways in which they can reduce risk for themselves, their homes, and their loved ones. These campaigns will focus on all citizens via workshops, flyers, surveys, etc. Subjects will include how the populace can weatherize their homes for extreme heat/ cold/severe winter weather, how to avoid flooding from heavy rain, such as by elevating utilities, wind barriers for high winds, tornado risk, and what to do when an alert is sounded. Education on dam failure can make the populace aware of where the inundation areas are.	Low	Town of Alta General Fund	Short term	Medium	
16	Encourage fuels mitigation on residential and commercial properties by providing chipping of green waste and waste removal following designated fuel clearing day/week.	Wildfire	TOA	UFA, SLCo Public Works & Municipal Services	Fuel reduction needs to be completed regularly to maintain effectiveness and reduce risk to property from wildfire. Providing chippers and waste removal facilitates greater participation.	Low	Town of Alta General Fund	Ongoing	Medium	Annual chipper days with UFA wildland crew.
17	Maintain/improve water storage and distribution system.	Wildfire, Drought, Earthquake.	TOA	SLCo Service Area #3	Efforts to maintain functionality of water supply to improve resilience and reduce risks to multiple hazards.	Medium	Town of Alta General Fund, BOR grants, WSMP	Short term	Medium	Small improvements under BOR grant in 2020–2022, WSMP. Additional improvements desired.
18	Improve culverts along SR-210, Michigan City Road, additional stormwater management features.	Flooding, Heavy Rain, Dam Failure, Landslide	TOA	UDOT, USFS	Reduce risk of road damage from flooding and other hazards.	Medium	Town of Alta General Fund, Capital Project Fund, UDOT Operational Budget,	Medium	Medium	
19	Seek best available data regarding the severity of shaking during major earthquake.	Earthquake	TOA	UGS/FEMA, SLCo EM	Improved understanding of risk severity to prioritize mitigation needs	Low	Town of Alta General Fund	Short term	Medium	

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
20	Support UDOT Remote Avalanche Control System (RACS) implementation.	Avalanche	UDOT	Town, ski areas	RACS allow triggering of avalanches at times where Interlodge and road closures are in place. This reduces the risk of an avalanche occurring while people are present, as well as the potential for injury or loss of life.	Medium	Town of Alta General Fund, UDOT Operational Fund	Ongoing	High	UDOT has installed RACS in most major avalanche paths affecting TOA and SR 210 through Alta. More may be added.
21	Support UDOT avalanche detection system improvements.	Avalanche	UDOT	Town, ski areas	Increased awareness of avalanche potential to reduce potential injury to people.	Medium	Town of Alta General Fund, UDOT Operational Fund	Long term	Medium	UDOT installed radar facing Mt. Superior, evaluating other options for remote detection
22	Seek new inundation map for improved Cecret Lake Dam.	Dam Failure	SLC/DNR	Utah Division of Water Resources, Dam Safety Section	Improved awareness and understanding of the hazard to Town of Alta can help city take steps to reduce risk.	Medium	Town of Alta General Fund, Utah DWR Operational Budget	Long term	Medium	Dam inundation maps have not been updated for a long time. Modeling capabilities may have improved.
23	Acquire, upgrade, and/or integrate communications equipment and systems as determined by coordinating group.	All hazards	TOA	Utah Communications Authority	Ensure communication systems remain operational during hazard events.	Medium	Town of Alta General Fund	Medium	Medium	
24	Compile inventory of mutual aid agreements and MOUs and identify deficiencies.	All hazards	TOA	SLCo EM, UFA, NGOs, Neighboring Jurisdictions	Improved capabilities reduce risk from hazards.	Low	Town of Alta General Fund	Medium	Medium	
25	Coordinate with existing public education programs, such as the American Red Cross, Utah Living with Fire, Be Ready Utah, and the National Weather Service.	All hazards	TOA	ARC, UFA, NWS, SLCo EM, Utah DEM	Expand opportunities to integrate information regarding hazard risk and ways to reduce risk in existing training and education opportunities.	Low	Town of Alta General Fund	Ongoing	Medium	
26	Continue to encourage water conservation utilizing and promoting outreach material from all water districts in the county.	Drought	TOA	DWR, SLCo EM	Inform public on ways to conserve water to improve resilience to drought.	Low	Town of Alta General Fund	Ongoing	Medium	
27	Repair, maintain and improve water distribution infrastructure to prevent loss from leakage, breaks, etc.	Drought	TOA	SLCo, SLC Public Utilities	Preserve water supply and improve resilience to drought.	Medium	Town of Alta General Fund, Capital Improvement Fund	Long term	Medium	
28	Assist Forest Service Utah Avalanche Forecast Center and other organizations in promoting avalanche hazard awareness for backcountry users.	Avalanche, Severe Winter Weather	TOA	UAC, USFS	Reduce risk of injury or loss of life from avalanche by continually improving awareness of avalanche hazard, informing the public when danger is high, and educating on steps to improve safety.	Low	Town of Alta General Fund, UAC General Budget	Ongoing	High	
29	Coordinate with the Utah Geological Survey and other agencies to	Landslide/Slope Failure	TOA	USGS, UGS	Detailed information about potential slope failure improves ability to mitigate risk.	Low	Town of Alta General Fund,	Long term	Medium	

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
	understand current slope failure threats/potential.						UGS General Fund			
30	Utilize recommendations provided by the State Geological Hazards Working Group to address land use and planning for new developments.	Landslide/Slope Failure	TOA	UGS, USGS	Reduce risk of landslide/slope failure in new developments by adhering to recommendations.	Low	Town of Alta General Fund	Long term	Medium	
31	Work with experts and communities to develop or update evacuation plans.	Wildfire	TOA	County and state transportation, SLCo EM, UDOT, SLCo Public Works & Municipal Services	Reduce risk of injury or loss of life for those evacuating from wildfire.	Medium	Town of Alta General Fund, SLCo EM General Fund	Long term	Medium	Participating in SLCo evacuation plan.
32	Evaluate transportation network and address needed improvements to facilitate evacuation and emergency response.	Wildfire	TOA	County and state transportation, UDOT, SLCo Public Works & Municipal Services	Functionality of transportation lifelines reduces risk from wildfire.	Medium	Town of Alta General Fund, Capital Improvement Fund, SLCo or UDOT Operational Budget	Long term	Medium	
33	Support Current Avalanche Hazard Mitigation Interagency Partnerships.	Avalanche	TOA	UDOT, SLCo EM, USFS, UAC	Partnerships to reduce avalanche risk.	Low	Town of Alta General Fund	Ongoing	Medium	

DRAFT

City of Bluffdale

Jurisdictional Annex to the
Salt Lake County Hazard Mitigation Plan

Month XXXX | Draft X.X

THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT

Table of Contents

City of Bluffdale Annex 1

Planning Process Contact Information 1
Jurisdiction Profile 1
Date of Incorporation 1
Location and Description 1
Population 2
Demographics 2
Brief History 2
Climate 2
Public Services 2
Governing Body 3
Development Trends 3
Jurisdiction-Specific Hazards and Risk 3
Hazard Event History 6
National Flood Insurance Program Summary 8
Jurisdiction-Specific Vulnerabilities and Impacts 9
Jurisdiction-Specific Changes in Vulnerability 28
Additional Public Involvement 38
Plan Integration 38
Capability Assessment 39
Planning and Regulatory Capabilities 40
Administrative and Technical Capabilities 41
Financial Capabilities 42
Education and Outreach Capabilities 44
Opportunities to Expand and/or Improve Capabilities 44
Mitigation Strategy 45

DRAFT

List of Figures

Figure 1: Social Media Posts for the Hazard Mitigation Survey (*left*) and Draft Plan Review (*center* and *right*) 38

List of Tables

Table 1: Contact Information for the City of Bluffdale 1
Table 2: Participant List for the City of Bluffdale 1
Table 3: Calculated Priority Risk Index Values for the City of Bluffdale 3
Table 4: Criteria for the Calculated Priority Risk Index 4
Table 5: History of Hazard Events in the City of Bluffdale 6
Table 6: National Flood Insurance Program Status for the City of Bluffdale 8
Table 7: National Flood Insurance Overview for the City of Bluffdale 8
Table 8: Jurisdiction-Specific Vulnerabilities and Impacts of the City of Bluffdale 9
Table 9: Jurisdiction-Specific Changes in Vulnerability in the City of Bluffdale 29
Table 10: Previous Plan Integration by the City of Bluffdale 39
Table 11: Future Plan Integration Opportunities for the City of Bluffdale 39
Table 12: Assessment of the Planning Capabilities of the City of Bluffdale 40
Table 13: Assessment of the Regulations and Ordinances of the City of Bluffdale 41
Table 14: Assessment of the Administrative Capabilities of the City of Bluffdale 41
Table 15: Assessment of the Technical Capabilities of the City of Bluffdale 42
Table 16: Assessment of the Financial Capabilities of the City of Bluffdale 43
Table 17: Assessment of the Education and Outreach Capabilities of the City of Bluffdale 44
Table 18: Opportunities to Expand or Improve the Capabilities of the City of Bluffdale 45
Table 19: Mitigation Action Alternatives for the City of Bluffdale 45
Table 20: Status of Prior Mitigation Actions of the City of Bluffdale 46
Table 21: 2025 Mitigation Action Plan for the City of Bluffdale 55

DRAFT

City of Bluffdale Annex

To participate in this multi-jurisdictional hazard mitigation plan (MJHMP) update for Salt Lake County (SLCo), the governing body of the city of Bluffdale passed a formal resolution, a copy of which is maintained at the local government offices.

Planning Process Contact Information

Table 1 provides information on the point of contact during the updating of the MJHMP.

Table 1: Contact Information for the City of Bluffdale

Name	Contact Information
Bart Barton	**Phone:** 801-254-2200 Ext 746; **email:** babarton@bluffdale.gov

The city of Bluffdale has a fully integrated approach to hazard mitigation planning and program implementation. During the 2024 update process, the MJHMP participation roles in Table 2 were recorded.

Table 2: Participant List for the City of Bluffdale

Name	Title	Jurisdiction/Agency
Bart Barton	Emergency Manager	City of Bluffdale

Jurisdiction Profile

Date of Incorporation

October 13, 1978

Location and Description

The city of Bluffdale is located 20 miles south from downtown Salt Lake City in the southern portion of Salt Lake County. The city is approximately 11.4 square miles in area and is located approximately 4,436 feet above sea level. Bluffdale is known for its suburban feel with a mix of residential neighborhoods, open spaces, and some commercial areas. The city is bordered by the Jordan River to the west and the Wasatch Mountains to the east providing residents with beautiful natural scenery and outdoor recreational opportunities.

DRAFT

Population

The 2022 American Community Survey 5-Year Estimate from the U.S. Census Bureau records the population of the city of Bluffdale at 18,168 people.

Demographics

Most of the 18,168 people are between the ages of 35 and 44, with a median age of 31.2; 9,214 are males (50.7%) and 8,954 are females (49.3%).

English is the primary language in 93.5% of homes, with 3.5% Spanish, 1.8% Other Ind-European languages, 1.2% Asian and Pacific Islander languages, and less than 0.1% other languages.

Brief History

In 1862, Jens and Rise Madsen became the first permanent settlers on the east side of the Jordan River. Chris Petersen and his family along with Timothy Gilbert and the Spencer Brothers, John and Robert soon followed. The construction of the canal system in 1874 led to an influx of settlers. Bluffdale Precinct was established in 1883 with William Wallace Merrill serving as the first justice of the peace. The community began to grow with a post office being established in 1888, a meetinghouse built between 1887 and 1888, a brick schoolhouse in 1893, and an amusement hall in 1899. The arrival of the Narrow Gauge Railroad in 1876 further connected Bluffdale to the surrounding areas. Bluffdale was officially incorporated in October 1978.

Climate

The city of Bluffdale experiences a humid continental climate (Dfa Köppen classification). This is characterized by hot, dry summers and cold, snowy winters. Average high temperatures are approximately 80–90°F in the summer and in the 20s and 30s in the winter. Rain each year is approximately 20 inches, and snowfall averages 30–40 inches.

Public Services

Because Bluffdale lies at the narrowest point between the Wasatch and Oquirrh mountain ranges, many utilities are located here. These utilities and other critical infrastructure and key resources (CIKR) significantly influence the city's land uses. These include a heavily used Union Pacific Railroad and UTA rail line running north-south; Redwood Road (also running north–south); Interstate-15 and Bangerter Highways; and a major canal that is the effective western boundary of the community. In addition, six other canals, several aqueducts, two major power corridors, regional arterials and highways, and a major gas line corridor create obstacles and shape land use opportunities.

Bluffdale has an established fire department, police department, and also has emergency management, public works, code enforcement, utilities, and building departments.

DRAFT

Governing Body

The city of Bluffdale operates under a six-member council system with a governing body consisting of the Mayor and five council members. The City Council created the position of City Manager through an ordinance who is responsible for the daily operations and management of the city including its employees and services. The City Manager reports directly to both the Mayor and the City Council.

Development Trends

The entire Wasatch Front is under tremendous growth pressure, with the Wasatch Front Regional Council projecting a 67% increase in population by 2040. Bluffdale's 2018 Capital Facilities Plan (CFP) uses a detailed methodology to project population in connection with projected future land use in the city. Based on the CFP, Bluffdale's population will grow to nearly 40,000 by the year 2035. At this point, the city will be at full build-out (given its current future land use planning and the associated dwelling densities). More detailed information about population projections is included in the CFP document. Population growth is expected to increase dramatically with the new housing developments presently under construction. The major population growth center in Bluffdale will be the east side of the city, between I-15 and the railroad tracks, where the heaviest growth is expected to occur between approximately 2015 and 2025, and then tapering off as Bluffdale nears build-out.

Jurisdiction-Specific Hazards and Risk

The Calculated Priority Risk Index (CPRI) is a comprehensive assessment tool for evaluating and prioritizing risks in a given context. It considers various factors, such as probability, impact, and urgency, to determine the level of risk associated with events or situations. The results for each hazard, including its risk factor (RF) value, are shown in Table 3. The results are based on the criteria in

Table 4 and the equation that follows it. The CPRI helps organizations and individuals make informed decisions about risk management and mitigation strategies. It provides a systematic approach to identifying and addressing potential issues, allowing for a more efficient allocation of resources and proactive risk prevention. With the CPRI, stakeholders can prioritize their focus on the most critical risks, leading to more effective risk management and, ultimately, better outcomes.

Table 3: Calculated Priority Risk Index Values for the City of Bluffdale

Type of Hazard Event	Probability of Future Events	Spatial Extent	Severity of Life/ Property Impact	Warning Time	Duration	Response Capacity	Risk Factor Value
Avalanche	4	1	2	4	2	1	2.6
Drought	4	4	2	1	4	1	2.8
Earthquake	3	4	4	4	3	2	3.4
Extreme Heat	4	4	3	1	3	1	3
Extreme Cold	3	4	2	1	3	1	2.4

DRAFT

Type of Hazard Event	Probability of Future Events	Spatial Extent	Severity of Life/ Property Impact	Warning Time	Duration	Response Capacity	Risk Factor Value
Flooding	4	3	3	3	3	1	3.1
Landslide/ Slope Failure	2	1	2	4	1	2	2
Radon	4	4	2	1	4	2	2.9
Heavy Rain	4	3	2	3	1	1	2.6
High Wind	4	3	3	3	2	1	3
Lightning	4	2	2	4	1	1	2.6
Severe Winter Weather	4	3	2	2	2	1	2.6
Tornado	2	2	3	4	1	2	2.4
Wildfire	4	3	3	4	3	1	3.2
Dam Failure	2	2	3	2	2	3	2.4
Civil Disturbance	2	1	2	4	2	2	2.1
Cyberattack	2	3	3	4	3	2	2.7
Hazardous Materials Incident (Transportation & Fixed Facility)	3	1	2	4	1	1	2.2
Public Health Epidemic/ Pandemic	3	4	3	1	4	1	2.8
Terrorism	2	1	3	4	2	1	2.3

Table 4: Criteria for the Calculated Priority Risk Index

Risk Index Factor	Degree of Risk Level		Criteria	Factor Weight for Degree of Risk Level
Probability of Future Events	1	Unlikely	Less than 1 percent probability of occurrence in the next year or a recurrence interval of greater than every 100 years.	30%
	2	Occasional	1 to 10 percent probability of occurrence in the next year or a recurrence interval of 11 to 100 years.	
	3	Likely	11 to 90 percent probability of occurrence in the next year or a recurrence interval of 1 to 10 years.	

DRAFT

Risk Index Factor	Degree of Risk Level		Criteria	Factor Weight for Degree of Risk Level
	4	Highly Likely	91 to 100 percent probability of occurrence in the next year or a recurrence interval of less than 1 year.	
Spatial Extent	1	Limited	Less than 10% of the planning area could be impacted.	10%
	2	Small	10%–25% of the planning area could be impacted	
	3	Significant	25%–50% of the planning area could be impacted.	
	4	Extensive	50%–100% of the planning area could be impacted.	
Severity of Life/Property Impact	1	Negligible	Less than 5% of the affected area's critical and non-critical facilities and structures are damaged/destroyed. Only minor property damage and minimal disruption of life. Temporary shutdown of critical facilities.	30%
	2	Limited	More than 5% and less than 25% percent of property in the affected area is damaged/destroyed. Complete shutdown of critical facilities for more than one day but less than one week.	
	3	Critical	More than 25% and less than 50% of property in the affected area was damaged/destroyed. Complete shutdown of critical facilities for over a week but less than one month.	
	4	Catastrophic	Over 50% of critical and non-critical facilities and infrastructures in the affected area are damaged/destroyed. Complete shutdown of critical facilities for more than one month.	
Warning Time	1	Self-defined	More than 24 hours	10%
	2	Self-defined	12 to 24 hours.	
	3	Self-defined	6 to 12 hours.	
	4	Self-defined	Less than 6 hours.	
Duration	1	Brief	Up to 6 hours.	10%
	2	Intermediate	Up to one day.	
	3	Extended	Up to one week.	
	4	Prolonged	More than one week.	
Response Capacity	1	High	Significant resources and capability to respond to this kind of event; staff are trained, experienced, and ready.	10%
	2	Medium	Some resources and capability to respond to this kind of staff; some staff may be trained,	

DRAFT

Risk Index Factor	Degree of Risk Level		Criteria	Factor Weight for Degree of Risk Level
			experienced, and ready while others may need additional support.	
	3	Low	Limited resources and capability to respond to this kind of event; additional staff or staff training needed.	
	4	None	No resources and capability to respond this kind of event; additional outside support would be required.	

RISK FACTOR (RF) EQUATION

RF Value = [(Probability x 0.30) + (Spatial Extent x 0.10) + (Severity of Life/Property Impact x 0.30) + (Warning Time x 0.10) + (Duration x 0.10) + (Response Capacity x 0.10)]

Hazards with an RF value greater than or equal to 2.5 are considered high risk. Those with RF values of 2.0 to 2.4 are considered moderate risk hazards, and those with an RF value less than 2.0 are considered low risk. The highest possible RF value is 4.

Hazard Event History

Examining hazard event histories provides valuable insights to inform decision-making and help prioritize resources for risk prevention and response efforts. Table 5 lists the hazard events impacting the city of Bluffdale since the 2019 plan update, as recorded in the Storm Events Database from the National Centers for Environmental Information.

Table 5: History of Hazard Events in the City of Bluffdale[1]

Type of Hazard Event	FEMA Disaster #	Date(s)	Damage or Impacts	Description
Avalanche	N/A			The likelihood of avalanches impacting Bluffdale is extremely minimal. There are no adjacent mountains steep enough to be of concern and no historical avalanche activity in our community.
Drought	N/A			Nothing official declared on a city level

[1] UDOT = Utah Department of Transportation.

Type of Hazard Event	FEMA Disaster #	Date(s)	Damage or Impacts	Description
Earthquake	N/A	03/12/2020	No damage to the city reported	5.7 M earthquake with epicenter near Magna. There have been smaller earthquakes in Bluffdale, with 3.7 M in 2019.
Extreme Heat	N/A			
Extreme Cold	N/A			
Flooding		Spring 2023/2024	Individual homes experienced isolated flooding. Some limited damage to native areas on city property Major damage to detention pond/park. A storm took out the two UDOT ponds on Redwood just south of PRB. Both ponds had to be rebuilt—not our facility but was in Bluffdale.	2023/2024 spring runoff
Landslide/ Slope Failure		N/A		
Radon		Statewide	No specific information on the city. 55% of households in Bluffdale are at or above the WHO's mitigation threshold.	Ongoing education via Utah state agencies promoting testing.
Heavy Rain	N/A	08/03/2007	$45,000 property damage	Rainfall of 1.1 inches in 30 minutes inundated storm drains and resulted in many reports of basement flooding.
High Wind	N/A	03/26/2012	$20,000 property damage	63 mph in Bluffdale.
Lightning	N/A			
Severe Winter Weather	N/A	12/13/2015		Over 150 accidents or stranded motorists were reported in Salt Lake Valley, and at least 1,500 customers were without power at some point during the event, with

DRAFT

Type of Hazard Event	FEMA Disaster #	Date(s)	Damage or Impacts	Description
				many of those in Bluffdale and Draper
Tornado	N/A			
Wildfire	N/A	July 8, 2019	Oak Springs Utah Fire	Wildfire near Camp Williams and the NSA data center
Dam Failure	N/A			
Civil Disturbance	N/A			
Cyberattack	N/A			
Hazardous Materials Incident (Transportation & Fixed Facility)	N/A			
Public Health Epidemic/ Pandemic	N/A	2020	Worldwide pandemic	COVID-19
Terrorism				

National Flood Insurance Program Summary

The city of Bluffdale participates in the National Flood Insurance Program (NFIP). Table 6 displays statistics related to the NFIP. The city of Bluffdale does not participate in the Community Rating System.

Table 6: National Flood Insurance Program Status for the City of Bluffdale[2]

Initial FHBM Identified	Initial FIRM Identified	Current Effective Map Date	Adopted Date	Date Joined NFIP	Tribal
–	09/30/1987	11/19/2021	2021	09/30/1987	No

Table 7: National Flood Insurance Overview for the City of Bluffdale

Community ID	Number of Losses	Total Net Payment	Active Policies	Total Coverage
490247	1	$0	13	$4,215,000

The City Engineer is the designated Floodplain Administrator for the city of Bluffdale. The city's Flood Control Ordinance was adopted on 8/11/2009. The current effective FIRM is dated 11/19/2021. The Building Department is responsible for permitting, including inspecting structures. All development in the Special Flood Hazard Area is required to submit a Floodplain Development Permit, which clearly indicates

[2] FIRM = Flood Insurance Rate Map, FHBM = Flood Hazard Boundary Map

the flood zone and type of work (such as channel improvements, structural development, etc.). Development may not be used or occupied until the Building Department has completed a final inspection, ensuring compliance with applicable FEMA regulations. Substantial damage or substantial improvement determinations are made through the permitting process. When the permit request is submitted, there is the opportunity to indicate whether the structure meets these definitions prior to permit approval and will therefore be required to come into compliance with current code.

Jurisdiction-Specific Vulnerabilities and Impacts

Table 8 provides information on the vulnerable assets in the city of Bluffdale, including its critical facilities, highlighting the city's vulnerability to identified hazards. It also describes the potential impacts on the community arising from those vulnerabilities. By understanding the risks associated with these assets, local authorities can develop proactive strategies to mitigate vulnerabilities and ensure the safety and functionality of these important assets during hazard events. These data are invaluable for decision-making and prioritizing resources for emergency response and preparedness efforts, ultimately contributing to more effective risk management and greater resilience in the community.

Vulnerable assets in Bluffdale include the population of 18,168 and their residences. Critical facilities in Bluffdale include one EOC, two fire stations, one police station, two elementary schools, and four charter schools. Bluffdale City Park, Wardle Fields Regional Park, and Jordan Narrows Park are some of the primary outdoor recreation facilities, as well as the Jordan River Parkway multi-use trail. Bangerter Highway runs along the northern border of the city, I-15 follows much of the eastern border, and Porter Rockwell Blvd, Redwood Road, and 14600/14400 South are primary routes through the city. Although Mountain View Corridor is not within Bluffdale, it closely parallels the southwest border and is a significant route for the city.

Table 8: Jurisdiction-Specific Vulnerabilities and Impacts of the City of Bluffdale

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
Avalanche	People	*Vulnerability:* While Bluffdale is not traditionally known for high avalanche activity compared to Utah's ski regions, individuals who venture into the nearby Wasatch Mountain foothills may face avalanche risks, particularly during the winter months. *Impacts:* Residents who engage in winter recreation in adjacent higher-elevation areas without proper avalanche training, safety gear, or awareness of local conditions are especially vulnerable. Lack of local avalanche education and the assumption that Bluffdale is outside danger zones can contribute to complacency.
	Structures	*Vulnerability:* Structures located along the eastern edges of Bluffdale near hilly or elevated terrain, including those near natural drainages or slopes, may be exposed to avalanche risk if snow conditions and slope characteristics align unfavorably. *Impacts:* Homes with inadequate snow load design, especially in transitional zones between flat and elevated land, may be more susceptible to damage. While direct avalanche impacts are rare, snow

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		accumulation and runoff can exacerbate structural stress or secondary impacts such as localized flooding or debris flow.
	Economic Assets	*Vulnerability:* Economic disruption from avalanches in Bluffdale is generally indirect. However, if avalanche conditions or closures affect nearby recreational areas or transportation routes used by residents or local businesses, economic effects may occur. *Impacts:* Road closures can delay commutes, goods deliveries, or regional commerce. Infrastructure repairs and emergency responses can also lead to financial strain.
	Natural, Historic, and Cultural Resources	*Vulnerability:* The natural landscape in and around Bluffdale, including wildlife corridors and seasonal creeks, is vulnerable to avalanches and related hazards. *Impacts:* Landscapes could be impacted by snow slide events in nearby terrain. Erosion and debris flow following snowmelt or avalanches may degrade habitats and open space areas. Bluffdale's historic sites and community assets near natural slopes may face occasional risks if they are poorly maintained or not protected against heavy snowfall and runoff patterns.
	Critical Facilities and Infrastructure	*Vulnerability:* Bluffdale facilities have low vulnerability to avalanches, but there is some risk to infrastructure systems. *Impacts:* While major critical facilities in Bluffdale are not located in traditional avalanche paths, the city's proximity to hilly terrain necessitates caution. Infrastructure such as power lines, communication towers, and roads leading into or from neighboring elevated areas may be impacted by snow accumulation, secondary slides, or access restrictions during avalanche conditions in the surrounding region.
	Community Activities	*Vulnerability:* Outdoor recreation is vulnerable to avalanche risks. *Impacts:* Residents of Bluffdale frequently engage in outdoor activities in nearby mountainous areas. Winter hiking, snowshoeing, and snowmobiling in areas just outside city boundaries can pose avalanche risks, especially in Little Cottonwood Canyon, Big Cottonwood Canyon, or American Fork Canyon—popular destinations for Bluffdale residents. Seasonal events or recreation near snow-covered terrain should incorporate public awareness of avalanche risks.
Drought	People	*Vulnerability:* All Bluffdale residents are vulnerable to drought. *Impacts:* In Bluffdale, drought conditions can significantly affect daily life, especially for households relying on well water or those using outdoor cooling systems such as evaporative coolers. Residents who maintain gardens or orchards or raise small livestock are particularly impacted by water shortages. Extended drought periods can increase household utility costs, limit water for personal use, and pose challenges for vulnerable populations such as the elderly and lower-income residents.
	Structures	*Vulnerability:* All homes and other structures are vulnerable to drought impacts. *Vulnerability:* Prolonged drought may restrict Bluffdale's residential and commercial development, particularly where landscaping

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		requirements or cooling systems depend heavily on water availability. Homes and businesses may experience increased wear on heating, ventilation, and air-conditioning (HVAC) systems during heat waves, while building materials can degrade faster in extremely dry conditions.
	Economic Assets	*Vulnerability:* Agricultural businesses and outdoor markets are vulnerable to drought impacts. *Impacts:* Agricultural operations and small-scale farming in Bluffdale may suffer economic losses due to limited irrigation supply. Drought can also reduce public attendance at outdoor markets and city-sponsored events, affecting local vendor income and city-generated revenue from permits and fees.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Vegetation and habitats are vulnerable to increased wildfire risk due to drought conditions. *Impacts:* Drought can degrade Bluffdale's natural landscapes, leading to the loss of vegetation, increased wildfire risk, and disruption of local ecosystems. Maintaining stable internal conditions in historic and cultural buildings may become challenging, accelerating material deterioration and limiting public use.
	Critical Facilities and Infrastructure	*Vulnerability:* Bluffdale's water supply infrastructure, including storage tanks and distribution lines, is vulnerable to strain during drought conditions. *Impacts:* Water systems may become strained during drought. Fire suppression capacity may be reduced due to limited water availability, complicating wildfire response. Healthcare and public health services are impacted by potential effects on air and water quality, including increased dust and contaminants in reduced surface water supplies.
	Community Activities	*Vulnerability:* City parks and recreational facilities are vulnerable to drought-related restrictions. *Impacts:* Parks and similar amenities may face water use restrictions, leading to dry fields, closed splash pads, or reduced summer programming. Households may be asked to limit landscape watering or pool use, which could affect residents' quality of life and property maintenance.
Earthquake	People	*Vulnerability:* Earthquake risk along the Wasatch Front is high. All Bluffdale residents are vulnerable. *Impacts:* Bluffdale residents living in older or poorly retrofitted homes face heightened earthquake risks. Vulnerable groups may struggle to respond or evacuate effectively. Because Bluffdale is near the Wasatch Fault Zone, preparedness and structural safety are especially critical.
	Structures	*Vulnerability:* All structures in Bluffdale are vulnerable to earthquake damage. Central Bluffdale also has moderate to high liquefaction susceptibility, which increases the risk. *Impacts:* Buildings constructed before modern seismic codes are most at risk. Bluffdale's rapid development in recent decades means newer construction is often safer, but pockets of older buildings or improperly compacted soils may still be vulnerable. Homes built on alluvial fan

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		deposits or soft soils could experience amplified shaking during a quake.
	Economic Assets	*Vulnerability:* All commercial, retail, and other economic assets are vulnerable to earthquakes. *Impacts:* Commercial buildings, schools, and essential service facilities could suffer severe damage if not built to current seismic standards. Bluffdale's economic base could face serious disruption from building closures and infrastructure failure. Earthquakes may also halt construction or delay city development plans.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Natural features, historic structures, and cultural sites are vulnerable to earthquake damage. *Impacts:* Bluffdale's proximity to fault lines makes natural terrain features and ecosystems susceptible to landslides or shifts during earthquakes. Historic buildings and landmarks, especially those not retrofitted, may face collapse or irreversible damage. Cultural facilities such as event centers or churches may be vulnerable due to their older architectural styles and structural design limitations.
	Critical Facilities and Infrastructure	*Vulnerability:* All critical facilities, public buildings, and infrastructure are vulnerable to earthquakes. *Impacts:* Key public services are susceptible to seismic damage if not adequately fortified. Utility disruptions (e.g., broken water mains, downed power lines) can severely hinder response and recovery efforts. Critical roadways, especially bridges and underpasses, may also be at risk if not seismically reinforced.
	Community Activities	*Vulnerability:* Almost all day-to-day activities will likely be disrupted following a strong earthquake. *Impacts:* Public events, school functions, and civic gatherings in Bluffdale are vulnerable due to potential building damage or crowd safety concerns during seismic events. Closures and cancellations are likely. Earthquakes occurring during high-attendance activities could lead to mass casualties or strain emergency response, particularly if evacuation plans are unclear or buildings lack seismic protection.
Extreme Heat	People	*Vulnerability:* Extreme heat can occur throughout the entire city, so all populations are vulnerable. Some residents may face higher risks. *Impacts:* Extreme heat can cause heat-related illnesses such as dehydration, heat exhaustion and heat stroke, which can be deadly. Vulnerable populations during extreme heat include adults over 65, individuals with pre-existing health conditions, and young children, as they struggle to regulate body temperature. Socioeconomically disadvantaged individuals may lack access to cooling resources, while outdoor workers are at higher risk of heat-related illnesses due to physical labor without adequate hydration and rest. Extreme heat can hinder students' learning.
	Structures	*Vulnerability:* All structures are vulnerable to the effects of extreme heat. *Impacts:* Residential buildings with inadequate insulation and ventilation and commercial buildings lacking reflective roofing and proper shading may be vulnerable. Materials like metal and glass can

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		amplify heat retention, while areas with limited green space typically experience higher temperatures.
	Economic Assets	*Vulnerability:* Agriculture and other outdoor-related and landscaping businesses are vulnerable. *Impacts:* Agricultural operations can have reduced yields and higher water demand due to heat stress. The outdoor recreation industry may see decreased participation during heat waves, affecting local businesses that rely on visitors. In addition, the energy infrastructure could face strain from increased cooling demands, leading to outages.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Parks, plants, wildlife, and historic buildings are vulnerable to extreme heat. *Impacts:* Local plant species and wildlife habitats can suffer from drought conditions, leading to reduced biodiversity. Historic buildings may degrade due to high temperatures, causing materials to deteriorate and paint to peel. In addition, parks and recreational areas may experience overuse and risk their preservation, as residents seek relief from the heat.
	Critical Facilities and Infrastructure	*Vulnerability:* Clinics, city facilities, and transportation systems are vulnerable to extreme heat. *Impacts:* Healthcare facilities may experience increased demand because of heat-related medical issues, while schools can suffer from the strain on cooling resources. Transportation systems are at risk of damage, such as buckling roads and warped train tracks. Power grids may be strained by higher demands for electricity for cooling, leading to potential outages.
	Community Activities	*Vulnerability:* Outdoor events are vulnerable to disruption due to extreme heat conditions. *Impacts:* Activities like outdoor sports, fairs, and agricultural practices are vulnerable to extreme heat. These events can pose risks, particularly for participants such as youth athletes and elderly residents who may suffer from heat-related illnesses. In addition, high temperatures can stress crops, impacting local farming.
Extreme Cold	People	*Vulnerability:* Extreme cold events are frequent and can affect the entire city. All residents are potentially vulnerable; however, some groups may face higher risks. *Impacts:* In Bluffdale, extreme cold events pose particular challenges for older adults, especially those with limited mobility or chronic health conditions that can worsen in freezing temperatures. Children may be vulnerable if they do not have access to adequate winter gear, especially during sudden cold snaps. Residents experiencing economic hardship or housing insecurity may lack access to safe, heated environments during prolonged cold weather, increasing the risk of frostbite, hypothermia, or respiratory illness.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Structures	*Vulnerability:* Homes and buildings throughout Bluffdale are at risk, particularly those that are poorly insulated or built before modern energy standards. *Impacts:* Heat loss through unsealed windows or outdated heating systems can make it difficult to maintain safe indoor temperatures. Detached structures like sheds or garages, which are often unheated, are at risk for burst pipes and material damage. Bridges and road surfaces around the city can also become slick or cracked due to freeze–thaw cycles.
	Economic Assets	*Vulnerability:* Agricultural operations and other local businesses are at risk during extreme cold events. *Impacts:* Bluffdale's small-scale farms and agricultural operations may suffer crop and livestock losses if temperatures plunge unexpectedly or stay low for extended periods. Local businesses, particularly those reliant on transportation or utilities, can be affected by icy roads, equipment malfunctions, or power interruptions. Heating costs may rise for energy-intensive facilities, placing strain on operating budgets and reducing revenue during winter months.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Trees, wildlife, historic buildings, and cultural sites are susceptible to damage from extreme cold. *Impacts:* Cold snaps can damage Bluffdale's native vegetation, especially young trees and plants not adapted to sudden temperature drops. Local wildlife may also struggle to find food or shelter during these periods. Historic buildings and community landmarks may experience cracking, paint damage, or moisture intrusion due to freezing conditions. Public art, monuments, and open-air heritage displays are also vulnerable to weathering and ice-related wear.
	Critical Facilities and Infrastructure	*Vulnerability:* Water and sewer systems, roads, and power systems are vulnerable to extreme cold conditions. *Impacts:* Water and sewer systems in Bluffdale can be compromised by frozen pipes, especially in areas with older or exposed infrastructure. Icy conditions on roads increase the chance of traffic accidents and can delay emergency response. Local power infrastructure may be strained by increased demand for heat, and any service disruptions could pose safety risks for vulnerable residents. Buildings not designed for cold resilience may also face heating system breakdowns or fire hazards from unsafe alternative heat sources.
	Community Activities	*Vulnerability:* Community events can be impacted by extreme cold conditions. *Impacts:* Events like youth sports practices, winter markets, or public gatherings can be canceled or poorly attended during extreme cold, limiting social interaction and community connection. For families with limited heating or mobility, these conditions further isolate vulnerable individuals. Inadequately heated community spaces or poorly insulated schools and event venues can struggle to remain operational, reducing access to essential programs during winter.
Flooding (and Heavy Rain)	People	*Vulnerability:* Flooding primarily affects residents in low-lying areas near rivers and streams, especially during heavy rainfall or snowmelt.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		In Bluffdale, this is most likely in flood hazard zones along the Jordan River near the center of the city. *Impacts:* Individuals without reliable transportation may struggle to evacuate quickly, while low-income families often lack resources for flood-prevention measures. The elderly and those with disabilities may face mobility challenges, increasing their risk during emergencies. Overall, factors such as geographic location, economic status, and physical ability contribute to the community's varying levels of vulnerability to flooding.
	Structures	*Vulnerability:* Structures vulnerable to flooding primarily include those in low-lying areas or areas near the Jordan River. *Impacts:* Residential properties in floodplains and commercial buildings without proper drainage systems or flood-resistant designs face significant risks during heavy rain or snowmelt. Older structures may be more susceptible due to outdated construction standards. Overall, a combination of location and construction features contributes to their vulnerability to flooding.
	Economic Assets	*Vulnerability:* Commercial properties, especially retail centers and warehouses near the Jordan River or low-lying areas, are at high risk during heavy rainfall. *Impacts:* Residential developments in flood-prone zones can also suffer damage, impacting property values. Public infrastructure, such as roads and utilities, may experience disruptions, leading to costly repairs. Agricultural land can be affected by excess water, reducing crop yields.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Habitats, historic sites, and cultural sites located near flood zones are at risk. *Impacts:* Natural areas like wetlands and streams are at risk of habitat destruction, while historic sites and landmarks may sustain structural damage. Cultural resources, such as parks and public spaces, can become unusable, affecting community events. Factors contributing to their vulnerability include inadequate flood management, urban development that alters water flow, and the increasing frequency of extreme weather events due to climate change.
	Critical Facilities and Infrastructure	*Vulnerability:* No critical facilities were identified within the 1% or 0.2% flood zones. Infrastructure, however, remains vulnerable. *Impacts:* Although schools and emergency response facilities are not in flood zones, they may be impacted indirectly by disruptions to transportation or power systems. Flooding can disrupt emergency services, require schools to evacuate, block transportation routes, and isolate communities. In addition, inadequate drainage systems and urban development encroaching on floodplains increase these risks.
	Community Activities	*Vulnerability:* Outdoor events located near flood zones are susceptible to flooding. *Impacts:* Due to the area's geography and infrastructure, outdoor events, sports, and farmers' markets are vulnerable to flooding. Parks and open spaces can quickly become inundated during heavy rainfall or rapid snowmelt. Residential neighborhoods near rivers, roads, and bridges are at risk of flash floods, which can disrupt transportation and emergency services.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
Landslide/ Slope Failure	People	*Vulnerability:* Residents on steep slopes or near unstable geological formations are most vulnerable to landslides and slope failures. In Bluffdale, this could occur in the narrows along the Jordan River. *Impacts:* Residents may be at risk from injury or displacement from homes due to landslides. Their risk is heightened by inadequate drainage systems, loose soil conditions due to heavy rainfall or rapid snowmelt, and older structures not designed for such events. A lack of awareness about the signs of impending landslides, along with limited resources for hazard monitoring and emergency preparedness, further increases their susceptibility.
	Structures	*Vulnerability:* Homes, commercial buildings, roads and bridges on or near steep slopes in southern Bluffdale may be vulnerable because of factors like loose soil or rock geology, heavy rainfall, and poor drainage systems. In addition, inadequate construction practices and a lack of erosion control measures can increase the risk of slope failures, particularly for properties not designed with their environmental context in mind.
	Economic Assets	*Vulnerability:* Businesses near landslide areas are at risk. *Impacts:* Businesses could be damaged by landslides or may lose business if roads are blocked or power is disrupted. These assets are at risk due to heavy rainfall, poor drainage systems, and development practices that destabilize slopes.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Natural terrain, ecosystems, wildlife, and water quality are at risk. Historic sites are also vulnerable. *Impacts:* Steep terrain can destabilize local ecosystems, impacting wildlife habitats and water quality. Historic sites, including early settlement structures, face soil erosion and foundation destabilization. In addition, community parks and significant buildings may be damaged during slope failures, threatening the local heritage.
	Critical Facilities and Infrastructure	*Vulnerability:* Roadways and essential services like water supply and power lines may be at risk. Their vulnerability is heightened by steep terrain, unstable soil, heavy rainfall, and poor drainage. In addition, a lack of vegetation can increase the risk of erosion. *Impacts:* Utilities crossing sloped terrain face potential service interruptions or structural compromise from slope failure. Steep areas without robust vegetation or engineered slope protections are more prone to runoff and soil displacement during spring melts or heavy precipitation. Emergency response access can be impeded by road damage or blocked routes following a slide.
	Community Activities	Residential developments on steep hillsides, infrastructure projects like roads and bridges, and recreational activities on sloped trails are vulnerable to landslides and slope failures.
Radon	People	*Vulnerability:* 49% of homes tested in Bluffdale contained dangerous levels of radon. In Bluffdale, residents living in homes with basements or slab-on-grade foundations are more likely to be exposed to radon, especially in older neighborhoods. *Impacts:* Prolonged exposure to high levels of radon is a leading cause of lung cancer in non-smokers. Families with young children or aging relatives may face higher health risks due to prolonged

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		exposure. Residents who are unaware of radon testing and mitigation options may unknowingly live in high-risk environments.
	Structures	*Vulnerability:* Homes and buildings with below-ground levels are at particular risk of radon infiltration, especially if the soil underneath contains natural uranium. Cracks in foundations, gaps around pipes, and poor ventilation increase the potential for radon buildup. Older homes without proper sealing or passive venting systems are more vulnerable. *Impacts:* Weaknesses, cracks, and other vulnerabilities in structures can allow radon to enter and accumulate within them, exposing occupants to health impacts.
	Economic Assets	*Vulnerability:* Property values and costs to businesses are affected by radon presence. *Impacts:* Radon presence in residential and commercial buildings can affect real estate values and complicate property sales in Bluffdale. Businesses operating in basement spaces may face liability concerns if radon levels are not addressed. Costs associated with testing and mitigation can place a financial burden on property owners and impact investment appeal.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Exposure to radon at historic or cultural sites is a concern. *Impacts:* Radon accumulation in soil and groundwater is a concern in parts of Bluffdale with known geological conditions, particularly areas with higher natural uranium content. Historic structures constructed with stone or concrete may retain radon indoors, especially if sealed tightly for preservation. Cultural venues and community centers housed in older buildings may inadvertently expose staff and visitors to elevated radon levels.
	Critical Facilities and Infrastructure	*Vulnerability:* Bluffdale schools, health clinics, and municipal buildings with basements may face radon exposure without adequate ventilation systems. *Impacts:* Facilities built before awareness of radon hazards may not have been tested or mitigated. If undetected, this invisible threat can pose long-term health risks to employees and residents who spend extended time in these environments.
	Community Activities	*Vulnerability:* Indoor gathering spaces are at risk of radon exposure. *Impacts:* Indoor events held in basements or lower levels of homes, schools, or community centers may unknowingly expose participants to radon. Without regular monitoring, high radon concentrations can become a hidden public health issue, particularly in community meeting spaces or daycare facilities with poor airflow.
High Wind	People	*Vulnerability:* All Bluffdale residents are potentially vulnerable to high wind, which can affect the entire city. *Impacts:* Wind can cause injury or death from blowing debris or falling tree limbs. Residents of Bluffdale living in mobile or manufactured homes, or those without basements, face elevated risk during high wind events. Outdoor workers, including utility crews and construction personnel, are particularly vulnerable when storms strike without

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		warning. Older adults or individuals with mobility issues may find it difficult to seek shelter quickly.
	Structures	*Vulnerability:* Structures throughout Bluffdale are potentially exposed to damage from high wind. Single-story homes, commercial buildings, and agricultural facilities such as barns may be at risk. *Impacts:* Homes with aging roofs, large windows, or poorly anchored structures are susceptible to wind damage. Bluffdale's open spaces and limited tree cover in newer developments allow wind to accelerate, increasing exposure. Outbuildings such as barns, sheds, and garages can be heavily damaged or destroyed during windstorms.
	Economic Assets	*Vulnerability:* Agricultural businesses and business exteriors are vulnerable to wind damage. *Impacts:* Agricultural operations in Bluffdale, including equipment sheds and livestock enclosures, are at risk from structural failure during strong winds. Businesses with exterior signs, awnings, or rooftop HVAC systems may face costly repairs. Wind can disrupt supply chains and cause short-term closures if power lines or access roads are affected.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Trees, open spaces, and historic and cultural sites are at risk. *Impacts:* Strong winds can uproot Bluffdale's trees, damage green spaces, and strip topsoil from agricultural lands. Historic buildings may suffer damage to roofs or facades, especially if constructed with older materials. Public art installations or outdoor monuments in exposed areas may be at risk from windborne debris or direct impacts.
	Critical Facilities and Infrastructure	*Vulnerability:* Power, communication, and transportation systems are vulnerable to high winds. *Impacts:* High winds can compromise Bluffdale's power grid, damage communications towers, and bring down utility poles, leading to outages. Bridges and elevated roadways may become unsafe for travel, while emergency services could be delayed by debris-blocked routes. Structures not built to wind-resistant standards may struggle to remain operational during severe events.
	Community Activities	*Vulnerability:* Outdoor events are vulnerable to strong winds. *Impacts:* Parades, sports tournaments, and seasonal markets are at high risk when strong winds occur. Tents and stages may collapse, and loose items can become hazardous projectiles. Public parks and recreation areas may need to close temporarily due to tree damage or debris cleanup.
Lightning	People	*Vulnerability:* Lightning can occur anywhere in Bluffdale, and all residents could be exposed. People who participate in golfing, swimming, and other outdoor sports and recreation activities are exposed to lightning risk. *Impacts:* Outdoor recreationists in Bluffdale are vulnerable to lightning during summer storms. Youth sports teams and spectators at games may not have immediate access to shelter. Residents without weather alert systems or knowledge of lightning safety may delay taking precautions, thereby increasing risk.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Structures	*Vulnerability:* Structures anywhere in Bluffdale are vulnerable to lightning. *Impacts:* Lightning poses a threat to tall buildings, church steeples, communication towers, and homes near tall trees. Structures without grounding systems or surge protection are more likely to suffer fire or electrical damage. In rural parts of Bluffdale, barns and metal-roofed buildings are particularly at risk.
	Economic Assets	*Vulnerability:* Businesses and agricultural structures are vulnerable to lightning strikes. *Impacts:* Businesses may lose inventory or suffer data loss from outages. Farms and greenhouses may also be affected if electrical systems fail due to lightning strikes.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Trees, parks, and historic or cultural sites are susceptible to lightning damage. *Impacts:* Lightning can damage mature trees in public parks, which are valued both ecologically and aesthetically. Bluffdale's historic sites and wood-framed structures may ignite if struck directly. Outdoor sculptures and monuments made of conductive materials face the risk of heat or impact damage during thunderstorms.
	Critical Facilities and Infrastructure	*Vulnerability:* Critical facilities and infrastructure such as water pumps, relay stations, and electronic equipment hubs are at risk. *Impacts:* Critical facilities and infrastructure can be damaged by lightning-induced surges. Communications towers, power substations, and utility poles can attract lightning which can contribute to cascading system failures. Schools and medical facilities without proper surge protection or grounding could lose essential systems during a strike. Power disruptions could impair emergency services' response time.
	Community Activities	*Vulnerability:* Outdoor events are vulnerable to lightning storms. *Impacts:* Local events held outdoors, especially in parks and athletic fields, become unsafe during lightning storms. Attendees may be caught in open areas without shelter, and event cancellations can strain scheduling and reduce participation. Water-based activities, such as kayaking or fishing on nearby Jordan River tributaries, increase lightning danger.
Severe Winter Weather	People	*Vulnerability:* Severe winter weather can affect the entire city and all residents are potentially vulnerable. *Impacts:* Residents of Bluffdale face health and safety risks when snowstorms or ice events occur. Seniors and individuals with disabilities may struggle with mobility during icy conditions. Those without access to reliable heat or snow removal equipment are particularly vulnerable, especially in older neighborhoods with limited sidewalk maintenance.
	Structures	*Vulnerability:* All structures are vulnerable, older homes may have a higher risk. *Impacts:* Buildings with flat roofs or poor insulation are susceptible to roof collapse and interior damage from ice dams. Older homes in Bluffdale may have drafty windows and outdated heating systems, leading to frozen pipes or fire hazards from alternative heating

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		methods. Detached garages and sheds may not withstand heavy snow loads.
	Economic Assets	*Vulnerability:* All local businesses are at risk during severe winter weather. *Impacts:* Local businesses may close or reduce hours during winter storms, reducing income and limiting access to goods and services. The construction and transportation sectors are especially impacted, with delays and equipment damage due to snow or ice. Farm operations may face losses if livestock or crops are exposed to prolonged freezing.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Parks, trees, and historic and cultural sites are at risk during severe winter weather. *Impacts:* Heavy snow and ice can stress trees and vegetation in Bluffdale's parks and open spaces, leading to limb breakage or plant death. Historic buildings face structural strain from snow buildup or water intrusion. Public art installations and community spaces may become inaccessible or sustain weather-related wear.
	Critical Facilities and Infrastructure	*Vulnerability:* Roadways, bridges, and utility infrastructure are vulnerable during snow and ice events. *Impacts:* Delayed plowing or salting can hinder emergency access. Public buildings—such as schools and city offices—may temporarily shut down due to power outages or heating failures. Communication systems may also be affected if ice damages towers or lines.
	Community Activities	*Vulnerability:* Community events, school operations, and commuting delays are vulnerable to disruption. *Impacts:* Snowstorms can cancel or limit attendance at public events, school functions, or community meetings. Travel becomes hazardous, and public transit or paratransit may be delayed. Recreation centers and parks may also close temporarily, reducing community engagement during winter months.
Tornado	People	*Vulnerability:* Although tornadoes are relatively rare in Bluffdale, when they do occur, they pose a serious risk to all residents. *Impacts:* Mobile home residents and those in older buildings without storm shelters are at risk of serious injury. Children, the elderly, and individuals with limited mobility may struggle to reach safe areas quickly. Residents lacking awareness of warning systems or shelter locations are at higher risk.
	Structures	*Vulnerability:* Structures with poor anchoring or older construction are vulnerable to tornado damage. *Impacts:* All structures could sustain heavy damage from a tornado. Roofs can be torn from homes, windows broken, and walls damaged and compromised. Bluffdale homes without basements or storm shelters offer limited protection to residents. Warehouses and commercial structures with wide-span roofs may be especially susceptible to collapse.
	Economic Assets	*Vulnerability:* All businesses are vulnerable to tornado damage. *Impacts:* Tornadoes can cause economic losses in Bluffdale through damage to businesses and interruption of economic activity. Retail buildings, warehouses, hotels, restaurants, office complexes, and

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		other businesses can all experience operational downtime or closures due to structural damage or interruption of power or communication systems. Commercial buildings with glass storefronts or weak roof structures may suffer severe losses. Utilities may be disrupted, and road closures can limit economic activity, especially in retail and logistics. Recovery costs can be high for uninsured or underinsured properties.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Trees, parks, open spaces, and historic or cultural sites are at risk during tornadoes. *Impacts:* Tree damage, flooding, and debris can disrupt Bluffdale's open spaces and trail systems. Tornado winds can destroy fragile historic buildings not built to modern standards. Community landmarks or cultural facilities may be temporarily closed or damaged, reducing access and preservation.
	Critical Facilities and Infrastructure	*Vulnerability:* Public buildings and infrastructure are vulnerable to tornado damage. *Impacts:* Schools, clinics, and public buildings not designed for extreme wind events may be unsafe during a tornado. Damage to roads, water systems, or electrical grids can interrupt vital services. Bluffdale's emergency facilities must remain operational, yet could be threatened if tornado paths shift unexpectedly toward the core community.
	Community Activities	*Vulnerability:* All outdoor events are susceptible to tornado impacts. *Impacts:* Outdoor markets, concerts, or sports games may face sudden cancellations or evacuation challenges during tornado warnings. Temporary event structures like tents or stages offer little protection and can collapse or become airborne. Schools and recreation centers must have tornado plans in place to protect students and attendees.
Wildfire	People	*Vulnerability:* Bluffdale retains a slightly rural feel, with developments interspersed with open space. As a result, much of southern and southeast Bluffdale has moderate wildfire risk. Residents close to these areas are most at risk, but areas of risk are found throughout the city, and all residents are vulnerable. *Impacts:* Wildfire can cause injury or death if individuals are unable to get away from spreading fire. Residents can also be displaced from homes due to evacuation and may require public shelter. Residents near the wildland–urban interface (WUI), individuals with physical disabilities or health issues who may struggle to evacuate, and low-income families lacking resources for fire safety measures may be vulnerable. Older adults might have reduced mobility, making them more dependent on others for assistance. Poor air quality from wildfire smoke can affect all residents.
	Structures	*Vulnerability:* Many homes throughout Bluffdale are vulnerable. *Impacts:* Residential homes, especially those made of wood or located in heavily vegetated areas may be vulnerable. Properties near the WUI are at higher risk due to surrounding flammable vegetation. Inadequate defensible space, such as insufficient clearing of dry grass and shrubs, increases susceptibility. Residences are also susceptible to embers, making them vulnerable during dry conditions and high

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		winds. Roofs made of combustible materials and buildings that lack fire-resistant features are particularly at risk during wildfire events.
	Economic Assets	*Vulnerability:* Businesses and commercial assets near the WUI are at risk. *Impacts:* Commercial assets, such as retail centers close to forested regions, can suffer damage from flames and smoke, affecting the local economy. Agricultural lands are also susceptible, as wildfires can destroy crops and livestock, leading to financial losses. Vital infrastructure, such as power lines and water pipelines, can be disrupted, causing further economic repercussions. These vulnerabilities are heightened by dry conditions and high winds, which can facilitate the spread of fires.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Open spaces and natural resources are at risk. Historic and cultural sites are also vulnerable. *Impacts:* Natural resources like forests and grasslands are at risk because dry vegetation and accumulated brush can easily ignite. Historic sites made of wood and cultural landmarks can also be affected, particularly when located near wildland areas. The increasing frequency of drought and extreme heat, exacerbated by climate change, heightens these vulnerabilities. In addition, urban development encroaching on wildland areas increases the risk to these essential resources.
	Critical Facilities and Infrastructure	*Vulnerability:* Schools, clinics, emergency services, and utilities, particularly those near wooded areas, may be vulnerable to wildfires. *Impacts:* Utilities like power lines and gas pipelines are also at risk, as sparks or falling trees can ignite fires. Residential neighborhoods adjacent to natural landscapes are particularly susceptible to embers, making them vulnerable during dry conditions and high winds.
	Community Activities	*Vulnerability:* Outdoor events and recreational activities are vulnerable to wildfires. *Impacts:* Outdoor events like festivals and sports, especially during hot, windy conditions may experience increased risk. Recreational activities, such as hiking and camping near wooded areas, also pose risks from open flames or sparks. In addition, landscaping with dry grasses and shrubs increases susceptibility during fire season, putting local infrastructure, such as schools and neighborhoods, at risk.
Dam Failure	People	*Vulnerability:* A large area in Bluffdale is vulnerable to dam failure due to the proximity of the Jordan Valley Water Purification Reservoirs, 3200 West Pond, Point of the Mountain Raw Water Reservoir, and Black Ridge Reservoir. Residents living in these areas are most at risk if a dam were to breach upstream. *Impacts:* These dams are rated as high hazard, meaning that dam failure can result in loss of life. Fast-moving waters can sweep away individuals caught in their path. Residents may be displaced from homes and require public shelter. In Bluffdale, families with small children, seniors, and individuals with limited mobility may find it more difficult to evacuate quickly during an emergency. Households experiencing financial hardship may lack access to transportation or early warning systems, which increases their vulnerability during a sudden dam-related flood.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Structures	*Vulnerability:* Homes and businesses located within dam inundation boundaries are particularly vulnerable to damage from a potential dam failure. *Impacts:* Structures within inundation areas could sustain serious damage in the event of a dam failure. Critical structures such as fire stations, medical clinics, and public schools may be impacted by fast-moving water. Key vulnerabilities include aging development built without consideration for dam break scenarios and insufficient local flood protection systems.
	Economic Assets	*Vulnerability:* Residential and commercial properties downstream face significant flood risks, leading to property damage and economic loss. Agricultural assets, including farmland and livestock, are also highly vulnerable, especially if irrigation systems are compromised. *Impacts:* Businesses located in flood-prone areas may suffer significant losses in equipment, inventory, and income. Bluffdale's agricultural operations are especially sensitive to water infrastructure failures, which can destroy crops or contaminate soils. Local industries that depend on a steady water supply or distribution, including processing or light manufacturing, may face operational shutdowns following a dam incident.
	Natural, Historic, and Cultural Resources	Flooding caused by a dam breach could damage or destroy local riparian habitats, disrupt ecosystems along the Jordan River, and lead to erosion in wetlands and open space areas. Bluffdale's historic canal systems, relics of the area's early agricultural development, may also be at risk. Community gathering places, such as neighborhood parks or historical markers near waterways, may experience flood damage, leading to reduced public access and costly restoration needs.
	Critical Facilities and Infrastructure	*Impacts:* One fire station, one EOC, one police station, and one school are in potential inundation areas. Utilities and other infrastructure are also vulnerable. *Impacts:* Essential services, including Bluffdale's water systems, roads, and communication networks, are highly vulnerable if a dam breach floods the service corridors or power infrastructure. Major roads like Redwood Road and Bangerter Highway, as well as nearby utility lines and service infrastructure, could be severely disrupted by flooding. Schools and healthcare facilities located within flood pathways may need rapid evacuation and could sustain long-term operational damage. A failure event could also disable emergency response routes and delay critical services due to road washouts or structural damage to bridges.
	Community Activities	*Vulnerability:* Community events and recreational activities are at risk from potential flooding caused by a dam breach. *Impacts:* Recreational activities centered around local water bodies may be at direct risk during a dam emergency. Community festivals or events held near flood-prone open spaces could face cancellations or create life-threatening conditions if water levels rise unexpectedly. In Bluffdale, the sudden nature of dam failure presents a challenge for community preparedness, especially when key recreational or transportation areas fall within the downstream hazard zones.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
Civil Disturbance	People	Low-income individuals may lack the resources for safety, while the elderly or disabled may struggle to navigate emergencies. Young people, particularly teenagers, may be drawn into unrest, influenced by social dynamics. In addition, marginalized individuals may feel targeted or compelled to participate. A lack of community cohesion and trust in authorities can further heighten tensions.
	Structures	Government buildings, commercial properties, and infrastructure, such as bridges and transportation hubs may be vulnerable. Government buildings may be targeted for their symbolic authority, while retail stores can attract crowds during protests. Residential neighborhoods also can be affected, especially in areas with heightened tensions. The vulnerability of these structures stems from their visibility and importance to the community, combined with factors such as location and ongoing social issues.
	Economic Assets	Retail establishments, especially shopping centers, are at risk as they often become focal points for protests. Transportation systems can be disrupted by blockades, hindering access to services. Financial institutions may face vandalism or theft, while critical service providers, such as hospitals, could experience strain during unrest. Several economic assets are vulnerable to civil disturbances, primarily due to their visibility and reliance on foot traffic.
	Natural, Historic, and Cultural Resources	Parks and open spaces may suffer from vandalism or destruction during uncontrolled events. Historic sites can become targets, as they symbolize authority or cultural significance. Cultural resources, such as community centers and places of worship, also may be affected, as they play a vital role in community identity. Their vulnerability lies in the potential for damage during protests.
	Critical Facilities and Infrastructure	Governmental buildings, schools, and healthcare facilities may be at risk, since they often symbolize authority and serve as community hubs, making them targets during unrest. Utility infrastructure, such as water and power facilities, is also at risk of disruption. Its visibility and essential services contribute to its vulnerability during civil disturbances.
	Community Activities	Public demonstrations, parades, and local government meetings are particularly vulnerable to civil disturbances. These events often attract large crowds and can become tense, especially around contentious social or political issues. Factors such as the local demographic, economic conditions, and recent events can heighten these vulnerabilities, making it easier for conflicts to arise during passionate public gatherings.
Cyberattack	People	Older adults often lack familiarity with technology and online security, making them easy targets for phishing scams. Individuals engaging in online banking or shopping without strong security measures also face heightened risks. Families with children may be less vigilant about internet safety, allowing cybercriminals to exploit personal information. In addition, small business owners without robust cybersecurity practices are prime targets for attacks that can disrupt operations.
	Structures	Critical infrastructure, such as power plants, water treatment facilities, and transportation systems, often lack robust cybersecurity measures. Commercial businesses, especially financial institutions and

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		healthcare providers, also are at risk due to weaker data protection and employee training. Educational institutions may be vulnerable because of limited funding for cybersecurity and outdated software. Obsolete technology and insufficient training enhance the susceptibility of these structures to cyber threats.
	Economic Assets	Financial institutions, such as banks and credit unions, are at risk of data theft and service disruption. Small and medium-sized businesses often lack robust cybersecurity measures, making them attractive targets. In addition, local government agencies and critical infrastructure, such as water treatment facilities, might have outdated security protocols, posing threats to public safety. The rise of remote work further exacerbates vulnerabilities, as employees accessing networks from home can unintentionally expose systems to risks. Overall, the combination of outdated technology and insufficient cybersecurity practices increases the vulnerability of an area's economic assets.
	Natural, Historic, and Cultural Resources	Natural resources like water management systems and wildlife databases can be compromised, disrupting ecosystems. Historic sites and museums that digitize collections are at risk of losing valuable artifacts and data. In addition, cultural organizations managing events may face threats if their systems lack adequate security. The limited resources of smaller organizations further increase this vulnerability
	Critical Facilities and Infrastructure	Energy and utility services, such as electricity and water systems, which often rely on outdated technology, may be vulnerable. Transportation infrastructure, such as traffic management and public transit, is also at risk due to networked systems. Healthcare facilities that use electronic records and connected medical devices face vulnerabilities that can compromise patient safety.
	Community Activities	Online registration for events, local government services, and educational programs that rely on digital tools may be targeted due to inadequate security measures, outdated software, and insufficient staff training.
Hazardous Materials Incident (Transporta-tion & Fixed Facility)	People	Individuals with pre-existing health conditions, such as respiratory issues, and the elderly are at higher risk due to their compromised health. Children also are more susceptible. Those living near industrial areas or transport routes for hazardous materials face increased exposure risk, while low-income families may lack resources and information to effectively prepare for incidents.
	Structures	Industrial facilities, such as manufacturing plants and warehouses, often store hazardous chemicals which may leak. Residential buildings, schools, and hospitals also are at risk, particularly if located along transportation routes for hazardous materials. Older buildings may lack modern safety features, increasing their vulnerability.
	Economic Assets	Industrial facilities, transportation infrastructure, and nearby commercial properties may be affected. Industrial facilities handling chemicals are at risk of spills or leaks, while roads and railways used for transporting hazardous materials can lead to accidents and contamination. In addition, nearby commercial and residential areas face potential health risks and economic losses.

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Natural, Historic, and Cultural Resources	Waterways and habitats are vulnerable to hazardous materials incidents, which can disrupt ecosystems. Historic sites and structures may suffer damage from toxic exposure, leading to degradation over time. In addition, cultural landmarks risk losing their significance due to contamination events. The proximity of these resources to industrial areas or transport routes exacerbates their risk.
	Critical Facilities and Infrastructure	Chemical manufacturing plants, waste treatment facilities, and transportation networks, such as highways and railroads may be at risk. Their vulnerability stems from factors such as proximity to residential areas, aging infrastructure, and inadequate safety measures. Natural hazards, such as flooding and earthquakes, can further increase risks by damaging containment systems.
	Community Activities	Local markets, school events, and outdoor gatherings are vulnerable to hazardous materials incidents if they are near industrial zones and transport corridors. This risk is heightened by inadequate emergency preparedness, lack of public awareness, and the potential for spills during transport. Large crowds at events can complicate evacuation efforts, increasing the risks for participants and nearby residents.
Public Health Epidemic/ Pandemic	People	Individuals with pre-existing health conditions like asthma and heart disease and adults over 65 may be vulnerable. Low-income families may struggle to access healthcare and vaccinations, increasing their risk. Marginalized communities with limited access to information and those living in high-density conditions also are at greater risk due to the rapid spread of diseases and the challenges in implementing preventive measures.
	Structures	Several structures are vulnerable to public health epidemics or pandemics, particularly due to their ability to facilitate the spread of disease. High-density residential areas, such as apartment complexes, are at risk, as close living quarters can lead to faster transmission. Public gathering spaces, such as schools and community centers, also pose significant threats because large groups are in confined spaces. Healthcare facilities can become hotspots for infections if infection control measures are insufficient. In addition, workplaces with high foot traffic, such as retail stores, contribute to vulnerability.
	Economic Assets	Small businesses in retail, hospitality, and food service are particularly vulnerable to public health epidemics or pandemics. These sectors face risks from fluctuating consumer demand and potential operational restrictions. The tourism industry also is affected, as travelers may avoid high-risk areas. Healthcare facilities can become overwhelmed, straining resources and impacting operations. In addition, local supply chains may experience disruptions, leading to shortages and inflation. Overall, the direct effects of illness, along with prolonged shutdowns and consumer hesitance, leave these economic assets exposed to significant downturns.
	Natural, Historic, and Cultural Resources	Natural resources like wildlife and ecosystems can be disrupted by increased human activity, raising the risk of zoonotic diseases. Historic sites may deteriorate due to reduced visitor access and funding, while cultural resources, such as community events, face cancelations, impacting social connections.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Critical Facilities and Infrastructure	Public health epidemic or pandemic incidents can affect healthcare facilities, nursing homes, public transportation systems, schools, and food supply chains. Hospitals and clinics may become overwhelmed with patients, while vulnerable populations in nursing homes are at higher risk. Public transportation can facilitate the spread of disease, and schools gather large groups, thereby increasing transmission potential. These facilities often lack adequate resources, including medical supplies and testing capabilities, making them more susceptible to the impacts of a health crisis.
	Community Activities	Large gatherings like festivals and sporting events can facilitate the rapid spread of diseases due to close contact. Public transportation also is at risk, as it serves many people in confined spaces. Schools and childcare facilities are particularly susceptible, given that children can easily transmit infections. In addition, food-related events, such as farmers' markets, can pose risks if hygiene practices are not followed. The interconnectedness of community members and varying adherence to health guidelines further exacerbate these vulnerabilities.
Terrorism	People	Young children and newcomers may lack awareness of potential threats, while the elderly and individuals with disabilities may struggle to respond quickly in emergencies. Marginalized communities often face bias, making them more susceptible to targeting. In addition, those with lower socioeconomic status may lack access to security measures and emergency preparedness resources.
	Structures	Government buildings, transportation hubs, commercial centers, and public spaces are particularly vulnerable to terrorism incidents. Government buildings are symbolic targets, while transportation hubs and commercial centers are attractive due to their potential for high casualties and crowd presence. Public spaces also are at risk due to their open nature and lack of security. Their vulnerability is heightened by inadequate security measures, high occupancy rates, and their locations in densely populated areas, which can amplify the impact of incidents.
	Economic Assets	Infrastructure, commercial establishments, and community facilities may be vulnerable. Critical infrastructure, such as transportation networks and power grids, could disrupt the economy if targeted. Commercial establishments, especially those with high foot traffic, and community facilities like schools and hospitals also are at risk, as they can provoke widespread concern and disruption. Their accessibility and interconnectivity increase vulnerability, meaning that damage to one asset can have a broader economic impact and hinder recovery efforts.
	Natural, Historic, and Cultural Resources	Natural resources like water supplies and parks could be targeted for their significance to the community. Historic sites and cultural resources, such as museums or community centers, also are at risk due to their accessibility and importance to local identity. Their vulnerability is often heightened by inadequate security measures.
	Critical Facilities and Infrastructure	Public transportation systems, healthcare facilities, schools, and utility services like water and power plants may be affected. Their vulnerability arises from high accessibility and the potential impact of

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		an attack, as crowded transportation and public spaces can lead to mass casualties and panic. Attacking utility services could disrupt the city's essential functions, creating chaos.
	Community Activities	Festivals, parades, and sporting events are particularly vulnerable to terrorism incidents. These events attract large crowds, making it easier for perpetrators to inflict harm and instill fear. In addition, community centers and places of worship serve as social hubs, increasing their risk. Factors such as limited security measures and open access to public spaces, contribute to this vulnerability.

Jurisdiction-Specific Changes in Vulnerability

Hazard events can impact communities, infrastructures, and ecosystems. The severity of these impacts can be influenced by climate change, population patterns, and land use development. Understanding these factors is crucial for the city of Bluffdale to develop a resilient community and minimize the impacts of hazards. Table 9 displays the changes within the city and the related effects of each hazard on the city of Bluffdale.

DRAFT

Table 9: Jurisdiction-Specific Changes in Vulnerability in the City of Bluffdale

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
Avalanche	Higher temperatures can lead to more rain, destabilizing snowpack and increasing the risk of wet avalanches. In addition, changes in snowfall can cause denser snow layering on slopes, making them more prone to sliding.	Avalanches can influence population patterns by deterring people from moving to or remaining in high-risk areas, leading to decreased density in these locations. The threat of avalanches prompts many to seek safer environments in urban or lower-risk regions. In addition, when avalanches occur, they can disrupt infrastructure, causing residents to relocate.	Avalanche risk is low in Bluffdale and the increased development since the previous hazard mitigation plan does not change that risk level.	Decreased
Drought	Climate change affects drought incidents by altering precipitation patterns and increasing temperatures. Warmer weather can lead to longer dry periods and more severe droughts, while changes in rainfall can reduce snowpack in nearby mountains, crucial for summer water supply. Higher temperatures also increase evaporation rates, further straining local water resources.	Drought can significantly influence population patterns by impacting economic opportunities and the quality of life. Water scarcity often leads to reduced agricultural productivity, prompting residents to migrate to areas with more stable job prospects. Increased water costs can make living less affordable, driving some residents away. Conversely, efforts to address drought, such as sustainable development or improved water management, may attract newcomers, resulting in changes in the community's demographic composition over time.	The city of Bluffdale has seen significant residential, commercial, and infrastructure growth to keep up with population growth since the previous plan update. This increase in development can exacerbate drought by increasing water demand from new homes and commercial ventures.	Increased
Earthquake	Rising temperatures can lead to glacial melting, which affects pressure on tectonic plates and may trigger seismic activity	Earthquakes can significantly alter population patterns by prompting residents to leave for safer areas after a seismic event.	New residential, commercial, and infrastructure development has led to more facilities that could be impacted by an	Stayed the same

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	through isostatic rebound. In addition, increased rainfall and flooding can erode soils, weakening structural integrity and heightening vulnerability during earthquakes. Although the direct links between climate change and earthquakes are still under investigation, environmental effects may impact the region's seismic risk.	This migration can lead to changes in population density and attract new residents and businesses during the rebuilding process. The perception of the area as a safe place to live may shift, impacting long-term demographics, as some residents return to rebuild while others relocate permanently.	earthquake. However, these facilities have been built to higher standards than earlier construction, meaning that they are less likely to be damaged by small- or medium-scale earthquakes.	
Extreme Heat	Climate change significantly impacts extreme heat by increasing the frequency and intensity of heat waves. Rising global temperatures lead to longer and hotter summers, affecting residents and local infrastructure while heightening health risks, especially for vulnerable populations. Urban heat islands from reduced vegetation and extensive pavement further amplify these effects.	By causing residents to relocate due to damaged homes or safety concerns. Some may move to areas perceived as safer or seek better job opportunities elsewhere. The economic impact and infrastructure damage can also make certain neighborhoods less desirable, leading to shifts in demographics and the socioeconomic landscape as new residents with different backgrounds move in.	The city of Bluffdale has seen increased density as more housing and commercial space has been constructed within the city. This density can increase extreme heat risk through the urban heat island effect.	Increased
Extreme Cold	By increasing the intensity of winter storms. Higher atmospheric temperatures allow for more moisture, resulting in heavier snowfall and potentially lower temperatures during these events. In addition, fluctuations in weather patterns may disrupt seasonal cycles,	By driving some residents to relocate to warmer areas. Harsh winters can hinder economic activities and deter new residents and businesses, influencing housing demand and the attractiveness of certain neighborhoods. This may disproportionately affect lower-income families, leading to	Increased development in Bluffdale has put a strain on the utility grid as there are more facilities running heat during extreme cold events.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	leading to unpredictable periods of extreme cold mixed with warmer spells.	changes in demographics and socioeconomic stratification in the community.		
Flooding	Higher temperatures increase the frequency and intensity of extreme weather events and alter precipitation patterns. They lead to more intense rainstorms and accelerated snowmelt from nearby mountains, raising water levels in rivers and streams. This combination raises the risk of flooding, especially in areas with inadequate drainage and urban development in flood-prone zones, heightening the potential for damage to homes and infrastructure.	Flooding can significantly alter population patterns by displacing residents from affected areas, leading them to seek shelter elsewhere. This may cause a population decline where flooding occurs, as individuals might hesitate to return due to ongoing risks or property damage. As neighborhoods become less desirable, people may migrate to safer areas, changing demographic trends and putting pressure on housing in those regions. Over time, these shifts can influence urban planning and development, as local governments address flooding risks and changing population needs.	While increased density and more construction have minorly increased flood risk, Bluffdale has also updated stormwater infrastructure near new development to increase capacity during flood events.	Decreased
Landslide/ Slope Failure	Climate change increases the risk of landslides through heavier rainfall and temperature fluctuations. Intense rain saturates soil, destabilizing slopes, while freeze–thaw cycles weaken the ground. Changes in vegetation can also reduce stability, leading to a higher potential for landslides.	Landslides and slope failures can impact population patterns by making some areas unsafe, leading to displacement and lower property values. This prompts residents to move to safer regions, thereby increasing density in more stable areas. Concerns about future landslides may also deter newcomers from high-risk zones, shaping long-term demographic trends.	Development along Bluffdale's eastern border has increased the risk and impact of landslides.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
Radon	Climate change can affect radon levels by altering soil temperatures and moisture conditions. Higher temperatures may increase radon emissions from the ground, while heavy rainfall can change groundwater and soil saturation, impacting radon migration into buildings.	Radon exposure can influence population patterns as increased health awareness may drive families to move away from areas with high radon levels. This shift could particularly affect vulnerable groups, changing demographics and demand in the housing market. Homes with lower radon levels may become more sought after, and public health campaigns can encourage community action, making previously undesirable areas more attractive once mitigation measures are implemented.	Development has not significantly changed the risk of radon in Bluffdale.	Decreased
Heavy Rain	Climate change increases the frequency and intensity of heavy rain, as higher temperatures allow the atmosphere to hold more moisture. This leads to stronger storms, flash flooding, and overwhelmed drainage systems.	Heavy rain can shift population patterns by pushing residents out of flood-prone areas and attracting them to safer neighborhoods. Frequent flooding may lead to evacuations and economic disruptions, prompting relocations. Over time, ongoing heavy rains can affect housing demand and community stability, altering the city's population distribution.	The increased development in Bluffdale has led to more impervious surfaces. These surfaces increase the risk of heavy rains leading to flash floods.	Increased
High Wind	Climate change affects high winds by altering atmospheric patterns and increasing extreme weather events. Rising temperatures may lead to more substantial, unpredictable winds and more frequent thunderstorms, posing	High winds can alter population patterns by making certain areas less desirable. Frequent damage may drive residents to safer neighborhoods, deter newcomers, and slow growth in affected regions.	Increased development has led to taller buildings in Bluffdale that are more susceptible to damage from high winds.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	risks to infrastructure and air quality.			
Lightning	Climate change increases temperatures and alters precipitation, leading to more intense thunderstorms and frequent lightning strikes. Urbanization can enhance this effect, posing risks to public safety and infrastructure.	Lightning can influence population patterns by causing property damage and wildfires, leading some residents to relocate. Areas with higher lightning activity may deter new residents, while safer locations could increase migration as people seek protection from severe weather.	Increased development has led to taller buildings in Bluffdale that are more susceptible to damage from lightning.	Increased
Severe Winter Weather	Climate change impacts heavy snow and blizzards by altering precipitation patterns. Higher temperatures can lead to more rain than snow, affecting snowpack levels—additionally, increased storm intensity results in heavier, more unpredictable snowfall.	Increased population equals an increased number of people needing to get to work and quicker snow removal. Heavy snow or blizzards can impact population patterns by influencing where people live and work. Transportation disruptions may lead residents to seek housing closer to jobs, increasing density in some areas while depopulating others. Families might also avoid regions with frequent heavy snowfall, shifting demand to milder areas. Over time, these trends can alter community demographics and economic activity, prompting adjustments in city planning and resource allocation.	Increased development of both residential and commercial structures means more facilities are at risk from heavy snowfall, including roof collapses.	Increased
Tornado	Climate change may increase the frequency and intensity of tornadoes. Higher temperatures lead to more moisture in the air, creating	Tornadoes can influence population patterns by prompting residents to move to safer areas after damage occurs. This can decrease density in affected	Increased development means more structures can potentially be damaged by tornados that strike Bluffdale.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	conditions for severe thunderstorms. Changes in wind patterns and precipitation can also heighten tornado risks, resulting in more destructive storms and greater threats to infrastructure and communities.	neighborhoods while increasing the demand for housing in safer regions. New residents may also move in for recovery opportunities, altering demographics. Over time, repeated tornado threats might push long-term residents to areas with better disaster preparedness, reshaping the city's population distribution.		
Wildfire	By raising temperatures and creating drier conditions, prolonged droughts lead to more dry vegetation, which serves as fuel for fires. Erratic seasons extend the growing period, while more lightning strikes can ignite wildfires. These factors heighten the threat to ecosystems and community safety.	Displaced individuals often seek safer areas, shifting demographics, while declining property values might deter newcomers. Conversely, some may be drawn to rebuilding efforts, impacting long-term growth and community dynamics.	Increased development in Bluffdale impacts wildfire risk in two ways. First, it densifies the city, reducing vegetation that can fuel a wildfire. Second, it adds more structures to the city that can potentially be lost in the event of a wildfire.	Increased
Dam Failure	Climate change raises the risk of dam failure by causing heavier rainfall and rapid snowmelt. These changes can overwhelm dams and compromise their integrity, highlighting the need for urgent safety assessments and upgrades to protect communities downstream.	Dam failure can impact population patterns by displacing residents and altering demographics. Evacuations can lead to an influx in safer areas, while destruction may deter new residents and contribute to population decline. Fear of future disasters may also prompt remaining individuals to relocate, changing the community's composition and affecting population density and economic activity.	Development in Bluffdale adds more structures that are at risk if a dam failure occurs.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
Civil Disturbance	Climate change can increase civil disturbances by intensifying environmental stresses and social tensions. Rising temperatures may lead to droughts, wildfires, and poor air quality, particularly affecting vulnerable communities. Resource scarcity, especially water, can spark conflicts and protests. In addition, an influx of migrants from harder-hit areas may strain local resources, further escalating tensions. This cycle of unrest is driven by the impacts of climate change on the environment and community dynamics.	By encouraging residents to move for safety, leading to outflows and new arrivals. These events can reveal social issues, impacting community dynamics, employment, and property values, ultimately reshaping demographics, and social cohesion.	Increased development in Bluffdale does not impact the risk of a civil disturbance.	Increased
Cyberattack	Possible attack on the industry, which is seen as producing large amounts of greenhouse gases and burning fossil fuels. Climate change can heighten cyberattack risk by increasing vulnerabilities during extreme weather. Disruptions like power outages offer cybercriminals opportunities, but focusing on emergency responses can weaken cybersecurity measures. As organizations adopt new technologies to cope with climate impacts, they may unintentionally introduce additional vulnerabilities.	Cyberattacks can change population patterns by eroding trust in essential services. Compromised systems may cause residents to leave due to safety concerns, while high-profile incidents can deter businesses, leading to job losses. This perception of vulnerability may also make the city less appealing to newcomers, resulting in demographic shifts and affecting local development.	Increased development in Bluffdale does not impact the risk of cyberattacks.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
Hazardous Materials Incident (Transportation & Fixed Facility)	Climate change elevates the risk of hazardous materials incidents by increasing extreme weather events like heavy rain and wildfires. These events can breach storage tanks and heighten material volatility. Vulnerable infrastructure can lead to more spills or accidents, while climate shifts may also introduce new challenges for managing hazardous substances and public health.	By causing evacuations and temporary declines in density. In the long run, unsafe areas may deter new residents, affecting growth and diversity. In addition, negative perceptions can lower property values and economic prospects, leading families to relocate, which impacts local demographics.	Increased development in Bluffdale does not impact the risk of hazardous materials incidents.	Increased
Public Health Epidemic/ Pandemic	By increasing the spread of vector-borne diseases and raising the risk of waterborne illnesses due to flooding or drought. Worsening air quality can also exacerbate respiratory conditions like asthma, especially in vulnerable populations.	By prompting migration for safety and better healthcare. Vulnerable groups may move to areas with improved services, while economic instability can drive people to seek new employment opportunities. In addition, restrictions like quarantine measures can limit movement and social interactions, reshaping the community's demographics and impacting local economies.	Increased development in Bluffdale does not impact the risk of a public health epidemics/pandemics.	Increased
Terrorism	Terroristic activity is sometimes centered around climate change. Climate change impacts terrorism incidents by creating conditions of resource scarcity and social unrest. Increased competition for essential resources, such as water, can fuel tensions, making	Terrorism incidents can alter population patterns by instilling fear and prompting residents to relocate to perceived safer areas, resulting in demographic shifts and potential declines in property values. Some neighborhoods may see an outflow of residents, while others could experience an influx of people seeking refuge from	Increased development in Bluffdale does not impact the risk of terrorist incidents.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	communities more vulnerable to extremist ideologies. Extreme weather events may disrupt social order and infrastructure, offering terrorist groups opportunities to exploit crises. In addition, climate-driven population displacement can heighten tensions in receiving areas, raising the risk of domestic terrorism. Law enforcement's focus on climate-related challenges can also limit its capacity to address terrorism threats. Ultimately, while climate change may not directly cause terrorism, its effects can create an environment conducive to extremist activities.	violence. In addition, increased security measures may deter businesses and residents from certain locations, leading to long-term changes in population density and urban development patterns.		

DRAFT

Additional Public Involvement

The city of Bluffdale provided several opportunities for public participation. Figure 1 presents examples of public outreach.

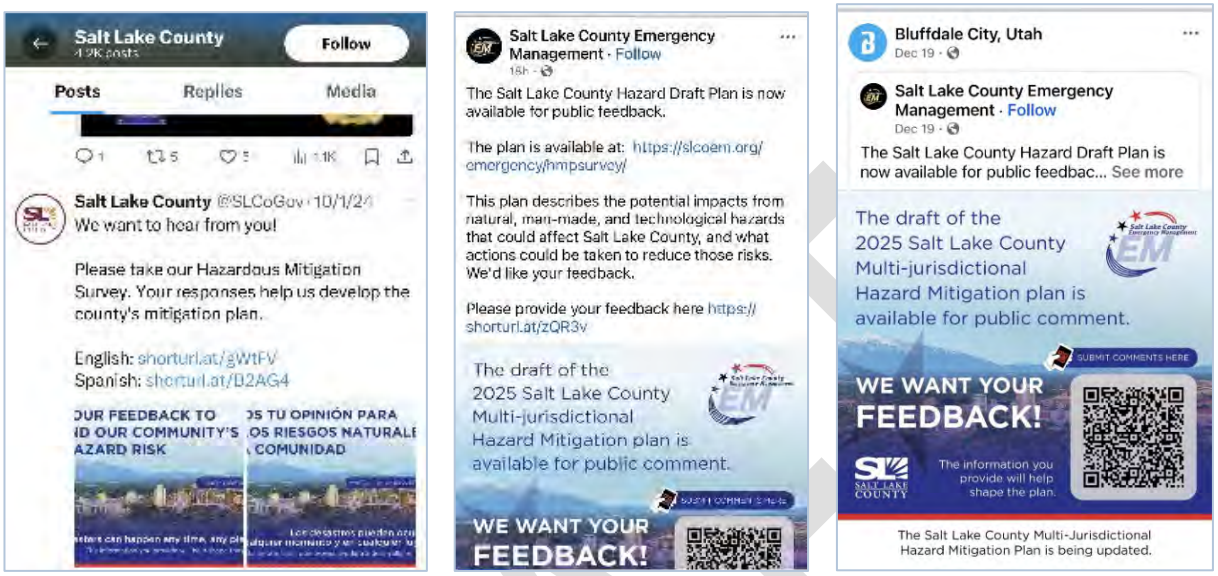


Figure 1: Social Media Posts for the Hazard Mitigation Survey (*left*) and Draft Plan Review (*center* and *right*)

Plan Integration

Incorporating the underlying principles of the Hazard Mitigation Plan and its recommendations into other plans is a highly effective and low-cost way to expand their influence. All plan participants will use existing methods and programs to implement hazard mitigation actions where possible. As previously stated, mitigation is most successful when it is incorporated into the day-to-day functions and priorities of government and public service. This plan builds on the momentum developed through previous and related planning efforts and mitigation programs, and it recommends implementing actions where possible through these other program mechanisms. These existing mechanisms include the following:

- Regularity Capabilities
- Administrative Capabilities
- Fiscal Capabilities

Respective planning stakeholders will conduct implementation and incorporation into existing planning mechanisms and will be done through the routine actions of:

- Monitoring other planning/program agendas
- Attending other planning/program meetings
- Participating in other planning processes; and

DRAFT

- Monitoring community budget meetings for other community program opportunities.

The successful implementation of this plan will require constant and vigilant review of existing plans and programs for coordination and multi-objective opportunities that promote a safe, sustainable community. Regular efforts should be made to monitor the progress of mitigation actions implemented through other planning mechanisms. Where appropriate, priority actions should be incorporated into planning updates. Table 9 lists existing planning mechanisms in which the Hazard Mitigation Plan has been integrated. Table 13 lists the opportunities for integrating elements of this plan into other plans.

Table 10: Previous Plan Integration by the City of Bluffdale

Plan	Description
None	N/A

Table 11: Future Plan Integration Opportunities for the City of Bluffdale

Plan Name	Description
General Plan	Vision for growth and development in Bluffdale.
Transportation Plan	Current conditions of Bluffdale's transportation system and outlines recommendations for future transportation needs.
Water Master Plan – Pressurized Irrigation	Outlines direction and decisions for pressurized irrigation system over the next 5 to 10 years.
Drinking Water Master Plan	Provides recommendations for adequate drinking water based on water use, growth projections, and state standards.
Floodplain Management Plan	Management of flood hazards in the city. Seeks to enhance the community's flood resilience, withstand a flooding event, minimize damage, and recover rapidly.
Storm Water Master Plan	Examines current and future needs of the city's storm water facilities and conveyance structures.
Stormwater Management Plan	Seeks to limit the discharge of pollutants in storm drain system
Impact Fee Facility Plan	Evaluates the current level of service for each utility and potential future needs. Provides information on the impact fee and associated public facility costs in the city
Parks, Trails, and Open Space Master Plan	Overview of parks, trails, and open space initiatives for the city

Capability Assessment

Local mitigation capabilities are existing authorities, policies, programs, and resources that reduce hazard impacts or could help carry out hazard mitigation activities.

Planning and Regulatory Capabilities

Planning and regulatory capabilities are the plans, policies, codes, and ordinances that prevent and reduce the impacts of hazards.

Table 12: Assessment of the Planning Capabilities of the City of Bluffdale

Plan	Does it address hazards? (Y/N)	How can it be used to implement mitigation actions?	When was the last update? When is the next update?
General Plan	Y	Goals can be incorporated into mitigation actions	2022
Capital Improvement Plan	Y	Funding sources and projects can incorporate mitigation actions	March 2024
Climate Change Adaptation Plan	N/A	N/A	N/A
Community Wildfire Protection Plan	N/A	N/A	N/A
Economic Development Plan	Y – in General Plan	Can be used to provide information on funding sources for mitigation actions	2022
Land Use Plan	Y	Information can be used to inform mitigation actions as far as funding and community needs	2015
Local Emergency Operations Plan	Y	Operational information can inform mitigation actions	2020
Stormwater Management Plan	Y	The plan includes a process for quickly resolving environmental hazards, with emergency contact information for assisting agencies. It also references the location of storm drain mapping for flood control. Funding sources, relevant departments	Last update was Sep. 2024. The plan is updated annually.
Transportation Plan	Y	The plan provides mapping of primary collector roads and gives some suggestions of routes to consider for evacuation routes. Funding sources, priorities	The last update was Feb. 2020. Next update will be July 2025.
Substantial Damage Plan	N/A	N/A	N/A
Other? (Describe)			

DRAFT

Table 13: Assessment of the Regulations and Ordinances of the City of Bluffdale

Regulation/Ordinance	Does it effectively reduce hazard impacts?	Is it adequately administered and enforced?	When was the last update? When is the next update?
Building Code	Yes; The City of Bluffdale adopts the State Construction Code as adopted in Utah Code Annotated title 15A, "State Construction and Fire Codes Act" and subsequent amendments thereof, as the Building Code of the City of Bluffdale. Current codes are dated 2021.	Yes	2021
Flood Insurance Rate Maps	Yes	Yes	2024
Floodplain Ordinance	Yes	Yes	2021
Subdivision Ordinance	Yes	Yes	2019
Zoning Ordinance	Yes	Yes	2023
Natural Hazard-Specific Ordinance (Stormwater, Steep Slope, Wildfire)	Yes	Yes	2023
Acquisition of Land for Open Space and Public Recreation Use	Yes	Yes	2022
Prohibition of Building in At-Risk Areas	Yes	Yes	2023
Other? (Describe)			

Administrative and Technical Capabilities

Administrative and technical capabilities include staff and their skills. They also include tools that can help carry out mitigation actions.

Table 14: Assessment of the Administrative Capabilities of the City of Bluffdale

Administrative Capability	In Place? (Y/N)	Is staffing adequate?	Are staff trained on hazards and mitigation?	Is coordination between agencies and staff effective?
Chief Building Official	Y	Y	Y	Y
Civil Engineer	Y	Y	Y	Y
Community Planner	Y	Y	Y	Y
Emergency Manager	Y	Y	Y	Y
Floodplain Administrator	Y	Y	Y	Y

DRAFT

Administrative Capability	In Place? (Y/N)	Is staffing adequate?	Are staff trained on hazards and mitigation?	Is coordination between agencies and staff effective?
Geographic Information System (GIS) Coordinator	Y, only a contractor though	No, have a contractor to complete GIS work	Y	Y
Planning Commission	Y	Yes	Y	Y
Fire Safe Council	N	N/A	N/A	N/A
CERT (Community Emergency Response Team)	Y	Y	Y	Y
Active VOAD (Voluntary Agencies Active in Disasters)	Y	Y	Y	Y
Other? (Please describe.)				

Table 15: Assessment of the Technical Capabilities of the City of Bluffdale

Technical Capability	In Place? (Y/N)	How has it been used to assess/mitigate risk in the past?	How can it be used to assess/mitigate risk in the future?
Mitigation Grant Writing	Y	Hasn't been used yet	Can be used in grant applications to support mitigation actions
Hazard Data and Information	Y	Identified areas of concern for specific hazards	Can be used to prioritize areas that need mitigation work
GIS	Y	Used to map out high hazard areas	Can be used to identify or prioritize areas for mitigation
Mutual Aid Agreements	Y	Used to assist in completing mitigation actions	Oversight and accountability of mitigation actions
Other? (Please describe.)			

Financial Capabilities

Financial capabilities are the resources to fund mitigation actions. Talking about funding and financial capabilities is important to determine what kinds of projects are feasible, given their cost. Mitigation actions like outreach programs are lower cost and often use staff time and existing budgets. Other actions, such as earthquake retrofits, could require substantial funding from local, state, and federal partners. Partnerships, including those willing to donate land, supplies, in-kind matches, and cash, can be included.

DRAFT

Table 16: Assessment of the Financial Capabilities of the City of Bluffdale

Funding Resource	In Place? (Y/N)	Has it been used in the past and for what types of activities?	Could it be used to fund future mitigation actions?	Can it be used as the local cost match for a federal grant?
Capital Improvement Project Funding	Y	Facility updates and maintenance	Y	Y
General Funds	Y	Operational costs, stormwater management	Y	Y
Hazard Mitigation Grant Program (HMGP/404)	Y	Has not been used yet	Y	No
Building Resilient Infrastructure & Communities (BRIC)	Y	Has not been used yet	Y	No
Flood Mitigation Assistance (FMA)	Y	Has not been used yet	Y	No
Public Assistance Mitigation (PA Mitigation/406)	Y	Has not been used yet	Y	No
Community Development Block Grant (CDBG)	Y	Used to develop General Plan	Y	No
Natural Resources Conservation Services (NRCS) Programs	Y	Has not been used yet	Y	No
U.S. Army Corps (USACE) Programs	Y	Has not been used yet	Y	No
Property, Sales, Income, or Special Purpose Taxes	Y	Used to fund fire and police department	Y	Y
Stormwater Utility Fee	Y	Fire suppression storage, facility maintenance	Y	Y
Fees for Water, Sewer, Gas, or Electric Services	Y	Operations and maintenance	Y	Y
Impact Fees from New Development and Redevelopment	Y	Stormwater maintenance and management	Y	Y
General Obligation or Special Purpose Bonds	Y	Has not been used yet	Y	Y
Federal-funded Programs (Please describe)	Y	Has not been used yet	Y	Y
Private Sector or Nonprofit Programs	Y	Has not been used yet	Y	Y
Other?				

DRAFT

Education and Outreach Capabilities

Education and outreach capabilities are programs and methods that could communicate about and encourage risk reduction. These programs may be run by a participant or a community-based partner. Partners, especially those who work with underserved communities, can help identify additional education and outreach capabilities.

Table 17: Assessment of the Education and Outreach Capabilities of the City of Bluffdale

Education and Outreach Capability	In Place? (Y/N)	Does it currently incorporate hazard mitigation?	Could it be used to support mitigation in the future?
Community Newsletter(s)	Y	Y	Y
Hazard Awareness Campaigns (such as Firewise, Storm Ready, Severe Weather Awareness Week, School Programs)	Unknown	Y	Y
Public Meetings/Events (Please describe.)	Y	Y	Y
Emergency Management Listserv	Y	Y	Y
Local News	Y	Y	Y
Distributing Hard Copies of Notices (e.g., public libraries, door-to-door outreach)	Y	Y	Y
Insurance Disclosures/ Outreach	Y	Y	Y
Organizations that Represent, Advocate for, or Interact with Underserved and Vulnerable Communities (Please describe.)	Yes – Healthy Bluffdale Coalition	Y	Y
Social Media (Please describe.)	Y – Facebook and Instagram accounts	Y	Y
Other? (Please describe.)	Section Leaders – community leaders throughout the city that share information	Yes	Yes

Opportunities to Expand and/or Improve Capabilities

Actions that can expand and improve existing authorities, plans, policies, and resources for mitigation include budgeting for mitigation actions, passing policies and procedures for mitigation actions, adopting and implementing stricter mitigation regulations, approving mitigation updates, and making additions to existing plans as new needs are recognized. Table 18 lists the opportunities for the city of Bluffdale.

Table 18: Opportunities to Expand or Improve the Capabilities of the City of Bluffdale

Capability	Opportunity to Expand and/or Improve
Planning and Regulation	Bluffdale can expand its planning and regulatory mitigation capabilities by integrating the mitigation actions in this plan into the Capital Improvement Plan, Economic Development Plan within the General Plan, Land Use Plan, and Transportation Plan, which is in the process of being updated. Aligning these planning mechanisms with the mitigation plan will increase the odds of successfully implementing the identified projects.
Administrative and Technical	Bluffdale can expand partnerships for mitigation, including identifying and acting upon any deficiencies identified during a review of mutual-aid agreements and memoranda of understanding (MOUs). Partnerships can help when developing grant applications and project implementation through either financial or in-kind support, letters of support, or time and materials. Other local governments and agencies in hazard mitigation as well as nonprofits and community-based organizations can be effective mitigation partners. Partners can also provide technical skills, such as GIS, which Bluffdale does not have in-house. Further, bringing the right partners together and establishing a Coordinating Group can ensure effective communications.
Financial	Bluffdale can apply for new grants which fund hazard mitigation actions including but not limited to the Hazard Mitigation Grant Program (HMGP/404), Flood Mitigation Assistance (FMA), and Public Assistance Mitigation (PA Mitigation/406).
Education and Outreach	Bluffdale can expand current public outreach methods by developing programs to target specific groups which may be at higher risk of disaster impacts or able to implement hazard mitigation measures including homeowners, developers, schools, and people with special needs. This may include direct training and education of developers, professionals, and representatives of people with special needs. Additional outreach could incorporate community leaders who are familiar with each of these populations, as well as newsletters to homeowners with information on the hazards that could impact their area and how they can reduce their risk such as through home retrofits.

Mitigation Strategy

Mitigation strategies provide proactive measures that are designed to minimize the impacts of hazards on the city of Bluffdale. Table 19 shows mitigation action alternatives, and

Table 20 shows the status of previous mitigation activities. Table 21 is the 2025 mitigation action plan for the city of Bluffdale.

Table 19: Mitigation Action Alternatives for the City of Bluffdale

Action	Type of Action	Selected for inclusion in the plan?	If not selected, why not?
Update the evacuation plan for the city.	All Hazards	Y	
Identify and map shelters throughout the city.	All Hazards	Y – incorporated into a mitigation action	

DRAFT

Table 20: Status of Prior Mitigation Actions of the City of Bluffdale[3]

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update
Conduct a slope study.	Landslide/Slope Failure	City of Bluffdale	UDOT	Complete An inclinometer and a piezometer have been installed to measure water and earth movement. The slope is below a canal and train tracks owned by Union Pacific and the Utah Transit Authority.
Increase drinking water storage.	All hazards, Extreme Heat, Wildfire	City of Bluffdale	JVWCD	Ongoing Adding drinking water storage to the city's water system is a high priority. Bluffdale purchases water from JVWCD. As the city continues to grow, the need for water has increased. There has been the recent completion of approximately 22,400 linear feet of water line, one pump station, two metering stations and one 3 million-gallon storage tank. The city will build two new drinking water storage tanks at two different locations. This project will take several years and have many phases.
Conduct a hazmat flow study.	Hazardous Materials Release	City of Bluffdale	Local utility companies	Incomplete
Conduct training and awareness activities on communications equipment, tools, and systems.	All hazards	Bluffdale EM	SLCo EM, VECC, UCA	Complete Bluffdale participates in training and exercises designed to practice using communications tools and equipment. The city uses its amateur radio volunteers.
Establish agreements to share communications equipment between	All hazards	Bluffdale EM and Communications	SLCo EM, VECC, UCA, NGO partners	Ongoing Bluffdale continues to expand these agreements.

[3] Bluffdale EM = Bluffdale Emergency Management, EM = Emergency Management, FD = Fire Department, JVWCD = Jordan Valley Water Conservancy District, MSD = Municipal Services District, NWS = National Weather Service, NGO = nongovernmental organization, PD = Police Department, PSAP = Public Safety Answering Point, SLCo = Salt Lake County, SLCo EM = Salt Lake County Emergency Management, UDEM = Utah Division of Emergency Management, UDOT = Utah Department of Transportation, UCA = Utah Communications Authority, VECC = Valley Emergency Communications Center.

DRAFT

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update
agencies involved in emergency operations.				
Establish redundancy for dispatch centers and other critical communications.	All hazards	Bluffdale EM and Communications	VECC	Complete Bluffdale relies on VECC for dispatch services. It coordinates with other Public Safety Answering Points to provide redundancy.
Establish a coordinating group to address long-term communications needs and implementation strategies.	All hazards	Bluffdale EM and Communications	SLCo EM, NGO partners	Ongoing
Acquire, upgrade, and/or integrate communications equipment and systems as determined by coordinating group.	All hazards	Bluffdale EM and Communications	SLCo EM, VECC, NGO partners	Complete Bluffdale has upgraded existing equipment and purchased new equipment to maintain operability.
Integrate existing hazard monitoring networks in emergency operations centers. Use sensors, such as weather stations, stream gauges, seismograph stations, and road conditions.	All hazards	Bluffdale EM and Communications	NWS, SLCo EM, NGO partners	Ongoing New technologies have been added to the emergency operations center, and the city is exploring new options.
Implement improvements to address concerns identified in assessment.	All hazards	Bluffdale EM	SLCo EM	Ongoing
Compile inventory of mutual-aid agreements and memoranda of understanding (MOU) and identify deficiencies.	All hazards	Bluffdale EM	SLCo EM, SLCo Public Works, SLCo Flood Control, MSD	Complete

DRAFT

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update
Pursue and implement needed mutual-aid agreements.	All hazards	Bluffdale EM	MSD, SLCo EM, SLCo Public Works, SLCo Flood Control	Ongoing
Provide education regarding all natural hazards through live trainings and web-based, print, and broadcast media.	All hazards	Bluffdale EM	SLCo EM, NWS	Ongoing Bluffdale EM provides several public education classes for groups to discuss the hazards in the community and what residents can do to be prepared.
Develop education programs to target specific groups, including homeowners, developers, schools, and people with special needs.	All hazards	Bluffdale EM	Jordan School District, SLCo EM	Ongoing Bluffdale's education programs are customizable for all kinds of groups and available to all members of the community.
Coordinate with existing public education programs, such as the American Red Cross, Utah Living with Fire, Be Ready Utah, and the National Weather Service (NWS).	All hazards	Bluffdale EM and Communications	SLCo EM, NGO partners, NWS	Ongoing Bluffdale has worked with Be Ready Utah, the American Red Cross and other groups to present to the citizens of our community.
Establish and enforce appropriate planning, zoning, and building code ordinances.	All hazards	Bluffdale EM and Zoning		Ongoing Bluffdale enforces all ordinances and building codes, including those for Flood Damage Prevention and Land Disturbance.
The emergency managers will coordinate with local water districts/public utilities to support ongoing conservation efforts.	Drought	Bluffdale EM	Local water districts, local utility companies, SLCo EM, Public Works	Ongoing

DRAFT

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update
Investigate feasibility of implementing an incentive program to encourage the use of low-flow appliances and fixtures in homes and businesses.	Drought	Bluffdale EM and Public Works	SLCo EM, water districts, local utility companies	Ongoing Bluffdale has implemented several projects including using secondary and reuse water to irrigate public parks instead of culinary water.
Implement water-saving devices and practices in public facilities.	Drought	Bluffdale EM and Public Works	SLCo EM, water districts, local utility companies	Complete Bluffdale has a variety of incentive programs that it offers to its residents related to water conservation. It has a tiered pricing structure to promote conservation.
Repair, maintain, and improve water distribution infrastructure to prevent loss from leakage, breaks, etc.	Drought	Bluffdale EM and Public Works	SLCo EM, local utility companies, water districts	Complete The Bluffdale Water Division responds immediately to all reports of leaks and performs regular system maintenance, including actively monitoring for leaks, theft of services, etc.
Coordinate public safety water use, such as hydrant testing.	Drought	Bluffdale EM, Public Works, and Fire department		Complete The Bluffdale Water Division coordinates all water use, including the testing of hydrants in partnership with the fire department.
Coordinate with water districts to plan for, develop, and/or expand secondary water.	Drought	Bluffdale EM and Public Works	Water districts, SLCo EM	Ongoing Bluffdale continues to encourage the development of secondary water, where feasible. With every road project it adds reuse lines.
Encourage active participation in the NFIP.	Flooding	Bluffdale EM	SLCo EM, SLCo Flood Control	Ongoing Bluffdale actively participates in the National Flood Insurance Program (NFIP).
Determine potential flood impacts and identify areas in need of additional flood control structures.	Flooding	Bluffdale EM, Engineering, and Public Works	SLCo Flood Control, SLCo EM	Ongoing The City Engineer and Public Works Director regularly review the impact of development and the need for flood control infrastructure and make recommendations as needed.

DRAFT

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update
Address identified problems through construction of debris basins, flood retention ponds, energy dissipaters, or other flood control structures.	Flooding	Bluffdale EM, Engineering, and Public Works	SLCo Flood Control	Ongoing The City Engineer and Public Works Director oversees the construction of flood control structures.
Establish maintenance and repair programs to remove debris, improve resistance, and otherwise maintain effectiveness of stormwater and flood control systems.	Flooding	Bluffdale EM, Engineering, and Public Works	SLCo Flood Control	Ongoing The Division of Public Works continues to maintain and repair all drainage systems in the city.
Identify and assess structures for deficiencies.	Flooding	Bluffdale EM, Engineering, and Public Works		Incomplete.
Modify structures as needed to address deficiencies.	Flooding	Bluffdale EM and Public Works	Water districts, local utility companies	Ongoing The City Engineering Division, in cooperation with the Public Works Department, makes needed repairs to deficient structures.
Assist NWS in making other agencies and departments aware of available resources.	Severe Weather	Bluffdale EM	NWS, SLCo EM, Public Works, Engineering, PD, FD	Ongoing Bluffdale supports NWS's efforts for education and outreach and makes internal departments aware of NWS resources.
Use recommendations from the State Geological Hazards Working Group to address land use and planning for new developments.	Slope Failure	Bluffdale EM, Public Works, Engineering, and GIS	UDEM, SLCo EM	Ongoing Bluffdale supports the efforts for education and outreach.

DRAFT

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update
Work with experts and communities to develop or update evacuation plans.	Wildland Fire	Bluffdale EM	SLCo EM, local jurisdictions, PD, FD, Public Works	Ongoing The city is working with Salt Lake County and the cities of Herriman, Riverton, and South Jordan, reviewing and updating evacuation planning with GIS mapping.
Determine potential flood impacts and identify areas in need of additional flood control infrastructure. **Address identified problems through construction of debris basins, flood retention ponds, energy dissipaters, or other flood control structures.** **Provide maintenance, repairs, and improvements to drainage structures, stormwater systems, and flood control structures. Establish maintenance and repair programs to remove debris, improve resistance and otherwise maintain effectiveness of stormwater and flood control systems. Reduce threat of unstable or inadequate flood control structures Identify, assess, and modify as needed.**	Flooding	Public Works, Planning, Engineering	SLCo EM, SLCo Flood Control	Ongoing

DRAFT

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update
Educate home and property owners regarding the risks of flooding. **Identify potential flooding of Wood Hollow, Beef Hollow, and Rose Creek drainages.** **Continue to enforce floodplain regulations as they apply to new housing developments.**				
Continue our work to prepare our community to be storm ready, including the following: 1. **Receive information from NWS annually about new services and alerts as available.** 2. **Include in our Neighborhood Emergency Plan the importance of caring for our older residents who will need help during severe weather.** 3. **Continue to educate all residents about how to prepare for severe weather.**	Severe Weather	Bluffdale EM, Public Works, FD		Ongoing The city is working with SLCo and the cities of Herriman, Riverton, and South Jordan, reviewing and updating Evacuation planning with GIS Mapping.

DRAFT

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update
Continue to urge resident preparation through seasonal articles in the monthly newsletter. **Create evacuation plans for high-risk areas.** **Continue to assess water flow capabilities and address deficiencies.** **Continue to keep Wildland-Urban Interface as an important element to our development and ensure that developers follow our city code for road accessibility and availability of water flow for fire response.**	Wildfire	Bluffdale EM, Public Works, PD, FD		Ongoing The city is working with SLCo and the cities of Herriman, Riverton, and South Jordan, reviewing and updating Evacuation planning with GIS Mapping.

DRAFT

THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT

Table 21: 2025 Mitigation Action Plan for the City of Bluffdale[4]

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
1	Conduct training and awareness activities on communications equipment, tools, and systems.	Avalanche, Civil Disturbance, Dam Failure, Drought, Wildfire, Earthquake, Extreme Heat, Extreme Cold, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide, Lightning, Public Health Epidemic, Radon, Severe Winter Weather Terrorism, Tornado, Wildfire	Bluffdale EM and Communications	SLCo EM, Bluffdale FD, Bluffdale PD, NWS, VOAD	Ensures key departments and agencies are in the same loop	Low	Bluffdale General Fund	Ongoing	Medium	Bluffdale participates in training and exercises designed to practice using communications tools and equipment.
2	Establish agreements to share communications equipment between agencies involved in emergency operations.	Avalanche, Civil Disturbance, Dam Failure, Drought, Wildfire, Earthquake, Extreme Heat, Extreme Cold, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide, Lightning, Public Health Epidemic, Radon, Severe Winter Weather Terrorism, Tornado, Wildfire	Bluffdale EM and Communications	SLCo EM, Bluffdale FD, Bluffdale PD, neighboring jurisdictions, NWS, VOAD	Ensures coordination between different agencies and organizations	Low	Bluffdale General Fund, SLCo EM General Fund, BRIC grant, HMGP grant	Ongoing	Medium	Bluffdale continues to expand these agreements.
3	Establish a coordinating group to address long-term communications needs and implementation strategies.	Avalanche, Civil Disturbance, Dam Failure, Drought, Wildfire, Earthquake, Extreme Heat, Extreme Cold, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide, Lightning, Public Health Epidemic, Radon, Severe Winter Weather Terrorism, Tornado, Wildfire	Bluffdale EM and Communications	SLCo EM, Bluffdale FD, Bluffdale PD, Bluffdale Public Works, Utilities	Identifies communication needs and solutions for the city	Low	Bluffdale General Fund, SLCo EM General Fund	Long term	Medium	These meetings are ongoing.
4	Integrate existing hazard monitoring networks in emergency operations centers. Utilize sensors, such as weather stations, stream gauges, seismograph stations, road conditions, etc.	Avalanche, Civil Disturbance, Dam Failure, Drought, Wildfire, Earthquake, Extreme Heat, Extreme Cold, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide, Lightning, Public Health Epidemic, Radon, Severe Winter Weather Terrorism, Tornado, Wildfire	Bluffdale EM and Communications	SLCo EM, NWS, UGS, UDEM, neighboring jurisdictions, NWS	Increased understanding and utilization of local resources to improve situational awareness	Medium	Bluffdale General Fund, NWS, SLCo EM General Fund, BRIC grant, HMGP grant	Long term	Medium	New technologies have been added to the Emergency Operations Center and exploring new options.
5	Implement improvements to address concerns identified in assessment.	Avalanche, Civil Disturbance, Dam Failure, Drought, Wildfire, Earthquake, Extreme Heat, Extreme Cold, Flooding, Hazardous Materials Incident,	Bluffdale EM	Bluffdale Public Works, SLCo EM, neighboring jurisdictions	Improved understanding of gaps and ways in which they can be	High	Bluffdale General Fund, Bluffdale Capital Improvement Fund,	Short term	High	

[4] ARC = American Red Cross, Bluffdale EM = Bluffdale Emergency Management, BRIC = Building Resilient Infrastructure and Communities, FD = Fire Department, FFSL = Division of Forestry, Fire, and State Lands, HMGP = Hazard Mitigation Grant Program, JVWCD = Jordan Valley Water Conservancy District, MSD = Municipal Services District, NWS = National Weather Service, NFIP = National Flood Insurance Program, NGO = nongovernmental organization, PD = Police Department, PIO = Public Information Officer, PSAP = Public Safety Answering Point, SHSP = State Homeland Security Program, SLCo = Salt Lake County, SLCo EM = Salt Lake County Emergency Management, UDEM = Utah Division of Emergency Management, UGS = Utah Geological Survey, VECC = Valley Emergency Communications Center, VOAD = Voluntary Agencies Active in Disasters.

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
		Heavy Rain, High Wind, Landslide, Lightning, Public Health Epidemic, Radon, Severe Winter Weather Terrorism, Tornado, Wildfire			addressed at the local level		HMGP grant, BRIC grant,			
6	Pursue and implement needed mutual-aid agreements.	Avalanche, Civil Disturbance, Dam Failure, Drought, Wildfire, Earthquake, Extreme Heat, Extreme Cold, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide, Lightning, Public Health Epidemic, Radon, Severe Winter Weather Terrorism, Tornado, Wildfire	Bluffdale EM	SLCo EM, Bluffdale FD, Bluffdale PD, neighboring jurisdictions, VOAD, NWS, UDEM	Strengthened relationships with local jurisdictions, agencies, and organizations for assistance, outlined options for assistance depending on the incident	Low	Bluffdale General Fund, SLCo EM General Fund, SLCo Public Works	Short term	Medium	
7	Provide education regarding all natural hazards through live trainings and web-based, print, and broadcast media.	Avalanche, Civil Disturbance, Dam Failure, Drought, Wildfire, Earthquake, Extreme Heat, Extreme Cold, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide, Lightning, Public Health Epidemic, Radon, Severe Winter Weather Terrorism, Tornado, Wildfire	Bluffdale EM	Bluffdale PIO, SLCo EM, Be Ready Utah, neighboring jurisdictions	Increased understanding of local hazards and ways in which residents can reduce their risk	Low	Bluffdale General Fund, SLCo EM General Fund, HMGP grant, BRIC grant	Ongoing	High	Bluffdale EM provides several public education classes for groups to discuss the hazards in the community and what residents can do to be prepared. Educational activity needs to be ongoing to maintain effectiveness. Additional hazard-specific materials also contain good information to share with the public on how to reduce their own risk, such as early warning signs, cascading impacts, seismic and non-seismic retrofits (earthquake), rain gardens, utility elevation, and flood-resistant building materials (flooding, dam failure, heavy rain), home weatherization (extreme cold, extreme heat, severe winter weather), tree pruning and wind-resistant building materials (high wind, tornado, lightning), warning signs and vegetation mitigation measures (landslide/slope failure), at-home testing and radon mitigation measures (radon), and defensible space and home hardening (wildfire).
8	Develop education programs to target specific groups including homeowners, developers, schools and people with special needs	Avalanche, Civil Disturbance, Dam Failure, Drought, Wildfire, Earthquake, Extreme Heat, Extreme Cold, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide, Lightning, Public Health Epidemic, Radon, Severe Winter Weather Terrorism, Tornado, Wildfire	Bluffdale EM	Bluffdale PIO, SLCo EM, Be Ready Utah, neighboring jurisdictions, school districts	Increased understanding of local hazards and ways in which residents can reduce their risk, increased community relationship and engagement	Low	Bluffdale General Fund, HMGP grant, BRIC grant, Jordan School District, water districts, SLCo EM General Fund	Ongoing	Medium	Bluffdale's education programs are customizable for all kinds of groups and available to all members of the community

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
9	Coordinate with existing public education programs, such as the American Red Cross, Utah Living with Fire, Be Ready Utah, and the National Weather Service (NWS).	Avalanche, Civil Disturbance, Dam Failure, Drought, Wildfire, Earthquake, Extreme Heat, Extreme Cold, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide, Lightning, Public Health Epidemic, Radon, Severe Winter Weather Terrorism, Tornado, Wildfire	Bluffdale EM	SLCo EM, Be Ready Utah, VOAD, neighboring jurisdictions ARC, NWS	Improved coordination with local agencies	Low	Bluffdale General Fund. NGO partners, SLCo EM General Fund, NWS, HMGP grant, BRIC grant	Ongoing	High	Bluffdale has worked with Be Ready Utah, ARC, and other groups to present to the citizens of our community
10	Establish and enforce appropriate planning, zoning, and building code ordinances.	Avalanche, Civil Disturbance, Dam Failure, Drought, Wildfire, Earthquake, Extreme Heat, Extreme Cold, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide, Lightning, Public Health Epidemic, Radon, Severe Winter Weather Terrorism, Tornado, Wildfire	Bluffdale EM	Bluffdale Zoning, Bluffdale Code Enforcement, MSD Land Use and Zoning	Improved compliance with local regulations, improved oversight of ordinances to ensure structures are up to code and safe	Low	Bluffdale General Fund	Long term	High	Bluffdale enforces all current ordinances and building codes including ordinances like our Flood Damage Prevention and Land Disturbance ordinances.
11	Increase drinking water storage.	Drought, extreme heat	Bluffdale Public Works	Bluffdale EM, JVWCD		Medium	Bluffdale General Funds, Bluffdale Capital Projects, JVWCD	Medium	Medium	Adding drinking water storage to the city's water system is a high priority. Bluffdale purchases water from JVWCD. As the city continues to grow, the need for water has increased. There has been the recent completion of approximately 22,400 linear feet of water line, one pump station, two metering stations and one 3 million-gallon storage tank. The city will build two new drinking water storage tanks at two different locations. This project will take several years and have many phases.
12	The emergency manager will coordinate with local water districts/public utilities to support ongoing conservation efforts	Drought	Bluffdale EM	SLCo EM, water districts	Improved private/public partnerships	Low	Bluffdale General Fund, water districts operational budget	Ongoing	Medium	
13	Continue implementing an incentive program to encourage the use of low-flow appliances and fixtures in homes and businesses, and pursue other opportunities to encourage efficient water use.	Drought	Bluffdale Public Works	Bluffdale EM, Bluffdale Public Works, Water districts, SLCo EM, SLCo Public Works, Communications	Reduced water usage, encourages water-saving measures and improved resilience to drought	Medium	Bluffdale General Fund and County Funding, BRIC grant, HMGP grant	Long term	Medium	Bluffdale has various incentive programs that it offers to its residents related to water conservation. We have a tiered pricing structure to promote conservation
14	Implement water-saving devices and practices in public facilities.	Drought	Bluffdale Public Works	Bluffdale EM, Communications, SLCo Public Works, SLCo EM, NWS, water districts	Reduced water usage, encourages water-saving measures	Medium	Bluffdale General Fund, SLCo Public Works, BRIC grant, HMGP grant, water districts	Long term	Medium	Bluffdale has implemented several projects including using secondary and reuse water to irrigate public parks instead of culinary water

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
15	Coordinate with water districts to plan for, develop and/or expand secondary water.	Drought	Bluffdale Public Works	Bluffdale EM, water districts, Utilities, SLCo Public Works	Improved coordination between the public and private sectors	High	Bluffdale General Fund, Bluffdale Capital Improvement Fund, SLCo Public Works, water districts	Short term	Medium	Bluffdale continues to encourage the development of secondary water, where feasible. With every road project we add reuse lines.
16	Continue to actively participate in NFIP.	Flooding	Bluffdale EM	SLCo EM, Water districts, SLCo Public Works	Improved collaboration, increased understanding of the NFIP	Low	Bluffdale General Fund	Short term	High	Bluffdale actively participates in the NFIP
17	Determine potential flood impacts and identify areas in need of additional flood control structures.	Flooding, Heavy Rain, Dam Failure	Bluffdale Engineering	Bluffdale Public Works, Bluffdale EM, SLCo Public Works, water districts	Greater understanding of flood risk	Medium	Bluffdale General Fund, SLCo Flood Control, HMGP grant, BRIC grant	Medium	High	The City Engineer and Public Works Director regularly review the impact of development and the need for flood control infrastructure and make recommendations as needed
18	Address identified problems through construction of debris basins, flood retention ponds, energy dissipaters or other flood control structures	Flooding, Heavy Rain, Dam Failure	Bluffdale Engineering	Bluffdale Public Works, Bluffdale EM, SLCo Flood Control, Utilities, water districts	Ensures safety standards are met for local infrastructure	High	SLCo EM General Fund, Capital Improvement Fund, SLCo Flood Control Capital Funds	Long term	High	The City Engineer and Public Works Director oversee the construction of flood control structures
19	Establish maintenance and repair programs to remove debris, improve resistance and otherwise maintain effectiveness of stormwater and flood control systems	Flooding, Heavy Rain, Dam Failure	Bluffdale, Engineering	Bluffdale Public Works, Bluffdale EM, SLCo Public Works, SLCo Flood Control, water districts, Utilities	Ensures infrastructure is up to code and regularly inspected	High	Bluffdale General Fund, SLCo Flood Control Operational Fund, HMGP grant, BRIC grant	Ongoing	High	The Division of Public Works Department continues to maintain and repair all drainage systems in the City
20	Identify and assess structures for deficiencies and vulnerability to flood.	Flooding, Heavy Rain, Dam Failure	Bluffdale Engineering, and Public Works	Bluffdale EM, SLCo Public Works, water districts, local utility companies	Ensures infrastructure is up to code and regularly inspected	High	Bluffdale General Fund	Ongoing	Medium	
21	Modify structures as needed to address deficiencies.	Flooding, Heavy Rain, Dam Failure	Bluffdale Public Works	Bluffdale EM, SLCo Public Works, Utilities, water districts	Ensures structures meet safety standards	High	Bluffdale General Fund, Bluffdale Capital Improvement Fund, BRIC grant, HMGP grant	Ongoing	High	The City Engineering Division in cooperation with the Public Works Department make repairs as needed to deficient structures
22	Assist NWS in making other agencies and departments aware of available resources.	Flood, Heavy Rain, High Wind, Lightning, Tornado, Severe Winter Storm, Extreme Cold, Extreme Heat	Bluffdale EM	SLCo EM, NWS, local jurisdictions, water districts	Improved community engagement, greater understanding of local resources	Low	SLCo EM General Fund, Bluffdale General Fund, NWS, NGO partners, HMGP grant, BRIC grant	Ongoing	High	Bluffdale supports the NWS efforts for education and outreach and makes internal departments aware of NWS resources

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
23	Use recommendations from the State Geological Hazards Working Group or similar geological subject matter experts to address land use and planning for new developments.	Landslide/Slope Failure	Bluffdale EM,	Bluffdale Public Works and Engineering, SLCo EM, UGS, Public Works, Engineering, and GIS	Improved understanding of landslide risks to reduce risk.	Medium	Bluffdale General Fund	Ongoing	High	Bluffdale Engineering and Planning reviews recommendations as provided pertaining to development in the city
24	Work with experts and communities to develop or update evacuation plans.	Wildfire	Bluffdale EM	SLCo EM, local jurisdictions, FFSL	Improved understanding of evacuation procedures, improved coordination between local, state, and federal partners	Low	Bluffdale General Fund, SLCo EM General Fund, HMGP grant	Short term	Medium	The city is working with Salt Lake County and the cities of Herriman, Riverton, and South Jordan, reviewing and updating evacuation planning with GIS mapping.
25	Determine potential flood impacts and identify areas in need of additional flood control infrastructure. Continue to enforce floodplain regulations as they apply to new housing developments.	Flood, Heavy Rain, Dam Failure	Bluffdale Public Works	Bluffdale Engineering, Bluffdale EM, SLCo EM, SLCo Flood Control, SLCo Public Works, local jurisdictions, NWS	Improved understanding of flood risk areas, improved coordination/oversight between local agencies	Medium	Bluffdale General Fund, SLCo Flood Control, BRIC grant, FMA, HMGP grant, SLCo EM General Fund	Medium	Medium	The language for this action has been revised from the previous plan for clarity.
26	Provide maintenance, repairs, and improvements to drainage structures, stormwater systems, and flood control structures. to remove debris, improve resistance and otherwise maintain their effectiveness.	Flood, Heavy Rain, Dam Failure	Bluffdale Public Works	Bluffdale Engineering, Bluffdale EM, SLCo EM, SLCo Flood Control, SLCo Public Works, local jurisdictions, NWS	Reduce potential structural losses or loss of life due to flooding.	High	Bluffdale General Fund, SLCo Flood Control, BRIC grant, FMA, HMGP grant, SLCo EM General Fund	Medium	High	
27	Reduce threat of unstable or inadequate flood control structures. Identify, assess, and modify as needed.	Flood, Heavy Rain, Dam Failure	Bluffdale Public Works	Bluffdale Engineering, Bluffdale EM, SLCo EM, SLCo Flood Control, SLCo Public Works, local jurisdictions, NWS	Reduce potential structural losses or loss of life due to flooding.	High	Bluffdale General Fund, Bluffdale Capital Improvement Fund, SLCo Flood Control, BRIC grant, FMA, HMGP grant, SLCo EM	Medium	High	
28	Educate home and property owners regarding the risks of flooding. Identify potential flooding of Wood Hollow, Beef Hollow, and Rose Creek drainages. Also educate about risk of flooding due to dam failure.	Flood, Heavy Rain, Dam Failure	Bluffdale Public Works	Bluffdale Engineering, Bluffdale EM, SLCo EM, SLCo Flood Control, SLCo Public Works, local jurisdictions, NWS	Improved understanding of flood risk areas. Reduce potential structural losses or loss of life due to flooding.	Medium	Bluffdale General Fund	Short term	Medium	

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
29	Continue to enforce floodplain regulations as they apply to new housing developments.	Flood, Heavy Rain, Dam Failure	Bluffdale Public Works	Bluffdale Engineering, Bluffdale EM, Zoning, SLCo EM, SLCo Flood Control, SLCo Public Works, local jurisdictions, NWS	Reduce potential structural losses or loss of life due to flooding.	Low	Bluffdale General Fund	Ongoing	High	
30	Continue our work to prepare our community to be storm ready, including the following: 1. Receive information from NWS annually about new services and alerts as available. 2. Include in our Neighborhood Emergency Plan the importance of caring for our older residents who will need help during severe weather.. Continue to educate all residents about how to prepare for severe weather.	Flood, Heavy Rain, High Wind, Lightning, Tornado, Severe Winter Storm, Extreme Cold, Extreme Heat	Bluffdale EM,	Bluffdale Public Works, Bluffdale FD, NWS, SLCo EM, local jurisdictions	Improved coordination with local, state, and federal agencies	Low – $11,000	Bluffdale General Fund, NWS, SLCo EM General Fund, BRIC grant, EMGP grant	Ongoing	Medium-High	
31	Continue to urge resident preparation through seasonal articles in the monthly newsletter.	Wildfire	Bluffdale EM	SLCo EM, SLCo Public Works, Code Enforcement, Engineering, Planning	Greater community engagement with local risks, improved compliance with local regulations	Low – $15,000	Bluffdale General Fund, SLCo EM General Fund, NWS, NGO partners, SLCo Flood Control	Long term	Medium	
32	Create evacuation plans for high risk areas.	Wildfire	Bluffdale EM	SLCo EM, SLCo Public Works, Engineering, Planning	Greater community engagement with local risks, improved compliance with local regulations	Low – $15,000	Bluffdale General Fund	Long term	Medium	The city is working with SLCo and the cities of Herriman, Riverton, and South Jordan, reviewing and updating evacuation planning with GIS mapping.
33	Continue to assess water flow capabilities and address deficiencies.	Wildfire	Bluffdale EM	SLCo EM, SLCo Flood Control, SLCo Public Works, Engineering, Planning	Greater community engagement with local risks, improved compliance with local regulations	Low – $15,000	Bluffdale General Fund, Bluffdale Capital Improvement Fund	Long term	Medium	

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
34	Continue to keep Wildland-Urban Interface as an important element to our development and ensure that developers follow our city code for road accessibility and availability of water flow for fire response.	Wildfire	Bluffdale EM	SLCo EM, SLCo Flood Control, SLCo Public Works, Code Enforcement, Engineering, Planning	Greater community engagement with local risks, improved compliance with local regulations	Low – $15,000	Bluffdale General Fund	Long term	Medium	
35	Conduct a hazmat flow study.	Hazardous Materials Incident	Bluffdale EM	SLCo EM, Local Utility Companies	Understanding the hazardous materials transporting through the area helps identify protective actions to reduce risk.	Medium	Bluffdale General Fund, SLCo EM General Fund	Long term	Medium	
36	Conduct risk studies or engineering assessments to determine approaches to address issues identified in dam safety inspection reports.	Dam Failure	SLCo EM	Salt Lake County Public Works Flood Control Engineering, Utah Division of Water Rights Dam Safety Section, Salt Lake City Public Utilities, Local Governments	Reduce potential losses from failure of HHPDs.	Medium	Salt Lake County General Fund, HHPD Grant, HMGP Grant	Medium	Medium	Jordan Valley Water Purification Upper has a safety condition rating of fair.
37	Rehabilitate or complete other safety projects for high hazard dams based on dam safety reports or risk studies.	Dam Failure	SLCo EM	Salt Lake County Public Works Flood Control Engineering, Utah Division of Water Rights Dam Safety Section, Salt Lake City Public Utilities, Local Governments	Reduce potential losses from failure of HHPDs.	High	Salt Lake County General Fund, HHPD Grant, HMGP Grant	Long term	Medium	

DRAFT

THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT

Town of Brighton

Jurisdictional Annex to the
Salt Lake County Hazard Mitigation Plan

Month XXXX | Draft X.X

BRIGHTON
Utah

THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT

Table of Contents

Town of Brighton Annex 1

Planning Process Contact Information 1
Jurisdiction Profile 1
Date of Incorporation 1
Location and Description 1
Population 2
Demographics 3
Brief History 3
Climate 3
Public Services 3
Governing Body 3
Development Trends 3
Jurisdiction-Specific Hazards and Risk 3
Hazard Event History 6
National Flood Insurance Program Summary 8
Jurisdiction-Specific Vulnerabilities and Impacts 9
Jurisdiction-Specific Changes in Vulnerability 29
Additional Public Involvement 43
Plan Integration 43
Capability Assessment 44
Planning and Regulatory Capabilities 44
Administrative and Technical Capabilities 46
Financial Capabilities 47
Education and Outreach Capabilities 49
Opportunities to Expand and/or Improve Capabilities 50
Mitigation Strategy 51

DRAFT

List of Figures

Figure 1: Map of the Town of Brighton 2
Figure 2: Social Media Posts for the Hazard Mitigation Survey (SLCo – *left*; MSD – *middle*), and the Draft Plan Review (SLCo EM – *right*) 43

List of Tables

Table 1: Contact Information for the Town of Brighton 1
Table 2: Participant List for the Town of Brighton 1
Table 3: Calculated Priority Risk Index Values for the Town of Brighton 4
Table 4: Criteria for the Calculated Priority Risk Index 5
Table 5: History of Hazard Events in the Town of Brighton 7
Table 6: National Flood Insurance Program Status for the Town of Brighton 8
Table 7: National Flood Insurance Policies for the Town of Brighton 8
Table 8: Jurisdiction-Specific Vulnerabilities and Impacts in the Town of Brighton 9
Table 9: Jurisdiction-Specific Changes in Vulnerability in the Town of Brighton 30
Table 10: Integration of Previous Plans by the Town of Brighton 44
Table 11: Opportunities for Integration with Future Plans of the Town of Brighton 44
Table 12: Assessment of the Planning Capabilities of the Town of Brighton 45
Table 13: Assessment of the Regulations and Ordinances of the Town of Brighton 45
Table 14: Assessment of the Administrative Capabilities of the Town of Brighton 46
Table 15: Assessment of the Technical Capabilities of the Town of Brighton 47
Table 16: Assessment of the Financial Capabilities of the Town of Brighton 48
Table 17: Assessment of the Education and Outreach Capabilities of the Town of Brighton 49
Table 18: Opportunities to Expand or Improve the Capabilities of the Town of Brighton 50
Table 19: Mitigation Action Alternatives for the Town of Brighton 51
Table 20: Status of Prior Mitigation Actions of the Town of Brighton 51
Table 21: 2025 Mitigation Action Plan for the Town of Brighton 53

DRAFT

Town of Brighton Annex

To participate in this multi-jurisdictional hazard mitigation plan (MJHMP) update for Salt Lake County (SLCo), the governing body of the town of Brighton passed a formal resolution, a copy of which is maintained at the local government offices.

Planning Process Contact Information

Table 1 provides information on the point of contact during the updating of the MJHMP.

Table 1: Contact Information for the Town of Brighton

Name	Contact Information
Jane Martain	**Phone:** 801-554-1007; **email:** janemartain@brighton.utah.gov

The town of Brighton has a fully integrated approach to hazard mitigation planning and program implementation. During the 2024 update process, the MJHMP participation roles in Table 2 were recorded.

Table 2: Participant List for the Town of Brighton

Name	Title	Jurisdiction
Jane Martain	City Manager	Town of Brighton

Jurisdiction Profile

Date of Incorporation

January 1, 2020

Location and Description

The town of Brighton is a newly incorporated community located at the top of Big Cottonwood Canyon. The town is approximately 15.9 square miles in area and is approximately 8,700 feet above sea level. The town of Brighton is the home of the Brighton Ski Resort and the Solitude Mountain Resort. Figure 1 is a map of the town.

DRAFT

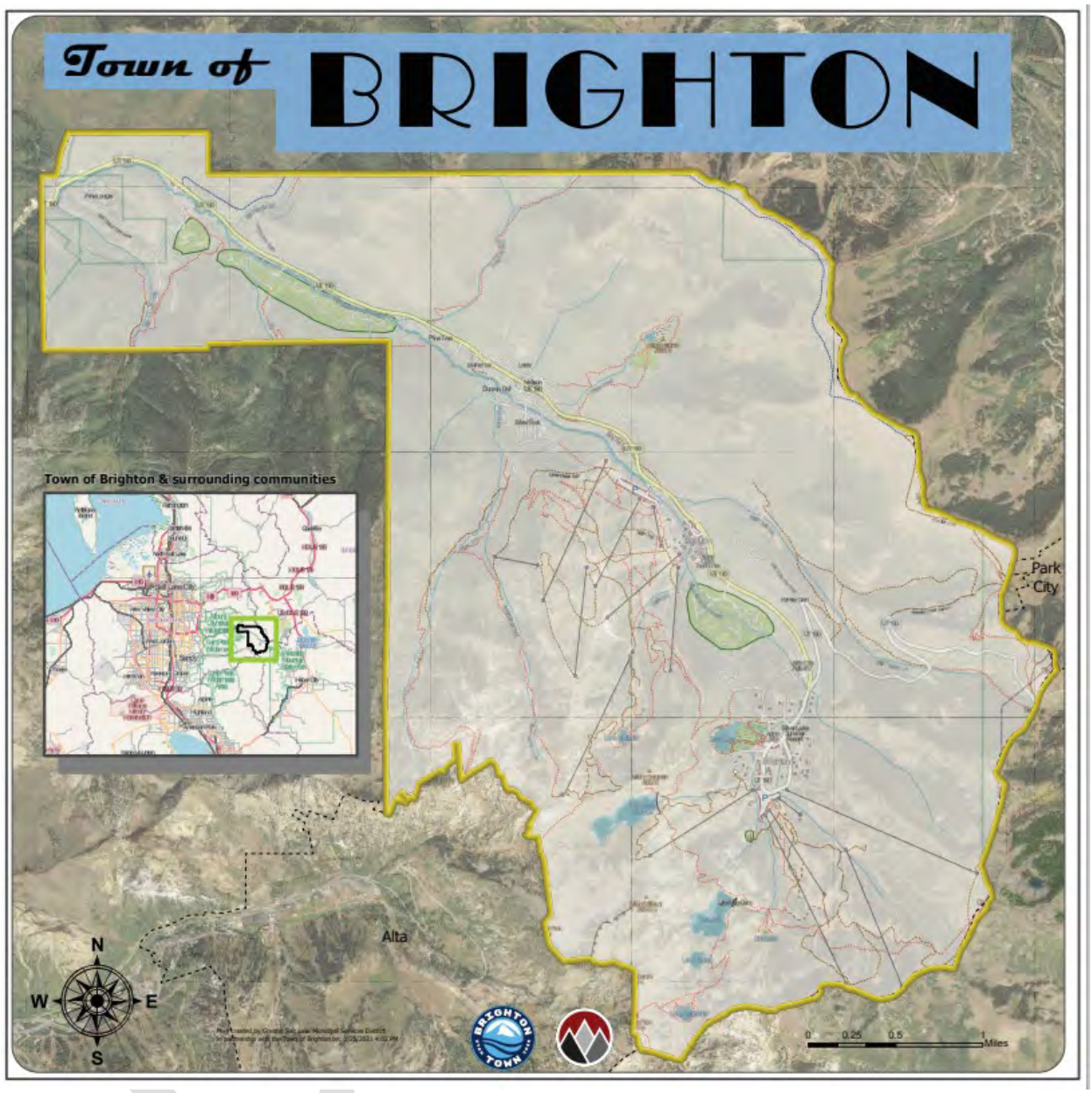


Figure 1: Map of the Town of Brighton[1]

Population

The 2022 American Community Survey 5-Year Estimate from the U.S. Census Bureau records the population of the town of Brighton as 353 people.

[1] Town of Brighton Map. https://www.brighton.utah.gov/media/2491.

Demographics

Most of the 353 people are between the ages of 25 and 34, with a median age of 43.1; 182 (51.6%) are males and 171 (48.4%) are females. English is the primary language in 99.4% of homes,.

Brief History

The town of Brighton boasts a storied history that began in 1871 with its initial settlement by Scottish immigrants William and Catherine Brighton who established a rustic hotel that quickly became a favored spot for visitors enjoying the natural beauty of Big Cottonwood Canyon. In 1936, the Brighton Ski Resort was founded, marking it as one of Utah's earliest ski destinations. As the community grew, residents voted to incorporate the town, with Brighton officially incorporating on January 1, 2020.

Climate

The town of Brighton experiences a continental climate (Dsa Köppen classification), characterized by dry, hot summers and cold winters, with significant temperature variations throughout the year. Average highs are approximately 81°F in the summer and approximately 15°F in the winter. Rain each year is approximately 15.3 inches, and snowfall averages 500 inches.

Public Services

The town of Brighton offers a wide range of public services through the Great Salt Lake Municipal Services District (MSD). MSD provides staffing and administrative support and other services and handles planning and zoning, business licensing, code enforcement, inspections, and emergency planning. Public works services are contracted with SLCo Public Works, which provides construction and maintenance of roads, snow removal, and street lighting.

Governing Body

The governing body—Mayor and four council members—is responsible for making policy decisions, adopting ordinances, and overseeing the administration of the town.

Development Trends

The Brighton Neighborhood Nodes Design Plan aims to increase amenities, commercial/recreational vitality, walking facilities, and sustainability in specific areas.

Jurisdiction-Specific Hazards and Risk

The Calculated Priority Risk Index (CPRI) is a comprehensive assessment tool for evaluating and prioritizing risks in a given context. It considers various factors, such as probability, impact, and urgency, to determine the level of risk associated with events or situations. The results for each hazard, including its risk factor (RF) value, are shown in Table 3. The results are based on the criteria in Table 4 and the

DRAFT

equation that follows it. The CPRI helps organizations and individuals make informed decisions about risk management and mitigation strategies. It provides a systematic approach to identifying and addressing potential issues, allowing for a more efficient allocation of resources and proactive risk prevention. With the CPRI, stakeholders can prioritize their focus on the most critical risks, leading to more effective risk management and, ultimately, better outcomes.

Table 3: Calculated Priority Risk Index Values for the Town of Brighton

Type of Hazard Event	Probability of Future Events	Spatial Extent	Severity of Life/ Property Impact	Warning Time	Duration	Response Capacity	Risk Factor Value
Avalanche	4	1	2	4	2	1	2.6
Drought	4	4	2	1	4	1	2.8
Earthquake	3	4	4	4	3	2	3.4
Extreme Heat	4	4	3	1	3	1	3
Extreme Cold	3	4	2	1	3	1	2.4
Flooding	4	3	3	3	3	1	3.1
Landslide/Slope Failure	2	1	2	4	1	2	2
Radon	4	4	2	1	4	2	2.9
Heavy Rain	4	3	2	3	1	1	2.6
High Wind	4	3	3	3	2	1	3
Lightning	4	2	2	4	1	1	2.6
Severe Winter Weather	4	3	2	2	2	1	2.6
Tornado	2	2	3	4	1	2	2.4
Wildfire	4	3	3	4	3	1	3.2
Dam Failure	2	2	3	2	2	3	2.4
Civil Disturbance	2	1	2	4	2	2	2.1
Cyber Attack	2	3	3	4	3	2	2.7
Hazardous Materials Incident (Transportation & Fixed Facility)	3	1	2	4	1	1	2.2
Public Health Epidemic/ Pandemic	3	4	3	1	4	1	2.8
Terrorism	2	1	3	4	2	1	2.3

DRAFT

Table 4: Criteria for the Calculated Priority Risk Index

Risk Index Factor	Degree of Risk Level		Criteria	Factor Weight for Degree of Risk Level
Probability of Future Events	1	Unlikely	Less than 1 percent probability of occurrence in the next year or a recurrence interval of greater than every 100 years.	30%
	2	Occasional	1 to 10 percent probability of occurrence in the next year or a recurrence interval of 11 to 100 years.	
	3	Likely	11 to 90 percent probability of occurrence in the next year or a recurrence interval of 1 to 10 years.	
	4	Highly Likely	91 to 100 percent probability of occurrence in the next year or a recurrence interval of less than 1 year.	
Spatial Extent	1	Limited	Less than 10% of the planning area could be impacted.	10%
	2	Small	10%–25% of the planning area could be impacted	
	3	Significant	25%–50% of the planning area could be impacted.	
	4	Extensive	50%–100% of the planning area could be impacted.	
Severity of Life/Property Impact	1	Negligible	Less than 5% of the affected area's critical and non-critical facilities and structures are damaged/destroyed. Only minor property damage and minimal disruption of life. Temporary shutdown of critical facilities.	30%
	2	Limited	More than 5% and less than 25% percent of property in the affected area is damaged/destroyed. Complete shutdown of critical facilities for more than one day but less than one week.	
	3	Critical	More than 25% and less than 50% of property in the affected area was damaged/destroyed. Complete shutdown of critical facilities for over a week but less than one month.	
	4	Catastrophic	Over 50% of critical and non-critical facilities and infrastructures in the affected area are damaged/destroyed. Complete shutdown of critical facilities for more than one month.	
Warning Time	1	Self-defined	More than 24 hours	10%
	2	Self-defined	12 to 24 hours.	

DRAFT

Risk Index Factor	Degree of Risk Level		Criteria	Factor Weight for Degree of Risk Level
	3	Self-defined	6 to 12 hours.	
	4	Self-defined	Less than 6 hours.	
Duration	1	Brief	Up to 6 hours.	10%
	2	Intermediate	Up to one day.	
	3	Extended	Up to one week.	
	4	Prolonged	More than one week.	
Response Capacity	1	High	Significant resources and capability to respond to this kind of event; staff are trained, experienced, and ready.	10%
	2	Medium	Some resources and capability to respond to this kind of staff; some staff may be trained, experienced, and ready while others may need additional support.	
	3	Low	Limited resources and capability to respond to this kind of event; additional staff or staff training needed.	
	4	None	No resources and capability to respond this kind of event; additional outside support would be required.	

RISK FACTOR (RF) EQUATION

RF Value = [(Probability x 0.30) + (Spatial Extent x 0.10) + (Severity of Life/Property Impact x 0.30) + (Warning Time x 0.10) + (Duration x 0.10) + (Response Capacity x 0.10)]

Hazards with an RF value greater than or equal to 2.5 are considered high risk. Those with RF values of 2.0 to 2.4 are considered moderate risk hazards, and those with an RF value less than 2.0 are considered low risk. The highest possible RF value is 4.

Hazard Event History

Examining hazard event histories provides valuable insights to inform decision making and help prioritize resources for risk prevention and response efforts. Table 5 lists the hazard events impacting the town of Brighton planning area since the 2019 plan update, as recorded in the Storm Events Database from the National Centers for Environmental Information.

DRAFT

Table 5: History of Hazard Events in the Town of Brighton[2]

Type of Hazard Event	FEMA Disaster #	Date(s)	Damage or Impacts	Description
Avalanche			A number of avalanches have occurred over the years.	Impacted travel in the canyon if the road is closed. Affected the local economy (if the resort is closed or people cannot get up/down the canyon). Also, concern about planned detonations and the potential effect on those who are in unfamiliar terrain or unaware of planned detonations.
Drought			Concerns about the watershed if there is not enough snowpack to replenish.	
Earthquake	DR-4548-UT	March 2020	5.7 earthquake near Magna	Magna earthquake had significant impacts in the valley. No damage occurred in Brighton and shake intensity was weak.
Extreme Heat		N/A	N/A	N/A
Extreme Cold		N/A	N/A	N/A
Flooding		2023	Concerns about flooding with the amount of snow melting	Residents stockpiled sandbags and cleaned out creeks to help with water flow.
Landslide/ Slope Failure		August 2021	Debris in road caused closure.	Heavy rain and flash flooding affected the area.
Radon		N/A	N/A	N/A
Heavy Rain		N/A	N/A	N/A
High Wind			High winds can damage powerlines or prevent the lifts from running at resorts.	This has led to injuries and revenue lost at ski resorts. In addition, it might have cascading effects with a potential avalanche.
Lightning		N/A	N/A	N/A
Severe Winter Weather		2023	Death of man from heavy snow/roof collapse.	Roof collapse is a concern if people do not keep up with snow clearing during the winter months. Heavy snow and blizzard conditions are common in Brighton.

[2] EAP = Emergency Action Plan, ML = local magnitude

DRAFT

Type of Hazard Event	FEMA Disaster #	Date(s)	Damage or Impacts	Description
Tornado		N/A	N/A	N/A
Wildfire		2024	There have been smaller wildfires in the forest nearby.	Road closure impacts.
Dam Failure			Lake Mary-Phoebe Dam and Twin Lakes Dam are in Brighton.	The town is behind on needed improvements due to funding/staffing issues. These are rated high hazard dams. EAPs have to be updated.
Civil Disturbance		2024	Brighton resident threatened a snowboarder who came onto his land.	Charged with third-degree felony aggravated assault
Cyberattack		N/A	N/A	N/A
Hazardous Materials Incident (Transporta-tion & Fixed Facility)		N/A	N/A	N/A
Public Health Epidemic/ Pandemic		2020–2023	COVID-19 pandemic	Affected local businesses and ski resorts in the canyon
Terrorism		N/A	N/A	N/A

National Flood Insurance Program Summary

The town of Brighton participates in the National Flood Insurance Program (NFIP). Table 6 displays statistics related to the NFIP. The town of Brighton does not participate in the Community Rating System.

Table 6: National Flood Insurance Program Status for the Town of Brighton[3]

Init FHBM Identified	Initial FIRM Identified	Current Effective Map Date	Adopted Date	Date Joined NFIP	Tribal
N/A	12/18/1985	09/25/2009	2009	10/04/2021	No

Table 7: National Flood Insurance Policies for the Town of Brighton

Community ID	Number of Losses	Total Net Payment	Active Policies	Total Coverage
490237	0	$0	1	$98,000

[3] FIRM = Flood Insurance Rate Map, FHBM = Flood Hazard Boundary Map

DRAFT

The town of Brighton has designated the Director of Planning and Development Services as the Floodplain Administrator. The duties of the Floodplain Administrator are supported by the Greater Salt Lake Municipal Services District (MSD). The current Flood Damage Prevention and Control Ordinance was adopted on 9/14/2021. The current Flood Insurance Rate Map (FIRM) became effective 9/25/2009. The MSD is responsible for issuing floodplain permits in MSD Member Communities, including Brighton. The permits include a description of all work, including the kind and type of construction, proposed intent, and location. Substantial damage/substantial improvement structures are identified through the permitting process. Structures that are determined to be substantially damaged or substantial improvements are required to come into compliance with current codes. The MSD Building Department provides guidance on how to build in accordance with existing building codes.

Jurisdiction-Specific Vulnerabilities and Impacts

Table 8 provides information on the vulnerable assets in the town of Brighton, including its critical facilities, highlighting the town's vulnerability to identified hazards. It also describes the potential impacts on the community arising from those vulnerabilities. By understanding the risks associated with these assets, local authorities can develop proactive strategies to mitigate vulnerabilities and ensure the safety and functionality of these important assets during hazard events. These data are invaluable for decision-making and prioritizing resources for emergency response and preparedness efforts, ultimately contributing to more effective risk management and greater resilience within the community.

Vulnerable assets include the 353 residents and their homes. Brighton has one fire station. Highway 190/Big Cottonwood Canyon Road provides the primary transportation route in and out of Brighton. In the summer, Guardsman Pass Road provides a transportation link to Summit County to the east. Solitude Mountain Resort and Brighton Resort, along with associated businesses, account for significant economic assets in the town that draw significant numbers of visitors and revenue. The area also offers summer recreation through campgrounds and trails. Natural resources include forests and other vegetation, wildlife, lakes, Big Cottonwood Creek and tributaries, and the general scenery of the Wasatch mountains.

Although this number deviates from the 353 residents reported by the 2020 U.S. Census, the Town of Brighton 2025 Community Wildfire Protection Plan reports the following: 432 full-time residents, 185 full-time housing units, 1,200 part-time residents, and 690 seasonal housing units, 875 homes, 900 buildable lots, and 5 commercial entities.

Table 8: Jurisdiction-Specific Vulnerabilities and Impacts in the Town of Brighton

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
Avalanche	People	*Vulnerability:* Backcountry outdoor enthusiasts in Brighton are most vulnerable to avalanches. This includes areas around Brighton Resort or in Big and Little Cottonwood Canyons. *Impacts*: Avalanche rescue is resource-heavy and time consuming, and it frequently results in loss of life. Skiers, other outdoor recreationists, ski patrol, and resort staff may be at risk. Residents are

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		also at risk from roof avalanches, which occur when large slabs of snow slide off steep roofs.
	Structures	*Vulnerability:* Residences and structures located near steep slopes, especially along Guardsman Pass, Silver Fork, or slopes adjacent to the Brighton Resort are at risk from avalanches. *Impacts*: Structures can be damaged or destroyed by natural and human-caused avalanches.
	Economic Assets	*Vulnerability:* Brighton's economy depends heavily on tourism, particularly during the winter season. All local businesses are vulnerable. *Impacts:* Avalanche events can temporarily close Brighton Resort, limit road access via SR-190, and disrupt ski rental shops, lodging businesses, and restaurants. Road closures and power outages can reduce visitation, resulting in lost revenue for the local economy.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Vegetation, habitats, scenery, and historic structures are vulnerable to avalanches. *Impacts:* Avalanches in Brighton can impact alpine meadows, aspen stands, and conifer forests, resulting in habitat disruption and soil erosion. The area's natural beauty, which is a draw for recreation and photography, may suffer visible scarring after large slides. Although not widely known for historical structures, any older lodges or historic cabins in the area could be at risk if they are located in avalanche-prone terrain without modern structural protections.
	Critical Facilities and Infrastructure	*Vulnerability:* SR-190, utility systems, and fuel systems are vulnerable to avalanches. *Impacts:* Brighton's critical infrastructure includes SR-190 (Big Cottonwood Canyon Road), which is the sole access point into and out of the community. This road is frequently closed for avalanche control or recovery operations, which isolates residents and hinders emergency response. Power lines, propane storage, and water systems may also be affected by slides that damage above-ground infrastructure or block maintenance access routes. Brighton's remote location and limited-service infrastructure amplify these vulnerabilities.
	Community Activities	*Vulnerability:* Avalanche risk affects many aspects of community life in Brighton. *Impacts:* Winter events, school transportation for children living seasonally in the area, and recreational outings can be delayed or canceled due to high avalanche danger.
Drought	People	*Vulnerability:* All residents are vulnerable. *Impacts:* In Brighton, prolonged drought conditions can lead to limited access to clean drinking water, particularly for residents and seasonal visitors who rely on local groundwater wells or small-scale municipal systems.
	Structures	*Vulnerability:* Drought imposes restrictions on growth. *Impacts:* Drought indirectly restricts development and infrastructure expansion in Brighton due to limited water supply.
	Economic Assets	*Vulnerability:* Brighton is renowned for its ski resorts, which rely heavily on consistent snowfall.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		Impacts: Drought conditions can lead to reduced snowpack, adversely affecting the ski season's length and quality. Additionally, the diminishing of the Great Salt Lake can reduce lake-effect snowfall, further impacting snow levels. This decline in snowfall can result in decreased tourist visits, affecting revenue for local businesses and employment opportunities within the community. While agriculture is minimal in Brighton itself, regional drought affects food availability and prices, indirectly impacting local businesses.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Drought places significant stress on Brighton's high-elevation vegetation, including wildflowers, aspens, and subalpine forests. *Impacts:* This stress weakens ecosystems and increases vulnerability to pests, such as bark beetles, which thrive in dry conditions.
	Critical Facilities and Infrastructure	*Vulnerability:* Water systems are vulnerable to drought. Brighton has limited public infrastructure, making drought impacts more pronounced. *Impacts*: Local water systems may face reduced recharge rates, affecting both quantity and quality.
	Community Activities	*Vulnerability:* Recreation opportunities and household water usage are vulnerable to drought. *Impacts:* Brighton's recreational spaces such as hiking trails, picnic areas, and campgrounds may suffer from lack of maintenance due to water restrictions or fire closures. Households may face limitations on landscaping, outdoor water use, and recreational water features. These restrictions, though necessary, can affect the community's quality of life and seasonal aesthetics, especially in areas relying on gardens or native landscaping for erosion control and fire mitigation.
Earthquake	People	*Vulnerability:* Brighton is located within a seismically active region of Utah, and all residents are vulnerable. *Impacts:* Although Brighton's population is relatively small, specific groups are more vulnerable to earthquake impacts. These include residents living in older cabins or lodges, many of which were constructed before modern seismic building codes. Families with young children, elderly residents, individuals with mobility or sensory impairments, and seasonal workers living in dense or shared accommodations may face challenges evacuating or accessing emergency services. Brighton residents will also be affected if access to the rest of Salt Lake County is limited by earthquake damage to roads or other lifelines. They may be cut off from outside emergency aid.
	Structures	*Vulnerability:* All structures in Brighton are vulnerable to earthquakes. Many buildings in Brighton, especially historic ski lodges, vacation rentals, and cabins, were built before seismic design standards were adopted statewide. *Impacts:* Earthquakes can cause slight to extensive damage to structures. Structures made from unreinforced masonry or with shallow foundations are particularly vulnerable. Some buildings are perched on steep or unstable slopes, where ground movement during an earthquake could trigger foundation failure or secondary hazards like landslides. Seasonal structures or those constructed for temporary

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		use may also lack the bracing or anchoring needed to withstand seismic shaking.
	Economic Assets	*Vulnerability:* All Brighton businesses and the town economy are vulnerable to earthquakes. Key assets include lodging facilities, restaurants, retail shops, and Brighton Resort. *Impacts:* Brighton's economy relies heavily on tourism and outdoor recreation. An earthquake could severely disrupt these businesses, particularly if access to the area is blocked or buildings are damaged.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Natural scenery, outdoor recreation amenities, and historic structures are vulnerable to earthquakes. *Impacts:* While Brighton is primarily a natural destination, landslides or rockfall triggered by earthquakes could alter scenic vistas, hiking trails, and alpine ecosystems. Historic cabins, community gathering spaces, and older ski infrastructure may lack seismic upgrades and be prone to collapse or structural compromise. These facilities represent important cultural and recreational value to the community and their damage would diminish both heritage and identity.
	Critical Facilities and Infrastructure	*Vulnerability:* Brighton's critical facilities, including emergency access routes, power lines, and water systems, are vulnerable to earthquake-induced disruption. *Impacts:* The community is largely accessed via SR-190 through Big Cottonwood Canyon, which includes steep slopes and rockfall-prone areas that could become impassable after a quake. Any damage to utility systems, especially during winter months, could leave residents and visitors without heat, water, or communication.
	Community Activities	*Vulnerability:* Community life in Brighton, especially during the winter recreation season, is vulnerable due to public events, ski operations, and gatherings at lodges or resorts. *Impacts:* Earthquakes that strike during high visitation periods pose a greater risk of casualties due to crowded spaces and limited evacuation infrastructure. Many public spaces and event venues are in older buildings or set against steep terrain, making them especially hazardous during seismic activity.
Extreme Heat	People	*Vulnerability:* Vulnerable populations during extreme heat include adults over 65, individuals with pre-existing health conditions, and young children, as they struggle to regulate body temperature. *Impacts:* Extreme heat can cause heat related illnesses such as dehydration, heat exhaustion, and heat stroke. Socioeconomically disadvantaged individuals may lack access to cooling resources, while outdoor workers are at higher risk of heat-related illnesses due to physical labor without adequate hydration and rest.
	Structures	*Vulnerability:* Residential buildings with inadequate insulation and ventilation and commercial buildings lacking reflective roofing and proper shading may be vulnerable to extreme heat. Materials like metal and glass can amplify heat retention, while areas with limited green space typically experience higher temperatures. *Impacts:* Structures may retain heat, increasing discomfort or illness for occupants. Increased demand can strain cooling systems and increase costs.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Economic Assets	*Vulnerability:* Agriculture and outdoor recreation businesses are vulnerable to extreme heat. *Impacts:* Agricultural operations can have reduced yields and higher water demand due to heat stress. The outdoor recreation industry may see decreased participation during heatwaves, affecting local businesses that rely on visitors. In addition, the energy infrastructure could face strain from increased cooling demands, leading to outages.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Plants, wildlife, historic buildings, and parks are vulnerable to extreme heat. *Impacts:* Local plant species and wildlife habitats can suffer from drought conditions, leading to reduced biodiversity. Historic buildings may degrade due to high temperatures, causing materials to deteriorate and paint to peel. In addition, parks and recreational areas may experience overuse and risk their preservation, as residents seek relief from the heat.
	Critical Facilities and Infrastructure	*Vulnerability:* Transportation, utilities, and healthcare systems are vulnerable to extreme heat. *Impacts:* Healthcare facilities may experience increased demand because of heat-related medical issues, while schools can suffer from the strain on cooling resources. Transportation systems are at risk of damage, such as buckling roads and warped train tracks. Power grids may be strained by higher demands for electricity for cooling, leading to potential outages.
	Community Activities	*Vulnerability:* Activities like outdoor sports, fairs, and agricultural practices are vulnerable to extreme heat. *Impacts:* These events can pose risks, particularly for participants such as youth athletes and elderly residents who may suffer from heat-related illnesses. In addition, high temperatures can stress crops, impacting local farming.
Extreme Cold	People	*Vulnerability:* Brighton frequently experiences extreme cold due to its high elevation and alpine climate, especially during the peak winter season. All residents are vulnerable. *Impacts:* Elderly residents, young children, and seasonal workers are particularly vulnerable, especially if they lack access to proper heating, insulated housing, or winter clothing. Visitors unaccustomed to high-altitude cold may underestimate the risk of frostbite or hypothermia while recreating outdoors. Individuals with pre-existing health conditions, such as respiratory or cardiovascular issues, face elevated health risks during prolonged exposure to sub-zero temperatures.
	Structures	*Vulnerability:* Older structures are vulnerable to extreme cold. *Impacts:* Many buildings in Brighton, including older cabins, seasonal rentals, and ski lodges, may lack modern insulation or energy-efficient heating systems. Homes with drafty windows, aging furnaces, or unsealed gaps are especially prone to heat loss and frozen pipes. Unheated outbuildings like storage sheds or garages are also susceptible to structural damage from frost. Public infrastructure, such as roads and bridges, may become treacherous due to black ice and snow accumulation, posing hazards to both residents and emergency responders.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Economic Assets	*Vulnerability:* All businesses in Brighton are vulnerable to extreme cold. *Impacts:* While Brighton has limited agriculture, transportation networks, utility services, and winter tourism businesses are economically vulnerable to extreme cold. Power outages caused by ice accumulation or equipment failure can disrupt operations at lodges, restaurants, and ski facilities, leading to lost revenue and reduced visitor confidence. Icy roads, especially SR-190 through Big Cottonwood Canyon, can impede supply deliveries, employee commutes, and tourist access. Energy costs spike during extended cold periods, increasing operational expenses for businesses reliant on heating systems.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Historic structures, cultural sites, local vegetation, and wildlife habitats are vulnerable to extreme cold. *Impacts:* Historic structures, especially those not built for severe weather, can deteriorate from below-freezing temperatures and ice. Original ski lodges or cabins are at risk if they are not maintained for extreme cold tolerance, potentially leading to foundation damage, ice dams, or roof collapse. Cultural resources, such as memorials or public art installations, may suffer from freeze-related cracking or surface degradation. Local vegetation and wildlife habitats may suffer from plant stress and reduced food availability when faced with prolonged cold.
	Critical Facilities and Infrastructure	*Vulnerability:* Water and power systems and roads are vulnerable to extreme cold. *Impacts:* While Brighton lacks major critical facilities, it does rely on a small-scale utility and water system that can be strained during extreme cold events. Frozen pipes, pump failures, and mechanical malfunctions at pump houses or storage tanks can compromise service delivery. Power infrastructure is also vulnerable, and any outage during winter could be life-threatening due to cold exposure. Emergency response capabilities may be delayed if roads become icy or blocked by snow accumulation, compounding public safety concerns.
	Community Activities	*Vulnerability:* Outdoor events and recreation are vulnerable to extreme cold. *Impacts:* Brighton's community gatherings, outdoor events, and ski resort activities can be significantly disrupted by extreme cold. When temperatures drop dangerously low, recreational programs and seasonal events may be postponed or canceled, affecting tourism and local morale. Vulnerable groups, such as the elderly, young children, and those without adequate indoor heating, may avoid public spaces entirely. Additionally, community centers or lodges that are poorly insulated or under-heated can become uncomfortable or unsafe for group gatherings.
Flooding (and Heavy Rain)	People	*Vulnerability:* Flooding primarily affects residents in low-lying areas near rivers and streams, such as Big Cottonwood Creek, especially during heavy rainfall or snowmelt. *Impacts:* Individuals without reliable transportation may struggle to evacuate quickly, while low-income families often lack resources for

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		flood-prevention measures. The elderly and those with disabilities may face mobility challenges, increasing their risk during emergencies. Overall, factors such as geographic location, economic status, and physical ability contribute to the community's varying levels of vulnerability to flooding.
	Structures	*Vulnerability:* Structures in low-lying areas near the Big Cottonwood Creek or other waterways are vulnerable to flooding. *Impacts:* Residential properties in flood plains and commercial buildings without proper drainage systems or flood-resistant designs face significant risks during heavy rain or snowmelt. Older structures may be more susceptible due to outdated construction standards. Overall, a combination of location and construction features contributes to their vulnerability to flooding.
	Economic Assets	*Vulnerability:* All businesses and economic activity in flood zones, near waterways, or low-lying areas are vulnerable to flooding. *Impacts:* Commercial properties, especially retail centers and warehouses near rivers or low-lying areas, are at high risk during heavy rainfall. Residential developments in flood-prone zones also can suffer damage, impacting property values. Public infrastructure, such as roads and utilities, may experience disruptions, leading to costly repairs. Agricultural land can be affected by excess water, reducing crop yields.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Streams and habitats, as well as cultural sites, are vulnerable to flooding. *Impacts:* Natural areas like wetlands and streams are at risk of habitat destruction, while historic sites and landmarks may sustain structural damage. Cultural resources, such as parks and public spaces, can become unusable, affecting community events. Factors contributing to their vulnerability include inadequate flood management, urban development that alters water flow, and the increasing frequency of extreme weather events due to climate change.
	Critical Facilities and Infrastructure	*Vulnerability:* No critical facilities were identified in the Special Flood Hazard Zone in Brighton. Roads and utilities may be vulnerable. Because Brighton has limited facilities, it may be vulnerable to disruptions to facilities and infrastructure in the valley. *Impacts:* Hospitals, schools, and transportation networks are vulnerable to flooding due to their proximity to rivers and low-lying areas, which can overflow during heavy rain or snowmelt. Flooding can disrupt emergency services, require schools to evacuate, block transportation routes, and isolate communities. In addition, inadequate drainage systems and urban development encroaching on floodplains increase these risks.
	Community Activities	*Vulnerability:* Outdoor recreation and events are vulnerable to flooding. *Impacts:* Due to the area's geography and infrastructure, outdoor events, sports, and farmers' markets are vulnerable to flooding. Parks and open spaces can quickly become inundated during heavy rainfall or rapid snowmelt. Residential neighborhoods near rivers, roads, and bridges are at risk of flash floods, which can disrupt transportation and emergency services.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
Landslide/ Slope Failure	People	*Vulnerability:* In Brighton, residents living in cabins or homes built along steep slopes, especially in areas like Silver Fork, near Guardsman Pass, or along SR-190, are most vulnerable to landslides and slope failures. The risk is particularly elevated during spring snowmelt and periods of heavy rain, when saturated soils become unstable. *Impacts:* Residents may be injured or displaced from homes due to landslides. Many properties in Brighton are older or seasonal and may lack modern drainage systems or slope stabilization features.
	Structures	*Vulnerability:* Homes, commercial buildings, roads, and bridges on or near steep slopes may be vulnerable to landslides because of factors like loose soil or rock geology, heavy rainfall, and poor drainage systems. In addition, inadequate construction practices and a lack of erosion control measures can increase the risk of slope failures, particularly for properties not designed with their environmental context in mind. *Impacts:* Landslide can damage or destroy structures, including homes, businesses, and auxiliary structures like storage sheds. Roads such as SR-190 through Big Cottonwood Canyon may also experience rockslides, roadbed slippage, or debris flows that can damage pavement and reduce safe access to the community.
	Economic Assets	*Vulnerability:* Brighton's economic well-being depends on tourism infrastructure, including ski resort operations, road access, and power service continuity. *Impacts:* Landslides can damage access roads, utility lines, and commercial buildings, causing service interruptions and discouraging visitor access. Homes and vacation rentals located on hillsides may also suffer property damage or depreciation if slope stability is questioned. The cost of repairs or slope stabilization measures can be significant for both public and private landowners, posing financial strain on a tourism-dependent economy.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Natural ecosystems, historic sites, and recreation amenities are vulnerable to landslides and slope failure. *Impacts:* Slope failures in Brighton can lead to soil erosion, vegetation loss, and sediment runoff into alpine streams, affecting water quality and wildlife habitat in the Wasatch Mountains. Areas near historic mining sites or early settlement cabins may be particularly unstable due to old excavation practices and a lack of modern engineering reinforcement. Community assets such as recreation areas, trailheads, and alpine meadows may be damaged or rendered inaccessible by landslide debris or erosion, threatening both ecological integrity and local heritage.
	Critical Facilities and Infrastructure	*Vulnerability:* Key infrastructure in Brighton—including water tanks, culverts, utility lines, and the SR-190 access road—is vulnerable to slope instability. *Impacts:* Erosion or shifting terrain may compromise buried pipes or overhead lines, leading to service outages. Access routes for emergency vehicles may be blocked by debris flows or rockfall, hindering emergency response during storms or post-disaster cleanup.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Community Activities	*Vulnerability:* Recreational activities such as hiking, skiing, and mountain biking on sloped terrain are directly affected by landslide risk. *Impacts:* Trails may become unsafe or impassable due to ground instability or debris. Residential areas built along canyon slopes face a heightened risk of slope movement, especially during rapid seasonal changes. Infrastructure projects such as road repair or new construction can also be delayed or jeopardized by unstable soil conditions, limiting progress on critical community improvements.
Radon	People	*Vulnerability:* In Brighton, homeowners and seasonal residents living in older cabins, lodges, and ski chalets are particularly vulnerable to radon exposure due to aging construction and limited ventilation. Many of these homes are located in areas with granitic bedrock and uranium-rich soils, which are known to emit higher levels of radon gas. According to Utahradon.org, 37% of homes tested in the Brighton area (zip code 84121) have dangerous levels of radon. *Impacts:* Families with young children, seniors, and individuals with chronic respiratory conditions face elevated health risks, as prolonged exposure to radon is the second leading cause of lung cancer in the United States. Given Brighton's cold alpine climate, homes are often tightly sealed during winter, which can trap radon indoors and increase exposure.
	Structures	*Vulnerability:* Structures with concrete slabs or basements are particularly vulnerable to radon exposure, as radon can seep in from the soil. Homes in areas with high uranium content are at greater risk, especially in older houses with inadequate ventilation. *Impacts:* Cracks in floors and walls can allow radon to enter. Seasonal cabins and rentals that remain closed for extended periods may have even higher concentrations due to reduced air circulation.
	Economic Assets	*Vulnerability:* Radon exposure poses economic risks to homeowners, property investors, and local business owners in Brighton. *Impacts:* Properties found to have elevated radon levels may experience reduced market value, delays in real estate transactions, or higher insurance and mitigation costs. Commercial buildings such as lodging facilities, retail shops, and short-term rentals can also be impacted, as health concerns or required remediation may deter potential buyers or guests. The tourism-based economy could suffer if radon is perceived as a persistent health issue in indoor accommodations.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Natural environments, historic structures, and cultural sites are vulnerable to radon exposure. *Impacts:* Brighton's natural environment, including its granitic mountain soils and shallow groundwater sources, can accumulate and transport radon gas. Historic structures—such as older ski lodges, community buildings, or cabins built from local stone or concrete—are more likely to retain radon indoors due to limited ventilation and construction practices that predate awareness of radon hazards. Cultural sites used for gatherings or seasonal events may face indoor air quality concerns, impacting both preservation efforts and public health

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Critical Facilities and Infrastructure	*Vulnerability:* While Brighton has limited public infrastructure, schools, health clinics, and any future municipal buildings are at risk if built in radon-prone areas without appropriate mitigation. *Impacts:* Children are especially vulnerable due to their developing lungs and time spent indoors, making schools or daycare spaces a priority for radon testing. Healthcare providers and facilities also must ensure adequate air quality for patients and staff, particularly in lower-level spaces. A lack of regular radon monitoring or public awareness campaigns can leave critical facilities unprotected.
	Community Activities	*Vulnerability:* Indoor gatherings are vulnerable to radon exposure. *Impacts:* Community life in Brighton often centers around indoor winter gatherings, such as residential get-togethers, après-ski events, and seasonal functions in lodges or community halls. These activities frequently take place in basements or enclosed lower levels, where radon tends to accumulate. Without proper ventilation or testing, participants may unknowingly face increased exposure.
High Wind	People	*Vulnerability:* In Brighton, all residents and visitors face increased risk from high wind events due to the community's location in Big Cottonwood Canyon, where wind can be funneled and intensified by the surrounding topography. *Impacts:* Elderly individuals and those with mobility impairments may struggle to seek shelter quickly on icy or uneven terrain, while children and tourists may underestimate the dangers posed by falling debris or windblown objects. Seasonal workers and outdoor employees, particularly those working at Brighton Resort or on trail maintenance crews, are especially at risk during sudden wind gusts, which can topple equipment and create hazardous working conditions. Wind events may also occur in conjunction with winter storms, compounding risks.
	Structures	*Vulnerability:* Brighton's structures, including residential cabins, ski lodges, and commercial buildings, are susceptible to damage from strong winds, especially older buildings with flat or low-pitched roofs, aging materials, or large overhangs. *Impacts:* Structures with extensive windows or exposed signage, such as those at the resort base area, are vulnerable to glass breakage and façade damage. While the area does not contain agricultural facilities, storage sheds, equipment enclosures, and lift shacks may be lightweight and lack reinforcement, making them prone to collapse or debris loss. The lack of natural windbreaks in open areas and ridgelines further increases exposure to wind damage.
	Economic Assets	*Vulnerability:* Brighton's economy relies heavily on winter tourism, including the operation of Brighton Resort and supporting businesses such as lodging facilities, restaurants, gear rental shops, and transit services. *Impacts:* High winds can lead to lift closures, temporary business shutdowns, or power outages, causing loss of revenue and service disruptions. Large signs, outdoor seating, and displays are at risk of damage, and older homes may suffer from roofing and siding failures. Windborne debris and falling tree limbs can also damage power

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		infrastructure and canyon access roads, temporarily isolating the community and disrupting business continuity.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Brighton's forested alpine environment is vulnerable to high winds, particularly through treefall and wind erosion. *Impacts:* Uprooted trees can block trails, damage property, and disrupt habitats. Historic ski cabins and early recreational structures, which may not have been retrofitted for severe weather, are susceptible to structural failure.
	Critical Facilities and Infrastructure	*Vulnerability:* Brighton's critical infrastructure is relatively limited, but it includes utility lines, propane tanks, water supply systems, and SR-190, the sole road providing year-round access. *Impacts:* High winds can topple power lines or trees, causing outages and blocking evacuation routes. Communication systems used by emergency responders and ski patrols may also be affected by damaged antennas or lines. Residential and commercial buildings without wind-resistant features or modern design standards may experience structural damage, further complicating response and recovery during severe wind events.
	Community Activities	*Vulnerability:* Brighton's outdoor-focused community life is especially vulnerable to disruption during high wind events. *Impacts:* Wind can force ski lift shutdowns, trail closures, or cancellation of outdoor events, impacting community engagement and visitor experience. Tents, signs, and temporary structures used for special events are particularly prone to being overturned or damaged.
Lightning	People	*Vulnerability:* Brighton's location in the Wasatch Mountains and its strong focus on outdoor recreation make lightning a notable hazard, particularly during summer thunderstorms. All residents and visitors are vulnerable. *Impacts:* Hikers, mountain bikers, and backcountry skiers on exposed ridgelines or alpine meadows are especially at risk when storms move in quickly. Visitors and locals participating in outdoor activities around Brighton Resort or in the adjacent Uinta-Wasatch-Cache National Forest may struggle to find immediate shelter in remote terrain.
	Structures	*Vulnerability:* In Brighton, ski lifts, chair towers, communications antennas, and mountaintop infrastructure are particularly vulnerable to lightning strikes due to their elevation and metal components. Lodges, cabins, and other residential structures located near tall pine and fir trees are also at risk, as lightning can strike a tree and transfer energy to the nearby building. *Impacts:* Structures without proper grounding systems or surge protection, especially older buildings or seasonal homes, are more likely to suffer electrical or fire-related damage from a strike.
	Economic Assets	*Vulnerability:* Brighton's economic engine is its year-round outdoor recreation and tourism, making outdoor venues, resort infrastructure, and electrical systems highly susceptible to lightning-related disruptions. *Impacts:* Power lines and lift systems may experience outages or surges, halting ski operations and affecting hospitality services. Communications towers used for emergency response and ski patrol

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		are also exposed, with damage potentially disrupting coordination during peak tourism periods. Trail closures or safety evacuations due to lightning can lead to lost visitor revenue and additional operational costs for the resort and nearby businesses.
	Natural, Historic, and Cultural Resources	*Vulnerability:* The forests surrounding Brighton contain many tall, mature trees that can attract lightning strikes. *Impacts:* These events can ignite wildfires during dry summer conditions or damage natural trails and ecosystems. Brighton's older ski lodges or historic cabins, particularly those constructed with flammable wood and lacking lightning protection, are vulnerable to ignition or structural damage.
	Critical Facilities and Infrastructure	*Vulnerability:* Though limited, Brighton's critical infrastructure includes ski lift control centers, utility substations, communications towers, and the SR-190 canyon access road. *Impacts:* Lightning strikes can disrupt power and communication, particularly during busy winter or summer seasons when visitor safety depends on real-time coordination.
	Community Activities	*Vulnerability:* Outdoor events and recreation in Brighton are highly susceptible to lightning risk. *Impacts:* Community and resort-hosted events in Brighton, such as outdoor festivals, concerts, and recreational competitions, are highly susceptible to lightning risk due to their exposed, high-elevation settings. These events often occur in areas with minimal shelter options, such as mountaintop lodges, trailheads, or picnic zones. Water-related recreation in nearby areas, such as Silver Lake or streamside trails, increases risk due to water's conductivity.
Severe Winter Weather	People	*Vulnerability:* Brighton experiences long, intense winters marked by heavy snowfall, freezing temperatures, and blizzard conditions, all of which pose risks to all residents and visitors. *Impacts:* Elderly individuals and those with mobility limitations may struggle to navigate snow-covered terrain or safely access medical care. Young children and tourists unfamiliar with mountain conditions may underestimate cold-related hazards like frostbite or whiteout disorientation. People with disabilities or chronic health conditions may be more affected if caregivers or essential services are delayed due to impassable roads.
	Structures	*Vulnerability:* Brighton's older ski lodges, vacation rentals, and residential cabins can be especially vulnerable during severe winter weather. *Impacts:* Flat or low-pitched roofs are prone to dangerous snow accumulation and ice dam formation, which can lead to roof collapse or water intrusion.
	Economic Assets	*Vulnerability:* Severe winter weather significantly impacts Brighton's tourism-driven economy, which depends on resort operations, hospitality, and transportation. *Impacts:* While snow attracts visitors, excessive snowfall or blizzard conditions can shut down lifts, delay travel, and deter tourists, leading to revenue loss. Retail and food service businesses may experience

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		disruptions in supply chains, while staff shortages can occur if employees are snowed in.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Vegetation and habitat, as well as historic and cultural sites, are vulnerable to severe winter weather. *Impacts:* Brighton's forested slopes and alpine habitats are susceptible to treefall, branch breakage, and habitat disturbance under heavy snow. Historic ski lodges and early recreational structures, often constructed with wood, may suffer roof or foundation damage from persistent snow loads. Cultural resources, including outdoor gathering spaces, trailheads, and memorials, may become inaccessible due to deep snow or icy conditions, limiting use during winter events and holidays.
	Critical Facilities and Infrastructure	*Vulnerability:* Brighton's critical infrastructure, including roads and utilities, is particularly sensitive to severe winter weather due to its remote mountain setting and single access route (SR-190). *Impacts:* Heavy snow and icy conditions can block or slow emergency response, supply deliveries, and evacuation routes. Utility infrastructure, including overhead power lines and water systems, may experience outages or freeze damage, especially in older systems.
	Community Activities	*Vulnerability:* Recreation and sport events in Brighton are vulnerable to severe winter weather disruptions. *Impacts:* Community life in Brighton, including ski competitions, winter festivals, and resort-hosted events, is closely tied to outdoor environments and is highly vulnerable to severe weather disruptions. Whiteout conditions, road closures, or avalanche risk can result in event cancellations, low attendance, or dangerous travel conditions.
Tornado	People	*Vulnerability:* While tornadoes are extremely rare in Brighton due to its high elevation and mountainous terrain, residents and visitors are still vulnerable to high wind events or rotational storm activity in nearby valleys that may produce localized damaging winds or downbursts. *Impacts:* Individuals with limited mobility, such as the elderly or people with disabilities, may struggle to find shelter quickly, especially in homes without basements or safe rooms. Families with young children or seasonal visitors unfamiliar with local emergency procedures may be unprepared during fast-moving storm conditions.
	Structures	*Vulnerability:* Brighton's cabins, ski lodges, lift buildings, and commercial structures are not typically designed for tornado-force winds. *Impacts:* Single-story homes and buildings with broad roof spans or flat designs are more vulnerable to uplift and structural damage from wind shear. Older, unreinforced buildings or those not built to current code standards may be at increased risk during intense wind events, especially in open or exposed ridge locations.
	Economic Assets	*Vulnerability:* Brighton's economy relies heavily on recreation and tourism infrastructure, including lodging, ski operations, and seasonal services. *Impacts:* Though a direct tornado strike is unlikely, a high wind event or nearby tornadic activity could damage power lines, roads, or resort buildings, resulting in temporary closures and loss of revenue. Lift

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		systems, communications equipment, and signs are all exposed assets that could be disrupted, while delays in road access (via SR-190) can affect business continuity.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Natural vegetation, and historic and cultural sites are vulnerable to severe storm activity. *Impacts:* The forested slopes and alpine meadows of Brighton could suffer tree damage or debris fallout from severe storm activity, even without a tornado touchdown. Historic ski cabins or older wood-framed structures are at risk due to their age and construction materials, which are often not engineered to withstand extreme wind forces. Outdoor cultural resources, such as community gathering areas, monuments, or interpretive signage, could be damaged by falling trees or flying debris during high wind events.
	Critical Facilities and Infrastructure	*Vulnerability:* Brighton's critical infrastructure is limited but includes power lines, utility sheds, propane storage tanks, and the canyon access road. *Impacts:* A tornado or strong convective windstorm in the canyon could block roads with fallen trees or rockfall, delaying emergency response or evacuation. Communications towers and lift operations could be damaged by wind, disrupting both emergency coordination and resort activity. Emergency shelters are not widely available in Brighton, and many buildings lack designated safe rooms or storm-resilient areas, increasing vulnerability for both visitors and residents.
	Community Activities	*Vulnerability:* Recreation and events in Brighton are vulnerable to severe wind or tornadic activity. *Impacts:* Brighton's seasonal events, outdoor recreation programs, and resort-based gatherings are held primarily in open, exposed environments, making them vulnerable to any severe wind or tornadic activity. Tents, pop-up structures, and open-air gathering spaces provide little protection, and the rapidly changing mountain weather can make it difficult to implement safety protocols in time.
Wildfire	People	*Vulnerability:* All residents of Brighton are vulnerable to wildfire. *Impacts:* Residents near the wildland–urban interface (WUI), individuals with physical disabilities or health issues who may struggle to evacuate, and low-income families lacking resources for fire safety measures may be vulnerable. Older adults might have reduced mobility, making them more dependent on others for assistance. Wildfire smoke and poor air quality can cause respiratory difficulty.
	Structures	*Vulnerability*: Residential homes, especially those made of wood or located in heavily vegetated areas, may be vulnerable. Properties near the WUI are at higher risk due to surrounding flammable vegetation. Inadequate defensible space, such as insufficient clearing of dry grass and shrubs, increases susceptibility. Roofs made of combustible materials and buildings that lack fire-resistant features are particularly at risk during wildfire events. *Impacts*: Property loss can occur during wildfire events. Residences, commercial structures, as well as facilities and equipment at the ski resorts, are also at risk of damage from wildfire.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Economic Assets	*Vulnerability:* Much of Brighton has moderate to high wildfire risk, and all structures are vulnerable. *Impacts:* Residential properties near wildland areas are at high risk, especially if they lack defensible space and fire-resistant landscaping. Commercial assets, such as retail centers close to forested regions, can suffer damage from flames and smoke, affecting the local economy. The ski resorts could experience economic losses if structures or equipment are damaged by wildfire. Summer recreation businesses in the resort areas also could be negatively impacted by wildfire, wildfire smoke, and related closures in the area. Agricultural lands also are susceptible, as wildfires can destroy crops and livestock, leading to financial losses. Vital infrastructure, such as power lines and water pipelines, can be disrupted, causing further economic repercussions. These vulnerabilities are heightened by dry conditions and high winds, which can facilitate the spread of fires.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Vegetation, wildlife, and historic sites are vulnerable to wildfire. *Impacts:* Natural resources like forests and grasslands are at risk because dry vegetation and accumulated brush can easily ignite. Historic sites made of wood and cultural landmarks also can be affected, particularly when located near wildland areas. The increasing frequency of drought and extreme heat, exacerbated by climate change, heightens these vulnerabilities. In addition, urban development encroaching on wildland areas increases the risk to these essential resources.
	Critical Facilities and Infrastructure	*Vulnerability:* Power and gas infrastructure, and emergency response services are vulnerable to wildfire. *Impacts:* One fire station in Brighton may be vulnerable to fire damage. If undamaged, its resources could be quickly overwhelmed. Brighton is removed from other critical facilities such as schools, hospitals, and emergency services buildings which may also be vulnerable. Utilities like power lines and gas pipelines also are at risk, as sparks or falling trees can ignite fires. Residential neighborhoods adjacent to natural landscapes are particularly susceptible to embers, making them vulnerable during dry conditions and high winds. Limited routes to and from Brighton may create challenges to provide response resources to the town or to facilitate an evacuation.
	Community Activities	*Vulnerability:* Outdoor events and recreation are vulnerable to wildfire. *Impacts:* Outdoor events like festivals and sports, especially during hot, windy conditions may experience risk. Recreational activities, such as hiking and camping near wooded areas, also pose risks from open flames or sparks. In addition, landscaping with dry grasses and shrubs increases susceptibility during fire season, putting local infrastructure, such as schools and neighborhoods, at risk.
Dam Failure	People	*Vulnerability:* While Brighton itself is located at a higher elevation, there are small reservoirs and water retention systems upstream and within the broader Big Cottonwood Canyon watershed that pose dam-related risks. Dam inundation boundaries from Twin Lakes and Lake Mary-Phoebe pose high risk to Brighton.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		Impacts: In the event of a localized dam or retention structure failure, residents and visitors in lower-lying areas of the canyon, particularly near stream channels such as Big Cottonwood Creek, could be vulnerable to rapid-onset flooding. The dams uphill from Brighton are rated as high hazard, indicating they have the potential to result in loss of life from a failure.
	Structures	*Vulnerability:* Cabins, vacation homes, and resort buildings situated near natural drainages or creek-adjacent areas may be at risk from sudden flooding caused by dam failure. *Impacts:* Structures can experience severe damage from rapid-onset flooding following a dam failure. Bridges along SR-190, culverts, and resort infrastructure near stream crossings could suffer structural failure or erosion. Although Brighton has no large hospitals or schools, its emergency and operational facilities, such as ski patrol buildings or maintenance centers, could be impacted depending on the location and extent of the flood path.
	Economic Assets	*Vulnerability:* Brighton's recreation-based economy depends on reliable access and infrastructure, which could be affected by the vulnerability of the dams in the surrounding area. *Impacts:* A dam failure in the canyon could damage SR-190, cutting off the only access route to the community, thereby disrupting resort operations, lodging services, and deliveries. Power and communication lines running along the canyon could be washed out, compounding disruptions. Though Brighton doesn't have agriculture, resort assets and snowmaking systems could be affected if water intake systems are damaged or silted in. Property damage from fast-moving floodwaters could result in substantial economic losses for homeowners, businesses, and public agencies.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Forests, streams, historic structures, and cultural amenities are vulnerable to dam failure. *Impacts:* A dam failure could significantly impact Brighton's forested landscape and alpine stream systems, causing erosion, sedimentation, and habitat destruction in the Big Cottonwood Creek corridor. Historic structures, including older ski lodges or cabins near the canyon floor, may not withstand floodwater and could suffer structural damage or loss. Parks, trailheads, and community use areas could be rendered unusable or inaccessible, especially those near water features.
	Critical Facilities and Infrastructure	*Vulnerability:* Brighton's critical infrastructure—including SR-190, power lines, water systems, and emergency response stations—are vulnerable to dam failure. *Impacts:* Facilities and infrastructure could be compromised in a dam failure scenario. Downstream flooding could damage culverts, bridges, and roadbeds, isolating the community and delaying emergency response.
	Community Activities	*Vulnerability:* Recreation and events are vulnerable to dam failure. *Impacts:* Recreational activities, such as fishing, hiking, or snowshoeing along creeks and near reservoir areas, could be at risk during or following a dam breach. Community events or resort programming held near the canyon floor or along streambeds may be

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		canceled or disrupted due to safety concerns. Emergency evacuations during a breach would be difficult, especially with only one road in and out of Brighton.
Civil Disturbance	People	Low-income individuals may lack the resources for safety, while the elderly or disabled may struggle to navigate emergencies. Young people, particularly teenagers, may be drawn into unrest, influenced by social dynamics. In addition, marginalized individuals may feel targeted or compelled to participate. A lack of community cohesion and trust in authorities can further heighten tensions.
	Structures	Government buildings, commercial properties, and infrastructure, such as bridges and transportation hubs may be vulnerable. Government buildings may be targeted for their symbolic authority, while retail stores can attract crowds during protests. Residential neighborhoods also can be affected, especially in areas with heightened tensions. The vulnerability of these structures stems from their visibility and importance to the community, combined with factors such as location and ongoing social issues.
	Economic Assets	Retail establishments, especially shopping centers, are at risk as they often become focal points for protests. Transportation systems can be disrupted by blockades, hindering access to services. Financial institutions may face vandalism or theft, while critical service providers, such as hospitals, could experience strain during unrest. Several economic assets are vulnerable to civil disturbances, primarily due to their visibility and reliance on foot traffic.
	Natural, Historic, and Cultural Resources	Parks and open spaces may suffer from vandalism or destruction during uncontrolled events. Historic sites can become targets, as they symbolize authority or cultural significance. Cultural resources such as community centers and places of worship may also be affected, as they play a vital role in community identity. Their vulnerability lies in the potential for damage during protests.
	Critical Facilities and Infrastructure	Governmental buildings, schools, and healthcare facilities may be at risk, since they often symbolize authority and serve as community hubs, making them targets during unrest. Utility infrastructure, such as water and power facilities, is also at risk of disruption. Its visibility and essential services contribute to its vulnerability during civil disturbances.
	Community Activities	Public demonstrations, parades, and local government meetings are particularly vulnerable to civil disturbances. These events often attract large crowds and can become tense, especially around contentious social or political issues. Factors such as the local demographic, economic conditions, and recent events can heighten these vulnerabilities, making it easier for conflicts to arise during passionate public gatherings.
Cyberattack	People	Older adults often lack familiarity with technology and online security, making them easy targets for phishing scams. Individuals engaging in online banking or shopping without strong security measures also face heightened risks. Families with children may be less vigilant about internet safety, allowing cybercriminals to exploit personal information. In addition, small business owners without robust cybersecurity practices are prime targets for attacks that can disrupt operations.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Structures	Critical infrastructure, such as power plants, water treatment facilities, and transportation systems, often lack robust cybersecurity measures. Commercial businesses, especially financial institutions and healthcare providers, also are at risk due to weaker data protection and employee training. Educational institutions may be vulnerable because of limited funding for cybersecurity and outdated software. Obsolete technology and insufficient training enhance the susceptibility of these structures to cyber threats.
	Economic Assets	Financial institutions, such as banks and credit unions, are at risk of data theft and service disruption. Small and medium-sized businesses often lack robust cybersecurity measures, making them attractive targets. In addition, local government agencies and critical infrastructure, such as water treatment facilities, might have outdated security protocols, posing threats to public safety. The rise of remote work further exacerbates vulnerabilities, as employees accessing networks from home can unintentionally expose systems to risks. Overall, the combination of outdated technology and insufficient cybersecurity practices increases the vulnerability of an area's economic assets.
	Natural, Historic, and Cultural Resources	Natural resources like water management systems and wildlife databases can be compromised, disrupting ecosystems. Historic sites and museums that digitize collections are at risk of losing valuable artifacts and data. In addition, cultural organizations managing events may face threats if their systems lack adequate security. The limited resources of smaller organizations further increase this vulnerability
	Critical Facilities and Infrastructure	Energy and utility services, such as electricity and water systems, which often rely on outdated technology, may be vulnerable. Transportation infrastructure, such as traffic management and public transit, is also at risk due to networked systems. Healthcare facilities that use electronic records and connected medical devices face vulnerabilities that can compromise patient safety.
	Community Activities	Online registration for events, local government services, and educational programs that rely on digital tools may be targeted due to inadequate security measures, outdated software, and insufficient staff training.
Hazardous Materials Incident (Transporta-tion & Fixed Facility)	People	Individuals with pre-existing health conditions, such as respiratory issues, and the elderly are at higher risk due to their compromised health. Children also are more susceptible. Those living near industrial areas or transport routes for hazardous materials face increased exposure risk, while low-income families may lack resources and information to effectively prepare for incidents.
	Structures	Industrial facilities, such as manufacturing plants and warehouses, often store hazardous chemicals which may leak. Residential buildings, schools, and hospitals also are at risk, particularly if located along transportation routes for hazardous materials. Older buildings may lack modern safety features, increasing their vulnerability.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Economic Assets	Industrial facilities, transportation infrastructure, and nearby commercial properties may be affected. Industrial facilities handling chemicals are at risk of spills or leaks, while roads and railways used for transporting hazardous materials can lead to accidents and contamination. In addition, nearby commercial and residential areas face potential health risks and economic losses.
	Natural, Historic, and Cultural Resources	Waterways and habitats are vulnerable to hazardous materials incidents, which can disrupt ecosystems. Historic sites and structures may suffer damage from toxic exposure, leading to degradation over time. In addition, cultural landmarks risk losing their significance due to contamination events. The proximity of these resources to industrial areas or transport routes exacerbates their risk.
	Critical Facilities and Infrastructure	Chemical manufacturing plants, waste treatment facilities, and transportation networks, such as highways and railroads may be at risk. Their vulnerability stems from factors such as proximity to residential areas, aging infrastructure, and inadequate safety measures. Natural hazards, such as flooding and earthquakes, can further increase risks by damaging containment systems.
	Community Activities	Local markets, school events, and outdoor gatherings are vulnerable to hazardous materials incidents if they are near industrial zones and transport corridors. This risk is heightened by inadequate emergency preparedness, lack of public awareness, and the potential for spills during transport. Large crowds at events can complicate evacuation efforts, increasing the risks for participants and nearby residents.
Public Health Epidemic/ Pandemic	People	Individuals with pre-existing health conditions like asthma and heart disease and adults over 65 may be vulnerable. Low-income families may struggle to access healthcare and vaccinations, increasing their risk. Marginalized communities with limited access to information and those living in high-density conditions also are at greater risk due to the rapid spread of diseases and the challenges in implementing preventive measures.
	Structures	Several structures are vulnerable to public health epidemics or pandemics, particularly due to their ability to facilitate the spread of disease. High-density residential areas, such as apartment complexes, are at risk, as close living quarters can lead to faster transmission. Public gathering spaces, such as schools and community centers, also pose significant threats because large groups are in confined spaces. Healthcare facilities can become hotspots for infections if infection control measures are insufficient. In addition, workplaces with high foot traffic, such as retail stores, contribute to vulnerability.
	Economic Assets	Small businesses in retail, hospitality, and food service are particularly vulnerable to public health epidemics or pandemics. These sectors face risks from fluctuating consumer demand and potential operational restrictions. The tourism industry also is affected, as travelers may avoid high-risk areas. Healthcare facilities can become overwhelmed, straining resources and impacting operations. In addition, local supply chains may experience disruptions, leading to shortages and inflation. Overall, the direct effects of illness, along with prolonged shutdowns and consumer hesitance, leave these economic assets exposed to significant downturns.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Natural, Historic, and Cultural Resources	Natural resources like wildlife and ecosystems can be disrupted by increased human activity, raising the risk of zoonotic diseases. Historic sites may deteriorate due to reduced visitor access and funding, while cultural resources, such as community events, face cancelations, impacting social connections.
	Critical Facilities and Infrastructure	Public health epidemic or pandemic incidents can affect healthcare facilities, nursing homes, public transportation systems, schools, and food supply chains. Hospitals and clinics may become overwhelmed with patients, while vulnerable populations in nursing homes are at higher risk. Public transportation can facilitate the spread of disease, and schools gather large groups, thereby increasing transmission potential. These facilities often lack adequate resources, including medical supplies and testing capabilities, making them more susceptible to the impacts of a health crisis.
	Community Activities	Large gatherings like festivals and sporting events can facilitate the rapid spread of diseases due to close contact. Public transportation also is at risk, as it serves many people in confined spaces. Schools and childcare facilities are particularly susceptible, given that children can easily transmit infections. In addition, food-related events, such as farmers' markets, can pose risks if hygiene practices are not followed. The interconnectedness of community members and varying adherence to health guidelines further exacerbate these vulnerabilities.
Terrorism	People	Young children and newcomers may lack awareness of potential threats, while the elderly and individuals with disabilities may struggle to respond quickly in emergencies. Marginalized communities often face bias, making them more susceptible to targeting. In addition, those with lower socioeconomic status may lack access to security measures and emergency preparedness resources.
	Structures	Government buildings, transportation hubs, commercial centers, and public spaces are particularly vulnerable to terrorism incidents. Government buildings are symbolic targets, while transportation hubs and commercial centers are attractive due to their potential for high casualties and crowd presence. Public spaces also are at risk due to their open nature and lack of security. Their vulnerability is heightened by inadequate security measures, high occupancy rates, and their locations in densely populated areas, which can amplify the impact of incidents.
	Economic Assets	Infrastructure, commercial establishments, and community facilities may be vulnerable. Critical infrastructure, such as transportation networks and power grids, could disrupt the economy if targeted. Commercial establishments, especially those with high foot traffic, and community facilities like schools and hospitals also are at risk, as they can provoke widespread concern and disruption. Their accessibility and interconnectivity increase vulnerability, meaning that damage to one asset can have a broader economic impact and hinder recovery efforts.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Natural, Historic, and Cultural Resources	Natural resources like water supplies and parks could be targeted for their significance to the community. Historic sites and cultural resources, such as museums or community centers, also are at risk due to their accessibility and importance to local identity. Their vulnerability is often heightened by inadequate security measures.
	Critical Facilities and Infrastructure	Public transportation systems, healthcare facilities, schools, and utility services like water and power plants may be affected. Their vulnerability arises from high accessibility and the potential impact of an attack, as crowded transportation and public spaces can lead to mass casualties and panic. Attacking utility services could disrupt the town's essential functions, creating chaos.
	Community Activities	Festivals, parades, and sporting events are particularly vulnerable to terrorism incidents. These events attract large crowds, making it easier for perpetrators to inflict harm and instill fear. In addition, community centers and places of worship serve as social hubs, increasing their risk. Factors such as limited security measures and open access to public spaces contribute to this vulnerability.

Jurisdiction-Specific Changes in Vulnerability

Hazard events can impact communities, infrastructures, and ecosystems. The severity of these impacts can be influenced by climate change, population patterns, and land use developments. Understanding these factors is crucial for the town of Brighton to develop a resilient community and minimize the impacts of hazards. Table 9 displays the changes within the town and the related effects on each hazard to the town of Brighton.

DRAFT

Table 9: Jurisdiction-Specific Changes in Vulnerability in the Town of Brighton

Type of Hazard Event	Description of Potential Impacts	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
Avalanche	Avalanches pose a direct threat to outdoor enthusiasts, leading to injuries or fatalities. Property damage can occur at ski resorts and along transportation routes, disrupting emergency response and logistics. The local economy may suffer, especially businesses reliant on winter tourism, and there can be a psychological toll on the community, along with increased insurance costs.	Higher temperatures can lead to more rain, destabilizing snowpack and increasing the risk of wet avalanches. In addition, changes in snowfall can cause denser snow layering on slopes, making them more prone to sliding.	Avalanches can influence population patterns by deterring people from moving to or remaining in high-risk areas, leading to decreased density in these locations. The threat of avalanches prompts many to seek safer environments in urban or lower-risk regions. In addition, when avalanches occur, they can disrupt infrastructure, causing residents to relocate.	There have been minimal changes in land use and development in the town of Brighton since the previous plan update.	Decreased
Drought	Drought can cause water scarcity, impacting agriculture and reducing crop yields. Recreational activities may decline, harming tourism, while the risk of wildfires increases, threatening safety and property. In addition, lower water levels can lead to water quality issues and public health concerns.	Climate change affects drought incidents by altering precipitation patterns and increasing temperatures. Warmer weather can lead to longer dry periods and more severe droughts, while changes in rainfall can reduce snowpack in nearby mountains, crucial for summer water supply. Higher temperatures also increase evaporation rates, further straining local water resources.	Drought can significantly influence population patterns by impacting economic opportunities and the quality of life. Water scarcity often leads to reduced agricultural productivity, prompting residents to migrate to areas with more stable job prospects. Increased water costs can make living less affordable, driving some residents away. Conversely, efforts to address	There have been minimal changes in land use and development in the town of Brighton since the previous plan update.	Increased

DRAFT

Type of Hazard Event	Description of Potential Impacts	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
			drought, such as sustainable development or improved water management, may attract newcomers, changing the community's demographic composition over time.		
Earthquake	The potential impacts of earthquakes can be substantial. Immediate damage to infrastructure may disrupt essential services such as water, electricity, and transportation, complicating recovery efforts. Homes and businesses might sustain significant structural damage, posing safety risks. In addition, psychological effects, such as increased anxiety, can affect the community. Economically, repairs can lead to high costs, potential declines in property values, and disruptions to local businesses, ultimately impacting job availability and the overall economy.	Rising temperatures can lead to glacial melting, which affects pressure on tectonic plates and may trigger seismic activity through isostatic rebound. In addition, increased rainfall and flooding can erode soils, weakening structural integrity and heightening vulnerability during earthquakes. Although the direct links between climate change and earthquakes are still under investigation, the environmental effects may impact the region's seismic risk.	Earthquakes can significantly alter population patterns by prompting residents to leave for safer areas after a seismic event. This migration can lead to changes in population density and attract new residents and businesses during the rebuilding process. The perception of the area as a safe place to live may shift, impacting long-term demographics, as some residents return to rebuild while others relocate permanently.	There have been minimal changes in land use and development in the town of Brighton since the previous plan update.	Stayed the same

DRAFT

Type of Hazard Event	Description of Potential Impacts	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
Extreme Heat	Extreme heat can significantly affect public health, increasing the risk of heat-related illnesses, especially among vulnerable populations. It also strains energy resources due to higher demand for air-conditioning, potentially leading to power outages. In addition, extreme temperatures worsen air quality by raising ozone levels, which poses respiratory risks. Urban infrastructure also may suffer damage, leading to increased maintenance costs and safety concerns.	Climate change significantly impacts extreme heat by increasing the frequency and intensity of heatwaves. Rising global temperatures lead to longer and hotter summers, affecting residents and local infrastructure while heightening health risks, especially for vulnerable populations. Urban heat islands resulting from reduced vegetation and extensive pavement further amplify these effects.	By causing residents to relocate due to damaged homes or safety concerns. Some may move to areas perceived as safer or seek better job opportunities elsewhere. The economic impact and infrastructure damage can also make certain neighborhoods less desirable, leading to shifts in demographics and the socioeconomic landscape as new residents with different backgrounds move in.	There have been minimal changes in land use and development in the town of Brighton since the previous plan update.	Increased
Extreme Cold	Extreme cold can lead to health risks, such as frostbite and hypothermia, especially among vulnerable populations. Transportation may be disrupted due to icy conditions, affecting commutes and emergency services. Infrastructure is at risk, with water pipes potentially freezing and bursting, resulting in costly repairs. In addition, energy demands surge as residents rely on heating, straining the	By increasing the intensity of winter storms. Warmer atmospheric temperatures allow for more moisture, resulting in heavier snowfall and potentially lower temperatures during these events. In addition, fluctuations in weather patterns may disrupt seasonal cycles, leading to unpredictable periods of extreme cold mixed with warmer spells.	By driving some residents to relocate to warmer areas. Harsh winters can hinder economic activities and deter new residents and businesses, influencing housing demand and the attractiveness of certain neighborhoods. This may disproportionately affect lower-income families, leading to changes in demographics and socioeconomic	There have been minimal changes in land use and development in the town of Brighton since the previous plan update.	Increased

DRAFT

Type of Hazard Event	Description of Potential Impacts	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	electrical grid and increasing utility costs. Cold temperatures can also impact local agriculture and wildlife.		stratification in the community.		
Flooding	Damaging infrastructure, such as roads and utilities, disrupts transportation and essential services. Homes and businesses may experience costly water damage, causing potential displacement. Environmental effects include erosion and contamination of local waterways, impacting wildlife and recreation. Economically, flooding can result in lost income for businesses, increased insurance costs, and declining property values. Public health also may be compromised due to waterborne diseases and stress-related issues.	Higher temperatures increase the frequency and intensity of extreme weather events and alter precipitation patterns. They lead to more intense rainstorms and accelerated snowmelt from nearby mountains, raising water levels in rivers and streams. This combination raises the risk of flooding, especially in areas with inadequate drainage and urban development in flood-prone zones, heightening the potential for damage to homes and infrastructure.	Flooding can significantly alter population patterns by displacing residents from affected areas, leading them to seek shelter elsewhere. This may result in a population decline where flooding occurs, as individuals might hesitate to return due to ongoing risks or property damage. As neighborhoods become less desirable, people may migrate to safer areas, changing demographic trends and putting pressure on housing in those regions. Over time, these shifts can influence urban planning and development, as local governments address both flooding risks and changing population needs.	There have been minimal changes in land use and development in the town of Brighton since the previous plan update.	Decreased

DRAFT

Type of Hazard Event	Description of Potential Impacts	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
Landslide/ Slope Failure	The town's steep terrain is vulnerable, especially during heavy rainfall or rapid snowmelt. Properties on slopes may suffer damage, resulting in displacement and economic losses. Transportation networks can be disrupted, complicating emergency responses. In addition, landslides can harm local ecosystems by displacing vegetation.	Climate change increases the risk of landslides through heavier rainfall and temperature fluctuations. Intense rain saturates soil, destabilizing slopes, while freeze–thaw cycles weaken the ground. Changes in vegetation can also reduce stability, leading to a higher potential for landslides.	Landslides and slope failures can impact population patterns by making some areas unsafe, leading to displacement and lower property values. This prompts residents to move to safer regions, thereby increasing density in more stable areas. Concerns about future landslides may also deter newcomers from high-risk zones, shaping long-term demographic trends.	There have been minimal changes in land use and development in the town of Brighton since the previous plan update.	Increased
Radon	Radon poses significant health risks, particularly lung cancer, as it can enter homes through foundation cracks. Many residents may not test for radon, making them unaware of dangerous levels. Increased awareness and public health initiatives are vital for protection, especially with regard to population growth. Incorporating radon-resistant construction in new developments also is essential for safety.	Climate change can affect radon levels by altering soil temperatures and moisture conditions. Higher temperatures may increase radon emissions from the ground, while heavy rainfall can change groundwater and soil saturation, impacting radon migration into buildings.	Radon exposure can influence population patterns as increased health awareness may drive families to move away from areas with high radon levels. This shift could particularly affect vulnerable groups, changing demographics and demand in the housing market. Homes with lower radon levels may become more sought after, and public health campaigns can encourage community action, making	There have been minimal changes in land use and development in the town of Brighton since the previous plan update.	Decreased

DRAFT

Type of Hazard Event	Description of Potential Impacts	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
			previously undesirable areas more attractive once mitigation measures are implemented.		
Heavy Rain	Heavy rain can cause flash floods, particularly in low-lying areas, disrupting traffic and emergency services. It may also lead to soil erosion, infrastructure damage, and increased landslide risk in hilly regions. In addition, heavy rainfall can overwhelm waterways, resulting in water quality issues from runoff and impacting public safety, local businesses, and agriculture.	Climate change increases the frequency and intensity of heavy rain, as higher temperatures allow the atmosphere to hold more moisture. This leads to stronger storms, flash flooding, and overwhelmed drainage systems.	Heavy rain can shift population patterns by pushing residents out of flood-prone areas and attracting them to safer neighborhoods. Frequent flooding may lead to evacuations and economic disruptions, prompting relocations. Over time, ongoing heavy rains can affect housing demand and community stability, altering the town's population distribution.	There have been minimal changes in land use and development in the town of Brighton since the previous plan update.	Increased
High Wind	High winds can cause property damage to roofs and windows, topple trees and power lines, and lead to power outages. They pose hazards for pedestrians and drivers and can worsen air quality by stirring up dust and pollutants, affecting residents' health.	Climate change affects high winds by altering atmospheric patterns and increasing extreme weather events. Rising temperatures may lead to more substantial, unpredictable winds and more frequent thunderstorms, posing risks to infrastructure and air quality.	High winds can alter population patterns by making certain areas less desirable. Frequent damage may drive residents to safer neighborhoods, deter newcomers, and slow growth in affected regions.	There have been minimal changes in land use and development in the town of Brighton since the previous plan update.	Increased
Lightning	Lightning can have several impacts, primarily posing	Climate change increases temperatures	Lightning can influence population patterns by	There have been minimal changes in land	Increased

DRAFT

Type of Hazard Event	Description of Potential Impacts	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	risks to public safety with the potential for injuries or fatalities. It can spark wildfires in nearby areas, threatening property and the environment. In addition, lightning strikes can damage infrastructure, leading to electrical surges that can cause power outages and service disruptions. This phenomenon also affects outdoor activities and tourism, while the economic burden includes increased insurance claims and repair costs.	and alters precipitation, leading to more intense thunderstorms and frequent lightning strikes. Urbanization can enhance this effect, posing risks to public safety and infrastructure.	causing property damage and wildfires, leading some residents to relocate. Areas with higher lightning activity may deter new residents, while safer locations could increase migration as people seek protection from severe weather.	use and development in the town of Brighton since the previous plan update.	
Severe Winter Weather	Heavy snow or blizzards can disrupt transportation, hinder emergency services, and cause infrastructure damage, such as roof collapses. These conditions can lead to increased municipal costs for snow removal and have a substantial economic impact on businesses, particularly in retail and tourism. Power outages also may occur, affecting heating during cold months.	Climate change impacts heavy snow and blizzards by altering precipitation patterns. Higher temperatures can lead to more rain than snow, affecting snowpack levels—additionally, increased storm intensity results in heavier, more unpredictable snowfall.	Increased population equals an increased number of people needing to get to work and quicker snow removal. Heavy snow or blizzards can impact population patterns by influencing where people live and work. Transportation disruptions may lead residents to seek housing closer to jobs, increasing density in some areas while depopulating others.	There have been minimal changes in land use and development in the town of Brighton since the previous plan update.	Increased

DRAFT

Type of Hazard Event	Description of Potential Impacts	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
			Families might also avoid regions with frequent heavy snowfall, shifting demand to milder areas. Over time, these trends can alter community demographics and economic activity, prompting adjustments in town planning and resource allocation.		
Tornado	Tornadoes can cause serious damage to property and infrastructure, leading to injuries and economic challenges. Urban areas are especially vulnerable, complicating emergency responses and disrupting essential services. The psychological impact can affect community well-being, potentially leading to changes in demographics and land use as residents seek safer locations.	Climate change may increase the frequency and intensity of tornadoes. Higher temperatures lead to more moisture in the air, creating conditions for severe thunderstorms. Changes in wind patterns and precipitation can also heighten tornado risks, resulting in more destructive storms and greater threats to infrastructure and communities.	Tornadoes can influence population patterns by prompting residents to move to safer areas after damage occurs. This can decrease density in affected neighborhoods while increasing demand for housing in safer regions. New residents may also move in for recovery opportunities, altering demographics. Over time, repeated tornado threats might push long-term residents to areas with better disaster preparedness, reshaping the town's population distribution.	There have been minimal changes in land use and development in the town of Brighton since the previous plan update.	Increased
Wildfire	Wildfires pose serious risks, including habitat damage, degraded air quality, and	By raising temperatures and creating drier conditions, prolonged	Displaced individuals often seek safer areas, shifting demographics,	There have been minimal changes in land use and development in	Increased

DRAFT

Type of Hazard Event	Description of Potential Impacts	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	health issues for vulnerable populations. They can also lead to economic losses, property damage, and increased erosion that affects water quality.	droughts lead to more dry vegetation, which serves as fuel for fires. Erratic seasons extend the growing period, while more lightning strikes can ignite wildfires. These factors heighten the threat to ecosystems and community safety.	while declining property values might deter newcomers. Conversely, some may be drawn to rebuilding efforts, impacting long-term growth and community dynamics.	the town of Brighton since the previous plan update..	
Dam Failure	Dam failure could lead to severe flooding, damaging homes and infrastructure, isolating communities, and hindering emergency responses. This may result in loss of life, especially among vulnerable groups, and trigger economic losses for local businesses and property values. Long-term effects could affect community stability and public health, while floodwaters may contaminate local waterways and disrupt ecosystems.	Climate change raises the risk of dam failure by causing heavier rainfall and rapid snowmelt. These changes can overwhelm dams and compromise their integrity, highlighting the need for urgent safety assessments and upgrades to protect communities downstream.	Dam failure tornadoes can impact population patterns by displacing residents and altering demographics. Evacuations can lead to an influx in safer areas, while the destruction may deter new residents and contribute to population decline. Fear of future disasters may prompt remaining individuals to relocate, changing the community's composition and affecting population density and economic activity.	There have been minimal changes in land use and development in the town of Brighton since the previous plan update.	Increased
Civil Disturbance	Civil disturbances can result in economic losses for businesses, create social divisions, and increase tensions among community	Climate change can increase civil disturbances by intensifying environmental stresses	By encouraging residents to move for safety, leading to outflows and new arrivals. These events	There have been minimal changes in land use and development in the town of Brighton	Increased

DRAFT

Type of Hazard Event	Description of Potential Impacts	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	groups. They may overwhelm law enforcement, leading to fear and mistrust among residents. Essential services could be disrupted, affecting quality of life, while long-term impacts may include changes in community dynamics and public policy.	and social tensions. Rising temperatures may lead to droughts, wildfires, and poor air quality, particularly affecting vulnerable communities. Resource scarcity, especially water, can spark conflicts and protests. In addition, an influx of migrants from harder-hit areas may strain local resources, further escalating tensions. This cycle of unrest is driven by the impact of climate change on both the environment and community dynamics.	can reveal social issues, impacting community dynamics, employment, and property values, ultimately reshaping demographics, and social cohesion.	since the previous plan update.	
Cyberattack	Cyber-attacks can disrupt critical infrastructure like power and water services, complicating emergency responses. Businesses may face financial losses from downtime and data breaches, eroding consumer trust. The public sector's essential services, including law enforcement and public health, could be compromised, leading to fear and reduced community confidence.	Possible attack on the industry, which is seen as producing large amounts of greenhouse gases and burning fossil fuels. Climate change can heighten cyberattack risk by increasing vulnerabilities during extreme weather. Disruptions like power outages offer cybercriminals opportunities, but	Cyber-attacks can change population patterns by eroding trust in essential services. Compromised systems may cause residents to leave due to safety concerns, while high-profile incidents can deter businesses, leading to job losses. This perception of vulnerability may also make the town less appealing to newcomers, resulting in demographic	There have been minimal changes in land use and development in the town of Brighton since the previous plan update.	Increased

DRAFT

Type of Hazard Event	Description of Potential Impacts	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
		focusing on emergency responses can weaken cybersecurity measures. As organizations adopt new technologies to cope with climate impacts, they may unintentionally introduce additional vulnerabilities.	shifts and affecting local development.		
Hazardous Materials Incident (Transporta-tion & Fixed Facility)	Hazardous materials incidents can severely impact public health, the environment, and the economy. Health risks include serious illnesses from exposure, while environmental damage may lead to soil and water contamination. Economically, incidents can cause property damage, lower property values, and disrupt businesses. The community also faces stress from evacuations and anxiety about safety.	Climate change elevates the risk of hazardous materials incidents by increasing extreme weather events like heavy rain and wildfires. These events can breach storage tanks and heighten material volatility. Vulnerable infrastructure can lead to more spills or accidents, while climate shifts may also introduce new challenges for managing hazardous substances and public health.	By causing evacuations and temporary declines in density. In the long run, unsafe areas may deter new residents, affecting growth and diversity. In addition, negative perceptions can lower property values and economic prospects, leading families to relocate, which impacts local demographics.	There have been minimal changes in land use and development in the town of Brighton since the previous plan update..	Increased
Public Health Epidemic/ Pandemic	Epidemics and pandemics can disrupt healthcare by overwhelming facilities and leading to resource shortages, diminishing care for all patients. Economic impacts may include business closures and job losses, particularly in	By increasing the spread of vector-borne diseases and raising the risk of waterborne illnesses due to flooding or drought. Worsening air quality can also exacerbate respiratory conditions	By prompting migration for safety and better healthcare. Vulnerable groups may move to areas with improved services, while economic instability can drive people to seek new employment	There have been minimal changes in land use and development in the town of Brighton since the previous plan update.	Increased

DRAFT

Type of Hazard Event	Description of Potential Impacts	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	hospitality and retail. The strain on public health services can affect routine care, while mental health issues may arise due to isolation and uncertainty. Shifts to remote learning can hinder student development, and vulnerable populations face heightened risks. The erosion of public trust in health authorities might reduce compliance with guidelines.	like asthma, especially in vulnerable populations.	opportunities. In addition, restrictions like quarantine measures can limit movement and social interactions, reshaping the community's demographics and impacting local economies.		
Terrorism	Terrorism incidents can have significant impacts, including loss of life and emotional trauma for the community. Economically, they disrupt local businesses and tourism while creating fear and anxiety that affect social cohesion. Emergency services might be overwhelmed, requiring additional support, and increased security measures can alter daily life and raise concerns about civil liberties. Damage to critical infrastructure necessitates long-term repairs, and such incidents may deepen social divisions	Terroristic activity is sometimes centered around climate change. Climate change impacts terrorism incidents by creating conditions of resource scarcity and social unrest. Increased competition for essential resources like water can fuel tensions, making communities more vulnerable to extremist ideologies. Extreme weather events may disrupt social order and infrastructure, offering terrorist groups opportunities to exploit crises. In addition,	Terrorism incidents can alter population patterns by instilling fear and prompting residents to relocate to perceived safer areas, resulting in demographic shifts and potential declines in property values. Some neighborhoods may see an outflow of residents, while others could experience an influx of people seeking refuge from violence. In addition, increased security measures may deter businesses and residents from certain locations, leading to long-term changes in	There have been minimal changes in land use and development in the town of Brighton since the previous plan update. .	Increased

DRAFT

Type of Hazard Event	Description of Potential Impacts	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	and prompt changes in security policies, highlighting the need for effective preparedness and response strategies.	climate-driven population displacement can heighten tensions in receiving areas, raising the risk of domestic terrorism. Law enforcement's focus on climate-related challenges can also limit its capacity to address terrorism threats. Ultimately, while climate change may not directly cause terrorism, its effects can create an environment conducive to extremist activities.	population density and urban development patterns.		

DRAFT

Additional Public Involvement

The town of Brighton provided several opportunities for public participation. Figure 2 displays examples of public outreach.

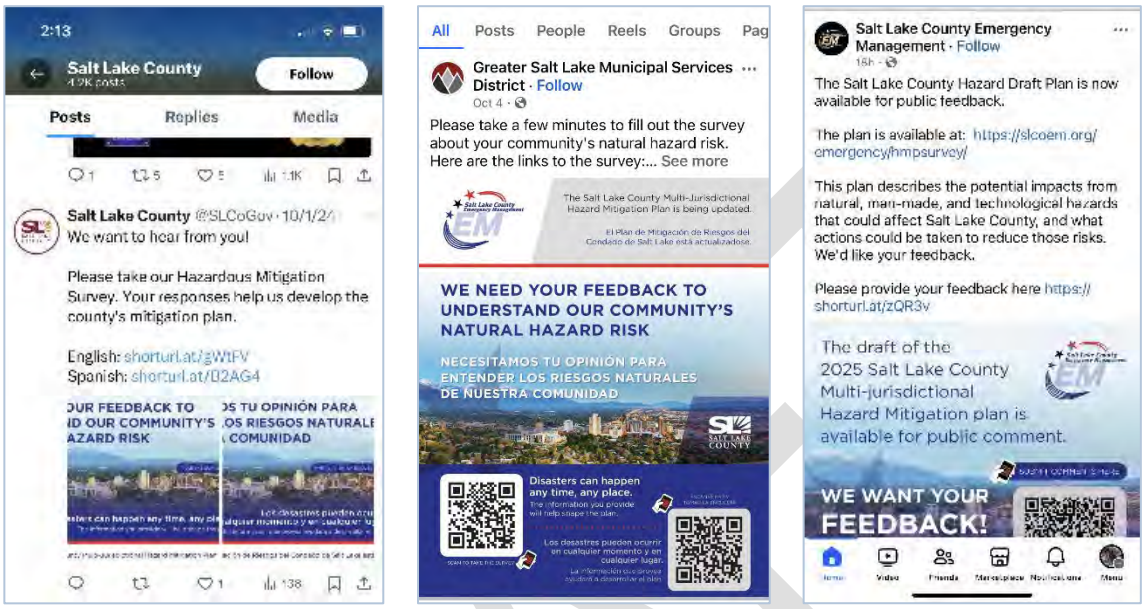


Figure 2: Social Media Posts for the Hazard Mitigation Survey (SLCo – *left*; MSD – *middle*), and the Draft Plan Review (SLCo EM – *right*)

Plan Integration

Incorporating the underlying principles of the Hazard Mitigation Plan and its recommendations into other plans is a highly effective and low-cost way to expand their influence. All plan participants will use existing methods and programs to implement hazard mitigation actions where possible. As previously stated, mitigation is most successful when it is incorporated into the day-to-day functions and priorities of government and public service. This plan builds on the momentum developed through previous and related planning efforts and mitigation programs, and it recommends implementing actions where possible through these other program mechanisms. These existing mechanisms include the following:

- Regularity Capabilities
- Administrative Capabilities
- Fiscal Capabilities

Respective planning stakeholders will conduct implementation and incorporation into existing planning mechanisms and will be done through the routine actions of:

- Monitoring other planning/program agendas
- Attending other planning/program meetings

DRAFT

- Participating in other planning processes; and
- Monitoring community budget meetings for other community program opportunities.

The successful implementation of this plan will require constant and vigilant review of existing plans and programs for coordination and multi-objective opportunities that promote a safe, sustainable community. Regular efforts should be made to monitor the progress of mitigation actions implemented through other planning mechanisms. Where appropriate, priority actions should be incorporated into planning updates. Table 10 lists existing planning mechanisms in which the Hazard Mitigation Plan has been integrated. Table 11 lists the opportunities for integrating elements of this plan into other plans

Table 10: Integration of Previous Plans by the Town of Brighton

Plan	Description
Community Wildfire Protection Plan	Includes goals to protect lives, structures, and watershed, and reduce wildfire intensity and duration and identifies mitigation actions.
Town of Brighton General Plan	Long-range planning guide for the town to address future growth and development. Addresses mitigation for wildfire, protection of waterways, avalanche, climate change and invasive species, transportation, and funding strategies for mitigation. Could be expanded to incorporate other hazards.

Table 11: Opportunities for Integration with Future Plans of the Town of Brighton

Plan	Description
Comprehensive Emergency Management Plan	Framework to prepare for, mitigate, respond to, and recover from the impact of hazards.
Salt Lake City Public Utilities Comprehensive Watershed Management Plan	Guiding document to protect canyon sources of drinking water from pollution.
Continuity Plan for Town of Brighton	Ensures the town is capable of conducting its daily operations under all threats and conditions.
Town of Brighton General Plan	Long-range planning guide for the town to address future growth and development. Addresses mitigation for wildfire, protection of waterways, avalanche, climate change, and invasive species but could incorporate other hazards.
Utah Wildlife Action Plan	Plan for managing native wildlife species and habitat.

Capability Assessment

Local mitigation capabilities are existing authorities, policies, programs, and resources that reduce hazard impacts or could help carry out hazard mitigation activities.

Planning and Regulatory Capabilities

Planning and regulatory capabilities are the plans, policies, codes, and ordinances that prevent and reduce the impacts of hazards.

DRAFT

Table 12: Assessment of the Planning Capabilities of the Town of Brighton[4]

Plan	Does it address hazards? (Y/N)	How can it be used to implement mitigation actions?	When was the last update? When is the next update?
General Plan	Y	Unknown	Adopted November 2022.
Capital Improvement Plan	Y	Unknown	MSD Strategic Plan 2024
Climate Change Adaptation Plan	N	Unknown	Unknown
Community Wildfire Protection Plan	Y – the current MSD plan has wildfire in it.	Unknown	2023
Economic Development Plan	N	Unknown	Unknown
Land Use Plan	Y	Unknown	Town of Brighton General Plan 2022
Local Emergency Operations Plan	Y		2024 MSD Comprehensive Emergency Management Plan
Stormwater Management Plan	N	Unknown	2020 MSD Stormwater Management Plan
Transportation Plan	Y – Big Cottonwood Canyon Mobility Action Plan	Unknown	2024
Substantial Damage Plan	N	Unknown	Unknown
Other? (Describe)	Y – Community Wildfire Preparedness Plan (CWPP)	Unknown	Unknown

Table 13: Assessment of the Regulations and Ordinances of the Town of Brighton[5]

Regulation/ Ordinance	Does it effectively reduce hazard impacts?	Is it adequately administered and enforced?	When was the last update? When is the next update?
Building Code	Y – Town of Brighton Title 19 Building codes ensure that structures are built to standard and brought up to code when remolding occurs. The town has adopted the current state version of the International Building Code (IBC 2021) and International	Unknown	Unknown

[4] MSD = Municipal Services District.
[5] FCOZ = Foothills and Canyons Overlay Zone.

DRAFT

Regulation/ Ordinance	Does it effectively reduce hazard impacts?	Is it adequately administered and enforced?	When was the last update? When is the next update?
	Residential Code (IRC 2021) as amended.		
Flood Insurance Rate Maps	Y – Unified Fire Authority	Unknown	Unknown
Floodplain Ordinance	N	Unknown	Unknown
Subdivision Ordinance	Y – FCOZ	Unknown	Unknown
Zoning Ordinance	Y – FCOZ	Unknown	Unknown
Natural Hazard-Specific Ordinance (Stormwater, Steep Slope, Wildfire)	Y – Wildfire risk, steep slope ordinance. Town Regulation, Forest Service, Salt Lake City Public Utilities	Unknown	Unknown
Acquisition of Land for Open Space and Public Recreation Use	Unknown	Unknown	Unknown
Prohibition of Building in At-Risk Areas	Y – FCOZ	Unknown	Unknown
Other? (Describe)	Unknown	Unknown	Unknown

Administrative and Technical Capabilities

Administrative and technical capabilities include staff and their skills. They also include tools that can help carry out mitigation actions.

Table 14: Assessment of the Administrative Capabilities of the Town of Brighton[6]

Administrative Capability	In Place? (Y/N)	Is staffing adequate?	Are staff trained on hazards and mitigation?	Is coordination between agencies and staff effective?
Chief Building Official	Y	Unknown	Unknown	Unknown
Civil Engineer	MSD	Unknown	Unknown	Unknown
Community Planner	MSD	Unknown	Unknown	Unknown
Emergency Manager	Y	Unknown	Unknown	Unknown
Floodplain Administrator	MSD	Unknown	Unknown	Unknown
Geographic Information System (GIS) Coordinator	N – MSD	Unknown	Unknown	Unknown
Planning Commission	Y	Unknown	Unknown	Unknown

[6] MSD = Municipal Services District, UFA = Unified Fire Authority.

DRAFT

Administrative Capability	In Place? (Y/N)	Is staffing adequate?	Are staff trained on hazards and mitigation?	Is coordination between agencies and staff effective?
Fire Safe Council	N – UFA does fire protection	Unknown	Unknown	Unknown
CERT (Community Emergency Response Team)	N	Unknown	Unknown	Unknown
Active VOAD (Voluntary Agencies Active in Disasters)	N	Unknown	Unknown	Unknown
Other? (Please describe.)				

Table 15: Assessment of the Technical Capabilities of the Town of Brighton[7]

Technical Capability	In Place? (Y/N)	How has it been used to assess/mitigate risk in the past?	How can it be used to assess/mitigate risk in the future?
Mitigation Grant Writing	MSD	Unknown	Unknown
Hazard Data and Information	MSD	Unknown	Unknown
GIS	MSD	GIS has help generate Evacuation Zones	GIS future projects will plot resources that are stored or will be staged
Mutual Aid Agreements	MSD	Unknown	Unknown
Other? (Please describe.)			

Financial Capabilities

Financial capabilities are the resources to fund mitigation actions. Talking about funding and financial capabilities is important to determine what kinds of projects are feasible, given their cost. Mitigation actions like outreach programs are lower cost and often use staff time and existing budgets. Other actions, such as earthquake retrofits, could require substantial funding from local, state, and federal partners. Partnerships, including those willing to donate land, supplies, in-kind matches, and cash, can be included.

[7] MSD = Municipal Services District.

Table 16: Assessment of the Financial Capabilities of the Town of Brighton

Funding Resource	In Place? (Y/N)	Has it been used in the past and for what types of activities?	Could it be used to fund future mitigation actions?	Can it be used as the local cost match for a federal grant?
Capital Improvement Project Funding	Y – capital fund	Unknown	Y	Y
General Funds	Y – town budget	Y – fuel reduction projects, infrastructure improvements	Y	Y
Hazard Mitigation Grant Program (HMGP/404)	N	N	Y	N
Building Resilient Infrastructure & Communities (BRIC)	N	N	Y	N
Flood Mitigation Assistance (FMA)	N	N	Y	N
Public Assistance Mitigation (PA Mitigation/406)	Unknown	N	Y	N
Community Development Block Grant (CDBG)	Y	Unknown	Y	Y
Natural Resources Conservation Services (NRCS) Programs	N	Unknown	Y	N
U.S. Army Corps (USACE) Programs	N	Unknown	Y	N
Property, Sales, Income, or Special Purpose Taxes	Y – sales (local, resort, highway/transit)	Unknown	Y	Y
Stormwater Utility Fee	Y	Unknown	Y	Y
Fees for Water, Sewer, Gas, or Electric Services	Y – special districts within Brighton have these.	Unknown	Y	Y
Impact Fees from New Development and Redevelopment	Y	Unknown	Y	Y
General Obligation or Special Purpose Bonds	Y	Yes – infrastructure improvements	Y	Y
Federal-funded Programs (Please describe)	Emergency Solutions Grant; HOME Investment Partnership	Unknown	Yes – support for shelters, property acquisition	N

DRAFT

Funding Resource	In Place? (Y/N)	Has it been used in the past and for what types of activities?	Could it be used to fund future mitigation actions?	Can it be used as the local cost match for a federal grant?
			and development of housing	
Private Sector or Nonprofit Programs	N	Unknown	Y	Y
Other?	Unknown	Unknown	Unknown	Unknown

Education and Outreach Capabilities

Education and outreach capabilities are programs and methods that could communicate about and encourage risk reduction. These programs may be run by a participant or a community-based partner. Partners, especially those who work with underserved communities, can help identify additional education and outreach capabilities.

Table 17: Assessment of the Education and Outreach Capabilities of the Town of Brighton[8]

Education and Outreach Capability	In Place? (Y/N)	Does it currently incorporate hazard mitigation?	Could it be used to support mitigation in the future?
Community Newsletter(s)	Y	Y	Y
Hazard Awareness Campaigns (such as Firewise, Storm Ready, Severe Weather Awareness Week, School Programs)	Y – Brighton is a Firewise Community, Chipper Days	Y	Y
Public Meetings/Events (Please describe.)	Y	Y	Y
Emergency Management Listserv	Y through MSD/ UFA	Y	Y
Local News	Y		
Distributing Hard Copies of Notices (e.g., public libraries, door-to-door outreach)	Y	Y	Y
Insurance Disclosures/ Outreach	Unknown	Unknown	Unknown
Organizations that Represent, Advocate for, or Interact with Underserved and Vulnerable Communities (Please describe.)	Unknown	Unknown	Unknown
Social Media (Please describe.)	Y – Facebook	Y	Y
Other? (Please describe.)			

[8] MSD = Municipal Services District, UFA = Unified Fire Authority.

Opportunities to Expand and/or Improve Capabilities

Actions that can expand and improve existing authorities, plans, policies, and resources for mitigation include budgeting for mitigation actions, passing policies and procedures for mitigation actions, adopting and implementing stricter mitigation regulations, approving mitigation updates, and making additions to existing plans as new needs are recognized. Table 18 lists the opportunities for the town of Brighton.

Table 18: Opportunities to Expand or Improve the Capabilities of the Town of Brighton

Capability	Opportunity to Expand and/or Improve
Planning and Regulations	Improvement of local knowledge and capabilities will occur with encourage of ongoing exploration and review of unknowns in the context of planning and regulations. A culture of continuous learning and capacity building among local officials, planners, and community members will occur.
Administrative and Technical	To address the unknowns in the administrative and technical capabilities table, several opportunities for improvement and expansion can be considered. For the Chief Building Official, it is essential to conduct a thorough staffing assessment to determine if the current levels are adequate. In addition, providing specialized training on hazards and mitigation strategies and enhancing coordination through regular interagency meetings would be beneficial. For the Civil Engineer, evaluating the current workload and staffing needs is crucial. Offering targeted training programs focused on hazard identification and mitigation techniques and enhancing coordination through collaborative projects could improve capabilities. The Community Planner's effectiveness can be boosted by assessing staffing adequacy, implementing continuous professional development programs on hazard and mitigation planning, and fostering better interagency coordination through joint task forces or working groups. For the Emergency Manager, reviewing staffing levels, ensuring that staff are trained in the latest hazard mitigation practices, and creating a centralized communication system to streamline coordination are key steps. The Floodplain Administrator's capabilities can be enhanced by performing a staffing review, introducing training modules covering flood hazards and mitigation measures, and organizing inter-departmental workshops to improve coordination. Hiring or training staff to manage GIS functions effectively, facilitating training sessions on GIS tools, and establishing clear protocols and regular meetings for improved coordination can strengthen the capabilities of the GIS Coordinator role.
Financial	To address the unknowns in financial capabilities, several opportunities for improvement and expansion can be considered. It is essential to conduct a comprehensive assessment to identify existing funding resources and their past use. This assessment will provide a clear understanding of which resources have been used for specific activities and can fund future mitigation actions.
Education and Outreach	To address the unknowns in education and outreach capabilities, there are several opportunities for improvement and expansion. First, it is essential to conduct an in-depth assessment of current insurance disclosures and outreach practices to understand the integration of hazard mitigation information. Collaborating with insurance companies, including mitigation-related content in their communications to policyholders, can increase awareness and preparedness. Next, identifying and engaging with organizations that represent, advocate for, or interact with underserved and vulnerable communities is crucial. Partnering with these organizations can help tailor hazard mitigation messages to the specific needs of these communities, ensuring that critical information reaches those most at risk. This collaboration can lead to the development of targeted outreach

DRAFT

Capability	Opportunity to Expand and/or Improve
	programs and initiatives that effectively address the unique challenges faced by these communities. For social media, a comprehensive strategy should be developed to leverage platforms such as Facebook. This strategy should include regularly updating content, engaging with the community through interactive posts, and using social media analytics to measure the effectiveness of outreach efforts. Expanding the use of social media to other platforms can also increase the reach and impact of hazard mitigation messages.

Mitigation Strategy

Mitigation strategies provide proactive measures that are designed to minimize the impacts of hazards on the town of Brighton. The Town of Brighton did not participate as a separate jurisdiction in the previous plan; therefore, no previous mitigation actions were available. Table 19 shows mitigation action alternatives, and Table 21 is the 2025 mitigation action plan for the town of Brighton.

Table 19: Mitigation Action Alternatives for the Town of Brighton

Action	Type of Action	Selected for inclusion in the plan?	If not selected, why not?
Public education	Education and Awareness Programs	Public education	
Severe weather that shuts down roads/ access for residents	Natural Systems Protection	Severe weather that shuts down roads/ access for residents	
Brighton Bridge Improvements	Structure and Infrastructure Projects.	Brighton Bridge Improvements	

Table 20: Status of Prior Mitigation Actions of the Town of Brighton[9]

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update (if ongoing, explain)
Remove debris from the 14 miles of Big Cottonwood Creek to enhance the natural flow.	Flood (Riverine), Flooding (Urban/Flash Flooding), Severe Thunderstorm, Severe Winter Storm	Brighton	Neighboring jurisdictions, Salt Lake County	Ongoing. 2022 cleanup removed debris.
Install three (3) horn notification/ warning systems.	All hazards	Brighton	N/A	Implemented new notification system in 2021 using IPAWS. Action not carried forward to 2025

[9] IPAWS = Integrated Public Alert and Warning System, Unified Fire Authority.

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update (if ongoing, explain)
Bury powerline to decrease power outage potential and to mitigate the potential for wildfires.	All hazards	Brighton	Utilities	Ongoing. 35 miles of lines that will be placed underground.
Continue to participate in Firewise, including strict fire codes and programs within the fire department.	Wildfire	Brighton	UFA	Ongoing
Trim trees to reduce potential to spark fires and decrease power outage potential.	All hazards, especially Wildfire	Brighton	UFA	Ongoing. UFA has regular chipper days and completes home assessments with homeowners.

DRAFT

Table 21: 2025 Mitigation Action Plan for the Town of Brighton[10]

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
1	Enhance security at critical infrastructure locations to prevent potential for terrorist acts.	Terrorism	Town of Brighton	SLCo EM, UPD, UFA, MSD, SLCo IT, SLCo PW, SLCo Clerk's Office, Sheriff's Office	Increased security protocols (both in technology and policy) for staff/first responders, clear expectations/ understanding for local jurisdictions and the public	Low	Brighton General Fund, UPD, Sheriff's Office, UFA, MSD	Short term	Medium	
2	Develop and implement public education programs on disaster awareness and mitigation.	Avalanche, Civil Disturbance, Dam Failure, Drought, Earthquake, Extreme Heat, Extreme Cold, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide, Lightning, Public Health Epidemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	Town of Brighton, MSD	SLCo EM, UFA, UPD, Sheriff's Office, SLCo PW	Improved understanding of local resources, improve relationships with the public and stakeholders. Outlined plans/SOPs for programs. Share information digitally and in-person on topics such as how to complete non-structural retrofits on homes to reduce the risk of earthquakes and home weatherization for extreme cold/severe winter weather events.	Low	Brighton General Fund, SLCo EM Budget	Short term	Medium	
3	Integrate WebEOC, Crisis Track, GIS, and other technological enhancements throughout the county.	Avalanche, Civil Disturbance, Dam Failure, Drought, Earthquake, Extreme Heat, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide, Lightning, Public Health Epidemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	Town of Brighton, MSD	SLCo EM, UFA, UPD, SLCo PW, SLCo Health Department	Common operating platform for stakeholders, increased situational awareness, improved response time.	Medium	Brighton General Fund, SLCo EM Budget, UFA Budget	Medium Term	Medium	Existing software that we just need to inform documentation/ training on.
4	Enhance and continue to promote the implementation of CERT and SAFE Hubs.	Avalanche, Civil Disturbance, Dam Failure, Drought, Earthquake, Extreme Heat, Extreme Cold, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide, Lightning, Public Health Epidemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	Town of Brighton, MSD	SLCo EM	Improved awareness of local resources	Medium	Brighton General Fund, SLCo EM Budget, UFA Budget,	Short term	Medium	SAFE Hubs (previously S.A.F.E. Neighborhoods) is currently going through a rebrand with new public awareness campaign and information for all partners.
5	Establish an access and functional needs registry and improve incorporation of those with access and functional needs in plans.	Avalanche, Civil Disturbance, Dam Failure, Drought, Earthquake, Extreme Heat, Extreme Cold, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide, Lightning, Public Health Epidemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	Town of Brighton, MSD	SLCo EM, MSD, UFA, UPD, Sheriff's Office	Improved situational awareness for the public and stakeholders, greater understanding of resources available for those with access and functional needs.	Low	Brighton General Fund, SLCo EM Budget, UFA Budget, MSD, State of Utah	Short term	High	The State of Utah's Access and Functional Needs Registry is dissolving in 2025. The county needs a way to account for those with access and functional needs, including incorporation into plans/SOPs.

[10] ATF = Bureau of Alcohol, Tobacco, Firearms and Explosives, CWPP = Community Wildfire Protection Plan, DHS = Department of Homeland Security, FBI = Federal Bureau of Investigation, FMA = Flood Mitigation Assistance, GIS = Geographic Information System, HHPD = High Hazard Potential Dams, LEPC = Local Emergency Planning Committee, MSD = Municipal Services District, NWS = National Weather Service, SIAC = Statewide Information and Analysis Center, SLCo EM = Salt Lake County Emergency Management, SLCo IT = Salt Lake County Information Technology, SLCo PW = Salt Lake County Public Works, SOP = Standard Operating Procedure, UDOT = Utah Department of Transportation, UFA = Unified Fire Authority, UPD = Unified Police Department.

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
6	Snow sheds – Construct snow sheds for avalanche mitigation in Big Cottonwood Canyon.	Avalanche	UDOT, Town of Brighton	SLCo EM, MSD, UFA, UPD	Diminish road closure time, preserve life and safety from avalanches (personal injuries, car/infrastructure damage, safety of first responders and UDOT staff)	High – $72–$90 million	UDOT Operational Budget, Brighton Capital Improvement Fund	Long term	Medium	
7	Bring deficient high hazard dams up to current industry standards.	Dam Failure	Dam owners/ water companies	Town of Brighton, SLCo EM, MSD	Life and safety (personal injuries, safety of first responders), damage to critical infrastructure	High	SLCo PW, Dam owners, Salt Lake City Public Utilities, Brighton Capital Improvement Fund, State of Utah DWR, HHPD	Long term	High	
8	Procure generators and transfer switches for public facilities and critical facilities.	Extreme Heat, Extreme Cold	Town of Brighton, MSD	SLCo EM, SLCo Parks and Recreation, school districts.	Provide backup generators for cooling centers and code blue centers. Accurate inventory of what the county has to provide to other agencies or jurisdictions as needed.	Medium	Brighton General Fund, SLCo General Fund, MSD General Fund	Long term	Medium	
9	Increase the size of culverts and bridges.	Flooding	SLCo PW, MSD	SLCo EM	Allow for larger runoff during the spring melt season, reduce the amount of debris buildup.	Medium	SLCo PW Capital Projects Fund, UDOT operational budget, MSD		Medium	
10	Coordinate with SLCo EM to understand and procure FMA grants.	Flooding	SLCo EM	Town of Brighton, SLCo PW, MSD	Improved understanding of grants available and how money can be used for mitigation efforts.	Low	SLCo EM General Fund, Brighton General Fund, MSD General Fund, State of Utah	Medium term	Medium	
11	Develop an enhanced emergency notification communication system for the county.	Avalanche, Civil Disturbance, Dam Failure, Drought, Earthquake, Extreme Heat, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide, Lightning, Public Health Epidemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	SLCo EM	Town of Brighton, MSD, UFA, UPD, local jurisdictions, UDOT	Early notification of impending wildfire to decrease loss of life. Improved relationships with the public and stakeholders. Faster delivery of information with templates/plans ready to go.	High – $1 million	SLCo General Fund, MSD General Fund, Brighton General Fund, grant program	Short term	Medium	
12	Promote the Firewise Initiative and regularly review/ update the Community Wildfire Protection Plans (CWPP) for at-risk communities.	Wildfire	UFA	SLCo EM, MSD, Town of Brighton	Increased awareness of plans (for the public and stakeholders), improved eligibility for grants/other funding sources, and regular review of CWPP.	Low	SLCo General Fund, MSD General Fund, Brighton General Fund	Short term	Medium	

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
13	Conduct public awareness campaign on Tier 2 reporting software for chemical reporting.	Hazardous Materials Incident	UFA	SLCo EM, UPD, Town of Brighton, Sheriff's Office, Rio Tinto	Improved understanding of Tier 2 reporting and how local agencies/jurisdictions can find and submit information. A common operating platform for hazardous materials reporting.	Low	SLCo General Fund, MSD General Fund, Brighton General Fund, State of Utah	Long term	Medium	
14	Enact countywide regulations and codes for development to reduce landslide and slope failure damage to critical infrastructure and buildings.	Landslide and Slope Failure	SLCo Office of Regional Development	SLCo EM, UFA, MSD, Town of Brighton	Reduce the likelihood of landslides and critical infrastructure/building damage. Ensure that future development is up to code and follows policy to avoid repetitive loss properties.	Low	SLCo General Fund, MSD General Fund, Brighton General Fund, State of Utah	Long term	Medium	
15	Leverage WebEOC and GIS to track the spread of contagious disease.	Public Health Epidemic/Pandemic	SLCo Health Department	SLCo EM, UFA, MSD, UPD, Sheriff's Office, Town of Brighton	Use GIS and WebEOC software to maintain situational awareness and track illnesses throughout the county.	Low	SLCo EM General Fund, MSD General Fund, Brighton General Fund, SLCo Health Department (SLCo General Fund), State of Utah	Short term	Medium	This is software that county/ local jurisdictions already have, so they just need to do a better job of training/documentation.
16	Create public awareness campaigns and public education programs on radon risks and provide home testing for radon.	Radon	SLCo EM, Town of Brighton	MSD, Aging and Adult Services, SLCo Health Department, local jurisdictions	Decrease radon-caused cancer deaths. Increase engagement/ understanding with the public about what SLCo can do or help with.	Low	SLCo EM General Fund, MSD General Fund, Brighton General Fund, State of Utah	Short term	Low	
17	Develop a road resurfacing project, including permeable pavement for areas with rain-based flooding.	Heavy Rain	SLCo PW and Municipal Services	SLCo Parks and Recreation Department, MSD, local jurisdictions	Reduce pollutants discharged in runoff, reduce maintenance time/costs on roads, improve traction on roads.	Medium	SLCo PW Capital Projects Fund, UDOT Operational Fund, grant program	Long term	Low	
18	Create a public education program for property owners to learn about tree maintenance and high-strength windows.	High Wind	SLCo EM	Aging and Adult Services, SLCo PW and Municipal Services, UFA, Town of Brighton, MSD	Reduce damage during high wind events to critical infrastructure. Prevent personal injuries (people driving on roads or walking in neighborhoods). Improve relationships with stakeholders and the public.	Low	SLCo PW, SLCo General Fund, MSD General Fund, Brighton General Fund, UFA General Fund	Short term	Low	
19	Develop a severe winter weather mitigation program to maintain access to primary roadways	Severe Winter Weather – Heavy Snow, Blizzard, Extreme Cold	SLCo PW for Municipal Services	SLCo EM, Town of Brighton, MSD, UDOT	Emergency services like police, fire, and paramedics can use roads to provide their services.	Low	MSD, SLCo EM and Town of Brighton General Fund	Short term	High	A severe winter storm with heavy snowfall requires operators and equipment to clear roads and streets for public and emergency vehicle

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
	and evacuation routes.									access. The primary effort will be to keep the roads open by clearing snow.
20	Conduct a public awareness campaign about lightning safety.	Lightning	SLCo EM, Town of Brighton	SLCo Parks and Recreation, UFA, SLCo PW, MSD	Lightning strike awareness for the public	Low	MSD, SLCo EM and Town of Brighton General Fund	Short term	Low	
21	Improve outreach for "See Something, Say Something" QR code to deter terrorist acts.	Terrorism (including Cyberattack)	SLCo Sheriff's Office	SLCo EM, UPD, UFA, MSD, Town of Brighton, SLCo IT	Ensure that residents and local agencies/jurisdictions are aware of local intelligence resources and ways in which they can report suspicious activity. Encourage QR code use/outreach at special events throughout the county.	Low	MSD, SLCo EM and Town of Brighton General Fund	Short term	Medium	
22	Partner with county to develop a countywide intelligence group/ division to monitor and analyze threats before an incident occurs.	Terrorism (including Cyberattack)	SLCo EM	Town of Brighton, SLCo Sheriff's Office, SIAC, DHS, ATF, FBI		Medium	MSD, SLCo EM and Town of Brighton General Fund	Short term	Medium	This would be a core group of stakeholders that meet on a regular basis to share and collaborate on intelligence data.
23	Code enforcement – Review critical infrastructure facilities to ensure that building materials are up to code and are tornado resistant.	Tornado	SLCo EM	MSD, Town of Brighton, SLCo PW	Ensure that critical infrastructure facilities are operational/ functional in the event of a disaster. Preserve life and safety.	Low	MSD, SLCo EM and Town of Brighton General Fund, UFA General Fund	Short term	Low	
24	Enhance interoperable radio communications systems throughout the county.	Avalanche, Civil Disturbance, Dam Failure, Drought, Earthquake, Extreme Heat, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide, Lightning, Public Health Epidemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	SLCo EM	Town of Brighton, UFA, UPD, Sheriff's Office	Improved communication between different agencies, common operating platform.	Medium	MSD, SLCo EM and Town of Brighton General Fund	Short term	Medium	
25	Develop a countywide single source of information sharing/gathering for intelligence.	Civil Disturbance, Terrorism	SLCo EM	Town of Brighton, SLCo Sheriff's Office, SIAC	Improved coordination between local agencies/jurisdictions.	Medium	MSD, SLCo EM and Town of Brighton General Fund	Short term	Medium	Have one common operating platform to be used by all agencies in Salt Lake County to collect suspicious activity reports. Develop a public awareness campaign to educate the public on how and what to report.
26	Install xeriscaping on government-owned buildings to combat	Drought	SLCo Facilities	Town of Brighton, Water companies/ districts, MSD, State of Utah	Decrease the cost of landscape irrigation, decrease water use	Medium	SLCo Facilities General Fund, State of Utah, local	Short term	Low	

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
	drought conditions and conserve water.						jurisdictions, MSD, SLCo EM and Town of Brighton General Fund			
27	Improve communication to the public and stakeholders on resources available when Code Blue is in effect during severe winter weather.	Severe Winter Weather	SLCo EM	Town of Brighton, MSD, Office of Homeless and Criminal Justice Reform	Prevents further damage to critical infrastructure, ensures that homeless individuals have warming resources available, offloads some of the pressure on local homeless resource providers with standard protocols to follow with Code Blue.	Low	SLCo EM General Fund, SLCo Health Department General Fund, State of Utah	Short term	Low	
28	The town would like to increase its monitoring of earthquake/seismic movement through strategic sensor placement.	Earthquake	SLCo EM	Town of Brighton	Sensor equipment can help forewarn the public and scientists in advance of ground shifting and seismic activity which could save lives.	High – $500,000	SLCo EM General Fund, Town of Brighton General Fund, NWS	Medium term	Medium	
29	The town would like to increase its shelters to accommodate for extreme cold conditions that affect the public.	Extreme Cold	Town of Brighton	SLCo EM	Shelters are instrumental in saving lives during extreme cold events for individuals that do not have permanent housing, or individuals whose heat is not working.	High – $200,000	Town of Brighton General Fund, SLCo EM General Fund, SLCo Health Department General Fund	Medium term	High	
30	Remove debris from the 14 miles of Big Cottonwood Creek to enhance the natural flow.	Flood (Riverine), Flooding (Urban/Flash Flooding), Severe Thunderstorm, Severe Winter Storm	Brighton	Neighboring jurisdictions, Salt Lake County	Natural flow helps reduce the risk of potential flooding. Some areas have been completed but may need a repeat effort.	Low	Brighton General Fund	Short term	Medium	Ongoing. 2022 cleanup removed debris.
31	Bury power lines to decrease power outage potential and mitigate the potential for wildfires.	Avalanche, Civil Disturbance, Dam Failure, Drought, Earthquake, Extreme Heat, Extreme Cold, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide, Lightning, Public Health Epidemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	Brighton	Utilities	Reduces risk of power lines and other utility damage during high wind events. Reduces risk of sparking fires and power outages.	High	Brighton General Fund	Long term	Medium	Ongoing. Thirty-five miles of lines that will be placed underground.
32	Continue to participate in Firewise, including strict fire codes and programs within the fire department.	Wildfire	Brighton	UFA	Reduces risk of loss of life and property damage from wildfires. Requires ongoing activity.	Low	UFA Budget, Brighton General Fund, MSD	Ongoing	Medium	Ongoing.

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
33	Trim trees to reduce the potential to spark fires and decrease power outage potential.	Avalanche, Civil Disturbance, Dam Failure, Drought, Earthquake, Extreme Heat, Extreme Cold, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide, Lightning, Public Health Epidemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	Brighton	UFA	Reduces risk of power line and other utility damage during high wind events. Reduces risk of sparking fires and power outages.	Medium	UFA Budget, Brighton General Fund, MSD	Short term	Medium	Ongoing. UFA has regular chipper days and completes home assessments with homeowners.
34	Enhance the spillway capacity of the Lake Mary-Phoebe Dam structure.	Dam Failure	Salt Lake City Corporation	Salt Lake County EM, Utah Division of Water Rights Dam Safety Section, Salt Lake City Public Utilities, Local Governments	Upgrade spillway capacity to manage extreme flood events, as suggested in the dam safety inspection and construction reports, and reduce potential losses from failure.	High	Salt Lake County General Fund, HHPD Grant, HMGP Grant	Short term	Medium	
35	Implement seepage control measures for Lake Mary-Phoebe Dam.	Dam Failure	Salt Lake City Corporation	Salt Lake County EM, Utah Division of Water Rights Dam Safety Section, Salt Lake City Public Utilities, Local Governments	Implement pressure grouting to reduce seepage, as outlined in the Lake Mary–Phoebe Dam inspection and annual reports.	Medium	Salt Lake County General Fund, HHPD Grant,	Short term	High	
36	Rehabilitate or complete other safety projects for high hazard potential dams (HHPDs) based on dam safety reports or risk studies.	Dam Failure	SLCo EM	Salt Lake County Public Works Flood Control Engineering, Utah Division of Water Rights Dam Safety Section, Salt Lake City Public Utilities, Local Governments	Reduce potential losses from failure of HHPDs.	High	Salt Lake County General Fund, HHPD Grant, HMGP Grant	Long term	High	New

DRAFT

Canyons School District

Jurisdictional Annex to the
Salt Lake County Hazard Mitigation Plan

Month XXXX | Draft X.X

THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT

Table of Contents

Canyons School District Annex 1

Planning Process Contact Information 1
Jurisdiction Profile 1
Location and Description 1
Population 2
Brief History 3
Climate 3
Public Services 4
Governing Body 4
Development Trends 4
Jurisdiction-Specific Hazards and Risk 4
Hazard Event History 7
National Flood Insurance Program Summary 8
Jurisdiction-Specific Vulnerabilities and Impacts 8
Hazards Not Profiled 22
Jurisdiction-Specific Changes in Vulnerability 22
Additional Public Involvement 30
Plan Integration 30
Capability Assessment 31
Planning and Regulatory Capabilities 31
Administrative and Technical Capabilities 32
Financial Capabilities 32
Education and Outreach Capabilities 33
Opportunities to Expand and/or Improve Capabilities 33
Mitigation Strategy 33

DRAFT

List of Figures

Figure 1: Canyons School District with Elementary School Boundaries 2
Figure 2: Demographics of Students in the Canyons School District 3

List of Tables

Table 1: Contact Information for the Canyons School District 1
Table 2: Participant List for the Canyons School District 1
Table 3: Calculated Priority Risk Index Values for the Canyons School District 5
Table 4: Criteria for the Calculated Priority Risk Index 6
Table 5: Hazard Events Specific to the Canyons School District since 2019 7
Table 6: History of Hazard Events in Salt Lake County 8
Table 7: Jurisdiction-Specific Vulnerabilities and Impacts in the Canyons School District 8
Table 8: Jurisdiction-Specific Changes in Vulnerability in the Canyons School District 23
Table 9: Integration of Previous Plans by the Canyons School District 31
Table 10: Opportunities for Integration with Future Plans of the Canyons School District 31
Table 11: Opportunities to Expand and/or Improve the Capabilities of the Canyons School District 33
Table 12: 2025 Mitigation Action Plan for the Canyons School District 35

DRAFT

Canyons School District Annex

To participate in this multi-jurisdictional hazard mitigation plan (MJHMP) update for Salt Lake County (SLCo), the governing body of the Canyons School District submitted a commitment letter to participate in the planning process. Upon approval from FEMA, the plan will be adopted by a formal resolution, a copy of which will be maintained at the district offices.

Planning Process Contact Information

Table 1 provides information on the point of contact during the updating of the MJHMP.

Table 1: Contact Information for the Canyons School District

Name	Contact Information
Ryan Jakeman	**Phone**: 801-826-5143 **email:** ryan.jakeman@canyonsdistrict.org

The Canyons School District has a fully integrated approach to hazard mitigation planning and program implementation. During the 2024 update process, the MJHMP participation roles in Table 2 were recorded.

Table 2: Participant List for the Canyons School District

Name	Title	Jurisdiction
Rick Conger	Facility Services Director	Canyons School District
Ryan Jakeman	Facility Coordinator	Canyons School District

Jurisdiction Profile

Location and Description

The Canyons School District is in the southeastern part of Salt Lake County. It serves the municipalities of Alta, Cottonwood Heights, Draper, Midvale, and Sandy (see Figure 1). The district covers 192 square miles and includes 50 schools with approximately 34,000 students. The district offers a range of educational programs, including 29 elementary schools, eight middle schools, five traditional high schools, and eight special programs schools. These special programs include a technical school, a special education school, and a high school for adults in prison. Canyons School District was established in 2007 after residents voted to split from the Jordan School District. It officially started operating on July 1, 2009.

DRAFT

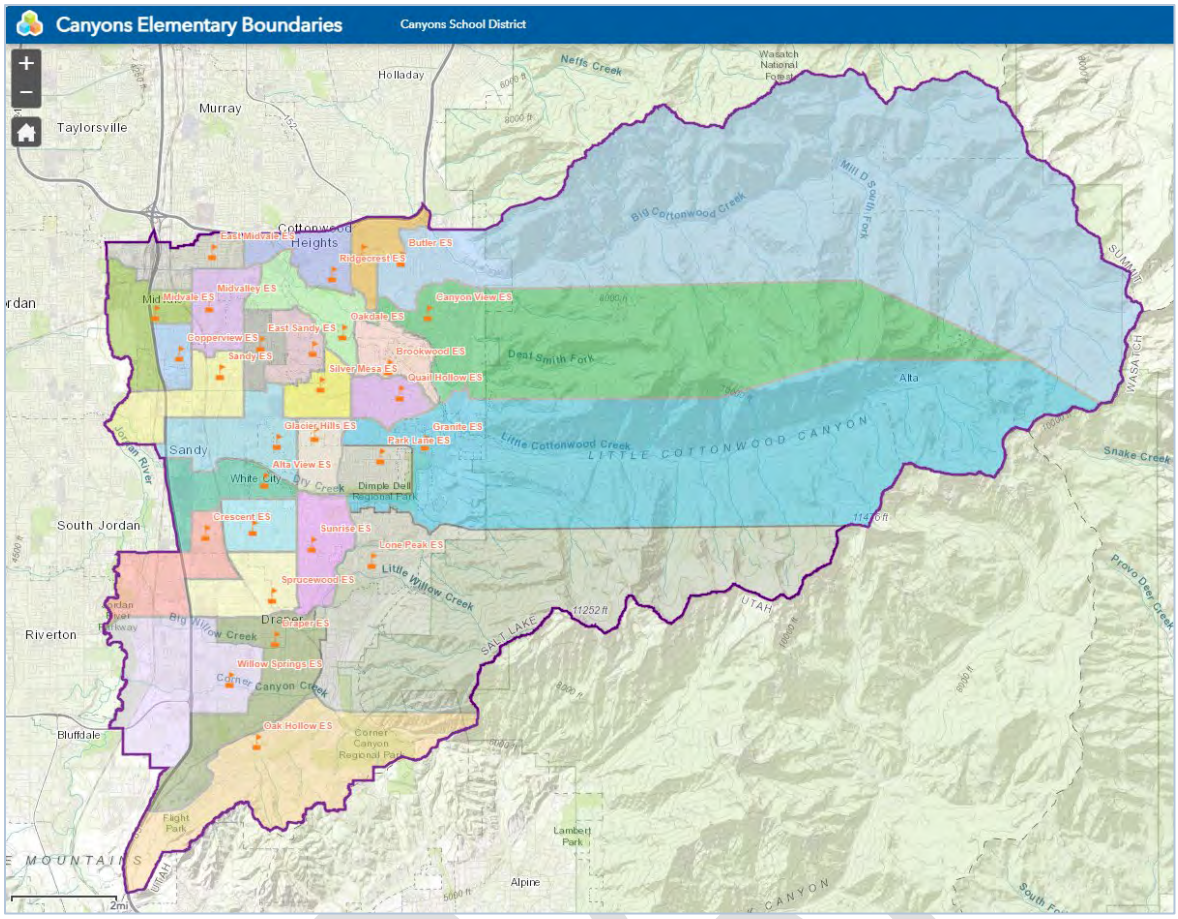


Figure 1: Canyons School District with Elementary School Boundaries[1]

Population

For the 2024–2025 school year, the Canyons School District had 33,386 students enrolled. Figure 2 presents the demographics of the students in the district.

[1] Canyons School District Boundaries. https://www.canyonsdistrict.org/schools/.

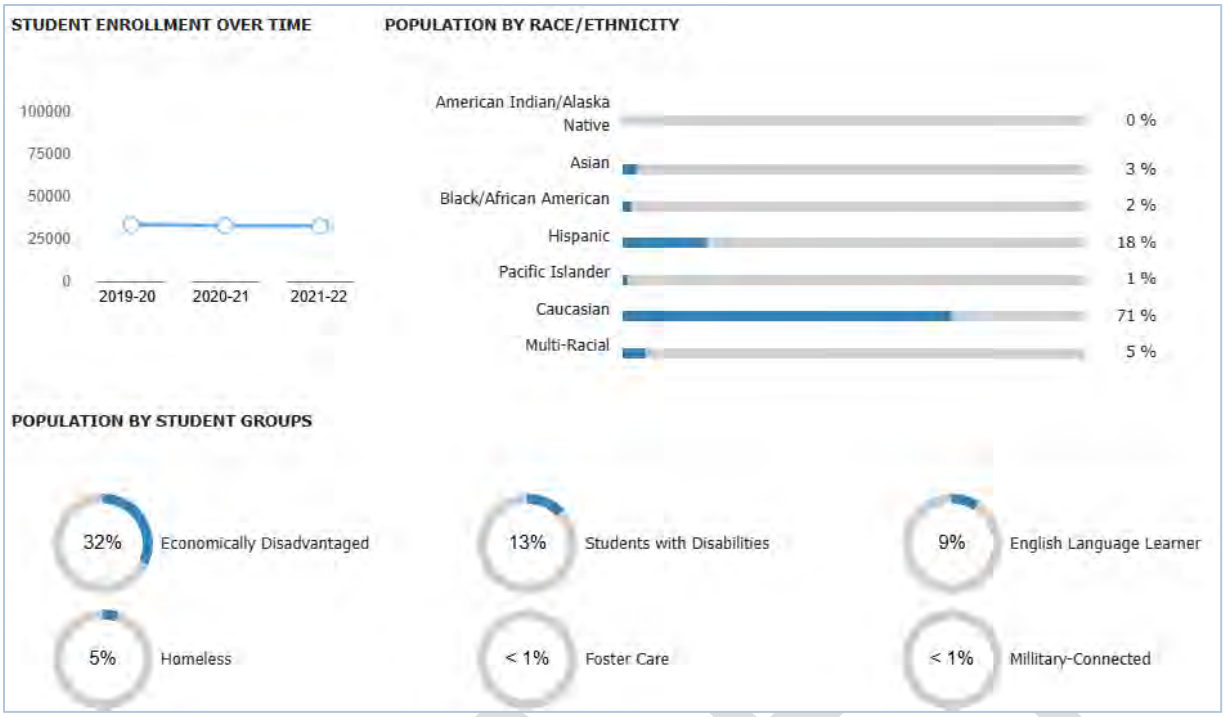


Figure 2: Demographics of Students in the Canyons School District[2]

Brief History

The Canyons School District was established in 2007 after residents in southeastern Salt Lake County voted to split from the Jordan School District. This made Canyons the first new school district created in the state in nearly a century.[3] The district officially began operations on July 1, 2009. David Doty, a former high school Spanish teacher and assistant commissioner for the Utah System of Higher Education, was appointed as the district's first superintendent. Over the years, the district has grown to include 47 schools and approximately 34,000 students.

In 2014, James Briscoe became superintendent, and in 2020, Rick Robins took over the role. The district continues to serve the communities of Alta, Cottonwood Heights, Draper, Midvale, and Sandy.

Climate

Salt Lake County, where Canyons School District is located, experiences a semi-arid climate characterized by hot, dry summers and cold, snowy winters. The region typically has four seasons, with average summer temperatures reaching the 80s to 90s°F (27–37°C). In comparison, winter temperatures can drop into the 20s to 30s°F (-6 to 4°C). Precipitation is relatively low, mostly occurring during the spring and early summer months. Snowfall is common in winter, contributing to the area's overall water supply. The surrounding mountains can influence weather patterns, leading to occasional heavy snowfall

[2] Canyons School District, "Profile." https://reportcard.schools.utah.gov/District/Profile?DistrictID=186056&schoolyearendyear=2022.
[3] Ibid.

in the winter months. The climate impacts various aspects of school life, including potential outdoor activities and commuting conditions.

Public Services

The Canyons School District provides public services to support student education and well-being. These include comprehensive academic programs, extracurricular activities, and specialized support for students with diverse needs. The district offers counseling and mental health services; nutritional programs, such as free and reduced lunch options; and opportunities for advanced placement and career and technical education. In addition, the district emphasizes community engagement through family support services and partnerships that enhance learning environments. These services aim to ensure that students have the necessary resources to thrive academically and personally.

Governing Body

The governing body of the Canyons School District is the Canyons School District Board of Education, which is responsible for setting policies, overseeing the district's budget, and making decisions that affect the educational programs and operations of the district.

Development Trends

The Canyons School District in Utah has experienced several notable development trends. The district is focusing on expanding its Career and Technical Education (CTE) programs to better prepare students for the workforce, with a significant development being the purchase of the former eBay campus in Draper for $50 million to create the Canyons Center of Innovation. This new facility will offer classes in robotics, engineering, business, and other technical fields.

Since its establishment in 2009, the district has rebuilt or renovated 23 schools, addressing seismic issues and modernizing facilities to ensure safety and accommodate growing student populations. Moreover, the district is aligning its development plans with regional economic trends and long-term strategic goals, leveraging the location of new facilities, such as the proximity of the new Center of Innovation to public transportation and the Point Innovation District.

Jurisdiction-Specific Hazards and Risk

The Calculated Priority Risk Index (CPRI) is a comprehensive assessment tool for evaluating and prioritizing risks in a given context. It considers various factors, such as probability, impact, and urgency, to determine the level of risk associated with events or situations. The results for each hazard, including its risk factor (RF) value, are shown in Table 3. The results are based on the criteria in Table 4 and the equation that follows it. The CPRI helps organizations and individuals make informed decisions about risk management and mitigation strategies. It provides a systematic approach to identifying and addressing potential issues, allowing for a more efficient allocation of resources and proactive risk prevention. With the CPRI, stakeholders can prioritize their focus on the most critical risks, leading to more effective risk management and, ultimately, better outcomes.

DRAFT

Table 3: Calculated Priority Risk Index Values for the Canyons School District

Type of Hazard Event	Probability of Future Events	Spatial Extent	Severity of Life/ Property Impact	Warning Time	Duration	Response Capacity	Risk Factor Value
Avalanche	1	1	1	1	1	1	1
Drought	2	2	2	1	3	1	1.9
Earthquake	2	4	4	4	4	2	3.2
Extreme Heat	2	2	1	1	3	1	1.6
Extreme Cold	2	2	1	1	3	1	1.6
Flooding	3	2	2	3	3	1	2.4
Landslide/ Slope Failure	1	1	1	4	1	2	1.4
Radon	3	1	2	1	4	2	2.3
Heavy Rain	3	2	1	2	2	1	1.9
High Wind	2	2	1	2	2	1	1.6
Lightning	2	1	1	4	1	1	1.6
Severe Winter Weather	2	2	1	1	2	1	1.5
Tornado	1	1	1	4	1	2	1.4
Wildfire	2	2	2	2	3	2	2.1
Dam Failure	1	1	1	2	1	2	1.2
Civil Disturbance	1	1	1	3	1	2	1.3
Cyberattack	2	2	1	4	1	2	1.8
Hazardous Materials Incident (Transportation & Fixed Facility)	2	2	1	4	1	1	1.7
Public Health Epidemic/ Pandemic	2	2	1	1	4	1	1.7
Terrorism	1	1	1	2	1	1	1.1

DRAFT

Table 4: Criteria for the Calculated Priority Risk Index

Risk Index Factor	Degree of Risk Level		Criteria	Factor Weight for Degree of Risk Level
Probability of Future Events	1	Unlikely	Less than 1 percent probability of occurrence in the next year or a recurrence interval of greater than every 100 years.	30%
	2	Occasional	1 to 10 percent probability of occurrence in the next year or a recurrence interval of 11 to 100 years.	
	3	Likely	11 to 90 percent probability of occurrence in the next year or a recurrence interval of 1 to 10 years.	
	4	Highly Likely	91 to 100 percent probability of occurrence in the next year or a recurrence interval of less than 1 year.	
Spatial Extent	1	Limited	Less than 10% of the planning area could be impacted.	10%
	2	Small	10%–25% of the planning area could be impacted	
	3	Significant	25%–50% of the planning area could be impacted.	
	4	Extensive	50%–100% of the planning area could be impacted.	
Severity of Life/Property Impact	1	Negligible	Less than 5% of the affected area's critical and non-critical facilities and structures are damaged/destroyed. Only minor property damage and minimal disruption of life. Temporary shutdown of critical facilities.	30%
	2	Limited	More than 5% and less than 25% percent of property in the affected area is damaged/destroyed. Complete shutdown of critical facilities for more than one day but less than one week.	
	3	Critical	More than 25% and less than 50% of property in the affected area was damaged/destroyed. Complete shutdown of critical facilities for over a week but less than one month.	
	4	Catastrophic	Over 50% of critical and non-critical facilities and infrastructures in the affected area are damaged/destroyed. Complete shutdown of critical facilities for more than one month.	
Warning Time	1	Self-defined	More than 24 hours	10%
	2	Self-defined	12 to 24 hours.	
	3	Self-defined	6 to 12 hours.	
	4	Self-defined	Less than 6 hours.	
Duration	1	Brief	Up to 6 hours.	10%
	2	Intermediate	Up to one day.	

DRAFT

	3	Extended	Up to one week.	
	4	Prolonged	More than one week.	
Response Capacity	1	High	Significant resources and capability to respond to this kind of event; staff are trained, experienced, and ready.	10%
	2	Medium	Some resources and capability to respond to this kind of staff; some staff may be trained, experienced, and ready while others may need additional support.	
	3	Low	Limited resources and capability to respond to this kind of event; additional staff or staff training needed.	
	4	None	No resources and capability to respond this kind of event; additional outside support would be required.	

RISK FACTOR (RF) EQUATION

RF Value = [(Probability x 0.30) + (Spatial Extent x 0.10) + (Severity of Life/Property Impact x 0.30) + (Warning Time x 0.10) + (Duration x 0.10) + (Response Capacity x 0.10)]

Hazards with an RF value greater than or equal to 2.5 are considered high risk. Those with RF values of 2.0 to 2.4 are considered moderate risk hazards, and those with an RF value less than 2.0 are considered low risk. The highest possible RF value is 4.

Hazard Event History

Examining hazard event histories provides valuable insights to inform decision-making and help prioritize resources for risk prevention and response efforts. Table 5 lists the hazard events impacting the Canyons School District since the 2019 plan update, as recorded in the Storm Events Database from the National Centers for Environmental Information.

Table 5: Hazard Events Specific to the Canyons School District since 2019

Type of Hazard Event	FEMA Disaster #	Date(s)	Damage or Impacts	Description
Public Health Epidemic/ Pandemic		2020–20XX		COVID-19 Pandemic

DRAFT

Table 6: History of Hazard Events in Salt Lake County[4]

Declaration Date	Event Type	Disaster Number	Deaths	Injuries	Property Damage	Crop Damage
08/14/2021	Fire (Parleys Canyon Fire)	5408	N/A	N/A	N/A	N/A
01/12/2021	Severe storm – (straight-line winds)	4578	N/A	N/A	N/A	N/A
07/09/2020	Earthquake	4548	N/A	N/A	N/A	N/A
04/04/2020	Biological (COVID-19)	4525	N/A	N/A	N/A	N/A
03/13/2020	Biological (COVID-19)	3478	N/A	N/A	N/A	N/A

National Flood Insurance Program Summary

The Canyons School District does not participate in the National Flood Insurance Program (NFIP) or the Community Rating System.

Jurisdiction-Specific Vulnerabilities and Impacts

Table 7 provides information on the vulnerable assets in the Canyons School District, including its critical facilities, highlighting the district's vulnerability to identified hazards. It also describes the potential impacts to the community arising from those vulnerabilities. Impacts are the consequences or effects of each hazard on the assets. By understanding the risks associated with these assets, the district can develop proactive strategies to mitigate vulnerabilities and ensure the safety and functionality of these important assets during hazard events. These data are invaluable for decision-making and prioritizing resources for emergency response and preparedness efforts, ultimately contributing to more effective risk management and greater resilience.

Vulnerabilities include 33,493 students, 7,020 district employees, 28 elementary schools, 8 middle schools, 6 high schools, and 5 other schools, as well as school buses, other vehicles, and other equipment used in educational programs.

Table 7: Jurisdiction-Specific Vulnerabilities and Impacts in the Canyons School District

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
Avalanche	People	N/A—not relevant to Canyons School District (CSD) schools.
Drought	People	*Vulnerability:* All students and staff are vulnerable to drought, lack of drinking/culinary water, and poor air quality. *Impacts:* Droughts can reduce municipal water supplies and water is a critical resource for everyday use, including drinking, cooking, and

[4] FEMA, "Disaster Declarations for States and Counties." https://www.fema.gov/data-visualization/disaster-declarations-states-and-counties.

Hazard	Vulnerable Asset	Description of Vulnerabilities and Impacts
		cleaning. Individuals with underlying health conditions, young children, and other medically vulnerable individuals may be more affected by drought-related poor air quality conditions and dust storms.
	Structures	*Vulnerability:* District building foundations, landscaping, and sports fields are susceptible to damage during drought conditions. *Impacts:* Drought conditions can cause scarcity of water or restrictions on irrigation for landscaping and sports fields at school facilities. During severe or prolonged drought, soil may contract due to decreased soil moisture. This contraction could damage structural foundations or building walls.
	Economic Assets	*Vulnerability:* Increased costs for water pose a vulnerability for the school district. *Impacts:* Drought can lead to water supply shortages for various school activities, resulting in restrictions on use or higher costs.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Schools and schoolyards are vulnerable to changes in water quality. *Impacts:* Droughts can reduce or affect the quality of municipal water supplies, which can damage vegetation on school grounds and limit recreation opportunities.
	Critical Facilities and Infrastructure	*Vulnerability:* Water supply systems are vulnerable during periods of drought. *Impacts:* Utah is the second driest state in the U.S. and drought could affect water supply and delivery systems over large regions, potentially affecting all of Salt Lake County. This could limit the availability of water to the CSD for irrigation and culinary purposes.
	Community Activities	*Vulnerability:* School activities are vulnerable to disruptions due to drought conditions. *Impacts:* CSD schools and properties hold many events each year. Serious drought conditions could impact on the community and/or school use of the facilities.
Earthquake	People	*Vulnerability:* All students and staff are vulnerable to injury and disruption during an earthquake. *Impacts:* Earthquakes can cause interruption and/or displacement of student learning. Possible injuries from falling objects if an earthquake occurs during school hours. Students may be displaced from homes following an earthquake and may be unable to attend school.
	Structures	*Vulnerability:* All schools and district facilities are vulnerable to damage and other disruptions caused by earthquakes. Impacts. Potential collapse/damage to schools and district structures in a seismic event. Classes would be disrupted in a moderate earthquake, and long-term disruptions are likely in a strong earthquake. Although no CSD schools were identified in the K–12 Public Schools Unreinforced Masonry Inventory, they may still require extensive repairs.
	Economic Assets	*Vulnerability:* District budgets are vulnerable due to potential costs for repairs or instructional material replacement. *Impacts:* Repairing or rebuilding damaged schools could be very costly. Reconstruction and retrofitting old buildings is expensive. There

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerabilities and Impacts
		could also be a loss of educational equipment that may get damaged such as computers or lab equipment. Buses and district-owned vehicles could be damaged, leading to a costly replacement or repair. Temporary relocation of students to alternate facilities to provide education may require leasing costs.
	Natural, Historic, and Cultural Resources	*Vulnerability:* CSD buildings are vulnerable because they are often used as community centers to house displaced families during emergencies. *Impacts*: CSD buildings may be unavailable for sheltering or other community activities.
	Critical Facilities and Infrastructure	*Vulnerability:* Utility systems such as water, power, and communication are vulnerable to damage and may become inoperable during an earthquake. Emergency response and medical care may be overwhelmed. *Impacts:* The schools may not be functional if water, power, communication, or other systems are disrupted. Emergency responders may not be available to respond to schools immediately.
	Community Activities	*Vulnerability:* Education and community activities are vulnerable to disruption following an earthquake. *Impacts:* CSD buildings may be unavailable for daily school operations or for other community activities. Schools are often used as community centers or shelters to house displaced families but may be unsafe for use following an earthquake.
Extreme Heat	People	*Vulnerability:* Students and staff are vulnerable to health risks associated with extreme heat conditions. *Impacts:* Extreme heat can contribute to heat-related illnesses for school staff and students as well as attendees at outdoor events/games in the summer. These individuals can experience dehydration, heat exhaustion, and heat stroke if temperatures continue to increase and there are no opportunities to cool off such as air conditioning, shade, water, or adequate resources such as EMS staff. Heat illness can pose significant health issues.
	Structures	*Vulnerability:* School HVAC and power systems, as well as blacktops, parking areas, and sidewalks, are vulnerable to damage from extreme heat. *Impacts:* Extreme heat can place a strain on power grids and lead to interruptions in service. Extreme heat may strain cooling systems and contribute to increased power costs. Pavement can buckle in extreme heat and require repairs.
	Economic Assets	*Vulnerability:* Schools face increased costs due to extreme heat conditions. *Impacts:* Increased energy use raises financial costs for schools, businesses, and residents. Damage to roadways and sidewalks from heat-related buckling can require costly emergency repairs and may cause secondary disruptions while transportation routes are closed.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Air and water quality are vulnerable to degradation due to extreme heat conditions. *Impacts:* Extreme heat can contribute to an increase in evaporation rates, reduce water availability for agriculture, recreation, and culinary

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerabilities and Impacts
		use, and exacerbate the effects of drought and increase wildfire risk. Extreme heat can increase ozone levels which can impact respiratory health.
	Critical Facilities and Infrastructure	*Vulnerability:* Power systems and road/transportation systems are vulnerable to failures and damage due to extreme heat. *Impacts:* One of the most significant secondary hazards associated with excessive heat events is the failure of motorized systems, such as ventilation systems used to control temperatures inside buildings. Extreme heat can increase demand for power resources and has contributed to widespread power outages. Heat can cause roads to buckle and may cause road closures for emergency repairs, which may disrupt transportation to and from schools. Extreme heat can also raise the risk of wildfires as vegetation dries out, which allows fires to ignite and spread more rapidly. Furthermore, extreme heat can exacerbate drought conditions. Extreme heat can increase demand for healthcare services, which can put a strain on providers.
	Community Activities	*Vulnerability:* Community sports and activities are vulnerable to cancellation due to extreme heat. *Impacts:* The district monitors temperature to ensure safe conditions for outdoor activities. Extreme heat can delay, relocate, or postpone outdoor school/sport activities and gatherings.
Extreme Cold	People	*Vulnerability:* Students and staff are vulnerable to extreme cold conditions, especially students who walk to school. *Impacts:* Potential exposure to cold-related health problems for students and faculty, particularly if schools have inadequate heating systems or power is disrupted. Prolonged exposure can lead to hypothermia, frostbite, and death. Windy conditions can increase these risks.
	Structures	*Vulnerability:* Structures face increased demand for HVAC equipment and are vulnerable to issues with water lines during extreme cold. *Impacts:* Structures are not typically directly affected by extreme cold but may be affected by secondary hazards. Extreme cold can freeze water in pipes, causing them to burst. This can damage water delivery systems, structures, and roadways. Extreme cold can also impact power systems through increased demand, which contributes to increased heating costs.
	Economic Assets	*Vulnerability:* Economic assets are vulnerable to increased costs due to extreme cold conditions. *Impacts:* Extreme cold can result in budget impacts from increased heating costs and possible emergency repairs to HVAC systems. Schools could potentially have to close if unable to keep buildings warm, causing students or staff to miss school/work.
	Natural, Historic, and Cultural Resources	Extreme cold is not directly related to CSD but can be harmful to wildlife or other natural systems.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerabilities and Impacts
	Critical Facilities and Infrastructure	*Vulnerability:* Water, power, and transportation systems are vulnerable to disruptions caused by extreme cold. *Impacts:* Freezing temperatures can lead to various infrastructure disruptions. They can cause insulators to fail and conductors to break. Extreme cold can also cause water in pipes to freeze, leading to burst pipes and water damage and service interruptions. School may not be able to stay in session if power, communication, or heating system outages occur, or due to water damage. Transportation may be disrupted due to icy conditions, affecting commutes and emergency services.
	Community Activities	*Vulnerability:* Recess, sports, and school or community events are vulnerable to disruption due to extreme cold. *Impacts:* Sports, school activities, and community gatherings may be postponed or canceled. The district monitors for safe conditions for these activities.
Flooding	People	*Vulnerability:* Students and staff in flood-prone areas are vulnerable to flooding events. *Impacts:* Heavy rain or rapid snowmelt can lead to flooding, particularly if drainage systems are overwhelmed. This could affect school accessibility, disrupt classes, damage facilities, and endanger student safety. The potential for flooding could impact the occupancy of school buildings, or buildings could receive minor to significant damage. Not many buildings are in flood-prone areas. People may be forced to evacuate homes, causing disruptions to education and daily life.
	Structures	*Vulnerability:* School buildings, district vehicles are vulnerable to flooding damage. One elementary school was identified in the 0.2% annual chance flood zone. Other facilities could be affected by localized or flash flooding following heavy rain or other severe weather events. *Impacts:* Buildings or vehicles can be damaged by floodwaters. The potential for flooding could impact the occupancy of school buildings, or buildings could receive minor to significant damage. Electrical and HVAC systems could be damaged, leading to replacement costs. Computers, books, equipment, and classrooms may suffer loss of supplies and learning materials. Athletic facilities and gymnasiums could be damaged requiring repairs.
	Economic Assets	*Vulnerability:* Economic assets are vulnerable to costs associated with flood damage to school assets. *Impacts:* Flooding can damage walls, floors, and roofs, which would require costly repairs. Electrical and HVAC systems could be damaged, leading to replacement costs. Computers, books, equipment, and classrooms may suffer loss of supplies and learning materials. Athletic facilities and gymnasiums could be damaged, requiring repairs. Prolonged disruptions could delay school operations, increasing expenses.
	Natural, Historic, and	*Vulnerability:* School grounds, parks, and playgrounds are vulnerable to damage from floodwaters.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerabilities and Impacts
	Cultural Resources	*Impacts:* Flood damage can result in the inability to use school facilities and grounds during repairs.
	Critical Facilities and Infrastructure	*Vulnerability:* Community lifelines, such as power, communication, and transportation systems, could be damaged or disrupted by floods. *Impacts:* Power outages, broken water mains, and sewage system failures could make schools unsafe for operation. Flooded roads and bridges can block bus routes, making it challenging for students and staff to commute. CSD buildings are often used as community centers to house displaced families during emergencies.
	Community Activities	*Vulnerability:* Education routines and community events held at schools are vulnerable to disruption due to flooding. *Impacts:* The potential for flooding could impact the occupancy of school buildings, and buildings could receive minor to significant damage. Sports, activities, and school gatherings may be postponed or canceled.
Landslide/ Slope Failure	People	*Vulnerability:* There is minimal vulnerability for the CSD school population regarding landslides. *Impacts:* Students and staff are not likely to be affected by a landslide at school, but homes could be affected. Families, students, and staff may need to evacuate affected areas, leading to temporary displacement and disruption of daily life.
	Structures	*Vulnerability:* There is minimal potential to impact JSD schools, as no structures were identified in landslide-susceptible areas. *Impacts:* Schools and district facilities are not likely to be damaged, but homes and other structures located near slopes or unstable terrain may suffer foundation cracks or damage, making buildings unsafe to occupy.
	Economic Assets	N/A—not relevant to CSD schools.
	Natural, Historic, and Cultural Resources	N/A—not relevant to CSD schools.
	Critical Facilities and Infrastructure	*Vulnerability:* Transportation networks and utility systems are vulnerable to damage from landslides. *Impacts:* School buses may be unable to reach students due to road blockages. Students and staff may be unable to travel to school due to the closed roads. Landslides elsewhere in the region could affect utility systems like power, water, or communication, which may disrupt school activities.
	Community Activities	N/A—not relevant to CSD schools.
Radon	People	*Vulnerability:* All students and staff are vulnerable to radon exposure. *Impacts:* Radon could be present in school facilities, and all students and staff could potentially be exposed. Long-term radon exposure is the second leading cause of lung cancer, particularly in enclosed spaces like classrooms and offices. Young children, teachers, and school staff who spend many hours in affected buildings may face

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerabilities and Impacts
		greater health risks. Radon could potentially affect the residences of staff and students.
	Structures	*Vulnerability:* Structures have minimal vulnerability, as radon is primarily a health risk. *Impacts:* Some schools could potentially have high levels of radon that might require foundation repairs or ventilation for radon mitigation.
	Economic Assets	N/A—not relevant to CSD schools.
	Natural, Historic, and Cultural Resources	N/A—not relevant to CSD; radon is primarily a health risk.
	Critical Facilities and Infrastructure	N/A—not relevant to CSD; radon is primarily a health risk.
	Community Activities	N/A—not relevant to CSD schools.
Heavy Rain	People	*Vulnerability:* Students and staff face minimal risk of harm from heavy rain. *Impacts:* Heavy rain can lead to localized flooding, which could impact school buildings. Heavy rain can cause temporary disruptions to education, transportation of students, and daily life. Student safety may be at risk if they encounter fast-moving floodwaters.
	Structures	*Vulnerability:* School facilities and vehicles are vulnerable to damage from heavy rain. *Impacts:* Heavy rain could lead to localized flooding and potentially damage schools including walls, floors, and roofs. Electrical and HVAC systems could be damaged, leading to replacement costs. Computers, books, equipment, and classrooms may suffer loss of supplies and learning materials. Athletic facilities and gymnasiums could be damaged, requiring repairs.
	Economic Assets	*Vulnerability:* Repair costs pose a vulnerability to the district budget. *Impacts:* Flood damage can be costly and affect the district budget. Prolonged disruptions could delay school operations, increasing expenses.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Floodwaters can damage school grounds, parks, and playgrounds. *Impacts:* Activities may be canceled or areas may be unavailable for use.
	Critical Facilities and Infrastructure	*Vulnerability:* Utility networks and transportation systems are vulnerable to damage from heavy rain. *Impacts:* Power outages, broken water mains, and sewage system failures could make schools unsafe for operation. Flooded roads and bridges can block bus routes, making it challenging for students and staff to commute. CSD buildings are often used as community centers to house displaced families. Heavy rain can cause structural damage potentially leading to temporary closures.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerabilities and Impacts
	Community Activities	*Vulnerability:* Daily education operations and other community activities are vulnerable to disruption due to heavy rain. *Impacts:* Heavy rain could impact the occupancy of school buildings, or buildings could receive minor to significant damage. Sports, activities, and school gatherings may be postponed or canceled. Storms may result in flying debris, fallen trees, and structural damage, which pose dangers to students, staff, and the community.
High Wind	People	*Vulnerability:* All students and staff are vulnerable to high winds, which can occur over a large area and may affect the whole district. *Impacts:* Students or staff could be injured by blown debris or falling tree limbs. Classes may be canceled or moved online, impacting the academic calendar.
	Structures	*Vulnerability:* All schools, facilities, and vehicles are vulnerable to damage from high winds. *Impacts:* High winds can damage school buildings and roofs, and break windows. Schools may be inoperable if the damage is severe.
	Economic Assets	*Vulnerability:* Structure or vehicle repair costs pose a vulnerability to the district budget. *Impacts:* Significant budget impacts can result from physical damage to structures and building contents. Debris removal can be costly and may strain local resources.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Schoolyards, playgrounds, and outdoor/indoor recreational facilities are vulnerable to high winds. *Impacts:* Facilities and equipment may be damaged, and areas may be closed for use. Activities may be canceled.
	Critical Facilities and Infrastructure	*Vulnerability:* Utility systems and transportation networks are vulnerable to high winds. *Impacts:* Damaged power lines and communication equipment may interrupt emergency communications and in-person and online learning. School buses may be delayed due to fallen debris or road closures. Transportation disruptions can make it difficult for students or staff to travel to class. Classes may be canceled or moved online, impacting the academic calendar.
	Community Activities	*Vulnerability:* Recreation and sports activities are vulnerable to cancellation due to high winds. *Impacts:* High winds may force the cancellation or delay of school sports, fairs, or other school gatherings.
Lightning	People	*Vulnerability:* All students and staff are vulnerable. A large area is at risk of lightning strikes during every thunderstorm. If thunder can be heard, lightning is close enough to strike and shelter should be sought. Because it is impossible to know where lightning will strike, all people, structures, and infrastructure are considered vulnerable to lightning. *Impacts:* Students or staff could be injured if lightning occurred, particularly during outdoor activities. The district monitors safe conditions for outdoor events.
	Structures	*Vulnerability:* Structures are vulnerable to damage from lightning and power surges.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerabilities and Impacts
		Impacts: Lightning strikes can cause fires, structural damage, or power surges that damage electrical systems in schools.
	Economic Assets	*Vulnerability:* Structures, computers, and electronic equipment are vulnerable. *Impacts:* Damage from lightning can result in expensive repairs to electrical systems, computers, and other infrastructure.
	Natural, Historic, and Cultural Resources	N/A—not relevant to CSD.
	Critical Facilities and Infrastructure	*Vulnerability:* Lightning can contribute to damaged power lines and communication systems. *Impacts*: Power and communication outages can affect operations for schools, homes, businesses, emergency responders, and medical facilities.
	Community Activities	*Vulnerability:* Recreation/extracurricular activities are vulnerable to lightning strikes. *Impacts:* Lightning could lead to delay or cancellation of sports or other outdoor activities.
Severe Winter Weather	People	*Vulnerability:* All students and staff are vulnerable to severe winter weather, occurs over large areas and could affect the entire district. The eastern benches tend to receive higher snow accumulations, and schools near these neighborhoods may have higher vulnerability. *Impacts:* Travel to school facilities may be difficult for students and staff during severe winter weather. Roads may be slick or impassable due to ice, snow, or traffic from collisions. There is a risk of possible injuries at schools from slips and falls. Heavy snowstorms can disrupt transportation, making it difficult for students to commute to class. As a result, classes may be canceled or moved online, impacting the academic calendar.
	Structures	*Vulnerability:* Minimal damage to district facilities is expected. *Impacts:* While possible damage from heavy snow loads on roofs is not expected, there is an increased need for facilities/maintenance staff to clear parking lots and sidewalks.
	Economic Assets	*Vulnerability:* The district is vulnerable to increased costs due to severe winter weather. *Impacts:* Severe winter weather can lead to increased maintenance and repair costs. Schools will have an increase in operational costs to keep buildings warm. In addition, transportation and fuel costs can also increase due to snow plowing, de-icing parking lots and sidewalk
	Natural, Historic, and Cultural Resources	*Vulnerability:* Trees, landscaping, playgrounds, outdoor equipment are vulnerable due to severe winter weather. *Impacts:* Severe winter weather, such as heavy snow, can break tree limbs, which may damage school landscaping and outdoor equipment.
	Critical Facilities and Infrastructure	*Vulnerability:* Utility networks and roads are vulnerable to damage or outages. *Impacts:* Heavy snow can damage power lines, affecting heating, lighting, and communication systems. Heating systems can overload,

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerabilities and Impacts
		leading to failures. Frozen pipes and water breaks can disrupt water access in schools. Snow-covered roads can delay emergency response times and make it harder for school buses to operate safely, leading to delays or snow days.
	Community Activities	*Vulnerability:* School functions are vulnerable to severe winter weather. *Impacts:* Daily school or other gatherings may be postponed or canceled due to unsafe travel conditions. There can be disruptions to learning and class schedules.
Tornado	People	*Vulnerability:* Students and staff are vulnerable to tornadoes. Tornadoes are rare but could occur anywhere in the district. *Impacts:* Flying debris, collapsed structures, and vehicle or bus accidents caused by high winds can lead to injuries or fatalities. Families may be temporarily or permanently displaced due to damaged homes. Student access to education may be interrupted.
	Structures	*Vulnerability:* All district facilities, schools, and vehicles are vulnerable to tornado damage. *Impacts:* Tornadoes can damage or destroy school buildings, homes, vehicles, and businesses. Roofs can be torn off, windows shattered, and buildings leveled.
	Economic Assets	*Vulnerability:* There are vulnerabilities related to costs for district structures and equipment. *Impacts:* There are high costs associated with rebuilding and repairing damaged property, including vehicles and classroom materials.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Trees, landscaping, playgrounds, and recreational facilities are vulnerable to tornadoes. *Impacts:* Landscaping and outdoor equipment may be damaged or destroyed.
	Critical Facilities and Infrastructure	*Vulnerability:* Utility networks are vulnerable to outages, and transportation access can be disrupted. *Impacts:* Damage to electrical grids can occur as well as water systems and communication systems. Debris can block roads and hinder emergency response or transportation to and from school.
	Community Activities	*Vulnerability:* Parks, playgrounds, and sports recreational facilities and fields for schools, as well as community events, are vulnerable. *Impacts:* Outdoor recreation areas may be damaged or littered with debris, making them unsafe or temporarily unusable. Events and activities held at the school may be delayed or canceled.
Wildfire	People	*Vulnerability:* Students and staff are vulnerable to the effects of wildfires. *Impacts:* Smoke and poor air quality from wildfires can affect the whole region, even if fire is not within the district. Smoke can cause respiratory issues, especially for children and those with pre-existing conditions like asthma. This may require the cancellation of outdoor events and necessitate indoor recess. Families in evacuated areas may need to leave their homes, disrupting daily life.
	Structures	*Vulnerability:* No structures were identified in high wildfire risk areas.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerabilities and Impacts
		Impacts: Schools are not expected to be directly impacted by wildfire, but students or staff with homes near the interface might be. The evacuation of students or staff with homes near the wildland-urban interface may disrupt school attendance.
	Economic Assets	*Vulnerability:* Minimal vulnerability to CSD. *Impacts:* Indirect impacts may affect the community. Local businesses may be destroyed or forced to close temporarily. Reconstructing homes, schools, and infrastructure can put a financial strain on residents and government resources.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Watersheds and air quality are at risk. *Impacts:* Smoke pollution can linger for weeks, and burned landscapes can result. Fire can threaten contamination of local water sources.
	Critical Facilities and Infrastructure	*Vulnerability:* Utility systems and emergency response capabilities are vulnerable. *Impacts:* Fires can damage power lines, leaving schools without electricity. Evacuations and road closures can impact transportation to and from school. Resources devoted to fire response may strain emergency response capabilities in the community.
	Community Activities	*Vulnerability:* Daily school activities and other school-related events are vulnerable. *Impacts:* Smoke, evacuations, or direct fire damage may cause schools to close temporarily, affecting student learning. School events or gatherings may be postponed or canceled.
Dam Failure	People	*Vulnerability:* Student and staff risk is minimal while at school, as no schools were identified within dam failure inundation boundaries. However, these individuals may be vulnerable to other impacts from dam failures in the area. *Impacts:* Dam failures can occur suddenly, but those downstream might have some warning. The failure of high-hazard dams may lead to injuries and loss of life for those caught in the resulting floodwaters. Homes may be damaged or destroyed, resulting in potential long-term displacement for residents. Some of these households may require public sheltering assistance. Evacuations or damage to homes may disrupt student access to education.
	Structures	*Vulnerability:* No schools were identified within potential dam inundation areas. *Impacts:* Significant structural and infrastructural losses can result from a dam failure. Although no schools are anticipated to be damaged, students may be affected by damage to homes, businesses, and government service facilities.
	Economic Assets	*Vulnerability:* There is minimal vulnerability for CSD. *Impacts:* Economic losses in the community may have indirect impacts on CSD. In addition to the costs of rebuilding structures, significant economic impacts are likely due to lost inventory or revenue during business closures. Businesses not directly impacted by a dam failure may incur losses due to transportation or other infrastructure interruptions or an inability for employees to return to work.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerabilities and Impacts
	Natural, Historic, and Cultural Resources	*Vulnerability:* There is minimal risk to CSD resources. *Impacts:* While the risk is minimal, community recreation areas, such as parks, playgrounds, and sports recreational facilities, can be damaged.
	Critical Facilities and Infrastructure	*Vulnerability:* Utility networks and transportation systems, including roads, are vulnerable. *Impacts:* School functionality could be disrupted by power outages, communication network outages, or damage to transportation networks. If roads are damaged or blocked, transportation to or from schools could be difficult for students and staff. Power and communication outages could cause delays or lead to the cancellation of school. Disruption of a public water supply or wastewater treatment facility could lead to reduced water quality, water shortages, exposure to sewage, and other health hazards.
	Community Activities	*Vulnerability:* School events are vulnerable to disruptions. *Impacts:* Evacuations and cleanup efforts may cause schools to close temporarily, affecting students' learning. School events or gatherings may be postponed or canceled
Civil Disturbance	People	During a civil disturbance, students and staff can be impacted in several ways. They may experience disruptions to essential services, such as transportation, healthcare, and utilities. There is also potential for personal injury, fatality and emotional distress.
	Structures	Civil disturbances can result in property damage.
	Economic Assets	Civil disturbances can lead to economic repercussions, including loss of income and damage to buildings.
	Natural, Historic, and Cultural Resources	Civil disturbances can have several impacts on the environment. Impacts include increased pollution from burning vehicles, buildings, and other materials and the use of chemical agents to disperse crowds. In addition, large gatherings during civil disturbances can increase the generation of waste, including litter and potentially hazardous materials.
	Critical Facilities and Infrastructure	Schools and other essential facilities may be impacted if they are near or the target of civil disorder or riots. Civil disturbances can lead to various impacts and losses to a community's critical infrastructure. Impacts can include damage to transportation systems, such as roadways, bridges, and public transit facilities, and disruption to communications networks, including phone lines and internet services. In addition, civil disturbances can damage power plants, electrical grids, and water supply systems, leading to power outages and water supply disruptions. These disruptions can significantly impact the daily lives of community members and hinder the delivery of essential services.
	Community Activities	Schools may be impacted if they are near or are the target of civil disorder or riots. As a result, school events or gatherings may be postponed or canceled.
Cyberattack	People	Cyberattacks can expose student and employee data that can be used for identity theft, leading to financial and emotional distress for individuals and families. Teachers may be unable to access lesson

Hazard	Vulnerable Asset	Description of Vulnerabilities and Impacts
		plans, online resources, student records, disrupting the learning environment.
	Structures	A cyberattack can damage public and private buildings. If private buildings or businesses utilize HVAC & Smart Building systems cybercriminals can control heating, ventilation, and security systems, making them unsafe or unusable. If 911 systems are compromised, response times, medical emergencies, or crimes can be delayed leading to property damage or loss of life. If a cyberattack triggers a failure in gas, water, or electrical systems it could lead to a fire, flooding, or other property damage from a cascading effect
	Economic Assets	Financial exploitation of local government and business may occur. School operations may be disrupted, leading to a loss of revenue from events, programs, and other activities.
	Natural, Historic, and Cultural Resources	Vulnerabilities in this area are not currently known for this topic.
	Critical Facilities and Infrastructure	Cyberattacks, especially ransomware, can render critical systems (like computers, email, and school databases) inaccessible.
	Community Activities	A cyberattack can disrupt the student learning environment and can also postpone, delay, or cancel student activities and gatherings.
Hazardous Materials Incident (Transporta-tion & Fixed Facility)	People	Salt Lake County is significantly vulnerable to hazardous materials in various locations, including industrial sites, transportation routes, and waste management facilities. The proximity of residential areas and schools to these sites increases the risk of exposure to toxic substances in the event of accidental releases or spills. Unknown exposure to toxic chemicals, flammable substances, or other hazardous materials can cause respiratory issues, burns, poisoning, or long-term health complications whether caused by a transportation accident or a fixed facility release. A spill or gas leak may require evacuations resulting in the relocation of students and staff.
	Structures	Hazardous substances could result in the infiltration of homes, businesses, and public buildings such as schools making them unsafe to occupy. Certain chemicals are also highly flammable and could cause structural damage if ignited.
	Economic Assets	Buildings and/or infrastructure exposed to toxic materials may require extensive cleanup. Businesses or transportation companies responsible for the incident may face lawsuits, fines, or compensation claims from the affected parties.
	Natural, Historic, and Cultural Resources	hazmat spills can severely damage the environment by contaminating the air, soil, and water. Cleanup can take weeks, months, or even years to complete, depending on the extent of the spill. The immediate financial impact may include emergency response costs, damage to infrastructure, and the potential for long-term environmental rehabilitation. In addition, businesses nearby might face temporary closures, leading to job losses and decreased revenue.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerabilities and Impacts
	Critical Facilities and Infrastructure	Schools may need to be evacuated or closed due to chemical spills, gas leaks, or other toxic exposures. A Hazmat incident on highways or local roads could block access to schools. A chemical spill could contaminate local water supplies, air systems, or power infrastructure which can affect school operations.
	Community Activities	Evacuations, or direct damage may cause schools to close temporarily, affecting student's learning. School events or gatherings may be postponed or canceled.
Public Health Epidemic/ Pandemic	People	In-person student learning/activities might not be available during a public health epidemic/pandemic. Students, teachers, and staff may contract illnesses leading to hospitalizations or fatalities, especially among vulnerable populations.
	Structures	Schools may need physical changes such as ventilation upgrades, sanitation stations, and modified classroom layouts. Schools, buses, and public spaces may require frequent deep cleaning and new health protocols
	Economic Assets	The district may have to spend more money on technology for remote learning, personal protective equipment (PPE), and sanitation supplies.
	Natural, Historic, and Cultural Resources	School performances and activities may be postponed or canceled.
	Critical Facilities and Infrastructure	In-person student learning/activities might not be available during this time. Reduced or modified school bus services may occur due to social distancing requirements. Delays in supply chain might occur affecting school meal programs, shortage in cleaning supplies, PPE, etc.
	Community Activities	In-person student learning/activities might not be available at this event.
Terrorism	People	Educational facilities could be targets for terrorist activities or active shooter scenarios which can result in the loss of life and injuries. Terrorism can impact CSD by increasing security measures and creating anxiety among students and staff, which could lead to decreased enrollment and participation. Such incidents could disrupt academic programs, harm the district's reputation, and create potential financial burdens for enhanced security.
	Structures	Attacks involving explosives, arson, or sabotage could destroy or severely damage school buildings and administrative offices.
	Economic Assets	Implementing enhanced security measures (e.g., security, screening, emergency drills) requires significant funding.
	Natural, Historic, and Cultural Resources	Educational facilities could be targets for terrorist activities or active shooter scenarios.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerabilities and Impacts
	Critical Facilities and Infrastructure	Physical attacks on power grids, communication infrastructure, and water supplies could impact school operations and affect public health.
	Community Activities	Threats or actual attacks could lead to the suspension of sports events or other school activities.

Hazards Not Profiled

Avalanche risk has been omitted from further discussion of hazard impacts and from mitigation actions. As shown in the description in Volume 1, avalanche risk is primarily in the Wasatch Mountains in SLCo. CSD schools and other facilities are not located within known avalanche paths and not near slopes with potential impact from avalanches. No previous occurrences of avalanches have impacted CSD facilities or assets.

Jurisdiction-Specific Changes in Vulnerability

Natural hazards can have a range of specific impacts on the Canyons School District, affecting the school environment and the broader community. The severity of these impacts can be influenced by climate change, population patterns, and land use developments. Understanding these factors is crucial for the Canyons School District to develop a resilient community and minimize the impacts of hazards. Table 8 lists some unique changes within the community and the related effects on each identified hazard to the CSD.

DRAFT

Table 8: Jurisdiction-Specific Changes in Vulnerability in the Canyons School District

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
Avalanche	N/A	N/A	N/A	N/A
Drought	Climate change affects drought incidents by altering precipitation patterns and increasing temperatures. Warmer weather can lead to longer dry periods and more severe droughts.	Drought can influence population patterns. Increased water costs can affect the cost of living. Sustainable development efforts and improved water management may attract newcomers.	Local governments to adjust zoning laws and promote sustainable practices in new projects. As a result, prolonged drought conditions can reshape the area's landscape and influence future development trends.	Same
Earthquake	Unknown	Population growth may contribute to higher student enrollment numbers and to the potential for more residents to be displaced from shelter when a disaster occurs.	Canyons School District may be affected by land use and development changes that may lead to the implementation of new measures to enhance safety and resilience. This could include assessing existing buildings to ensure they meet updated safety standards, leading to renovations or new construction. The district might also develop facilities for emergency preparedness, such as shelters and resource centers, while expanding green spaces for emergency gatherings. Increased collaboration with local government and emergency services would promote community engagement through joint response strategies and educational programs on earthquake preparedness.	Stayed the same
Extreme Heat	Climate change significantly impacts extreme heat by	Some may move to areas perceived as safer or seek better	Rising temperatures may lead government planners to adopt	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	increasing the frequency and intensity of heat waves. Rising global temperatures lead to longer and hotter summers, affecting residents and local infrastructure while heightening health risks, especially for vulnerable populations. Urban heat islands from reduced vegetation and extensive pavement further amplify these effects.	job opportunities elsewhere. The economic impact and infrastructure damage can also make certain neighborhoods less desirable, leading to shifts in demographics and the socioeconomic landscape as new residents with different backgrounds move in.	heat mitigation strategies, such as increasing green spaces and using reflective materials. Zoning regulations might shift to promote mixed-use developments that enhance walkability and reduce vehicle reliance during peak heat. As concerns about heat-related health risks grow, there may be greater demand for improvements like shaded sidewalks and cooling centers, influencing future development toward resilience and sustainability.	
Extreme Cold	Higher atmospheric temperatures allow for more moisture, resulting in heavier snowfall and potentially lower temperatures during these events.	By driving some residents to relocate to warmer areas. Harsh winters can hinder economic activities and deter new residents and businesses, influencing housing demand and the attractiveness of certain neighborhoods. This may disproportionately affect lower-income families, leading to changes in demographics and socioeconomic stratification in the community.	Extreme cold can impact land use and development by shifting priorities toward indoor facilities like shopping centers and community spaces, as outdoor activities are curtailed. Developers may focus on energy-efficient designs to cope with harsh winter conditions, which can lead to increased construction costs and adjusted project timelines.	Same
Flooding	Higher temperatures increase the frequency and intensity of extreme weather events and alter precipitation patterns. They lead to more intense rainstorms and accelerated snowmelt from nearby mountains, raising water levels in rivers and streams.	Population growth may contribute to the potential for more residents displaced from shelter when a disaster occurs.	Flooding can impact land use at Canyons District Schools by requiring zoning changes and limiting construction in flood-prone areas. Existing buildings may need retrofitting, while new facilities might be built on higher ground. Effective drainage and	Same

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	This combination increases the risk of flooding, especially in areas with inadequate drainage and urban development in flood-prone zones, heightening the potential for damage to homes and infrastructure.		resilience planning will be crucial in addressing these challenges.	
Landslide/ Slope Failure	Climate change increases the risk of landslides through heavier rainfall and temperature fluctuations. Intense rain saturates soil, destabilizing slopes, while freeze–thaw cycles weaken the ground. Changes in vegetation can also reduce stability, leading to a higher potential for landslides.	Landslides and slope failures can impact population patterns by making some areas unsafe, leading to displacement and lower property values. This prompts residents to move to safer regions, thereby increasing density in more stable areas. Concerns about future landslides may also deter newcomers from high-risk zones, shaping long-term demographic trends.	Landslides and slope failures can impact land use and development by rendering certain areas unsafe for construction. This often results in stricter zoning laws, pushing developers to focus on more stable regions. Consequently, property values may decline in affected areas, and infrastructure investments shift to increase safety, ultimately guiding growth toward safer locations.	Minimal direct impacts to JSD. May impact other structures or infrastructure systems in community. Transportation networks can be disrupted, complicating emergency responses.
Radon	Climate change can affect radon levels by altering soil temperatures and moisture conditions. Higher temperatures may increase radon emissions from the ground, while heavy rainfall can change groundwater and soil saturation, impacting radon migration into buildings.	Radon exposure can influence population patterns as increased health awareness may drive families to move away from areas with high radon levels. This shift could particularly affect vulnerable groups, changing demographics in the CSD.	Radon can impact land use and development by necessitating site assessments and mitigation, which can increase costs. Developers might prioritize areas with lower radon risks and adopt designs that reduce gas infiltration. This awareness may prompt stricter building codes and zoning regulations, influencing where new projects are located and shaping community planning.	Same
Heavy Rain	Higher temperatures increase the frequency and intensity of	Population growth may contribute to the potential for more	Heavy rain can impact land use at Canyons District Schools by	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	extreme weather events and alter precipitation patterns. They may lead to more intense rainstorms.	residents displaced from shelter when a disaster occurs.	requiring zoning changes and limiting construction in flood-prone areas. Existing buildings may need retrofitting, while new facilities might be built on higher ground. Effective drainage and resilience planning will be crucial in addressing these challenges.	
High Wind	Climate change affects high winds by altering atmospheric patterns and increasing extreme weather events. Rising temperatures may lead to more substantial, unpredictable winds and more frequent thunderstorms, posing risks to infrastructure and air quality.	Population growth may contribute to the potential for more residents to be displaced when a disaster occurs.	High winds could change land use and development in Canyons School District classes by requiring windbreaks, such as trees, to protect buildings and reduce erosion. Outdoor spaces may be redesigned for safety, incorporating sheltered areas. New construction could also focus on better anchoring and resilience against wind, leading to a reevaluation of class planning with an emphasis on sustainability.	Increased
Lightning	Climate change may alter atmospheric patterns a contribute to more extreme events.	Minimal	N/A	Same
Severe Winter Weather	Climate change impacts heavy snow and blizzards by altering precipitation patterns. Higher temperatures can lead to more rain than snow, affecting snowpack levels. Moreover, increased storm intensity results in heavier, more unpredictable snowfall.	The potential for more residents displaced.	Heavy snow or blizzard conditions may prompt changes in land use and development at Canyons School District to enhance safety and accessibility. The district could invest in better snow removal systems and features, such as heated sidewalks, to prevent snow buildup. Parking areas might be redesigned for easier access during winter weather, and	Same

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
			outdoor spaces could be adapted for winter activities. In addition, building layouts may be modified to minimize the impact of snow on entrances and walkways, ensuring that classes remain functional during severe conditions.	
Tornado	Climate change may increase the frequency or intensity of tornadoes.	Not expected to affect the school population.	Unknown.	Same
Wildfire	Climate change contributes to raising temperatures and creating drier conditions, prolonged droughts lead to more dry vegetation, which serves as fuel for fires.	Not expected to affect the school population.	Unknown.	Increased
Dam Failure	Climate change raises the risk of dam failure by causing heavier rainfall and rapid snowmelt. These changes can overwhelm dams and compromise their integrity, highlighting the need for urgent safety assessments and upgrades to protect communities downstream.	Dam failure can impact population patterns by displacing residents and altering demographics. Evacuations can lead to an influx in safer areas, while destruction may deter new residents and contribute to population decline. Fear of future disasters may also prompt remaining individuals to relocate, changing the community's composition and affecting population density.	Dam failure can reshape land use and development by making areas prone to flooding unsuitable for growth. This may lead planners to focus on safer regions and implement stricter zoning laws to enhance resilience. The emphasis on sustainable practices and flood mitigation can ultimately transform the urban landscape, prioritizing disaster preparedness in future developments.	Same
Civil Disturbance	Climate change can increase civil disturbances by intensifying environmental stresses and social tensions. Rising temperatures may lead to droughts, wildfires, and	By encouraging residents to move for safety, leading to outflows and new arrivals. These events can reveal social issues, impacting community dynamics, employment, and property	By shifting community priorities toward safety and stability. Developers may hesitate to invest in troubled areas, leading to a focus on public spaces and community centers. Residents	Same

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	poor air quality, particularly affecting vulnerable communities. Resource scarcity, especially water, can spark conflicts and protests. In addition, an influx of migrants from harder-hit areas may strain local resources, further escalating tensions.	values, ultimately reshaping demographics, and social cohesion.	might also push for zoning changes favoring low-density housing and community-oriented efforts, prompting a reevaluation of land use strategies.	
Hazardous Materials Incident (Transportation & Fixed Facility)	Possible attack on the industry, which is seen as producing large amounts of greenhouse gases and burning fossil fuels. Climate change can heighten cyberattack risk by increasing vulnerabilities during extreme weather. Disruptions like power outages offer cybercriminals opportunities, but focusing on emergency responses can weaken cybersecurity measures.	Cyberattacks can change population patterns by eroding trust in essential services. Compromised systems may cause residents to leave due to safety concerns, while high-profile incidents can deter businesses, leading to job losses. This perception of vulnerability may also make the city less appealing to newcomers, resulting in demographic shifts and affecting local development.	Cyberattacks can impact land use and development by undermining confidence in public infrastructure. If essential systems are compromised, investors may be discouraged, slowing economic activity. Local governments might also redirect funds to increase cybersecurity rather than new infrastructure, altering development timelines and urban planning priorities. This can significantly reshape the city's growth and land use.	Same
Public Health Epidemic/ Pandemic	Worsening air quality can exacerbate respiratory conditions like asthma, especially in vulnerable populations, by increasing the spread of vector-borne diseases and raising the risk of waterborne illnesses due to flooding or drought.	Public health crises, like the COVID-19 pandemic, have notably affected Canyons School District enrollment. There may be increased absenteeism due to illness. Some families may choose to educate at home or other alternative learning options.	Public health considerations may lead to significant changes at Canyons School District, focusing on land use and infrastructure. To enhance well-being, outdoor spaces, such as gardens and recreational areas, could be prioritized. In addition, buildings may be upgraded for better air quality, and new wellness centers could be established, promoting a culture of health among students.	Stayed the same

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
Terrorism/ Cyberterrorism	Terroristic activity is sometimes centered around climate change. Climate change impacts terrorism incidents by creating resource scarcity and social unrest. Increased competition for essential resources like water can fuel tensions, making communities more vulnerable to extremist ideologies. Extreme weather events may disrupt social order and infrastructure, offering terrorist groups opportunities to exploit crises. In addition, climate-driven population displacement can heighten tensions in receiving areas, raising the risk of domestic terrorism. Law enforcement's focus on climate-related challenges can also limit its capacity to address terrorism threats. Ultimately, while climate change may not directly cause terrorism, its effects can create an environment conducive to extremist activities.	Terrorism could lead to a decline in enrollment at Canyons School District due to safety concerns. Potential students might choose other institutions perceived as safer. Following any incident, increased security measures may result in a temporary drop in enrollment.	Changes in land use at Canyons School District due to terrorism could involve enhanced security measures, such as increased surveillance and emergency response facilities. Access points may be redesigned to restrict vehicle entry, and outdoor spaces could be modified to improve safety, limiting gatherings and reshaping the class environment to prioritize security in open communal areas.	Stayed the Same

DRAFT

Additional Public Involvement

The Canyon School District proactively informs students and families about potential hazards and safety issues. The district uses a multi-faceted approach to public outreach, which includes regular communication through newsletters, social media updates, and community meetings. It also provides essential resources on its official website, offering guidelines on how to prepare for and respond to various emergencies, such as natural disasters and health concerns. The school district also collaborates with local emergency services to hold safety drills and workshops, ensuring that families are well-informed and equipped to handle potential threats. This commitment to transparency and education helps foster a safe and informed community for all students and their families.

Plan Integration

Incorporating the underlying principles of the Hazard Mitigation Plan and its recommendations into other plans is a highly effective and low-cost way to expand their influence. All plan participants will use existing methods and programs to implement hazard mitigation actions where possible. As previously stated, mitigation is most successful when it is incorporated into the day-to-day functions and priorities of government and public service. This plan builds on the momentum developed through previous and related planning efforts and mitigation programs, and it recommends implementing actions where possible through these other program mechanisms. These existing mechanisms include the following:

- Regularity Capabilities
- Administrative Capabilities
- Fiscal Capabilities

Respective planning stakeholders will conduct implementation and incorporation into existing planning mechanisms and will be done through the routine actions of:

- Monitoring other planning/program agendas
- Attending other planning/program meetings
- Participating in other planning processes; and
- Monitoring community budget meetings for other community program opportunities.

The successful implementation of this plan will require constant and vigilant review of existing plans and programs for coordination and multi-objective opportunities that promote a safe, sustainable community. Regular efforts should be made to monitor the progress of mitigation actions implemented through other planning mechanisms. Where appropriate, priority actions should be incorporated into planning updates. Canyons School District was not a participant in the previous mitigation plan, so it has not yet integrated hazard mitigation into other existing plans. Table 9 lists existing planning mechanisms in which the MJHMP has been integrated. Table 10 lists the opportunities for integrating elements of this plan into other plans.

DRAFT

Table 9: Integration of Previous Plans by the Canyons School District

Plan	Description
None	N/A

Table 10: Opportunities for Integration with Future Plans of the Canyons School District

Plan	Description
CSD Strategic Plan	The strategic plan is a growth blueprint for the next decade and beyond.
City Building Codes	The school district will work with city planning departments to ensure new school construction aligns with building codes and can withstand local hazards.
Policy 300.05 Emergencies and Safety Procedures	Addresses the safety of students and staff in times of emergency and disaster though collaborative relationships with emergency response agencies and government entities. This could be expanded to integrate hazard mitigation.
Policy 300.09 Facilities Construction, Renovation and Maintenance	Establishes policy for new facility construction, building renovation, small capital facility projects, and bond issuance, which may be used for hazard mitigation purposes.
Capital Projects Plans	Capital projects planning addresses the remodel and renovation of existing facilities to support educational needs. It also provides inspections for life safety needs and the preservation of existing facilities

Capability Assessment

Local mitigation capabilities are existing authorities, policies, programs, and resources that reduce hazard impacts or could help carry out hazard mitigation activities. School districts do not have the same planning obligations and procedures as municipalities. As such, their capabilities will be described in a narrative rather than the table format of the municipal annexes.

Planning and Regulatory Capabilities

Planning and regulatory capabilities are the plans, policies, codes, and ordinances that prevent and reduce the impacts of hazards.

District Policy 300.05 – Emergencies and Safety Procedures addresses the adoption of an emergency response plan and the district's responsibility to assist individual schools to develop safety procedures and a District Emergency Response Plan and to train district and school staff on the roles in the emergency plan.

Canyons School District adheres to federal law and the building codes adopted by the State of Utah from various international and national code organizations. The Facilities Services Department addresses specific code questions.

DRAFT

Administrative and Technical Capabilities

Administrative and technical capabilities include staff and their skills. They also include tools that can help carry out mitigation actions.

District staff includes financial and administrative services, facilities management, and employees who specialize in coordinating with state and federal programs. The external relations department provides efforts in public engagement. It is not known whether these departments are familiar with hazard mitigation. There is potential to expand this capability for district departments to engage in additional mitigation activities.

Financial Capabilities

Financial capabilities are the resources to fund mitigation actions. Talking about funding and financial capabilities is important to determine what kinds of projects are feasible, given their cost. Mitigation actions like outreach programs are lower cost and often use staff time and existing budgets. Other actions, such as earthquake retrofits, could require substantial funding from local, state, and federal partners. Partnerships, including those willing to donate land, supplies, in-kind matches, and cash, can be included.

The financial capabilities of the Canyons School District include management of governmental and proprietary funds. Major funds including the general fund, capital outlay fund, and debt service fund account for 90.7% of government fund expenditures. Specific funds are as follows:

GOVERNMENTAL FUNDS

- General Fund: including activities such student instruction, student services, staff services, district administration, school administration and support services, and student transportation
- Capital Outlay Fund (a major fund): Long-term building program to construct new schools and renovate existing schools
- Debt Service Fund (a major fund): General obligation bonds
- Pass-Through Taxes Fund
- District Activity Fund
- Canyons Education Foundation Fund
- Nutrition Services Fund

PROPRIETARY FUND

- Self-insurance Fund

DRAFT

Education and Outreach Capabilities

Education and outreach capabilities are programs and methods that could communicate about and encourage risk reduction. These programs may be run by a participant or a community-based partner. Partners, especially those who work with underserved communities, can help identify additional education and outreach capabilities.

The Canyons School District communicates with students, parents, and employees through a variety of methods. Information is shared via the district and individual school websites, email newsletters, the ParentSquare messaging system for email, text, and app notifications, social media, and other methods. These communication tools provide opportunities to share information regarding potential mitigation activities.

Opportunities to Expand and/or Improve Capabilities

Actions that can expand and improve existing authorities, plans, policies, and resources for mitigation include budgeting for mitigation actions, passing policies and procedures for mitigation actions, adopting and implementing stricter mitigation regulations, approving mitigation updates, and making additions to existing plans as new needs are recognized. Table 11 lists the opportunities for the CSD to expand or improve.

Table 11: Opportunities to Expand and/or Improve the Capabilities of the Canyons School District

Capability	Opportunity to Expand and/or Improve
Planning and Regulation	Canyons School District can update the District Capital Improvement budget to include hazard mitigation projects, including but not limited to seismic retrofitting projects.
Administrative and Technical	Staff could receive additional training on hazard mitigation, including training on what mitigation grants are available and developing a mitigation grant. State or federal direct technical assistance may help expand this capability.
Financial	The District can apply for new hazard mitigation grants such as the Hazard Mitigation Grant Program (HMGP).
Education and Outreach	The District has the capability to connect with students, parents, and employees through a variety of methods including the website, newsletter, messaging, and social media. These public outreach methods can be expanded to include information on specific hazards including how to mitigate them. Increasing public awareness by sharing seasonal disaster-related information can help community members reduce their own risk as well as garner support for the mitigation measures the District pursues.

Mitigation Strategy

Mitigation strategies provide proactive measures that are designed to minimize the impacts of hazards on the Canyons School District. The Canyons School district did not participate in the previous hazard mitigation plan; therefore, no previous mitigation actions were available for review. Table 12 is the 2025 mitigation action plan for the Canyons School District.

THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT

Table 12: 2025 Mitigation Action Plan for the Canyons School District[5]

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
1	Update equipment and landscaping at schools and district facilities to conserve water.	Drought	Canyons School District	Municipalities in the district, water districts	Conserve water supplies, increase resilience to drought and potential water restrictions, and save costs on landscape irrigation.	Medium	District budget, grants	Medium-term	Low	
2	Evaluate district facilities to identify potential hazard impacts and prioritize possible improvements (e.g., seismic retrofit).	Drought, Earthquake, Extreme Cold, Extreme Heat, Flooding, Heavy Rain, High Wind, Lightning, Tornado, Severe Winter Storm, Public Health Epidemic/Pandemic, Terrorism	Canyons School District	SLCo EM, municipalities	Protect staff and students from injury. Maintain normal school operations.	Medium	District Capital Improvement budget, Lease Revenue Bonds, Go Bonds	Medium-term	High	
3	Update system security at schools and other district facility buildings.	Terrorism	Canyons School District	Municipal law enforcement	Protect staff and students from injury.	Medium	District Capital Improvement budget, Lease Revenue Bonds, Go Bonds	Medium-term	Medium	
4	Develop and implement public education and awareness programs on hazards and mitigation.	Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Flooding, Heavy Rain, High Wind, Lightning, Tornado, Severe Winter Storm, Wildfire, Public Health Epidemic/Pandemic, Terrorism	Canyons School District	SLCo EM, municipalities	Inform employees, students, and parents of the potential hazards and steps they can take to reduce risk. Share information with parents in person, online, and via handouts. Increase awareness of hazard mitigation activities, such as defensible space and home hardening (wildfire), at-home radon testing and mitigation (radon), landslide detection and prevention techniques (landslide), flood mapping and home retrofits, such as utility elevation and flood-resistant building materials (flooding, dam failure, heavy rain), vaccinations (public health epidemic/pandemic), water conservation (drought), home weatherization (extreme cold, extreme heat, severe winter storm), tree pruning and wind-resistant building materials (high wind, tornado), surge protectors and lightning protection systems (lighting), and structural and non-structural retrofits (earthquake).	Low	District budget	Short-term	Medium	
5	Procure generators or emergency backup power	Drought, Earthquake, Extreme Cold, Extreme Heat, Flooding, Heavy Rain, High	Canyons School District	SLCo EM, municipalities	Maintain facility operations and avoid disruptions following hazards. Retain power during	Medium	HMGP, District Capital Improvement	Medium-term	Medium	

[5] HMGP = Hazard Mitigation Grant Program, HVAC = Heating, Ventilation, and Air Conditioning, SLCo EM = Salt Lake County Emergency Management.

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
	for schools and district facilities.	Wind, Lightning, Tornado, Severe Winter Storm, Public Health Epidemic/Pandemic, Terrorism, Wildfire			power outages, including Public Safety Power Shutoffs.		budget, Lease Revenue Bonds, Go Bonds			
6	Improve HVAC systems.	Extreme Cold, Extreme Heat, Epidemic/Pandemic, Wildfire (poor air quality)	Canyons School District	SLCo EM, municipalities	Maintain facility operations and avoid disruptions from hazards. Reduce the likelihood of school closures and public health concerns, such as those from wildfire smoke.	Medium	District Capital Improvement budget, Lease Revenue Bonds, Go Bonds	Long-term	Medium	

DRAFT

Town of Copperton

Jurisdictional Annex to the
Salt Lake County Hazard Mitigation Plan

Month XXXX | Draft X.X

THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT

Table of Contents

Town of Copperton Annex 1

Planning Process Contact Information 1
Jurisdiction Profile 1
Date of Incorporation 1
Location and Description 1
Population 2
Demographics 2
Brief History 2
Climate 2
Public Services 2
Governing Body 2
Development Trends 2
Jurisdiction-Specific Hazards and Risk 3
Hazard Event History 5
National Flood Insurance Program Summary 9
Jurisdiction-Specific Vulnerabilities and Impacts 9
Hazards Not Profiled 24
Jurisdiction-Specific Changes in Vulnerability 24
Additional Public Involvement 28
Plan Integration 29
Capability Assessment 30
Planning and Regulatory Capabilities 30
Administrative and Technical Capabilities 32
Financial Capabilities 33
Education and Outreach Capabilities 35
Opportunities to Expand and/or Improve Capabilities 36
Mitigation Strategy 38

DRAFT

List of Figures

Figure 1: Social Media Posts for the Hazard Mitigation Survey (*left*), from the Municipal Services District (*middle*), and for the Draft Plan Review (*right*)..... 28
Figure 2: Mitigation Survey at Copperton Park Community Event..... 29

List of Tables

Table 1: Contact Information for the Town of Copperton..... 1
Table 2: Participant List for the Town of Copperton..... 1
Table 3: Calculated Priority Risk Index Values for the Town of Copperton..... 3
Table 4: Criteria for the Calculated Priority Risk Index..... 4
Table 5: History of Hazard Events in the Town of Copperton..... 6
Table 6: National Flood Insurance Program Status for the Town of Copperton..... 9
Table 7: Jurisdiction-Specific Vulnerabilities and Impacts in the City of Copperton..... 10
Table 8: Jurisdiction-Specific Changes in Vulnerability in the Town of Copperton..... 24
Table 9: Integration of Previous Plans by the Town of Copperton..... 30
Table 10: Opportunities for Integration with Future Plans of the Town of Copperton..... 30
Table 11: Assessment of the Planning Capabilities of the Town of Copperton..... 30
Table 12: Assessment of the Regulations and Ordinances of the Town of Copperton..... 31
Table 13: Assessment of the Administrative Capabilities of the Town of Copperton..... 32
Table 14: Assessment of the Technical Capabilities of the Town of Copperton..... 33
Table 15: Assessment of the Financial Capabilities of the Town of Copperton..... 34
Table 16: Assessment of the Education and Outreach Capabilities of the Town of Copperton..... 35
Table 17: Opportunities to Expand or Improve the Capabilities of the Town of Copperton..... 36
Table 18: Mitigation Action Alternatives for the Town of Copperton..... 38
Table 19: Status of Prior Mitigation Actions of the Town of Copperton..... 38
Table 20: 2025 Mitigation Action Plan for the Town of Copperton..... 39

DRAFT

Town of Copperton Annex

To participate in this multi-jurisdictional hazard mitigation plan (MJHMP) update for Salt Lake County (SLCo), the governing body of the town of Copperton passed a formal resolution, a copy of which is maintained at the local government offices.

Planning Process Contact Information

Table 1 provides information on the point of contact during the updating of the MJHMP.

Table 1: Contact Information for the Town of Copperton

Name	Contact Information
Madison Warner	**Phone:** 801-743-7100; **email:** Mwarner@unifiedfire.org

The town of Copperton has a fully integrated approach to hazard mitigation planning and program implementation. During the 2024 update process, the MJHMP participation roles in Table 2 were recorded.

Table 2: Participant List for the Town of Copperton

Name	Title	Jurisdiction
Madison Warner	Municipal Planner at Salt Lake County Emergency Management	Kearns, Copperton, and Magna
Brad Jewett	Intelligence Specialist	Salt Lake County Emergency Management

Jurisdiction Profile

Date of Incorporation

Copperton became a metro township in January 2017, then converted to a town on May 1, 2024.

Location and Description

The town of Copperton is located southwest of Salt Lake City. The town is approximately 0.3 square miles in area and is approximately 5,400 feet above sea level. It is renowned for its picturesque landscapes and historical importance. The Copperton Historic District, which is listed on the National Register of Historic Places, includes over 230 contributing buildings.

DRAFT

Population

The 2022 American Community Survey 5-Year Estimate from the U.S. Census Bureau records the population of the town of Copperton as 865 people.

Demographics

Most of the 865 people are between the ages of 25 and 34, with a median age of 32; 461 are females (53.3%) and 404 are males (46.7%). English is the primary language in 88.4% of homes,, with 7.9% Spanish, and 3.7% other languages.

Brief History

In 1926, Copperton was established by the Utah Copper Company as a residential area and model city for its employees. It was designed to showcase company-subsidized family life featuring model brick and stucco homes, a community park, and amenities like electricity and paved streets. Construction of housing units ended in the 1930s and company-furnished housing ended in 1955. The town was added to the National Register of Historic Places in 1986 preserving its unique history and architecture.

Climate

The town of Copperton experiences a humid subtropical climate (Cfa Köppen classification) characterized by hot, humid summers and mild winters with consistent precipitation throughout the year. Average highs are approximately 78°F in the summer and approximately 33°F in the winter. Annual precipitation is approximately 16 inches annually with snowfall averaging 79 inches annually.

Public Services

The town of Copperton offers a wide range of public services through the Greater Salt Lake Municipal Services District (MSD). The MSD provides staffing and administrative support and other services and handles planning and zoning, business licensing, code enforcement, inspections, emergency planning, and related municipal services. Public works services are contracted with SLCo Public Works, which encompasses the construction and maintenance of roads, snow removal, and street lighting.

Governing Body

The town of Copperton's governing body is the Copperton Council, which includes the Mayor, Deputy Mayor, and three council members.

Development Trends

The community is physically separated from development in nearby communities by mining operation buffer areas.

DRAFT

Jurisdiction-Specific Hazards and Risk

The Calculated Priority Risk Index (CPRI) is a comprehensive assessment tool for evaluating and prioritizing risks in a given context. It considers various factors, such as probability, impact, and urgency, to determine the level of risk associated with events or situations. The results for each hazard, including its risk factor (RF) value, are shown in Table 3. The results are based on the criteria in Table 3 and the equation that follows it. The CPRI helps organizations and individuals make informed decisions about risk management and mitigation strategies. It provides a systematic approach to identifying and addressing potential issues, allowing for a more efficient allocation of resources and proactive risk prevention. With the CPRI, stakeholders can prioritize their focus on the most critical risks, leading to more effective risk management and, ultimately, better outcomes.

Table 3: Calculated Priority Risk Index Values for the Town of Copperton

Type of Hazard Event	Probability of Future Events	Spatial Extent	Severity of Life/ Property Impact	Warning Time	Duration	Response Capacity	Risk Factor Value
Avalanche	0	0	0	0	0	0	0
Drought	3	4	2	1	4	2	2.6
Earthquake	3	4	4	4	4	3	3.6
Extreme Heat	3	4	3	1	4	2	2.9
Extreme Cold	2	4	2	1	3	1	2.1
Flooding	2	1	2	2	3	3	2.1
Landslide/ Slope Failure	2	1	1	0	4	1	1.5
Radon	4	4	3	1	4	1	3.1
Heavy Rain	3	3	2	3	1	1	2.3
High Wind	2	3	2	1	1	2	1.9
Lightning	3	1	1	1	1	3	1.8
Severe Winter Weather	3	4	2	1	3	2	2.5
Tornado	1	1	3	4	1	1	1.9
Wildfire	2	2	2	4	3	2	2.3
Dam Failure	2	3	3	3	2	3	2.6
Civil Disturbance	3	1	2	3	4	1	2.4
Cyberattack	3	3	2	4	4	3	2.9
Hazardous Materials Incident (Transportation & Fixed Facility)	4	2	3	4	4	3	3.4

DRAFT

Type of Hazard Event	Probability of Future Events	Spatial Extent	Severity of Life/ Property Impact	Warning Time	Duration	Response Capacity	Risk Factor Value
Public Health Epidemic/ Pandemic	2	4	3	1	4	2	2.6
Terrorism	1	3	4	4	3	4	2.9

Table 4: Criteria for the Calculated Priority Risk Index

Risk Index Factor	Degree of Risk Level		Criteria	Factor Weight for Degree of Risk Level
Probability of Future Events	1	Unlikely	Less than 1 percent probability of occurrence in the next year or a recurrence interval of greater than every 100 years.	30%
	2	Occasional	1 to 10 percent probability of occurrence in the next year or a recurrence interval of 11 to 100 years.	
	3	Likely	11 to 90 percent probability of occurrence in the next year or a recurrence interval of 1 to 10 years.	
	4	Highly Likely	91 to 100 percent probability of occurrence in the next year or a recurrence interval of less than 1 year.	
Spatial Extent	1	Limited	Less than 10% of the planning area could be impacted.	10%
	2	Small	10%–25% of the planning area could be impacted	
	3	Significant	25%–50% of the planning area could be impacted.	
	4	Extensive	50%–100% of the planning area could be impacted.	
Severity of Life/Property Impact	1	Negligible	Less than 5% of the affected area's critical and non-critical facilities and structures are damaged/ destroyed. Only minor property damage and minimal disruption of life. Temporary shutdown of critical facilities.	30%
	2	Limited	More than 5% and less than 25% percent of property in the affected area is damaged/ destroyed. Complete shutdown of critical facilities for more than one day but less than one week.	
	3	Critical	More than 25% and less than 50% of property in the affected area was damaged/ destroyed. Complete shutdown of critical facilities for over a week but less than one month.	
	4	Catastrophic	Over 50% of critical and non-critical facilities and infrastructures in the affected area are damaged/	

DRAFT

Risk Index Factor	Degree of Risk Level		Criteria	Factor Weight for Degree of Risk Level
			destroyed. Complete shutdown of critical facilities for more than one month.	
Warning Time	1	Self-defined	More than 24 hours	10%
	2	Self-defined	12 to 24 hours.	
	3	Self-defined	6 to 12 hours.	
	4	Self-defined	Less than 6 hours.	
Duration	1	Brief	Up to 6 hours.	10%
	2	Intermediate	Up to one day.	
	3	Extended	Up to one week.	
	4	Prolonged	More than one week.	
Response Capacity	1	High	Significant resources and capability to respond to this kind of event; staff are trained, experienced, and ready.	10%
	2	Medium	Some resources and capability to respond to this kind of staff; some staff may be trained, experienced, and ready while others may need additional support.	
	3	Low	Limited resources and capability to respond to this kind of event; additional staff or staff training needed.	
	4	None	No resources and capability to respond this kind of event; additional outside support would be required.	

RISK FACTOR (RF) EQUATION

RF Value = [(Probability x 0.30) + (Spatial Extent x 0.10) + (Severity of Life/Property Impact x 0.30) + (Warning Time x 0.10) + (Duration x 0.10) + (Response Capacity x 0.10)]

Hazards with an RF value greater than or equal to 2.5 are considered high risk. Those with RF values of 2.0 to 2.4 are considered moderate risk hazards, and those with an RF value less than 2.0 are considered low risk. The highest possible RF value is 4.

Hazard Event History

Examining hazard event histories provides valuable insights to inform decision-making and help prioritize resources for risk prevention and response efforts. Table 5 lists the hazard events impacting the town of Copperton planning area since the 2019 plan update, as recorded in the Storm Events Database from the National Centers for Environmental Information.

DRAFT

Table 5: History of Hazard Events in the Town of Copperton

Type of Hazard Event	FEMA Disaster #	Date(s)	Damage or Impacts	Description
Avalanche	N/A	N/A	N/A	N/A
Drought	N/A	1930s: The Great Salt Lake and streams experienced low water levels 1950s–1960s: The Great Salt Lake experienced even lower water levels than in the 1930s. 2020: Utah experienced its driest year on record, with record dry soils and low snowpack. 2021: The Great Salt Lake reached an all-time record low due to a drought.	Air quality issues, potential for greater ecosystem collapse.	The entire county faces risk of historic drought.
Earthquake	DR-4548-UT	A 5.7M earthquake was felt March 2020. 1962: Magna 5.2M earthquake and the 1992 Western Traverse Mountains 4.2M earthquake[1]. The Magna earthquake caused minor damage to buildings in several cities and towns within one mile	Some structural damage was reported, mostly on the south end of Copperton. Walls were cracked, plaster was knocked off, and lead paint dust was released. The Greater Salt Lake Municipal Services District, which includes Copperton, received 219 damage reports online. Tens of thousands lost power.	The Wasatch Fault is considered overdue for a major earthquake, with a 57% chance of a 6.0M or greater earthquake occurring in the next 50 years. The Copperton quadrangle may experience significant ground shaking due to nearby faults, primarily the West Valley fault zone and the Wasatch fault zone, but also the Harkers fault and an unnamed fault in the southwest part of the quadrangle for which the time of latest movement is not known. Numerous earthquakes greater than 4.0 magnitude have occurred near

[1] Christensen, 1992; University of Utah Seismograph Stations, 2010a; Figure 3.

DRAFT

Type of Hazard Event	FEMA Disaster #	Date(s)	Damage or Impacts	Description
		(1.6 km) to the southwest of the epicenter, which was approximately 5 miles (8 km) north of Copperton.		the Copperton quadrangle over the past century. The proximity of Bingham Canyon Mine is a concern for larger land mass movement due to an earthquake.
Extreme Heat	N/A	Summers of 2020, 2021, 2022, 2023, 2024	Reported 9 deaths in Northern Utah, an upward trend in heat exposure and heat-related deaths since 2015. Excessive heat can also affect infrastructure.	Specific impacts on Copperton were not available, but general impacts include increased risk of heat-related illness and increased power demand for cooling systems.
Extreme Cold	N/A	Winter of 2022 & 2023	2022: 5 people experiencing homelessness died from cold-related exposure in Salt Lake City, but this threat could impact neighboring jurisdictions.	Specific impacts on Copperton were not available, but extreme cold can contribute to hypothermia and other cold-related illness/ . Increased demand for heating systems. Potential for frozen pipes or other service disruptions.
Flooding	N/A	N/A	Some minor flooding reported by residents due to faulty storm drain.	Minor residential and commercial damage occurred.
Landslide/ Slope Failure	N/A	April 10, 2013	No reported damage to the town of Copperton, as this slide was the result of mining activity and took place in a restricted area with controlled access and distance from the town.	Two massive landslides carried about 145 million tons of waste rock into the open pit at Bingham Canyon, the largest copper mine in the U.S.
Radon	N/A	Radon is present in soils.	The specific impacts of radon in the area are not known (i.e., exact count of illnesses known to be caused by radon), but test results have indicated elevated radon levels in the area.	As shown in Figures 147 and 148 in Volume 1, elevated radon levels have been found in the Copperton area.
Heavy Rain	N/A	N/A	N/A	There have been some significant rains, but no major damage associated.

DRAFT

Type of Hazard Event	FEMA Disaster #	Date(s)	Damage or Impacts	Description
High Wind	N/A	September 8, 2020	N/A	Salt Lake County and surrounding areas experienced a severe windstorm with winds exceeding 100 mph in some areas.
Lightning	N/A	N/A	N/A	N/A
Severe Winter Weather	N/A	N/A	N/A	There have been some significant winter storms, but no major damage was associated.
Tornado	N/A	N/A	N/A	N/A
Wildfire		June 17, 2022 July 30, 2019	Barney's Wash fire Small brush fire	This fire got close to Copperton but was handled by UFA, South Jordan, West Jordan, and Rio Tinto. This was a brush fire. Small brush fire in 2019 on private property south of Copperton. There were issues with access as UFA had to wait for Rio Tinto personnel to give them access.
Dam Failure	N/A	N/A	There are three dams near Copperton with significant hazard ratings that could affect the area.	The inundation areas of these dams are southeast of the town but could impact roadways or other infrastructure that are critical to the town.
Civil Disturbance	N/A	N/A	N/A	N/A
Cyberattack	N/A	N/A	N/A	N/A
Hazardous Materials Incident (Transportation & Fixed Facility)	N/A	N/A	N/A	Rio Tinto stores wastewater from the Bingham Canyon Mine, one of the largest open-pit copper mines in the world and a massive source of toxic chemicals. There are TRI facilities nearby
Public Health Epidemic/ Pandemic	DR-4525-UT	January 20, 2020 – May 11, 2023	Unknown degree of damage done to community and local economy	A pandemic of SARS-CoV-2 (also known as COVID-19) killed millions and has many medical repercussions that are still being studied. There is no specific data on Copperton residents who were affected medically or otherwise.
Terrorism	N/A	N/A	N/A	N/A

DRAFT

National Flood Insurance Program Summary

The town of Copperton participates in the National Flood Insurance Program (NFIP). Table 6 displays statistics related to the NFIP. The town of Copperton does not participate in the Community Rating System.

Table 6: National Flood Insurance Program Status for the Town of Copperton[2]

Init FHBM Identified	Init FIRM Identified	Current Effective Map Date	Adopted Date	Date Joined NFIP	Tribal
12/18/85	12/18/85	9/25/09	2009	6/3/20	No

No information was available regarding active NFIP policies, coverage amounts, losses or payments for the Town of Copperton.

Copperton has designated the Director of Planning and Development Services as the Floodplain Administrator. The duties of the Floodplain Administrator are supported by the Greater Salt Lake Municipal Services District (MSD). The current Flood Damage Prevention and Control Ordinance was adopted on 10/20/2021. The current FIRM became effective 9/25/2009. The MSD is responsible for issuing floodplain permits in MSD Member Communities, including Copperton. The permits include a description of all work, including the kind and type of construction, proposed intent, and location. Substantial damage/substantial improvement structures are identified through the permitting process. Structures that are determined to be substantially damaged or substantial improvements are required to come into compliance with current codes. The MSD Building Department provides guidance on how to build in accordance with existing building codes.

Jurisdiction-Specific Vulnerabilities and Impacts

Table 7 provides information on the vulnerable assets in the town of Copperton, including its critical facilities, highlighting the [town's vulnerability to identified hazards. By understanding the risks associated with these assets, local authorities can develop proactive strategies to mitigate vulnerabilities and ensure the safety and functionality of these important assets during hazard events. This data is invaluable for decision-making and prioritizing resources for emergency response and preparedness efforts, ultimately contributing to more effective risk management and greater resilience in the community.

Community assets that may be vulnerable to hazards in Copperton include the 865 residents, 1 fire station, Copperton Park, and the Bingham Canyon Lions Club community center. Primary roads in Copperton are 10200 South, SR 48 (New Bingham Hwy), and SR 209 (Old Bingham Hwy). The Rio Tinto Kennecott copper mine is a significant industry near Copperton. It is accessed through Copperton and the Kennecott office building is just outside the town. Natural resources in the area include the mineral contents in the nearby hills, vegetation and wildlife in the foothills, and Bingham Creek. The Copperton Historic District includes 237 buildings and 2 contributing structures in the town, mainly homes built for

[2] FIRM = Flood Insurance Rate Map, FHBM = Flood Hazard Boundary Map

employees of the Utah Copper Company between 1926 to 1941. Copperton Community Methodist Church is also listed on the NRHP.

Table 7: Jurisdiction-Specific Vulnerabilities and Impacts in the City of Copperton

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
Avalanche	People	N/A
Drought	People	*Vulnerability:* Drought can affect all populations in Copperton. Prolonged drought conditions can pose serious challenges for vulnerable groups, including seniors, children, low-income households, and individuals experiencing homelessness. *Impacts:* These residents may struggle to afford rising water bills, install water-efficient fixtures, or maintain cooling during extreme heat. Limited access to water can increase the risk of heat-related illnesses and worsen air quality as dust and particulates become more prevalent. Additionally, food security may be impacted if locally grown produce becomes scarce or if prices rise due to agricultural strain across the region. Public health can decline due to water rationing and loss/damage to green or natural spaces.
	Structures	*Vulnerability:* All structures in Copperton are vulnerable to drought. *Impacts:* Many homes in Copperton, especially older ones, may have outdated plumbing systems and appliances that use more water than current efficiency standards allow. As drought persists, properties without waterwise landscaping are more likely to contribute to fire risk from dry vegetation near buildings. Without adequate irrigation alternatives, both curb appeal and safety may decline in residential neighborhoods.
	Economic Assets	*Vulnerability:* Local businesses are vulnerable, particularly those that are dependent on a consistent water supply. *Impacts:* Local businesses that depend on a consistent water supply may experience financial setbacks. Restrictions on water use can reduce business activity, increase operational costs, or result in temporary closures. For a small community like Copperton, the ripple effects of even modest economic disruptions can be significant.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Vegetation in foothills and Copperton Park is vulnerable to drought. *Impacts:* Drought can have a visible impact on Copperton's natural environment, reducing the vitality of parks, greenways, and surrounding foothills. Vegetation loss not only affects the look of public spaces but also degrades habitat for local wildlife. Historic properties, especially those with landscaping or irrigation-dependent grounds, may suffer neglect or deterioration. Airborne dust from dry soils can contribute to respiratory issues and affect the enjoyment of outdoor cultural amenities.
	Critical Facilities and Infrastructure	*Vulnerability:* Copperton's culinary water supply is vulnerable to ongoing drought. *Impacts:* Ongoing drought may strain Copperton's culinary water supply, requiring conservation measures or temporary restrictions. Water-dependent operations at facilities such as senior centers, clinics, and schools could be disrupted. Dry conditions also elevate the

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		risk of wildfires, which can threaten key infrastructure like power lines and water treatment systems. Soil degradation from extended dryness can increase flood risk when sudden rainfall occurs, placing pressure on stormwater systems.
	Community Activities	*Vulnerability:* Community events and Copperton Park are vulnerable to the impacts of drought. *Impacts:* Parks and gathering areas in Copperton may become less inviting or safe during drought due to heat stress, dry grass, and limited irrigation. Community events may be scaled back or canceled during peak summer months to protect public health. Public outreach is essential to promote water conservation strategies, encourage heat safety practices, and educate residents about drought-tolerant landscaping options.
Earthquake	People	*Vulnerability:* All Copperton residents are vulnerable. Vulnerable populations, including the elderly, young children, low-income individuals, and unsheltered persons, may be more affected by an earthquake. *Impacts:* Health impacts can be severe, especially if people are trapped under collapsed homes or other structures.
	Structures	*Vulnerability:* All homes and other structures in Copperton are vulnerable. The 2020 earthquake highlighted the risk, and the brick houses that are predominant in Copperton are historically known to fail during earthquakes. *Impacts:* Unreinforced masonry structures are likely to experience extensive damage from a moderate or strong earthquake. This is a significant concern, as not all residents have the tools or the funds to improve their homes or businesses to withstand a significant earthquake. Residents may be injured and are likely to be displaced if homes are damaged.
	Economic Assets	*Vulnerability:* Businesses throughout the region are vulnerable. *Impacts:* Economic impacts could be great due to direct damage to businesses and service disruptions. Failure of utility and transportation systems can affect businesses' ability to function. In addition, recovery for the community and businesses may be lengthy. Access to emergency services, such as police, fire, and emergency medical services (EMS), may be disrupted.
	Natural, Historic, and Cultural Resources	*Vulnerability:* The Historic District and the environment are vulnerable to earthquakes. *Impacts:* The resources could be severely damaged due to an earthquake. Unreinforced masonry buildings could be affected. Local vegetation and wildlife could be impacted by an earthquake.
	Critical Facilities and Infrastructure	*Vulnerability:* The fire station and all town infrastructure could be negatively affected due to physical damage, utilities failure, and medical surges. *Impacts:* Access to emergency services, such as fire stations, police stations, or medical facilities, could be compromised.
	Community Activities	*Vulnerability:* Community events are vulnerable to earthquakes.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		Impacts: Community gatherings could lead to an increased risk to public safety if an earthquake were to occur in the middle of an event. Future events may be canceled.
Extreme Heat	People	*Vulnerability:* Extreme heat can affect all Copperton residents *Impacts:* In Copperton, extended periods of high temperatures pose a serious health risk. Outdoor workers and residents without access to reliable air conditioning face the highest risk of heat exhaustion or heat stroke. As summer temperatures rise, especially during midday, hospital visits may increase, while outdoor recreation decreases due to the unsafe conditions. Residents will face increased energy costs for cooling systems.
	Structures	*Vulnerability:* All structures in Copperton are vulnerable to extreme heat. *Impacts:* Prolonged heat can stress buildings and infrastructure in Copperton. Roads and pavements may crack, and roofing materials can deteriorate under intense sunlight. Structures lacking proper insulation or cooling systems may become dangerously hot inside, placing residents at risk and overloading electrical systems.
	Economic Assets	*Vulnerability:* All businesses in Copperton are vulnerable to extreme heat. *Impacts:* Businesses in Copperton face rising cooling costs during periods of extreme heat. Companies reliant on outdoor services may need to limit work hours or reduce output, resulting in lost revenue. Recreational venues, including parks and local outdoor markets, could see a drop in attendance, especially during the hottest parts of the day.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Copperton Park is vulnerable to extreme heat. *Impacts:* Local parks and green spaces may suffer from drying vegetation and declining wildlife activity, especially if heat is paired with limited water supply. Trees and plants may become more vulnerable to disease or fire. Additionally, prolonged heat may accelerate the weathering of historic structures, public monuments, and art installations.
	Critical Facilities and Infrastructure	*Vulnerability:* Community centers and power infrastructure are vulnerable to extreme heat. *Impacts:* Essential facilities such as clinics, senior centers, and community shelters in Copperton may experience spikes in utility use as they work to keep interiors cool. Power demand for air conditioning can strain the grid, increasing the risk of localized outages. Fire danger also grows during extreme heat, particularly in areas with dry vegetation.
	Community Activities	*Vulnerability:* Community events are vulnerable to extreme heat. *Impacts:* Community events held during the summer months are at risk of being delayed, relocated, or canceled if cooling measures are not available. Public participation in outdoor gatherings may decrease, especially during excessive heat warnings, limiting community engagement.
	People	*Vulnerability:* All residents are potentially vulnerable to extreme cold. Severe cold spells can be especially hazardous in Copperton for

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
Extreme Cold		vulnerable groups, including seniors, young children, lower-income families, and individuals without stable housing. *Impacts:* Residents without reliable heating, insulation, or winter clothing may struggle to stay safe. Outdoor workers are also at risk of hypothermia and frostbite if protective gear and shelter are not accessible.
	Structures	*Vulnerability:* All structures are vulnerable to extreme cold. *Impacts:* Cold temperatures can cause pipes to freeze and burst in both older and newer homes lacking proper insulation. Prolonged exposure to cold can weaken roofing materials and compromise structural components, especially when followed by heavy snowfall. Repeated freeze–thaw cycles can deteriorate wood, brick, and metal components of buildings over time.
	Economic Assets	*Vulnerability:* Businesses and household budgets are vulnerable to extreme cold. *Impacts:* Heating expenses tend to spike during winter storms and cold snaps, placing a financial burden on both households and businesses. Companies may need to adjust hours of operation or delay projects due to weather-related barriers. The town may also face increased costs for maintaining warming shelters or assisting residents with heating needs.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Wildlife, vegetation, and the Historic District are vulnerable to extreme cold. *Impacts:* Extreme cold can take a toll on native wildlife in Copperton, particularly species not well adapted to sudden drops in temperature. Vegetation may also suffer, especially if cold is accompanied by wind or ice. Historic properties may be at risk of material damage or structural wear due to the expansion and contraction of building components.
	Critical Facilities and Infrastructure	*Vulnerability:* Cold weather can stress key systems in Copperton, including emergency services, utility lines, and water distribution systems. *Impacts:* Power outages are more likely when ice or snow accumulates on lines. Burst pipes in critical facilities, such as fire stations or clinics, could disrupt service delivery during emergencies.
	Community Activities	*Vulnerability:* Community activities are vulnerable to extreme cold. *Impacts:* Outdoor events and programs may be canceled if temperatures become dangerously low or snow makes travel difficult. Icy roads and unreliable vehicles can prevent residents from attending both recreational and essential services. Without sufficient heating in public spaces, community gatherings may have to be postponed or moved indoors.
Flooding	People	*Vulnerability:* People near Bingham Creek or low-lying areas are vulnerable to flooding. No Special Flood Hazard Zones (SFHZs) are within the town boundaries. *Impacts:* Individuals may need rescuing from high waters. Waterborne hazardous materials from Kennecott Mine could pose an additional risk, especially if they overflow Bingham Creek reservoir. Unsheltered populations, young children, low income, and the elderly are a

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		significant concern. Persons displaced by flooding may need public shelter.
	Structures	*Vulnerability:* No SFHZs are within Copperton. Some structures near Bingham Creek or in low-lying areas may be vulnerable to flooding. *Impacts:* Structures may be affected if they are exposed to floodwaters. Damage can include foundation damage, cracked pipes, damaged electrical systems, and mold. In addition, entire structures can be carried away if the water is moving very fast.
	Economic Assets	*Vulnerability:* Kennecott mine and other businesses are vulnerable to flooding. *Impacts:* Flooding could interrupt commerce and cause major interruptions to Kennecott Mine, particularly if roadways are damaged or closed. Rebuilding structures affected by flooding could be a significant cost for the town if financial assistance is not provided or the homeowner does not have flood insurance.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Wildlife, vegetation, and the Historic District are vulnerable to flooding. *Impacts:* Flooding can impact local wildlife and flora/fauna with the sheer amount of water and debris that move into the area. This could impact historical buildings or infrastructure, especially if they do not have flood insurance or the funds to rebuild.
	Critical Facilities and Infrastructure	*Vulnerability:* Roads and utilities are vulnerable to flooding. *Impacts:* Floodwater could damage roads and utilities, and carry hazardous materials. Access to emergency services like police, fire, and medical facilities would be impacted by flooding.
	Community Activities	*Vulnerability:* Community events and Copperton Park are vulnerable to flooding. *Impacts:* The time it takes for the town to recover from a significant flooding event would impact the ability to have community events. Local parks or businesses may not be able to operate.
Landslide/ Slope Failure	People	*Vulnerability:* The majority of landslide risk is associated with Kennecott Mine. This could include its employees. The slope on the north end of town has moderate susceptibility to landslides and could pose a risk to residents. *Impacts:* People could be injured if caught in a landslide. If the mine is affected, residents could lose wages or experience other impacts from possible closures or inability to work.
	Structures	*Vulnerability:* The majority of landslide risk is associated with Kennecott Mine. This could include its structures. The slope on the north side of town may pose a risk of landslide to nearby structures. *Impacts:* Homes could be damaged, and residents displaced. Repairs may be difficult or costly.
	Economic Assets	*Vulnerability:* The majority of landslide risk is associated with Kennecott Mine. *Impacts:* This could disrupt or halt mine operations and lead to loss of revenue and lost wages for employees.
	Natural, Historic, and	*Vulnerability:* Vegetation and environmental contamination are vulnerable to landslides.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Cultural Resources	*Impacts:* Landslide can impact local vegetation with excess debris in certain areas that may affect air or water quality. With Rio Tinto nearby, hazardous materials can seep into the soil or impact local wildlife and vegetation.
	Critical Facilities and Infrastructure	*Vulnerability:* Major roadways in and near Copperton, utilities, and emergency response are in landslide-susceptible areas. *Impacts:* Landslides could disrupt transportation to the town or to those who are employed at the Kennecott Mine. Managing debris after an incident would affect the ability of public works to complete their day-to-day duties. In addition, excess debris could affect essential services like power, water, medical facilities, police, and fire. Road access becomes an issue.
	Community Activities	*Vulnerability:* Community activities are vulnerable to landslides. *Impacts:* Community activities could be impacted if recreation areas, local businesses, or residential homes cannot be rebuilt or restored to their original condition.
Radon	People	*Vulnerability:* There are a significant number of properties throughout Copperton that have high radon levels. Seventy-seven percent of homes tested in the Copperton zip code have dangerous radon levels. *Impacts:* Radon increases risk of lung cancer for people exposed to it.
	Structures	Structures: Radon doesn't directly damage structures, but structural design or deterioration may contribute to radon accumulation. *Impacts:* Radon can seep through cracks in foundations or walls and accumulate in homes, putting occupants at risk of lung cancer. There are properties throughout Copperton with high radon levels. Radon kits are available through the state and other online services, but the cost may prevent people from purchasing them.
	Economic Assets	*Vulnerability:* Businesses and home values are vulnerable to high radon levels. *Impacts:* The cost of remediation for high radon levels and radon monitoring services may prevent people from reducing their radon levels. This can affect overall home prices and the local economy if it is known that the area has high radon levels.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Historical structures and the environment are vulnerable to radon exposure. *Impacts:* Local vegetation and wildlife can be impacted by radon. In addition, historical structures may be affected by radon, especially if it is not mitigated or they have poor ventilation. Older homes may have structural deterioration that contributes to radon entering the home.
	Critical Facilities and Infrastructure	*Vulnerability:* Fire station and community centers are vulnerable to radon. *Impacts:* Critical facilities and infrastructure may be impacted if there are high radon levels because remediation is required. Occupants may be exposed to radon. Radon may also impact access to critical facilities if people have existing health conditions.
	Community Activities	*Vulnerability:* Community activities have minimal vulnerability to radon exposure.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		Impacts: Radon poses a higher risk from long-term indoor exposure. Attendance at community activities, especially those held indoors, could be impacted if radon levels are high. Those who are immunocompromised or have existing health conditions may choose not to attend because of the health risks associated with radon.
Heavy Rain	People	*Vulnerability:* Heavy rain can occur anywhere in the city, and all individuals are potentially vulnerable. *Impacts:* Individuals may need rescuing from high waters. Waterborne hazardous materials from Kennecott Mine could pose an additional risk, especially if the Bingham Creek reservoir overflows. Unsheltered populations, young children, low-income individuals, and the elderly are a significant concern.
	Structures	*Vulnerability:* Structures near low-lying areas or impervious surfaces could be affected by ponding or high runoff during heavy rain. *Impacts:* Structures may be affected if they are exposed to localized flooding. This can include foundation damage, cracked pipes, damaged electrical systems, and mold. In addition, entire structures can be carried away if the water is moving very fast.
	Economic Assets	*Vulnerability:* All businesses in Copperton are vulnerable to heavy rain. *Impacts:* Heavy rain and localized flooding could interrupt commerce and cause major interruptions to Kennecott Mine. Repairs to damaged structures or infrastructure could be a significant cost if financial assistance is not provided or the homeowner does not have flood insurance.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Wildlife, vegetation, and waterways are vulnerable to heavy rain. *Impacts:* Flooding can impact local wildlife and flora/fauna with the sheer amount of water and debris that move into the area. Heavy rain can cause erosion and damage to habitats. Historical homes could also be damaged by flooding.
	Critical Facilities and Infrastructure	*Vulnerability:* Roads, utilities, and emergency response systems are vulnerable to heavy rain. *Impacts:* Localized flooding from heavy rain could damage roads and utilities, and carry hazardous materials. Access to emergency services, such as police, fire, and medical facilities, could be disrupted.
	Community Activities	*Vulnerability:* Outdoor events and recreation are vulnerable to heavy rain. *Impacts:* Outdoor events may be disrupted or canceled due to heavy rain. Local parks or businesses might not be able to operate. It may take significant time for the town to recover from damage caused by heavy rain.
High Wind	People	*Vulnerability:* All residents in Copperton can face risks during high wind events, especially those who are outdoors or near structures and trees. *Impacts:* Blowing debris, falling branches, and damaged infrastructure can cause injuries. Wind-related hazards may be especially dangerous for children, seniors, and individuals with mobility challenges, who may have limited ability to seek shelter quickly.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Structures	*Vulnerability:* Buildings in Copperton, particularly older homes, sheds, and fences, are vulnerable to wind-related damage. *Impacts:* Shingles can be lifted, windows shattered, and trees or utility poles may fall onto roofs or vehicles. Wind can also loosen signs and lightweight materials from commercial properties, creating additional hazards.
	Economic Assets	*Vulnerability:* Copperton businesses are vulnerable to high wind. *Impacts:* Storm damage can temporarily or permanently shut down small businesses, especially those without adequate insurance coverage. Clean-up costs and service disruptions can affect local commerce. Businesses that depend on consistent access to customers or transportation routes may experience revenue losses.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Copperton Park and historic homes are vulnerable to high wind. *Impacts:* Strong winds can damage trees, wildlife habitats, and park infrastructure in Copperton's green spaces. If historic landmarks or cultural sites are impacted and lack proper insurance or funding for repair, it may be difficult to restore them to their original condition.
	Critical Facilities and Infrastructure	*Vulnerability:* Power lines, roads, and emergency response systems are vulnerable to high wind. *Impacts:* Windstorms can down power lines, damage utility systems, and scatter debris across local roads, making emergency response more difficult. Disruptions to road access can delay fire, EMS, and law enforcement operations. Public infrastructure like water systems and electrical grids may also be affected, particularly in more remote parts of the community.
	Community Activities	*Vulnerability:* Outdoor events and recreation are vulnerable to high wind. *Impacts:* Outdoor gatherings, such as fairs or sporting events, may need to be canceled or delayed due to safety concerns during high wind events. Without proper shelter or medical staff on-site, the risk of injury during these storms increases.
Lightning	People	*Vulnerability:* Lightning presents a direct danger to anyone caught outside during storms, which potentially includes all Copperton residents. Those involved in recreation or outdoor work are most vulnerable. *Impacts:* Those in proximity to a lightning strike can be seriously injured or killed. Individuals may also be harmed by secondary effects of lightning, such as structure fires, electrical surges, or when lightning strikes water or conductive surfaces nearby.
	Structures	*Vulnerability:* Homes, barns, and outbuildings may be struck by lightning. *Impacts:* Lightning strikes can cause fires or electrical damage. Buildings without proper lightning protection systems are at higher risk, especially if they have outdated electrical infrastructure or are located in exposed areas.
	Economic Assets	*Vulnerability:* All Copperton businesses are vulnerable to lightning.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		Impacts: Fires or damage resulting from lightning strikes can cause costly repairs for local businesses. Prolonged closures may follow if critical systems are damaged. If such incidents are publicized, they may also impact the community's reputation for safety and deter new residents or business development.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Environment, wildfire risk, and risk to historic homes to lightning. *Impacts:* Lightning can ignite dry vegetation in Copperton, potentially sparking wildfires that damage ecosystems. Public safety and infrastructure, transportation, and other local resources may be overwhelmed by cascading effects like wildfires or medical surges. Historic buildings and cultural landmarks may be especially difficult to repair if they are not insured or if restoration resources are limited.
	Critical Facilities and Infrastructure	*Vulnerability:* Lightning can damage power infrastructure, communication towers, and electrical substations. *Impacts:* Damage to utilities can result in power outages or electrical surges. Medical responders could experience increased demand if lightning strikes cause injuries, and response efforts may be delayed if infrastructure is compromised.
	Community Activities	*Vulnerability:* Outdoor events, recreation, sports, and markets are vulnerable to lightning. *Impacts:* Outdoor events may be canceled due to lightning risks, particularly if shelter options are limited. Repeated interruptions during summer events could reduce attendance and engagement in community programs.
Severe Winter Storm	People	*Vulnerability:* All residents are potentially vulnerable. Cold snaps and snowstorms pose significant risks in Copperton, particularly for seniors, young children, low-income households, and unsheltered residents. *Impacts:* Individuals working outdoors, such as construction crews or service workers, are vulnerable to frostbite and hypothermia if safety precautions are not in place. Snow accumulation can also isolate residents who lack the means or ability to clear paths or driveways.
	Structures	*Vulnerability:* All structures are vulnerable to severe winter storms. *Impacts:* Buildings with flat or poorly maintained roofs are susceptible to collapse under heavy snow or ice loads. In older structures, pipes may freeze and burst during prolonged cold periods. Fluctuating temperatures can cause expansion and contraction of building materials, leading to gradual structural wear.
	Economic Assets	*Vulnerability:* All Copperton businesses to severe winter storms. *Impacts:* Local commerce may slow or halt altogether if roads remain uncleared or if facilities cannot maintain heat. Heating costs may rise for residents and businesses alike. Snow events may also interrupt operations for delivery services, contractors, and tourism-related businesses.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Parks, mature trees, and historic homes are vulnerable to severe winter storms. *Impacts:* Parks and trees can suffer from broken limbs and root damage due to ice buildup. Historical structures may also face

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		increased stress during severe weather, especially if roofs or foundations are not built to handle significant snow weight.
	Critical Facilities and Infrastructure	*Vulnerability:* Utilities, roads, and emergency response systems are vulnerable to severe winter storms. *Impacts:* Utilities in Copperton can be interrupted by ice or snow. If public works teams are unable to clear roads in a timely manner, emergency responders may be delayed. Extended exposure to cold can strain community infrastructure such as heating centers, water towers, and substations.
	Community Activities	*Vulnerability:* Community events are vulnerable to severe winter storms. *Impacts:* Outdoor events during the winter months may be canceled if snow removal and heating support are unavailable. Residents may be unable to attend community gatherings or access essential services if roads become impassable or cars fail to start in subzero temperatures.
Tornado	People	*Vulnerability:* Though rare, tornadoes remain a possibility in Copperton and all residents are at risk. *Impacts:* Tornadoes can cause serious injury or death. People in mobile homes or older, unreinforced structures are at greater risk. A tornado strike can disrupt transportation and limit access to hospitals, schools, and other essential services. Emergency responders may face increased demands due to injuries and displacement.
	Structures	*Vulnerability:* Homes, businesses, and public buildings are all vulnerable to tornadoes. *Impacts:* Structures may experience roof damage, shattered windows, or even full structural collapse during a tornado. Buildings without basements or safe rooms provide less protection. Recovery time can be lengthy, especially if damage is widespread.
	Economic Assets	*Vulnerability:* All Copperton businesses are vulnerable to tornadoes. *Impacts:* Businesses may close temporarily or permanently following a tornado, particularly if they lack insurance coverage or emergency funds. Job loss and economic disruption can follow, especially in small communities where businesses are tightly woven into local infrastructure and services.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Parks, natural plants and wildlife, and historic homes are vulnerable to tornadoes. *Impacts:* Tornadoes can damage vegetation, parks, and wildlife corridors in and around Copperton. Historical buildings made of older materials are especially vulnerable and may be difficult to restore. Loss of cultural spaces like community halls or public landmarks can have lasting emotional and economic effects.
	Critical Facilities and Infrastructure	*Vulnerability:* Utilities and emergency facilities, such as the fire station, are vulnerable to tornado damage. *Impacts:* Water and power services can be interrupted if distribution lines are affected. Blocked roads may prevent timely access for ambulances, fire trucks, or police vehicles. Re-establishing power and communications could take days, depending on the extent of destruction.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Community Activities	*Vulnerability:* Community centers and events are vulnerable to tornadoes. *Impacts:* Community centers and recreation facilities may be shut down for repairs, limiting access to programs and services. Outdoor events would need strong contingency plans or cancellations if tornado risks increase. Rebuilding efforts may take priority, reducing the availability of public spaces for months following a disaster.
Wildfire	People	*Vulnerability:* Copperton is located near the foothills of the Oquirrh mountains where wildfires are more likely than more urban areas. All residents are potentially at risk. *Impacts:* Urban interface wildfire areas can pose a health and safety hazard due to unpredictable or fast-moving fires. Residents may be evacuated from homes. Limited transportation routes to town could increase risk. There are health concerns about hazardous materials exposure if the fire starts at Rio Tinto and moves into Copperton. Wildfire smoke contributes to unhealthy air quality, which may impact Copperton residents even if the fire is not nearby.
	Structures	*Vulnerability:* All structures in Copperton are in close proximity to a moderate to high wildfire risk area and are at risk. Those closest to the foothills are at the highest risk. *Impacts:* Wildfire can damage structures and affect emergency services. If people do not have insurance, they may not be able to afford residential repairs.
	Economic Assets	*Vulnerability:* Local businesses could suffer if they do not have the funds to repair damage. If the area is prone to burning, there is also the reputational impact, where people do not want to visit if it is not safe or high risk.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Natural spaces and resources, such as vegetation and wildlife, as well as historic homes, are vulnerable to wildfires. *Impacts:* Wildfires can lead to the loss of natural spaces and wildlife habitats and may increase erosion. Historic buildings would need to be rebuilt. The extensive open space surrounding Copperton raises concerns about small brush fires that could grow. Nearby Rio Tinto land poses a risk, as any fire or chemical leak could impact Copperton's vegetation and wildlife.
	Critical Facilities and Infrastructure	*Vulnerability:* Fire station, utilities, and roadways are vulnerable to wildfires. *Impacts:* Interruptions to utilities and transportation are possible. Power could be turned off if it is deemed unsafe by Rocky Mountain Power. Road access and communications are concerns if emergency services cannot reach residents. Medical services would be impacted if they have to run on a generator or other limited power source.
	Community Activities	*Vulnerability:* Community activities and events are vulnerable to wildfires. *Impacts:* Events may be disrupted or possibly canceled, especially in outdoor areas like parks, if there is high wildfire risk. Areas with a lot of brush or natural vegetation present a high risk, which may deter people from engaging in recreation in those areas.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
Dam Failure	People	*Vulnerability:* There are three dams in Copperton, one ranked as high hazard and two rated as significant hazard—Kennecott Mine Bingham Creek, Kennecott Mine Small Reservoir, and Large Bingham Reservoir Distilling Basin. *Impacts:* The dams are located downslope of most residences and are not likely to directly impact people. However, access to emergency services, such as police, fire, or medical, support could be disrupted if the Kennecott Mine Bingham Creek Dam has a sunny day failure that spills into West Jordan. Public health could be impacted if there is no clean drinking water or if there is a power failure.
	Structures	*Vulnerability:* The Kennecott Mine Bingham Creek sunny day failure for dam inundation would impact surrounding jurisdictions. Direct vulnerability to Copperton structures is low. *Impacts:* Significant flooding could occur, impacting emergency vehicle access to and from Copperton.
	Economic Assets	*Vulnerability:* Business disruptions throughout Copperton are possible. *Impacts:* Flooding could cause substantial travel delays for residents and local businesses, which impacts the economy. Recovery efforts are tied to the amount of money or insurance people have to be able to rebuild after a dam failure. In addition, further inspections may be required for structures that are affected by a dam failure if there are any hazardous materials in the Rio Tinto-owned dams.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Vegetation, wildlife, and historic homes are vulnerable to dam failure. *Impacts:* Local vegetation and wildlife could be impacted if there is a dam failure. Historical buildings are at risk, especially if an insurance policy or adequate funds are not available to make repairs after flooding or other damage from a dam failure.
	Critical Facilities and Infrastructure	*Vulnerability:* Roads and downstream critical facilities are vulnerable to dam failure. *Impacts:* The Kennecott Mine Bingham Creek sunny day failure for dam inundation would impact surrounding jurisdictions. It could cause significant flooding and impact emergency vehicle access to and from Copperton.
	Community Activities	*Vulnerability:* All community events are vulnerable to dam failure. *Impacts:* Community activities would be affected, especially outdoor events, due to impacts on local vegetation, particularly if exposed to chemicals or other hazardous materials from the dam failure. Plants may not grow in certain areas, and it can also affect air quality.
Civil Disturbance	People	Possible risk to health or safety. A civil disturbance could overwhelm local resources and potentially impact access to emergency services if people are injured.
	Structures	Looting or damage to buildings is possible.
	Economic Assets	Theft or interruption of services/transportation. It can affect Copperton from a reputation standpoint if people are afraid to visit or live in the area after a civil disturbance. They may also be concerned about crime.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Natural, Historic, and Cultural Resources	Local business owners may be impacted if they cannot afford repairs associated with property damage.
	Critical Facilities and Infrastructure	Service/transportation interruption. Power and water service could be affected if they are struck or shut down. Police and fire could be impacted if roads are inaccessible.
	Community Activities	Outdoor community activities would be impacted if it is not safe or vandalism is likely.
Cyberattack	People	Communication interruptions or power failure is a concern for vulnerable populations.
	Structures	A cyberattack could impact the physical security of buildings or residential homes if the security system can be hacked into. In addition, a cyberattack could affect fire suppression systems or evacuation methods, which would exacerbate the issue.
	Economic Assets	Flow of commerce could be interrupted. This could impact payroll or other virtual systems for emergency services, local businesses, government services, or residential homes (like paying a mortgage or utility bill). If people cannot use the internet or are locked out a specific account, it is challenging to pay bills, complete projects, or access information.
	Natural, Historic, and Cultural Resources	Natural, historic, and cultural resources could be impacted if the cyberattack accesses critical infrastructure like water or power. This could disrupt the energy grid by manipulating data or overriding emergency systems. It could flood areas, redirect emergency services, or shut off power.
	Critical Facilities and Infrastructure	Delivery of utilities could be affected. In addition, critical infrastructure could be compromised if the hacker is asking for a ransom or the cyberattack cannot be resolved in a reasonable time for power/water infrastructure to come online. Shelters would have to be set up to provide essential services.
	Community Activities	Community activities can be impacted from a reputational perspective if there is no public trust. The public may not want to go to certain areas or visit local businesses in Copperton if they are affected by a cyberattack.
Hazardous Materials Incident (Transporta-tion & Fixed Facility)	People	High risk of exposure due to the proximity of the industrial mining operation. This can include respiratory illnesses or other health impacts from exposure.
	Structures	Could require people to evacuate or shelter in place. Structures would have to complete HazMat cleanup if they were exposed to hazardous materials or in the area affected by an incident.
	Economic Assets	Mainly would affect operations at Rio Tinto but could also affect small businesses in the town. Local businesses may not financially recover from business loss after hazmat clean up, whether that's from a reduction in customers or the amount of time they were closed.
	Natural, Historic, and	Could severely damage local vegetation. Natural, historical, and cultural resources would be affected by the exposure to hazardous materials. Remediation or ventilation may be needed.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Cultural Resources	
	Critical Facilities and Infrastructure	Possible interruption of essential services like fire, police, and EMS. Access to medical facilities could be impacted if there are significant road closures.
	Community Activities	Outdoor community activities could be impacted if the local vegetation was affected by the hazardous materials. Outdoor recreation may be a concern for vulnerable populations.
Public Health Epidemic/Pandemic	People	Direct risk due to contagious/severe illnesses. Vulnerable populations are especially at risk if they are exposed, which could overwhelm medical facilities or create a medical surge.
	Structures	If medical facilities are overwhelmed, additional local facilities or temporary structures may have to be identified to accommodate patients.
	Economic Assets	Interruptions of normal business operations, potential reduction in the workforce, and social distancing restrictions that can impact local businesses.
	Natural, Historic, and Cultural Resources	Increased use of outdoor spaces as seen with the COVID-19 pandemic. Restricted access to outdoor areas or historical buildings if social distancing is required. This can also impact the visitation to those areas if people do not want to socially distance or are afraid of the potential exposure.
	Critical Facilities and Infrastructure	Increased use of public health resources, leading to a medical surge. Illness for public safety or healthcare professionals if they are working with or exposed to patients experiencing symptoms.
	Community Activities	Community activities and events would be impacted by social distancing requirements. People may opt for virtual instead of in-person activities.
Terrorism	People	People could be scared to recreate outside due to previous terrorism events or could sustain injuries from a terrorism event.
	Structures	Structures could sustain damage from a terrorism event and the owner's financial situation could affect their ability to make repairs. If it is commercial property, they may be concerned about future terrorism events and choose to relocate.
	Economic Assets	The reputation of the area post-terrorism event could affect the local businesses, whether those are existing or new. A new business may not want to move into the area if the land or building was previously affected by a terrorism event. In addition, the terrorism event could be costly for a resident or local business to make needed damage repairs.
	Natural, Historic, and Cultural Resources	Historic buildings or cultural resources could be impacted if there is lower visitation by locals or tourists. Local wildlife may migrate into a different area if there is significant activity in where they typically go.
	Critical Facilities and Infrastructure	Critical facilities and infrastructure would be affected by a targeted terrorism event. Essential employees may not be able to perform their

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		job duties and water/power infrastructure could be shut down or damaged.
	Community Activities	Community activities could be affected by a terrorism event if the reputation of the area declines. If it is deemed unsafe or if there are multiple incidents in the same area, people won't want to recreate or attend events.

Hazards Not Profiled

Avalanche has been omitted from further discussion of hazard impacts and from mitigation actions. As shown in the description in Volume 1, avalanche risk is primarily in the Wasatch Mountains in SLCo. No previous occurrences of avalanche have impacted Copperton.

Jurisdiction-Specific Changes in Vulnerability

Hazard events can impact communities, infrastructures, and ecosystems. The severity of these impacts can be influenced by climate change, population patterns, and land use developments. Understanding these factors is crucial for the town of Copperton to develop a resilient community and minimize the impacts of hazards.

Table 8 displays the unique changes within the community and the related effects on each identified hazard affecting the town of Copperton.

Table 8: Jurisdiction-Specific Changes in Vulnerability in the Town of Copperton

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
Avalanche	N/A	N/A	N/A	N/A
Drought	Extreme or unusual weather, lack of rainfall, decreased snowpack	An increased population has led to greater need for water resources, such as for cooling, landscape maintenance, commercial businesses, and emergency services. Population has increased since 2019.	Increased development in Rio Tinto may also increase its water needs.	Increased due to climate change and population growth
Earthquake	Extreme or unusual weather patterns, increased greenhouse gas emissions, and	Increased road use with an increased population.	Increased development at Rio Tinto could increase the risk of seismic events in Copperton.	Same

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	rising sea levels can trigger seismic activity.			
Extreme Heat	Extreme or unusual weather, drought, less local vegetation, wildlife, and snowpack Increases in extreme heat can be closely related to increased impacts of drought and wildfire.	An increased population requires more water use for essential services, local businesses, and landscaping. In addition, resources like cooling facilities for vulnerable populations are needed.	There have been minimal changes in land use and development in Copperton since the previous hazard mitigation plan update.	Increased due to climate change and the increased population
Extreme Cold	Extreme or unusual weather, reduction in local vegetation and wildlife	The increased population may place a strain on local resources, such as power and water infrastructure to run essential services or the staffing needed at warming centers for vulnerable populations.	There have been minimal changes in land use and development in Copperton since the previous hazard mitigation plan update.	Increased due to climate change and the increased population
Flooding	Extreme/ unusual weather (like heavy rain events, preventing the soil from absorbing moisture), excess debris, contamination and disease	Vulnerable populations (the elderly, young children, and unsheltered) may be impacted by flooding if they cannot seek shelter or get out of the flood zone in time. The increased population can also impact essential services, creating a medical surge if people are injured.	There have been minimal changes in land use and development in Copperton since the previous hazard mitigation plan update.	Increased due to climate change and the increased population
Landslide/ Slope Failure	Drought, decreased snowpack, variable rain patterns can all contribute to changes in soil moisture and slope stability.	The number of workers at Rio Tinto could impact evacuation procedures and overwhelm Copperton if people are moving into the area. There could be a medical surge due to population growth in Copperton.	The increased development at the neighboring Rio Tinto site could impact Copperton through landslide and/or slope failure.	Increased due to climate change and population growth

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
Radon	Greater exposure to radon if we continue to see higher temperatures (permafrost thawing allows radon to seep through).	The continued activity in Rio Tinto as well and the population growth in Copperton places mores people at risk.	There have been minimal changes in land use and development in Copperton since the previous hazard mitigation plan update.	Same but population growth increases the number of people exposed to hazard
Heavy Rain	Extreme or unusual weather, flooding, landslides, soil or crop damage, water quality	Heavy rain could cause flooding which would impact residential areas and local businesses. It could also disrupt or prevent timely response from emergency vehicles if roadways are flooded or blocked by debris.	There have been minimal changes in land use and development in Copperton since the previous hazard mitigation plan update.	Increased due to climate change and population growth.
High Wind	Extreme or unusual weather, air quality, water quality, soil erosion	Vulnerable populations (the elderly, young children, and unsheltered) would be impacted if they cannot seek shelter. They would also be the most affected by poor air or water quality.	Materials from increased development at Rio Tinto could be pushed into Copperton, affecting water, soil, and air quality.	Increased due to climate change
Lightning	Extreme or unusual weather, increased likelihood of fires, air pollution, greenhouse gas emissions	Vulnerable populations (the elderly, young children, and unsheltered) may not be able to find or take shelter.	There have been minimal changes in land use and development in Copperton since the previous hazard mitigation plan update.	Increased due to climate change and population growth
Severe Winter Weather	Extreme or unusual weather, less outdoor recreation or investment in local economy (not going out to eat, attending community events, or commuting in/out of town)	The population growth places socially vulnerable groups at risk, especially if heavy snow is associated with a Code Blue alert where shelters must increase their capacity. Heavy snow can also place a strain on fire, police, and EMS if there are car accidents or falls.	There have been minimal changes in land use and development in Copperton since the previous hazard mitigation plan update.	Increased due to climate change and population growth

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
Tornado	Possible increase in severe thunderstorms; diminished quality of air, water, and soil	Vulnerable populations (the elderly, young children, and unsheltered) are most at risk of serious injury.	There have been minimal changes in land use and development in Copperton since the previous hazard mitigation plan update.	Same
Wildfire	Extreme or unusual weather, soil erosion, landslides, drought, lack of vegetation, higher temperatures	Rebuilding is a concern for local homeowners if they do not have the funds or an insurance policy.	There have been minimal changes in land use and development in Copperton since the previous hazard mitigation plan update.	Increased due to climate change and population growth
Dam Failure	Increased precipitation, soil erosion, air quality, water quality, reduction in local wildlife and vegetation	Dam failures could spill into surrounding jurisdictions, affecting access to and from Copperton. This can place a strain on emergency services (police, fire, and EMS)	There have been minimal changes in land use and development in Copperton since the previous hazard mitigation plan update.	Same
Civil Disturbance	N/A	A civil disturbance can overwhelm emergency services (police, fire, and EMS), and affect road access to and from Copperton, especially if there is debris.	There have been minimal changes in land use and development in Copperton since the previous hazard mitigation plan update.	Same
Cyberattack	N/A	In an increasingly digital world, Copperton is vulnerable to cyberattacks on critical infrastructure, which would impact water and power. In addition, police and fire systems could be disrupted. Payroll for local employees or businesses could be hacked into.	There have been minimal changes in land use and development in Copperton since the previous hazard mitigation plan update.	Same
Hazardous Materials Incident (Transporta-	N/A	Increased activity on roads presents a greater risk to the population. If roads are	Increased development at Rio Tinto could expose Copperton to	Same

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
tion & Fixed Facility)		inaccessible due to a hazmat incident, it prevents emergency vehicles from responding quickly.	hazardous materials, which would impact air, water, and soil quality.	
Public Health Epidemic/ Pandemic	N/A	Essential services could become overwhelmed, preventing timely medical response.	There have been minimal changes in land use and development in Copperton since the previous hazard mitigation plan update.	Same
Terrorism	N/A	If roads are blocked or inaccessible, it prevents timely public safety response.	There have been minimal changes in land use and development in Copperton since the previous hazard mitigation plan update.	Same

Additional Public Involvement

The town of Copperton provided several opportunities for public participation. Figure 1 and Figure 2 present examples of public outreach.

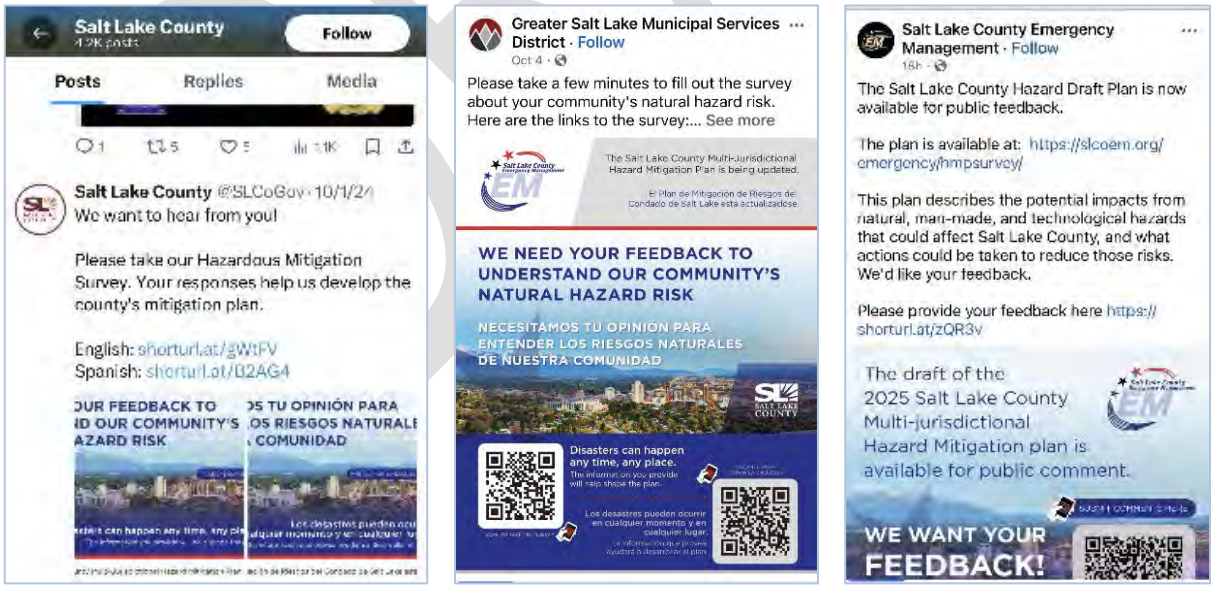


Figure 1: Social Media Posts for the Hazard Mitigation Survey (*left*), from the Municipal Services District (*middle*), and for the Draft Plan Review (*right*)

Figure 2: Mitigation Survey at Copperton Park Community Event

Plan Integration

Incorporating the underlying principles of the Hazard Mitigation Plan and its recommendations into other plans is a highly effective and low-cost way to expand their influence. All plan participants will use existing methods and programs to implement hazard mitigation actions where possible. As previously stated, mitigation is most successful when it is incorporated into the day-to-day functions and priorities of government and public service. This plan builds on the momentum developed through previous and related planning efforts and mitigation programs, and it recommends implementing actions where possible through these other program mechanisms. These existing mechanisms include the following:

- Regularity Capabilities
- Administrative Capabilities
- Fiscal Capabilities

Respective planning stakeholders will conduct implementation and incorporation into existing planning mechanisms and will be done through the routine actions of:

- Monitoring other planning/program agendas
- Attending other planning/program meetings
- Participating in other planning processes; and
- Monitoring community budget meetings for other community program opportunities.

The successful implementation of this plan will require constant and vigilant review of existing plans and programs for coordination and multi-objective opportunities that promote a safe, sustainable community. Regular efforts should be made to monitor the progress of mitigation actions implemented through other

DRAFT

planning mechanisms. Where appropriate, priority actions should be incorporated into planning updates. Table 9 lists existing planning mechanisms in which the Hazard Mitigation Plan has been integrated.

Table 10 lists the opportunities for integrating elements of this plan into other plans.

Table 9: Integration of Previous Plans by the Town of Copperton

Plan	Description
Community Wildfire Protection Plan	Addresses wildfire vulnerability and potential mitigation actions.

Table 10: Opportunities for Integration with Future Plans of the Town of Copperton

Plan	Description
CEMP – Comprehensive Emergency Management Plan	Framework to prepare for, mitigate, respond to, and recover from hazards
Copperton General Plan	This document guides future development for Copperton and sets goals for the community
Copperton Active Transportation Plan	Creating safe local and regional connections for people walking, biking, and rolling.

Capability Assessment

Local mitigation capabilities are existing authorities, policies, programs, and resources that reduce hazard impacts or could help carry out hazard mitigation activities.

Planning and Regulatory Capabilities

Planning and regulatory capabilities are the plans, policies, codes, and ordinances that prevent and reduce the impacts of hazards.

Table 11: Assessment of the Planning Capabilities of the Town of Copperton

Plan	Does it address hazards? (Y/N)	How can it be used to implement mitigation actions?	When was the last update? When is the next update?
General Plan	Y	Review the actions identified in the general plan and how they can be updated or incorporated into the hazard mitigation plan.	2020
Capital Improvement Plan	Y	Master storm drain plan study can inform hazards like flooding.	Updated in the MSD 2024 Strategic Plan
Climate Change Adaptation Plan	N	N/A	N/A

DRAFT

Plan	Does it address hazards? (Y/N)	How can it be used to implement mitigation actions?	When was the last update? When is the next update?
Community Wildfire Protection Plan	Y	Can inform wildfire mitigation actions.	2021
Economic Development Plan	N	N/A	N/A
Land Use Plan	Y	Provides an overview and historical context to inform future efforts and mitigation actions in the General Plan.	2020
Local Emergency Operations Plan	Y	The vulnerabilities and hazards identified can inform mitigation strategies.	Updated recently – Comprehensive Emergency Management Plan can be adopted
Stormwater Management Plan	Y	Can inform flooding-related mitigation actions.	2022
Transportation Plan	Y	Informs public safety.	2024
Substantial Damage Plan	N	N/A	N/A
Other? (Describe)			

Table 12: Assessment of the Regulations and Ordinances of the Town of Copperton

Regulation/ Ordinance	Does it effectively reduce hazard impacts?	Is it adequately administered and enforced?	When was the last update? When is the next update?
Building Code	Building codes ensure that structures are built to standard and brought up to code when remodeling occurs. Copperton has several commercial buildings. The town has adopted the International Building Code (IBC 2021) and International Residential Code (IRC 2021) as adopted by the state with amendments as well as Appendix C, Group U and Appendix K of the IBC.	Unknown	2023
Flood Insurance Rate Maps	Y	Yes	2022
Floodplain Ordinance	N	Yes	2023
Subdivision Ordinance	Varies	Yes	2024
Zoning Ordinance	Varies	Yes	2023

Regulation/ Ordinance	Does it effectively reduce hazard impacts?	Is it adequately administered and enforced?	When was the last update? When is the next update?
Natural Hazard-Specific Ordinance (Stormwater, Steep Slope, Wildfire)	Y – Wildfire & Stormwater No steep slopes in Copperton (outside copper mine)	Yes	Will be updated in 2025.
Acquisition of Land for Open Space and Public Recreation Use	Copperton is built out to its boundaries in all directions. New growth is only when land is rezoned or repurposed.	Yes	2023
Prohibition of Building in At-Risk Areas	Y	Yes	2023
Other? (Describe)			

Administrative and Technical Capabilities

Administrative and technical capabilities include staff and their skills. They also include tools that can help carry out mitigation actions.

Table 13: Assessment of the Administrative Capabilities of the Town of Copperton[3]

Administrative Capability	In Place? (Y/N)	Is staffing adequate?	Are staff trained on hazards and mitigation?	Is coordination between agencies and staff effective?
Chief Building Official	Y via MSD	Yes	Yes	Yes
Civil Engineer	Y (MSD)	Yes	Yes	Yes
Community Planner	Y(MSD)	Yes	Yes	Yes
Emergency Manager	Y, MSD-appointed	Yes; however, the appointee might have other job duties	Yes	Yes
Floodplain Administrator	Y, MSD	Yes	Yes	Yes
Geographic Information System (GIS) Coordinator	Y, MSD	Yes	Yes	Yes
Planning Commission	Y	Yes	Yes	Yes
Fire Safe Council	N – UFA is their fire department.	N/A	N/A	N/A

[3] LDS = Church of Jesus Christ of Latter-Day Saints, MSD = Municipal Services District, UFA = Unified Fire Authority.

Administrative Capability	In Place? (Y/N)	Is staffing adequate?	Are staff trained on hazards and mitigation?	Is coordination between agencies and staff effective?
CERT (Community Emergency Response Team)	N	N/A	N/A	N/A
Active VOAD (Voluntary Agencies Active in Disasters)	Y	No, more is needed. Work with LDS, Southern Baptist Disaster Relief, Salvation Army, and Habitat for Humanity.	Yes	Could be improved.
Other? (Please describe)				

Table 14: Assessment of the Technical Capabilities of the Town of Copperton[4]

Technical Capability	In Place? (Y/N)	How has it been used to assess/mitigate risk in the past?	How can it be used to assess/mitigate risk in the future?
Mitigation Grant Writing	Y, MSD	Copperton is part of the MSD. All services are currently contracted out – UFA, UPD, public works, or through the MSD.	Copperton can apply for hazard mitigation grant funding to complete projects or studies.
Hazard Data and Information	Y, MSD	Provide information for studies and inform Copperton, the MSD, and the general public of different hazards that affect the community to drive change.	Actions from the general plan that identified known hazards and issues can information mitigation actions in the hazard mitigation plan update.
GIS	Y, MSD	Maps were created to show different hazards in the General Plan and the stormwater master plan.	The maps and GIS data can inform mitigation actions for the hazard mitigation plan update to reduce risk.
Mutual Aid Agreements	Y, MSD and SLCo	Mutual aid agreements for police (UPD), fire (UFA), public works (SLCo PW)	Mutual aid agreements strengthen Copperton's resilience.
Other? (Please describe)			

Financial Capabilities

Financial capabilities are the resources to fund mitigation actions. Talking about funding and financial capabilities is important to determine what kinds of projects are feasible, given their cost. Mitigation

[4] MSD = Municipal Services District, SLCo PW = Salt Lake County Public Works, UFA = Unified Fire Authority, UPD = Unified Police Department.

actions like outreach programs are lower cost and often use staff time and existing budgets. Other actions, such as earthquake retrofits, could require substantial funding from local, state, and federal partners. Partnerships, including those willing to donate land, supplies, in-kind matches, and cash, can be included.

Table 15: Assessment of the Financial Capabilities of the Town of Copperton

Funding Resource	In Place? (Y/N)	Has it been used in the past and for what types of activities?	Could it be used to fund future mitigation actions?	Can it be used as the local cost match for a federal grant?
Capital Improvement Project Funding	Y	Yes, Master Storm Drain Plan	Yes	Unknown
General Funds	Y	Unknown	Unknown	Unknown
Hazard Mitigation Grant Program (HMGP/404)	N	Could apply for funding but have not in the past.	Yes	Unknown
Building Resilient Infrastructure & Communities (BRIC)	N	Could apply for funding but have not in the past.	Yes	Unknown
Flood Mitigation Assistance (FMA)	N	Could apply for funding but have not in the past.	Yes	Unknown
Public Assistance Mitigation (PA Mitigation/406)	N	Could apply for funding but have not in the past.	Unknown	Unknown
Community Development Block Grant (CDBG)	N	Could apply for funding but have not in the past.	Yes	Unknown
Natural Resources Conservation Services (NRCS) Programs	N	Could have done studies related to the Bingham Canyon Mine.	Unknown	Unknown
U.S. Army Corps (USACE) Programs	N	Unknown	Unknown	Unknown
Property, Sales, Income, or Special Purpose Taxes	Y	Unknown	Unknown	Unknown
Stormwater Utility Fee	Y	Copperton Improvement District manages.	Unknown	Unknown
Fees for Water, Sewer, Gas, or Electric Services	Y	Unknown	Unknown	Unknown
Impact Fees from New Development and Redevelopment	Y	Unknown	Unknown	Unknown

DRAFT

Funding Resource	In Place? (Y/N)	Has it been used in the past and for what types of activities?	Could it be used to fund future mitigation actions?	Can it be used as the local cost match for a federal grant?
General Obligation or Special Purpose Bonds	Unknown	Unknown	Unknown	Unknown
Federal-funded Programs (Please describe)	Unknown	Unknown	Unknown	Unknown
Private Sector or Nonprofit Programs	Wasatch Front Regional Council	Provided a $73,500 grant to fund an Active Transportation Plan and Connectivity Ordinance	Yes	Unknown
Other?				

Education and Outreach Capabilities

Education and outreach capabilities are programs and methods that could communicate about and encourage risk reduction. These programs may be run by a participant or a community-based partner. Partners, especially those who work with underserved communities, can help identify additional education and outreach capabilities.

Table 16: Assessment of the Education and Outreach Capabilities of the Town of Copperton[5]

Education and Outreach Capability	In Place? (Y/N)	Does it currently incorporate hazard mitigation?	Could it be used to support mitigation in the future?
Community Newsletter(s)	Y	Unknown	Yes
Hazard Awareness Campaigns (such as Firewise, Storm Ready, Severe Weather Awareness Week, School Programs)	Y	Yes	Yes
Public Meetings/Events (Please Describe)	Y	Yes	Yes
Emergency Management Listserv	Y, through MSD/UFA	Yes	Yes
Local News	Y	Yes	Yes
Distributing Hard Copies of Notices (e.g., public libraries, door-to-door outreach)	Y	Unknown	Yes

[5] IPAWS = Integrated Public Alert and Warning System, MSD = Municipal Services District, SLCo EM = Salt Lake County Emergency Management, UFA = Unified Fire Authority.

Education and Outreach Capability	In Place? (Y/N)	Does it currently incorporate hazard mitigation?	Could it be used to support mitigation in the future?
Insurance Disclosures/Outreach	N	N	N
Organizations that Represent, Advocate for, or Interact with Underserved and Vulnerable Communities (Please Describe)	Y	Yes	Yes
Social Media (Please Describe)	Y	Facebook and Instagram. Use Wireless Emergency Alert (WEA) for emergency alerts and coordinate with SLCo EM for an IPAWS.	Yes
Other? (Please Describe)			

Opportunities to Expand and/or Improve Capabilities

Actions that can expand and improve existing authorities, plans, policies, and resources for mitigation include budgeting for mitigation actions, passing policies and procedures for mitigation actions, adopting and implementing stricter mitigation regulations, approving mitigation updates, and making additions to existing plans as new needs are recognized. Table 17 lists the opportunities for the town of Copperton.

Table 17: Opportunities to Expand or Improve the Capabilities of the Town of Copperton[6]

Capability	Opportunity to Expand and/or Improve
Planning and Regulations	Copperton can adopt the CEMP created by the SLCo EM/MSD planners. In addition, the CEMP will have annexes added to it that address specific hazards. To address the unknowns in planning and regulatory capabilities, there are several opportunities for improvement and expansion. First, it is essential to conduct a detailed review of the General Plan, Capital Improvement Plan, Community Wildfire Protection Plan, and other relevant plans to update them. This will help in understanding how these plans can be better used to implement mitigation actions. For the Capital Improvement Plan, the integration of the master storm drain plan can be expanded to include broader flood hazard mitigation measures. This can help inform future infrastructure investments and improve overall community resilience to flooding. The Land Use Plan provides a historical context that can inform future efforts and mitigation actions. By updating the plan with recent data and trends, the community can better anticipate and manage future risks. Similarly, the CEMP should continue to be regularly updated, with the vulnerabilities and hazards identified being used to inform targeted mitigation strategies.

[6] CEMP = Comprehensive Emergency Management Plan, MSD = Municipal Services District, SLCo EM = Salt Lake County Emergency Management

Capability	Opportunity to Expand and/or Improve
	For the Stormwater Management Plan, which was last updated in 2022, regular reviews and updates are needed to ensure that it remains effective in addressing flooding-related hazards. The Transportation Plan, due for an update in 2024, should include considerations for public safety and mitigation actions related to transportation infrastructure. In terms of regulations and ordinances, assessing the Building Code's effectiveness in reducing hazard impacts and ensuring that it is adequately administered and enforced is crucial. This includes understanding the last update and planning for future updates. The same approach should be applied to the Flood Insurance Rate Maps, Floodplain Ordinance, Subdivision Ordinance, and Zoning Ordinance, with a focus on identifying and addressing any gaps in hazard mitigation.
Administrative and Technical	Many positions and technical capabilities that support effective mitigation action implementation are coordinated by the MSD on Copperton's behalf. One local opportunity to expand capabilities is through engaging community-based organizations, such as voluntary agencies active in disasters. By engaging the LDS, Southern Baptist Disaster Relief, Salvation Army, and Habitat for Humanity, Copperton can leverage volunteer resources to build safer homes, implement hazard awareness campaigns and increase community resilience.
Financial	To address the unknowns in financial capabilities, there are several opportunities for improvement and expansion. First, conducting a comprehensive assessment to identify existing funding resources and their past use is crucial. This will provide clarity regarding which resources have been used for specific activities and their potential to fund future mitigation actions. For instance, evaluating the use of Capital Improvement Project Funding and General Funds in past activities will help determine their effectiveness and how they can be leveraged for future mitigation efforts. Next, exploring opportunities to apply for various grant programs, such as the Hazard Mitigation Grant Program (HMGP/404), Building Resilient Infrastructure and Communities (BRIC), Flood Mitigation Assistance (FMA), Public Assistance Mitigation (PA Mitigation/406), and Community Development Block Grant (CDBG), can significantly enhance financial capabilities. These grants, although not previously used, can provide substantial funding for mitigation actions if successfully obtained. Engaging with state and federal partners, as well as private sector and nonprofit organizations, can open doors to additional funding resources. For example, partnerships with the Natural Resources Conservation Service (NRCS) and the U.S. Army Corps of Engineers (USACE) can be explored for studies and projects related to specific hazards, such as the Bingham Canyon Mine. Similarly, the Wasatch Front Regional Council's grant for the Active Transportation Plan and Connectivity Ordinance demonstrates the potential for securing funds from regional entities. For revenue-generating options, such as property, sales, income, or special purpose taxes, and fees for water, sewer, gas, or electric services, it is essential to evaluate their contribution to mitigation actions and their potential to serve as local cost matches for federal grants. Understanding the role of these resources in supporting mitigation efforts will help in planning and allocating budgets effectively. Regularly reviewing and updating the financial capability assessment will ensure that the community remains well-equipped to handle future challenges. By addressing these opportunities, the community can strengthen its financial capabilities, making it more feasible to implement a wide range of mitigation actions and enhance overall resilience to hazards.

DRAFT

Capability	Opportunity to Expand and/or Improve
Education and Outreach	Copperton can develop more hazard-specific public outreach and engagement programs. In addition, evaluating the effectiveness of methodologies of public outreach such as the distribution of hard copies of notices and exploring ways to enhance this method, such as increasing distribution points or collaborating with local organizations, can improve outreach efforts. Insurance disclosures and outreach are currently unknown, presenting an opportunity to collaborate with insurance companies to integrate hazard mitigation information into their communications with policyholders. This can help raise awareness and encourage proactive risk-reduction measures among residents. For social media, developing a comprehensive strategy that includes regular updates on hazard mitigation, interactive posts, and the use of analytics to measure effectiveness can enhance outreach capabilities. Expanding the use of social media platforms beyond Facebook and Instagram can also increase the reach and impact of mitigation messages.

Mitigation Strategy

Mitigation strategies provide proactive measures that are designed to minimize the impacts of hazards on the town of Copperton. Table 18 shows mitigation action alternatives, and

Table 19 shows the status of previous mitigation activities. Table 20 is the 2025 mitigation action plan for the town of Copperton.

Table 18: Mitigation Action Alternatives for the Town of Copperton

Action	Type of Action	Selected for inclusion in the plan?	If not selected, why not?
Continue social media engagement	Education and Awareness Programs		
Adopt new building codes as they are approved to bring some existing structures up to current codes	Structure and Infrastructure Projects		

Table 19: Status of Prior Mitigation Actions of the Town of Copperton

Action	Hazard(s)	Lead Agency	Support Agency(ies)	Status Update
Conduct seismic retrofitting and implement a program for residents similar to the "Fix the Bricks" initiative.	Earthquake	Copperton	Municipal Services District (MSD)	Ongoing, not yet completed
Provide additional education and materials to the public regarding the earthquake risk and potential mitigation actions that can be taken.	Earthquake	Copperton	MSD	Ongoing

DRAFT

Table 20: 2025 Mitigation Action Plan for the Town of Copperton[7]

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
1	Enhance security at critical infrastructure locations to prevent potential terrorist acts.	Terrorism	MSD	Copperton, SLCo EM, UPD, UFA, SLCo IT, SLCo PW, SLCo Clerk's Office, SLCo Sheriff's Office	Increases security protocols (both in technology and policy) for staff/first responders, clarifies expectations/understanding for local jurisdictions and the public.	High	MSD General Fund–Copperton, SLCo EM General Fund, UPD General Fund, SLCo Sheriff's Office General Fund, UFA General Fund, SHSP grant	Short term	Medium	
2	Develop and implement public education programs on disaster awareness and mitigation.	Civil Disturbance, Dam Failure, Drought, Wildfire, Earthquake, Extreme Heat, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide, Lightning, Public Health Epidemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	Copperton	MSD, UFA, UPD, SLCo Sheriff's Office, SLCo PW, SLCo EM	Improves understanding of local resources and strengthens relationships with the public and stakeholders. Outlines plans/SOPs for programs. Shares information digitally and in person on topics such as how to complete non-structural retrofits on homes to reduce the risk of earthquakes and home weatherization for extreme cold/severe winter weather events.	Low	MSD General Fund–Copperton, SLCo EM General Fund	Short term	Medium	
3	Integrate WebEOC, Crisis Track, GIS, and other technological enhancements.	Civil Disturbance, Dam Failure, Drought, Wildfire, Earthquake, Extreme Heat, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide, Lightning, Public Health Epidemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	Copperton	MSD, SLCo EM, UFA, UPD, SLCo PW, SLCo Health Department	Provides a common operating platform for stakeholders, increases situational awareness, and improves response time.	Low	MSD General Fund–Copperton, SLCo EM General Fund, UFA General Fund	Medium term	Medium	Copperton already has this software; need to improve training and documentation.
4	Enhance and continue to promote the implementation of CERT and SAFE Hubs.	Civil Disturbance, Dam Failure, Drought, Wildfire, Earthquake, Extreme Heat, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide, Lightning, Public Health Epidemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	Copperton	MSD, SLCo EM	Improves awareness of local resources.	Low	MSD General Fund–Copperton, SLCo EM General Fund, State of Utah DEM General Fund	Short term	Medium	SAFE Hubs, previously S.A.F.E. Neighborhoods, is going through a rebrand with a new public awareness campaign and information for all partners.
5	Establish access and functional needs registry and improve incorporation of those with access and functional needs in plans.	Civil Disturbance, Dam Failure, Drought, Wildfire, Earthquake, Extreme Heat, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide, Lightning, Public Health Epidemic, Radon, Severe Winter	Copperton	SLCo EM, MSD, UFA, UPD, SLCo Sheriff's Office	Improves situational awareness for the public and stakeholders, provides greater understanding of resources available for those with access and functional needs.	Low	MSD General Fund–Copperton, SLCo EM General Fund, State of Utah DEM staff time	Short term	High	The state of Utah's Access and Functional Needs Registry is dissolving in 2025. The county needs a way to account for those with access and functional needs, including

[7] ATF = Bureau of Alcohol, Tobacco, Firearms and Explosives, BRIC = Building Resilient Infrastructure and Communities, CWDG = Community Wildfire Defense Grant, DEM = Department of Emergency Management, DHS = Department of Homeland Security, EMPG = Emergency Management Performance Grant, FBI = Federal Bureau of Investigation, FEMA = Federal Emergency Management Agency, FMA = Flood Mitigation Assistance, HHPD = High Hazard Potential Dam, HMA = Hazard Mitigation Assistance, HMGP = Hazard Mitigation Grant Program, LEPC = Local Emergency Planning Committee, MSD = Municipal Services District, NWS = National Weather Service, SIAC = Statewide Information and Analysis Center, SHSP = State Homeland Security Program, SLC = Salt Lake City, SLCo EM = Salt Lake County Emergency Management, SLCo IT = Salt Lake County Information Technology, SLCo PW = Salt Lake County Public Works, SOP = Standard Operating Procedure, UDOT = Utah Department of Transportation, UFA = Unified Fire Authority, UPD = Unified Police Department

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
		Weather, Terrorism, Tornado, Wildfire								incorporation into plans/SOPs.
6	Bring deficient high hazard dams up to current industry standards.	Dam Failure	Dam owners	Water companies, SLCo EM, MSD, Copperton	Preserves life and safety (personal injuries, safety of first responders), reduces damage to critical infrastructure.	High	MSD General Fund- PW Operations Copperton, MSD Capital Projects Fund, SLCo PW Operations Fund, dam owners, water districts, State of Utah DWR General Fund and staff time, HHPD grant	Long term	High	
7	Procure generators and transfer switches for critical facilities.	Extreme Heat	MSD	Copperton, SLCo EM, SLCo Facilities Management, local public utilities, Rio Tinto	Provides backup generators for cooling centers and Code Blue centers. Ensures accurate inventory of what the county has to provide to other agencies or jurisdictions as needed.	Medium	SLCo PW General Fund, MSD General Fund– Copperton, HMA grant	Long term	Medium	
8	Increase the size of culverts and bridges.	Flooding	MSD	SLCo EM, SLCo PW, Copperton	Allows for larger runoff during spring melt season, reduces the amount of debris buildup.	High	SLCo PW General Fund, UDOT Operational Fund, MSD Capital Projects– Copperton, HMGP, FMA grant	Long term	Medium	
9	Procure Flood Mitigation Assistance (FMA) grants.	Flooding	SLCo EM	Copperton, SLCo PW, MSD	Improves understanding of grants available and how money can be used for mitigation efforts.	Low	HMGP, FMA grant, SLCo EM General Fund, MSD General Fund–Copperton, State of Utah DEM staff time	Long term	Medium	
10	Develop an enhanced emergency notification communication system for Copperton.	Civil Disturbance, Dam Failure, Drought, Earthquake, Extreme Heat, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide, Lightning, Public Health Epidemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	SLCo EM	MSD, UFA, UPD, UDOT	Provides early notification of impending wildfires to decrease loss of life. Improves relationships with the public and stakeholders. Ensures faster delivery of information with templates and plans ready to go.	Medium	MSD General Fund– Copperton, SLCo EM General Fund, Next Generation Warning System grant, EMPG	Short term	Medium	
11	Promote the Firewise Initiative and regularly review/ update the Community Wildfire Protection Plan (CWPP).	Wildfire	UFA	SLCo EM, MSD, Copperton, FFSL	Increases awareness of plans (for the public and stakeholders), improves eligibility for grants or other funding sources, ensures regular review of CWPP.	Low	MSD General Fund– Copperton, SLCo EM General Fund CWDG grant, UFA General Fund	Short term	Medium	
12	Conduct public awareness campaign on Tier 2 reporting software for chemical reporting.	Hazardous materials incident	SLCo EM	LEPC, UFA, UPD, Copperton, SLCo Sheriff's Office, Rio Tinto	Improves understanding of Tier 2 reporting and how Copperton can find and submit information. Provides a common operating platform for hazardous materials reporting.	Low	MSD General Fund– Copperton, SLCo EM General Fund, LEPC, State of Utah DEM staff time, UFA General Fund	Long term	Medium	

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
13	Enact local regulations and codes for development to reduce landslide and slope failure damage to critical infrastructure and buildings.	Landslide and slope failure	MSD	SLCo EM, UFA, Copperton	Reduces the likelihood of landslides and critical infrastructure/building damage. Ensures that future development is up to code and follows policy to avoid repetitive loss properties.	Low	SLCo General Fund, MSD General Fund – Code Enforcement, MSD General Fund-Copperton, State of Utah staff time, HMGP	Long term	Medium	
14	Leverage WebEOC and GIS to track the spread of contagious disease.	Public Health Epidemic/Pandemic	SLCo Health Department	SLCo EM, UFA, MSD, UPD, Sheriff's Office, Copperton	Uses GIS and WebEOC software to maintain situational awareness and tracks illnesses throughout the county.	Low	SLCo EM General Fund, MSD General Fund–Copperton, SLCo Health Department General Fund, State of Utah DEM staff time	Short term	Medium	Copperton already has this software through SLCo EM and the MSD; need to improve training and documentation.
15	Create public awareness campaigns and public education programs on radon risks and provide home testing for radon.	Radon	SLCo EM	SLCo Health Department, SLCo Aging and Adult Services, Copperton, MSD	Decreases radon-caused cancer deaths. Increases engagement/ understanding with the public on what SLCo can do or help with.	Low	SLCo General Fund–Health Department, SLCo General Fund–Aging and Adult Services, MSD General Fund–Copperton, Utah Department of Environmental Quality General Fund	Short term	Low	
16	Develop road resurfacing project including permeable pavement for areas with rain-based flooding.	Severe Weather – Heavy Rain	MSD	UDOT, SLCo PW, Copperton	Reduces pollutants discharged in runoff, reduced maintenance time/costs on roads, improved traction on roads.	High	MSD Capital Projects–Copperton, MSD General Fund–Copperton, SLCo PW General Fund, UDOT Operational or Capital Fund, HMA grant	Long term	Low	
17	Create a public education program for property owners to learn about tree maintenance and high-strength windows.	Severe Weather – High Wind	MSD	SLCo EM, SLCo Aging and Adult Services, NWS, SLCo PW, Copperton	Reduces damage during high wind event to critical infrastructure. Prevents personal injuries (people driving on roads or walking in neighborhoods). Improves relationships with stakeholders and the public.	Low	SLCo PW General Fund, MSD General Fund–Copperton, SLCo EM General Fund,	Short term	Low	
18	Develop a severe winter weather mitigation program to maintain access to primary roadways and evacuation routes.	Severe Winter Weather – Heavy Snow, Blizzard	SLCo PW and Municipal Services	MSD, SLCo EM, Copperton, UDOT, NWS	Ensures emergency services like police, fire, and EMS can use roads to provide their services.	Medium	MSD General Fund–Copperton, NWS Operational Fund, SLCo EM General Fund, UDOT Operational Fund	Short term	High	A severe winter storm with heavy snowfall requires our operators and equipment to be used to clear roads and streets for the public and emergency vehicles to use. The primary efforts will be to keep the roads open by clearing snow.
19	Conduct public awareness campaign about lightning safety.	Severe Weather – Lightning	Copperton	SLCo EM, NWS, UFA, SLCo PW	Increases lightning strike awareness for the public.	Low	SLCo EM General Fund, MSD General Fund–Copperton, NWS	Short term	Low	

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
							Operational Fund, UFA General Fund			
20	Improve outreach for "see something, say something" QR code to deter terrorist acts.	Terrorism (including cyberattacks)	SLCo EM	UPD, UFA, MSD, Copperton, SLCo IT, SLCo Sheriff's Office	Ensures that residents and local agencies/jurisdictions are aware of local intelligence resources and ways in which they can report suspicious activity. Encourages QR code use/outreach at special events throughout the county.	Low	SLCo EM General Fund, MSD General Fund–Copperton, UPD General Fund, SLCo Sheriff's Office General Fund, SHSP grant	Short term	Medium	
21	Be a part of the countywide intelligence group/ division to monitor and analyze threats before an incident occurs.	Terrorism (including cyberattacks)	SLCo EM	Copperton, SLCo Sheriff's Office, SIAC, DHS, ATF, FBI	Increases situational awareness.	Low	SHSP grant, SLCo EM General Fund, MSD General Fund–Copperton, SLCo Sheriff's Office General Fund, SIAC General Fund	Short term	Medium	This would be a core group of stakeholders that meet on a regular basis to share and collaborate on intelligence data.
22	Code Enforcement – Review critical infrastructure facilities to ensure that building materials are up to code and are tornado resistant.	Tornado	MSD	Copperton, SLCo PW, SLCo EM	Ensures that critical infrastructure facilities are operational/functional in the event of a disaster. Preserves life and safety.	Medium	SLCo EM General Fund, MSD General Fund–Copperton, UFA General Fund	Short term	Low	
23	Enhance interoperable radio communications systems throughout the county.	Civil Disturbance, Dam Failure, Drought, Earthquake, Extreme Heat, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide, Lightning, Public Health Epidemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	Copperton	MSD, UFA, UPD, SLCo Sheriff's Office, SLCo EM	Improves communication between different agencies and provides a common operating platform.	Medium	SLCo EM General Fund, MSD General Fund–Copperton, SLCo Sheriff's Office General Fund	Short term	Medium	
24	Develop a countywide single source of information sharing/gathering for intelligence.	Civil Disturbance, Terrorism	SLCo EM	Copperton, SLCo Sheriff's Office, SIAC, MSD	Improves coordination between local agencies/jurisdictions.	Medium	SHSP Grants, SLCo General Fund, MSD General Fund–Copperton	Short term	Medium	Have one common operating platform to be used by all agencies in SLCo to collect suspicious activity reports. Develop a public awareness campaign to educate the public on how and what to report.
25	Install xeriscaping on government-owned buildings.	Drought	Copperton	SLCo Facilities, Water companies/ districts, Copperton, MSD, state of Utah, SLCO EM	Decreases the cost of landscape irrigation and decreases water use.	High	SLCo General Fund-Facilities, MSD General Fund–Copperton	Short term	Low	
26	Improve communication to the public and stakeholders on	Severe Winter Weather	SLCo EM	Copperton, SLCo Office of Homeless and Criminal Justice Reform,	Prevents further damage to critical infrastructure, ensures that homeless individuals have warming resources available,	Low	SLCo EM General Fund, SLCo General Fund-Health Department, State of Utah General Fund–	Short term	Low	

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
	resources available when Code Blue is in effect during severe winter weather.			NWS, SLCo Health Department, State of Utah	offloads some of the pressure on local homeless resource providers with standard protocols to follow with Code Blue.		Health and Human Services, NWS General Fund			
27	Install earthquake and ground sensors to help anticipate the likelihood of an earthquake in strategic locations.	Earthquake	SLCo EM	MSD, Copperton, NWS	Monitors high seismic areas more intimately to be able to alert the population of impending seismic activity.	Low	SLCo EM General Fund, MSD General Fund–Copperton, NWS General Fund	Short term	Low	
28	Construct extreme cold shelters to protect citizens from the adverse effects of cold weather.	Extreme Cold	SLCo EM	MSD, Copperton	Protects the population from extreme cold when they cannot find heat, or shelter.	High	SLCo EM General Fund, MSD General Fund–Copperton	Short term	High	
29	Conduct seismic retrofitting and implement a program for residents similar to the “Fix the Bricks” initiative.	Earthquake	Copperton	MSD, SLCo EM	Reduces potential damage to structures and improves safety for residents.	High	SLCo EM General Fund, MSD General Fund-Copperton, HMGP	Long term	Medium	
30	Provide additional education and materials to the public regarding the earthquake risk and potential mitigation actions that can be taken.	Earthquake	Copperton	MSD, SLCo Em	Increases public awareness and preparedness, potentially reducing damage and injuries.	Low	SLCo EM General Fund, MSD General Fund-Copperton, HMGP	Short term	Medium	

DRAFT

THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT

City of Cottonwood Heights

Jurisdictional Annex to the
Salt Lake County Hazard Mitigation Plan

Month XXXX | Draft X.X

THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT

Table of Contents

City of Cottonwood Heights Annex 1

Planning Process Contact Information 1
Jurisdiction Profile 1
Date of Incorporation 1
Location and Description 1
Population 2
Demographics 2
Brief History 2
Climate 2
Public Services 2
Governing Body 2
Development Trends 3
Jurisdiction-Specific Hazards and Risk 3
Hazard Event History 6
National Flood Insurance Program Summary 8
Jurisdiction-Specific Vulnerabilities and Impacts 9
Jurisdiction-Specific Changes in Vulnerability 27
Additional Public Involvement 37
Plan Integration 37
Capability Assessment 39
Planning and Regulatory Capabilities 39
Administrative and Technical Capabilities 41
Financial Capabilities 42
Education and Outreach Capabilities 43
Opportunities to Expand and/or Improve Capabilities 44
Mitigation Strategy 45

DRAFT

List of Figures

Figure 1: Social Media Post for Public Participation 37

List of Tables

Table 1: Contact Information for the City of Cottonwood Heights 1
Table 2: Participant List for the City of Cottonwood Heights 1
Table 3: Calculated Priority Risk Index Values for the City of Cottonwood Heights 3
Table 4: Criteria for the Calculated Priority Risk Index 4
Table 5: History of Hazard Events in the City of Cottonwood Heights 6
Table 6: National Flood Insurance Program Status for the City of Cottonwood Heights 8
Table 7: National Flood Insurance Overview for the City of Cottonwood Heights 8
Table 8: Jurisdiction-Specific Vulnerabilities and Impacts in the City of Cottonwood Heights 9
Table 9: Jurisdiction-Specific Changes in Vulnerability in the City of Cottonwood Heights 28
Table 10: Previous Plan Integration by the City of Cottonwood Heights 38
Table 11: Future Plan Integration Opportunities for the City of Cottonwood Heights 38
Table 12: Assessment of the Planning Capabilities of the City of Cottonwood Heights 39
Table 13: Assessment of the Regulations and Ordinances of the City of Cottonwood Heights 40
Table 14: Assessment of the Administrative Capabilities of the City of Cottonwood Heights 41
Table 15: Assessment of the Technical Capabilities of the City of Cottonwood Heights 42
Table 16: Assessment of the Financial Capabilities of the City of Cottonwood Heights 42
Table 17: Assessment of the Education and Outreach Capabilities of the City of Cottonwood Heights 44
Table 18: Opportunities to Expand or Improve the Capabilities of the City of Cottonwood Heights 45
Table 19: Mitigation Action Alternatives for the City of Cottonwood Heights 45
Table 20: Status of Prior Mitigation Actions of the City of Cottonwood Heights 46
Table 21: 2025 Mitigation Action Plan for the City of Cottonwood Heights 51

DRAFT

City of Cottonwood Heights Annex

To participate in this multi-jurisdictional hazard mitigation plan (MJHMP) update for Salt Lake County (SLCo), the governing body of the city of Cottonwood Heights passed a formal resolution, a copy of which is maintained at the local government offices.

Planning Process Contact Information

Table 1 provides information on the point of contact during the updating of the MJHMP.

Table 1: Contact Information for the City of Cottonwood Heights

Name	Contact Information
Paul Brenneman	**Phone**: 801-944-7100 **email:** pbrenneman@ch.utah.gov
Lance Bess	**Phone:** 801-944-7100 **email:** lbess@ch.utah.gov

The city of Cottonwood Heights has a fully integrated approach to hazard mitigation planning and program implementation. During the 2024 update process, the MJHMP participation roles in Table 2 were recorded.

Table 2: Participant List for the City of Cottonwood Heights

Name	Title	Jurisdiction
Paul Brenneman	Emergency Manager	Cottonwood Heights
Lance Bess	Emergency Manager	Cottonwood Heights
Mike Johnson	Director of Planning and Economic Development	Cottonwood heights
Matt Shipp	Director of Public Works and Floodplain Management	Cottonwood Heights

Jurisdiction Profile

Date of Incorporation

January 14, 2005

Location and Description

The city of Cottonwood Heights is in central Salt Lake County. The city is approximately 9.2 square miles in area and is located approximately 4,800 feet above sea level. Geographically, Cottonwood Heights is characterized by a prominent ridge that separates the Big and Little Cottonwood Creek valleys. Suburban

DRAFT

housing covers the ridge while commercial development is found mainly in the lower areas north of the ridge.

Population

The 2022 American Community Survey 5-Year Estimate from the U.S. Census Bureau records the population of the city of Cottonwood Heights as 32,984 people.

Demographics

Most of the 32,984 people are between the ages of 35 and 44, with a median age of 39.1; 16,608 are females (50.4%) and 16,376 are males (49.6%). English is the primary language in 90.9% of homes, with 2.2% Spanish, and 6.9% other languages.

Brief History

In 1849, eight families settled in what would be known as Union, with one of the settlers, Jehu Cox, donating 10 acres for a fort. By 1854, 23 homes were housing 273 people. The population began to grow and by 1880, 484 people were living in the area. This trend continued with 602 people by 1890, and 757 people by 1900. Union, now part of Cottonwood Heights, Midvale, and Sandy, witnessed the establishment of Butler and Union Precincts in 1877, along with the Butler School District 57 and Union School District 23. Local industries at the time included the Cottonwood Paper Mill, sand and gravel pits, mining, and various types of farming. After World War II, the area transitioned from rural to suburban, with the first subdivisions built between 1953 and 1955, boosting the population to 5,000. The city of Cottonwood Heights was incorporated on January 14, 2005.

Climate

The city of Cottonwood Heights experiences a humid continental climate (Dfa Köppen classification) characterized by hot summers and cold winters with significant temperature variations throughout the year. Average highs range from the 80s to the low 90s°F in the summer and from the 20s to the low 40s°F in the winter. Rain each year is approximately 26.4 inches, and snowfall averages 52.4 inches.

Public Services

The city of Cottonwood Heights is served by the Canyons School District with Brighton High School and Butler Middle School being the primary public schools within the city limits.

Governing Body

Cottonwood Heights operates under a council/manger form of government featuring four council members and a mayor who chairs the council. Together, the council and the mayor appoint a city manager who serves as the chief administrative officer, implementing council policies and managing staff.

DRAFT

Development Trends

The city serves as a sub-regional market to the Greater Salt Lake Metropolitan area, providing class A office space, world-class outdoor recreational amenities, and well-established residential neighborhoods. Currently, the city's six largest employers are Jet Blue Airways Corporation (leisure, travel), INstructure Inc (learning technology), Canyons School District (education), Extra Space Management (retail storage), Regence Blue Cross Blue Shield (insurance), and Western Digital (technology). The city has a high concentration of office parks with limited industry users. As with many other communities in Salt Lake County, the city has not been immune from the effects of the domestic and international economic slowdown. Economic development in the city has been very active in recent years but still struggles in the highly competitive recruitment of some major businesses.

Jurisdiction-Specific Hazards and Risk

The Calculated Priority Risk Index (CPRI) is a comprehensive assessment tool for evaluating and prioritizing risks in a given context. It considers various factors, such as probability, impact, and urgency, to determine the level of risk associated with events or situations. The results for each hazard, including its risk factor (RF) value, are shown in Table 3. The results are based on the criteria in Table 4 and the equation that follows it. The CPRI helps organizations and individuals make informed decisions about risk management and mitigation strategies. It provides a systematic approach to identifying and addressing potential issues, allowing for a more efficient allocation of resources and proactive risk prevention. With the CPRI, stakeholders can prioritize their focus on the most critical risks, leading to more effective risk management and, ultimately, better outcomes.

Table 3: Calculated Priority Risk Index Values for the City of Cottonwood Heights

Type of Hazard Event	Probability of Future Events	Spatial Extent	Severity of Life/ Property Impact	Warning Time	Duration	Response Capacity	Risk Factor Value
Avalanche	4	1	2	4	2	1	2.6
Drought	4	4	2	1	4	1	2.8
Earthquake	3	4	4	4	3	2	3.4
Extreme Heat	4	4	3	1	3	1	3
Extreme Cold	3	4	2	1	3	1	2.4
Flooding	4	3	3	3	3	1	3.1
Landslide/ Slope Failure	2	1	2	4	1	2	2
Radon	4	4	2	1	4	2	2.9
Heavy Rain	4	3	2	3	1	1	2.6
High Wind	4	3	3	3	2	1	3
Lightning	4	2	2	4	1	1	2.6
Severe Winter Weather	4	3	2	2	2	1	2.6

DRAFT

Type of Hazard Event	Probability of Future Events	Spatial Extent	Severity of Life/ Property Impact	Warning Time	Duration	Response Capacity	Risk Factor Value
Tornado	2	2	3	4	1	2	2.4
Wildfire	4	3	3	4	3	1	3.2
Dam Failure	2	2	3	2	2	3	2.4
Civil Disturbance	2	1	2	4	2	2	2.1
Cyberattack	2	3	3	4	3	2	2.7
Hazardous Materials Incident (Transportation & Fixed Facility)	3	1	2	4	1	1	2.2
Public Health Epidemic/ Pandemic	3	4	3	1	4	1	2.8
Terrorism	2	1	3	4	2	1	2.3

Table 4: Criteria for the Calculated Priority Risk Index

Risk Index Factor	Degree of Risk Level		Criteria	Factor Weight for Degree of Risk Level
Probability of Future Events	1	Unlikely	Less than 1 percent probability of occurrence in the next year or a recurrence interval of greater than every 100 years.	30%
	2	Occasional	1 to 10 percent probability of occurrence in the next year or a recurrence interval of 11 to 100 years.	
	3	Likely	11 to 90 percent probability of occurrence in the next year or a recurrence interval of 1 to 10 years.	
	4	Highly Likely	91 to 100 percent probability of occurrence in the next year or a recurrence interval of less than 1 year.	
Spatial Extent	1	Limited	Less than 10% of the planning area could be impacted.	10%
	2	Small	10%–25% of the planning area could be impacted	
	3	Significant	25%–50% of the planning area could be impacted.	
	4	Extensive	50%–100% of the planning area could be impacted.	
	1	Negligible	Less than 5% of the affected area's critical and non-critical facilities and structures are	30%

DRAFT

Risk Index Factor	Degree of Risk Level		Criteria	Factor Weight for Degree of Risk Level
Severity of Life/Property Impact			damaged/destroyed. Only minor property damage and minimal disruption of life. Temporary shutdown of critical facilities.	
	2	Limited	More than 5% and less than 25% percent of property in the affected area is damaged/ destroyed. Complete shutdown of critical facilities for more than one day but less than one week.	
	3	Critical	More than 25% and less than 50% of property in the affected area was damaged/destroyed. Complete shutdown of critical facilities for over a week but less than one month.	
	4	Catastrophic	Over 50% of critical and non-critical facilities and infrastructures in the affected area are damaged/ destroyed. Complete shutdown of critical facilities for more than one month.	
Warning Time	1	Self-defined	More than 24 hours	10%
	2	Self-defined	12 to 24 hours.	
	3	Self-defined	6 to 12 hours.	
	4	Self-defined	Less than 6 hours.	
Duration	1	Brief	Up to 6 hours.	10%
	2	Intermediate	Up to one day.	
	3	Extended	Up to one week.	
	4	Prolonged	More than one week.	
Response Capacity	1	High	Significant resources and capability to respond to this kind of event; staff are trained, experienced, and ready.	10%
	2	Medium	Some resources and capability to respond to this kind of staff; some staff may be trained, experienced, and ready while others may need additional support.	
	3	Low	Limited resources and capability to respond to this kind of event; additional staff or staff training needed.	
	4	None	No resources and capability to respond this kind of event; additional outside support would be required.	

DRAFT

RISK FACTOR (RF) EQUATION

RF Value = [(Probability x 0.30) + (Spatial Extent x 0.10) + (Severity of Life/Property Impact x 0.30) + (Warning Time x 0.10) + (Duration x 0.10) + (Response Capacity x 0.10)]

Hazards with an RF value greater than or equal to 2.5 are considered high risk. Those with RF values of 2.0 to 2.4 are considered moderate risk hazards, and those with an RF value less than 2.0 are considered low risk. The highest possible RF value is 4.

Hazard Event History

Examining hazard event histories provides valuable insights to inform decision-making and help prioritize resources for risk prevention and response efforts. Table 5 lists the hazard events impacting the city of Cottonwood Heights planning area since the 2019 plan update, as recorded in the Storm Events Database from the National Centers for Environmental Information.

Table 5: History of Hazard Events in the City of Cottonwood Heights

Type of Hazard Event	FEMA Disaster #	Date(s)	Damage or Impacts	Description
Avalanche	N/A	N/A	N/A	N/A
Drought	N/A	Drought is a recurring problem in the region	Air quality issues, water restrictions.	The entire county faces risk of historic drought.
Earthquake	DR-4548-UT	A 5.7M earthquake was felt March 2020.	Some structural damage was reported, mostly near Magna. Tens of thousands lost power in the Salt Lake Valley.	The Wasatch Fault is considered overdue for a major earthquake, with a 57% chance of a 6.0M or greater earthquake in the next 50 years.
Extreme Heat	N/A	Summers of 2020, 2021, 2022, 2023, 2024	Reported 9 deaths in Northern Utah, an upward trend in heat exposure and heat-related deaths since 2015. Excessive heat can also affect infrastructure.	Specific impacts on Cottonwood Heights were not available, but general impacts include increased risk for heat-related illness and increased power demand for cooling systems.
Extreme Cold	N/A	Winter of 2022 & 2023	2022: 5 people experiencing homelessness died from cold-related exposure in Salt Lake City, but this threat could impact neighboring jurisdictions.	Specific impacts on Cottonwood Heights were not available but extreme cold can contribute to hypothermia and other cold-related illness/injury. Increased demand for heating systems. Potential for frozen pipes or other service disruptions.

DRAFT

Type of Hazard Event	FEMA Disaster #	Date(s)	Damage or Impacts	Description
Flooding[1]	N/A	August 1, 2021	Flash flooding caused around $2,000 in damage.	
Radon	N/A	Radon is present in the soils.	The specific impacts of radon in the area are not known (i.e., exact count of illnesses known to be caused by radon), but test results have indicated elevated radon levels in the area. 46% of households in Cottonwood Heights have radon test results at or above WHO's mitigation threshold.	As shown in Figures 147 and 148 in Volume 1, average radon test results in the Cottonwood Heights area have indicated elevated radon levels
High Wind	N/A	September 8, 2020	Extensive damage in neighborhoods with downed trees, debris in roads, and home damage. Unknown total damage, minor impacts on houses and yards to include downed trees. Reported partial damage estimates $45,525	Salt Lake County and surrounding areas experienced a severe windstorm with winds exceeding 100 mph in some areas. The impact was experienced in Cottonwood Heights mainly on the upper east bench of the city. Downed trees and tree limbs cause minor damage to residences and fences. No persons were displaced. City Public Works Crews responded to assist with debris removal.
Severe Winter Weather	N/A	N/A	N/A	There have been some significant winter storms but no major damage associated.
Public Health Epidemic/ Pandemic	DR-4525-UT	January 20, 2020 – May 11, 2023	The COVID-19 pandemic struck the United States in early 2020. The city of Cottonwood Heights suffered the same effects as cities across the US. The city responded by instituting changes to city staff schedules, which resulted in diminished	SARS-CoV-2 (also known as COVID-19) was responsible for a pandemic that killed millions and has many medical repercussions that are still being studied. There is no specific data on Cottonwood Heights residents who were affected medically or otherwise. The COVID virus infected countless residents of

[1] National Centers for Environmental Information "Storm Events Database" https://www.ncdc.noaa.gov/stormevents/.

DRAFT

Type of Hazard Event	FEMA Disaster #	Date(s)	Damage or Impacts	Description
			levels of service to residents.	Cottonwood Heights. The pandemic was felt across the city.
Civil Disturbance		8/2/2020	An estimated 130–150 civilians conducted an illegal march on residential roadways in the Mill Hollow Subdivision. Protesters occupied the roadway, disrupting traffic and causing a breach of the peace in a residential neighborhood.	Protestors met in a local park.to rally against police violence. At the conclusion of the event in the park, protestors marched on public roads in violation of city and state statutes. Police warned the protestors that continued violations would result in arrests. Protestors attacked police officers, resulting in a physical confrontation. Officers from surrounding jurisdictions responded to assist in stabilizing the situation.

National Flood Insurance Program Summary

The city of Cottonwood Heights participates in the National Flood Insurance Program (NFIP). Table 6 displays statistics related to the NFIP. The city of Cottonwood Heights does not participate in the Community Rating System (CRS).

Table 6: National Flood Insurance Program Status for the City of Cottonwood Heights[2]

Init FHBM Identified	Init FIRM Identified	Current Effective Map Date	Adopted Date	Date Joined NFIP	Tribal
8/30/77	12/18/85	9/25/09	2009	9/16/09	No

Table 7: National Flood Insurance Overview for the City of Cottonwood Heights

Community ID	Number of Losses	Total Net Payment	Active Policies	Total Coverage
490028	5	$3,554.26	124	$26,434,000

The city of Cottonwood Heights has designated the Community Development Director as the Floodplain Administrator. The current Flood Damage Prevention Ordinance was adopted in 2022. The current effective maps are dated 9/25/2009. Permits are issued through the permits team, including contract support. As a part of the storm water review checklist, permits are reviewed for their location in relation to

[2] FIRM = Flood Insurance Rate Map, FHBM = Flood Hazard Boundary Map

the floodplain/floodway. Substantial damage/substantial improvement determinations are made through the permitting process. Structures in the Special Flood Hazard Area are then required to come into compliance with current codes.

Jurisdiction-Specific Vulnerabilities and Impacts

Table 8 provides information on the vulnerable assets in the city of Cottonwood Heights, including its critical facilities, highlighting the city's vulnerability to identified hazards. By understanding the risks associated with these assets, local authorities can develop proactive strategies to mitigate vulnerabilities and ensure the safety and functionality of these important assets during hazard events. These data are invaluable for decision-making and prioritizing resources for emergency response and preparedness efforts, ultimately contributing to more effective risk management and greater resilience in the community.

In addition to the 32,984 residents in Cottonwood Heights, vulnerable assets in the city include critical facilities such as 1 EOC, 2 fire stations, 1 police station, and 7 schools. Crestwood Park and Pool, Butler Park, Cottonwood Heights Recreation Center, Old Mill Park, and several other parks provide outdoor recreation opportunities. I-215 runs along the north border of the city. Other major routes include Wasatch Boulevard, Big Cottonwood Canyon Road, Bengal Boulevard, Highland Drive, and Ft. Union Boulevard. Metropolitan Water District and Granite Hydroelectric Power Plant are critical infrastructure assets. The Granite Hydroelectric Plant is also a historical site. Other historic sites include Cottonwood Paper Mill, Butler School Teachers Dormitory, and the Alvin and Annie Green House. Outdoor recreation is significant to Cottonwood Heights, and the city includes access routes to major ski resorts, trailheads, and other amenities.

Table 8: Jurisdiction-Specific Vulnerabilities and Impacts in the City of Cottonwood Heights

Hazard	Vulnerable Assets	Description of Vulnerabilities and Impacts
Avalanche	People	*Vulnerability:* Residents and visitors in Cottonwood Heights who venture into the Wasatch foothills for skiing, snowboarding, or hiking are at risk during avalanche season. Homeowners living near steep slopes or canyon roads also face elevated risk, especially after heavy snowfall and rapid temperature changes. *Impacts:* Avalanche can injure or kill those caught in their path. Individuals unfamiliar with avalanche safety, who lack proper training or gear, may underestimate the danger in backcountry areas.
	Structures	*Vulnerability:* Homes and buildings near Little Cottonwood Canyon and other steep areas may be impacted by avalanches. Structures located at the base of slopes or in natural snow runout zones are more vulnerable. Poor slope management or deforestation can further increase the risk to development in these zones. *Impacts:* Structures may lack reinforcement to withstand the impact of heavy snow and may receive extensive damage.
	Economic Assets	*Vulnerability:* Tourism, recreation, and other businesses near foothills are vulnerable to avalanche activity. *Impacts:* Avalanche activity can close major routes like SR-210, disrupting tourism and commuting for local businesses. Resorts,

Hazard	Vulnerable Assets	Description of Vulnerabilities and Impacts
		outdoor gear retailers, and lodging facilities may experience financial losses during prolonged closures or dangerous conditions. Infrastructure repair and emergency services also incur additional costs during severe snow events.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Ecosystems, trails, historic structures are vulnerable to avalanches. *Impacts:* Snow slides can damage forest ecosystems, strip vegetation, and lead to erosion. Trails, scenic routes, and wildlife corridors near the canyons may be affected. Cultural or historic landmarks located near avalanche-prone areas may have access and structural integrity compromised.
	Critical Facilities and Infrastructure	*Vulnerability:* Power lines, the water treatment facility, and roads are vulnerable to avalanches. *Impacts:* Power lines and roads through canyon corridors may be damaged or temporarily shut down during avalanche incidents. Utility disruptions and blocked access routes can limit emergency response and affect the city's connectivity to nearby regions.
	Community Activities	*Vulnerability:* Outdoor recreation and commuting are vulnerable to avalanche risks. *Impacts:* Winter sports events and outdoor recreation in Cottonwood Heights may be canceled or delayed due to avalanche risk. Trail closures or restricted access to canyons can reduce participation in seasonal activities and place stress on emergency services during rescues or evacuations. Closures of Little Cottonwood Canyon Road could back up traffic into the city and contribute to delays.
Drought	People	*Vulnerability:* All Cottonwood Heights residents are vulnerable to drought conditions. *Impacts:* During prolonged dry periods, residents of Cottonwood Heights may face water use restrictions. Vulnerable populations, including seniors, families with limited income, and those relying on local agriculture, are particularly impacted by increased water costs and reduced supply. High temperatures during drought can also worsen air quality and increase heat-related illness risks.
	Structures	*Vulnerability:* All properties and structures in Cottonwood Heights are vulnerable to drought impacts. *Impacts:* Shrinking soil due to drought can cause foundations to shift or crack. Landscaping that requires high water usage may die off, affecting curb appeal and property value. New construction may be limited by water availability and conservation policies.
	Economic Assets	*Vulnerability:* Many businesses, particularly those in landscaping and recreation, are vulnerable to drought conditions. *Impacts:* Businesses relying on outdoor aesthetics, such as landscaping, nurseries, or recreation centers, may face revenue losses during drought. Water rate increases can strain small business budgets. Declines in tourism and event participation may affect local income during especially hot and dry seasons.
	Natural, Historic, and	*Vulnerability:* Local parks, natural trails, and native plant species are vulnerable to drought conditions. Historic sites and cultural events are also vulnerable.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerabilities and Impacts
	Cultural Resources	*Impacts:* Ecosystems can suffer during drought, reducing habitat availability and increasing wildfire risk. Historic sites with landscaping or water-dependent features may face deterioration. Cultural events requiring outdoor settings may be postponed or canceled due to fire restrictions or heat advisories.
	Critical Facilities and Infrastructure	*Vulnerability:* Water systems, sanitation, healthcare, and fire response are vulnerable to drought impacts. *Impacts:* Reduced water availability may strain Cottonwood Heights' infrastructure, particularly for emergency response, healthcare, and sanitation services. Fire departments may face challenges managing wildfires with limited water resources. Water treatment and supply systems must adapt to fluctuating demand and conservation requirements.
	Community Activities	*Vulnerability:* Outdoor recreation is vulnerable to drought conditions. *Impacts:* Outdoor recreational areas may be closed or restricted due to water shortages or fire danger. Pools and splash pads may operate on reduced schedules, and residents may encounter limits on lawn irrigation or garden use. Community events held in parks or open spaces could see decreased attendance during high heat and low-water conditions.
Earthquake	People	*Vulnerability*: With Cottonwood Heights located near the Wasatch Fault, earthquake risks are a pressing concern. All residents are vulnerable; however, residents in older homes or unreinforced masonry structures are at heightened risk. *Impacts:* A major earthquake could have significant impacts on all residents. Some may be injured or killed by falling objects or collapsed structures. Essential services and community lifelines may be disrupted. People may be displaced from their homes and need public shelter. Businesses may close and lost wages may cause financial hardship. Those without emergency plans or resources may struggle to evacuate or recover after a major seismic event.
	Structures	*Vulnerability:* All structures are vulnerable. Buildings constructed before modern seismic codes are more likely to suffer damage during a quake. Soft soils and slope-side construction further increase the potential for structural instability. Areas along the southwest border of the city have moderate liquefaction potential, which poses additional risk to structures. *Impacts:* Ground shaking can cause significant structural damage that may require extensive, costly repairs. Homes and businesses are likely to be damaged.
	Economic Assets	*Vulnerability:* All businesses in Cottonwood Heights are vulnerable to earthquake impacts. *Impacts:* Commercial districts, schools, and medical centers may experience serious disruption if earthquake damage renders buildings unusable. Retail and service-based businesses in Cottonwood Heights may close temporarily or permanently depending on the extent of the damage. Damage to roads or other infrastructure may further inhibit businesses from opening. Economic disruption from a major earthquake could result in years of recovery.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerabilities and Impacts
	Natural, Historic, and Cultural Resources	*Vulnerability:* Trails, parks, historic buildings, and community centers are vulnerable to earthquake impacts. *Impacts:* Landslides triggered by earthquakes may damage local trails, park areas, and canyon routes. Historic buildings that are without retrofitting are particularly vulnerable to structural collapse. Community centers or culturally significant buildings may be lost or closed for extended periods after a quake.
	Critical Facilities and Infrastructure	*Vulnerability:* Water lines, power systems, and road networks are vulnerable to earthquake impacts. *Impacts:* Utilities and infrastructure systems may be severely impacted by shaking. Bridges or overpasses leading in and out of the city could become impassable. Emergency response facilities that have not been seismically reinforced may be temporarily offline during critical periods.
	Community Activities	*Vulnerability:* School events, festivals, and public gatherings are vulnerable to earthquake impacts. *Impacts:* Outdoor events may be affected by damage to venues and transportation networks. The community may face long-term displacement or restricted access to recreational spaces as recovery efforts are underway.
Extreme Heat	People	*Vulnerability:* All Cottonwood Heights residents are vulnerable, but some populations are at higher risk. *Impacts:* Extreme heat can cause illness such as dehydration, heat exhaustion, or heat stroke, which can be deadly. Extreme heat events in Cottonwood Heights pose the highest risk to elderly residents, individuals with chronic health conditions, and low-income households without air conditioning. Children and outdoor workers are also at greater risk of heat-related illnesses. Extended heatwaves may increase emergency room visits and reduce productivity for those working outside. Low-income residents may face hardship from increased energy costs for cooling.
	Structures	*Vulnerability:* All structures in Cottonwood Heights are vulnerable to extreme heat impacts. *Impacts:* Buildings lacking proper insulation or reflective materials retain heat, driving up cooling costs. Urban heat island effects may be intensified in areas with limited green cover or exposed asphalt surfaces. Heating, ventilation, and air conditioning (HVAC) systems may become overworked, leading to malfunctions.
	Economic Assets	*Vulnerability:* All businesses are vulnerable to extreme heat impacts. *Impacts:* Increased demand for electricity can strain the energy grid, leading to blackouts or surges, which can disrupt business operations. Outdoor-based businesses and summer recreation programs may see declining participation. Water use restrictions and high temperatures may also impact gardening, agriculture, and landscaping businesses.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Environment, parks, and historic buildings are vulnerable to extreme heat impacts. *Impacts:* Wildlife and plant life may suffer from water scarcity and habitat stress. Historic buildings exposed to prolonged heat may experience material deterioration, such as fading, cracking, or

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerabilities and Impacts
		warping. Community parks may require more maintenance or face partial closures due to heat exposure.
	Critical Facilities and Infrastructure	*Vulnerability:* Healthcare and community centers are vulnerable to extreme heat impacts. *Impacts:* Healthcare facilities may see a rise in patients with heatstroke or dehydration. Schools, libraries, and other cooling shelters may become overcrowded during major heat events. Electricity infrastructure may falter under excessive demand.
	Community Activities	*Vulnerability:* Recreation and outdoor events are vulnerable to extreme heat impacts. *Impacts:* Summer events, sports leagues, and markets may need to shift schedules or provide additional cooling resources. Participation in outdoor programs may decline, especially during peak afternoon hours.
Extreme Cold	People	*Vulnerability:* Extreme cold affects the entire city, and all residents are vulnerable. *Impacts:* Cold weather poses health risks such as hypothermia or frostbite. Particularly vulnerable groups include seniors, children, and unhoused individuals in Cottonwood Heights, especially during sudden temperature drops. Residents relying on electric heating may be at risk if power outages occur. Individuals without winter gear or reliable transportation may face isolation or cold-related illness.
	Structures	*Vulnerability:* All structures are vulnerable to extreme cold impacts. Older homes may be more vulnerable. *Impacts:* Older homes or those with poor insulation are prone to burst pipes, frozen water lines, and indoor temperature drops. Prolonged cold can strain heating systems, and heavy snow accumulation can threaten the integrity of roofs on homes and garages.
	Economic Assets	*Vulnerability:* Businesses throughout the city are vulnerable to extreme cold impacts. *Impacts:* Retail activity and construction may slow significantly during deep freezes. Cold temperatures increase heating costs for homes and businesses. Damaged plumbing and HVAC systems can lead to expensive emergency repairs.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Vegetation, parks, and historic buildings are vulnerable to extreme cold impacts. *Impacts:* Cold and ice may damage trees, shrubs, and garden beds in city parks. If accompanied by heavy snow, branches may break under the load. Historic buildings may experience frost damage or roof collapse under snow weight. Community spaces like amphitheaters may remain unused until the weather improves.
	Critical Facilities and Infrastructure	*Vulnerability:* All city facilities and utilities are vulnerable to extreme cold impacts. *Impacts:* Frozen pipes at schools, clinics, or municipal buildings can disrupt services. Icy conditions may lead to vehicle accidents and impede public transit. Power and gas lines are vulnerable during freezing weather, impacting reliability.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerabilities and Impacts
	Community Activities	*Vulnerability:* Community events are vulnerable to extreme cold impacts. *Impacts:* Outdoor winter events may be canceled or postponed. Extreme cold may reduce attendance at recreational facilities and discourage participation in seasonal sports. Road closures or icy sidewalks can prevent residents from accessing key services or community resources.
Flooding (and Heavy Rain)	People	*Vulnerability:* Flooding primarily affects residents in low-lying areas near rivers and streams, especially during heavy rainfall or snowmelt. For Cottonwood Heights, this includes flood hazard areas along Big and Little Cottonwood Creek. *Impacts:* Individuals without reliable transportation may struggle to evacuate quickly, while low-income families often lack resources for flood-prevention measures. The elderly and those with disabilities may face mobility challenges, increasing their risk during emergencies. Overall, factors such as geographic location, economic status, and physical ability contribute to the community's varying levels of vulnerability to flooding.
	Structures	*Vulnerability:* Structures vulnerable to flooding primarily include those in low-lying areas or near Big and Little Cottonwood Creek. *Impacts:* Residential properties in flood plains and commercial buildings without proper drainage systems or flood-resistant designs face significant risks during heavy rain or snowmelt. Older structures may be more susceptible due to outdated construction standards. Overall, a combination of location and construction features contributes to their vulnerability to flooding.
	Economic Assets	*Vulnerability:* Commercial properties, especially retail centers and warehouses near rivers or low-lying areas, are at high risk during heavy rainfall or rapid snow runoff. *Vulnerability:* Businesses can have structures or inventory damaged by flooding. Residential developments in flood-prone zones can also suffer damage, impacting property values. Public infrastructure, such as roads and utilities, may experience disruptions, leading to costly repairs. Agricultural land can be affected by excess water, reducing crop yields.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Natural areas, parks, and historic structures are vulnerable to flooding impacts. *Impacts:* Natural areas like wetlands and streams are at risk of habitat destruction, while historic sites and landmarks may sustain structural damage. Cultural resources, such as parks and public spaces, can become unusable, affecting community events. Factors contributing to their vulnerability include inadequate flood management, urban development that alters water flow, and the increasing frequency of extreme weather events due to climate change.
	Critical Facilities and Infrastructure	*Vulnerability:* Healthcare facilities, schools, and transportation networks are vulnerable to flooding due to their proximity to rivers and low-lying areas. *Impacts:* Rivers can overflow during heavy rain or snowmelt. Flooding can disrupt emergency services, require schools to evacuate, block transportation routes, and isolate communities. In addition, inadequate

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerabilities and Impacts
		drainage systems and urban development encroaching on floodplains increase these risks.
	Community Activities	*Vulnerability:* Outdoor events and recreation are vulnerable to flooding impacts. *Impacts:* Due to the area's geography and infrastructure, outdoor events, sports, and farmers' markets are vulnerable to flooding. Parks and open spaces can quickly become inundated during heavy rainfall or rapid snowmelt. Residential neighborhoods near rivers, roads, and bridges are at risk of flash floods, which can disrupt transportation and emergency services.
Landslide/ Slope Failure	People	*Vulnerability:* Residents living along the steep foothills of the Wasatch Mountains in Cottonwood Heights are particularly susceptible to landslides and slope failures. *Impacts:* The city's location between Big and Little Cottonwood Canyons places many homes near unstable slopes, where rapid snowmelt or intense rainfall can saturate soils and trigger ground movement. Older homes constructed before modern geotechnical standards may lack the structural resilience needed to withstand such events. Additionally, limited public awareness about early warning signs can delay evacuation or mitigation efforts.
	Structures	*Vulnerability*: Buildings situated on or near steep inclines, primarily on the east side of the city, are vulnerable to landslides and slope failures. Those lacking proper drainage systems or built on unstable geological formations face heightened risks. *Impacts:* The combination of Cottonwood Heights' sloped terrain and seasonal precipitation increases the likelihood of soil saturation, which can undermine foundations and lead to structural damage. Infrastructure such as roads and bridges, particularly those near canyon mouths or on hillsides, is also vulnerable to erosion and collapse during slope failures.
	Economic Assets	*Vulnerability:* Businesses near slopes are vulnerable to damage and disruptions from landslides. *Impacts:* The economic implications of landslides in Cottonwood Heights are significant. Landslides can damage businesses directly and can also cause losses through impacts on infrastructure. Disruptions to transportation routes, like State Routes 190 and 210, can impede commerce and daily commutes. Damage to residential properties can lead to decreased property values and increased insurance premiums. Utility services, including water and power lines that traverse hilly areas, are at risk of damage, leading to costly repairs and service interruptions.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Landslides can have detrimental effects on the natural environment, destroying vegetation and wildlife habitats. *Impacts:* Sediment runoff into waterways can degrade water quality, affecting both ecosystems and human water sources. Historic sites, such as the Granite Hydroelectric Power Plant Historic District, may be threatened by soil movement and erosion, jeopardizing their structural integrity and cultural significance.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerabilities and Impacts
	Critical Facilities and Infrastructure	*Vulnerability:* No facilities were identified in landslide-susceptible areas. However, transportation and utilities are vulnerable, which indirectly disrupts critical facility services. *Impacts:* Essential services in Cottonwood Heights, including emergency response centers, schools, and healthcare facilities, may be compromised if access routes are blocked by landslides. Power and water infrastructure located on or near unstable slopes are susceptible to damage, potentially leading to extended service outages. The city's reliance on canyon roads for connectivity underscores the importance of maintaining slope stability to ensure uninterrupted access to critical services.
	Community Activities	*Vulnerability:* Community engagement in outdoor activities, such as hiking and biking on the city's numerous trails, can be impacted by landslide risks. *Impacts:* Trail closures due to slope instability not only affect recreational opportunities but also local tourism and associated economic benefits. Furthermore, community events held in parks or open spaces near vulnerable slopes may require contingency planning to ensure public safety during periods of increased landslide risk.
Radon	People	*Vulnerability:* According to utahradon.org, 46% of homes tested in Cottonwood Heights have dangerous levels of radon. *Impacts:* Radon is the leading cause of lung cancer in nonsmokers. Those with prolonged exposure to elevated radon levels are at risk for cancer. In Cottonwood Heights, residents in older homes built over radon-prone soils are more likely to be affected by radon exposure. Families with young children and older adults are especially vulnerable due to their heightened sensitivity to long-term respiratory health risks.
	Structures	*Vulnerability:* Buildings with basements or slab-on-grade foundations are at a higher risk of radon infiltration, especially those with cracks in flooring or foundation walls. *Impacts:* Radon does not directly affect structures, but weaknesses or cracks within structures can place occupants at greater risk for health impacts. Older homes without updated ventilation systems are particularly susceptible in this part of the Salt Lake Valley, where naturally occurring uranium in the underlying geology increases radon presence.
	Economic Assets	*Vulnerability:* Residential and commercial property values are vulnerable to radon impacts. *Impacts:* Properties in Cottonwood Heights may experience lower market value and increased maintenance costs due to radon remediation needs. Real estate transactions can be delayed or disrupted when radon is detected, and rental units may require costly mitigation to meet tenant safety expectations.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Radon may accumulate in subsurface soils and aquifers near Cottonwood Heights, particularly around older stone or concrete structures. Local landmarks or cultural buildings made of porous materials could retain radon. *Impacts:* Accumulation in older structures increases risk from long-term exposure for staff, residents, or visitors.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerabilities and Impacts
	Critical Facilities and Infrastructure	*Vulnerability:* Public buildings such as schools, clinics, and government offices may be vulnerable if built in radon-affected areas and not equipped with proper ventilation. *Impacts:* Radon can accumulate in public facilities with basements or slab on grade foundations and employees, students, or other occupants can be exposed to radon. Facilities with basements, like emergency operation centers, may require routine radon testing and mitigation to remain safe.
	Community Activities	*Vulnerability:* Indoor activities held in basements or poorly ventilated spaces are more likely to expose participants to radon. *Impacts:* Schools, daycares, and community centers in Cottonwood Heights could be exposed to dangerous levels of radon and facilities should consider regular testing to protect young children and staff.
High Wind	People	*Vulnerability:* High wind can occur anywhere in the city, and all residents are vulnerable. *Impacts:* Wind can cause injury or death to people hit by falling trees, blowing debris, or falling roofs or walls. Older adults, individuals with mobility limitations, and outdoor workers in Cottonwood Heights face elevated risk from wind-related hazards. Sudden gusts, especially in exposed areas or near open spaces, can lead to injuries or prevent timely access to safe shelter.
	Structures	*Vulnerability:* All structures in the city are vulnerable to high wind impacts. *Impacts:* High wind can damage roofs, shatter windows, uproot trees and cause extensive damage. Flat-roofed homes, unreinforced garages, and large commercial buildings with expansive glass windows are particularly at risk during high wind events. In Cottonwood Heights, homes in less sheltered locations or lacking wind-resistant design elements may experience roofing and siding damage.
	Economic Assets	*Vulnerability:* All businesses are at risk of high winds. *Impacts:* Retail centers and service-oriented businesses can suffer from broken windows, damaged signs, and temporary closures. Power outages from fallen lines may disrupt operations across multiple sectors, while costs for repairs and insurance claims rise significantly after windstorms.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Trees, parks, habitats, and historic buildings are vulnerable to high wind impacts. *Impacts:* Strong winds can topple mature trees along trails and parks in Cottonwood Heights, degrading habitats and increasing fire risks. Older landmarks or stone structures not built to modern standards are especially vulnerable to exterior damage.
	Critical Facilities and Infrastructure	*Vulnerability:* Windstorms may damage power poles, communications towers, traffic signals, and public facilities across the city. *Impacts:* Damage to power lines, communication towers, and traffic signals can cause disruptions to emergency services, businesses and other activities throughout the community. Schools, fire stations, and other public buildings could also suffer if not designed with structural reinforcements, impacting emergency response capacity.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerabilities and Impacts
	Community Activities	*Vulnerability:* Outdoor events and recreation activities are vulnerable to high wind impacts. *Impacts:* Public events held in open spaces, such as farmers' markets or school sports, are easily disrupted or canceled due to high winds. Portable shelters and equipment are especially vulnerable, posing injury risks if not secured properly.
Lightning	People	*Vulnerability:* Lightning presents a serious risk throughout Cottonwood Heights, particularly during summer thunderstorms. All residents are potentially vulnerable. Some populations may be at higher risk. *Impacts:* Lightning can cause injury or death to those in close proximity to a strike. Outdoor workers may not be able to reach shelter from lightning. Outdoor recreational users, such as trail hikers and cyclists in areas like Ferguson Canyon or Big Cottonwood Canyon, are at elevated risk during thunderstorms. Children at playgrounds or residents in open parks may lack the time or access to seek shelter quickly.
	Structures	*Vulnerability:* All structures are vulnerable to lightning. *Impacts:* Lightning can cause fire or damage to electrical systems. Structures with tall or exposed profiles, including communication towers and older barns, are at increased risk of lightning strikes. Homes near large trees may also be affected if a strike transfers energy through root systems or branches into nearby buildings.
	Economic Assets	*Vulnerability:* All businesses are vulnerable to lightning. *Impacts:* Critical equipment in data centers, retail stores, and manufacturing facilities can be damaged by power surges. Businesses may be unable to operate if power or other systems are not functional. Local infrastructure supporting tourism and outdoor activity can face temporary shutdowns due to safety hazards and inspection needs.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Lightning poses a wildfire risk. Historic buildings and outdoor installations are vulnerable to lightning. *Impacts:* Lightning poses a fire risk to forests and trails surrounding Cottonwood Heights and can damage historic homes or outdoor art installations if strikes occur. Community features such as pavilions and statues are also vulnerable without grounding systems.
	Critical Facilities and Infrastructure	*Vulnerability:* City facilities and healthcare facilities are vulnerable to lightning. *Impacts:* Public buildings like schools and clinics need adequate lightning protection to reduce the risk of power loss or fire. Lightning-related disruptions to power and communication systems may delay emergency response or affect citywide operations.
	Community Activities	*Vulnerability:* Outdoor events and recreation activities are vulnerable to lightning. *Impacts:* Summer events at local parks, outdoor concerts, and youth sports games may face cancellations due to lightning risk. Limited shelter options at recreational areas increase safety concerns, particularly during rapidly developing storms.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerabilities and Impacts
Severe Winter Weather	People	*Vulnerability:* Severe winter weather can occur throughout the city, so all residents are vulnerable. Some populations may be at increased risk. *Impacts:* Cottonwood Heights residents can be injured from slips and falls, or have health impacts from prolonged exposure to cold. People can be injured in car accidents while driving in severe winter weather conditions. The elderly or those with health conditions may struggle to stay warm or move safely during snowstorms. Individuals with limited access to transportation or those experiencing housing insecurity face increased hardship.
	Structures	*Vulnerability:* Older homes or weakened structures are vulnerable to severe winter weather. *Impacts:* Heavy snow accumulation on flat roofs can lead to structural strain or collapse, especially in older homes or commercial buildings. Ice dams from poor insulation or roof ventilation are a common concern, leading to water damage and long-term maintenance costs.
	Economic Assets	*Vulnerability:* All businesses are vulnerable to severe winter weather. *Impacts:* Storms can delay construction and logistics operations, while local shops and restaurants may experience customer shortages due to travel difficulties. Commutes may be delayed and impact worker productivity. Higher utility costs during extreme cold also increase operating expenses for many businesses.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Parks, trees, and historic buildings are vulnerable to severe winter weather. *Impacts:* Heavy snow and ice may damage trees and shrubs in community parks, affecting ecosystems and increasing debris cleanup needs. Older historic buildings may not be equipped to handle snow loads, risking deterioration or permanent damage.
	Critical Facilities and Infrastructure	*Vulnerability:* Transportation networks and utilities are vulnerable to severe winter weather. *Impacts:* Snow and ice can render key transportation corridors like Fort Union Boulevard and Wasatch Boulevard impassable, delaying emergency services. Utilities may also be impacted by frozen lines or fallen trees, affecting heating and communication systems.
	Community Activities	*Vulnerabilities:* Community events, schools, and commuting are vulnerable to severe winter weather. *Impacts:* Local events and city programs may be postponed due to impassable roads or unsafe venues. School closures and limited access to community centers can disrupt routines and isolate vulnerable populations.
Tornado	People	*Vulnerability:* Although tornadoes are rare in Cottonwood Heights, they can occur in the city, and all residents are vulnerable. *Impacts:* Tornadoes can cause serious injury or death to those caught in collapsed structures or struck by debris. Residents in older homes or mobile structures are most vulnerable as these are less able to withstand strong winds. Those with limited mobility, including seniors and people with disabilities, may have difficulty accessing safe shelter quickly during a warning.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerabilities and Impacts
	Structures	*Vulnerability:* All buildings can be damaged by a tornado. *Impacts:* Buildings not designed to withstand high winds, particularly older or lightweight structures, face higher damage risk. Roofs, garage doors, and large glass windows are especially susceptible during wind events, even from less intense tornadoes or strong microbursts.
	Economic Assets	*Vulnerability:* All businesses are vulnerable to tornadoes. *Impacts:* Businesses may face direct losses if in the path of the tornado. They can also experience indirect losses due to infrastructure disruptions. Power outages and structural damage can lead to lost revenue for local businesses. Transportation disruptions may affect commerce and deliveries, while damaged homes and infrastructure can generate long-term financial burdens for residents and city services.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Trees, parks, and historic markers are vulnerable to tornadoes. *Impacts:* Tornado-strength winds can uproot trees in natural areas and parks, leading to erosion or trail closures. Cultural assets like sculptures, historic markers, and open-air pavilions may also suffer irreparable damage.
	Critical Facilities and Infrastructure	*Vulnerabilities:* Schools, clinics, and public buildings are vulnerable to tornadoes.. *Impacts:* Essential buildings like schools and clinics that were not built to current wind-resistance codes may be compromised. Tornado-related damage to power lines, water systems, and communication hubs could disrupt emergency response and recovery operations.
	Community Activities	*Vulnerability:* Outdoor events are vulnerable to tornadoes. *Impacts:* Outdoor gatherings and seasonal events are highly vulnerable to unexpected tornado conditions or strong wind events. Tents, staging equipment, and bleachers used for local sports or performances pose risks if not properly secured.
Wildfire	People	*Vulnerability:* The eastern side of the city borders undeveloped, forested land. Potentially hundreds of homes and residents are in proximity to areas vulnerable to wildfire. *Impacts:* Residents near the wildland–urban interface (WUI), individuals with physical disabilities or health issues who may struggle to evacuate, and low-income families lacking resources for fire safety measures may be vulnerable. Older adults might have reduced mobility, making them more dependent on others for assistance. All residents can be affected by poor air quality from wildfire smoke.
	Structures	*Vulnerability:* All homes, businesses, and other structures in Cottonwood Heights near the WUI are vulnerable, particularly east of Wasatch Boulevard and near the mouth of Little Cottonwood Canyon. *Impacts:* Residential properties near wildland areas are at high risk, especially if they lack defensible space and fire-resistant landscaping or are made of easily flammable materials. Properties near the WUI are at higher risk due to surrounding flammable vegetation. Inadequate defensible space, such as insufficient clearing of dry grass and shrubs, increases susceptibility. Roofs made of combustible

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerabilities and Impacts
		materials and buildings that lack fire-resistant features are particularly at risk during wildfire events.
	Economic Assets	*Vulnerability:* Businesses on or near the benches are most vulnerable. *Impacts:* Commercial assets, such as retail centers close to forested regions, can suffer damage from flames and smoke, affecting the local economy. Agricultural lands are also susceptible, as wildfires can destroy crops and livestock, leading to financial losses. Vital infrastructure, such as power lines and water pipelines, can be disrupted, causing further economic repercussions. These vulnerabilities are heightened by dry conditions and high winds, which can facilitate the spread of fires.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Natural environment and historic sites are vulnerable to wildfire. *Impacts:* Natural resources like forests and grasslands are at risk because dry vegetation and accumulated brush can easily ignite. Waterways such as Big and Little Cottonwood Creek can be affected by increased runoff and erosion. Historic sites made of wood and cultural landmarks also can be affected, particularly when located near wildland areas. The increasing frequency of drought and extreme heat, exacerbated by climate change, heightens these vulnerabilities. In addition, urban development encroaching on wildland areas increases the risk to these essential resources.
	Critical Facilities and Infrastructure	*Vulnerability:* Transportation, utilities, and emergency response are vulnerable to wildfire. Fire Station 116 is within a short distance of the WUI. *Impacts:* Wildfire can place a strain on emergency responders. Evacuations can clog roads and may disrupt transportation throughout the city. Utilities like power lines and gas pipelines are also at risk, as sparks or falling trees can ignite fires. Water treatment facilities at the base of the canyons may be affected. Residential neighborhoods adjacent to natural landscapes are particularly susceptible to embers, making them vulnerable during dry conditions and high winds.
	Community Activities	*Vulnerability:* Outdoor events and recreation activities are vulnerable to wildfire. *Impacts:* Outdoor events like festivals and sports, especially during hot, windy conditions, may experience risk. Recreational activities, such as hiking and camping near wooded areas, also pose risks from open flames or sparks. In addition, landscaping with dry grasses and shrubs increases susceptibility during fire season, putting local infrastructure, such as schools and neighborhoods, at risk.
Dam Failure	People	*Vulnerability:* Residents of Cottonwood Heights could be affected by a dam failure from several dams upstream of the city. A failure of Twin Lakes and Lake Mary-Phoebe dams would affect areas along Big Cottonwood Creek in the northeast corner of the city. Failure of White Pine or Red Pine, or Sandy–Willow Creek dams would affect areas along Little Cottonwood Creek near the southern and eastern side of the city. Residents living downhill from key water retention structures face increased danger in the event of a dam breach. Those living in the lower elevations near Big Cottonwood Creek are especially at risk.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerabilities and Impacts
		Impacts: Dam failure can create dangerous conditions where fast-moving waters can injure or sweep away people. Individuals who may have limited mobility could struggle with timely evacuation, particularly if flooding occurs rapidly. Households with limited financial resources may lack access to transportation or emergency planning resources, heightening their vulnerability during a fast-moving flood emergency. Homes could be damaged, leaving residents displaced.
	Structures	*Vulnerability:* In Cottonwood Heights, homes located along the foothills and near stream corridors could suffer severe damage if a dam-related failure caused a downstream surge. *Impacts:* Critical structures such as Fort Union Boulevard bridges, nearby schools, and healthcare offices located near water channels could be exposed to inundation or indirect impacts. Older infrastructure that predates modern safety standards or floodplain management may be more susceptible to structural failure or flood damage. A lack of robust flood alert systems or limited spillway capacity upstream could amplify these risks.
	Economic Assets	*Vulnerability:* A dam failure could cause widespread impacts to Cottonwood Heights' transportation and utility systems. *Impacts:* Roads like Wasatch Boulevard and Highland Drive could experience closures or damage, disrupting business operations and commutes. Commercial zones near lower elevations, including the Fort Union area, could suffer property losses, temporary closures, and costly cleanup efforts. While the city doesn't rely on agricultural production, landscaping businesses, irrigation-dependent parks, and water-reliant services may experience significant disruptions.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Streamside habitats and greenways, including areas along Big Cottonwood Creek, may be washed out or degraded by sudden floodwaters. *Impacts:* A dam breach could lead to sediment deposition and erosion that threaten riparian ecosystems. Historic irrigation features or early infrastructure linked to the city's settlement era could be damaged, along with public parks or gathering areas that are vital to the community's identity and recreation. Trails and other recreation amenities could be damaged.
	Critical Facilities and Infrastructure	*Vulnerability:* Essential services such as water and transportation networks are vulnerable to dam failure. Cottonwood Heights could be affected by water supply interruptions or direct flood damage. *Impacts:* Failure involving upstream dams could disrupt flows to water treatment facilities or damage pipelines serving neighborhoods throughout the city. Critical response times could be delayed if bridges or main thoroughfares are blocked, further stressing emergency responders.
	Community Activities	*Vulnerability:* Community events and recreational activities are vulnerable to flood damage from dam failure. *Impacts:* Community events held near parks or green spaces along water corridors, like those in Crestwood Park or Bywater Park, may face cancellation or long-term disruption due to flood damage. Fishing, walking, and biking paths that follow local streams could be rendered unsafe. In addition, if key roads or bridges become impassable,

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerabilities and Impacts
		neighborhood connectivity and emergency access could be compromised, disrupting day-to-day life and local events.
Civil Disturbance	People	Low-income individuals may lack the resources for safety, while the elderly or disabled may struggle to navigate emergencies. Young people, particularly teenagers, may be drawn into unrest, influenced by social dynamics. In addition, marginalized individuals may feel targeted or compelled to participate. A lack of community cohesion and trust in authorities can further heighten tensions.
	Structures	Government buildings, commercial properties, and infrastructure, such as bridges and transportation hubs may be vulnerable. Government buildings may be targeted for their symbolic authority, while retail stores can attract crowds during protests. Residential neighborhoods also can be affected, especially in areas with heightened tensions. The vulnerability of these structures stems from their visibility and importance to the community, combined with factors such as location and ongoing social issues.
	Economic Assets	Retail establishments, especially shopping centers, are at risk as they often become focal points for protests. Transportation systems can be disrupted by blockades, hindering access to services. Financial institutions may face vandalism or theft, while critical service providers, such as hospitals, could experience strain during unrest. Several economic assets are vulnerable to civil disturbances, primarily due to their visibility and reliance on foot traffic.
	Natural, Historic, and Cultural Resources	Parks and open spaces may suffer from vandalism or destruction during uncontrolled events. Historic sites can become targets, as they symbolize authority or cultural significance. Cultural resources, such as community centers and places of worship, also may be affected, as they play a vital role in community identity. Their vulnerability lies in the potential for damage during protests.
	Critical Facilities and Infrastructure	Governmental buildings, schools, and healthcare facilities may be at risk, since they often symbolize authority and serve as community hubs, making them targets during unrest. Utility infrastructure, such as water and power facilities, is also at risk of disruption. Its visibility and essential services contribute to its vulnerability during civil disturbances.
	Community Activities	Public demonstrations, parades, and local government meetings are particularly vulnerable to civil disturbances. These events often attract large crowds and can become tense, especially around contentious social or political issues. Factors such as the local demographic, economic conditions, and recent events can heighten these vulnerabilities, making it easier for conflicts to arise during passionate public gatherings.
Cyberattack	People	Older adults often lack familiarity with technology and online security, making them easy targets for phishing scams. Individuals engaging in online banking or shopping without strong security measures also face heightened risks. Families with children may be less vigilant about internet safety, allowing cybercriminals to exploit personal information. In addition, small business owners without robust cybersecurity practices are prime targets for attacks that can disrupt operations.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerabilities and Impacts
	Structures	Critical infrastructure, such as power plants, water treatment facilities, and transportation systems, often lack robust cybersecurity measures. Commercial businesses, especially financial institutions and healthcare providers, also are at risk due to weaker data protection and employee training. Educational institutions may be vulnerable because of limited funding for cybersecurity and outdated software. Obsolete technology and insufficient training enhance the susceptibility of these structures to cyber threats.
	Economic Assets	Financial institutions, such as banks and credit unions, are at risk of data theft and service disruption. Small and medium-sized businesses often lack robust cybersecurity measures, making them attractive targets. In addition, local government agencies and critical infrastructure, such as water treatment facilities, might have outdated security protocols, posing threats to public safety. The rise of remote work further exacerbates vulnerabilities, as employees accessing networks from home can unintentionally expose systems to risks. Overall, the combination of outdated technology and insufficient cybersecurity practices increases the vulnerability of an area's economic assets.
	Natural, Historic, and Cultural Resources	Natural resources like water management systems and wildlife databases can be compromised, disrupting ecosystems. Historic sites and museums that digitize collections are at risk of losing valuable artifacts and data. In addition, cultural organizations managing events may face threats if their systems lack adequate security. The limited resources of smaller organizations further increase this vulnerability
	Critical Facilities and Infrastructure	Energy and utility services, such as electricity and water systems, which often rely on outdated technology, may be vulnerable. Transportation infrastructure, such as traffic management and public transit, is also at risk due to networked systems. Healthcare facilities that use electronic records and connected medical devices face vulnerabilities that can compromise patient safety.
	Community Activities	Online registration for events, local government services, and educational programs that rely on digital tools may be targeted due to inadequate security measures, outdated software, and insufficient staff training.
Hazardous Materials Incident (Transporta-tion & Fixed Facility)	People	Individuals with pre-existing health conditions, such as respiratory issues, and the elderly are at higher risk due to their compromised health. Children also are more susceptible. Those living near industrial areas or transport routes for hazardous materials face increased exposure risk, while low-income families may lack resources and information to effectively prepare for incidents.
	Structures	Industrial facilities, such as manufacturing plants and warehouses, often store hazardous chemicals which may leak. Residential buildings, schools, and healthcare facilities also are at risk, particularly if located along transportation routes for hazardous materials. Older buildings may lack modern safety features, increasing their vulnerability.
	Economic Assets	Industrial facilities, transportation infrastructure, and nearby commercial properties may be affected. Industrial facilities handling chemicals are at risk of spills or leaks, while roads and railways used

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerabilities and Impacts
		for transporting hazardous materials can lead to accidents and contamination. In addition, nearby commercial and residential areas face potential health risks and economic losses.
	Natural, Historic, and Cultural Resources	Waterways and habitats are vulnerable to hazardous materials incidents, which can disrupt ecosystems. Historic sites and structures may suffer damage from toxic exposure, leading to degradation over time. In addition, cultural landmarks risk losing their significance due to contamination events. The proximity of these resources to industrial areas or transport routes exacerbates their risk.
	Critical Facilities and Infrastructure	Chemical manufacturing plants, waste treatment facilities, and transportation networks, such as highways and railroads, may be at risk. Their vulnerability stems from factors such as proximity to residential areas, aging infrastructure, and inadequate safety measures. Natural hazards, such as flooding and earthquakes, can further increase risks by damaging containment systems.
	Community Activities	Local markets, school events, and outdoor gatherings are vulnerable to hazardous materials incidents if they are near industrial zones and transport corridors. This risk is heightened by inadequate emergency preparedness, lack of public awareness, and the potential for spills during transport. Large crowds at events can complicate evacuation efforts, increasing the risks for participants and nearby residents.
Public Health Epidemic/ Pandemic	People	Individuals with pre-existing health conditions like asthma and heart disease and adults over 65 may be vulnerable. Low-income families may struggle to access healthcare and vaccinations, increasing their risk. Marginalized communities with limited access to information and those living in high-density conditions also are at greater risk due to the rapid spread of diseases and the challenges in implementing preventive measures.
	Structures	Several structures are vulnerable to public health epidemics or pandemics, particularly due to their ability to facilitate the spread of disease. High-density residential areas, such as apartment complexes, are at risk, as close living quarters can lead to faster transmission. Public gathering spaces, such as schools and community centers, also pose significant threats because large groups are in confined spaces. Healthcare facilities can become hotspots for infections if infection control measures are insufficient. In addition, workplaces with high foot traffic, such as retail stores, contribute to vulnerability.
	Economic Assets	Small businesses in retail, hospitality, and food service are particularly vulnerable to public health epidemics or pandemics. These sectors face risks from fluctuating consumer demand and potential operational restrictions. The tourism industry also is affected, as travelers may avoid high-risk areas. Healthcare facilities can become overwhelmed, straining resources and impacting operations. In addition, local supply chains may experience disruptions, leading to shortages and inflation. Overall, the direct effects of illness, along with prolonged shutdowns and consumer hesitance, leave these economic assets exposed to significant downturns.
	Natural, Historic, and	Natural resources like wildlife and ecosystems can be disrupted by increased human activity, raising the risk of zoonotic diseases. Historic sites may deteriorate due to reduced visitor access and funding, while

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerabilities and Impacts
	Cultural Resources	cultural resources, such as community events, face cancelations, impacting social connections.
	Critical Facilities and Infrastructure	Public health epidemic or pandemic incidents can affect healthcare facilities, nursing homes, public transportation systems, schools, and food supply chains. Clinics may become overwhelmed with patients, while vulnerable populations in nursing homes are at higher risk. Public transportation can facilitate the spread of disease, and schools gather large groups, thereby increasing transmission potential. These facilities often lack adequate resources, including medical supplies and testing capabilities, making them more susceptible to the impacts of a health crisis.
	Community Activities	Large gatherings like festivals and sporting events can facilitate the rapid spread of diseases due to close contact. Public transportation also is at risk, as it serves many people in confined spaces. Schools and childcare facilities are particularly susceptible, given that children can easily transmit infections. In addition, food-related events, such as farmers' markets, can pose risks if hygiene practices are not followed. The interconnectedness of community members and varying adherence to health guidelines further exacerbate these vulnerabilities.
Terrorism	People	Young children and newcomers may lack awareness of potential threats, while the elderly and individuals with disabilities may struggle to respond quickly in emergencies. Marginalized communities often face bias, making them more susceptible to targeting. In addition, those with lower socioeconomic status may lack access to security measures and emergency preparedness resources.
	Structures	Government buildings, transportation hubs, commercial centers, and public spaces are particularly vulnerable to terrorism incidents. Government buildings are symbolic targets, while transportation hubs and commercial centers are attractive due to their potential for high casualties and crowd presence. Public spaces also are at risk due to their open nature and lack of security. Their vulnerability is heightened by inadequate security measures, high occupancy rates, and their locations in densely populated areas, which can amplify the impact of incidents.
	Economic Assets	Infrastructure, commercial establishments, and community facilities may be vulnerable. Critical infrastructure, such as transportation networks and power grids, could disrupt the economy if targeted. Commercial establishments, especially those with high foot traffic, and community facilities like schools and hospitals also are at risk, as they can provoke widespread concern and disruption. Their accessibility and interconnectivity increase vulnerability, meaning that damage to one asset can have a broader economic impact and hinder recovery efforts.
	Natural, Historic, and Cultural Resources	Natural resources like water supplies and parks could be targeted for their significance to the community. Historic sites and cultural resources, such as museums or community centers, also are at risk due to their accessibility and importance to local identity. Their vulnerability is often heightened by inadequate security measures.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerabilities and Impacts
	Critical Facilities and Infrastructure	Public transportation systems, healthcare facilities, schools, and utility services like water and power plants may be affected. Their vulnerability arises from high accessibility and the potential impact of an attack, as crowded transportation and public spaces can lead to mass casualties and panic. Attacking utility services could disrupt the town's essential functions, creating chaos.
	Community Activities	Festivals, parades, and sporting events are particularly vulnerable to terrorism incidents. These events attract large crowds, making it easier for perpetrators to inflict harm and instill fear. In addition, community centers and places of worship serve as social hubs, increasing their risk. Factors such as limited security measures and open access to public spaces, contribute to this vulnerability.

Jurisdiction-Specific Changes in Vulnerability

Hazard events can impact communities, infrastructures, and ecosystems. The severity of these impacts can be influenced by climate change, population patterns, and land use developments. Understanding these factors is crucial for the city of Cottonwood Heights to develop a resilient community and minimize the impacts of hazards. Table 9 displays the impacts each identified hazard has had on the city of Cottonwood Heights.

DRAFT

Table 9: Jurisdiction-Specific Changes in Vulnerability in the City of Cottonwood Heights

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
Avalanche	Higher temperatures can lead to more rain, destabilizing snowpack and increasing the risk of wet avalanches. In addition, changes in snowfall can cause denser snow layering on slopes, making them more prone to sliding.	Avalanches can influence population patterns by deterring people from moving to or remaining in high-risk areas, leading to decreased density in these locations. The threat of avalanches prompts many to seek safer environments in urban or lower-risk regions. In addition, when avalanches occur, they can disrupt infrastructure, causing residents to relocate.	The minor development that has occurred in Cottonwood Heights has not impacted avalanche risk in the city.	Decreased
Drought	Climate change affects drought incidents by altering precipitation patterns and increasing temperatures. Warmer weather can lead to longer dry periods and more severe droughts, while changes in rainfall can reduce snowpack in nearby mountains, crucial for summer water supply. Higher temperatures also increase evaporation rates, further straining local water resources.	Drought can significantly influence population patterns by impacting economic opportunities and the quality of life. Water scarcity often leads to reduced agricultural productivity, prompting residents to migrate to areas with more stable job prospects. Increased water costs can make living less affordable, driving some residents away. Conversely, efforts to address drought, such as sustainable development or improved water management, may attract newcomers, resulting in changes in the community's demographic composition over time.	While development, both residential and commercial, in Cottonwood Heights has increased slightly since the previous plan update, this development has not changed drought risk.	Increased
Earthquake	Rising temperatures can lead to glacial melting, which affects pressure on tectonic plates and may trigger	Earthquakes can significantly alter population patterns by prompting residents to leave for safer areas after a seismic event. This	While development, both residential and commercial, in Cottonwood Heights has increased slightly since the	Stayed the same

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	seismic activity through isostatic rebound. In addition, increased rainfall and flooding can erode soils, weakening structural integrity and heightening vulnerability during earthquakes. Although the direct links between climate change and earthquakes are still under investigation, environmental effects may impact the region's seismic risk.	migration can lead to changes in population density and attract new residents and businesses during the rebuilding process. The perception of the area as a safe place to live may shift, impacting long-term demographics, as some residents return to rebuild while others relocate permanently.	previous plan update, this development has not changed earthquake risk.	
Extreme Heat	Climate change significantly impacts extreme heat by increasing the frequency and intensity of heat waves. Rising global temperatures lead to longer and hotter summers, affecting residents and local infrastructure while heightening health risks, especially for vulnerable populations. Urban heat islands from reduced vegetation and extensive pavement further amplify these effects.	By causing residents to relocate due to damaged homes or safety concerns. Some may move to areas perceived as safer or seek better job opportunities elsewhere. The economic impact and infrastructure damage can also make certain neighborhoods less desirable, leading to shifts in demographics and the socioeconomic landscape as new residents with different backgrounds move in.	Although development in Cottonwood Heights has been minor, consisting of mostly small subdivisions, apartments, and office buildings, more structures can increase extreme heat risk by displacing vegetation and exacerbating the urban heat island effect.	Increased
Extreme Cold	By increasing the intensity of winter storms. Higher atmospheric temperatures allow for more moisture, resulting in heavier snowfall and potentially lower temperatures during these events. In addition,	By driving some residents to relocate to warmer areas. Harsh winters can hinder economic activities and deter new residents and businesses, influencing housing demand and the attractiveness of certain neighborhoods. This may	The slight increase in structures also leads to slightly more risk from heavy snow events.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	fluctuations in weather patterns may disrupt seasonal cycles, leading to unpredictable periods of extreme cold mixed with warmer spells.	disproportionately affect lower-income families, leading to changes in demographics and socioeconomic stratification in the community.		
Flooding	Higher temperatures increase the frequency and intensity of extreme weather events and alter precipitation patterns. They lead to more intense rainstorms and accelerated snowmelt from nearby mountains, raising water levels in rivers and streams. This combination raises the risk of flooding, especially in areas with inadequate drainage and urban development in flood-prone zones, heightening the potential for damage to homes and infrastructure.	Flooding can significantly alter population patterns by displacing residents from affected areas, leading them to seek shelter elsewhere. This may cause a population decline where flooding occurs, as individuals might hesitate to return due to ongoing risks or property damage. As neighborhoods become less desirable, people may migrate to safer areas, changing demographic trends and putting pressure on housing in those regions. Over time, these shifts can influence urban planning and development, as local governments address flooding risks and changing population needs.	Development has not occurred in the 1% or the 0.2% annual chance flood zones.	Decreased
Landslide/ Slope Failure	Climate change increases the risk of landslides through heavier rainfall and temperature fluctuations. Intense rain saturates soil, destabilizing slopes, while freeze–thaw cycles weaken the ground. Changes in vegetation can also reduce	Landslides and slope failures can impact population patterns by making some areas unsafe, leading to displacement and lower property values. This prompts residents to move to safer regions, thereby increasing density in more stable areas. Concerns about future landslides may also deter newcomers from	A slight increase in development on the east side of the city, which abuts the Wasatch Mountains, has led to a slight increase in landslide risk.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	stability, leading to a higher potential for landslides.	high-risk zones, shaping long-term demographic trends.		
Radon	Climate change can affect radon levels by altering soil temperatures and moisture conditions. Higher temperatures may increase radon emissions from the ground, while heavy rainfall can change groundwater and soil saturation, impacting radon migration into buildings.	Radon exposure can influence population patterns as increased health awareness may drive families to move away from areas with high radon levels. This shift could particularly affect vulnerable groups, changing demographics and demand in the housing market. Homes with lower radon levels may become more sought after, and public health campaigns can encourage community action, making previously undesirable areas more attractive once mitigation measures are implemented.	Changes in development and land use in Cottonwood Heights have not impacted radon risk.	Decreased
Heavy Rain	Climate change increases the frequency and intensity of heavy rain, as higher temperatures allow the atmosphere to hold more moisture. This leads to stronger storms, flash flooding, and overwhelmed drainage systems.	Heavy rain can shift population patterns by pushing residents out of flood-prone areas and attracting them to safer neighborhoods. Frequent flooding may lead to evacuations and economic disruptions, prompting relocations. Over time, ongoing heavy rains can affect housing demand and community stability, altering the town's population distribution.	There is a need for adequate stormwater systems in new areas. More structures in Cottonwood Heights may lead to slightly more pluvial flooding due to impervious surfaces.	Increased
High Wind	Climate change affects high winds by altering atmospheric patterns and increasing extreme weather events. Rising temperatures may lead to more substantial, unpredictable winds and more	High winds can alter population patterns by making certain areas less desirable. Frequent damage may drive residents to safer neighborhoods, deter newcomers, and slow growth in affected regions.	The increase in multistory office buildings slightly increases risk from high winds.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	frequent thunderstorms, posing risks to infrastructure and air quality.			
Lightning	Climate change increases temperatures and alters precipitation, leading to more intense thunderstorms and frequent lightning strikes. Urbanization can enhance this effect, posing risks to public safety and infrastructure.	Lightning can influence population patterns by causing property damage and wildfires, leading some residents to relocate. Areas with higher lightning activity may deter new residents, while safer locations could increase migration as people seek protection from severe weather.	An increase in taller structures in Cottonwood Heights leads to slightly higher lightning strike risk.	Increased
Severe Winter Weather	Climate change impacts heavy snow and blizzards by altering precipitation patterns. Higher temperatures can lead to more rain than snow, affecting snowpack levels—additionally, increased storm intensity results in heavier, more unpredictable snowfall.	Increased population equals an increased number of people needing to get to work and quicker snow removal. Heavy snow or blizzards can impact population patterns by influencing where people live and work. Transportation disruptions may lead residents to seek housing closer to jobs, increasing density in some areas while depopulating others. Families might also avoid regions with frequent heavy snowfall, shifting demand to milder areas. Over time, these trends can alter community demographics and economic activity, prompting adjustments in town planning and resource allocation.	The increase in subdivisions means the city has more roads to plow and people to evacuate in the case of heavy snow.	Increased
Tornado	Climate change may increase the frequency and intensity of tornadoes. Higher temperatures lead to more	Tornadoes can influence population patterns by prompting residents to move to safer areas after damage occurs. This can	More structures in Cottonwood Heights mean more structures that could be damaged due to a tornado.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	moisture in the air, creating conditions for severe thunderstorms. Changes in wind patterns and precipitation can also heighten tornado risks, resulting in more destructive storms and greater threats to infrastructure and communities.	decrease density in affected neighborhoods while increasing the demand for housing in safer regions. New residents may also move in for recovery opportunities, altering demographics. Over time, repeated tornado threats might push long-term residents to areas with better disaster preparedness, reshaping the town's population distribution.		
Wildfire	By raising temperatures and creating drier conditions, prolonged droughts lead to more dry vegetation, which serves as fuel for fires. Erratic seasons extend the growing period, while more lightning strikes can ignite wildfires. These factors heighten the threat to ecosystems and community safety.	Displaced individuals often seek safer areas, shifting demographics, while declining property values might deter newcomers. Conversely, some may be drawn to rebuilding efforts, impacting long-term growth and community dynamics.	The increase in subdivisions on the east side of the city, which is close to fire-prone areas, increases wildfire risk for the city.	Increased
Dam Failure	Climate change raises the risk of dam failure by causing heavier rainfall and rapid snowmelt. These changes can overwhelm dams and compromise their integrity, highlighting the need for urgent safety assessments and upgrades to protect communities downstream.	Dam failure tornadoes can impact population patterns by displacing residents and altering demographics. Evacuations can lead to an influx in safer areas, while destruction may deter new residents and contribute to population decline. Fear of future disasters may also prompt remaining individuals to relocate, changing the community's composition and affecting	Increased development in Cottonwood Heights has not changed dam failure risk.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
		population density and economic activity.		
Civil Disturbance	Climate change can increase civil disturbances by intensifying environmental stresses and social tensions. Rising temperatures may lead to droughts, wildfires, and poor air quality, particularly affecting vulnerable communities. Resource scarcity, especially water, can spark conflicts and protests. In addition, an influx of migrants from harder-hit areas may strain local resources, further escalating tensions. This cycle of unrest is driven by the impacts of climate change on the environment and community dynamics.	By encouraging residents to move for safety, leading to outflows and new arrivals. These events can reveal social issues, impacting community dynamics, employment, and property values, ultimately reshaping demographics, and social cohesion.	Increased development in Cottonwood Heights has not changed civil disturbance risk.	Increased
Cyberattack	Possible attack on the industry, which is seen as producing large amounts of greenhouse gases and burning fossil fuels. Climate change can heighten cyberattack risk by increasing vulnerabilities during extreme weather. Disruptions like power outages offer cybercriminals opportunities, but focusing on emergency responses can weaken cybersecurity measures. As organizations adopt new	Cyberattacks can change population patterns by eroding trust in essential services. Compromised systems may cause residents to leave due to safety concerns, while high-profile incidents can deter businesses, leading to job losses. This perception of vulnerability may also make the town less appealing to newcomers, resulting in demographic shifts and affecting local development.	Increased development in Cottonwood Heights has not changed cyberattack risk.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	technologies to cope with climate impacts, they may unintentionally introduce additional vulnerabilities.			
Hazardous Materials Incident (Transportation & Fixed Facility)	Climate change elevates the risk of hazardous materials incidents by increasing extreme weather events like heavy rain and wildfires. These events can breach storage tanks and heighten material volatility. Vulnerable infrastructure can lead to more spills or accidents, while climate shifts may also introduce new challenges for managing hazardous substances and public health.	By causing evacuations and temporary declines in density. In the long run, unsafe areas may deter new residents, affecting growth and diversity. In addition, negative perceptions can lower property values and economic prospects, leading families to relocate, which impacts local demographics.	Increased development in Cottonwood Heights has not changed hazardous materials risk.	Increased
Public Health Epidemic/ Pandemic	By increasing the spread of vector-borne diseases and raising the risk of waterborne illnesses due to flooding or drought. Worsening air quality can also exacerbate respiratory conditions like asthma, especially in vulnerable populations.	By prompting migration for safety and better healthcare. Vulnerable groups may move to areas with improved services, while economic instability can drive people to seek new employment opportunities. In addition, restrictions like quarantine measures can limit movement and social interactions, reshaping the community's demographics and impacting local economies.	Increased development in Cottonwood Heights has not changed pandemic/epidemic risk.	Increased
Terrorism	Terroristic activity is sometimes centered around climate change. Climate change impacts terrorism incidents by creating conditions of resource scarcity	Terrorism incidents can alter population patterns by instilling fear and prompting residents to relocate to perceived safer areas, resulting in demographic shifts and potential declines in property	Increased development in Cottonwood Heights has not changed terrorism risk.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	and social unrest. Increased competition for essential resources, such as water, can fuel tensions, making communities more vulnerable to extremist ideologies. Extreme weather events may disrupt social order and infrastructure, offering terrorist groups opportunities to exploit crises. In addition, climate-driven population displacement can heighten tensions in receiving areas, raising the risk of domestic terrorism. Law enforcement's focus on climate-related challenges can also limit its capacity to address terrorism threats. Ultimately, while climate change may not directly cause terrorism, its effects can create an environment conducive to extremist activities.	values. Some neighborhoods may see an outflow of residents, while others could experience an influx of people seeking refuge from violence. In addition, increased security measures may deter businesses and residents from certain locations, leading to long-term changes in population density and urban development patterns.		

DRAFT

Additional Public Involvement

The city of Cottonwood Heights provided several opportunities for public participation. Figure 1 is an example of the city's public outreach.

Figure 1: Social Media Post for Public Participation

Plan Integration

Incorporating the underlying principles of the Hazard Mitigation Plan and its recommendations into other plans is a highly effective and low-cost way to expand their influence. All plan participants will use existing methods and programs to implement hazard mitigation actions where possible. As previously stated, mitigation is most successful when it is incorporated into the day-to-day functions and priorities of government and public service. This plan builds on the momentum developed through previous and related planning efforts and mitigation programs, and it recommends implementing actions where possible through these other program mechanisms. These existing mechanisms include the following:

- Regularity Capabilities
- Administrative Capabilities
- Fiscal Capabilities

Respective planning stakeholders will conduct implementation and incorporation into existing planning mechanisms and will be done through the routine actions of:

- Monitoring other planning/program agendas
- Attending other planning/program meetings

DRAFT

- Participating in other planning processes; and
- Monitoring community budget meetings for other community program opportunities.

The successful implementation of this plan will require constant and vigilant review of existing plans and programs for coordination and multi-objective opportunities that promote a safe, sustainable community. Regular efforts should be made to monitor the progress of mitigation actions implemented through other planning mechanisms. Where appropriate, priority actions should be incorporated into planning updates. Table 10 lists existing planning mechanisms in which the Hazard Mitigation Plan has been integrated.

Table 11 lists the opportunities for integrating elements of this plan into other plans.

Table 10: Previous Plan Integration by the City of Cottonwood Heights

Name	Description
None	N/A

Table 11: Future Plan Integration Opportunities for the City of Cottonwood Heights

Name	Description
General Plan	Overview of the city's long-term goals and guides land use ordinances and regulations.
Transportation Master Plan	This is comprehensive master plan for transportation in Cottonwood Heights addresses mobility, multi-modal transportation options, safety, and growth. The city also has a Bicycle and Trails Master Plan and the Bonneville Shoreline Trail Access Master Plan.
Parks, Trails, and Open Space Master Plan	This plan establishes goals, recommendations, and priorities for maintaining and improving parks, trails, and open spaces.
Mid-Valley Active Transportation Plan	This partnership with Taylorsville, Midvale, Murray, Millcreek, and Holladay proposes a "backbone network" of safe active transportation routes connecting all six cities. The plan was prepared by Avenue Consultants, sponsored by the Wasatch Front Regional Council, and adopted by resolution by the city in 2022.
For Union Area Master Plan	An addendum to the General Plan, this master plan guides future growth and development in and around Fort Union Boulevard and its planning area.
Interlocal Sustainability Action Plan	Cottonwood Heights, Holladay and Millcreek signed an interlocal agreement to collaborate on sustainability projects and agreed to write a sustainability plan to guide future sustainability efforts. This plan recommends best practices for sustainable development, energy use, landscaping, transportation, and waste management across the tri-city region.
Wasatch Boulevard Area Master Plan	The Wasatch Boulevard Master Plan is a project led by the city that guides the future evolution of Wasatch Boulevard and the communities it serves. The plan focuses on the corridor between Interstate 215 and the mouth of Little Cottonwood Canyon. It was adopted on July 2, 2019, and is "deemed to augment the General Plan."

Name	Description
Storm Drain Master Plan	Outlines existing system deficiencies and future projects required to bring storm drains to an acceptable level of service.
Pavement Management Plan	Plan to preserve the life of pavement on city streets.
Stormwater Management Plan	Manages 89 miles of storm drainpipes and drainage channels, 1,620 storm drain structures, and 104 outfalls.
Affordable Housing Plan	This report updates the 2005 Affordable Housing Plan and complies with Utah state code. It contains an analysis of current and projected affordable housing needs in the city. The plan was adopted Nov. 19, 2019, and is an element of the General Plan.

Capability Assessment

Local mitigation capabilities are existing authorities, policies, programs, and resources that reduce hazard impacts or could help carry out hazard mitigation activities.

Planning and Regulatory Capabilities

Planning and regulatory capabilities are the plans, policies, codes, and ordinances that prevent and reduce the impacts of hazards.

Table 12: Assessment of the Planning Capabilities of the City of Cottonwood Heights

Plan	Does it address hazards? (Y/N)	How can it be used to implement mitigation actions?	When was the last update? When is the next update?
General Plan	Y	Can inform mitigation actions over time	2005 – to be updated in 2025
Capital Improvement Plan	Y	Can provide information on funding sources	2024/2025
Climate Change Adaptation Plan	Y – Sustainability Plan	Can inform mitigation actions and climate-friendly initiatives	2021
Community Wildfire Protection Plan	Y	Can inform drought or wildfire mitigation actions	2020/2025
Economic Development Plan	Y – referenced in General Plan	Can provide information on funding sources for mitigation actions	2005
Land Use Plan	Y	Can inform mitigation actions for a variety of hazards as far as parks, trails, and open space	2021 – update TBD
Local Emergency Operations Plan	Y	Can inform operations and responsible parties for mitigation actions	2023

DRAFT

Plan	Does it address hazards? (Y/N)	How can it be used to implement mitigation actions?	When was the last update? When is the next update?
Stormwater Management Plan	Y	Can inform flooding priorities and concerns	2024
Transportation Plan	Y	Can inform mitigation actions as far as transportation concerns and future projects	2023
Substantial Damage Plan	N/A	N/A	N/A
Other? (Describe)			

Table 13: Assessment of the Regulations and Ordinances of the City of Cottonwood Heights

Regulation/Ordinance	Does it effectively reduce hazard impacts?	Is it adequately administered and enforced?	When was the last update? When is the next update?
Building Code	Y – the following codes (with state amendments) are currently enforced in the city: • 2021 International Building Code • 2021 International Mechanical Code • 2021 International Fuel Gas Code • 2021 International Plumbing Code • 2021 International Residential Code • 2020 National Electric Code • 2017 ANSI ADA CODE • 2018 international energy conservation code • 2015 uniform code for abatement of dangerous buildings • 2009 ANSI A117.1 standard for accessible and usable buildings and facilities • 2018 international fire code • Cottonwood Heights code of ordinances	Y	2021
Flood Insurance Rate Maps	Y	Y	2009/TBD

DRAFT

Regulation/Ordinance	Does it effectively reduce hazard impacts?	Is it adequately administered and enforced?	When was the last update? When is the next update?
Floodplain Ordinance	Y	Y	2022/TBD
Subdivision Ordinance	Y	Y	2025/TBD
Zoning Ordinance	Y	Y	2025/TBD
Natural Hazard-Specific Ordinance (Stormwater, Steep Slope, Wildfire)	Y	Y	2023/TBD
Acquisition of Land for Open Space and Public Recreation Use	Y	Y	2022/Ongoing
Prohibition of Building in At-Risk Areas	Y	Y	2023/TBD
Other? (Describe)			

Administrative and Technical Capabilities

Administrative and technical capabilities include staff and their skills. They also include tools that can help carry out mitigation actions. If you do not have local staff, consider how state and regional partners can help.

Table 14: Assessment of the Administrative Capabilities of the City of Cottonwood Heights[3]

Administrative Capability	In Place? (Y/N)	Is staffing adequate?	Are staff trained on hazards and mitigation?	Is coordination between agencies and staff effective?
Chief Building Official	Y	Y	Y	Y
Civil Engineer	Y	Y	Y	Y
Community Planner	Y	Y	Y	Y
Emergency Manager	Y	Y	Y	Y
Floodplain Administrator	Y	Y	Y	Y
Geographic Information System (GIS) Coordinator	Y	Y	Y	Y
Planning Commission	Y	Y	Y	Y
Fire Safe Council	N – fire service provided by UFA	N/A	N/A	N/A
CERT (Community Emergency Response Team)	Y	Y	Y	Y

[3] UFA = Unified Fire Authority.

DRAFT

Administrative Capability	In Place? (Y/N)	Is staffing adequate?	Are staff trained on hazards and mitigation?	Is coordination between agencies and staff effective?
Active VOAD (Voluntary Agencies Active in Disasters)	Y	Y	Y	Y
Other? (Please describe.)				

Table 15: Assessment of the Technical Capabilities of the City of Cottonwood Heights

Technical Capability	In Place? (Y/N)	How has it been used to assess/mitigate risk in the past?	How can it be used to assess/mitigate risk in the future?
Mitigation Grant Writing	Y	Funded the development of plans, construction projects and road improvements	Can be used to fund mitigation projects
Hazard Data and Information	Y	Identify high risk areas to prioritize mitigation projects	Used to support mitigation projects as far as funding and the need for the work in the community
GIS	Y	Identify high risk areas to prioritize mitigation projects	Map and track mitigation projects over time
Mutual Aid Agreements	Y	Used to ensure response readiness	Established agreements in place to assist in known high risk areas
Other? (Please describe.)			

Financial Capabilities

Financial capabilities are the resources to fund mitigation actions. Talking about funding and financial capabilities is important to determine what kinds of projects are feasible, given their cost. Mitigation actions like outreach programs are lower cost and often use staff time and existing budgets. Other actions, such as earthquake retrofits, could require substantial funding from local, state, and federal partners. Partnerships, including those willing to donate land, supplies, in-kind matches, and cash, can be included.

Table 16: Assessment of the Financial Capabilities of the City of Cottonwood Heights

Funding Resource	In Place? (Y/N)	Has it been used in the past and for what types of activities?	Could it be used to fund future mitigation actions?	Can it be used as the local cost match for a federal grant?
Capital Improvement Project Funding	Y	Operational costs	Y	Y
General Funds	Y	Operational costs	Y	Y

DRAFT

Funding Resource	In Place? (Y/N)	Has it been used in the past and for what types of activities?	Could it be used to fund future mitigation actions?	Can it be used as the local cost match for a federal grant?
Hazard Mitigation Grant Program (HMGP/404)	Y	Has not been used yet	Y	N
Building Resilient Infrastructure & Communities (BRIC)	Y	Has not been used yet	Y	N
Flood Mitigation Assistance (FMA)	Y	Has not been used yet	Y	N
Public Assistance Mitigation (PA Mitigation/406)	Y	Has not been used yet	Y	N
Community Development Block Grant (CDBG)	Y	Funded the development of plans	Y	N
Natural Resources Conservation Services (NRCS) Programs	Y	Has not been used yet	Y	N
U.S. Army Corps (USACE) Programs	Y	Has not been used yet	Y	N
Property, Sales, Income, or Special Purpose Taxes	Y	Operational costs	Y	Y
Stormwater Utility Fee	Y	Stormwater maintenance and management	Y	Y
Fees for Water, Sewer, Gas, or Electric Services	Y	Maintenance and operational costs	Y	Y
Impact Fees from New Development and Redevelopment	Y	Stormwater maintenance, new construction projects	Y	Y
General Obligation or Special Purpose Bonds	Y	City development projects,	Y	Y
Federal-funded Programs (Please describe)	Y	Plan development and road maintenance projects	Y	N
Private Sector or Nonprofit Programs	Y	Arts projects	Y	Y
Other?				

Education and Outreach Capabilities

Education and outreach capabilities are programs and methods that could communicate about and encourage risk reduction. These programs may be run by a participant or a community-based partner.

DRAFT

Partners, especially those who work with underserved communities, can help identify additional education and outreach capabilities.

Table 17: Assessment of the Education and Outreach Capabilities of the City of Cottonwood Heights

Education and Outreach Capability	In Place? (Y/N)	Does it currently incorporate hazard mitigation?	Could it be used to support mitigation in the future?
Community Newsletter(s)	Y	Y	Y
Hazard Awareness Campaigns (such as Firewise, Storm Ready, Severe Weather Awareness Week, School Programs)	Y	Y	Y
Public Meetings/Events (Please describe.)	Y – Monthly Emergency Preparedness Committee Meetings/Trainings	Y	Y
Emergency Management Listserv	Y	Y	Y
Local News	Y	Y	Y
Distributing Hard Copies of Notices (e.g., public libraries, door-to-door outreach)	Y	Y	Y
Insurance Disclosures/ Outreach	N	Y	Y
Organizations that Represent, Advocate for, or Interact with Underserved and Vulnerable Communities (Please describe.)	Y	Y	Y
Social Media (Please describe.)	Y	Y	Y
Other? (Please describe.)			

Opportunities to Expand and/or Improve Capabilities

Actions that can expand and improve existing authorities, plans, policies, and resources for mitigation include budgeting for mitigation actions, passing policies and procedures for mitigation actions, adopting and implementing stricter mitigation regulations, approving mitigation updates, and making additions to existing plans as new needs are recognized. Table 18 lists the opportunities for the city of Cottonwood Heights.

DRAFT

Table 18: Opportunities to Expand or Improve the Capabilities of the City of Cottonwood Heights

Capability	Opportunity to Expand and/or Improve
Planning and Regulation	The city could benefit from updated evacuation plans and an updated Community Wildfire Protection Plan. These documents will help expand mitigation capabilities for reducing wildfire risk by revising current plans to include new risk data that takes into account current wildfire conditions and vulnerabilities.
Administrative and Technical	Providing ongoing training on hazards and mitigation for all relevant staff members will enhance their expertise and ability to implement effective mitigation strategies.
Financial	While the city itself has many positions and technical capabilities that can support mitigation actions, one area in which administrative and technical capabilities could be expanded is through partnership building. In particular, the city could expand current capabilities by establishing new memoranda of understanding (MOUs) and engaging with water districts, particularly through partnerships that support secondary water supply.
Education and Outreach	The city can expand funding for mitigation by applying for mitigation grants, including but not limited to FEMA's Hazard Mitigation Assistance grants (such as the Hazard Mitigation Grant Program or Flood Mitigation Assistance grant program) as well as post-disaster Public Assistance Mitigation (PA Mitigation/406) should a disaster impact the area.

Mitigation Strategy

Mitigation strategies provide proactive measures that are designed to minimize the impacts of hazards on the city of Cottonwood Heights. Table 19 shows mitigation action alternatives, and

Table 20 shows the status of previous mitigation activities. Table 21 is the 2025 mitigation action plan for the city of Cottonwood Heights.

Table 19: Mitigation Action Alternatives for the City of Cottonwood Heights

Action	Type of Action	Selected for inclusion in the plan?	If not selected, why not?
Public education	Education and awareness programs	Y – refined this mitigation action to be more specific.	
Security	Structure and infrastructure projects	Y – refined this mitigation action to be more specific.	

DRAFT

Table 20: Status of Prior Mitigation Actions of the City of Cottonwood Heights[4]

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update
Investigate potential buyout of specific properties that reside in high-risk areas due to earthquake fault.	Earthquake	Cottonwood Heights Building Department	Community and Economic Development, Cottonwood Heights EM	Incomplete.
Update and retrofit stormwater infrastructure to meet seismic standards and increased resilience.	Earthquake	Cottonwood Heights Public Works	Cottonwood Heights EM, SLCo Public Works	Ongoing. The city has a Stormwater Improvement Plan that is implementing upgrades to the system.
Develop a Debris Management Plan.	All hazards	Cottonwood Heights Public Works	SLCo EM, Cottonwood Heights EM, SLCo Public Works	Incomplete.
Procure generators and necessary hookups for key critical facilities, such as the Public Works Yard, potential shelter locations and Long-term Care facilities. Procure additional mobile generators.	All hazards	Cottonwood Heights EM	Cottonwood Heights Public Works, school districts, SLCo EM	Deleted. Not currently under consideration.
Conduct Training and awareness activities on communications equipment, tools, and systems.	All hazards	Cottonwood Heights EM	SLCo EM, UCA, VECC, UFA, Cottonwood Heights Public Works, SLCo Public Works	Ongoing. Drills and outreach are conducted biannually.
Provide centralized access to geographic data to emergency planners and responders.	All hazards	Cottonwood Heights EM	Cottonwood Heights Community and Economic Development, SLCo EM, local jurisdictions	

[4] CWPP = Community Wildfire Protection Plan, EM = Emergency Management, FFSL = Division of Forestry, Fire, and State Lands, NGO = nongovernmental organization, NWS = National Weather Service, SLCo = Salt Lake County, SLCo EM = Salt Lake County Emergency Management, UCA = Utah Communications Authority, UFA = Unified Fire Authority, VECC = Valley Emergency Communications Center, WUI = Wildland–Urban Interface.

DRAFT

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update
Use GIS to identify facilities and infrastructure at risk.	All hazards	Cottonwood Heights EM	Cottonwood Heights Community and Economic Development, SLCo EM, Cottonwood Heights Public Works, SLCo Public Works, UFA	Complete
Assess critical facilities, specifically schools and churches, for hazard exposure, structural weaknesses, power, communications and equipment resources and redundancy, and adequate emergency procedures.	All hazards	Cottonwood Heights Community and Economic Development	Cottonwood Heights Public Works, Cottonwood Heights EM, SLCo EM, SLCo Public Works	Incomplete
Compile an inventory of mutual-aid agreements and memoranda of understanding (MOU) and identify deficiencies.	All hazards	Cottonwood Heights EM	Local jurisdictions, SLCo EM, SLCo Public Works, NGO partners.	Ongoing
Pursue and implement needed mutual aid agreements.	All hazards	Cottonwood Heights EM	SLCo EM, local jurisdictions, NGO partners, SLCo Public Works	Ongoing
Provide education regarding all natural hazards through live trainings and web-based, print, and broadcast media.	All hazards	Cottonwood Heights EM	NWS, SLCo EM	Ongoing, conducted biannually
Develop education programs to target specific groups, including homeowners, developers, schools and people with special needs.	All hazards	Cottonwood Heights EM	SLCo EM, NWS, NGO partners, local jurisdictions	Ongoing
Enforce appropriate planning, zoning, and building code ordinances.	All hazards	Cottonwood Heights Community and Economic Development	Cottonwood Heights Public Works, Cottonwood Heights EM	Ongoing

DRAFT

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update
Continue to encourage water conservation, using outreach material from all water districts in the county.	Drought	Cottonwood Heights Public Works	Cottonwood Heights EM, SLCo EM, NWS, local utility companies, water districts	Ongoing
Implement water-saving devices and practices in public facilities.	Drought	Cottonwood Heights Public Works	Local utility companies, water districts, Cottonwood Heights EM	Ongoing
Provide information on landscaping alternatives for persons subject to green area requirements.	Drought	Cottonwood Heights Public Works	Water districts, local utility companies, Cottonwood Heights EM	Ongoing
Coordinate with water districts to plan for, develop, and/or expand secondary water.	Drought	Cottonwood Heights Public Works	Water districts, local utility companies, Cottonwood Heights EM	Incomplete
Identify structures at risk of earthquake damage Conduct an assessment.	Earthquake	Cottonwood Heights Community and Economic Development	Cottonwood Heights EM, Cottonwood Heights Public Works	Ongoing
Research feasibility of an incentive program for retrofitting privately owned buildings, particularly unreinforced masonry.	Earthquake	Cottonwood Heights Community and Economic Development	Cottonwood Heights EM, Cottonwood Heights Public Works, SLCo EM	Incomplete
Complete seismic rehabilitation/ retrofitting projects of public buildings at risk.	Earthquake	Cottonwood Heights Community and Economic Development	Cottonwood Heights EM, Cottonwood Heights Public Works	Incomplete
Provide educational materials to unreinforced masonry home and business owners.	Earthquake	Cottonwood Heights EM	Cottonwood Heights Public Works, Cottonwood Heights Building Department, SLCo EM	Ongoing
Establish maintenance and repair programs to remove debris, improve resistance, and otherwise maintain effectiveness of stormwater and flood control systems.	Flood	Cottonwood Heights Public Works	SLCo Public Works, Cottonwood Heights EM	Ongoing

DRAFT

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update
Identify and assess structures for deficiencies.	Flood	Cottonwood Heights Community and Economic Development	Cottonwood Heights Public Works, SLCo Public Works	Ongoing.
Maintain Hazardous Weather Operations Plan according to StormReady requirements.	Severe Weather	Cottonwood Heights Public Works	Cottonwood Heights EM, SLCo Public Works, NWS	Ongoing
Develop protocols for working with state and federal agencies to reducing the impact of post-fire debris-flow.	Slope Failure	UFA and Cottonwood Heights Public Works	SLCo EM, Cottonwood Heights EM	Ongoing.
Increase public awareness through "Firewise" program.	Wildland Fire	UFA	SLCo EM, Cottonwood Heights EM	Ongoing.
Educate homeowners on the need to create defensible space near structures in WUI.	Wildland Fire	UFA	Cottonwood Heights EM, SLCo EM	Complete – UFA does mitigation work annually or as needed in all of the communities they serve.
Assist communities in developing Community Wildfire Protection Plans or similar plans.	Wildland Fire	UFA	SLCo EM, UFA, Cottonwood Heights EM	Complete. Cottonwood Heights will be updating their CWPP in 2025.
Work with experts and communities to develop or update evacuation plans.	Wildland Fire	Cottonwood Heights EM	SLCo EM, UFA, FFSL, local jurisdictions	Complete
Identify all facilities, businesses, and residences, particularly in the canyons, and assign addresses according to current county addressing standards.	Wildland Fire	Cottonwood Heights Community and Economic Development	Cottonwood Heights EM, UFA, SLCo EM, SLCo Addressing, SLCo Surveyor's Office	Complete.
Incorporate improved addresses in fire-dispatch and other databases.	Wildland Fire	UFA	Cottonwood Heights EM, SLCo EM, VECC	Complete

DRAFT

THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT

Table 21: 2025 Mitigation Action Plan for the City of Cottonwood Heights[5]

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Time-frame	Priority	Comments
1	Develop a Debris Management Plan.	Dam Failure, Earthquake, Heavy Rain, High Wind, Landslide/Slope Failure, Severe Winter Storm, Tornado, Wildfire	Cottonwood Heights Public Works	Cottonwood Heights EM, SLCo EM, SLCo Public Works	Reduces risk of transportation or other disruptions due to debris caused by hazards. Ensures roads and other transportation routes are open for emergency services.	Low	Cottonwood Heights General Fund, HMGP grant, BRIC grant	Short	Medium	
2	Procure generators and necessary hookups for key critical facilities, such as the Public Works Yard, potential shelter locations, and long-term care facilities. Procure additional mobile generators.	Avalanche, Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Heavy Rain, High Wind, Landslide/Slope Failure, Lightning, Radon, Severe Winter Storm, Tornado, Wildfire	Cottonwood Heights EM	Cottonwood Heights Public Works, SLCo EM, SLCo Public Works	Provides backup generators for critical facilities to maintain operations and provide essential services during a disaster.	Medium	Cottonwood Heights General Fund, BRIC grant, HMGP grant	Medium	Medium	
3	Conduct training and awareness activities on communications equipment, tools, and systems.	Avalanche, Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Heavy Rain, High Wind, Landslide/Slope Failure, Lightning, Radon, Severe Winter Storm, Tornado, Wildfire	Cottonwood Heights EM	Cottonwood Heights Public Works, Cottonwood Heights PD, UFA, SLCo EM, NGO partners, school districts, water districts	Reduces risk to functionality of communication equipment from hazards. Improves information sharing and coordination between local agencies/jurisdictions.	Medium	Cottonwood Heights General Fund, BRIC grant, HMGP grant	Ongoing	Medium	Monthly radio checks with key staff. Radio club implementation at all planned special events to improve communications.
4	Provide centralized access to geographic data to emergency planners and responders.	Avalanche, Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Heavy Rain, High Wind, Landslide/Slope Failure, Lightning, Radon, Severe Winter Storm, Tornado, Wildfire	Cottonwood Heights EM	Cottonwood Heights Community and Economic Development, SLCo EM, UFA, NGO partners, school districts, water districts	Provides consistent information to increase understanding of community assets at risk from hazards.	Medium	Cottonwood Heights General Fund, HMGP grant, BRIC grant	Ongoing	Medium	New server is being implemented.
5	Use GIS to identify facilities and infrastructure at risk.	Avalanche, Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Heavy Rain, High Wind, Landslide/Slope Failure, Lightning, Radon, Severe Winter Storm, Tornado, Wildfire	Cottonwood Heights EM	SLCo EM, UDEM, Cottonwood Heights Community and Economic Development, UFA, Cottonwood Heights PD	Increases understanding of community assets at risk from hazards and potential mitigation opportunities.	Medium	Cottonwood Heights General Fund	Ongoing	Medium	
6	Assess critical facilities, specifically schools and churches, for hazard exposure, structural weaknesses, power, communications, and equipment resources and redundancy, and adequate emergency procedures.	Avalanche, Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Heavy Rain, High Wind, Landslide/Slope Failure, Lightning, Radon, Severe Winter Storm, Tornado, Wildfire	Cottonwood Heights EM	Cottonwood Heights Community and Economic Development, Cottonwood Heights PD, Cottonwood Heights Public Works, SLCo EM, UFA	Increases understanding of potential vulnerabilities in critical facilities and potential mitigation opportunities and prevents damage to critical infrastructure.	High	Cottonwood Heights General Fund, HMGP grant, BRIC grant	Ongoing	Medium	Grant funding dependent.

[5] BRIC = Building Resilient Infrastructure and Communities, CDBG = Community Development Block Grant, CWDG = Community Wildfire Defense Grant, CWPP = Community Wildfire Protection Plan, EM = Emergency Management, FFSL = Division of Forestry, Fire, and State Lands, HMGP = Hazard Mitigation Grant Program, LEPC = Local Emergency Planning Committee, MSD = Municipal Services District, NGO = nongovernmental organization, NWS = National Weather Service, PD = Police Department, SLCo = Salt Lake County, SLCo EM = Salt Lake County Emergency Management, UDEM = Utah Division of Emergency Management, UFA = Unified Fire Authority, WUIPPM = Wildland Urban Interface Prevention, Preparedness, and Mitigation Fund.

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Time-frame	Priority	Comments
7	Compile an inventory of mutual-aid agreements and memoranda of understanding (MOUs), and identify deficiencies to pursue or implement needed agreements.	Avalanche, Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Heavy Rain, High Wind, Landslide/Slope Failure, Lightning, Radon, Severe Winter Storm, Tornado, Wildfire	Cottonwood Heights EM	Cottonwood Heights Public Works, SLCo EM, SLCo Public Works, UFA, Cottonwood Heights PD, NGO partners, water districts, school districts, local utility companies	Improves understanding of and strengthens capabilities through agreements.	Medium	Cottonwood Heights General Fund	Ongoing	Medium	Emergency Manager is identifying MOU's for renewal. Develop emergency contracts.
9	Provide education regarding all natural hazards through live trainings and web-based, print, and broadcast media.	Avalanche, Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Heavy Rain, High Wind, Landslide/Slope Failure, Lightning, Radon, Severe Winter Storm, Tornado, Wildfire	Cottonwood Heights EM	NWS, Cottonwood Heights Public Works, SLCo EM, UFA, LEPC, NGO partners, Utah Avalanche Center	Reduces damage to critical infrastructure, residences, and businesses and prevents personal injuries. For example, for avalanche, sharing information on how to spot the warning signs, alerting people of dangerous terrain, and educating on safety practices and rescue techniques could help the public, including visitors, reduce risk. Also, sharing information from the Utah Avalanche Center when avalanche risk is high.	Low	Cottonwood Heights General Fund, NWS, SLCo EM	Ongoing	Medium	This is one of five strategic goals for the emergency operations program.
10	Develop education programs to target specific groups, including homeowners, developers, schools and people with special needs.	Avalanche, Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Heavy Rain, High Wind, Landslide/Slope Failure, Lightning, Radon, Severe Winter Storm, Tornado, Wildfire	Cottonwood Heights EM	SLCo EM, Cottonwood Heights Public Works, UFA, Cottonwood Heights PD, NGO partners, school districts, water districts	Reduces or prevents personal injuries by informing groups of appropriate actions for local hazards.	Low	Cottonwood Heights General Fund, HMGP grant, BRIC grant	Ongoing	Medium	Community events incorporate EM into program.
11	Enforce appropriate planning, zoning, and building code ordinances.	Avalanche, Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Heavy Rain, High Wind, Landslide/Slope Failure, Lightning, Radon, Severe Winter Storm, Tornado, Wildfire	Cottonwood Heights Community and Economic Development	Cottonwood Heights EM, Cottonwood Heights Public Works	Reduces damage to structures from hazards by avoiding construction in hazard-prone areas and using appropriate building codes to withstand the effects of hazards.	Low	Cottonwood Heights General Fund	Ongoing	Medium	
12	Continue to encourage water conservation, using outreach material from all water districts in the county.	Drought	Cottonwood Heights Public Works	Local utility companies, water districts, NWS, SLCo EM, Cottonwood Heights EM, SLCo Public Works	Decreases the cost of landscape irrigation, decreases water use to preserve water supply.	Low	Cottonwood Heights General Fund, BRIC grant, HMGP grant, NWS, water districts	Ongoing	Medium	City promotes green activities including water conservation.
13	Implement water-saving devices and practices in public facilities.	Drought	Cottonwood Heights Public Works	Cottonwood Heights Community and Economic Development, Cottonwood Heights EM, SLCo EM, SLCo Public Works, water	Conserves water supply and improves community resilience during times of drought.	Medium	Cottonwood Heights General Fund, BRIC grant, CDBG grant, HMGP	Ongoing	Medium	

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Time-frame	Priority	Comments
				districts, local utility companies			grant, water districts			
14	Provide information on landscaping alternatives for persons subject to green area requirements.	Drought	Cottonwood Heights Public Works	SLCo Public Works, SLCo EM, water districts, local utility companies, Cottonwood Heights Community and Economic Development, Cottonwood Heights EM	Reduces waste of water, maintains adequate water supply during drought, and reduces costs of landscape irrigation.	Low	Cottonwood Heights General Fund, HMGP grant, BRIC grant, CDBG grant	Ongoing	Medium	
15	Coordinate with water districts to plan for, develop, and/or expand secondary water.	Drought	Cottonwood Heights EM	Cottonwood Heights Public Works, SLCo EM, SLCo Public Works, water districts, local utility companies	Provides alternative landscape irrigation resources to conserve culinary water supply, improves management of water resources, and reduces risk to drought.	Medium	Cottonwood Heights General Fund, city stormwater maintenance fee, city impact fees, city capital improvement funds, water districts	Ongoing	Medium	
16	Investigate potential buy-out of specific properties that reside in high-risk areas due to earthquake fault.	Earthquake	Cottonwood Heights Community and Economic Development	Cottonwood Heights EM, Cottonwood Heights Public Works, SLCo Public Works, MSD	Reduces damage to structures and potential injury to occupants.	Medium	Cottonwood Heights General Fund, capital improvement funds	Ongoing	Medium	
17	Update and retrofit stormwater infrastructure to meet seismic standards and increased resiliency.	Earthquake	Cottonwood Heights Public Works	Cottonwood Heights Community and Economic Development, Cottonwood Heights EM, SLCo Public Works, water districts, local utility companies	Reduces potential damage to critical infrastructure and reduces risk of further damage that could be caused if stormwater system does not function properly.	Medium	Cottonwood Heights General Fund, capital improvement funds, city impact fees, city stormwater maintenance fee, HMGP grant, BRIC grant	Ongoing	Medium	
18	Identify structures at risk to earthquake damage. Conduct an assessment.	Earthquake	Cottonwood Heights Community and Economic Development	Cottonwood Heights Public Works, SLCo Public Works, MSD, SLCo EM	Greater understanding of which facilities are at highest risk can guide prioritization of mitigation actions to enhance building safety and minimize damage.	High	Cottonwood Heights General Fund, HMGP grant, BRIC grant	Ongoing	High	
19	Research feasibility of an incentive program for retrofitting privately owned buildings, particularly unreinforced masonry.	Earthquake	Cottonwood Heights Community and Economic Development	SLCo Public Works, Cottonwood Heights Public Works, Cottonwood Heights EM, school districts	Retrofitting residential and other private buildings can reduce disaster losses and reduce risk of injury and loss of life. Additional information is needed to identify funding and implementation of such a program in the city.	Low	Cottonwood Heights General Fund, BRIC grant, HMGP grant	Ongoing	High	
20	Complete seismic rehabilitation/retrofitting	Earthquake	Cottonwood Heights Community	Cottonwood Heights Public Works, SLCo Public Works, SLCo EM,	Reduces structural losses and injury/loss of life by reducing	High	Cottonwood Heights General Fund, BRIC	Ongoing	High	Assess school districts.

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Time-frame	Priority	Comments
	projects of public buildings at risk.		and Economic Development	Cottonwood Heights EM, school districts	potential damage to buildings during earthquake.		grant, HMGP grant			
21	Provide educational materials to unreinforced masonry home and business owners.	Earthquake	Cottonwood Heights EM	SLCo Public Works, Cottonwood Heights Community and Economic Development, Cottonwood Heights Public Works, NGO partners, school districts	Educates citizens of possible actions they can take to reduce risk in their homes and businesses and reduce injuries and other losses during an earthquake.	Low	Cottonwood Heights General Fund, BRIC grant, HMGP grant	Ongoing	Medium	
22	Establish maintenance and repair programs to remove debris, improve resistance, and otherwise maintain effectiveness of stormwater and flood control systems.	Flooding, Heavy Rain, Dam Failure	Cottonwood Heights Public Works	Cottonwood Heights Community and Economic Development, SLCo Public Works	Ensures stormwater systems are effective during flooding and heavy rain events to reduce potential water damage to structures and other essential systems.	High	Cottonwood Heights General Fund, city stormwater maintenance fee, city capital improvement funds	Ongoing	High	
23	Identify and assess structures for deficiencies.	Flooding, Heavy Rain, Dam Failure	Cottonwood Heights Community and Economic Development	Cottonwood Heights Public Works, Cottonwood Heights EM	Reduces losses by identifying potential actions to address structural deficiencies.	High	Cottonwood Heights General Fund, BRIC grant, HMGP grant	Ongoing	High	
24	Maintain Hazardous Weather Operations Plan according to StormReady requirements.	Heavy Rain, High Wind, Lightning, Heavy Snow, Flood	Cottonwood Heights Public Works	Cottonwood Heights EM, SLCo EM, NWS, SLCo Public Works, UDEM	StormReady helps communities identify potential impacts from severe weather and educate individuals on protective actions to reduce potential for injury or loss of life.	Low	Cottonwood Heights General Fund, NWS, SLCo Public Works, BRIC grant, HMGP grant	Ongoing	Medium	
25	Develop protocols for working with state and federal agencies in reducing the impact of postfire debris-flow hazard.	Slope Failure, Wildfire, Flooding	Cottonwood Heights EM	UFA, SLCo EM, SLCo Public Works, Cottonwood Heights Public Works, UDEM	Coordination with various agencies following a fire to assess post-fire impacts and potential for debris flows and implementation of various stabilization procedures can reduce the likelihood of debris flow and limit the potential damage to structures down-slope.	Low	Cottonwood Heights General Fund	Ongoing	Medium	State Wildfire Pre-attack plan.
26	Increase public awareness through “Firewise” program.	Wildland Fire	UFA	SLCo EM, Cottonwood Heights EM, FFSL, UDEM	Increases awareness of wildfire risk in the city and appropriate actions citizens can take to reduce risk on their properties.	Medium	Cottonwood Heights General Fund, SLCo EM, WUIPPM, CWDG grant, BRIC grant, HMGP grant	Ongoing	High	Spring efforts will include information for residents and businesses.

City of Draper

Jurisdictional Annex to the
Salt Lake County Hazard Mitigation Plan

Month XXXX | Draft X.X

THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT

Table of Contents

City of Draper Annex 1

Planning Process Contact Information 1
Contact List 1
Jurisdiction Profile 3
Date of Incorporation 3
Location and Description 3
Population 3
Demographics 3
Brief History 3
Climate 3
Public Services 4
Governing Body 4
Development Trends 4
Jurisdiction-Specific Hazards and Risk 4
Hazard Event History 7
National Flood Insurance Program Summary 10
Jurisdiction-Specific Vulnerabilities and Impacts 11
Jurisdiction-Specific Changes in Vulnerability 25
Additional Public Involvement 40
Plan Integration 40
Capability Assessment 42
Planning and Regulatory Capabilities 42
Administrative and Technical Capabilities 43
Financial Capabilities 44
Education and Outreach Capabilities 46
Opportunities to Expand and/or Improve Capabilities 47
Mitigation Strategy 48

DRAFT

List of Figures

Figure 1: Social Media Post for Public Participation 40

List of Tables

Table 1: Contact Information for the City of Draper 1
Table 2: Participant List for the City of Draper 1
Table 3: Contact and Stakeholder List for the City of Draper 2
Table 4: Calculated Priority Risk Index Values for the City of Draper 5
Table 5: Criteria for the Calculated Priority Risk Index 6
Table 6: History of Hazard Events in the City of Draper 7
Table 7: National Flood Insurance Program Status for the City of Draper 10
Table 8: National Flood Insurance Overview for the City of Draper 10
Table 9: Jurisdiction-Specific Vulnerabilities and Impacts in the City of Draper 11
Table 10: Jurisdiction-Specific Changes in Vulnerability in the City of Draper 26
Table 11: Integration of Previous Plans by the City of Draper 41
Table 12: Opportunities to Integrate into Future Plans of the City of Draper 41
Table 13: Assessment of the Planning Capabilities of the City of Draper 42
Table 14: Assessment of the Regulations and Ordinances of the City of Draper 43
Table 15: Assessment of the Administrative Capabilities of the City of Draper 43
Table 16: Assessment of the Technical Capabilities of the City of Draper 44
Table 17: Assessment of the Financial Capabilities of the City of Draper 45
Table 18: Assessment of the Education and Outreach Capabilities of the City of Draper 46
Table 19: Opportunities to Expand or Improve the Capabilities of the City of Draper 47
Table 20: Mitigation Action Alternatives for the City of Draper 48
Table 21: Status of Prior Mitigation Actions of the City of Draper 48
Table 22: 2025 Mitigation Action Plan for the City of Draper 53

DRAFT

City of Draper Annex

To participate in this multi-jurisdictional hazard mitigation plan (MJHMP) update for Salt Lake County (SLCo), the governing body of the city of Draper passed a formal resolution, a copy of which is maintained at the local government offices.

Planning Process Contact Information

Table 1 provides information on the point of contact during the updating of the MJHMP.

Table 1: Contact Information for the City of Draper

Name	Contact Information
Robert Lambert	**Phone:** 385-695-7199; **email:** Robert.lambert@draperutah.gov

The city of Draper has a fully integrated approach to hazard mitigation planning and program implementation. During the 2024 update process, the MJHMP participation roles in Table 2 were recorded.

Table 2: Participant List for the City of Draper

Name	Title	Jurisdiction
Robert Lambert	Battalion Chief	Draper City Fire Department
Don Buckley	Battalion Chief	Draper City Fire Department

Contact List

Table 3 lists the plan contacts and stakeholders.

DRAFT

Table 3: Contact and Stakeholder List for the City of Draper

Name	Title	Email	Phone	Stake-holder Type[1]	Should they receive meeting invites?	Should they complete a survey?	Should they review the draft plan?
Robert Lambert	Battalion Chief	Robert.lambert@draperutah.gov	385-695-7199	1	Y	Y	Y
Mike Barker	City Manager	Mike.barker@draperutah.gov	801-576-6322	1	N	Y	Y
Kellie Challburg	Assistant City Manager	Kellie.challburg@draperutah.gov	801-576-6513	1	Y	Y	Y
Karen Burnett	GIS Director	Karen.burnett@draperutah.gov	801-576-6552	1	Y	Y	Y
Clint Smith	Fire Chief	Clint.smith@draperutah.gov	801-824-3714	1	N	Y	Y
Steve Pearson	Deputy Fire Chief	Steve.pearson@draperutah.gov	385-296-5710	1	N	Y	Y
Rich Ferguson	Police Chief	Rich.ferguson@draperutah.gov	801-576-6338	1	N	Y	Y
Scott Cooley	Public Works Director	Scott.cooley@draperutah.gov	801-576-6565	1	N	Y	Y
Dustin Willie	Police Lieutenant	Dustin.willie@draperutah.gov	801-576-6395	1	Y	Y	Y
Robert Markle	Public Works Director	Robert.markle@draperutah.gov	801-576-6360	1	Y	Y	Y

[1] 1 – Local and regional agencies involved in hazard mitigation activities; 2 – Agencies that have the authority to regulate development; 3 – Neighboring communities; 4 – Representatives of businesses, academia, and other private organizations; 5 – Representatives of nonprofit organizations, including community-based organizations, that work directly with and/or provide support to underserved communities and socially vulnerable populations.

DRAFT

Jurisdiction Profile

Date of Incorporation

February 27, 1978

Location and Description

The city of Draper is located 25 minutes south from downtown Salt Lake City in the southeast corner of the Salt Lake Valley. The city is approximately 30.1 square miles in area and is approximately 4,500 feet above sea level. Draper offers a blend of suburban life and metropolitan amenities with a strong sense of community and high quality of life. The city is known for its extensive trail systems, parks, and recreational opportunities, making it a great place for outdoor enthusiasts.

Population

The 2022 American Community Survey 5-Year Estimate from the U.S. Census Bureau records the population of the city of Draper at 50,635 people. The 2020 Census reported the total population as 51,017.

Demographics

Most of the 51,017 people are between the ages of 35 and 44, with a median age of 33.6; 26,525 are males (52.4%) and 24,110 are females (47.6%). English is the primary language in 83.2% of homes, with 7.6% Spanish, and 9.2% other languages.

Brief History

Initially known as South Willow Creek, the city of Draper was first settled in 1849 by Ebenezer Brown, his wife Phoebe, and their five children. Brown and his family cultivated the land and raised cattle to sell to those heading west for the gold rush. The first post office was established in 1854 and the settlement was named Draperville in honor of William Draper, the first Presiding Elder of the Mormon Church at the time. The name was later shortened to Draper. A fort was established in 1854 where settlers stayed during the winter of 1855–1856; they ventured out in the spring to build homes and irrigation systems. The city of Draper was officially incorporated on February 22, 1978.

Climate

The city of Draper experiences a humid continental climate (Dfb Köppen classification) characterized by warm summers and cold, snowy winters with significant temperature variations during the year. Average high temperatures are approximately 85.6°F in the summer and approximately 17.1°F in the winter. Rain each year is approximately 23.8 inches, and snowfall averages 34 inches annually.

DRAFT

Public Services

The city organized a Draper City Emergency Preparedness Committee to look at long-range planning and preparedness.

Governing Body

The city of Draper has a part-time Mayor and a City Council that act together as the Governing Body that adopts all ordinances and resolutions. They City Manager oversees operations day-to-day operations and programs of the city.

Development Trends

Draper has a mixture of land uses: commercial, industrial, residential, agricultural, and vacant land, with 4,500 acres of open space. The open space—which has many multi-use trails and areas—is used for recreational purposes by residents of Draper and the surrounding communities. Draper is home to the main customer service center and campus of eBay, the tech call center of PGP Corporation, the call center of Musician's Friend, and the headquarters of 1-800 Contacts. Draper is also home to Utah's first Ikea store in the intermountain west, which opened in spring 2007. The Church of Jesus Christ of Latter-day Saints (Mormons) constructed a temple in Draper that was dedicated on March 20, 2009. Since 1990, Draper has experienced its greatest growth in volume and geographic extent. During this time, the city changed quickly from a rural, agricultural town into a full-fledged suburban city. Its geographical growth has largely been in the southeastern part of the city, where 75% of the new housing units have been built.

New housing is increasingly built in the fringe areas, as the central city is nearing buildout. A very large portion of this growth has been focused on a series of medium to large master planned developments spread across the southern parts of the city. The growth in business facilities (office space, warehousing, retail, and manufacturing) has been concentrated in areas east and west of the I-15 freeway and along the 123rd south corridor. This growth has included greater diversity in users and building types, more expensive construction, the import of new businesses, and the growth of existing businesses. The strongest areas for future business growth are expected to be near the major north–south corridors (along the I-15 freeway corridor from Sandy to the Point of the Mountain), the major east–west corridors (114th South, 118th South State, 123rd South, and the Bangerter Highway), and the Town Center area. The mix of businesses will probably continue to diversify and the demand for more services to meet the needs of the local population and business communities will increase.

Jurisdiction-Specific Hazards and Risk

The Calculated Priority Risk Index (CPRI) is a comprehensive assessment tool for evaluating and prioritizing risks in a given context. It considers various factors, such as probability, impact, and urgency, to determine the level of risk associated with events or situations. The results for each hazard, including its risk factor (RF) value, are shown in Table 4. The results are based on the criteria in Table 5 and the equation that follows it. The CPRI helps organizations and individuals make informed decisions about risk

DRAFT

management and mitigation strategies. It provides a systematic approach to identifying and addressing potential issues, allowing for a more efficient allocation of resources and proactive risk prevention. With the CPRI, stakeholders can prioritize their focus on the most critical risks, leading to more effective risk management and, ultimately, better outcomes.

Table 4: Calculated Priority Risk Index Values for the City of Draper

Type of Hazard Event	Probability of Future Events	Spatial Extent	Severity of Life/ Property Impact	Warning Time	Duration	Response Capacity	Risk Factor Value
Avalanche	1	1	2	4	2	1	1.7
Drought	2	2	2	1	4	1	2
Earthquake	2	3	4	4	3	2	3
Extreme Heat	3	2	3	1	3	1	2.5
Extreme Cold	3	2	2	1	3	1	2.2
Flooding	2	2	3	3	3	1	2.4
Landslide/ Slope Failure	2	2	2	4	1	2	2.1
Radon	3	0	2	1	4	2	2.2
Heavy Rain	3	3	2	3	1	1	2.3
High Wind	2	2	3	3	2	1	2.3
Lightning	1	1	2	4	1	1	1.6
Severe Winter Weather	4	3	2	2	2	1	2.6
Tornado	1	1	3	4	1	2	2
Wildfire	4	4	3	4	3	1	3.3
Dam Failure	1	3	3	2	2	3	2.2
Civil Disturbance	1	1	2	4	2	2	1.8
Cyberattack	2	2	3	4	3	2	2.6
Hazardous Materials Incident (Transportation & Fixed Facility)	2	2	2	4	1	1	2
Public Health Epidemic/ Pandemic	2	3	3	1	4	1	2.4
Terrorism	1	1	3	4	2	1	2

DRAFT

Table 5: Criteria for the Calculated Priority Risk Index

Risk Index Factor	Degree of Risk Level		Criteria	Factor Weight for Degree of Risk Level
Probability of Future Events	1	Unlikely	Less than 1 percent probability of occurrence in the next year or a recurrence interval of greater than every 100 years.	30%
	2	Occasional	1 to 10 percent probability of occurrence in the next year or a recurrence interval of 11 to 100 years.	
	3	Likely	11 to 90 percent probability of occurrence in the next year or a recurrence interval of 1 to 10 years.	
	4	Highly Likely	91 to 100 percent probability of occurrence in the next year or a recurrence interval of less than 1 year.	
Spatial Extent	1	Limited	Less than 10% of the planning area could be impacted.	10%
	2	Small	10%–25% of the planning area could be impacted	
	3	Significant	25%–50% of the planning area could be impacted.	
	4	Extensive	50%–100% of the planning area could be impacted.	
Severity of Life/Property Impact	1	Negligible	Less than 5% of the affected area's critical and non-critical facilities and structures are damaged/destroyed. Only minor property damage and minimal disruption of life. Temporary shutdown of critical facilities.	30%
	2	Limited	More than 5% and less than 25% percent of property in the affected area is damaged/ destroyed. Complete shutdown of critical facilities for more than one day but less than one week.	
	3	Critical	More than 25% and less than 50% of property in the affected area was damaged/destroyed. Complete shutdown of critical facilities for over a week but less than one month.	
	4	Catastrophic	Over 50% of critical and non-critical facilities and infrastructures in the affected area are damaged/ destroyed. Complete shutdown of critical facilities for more than one month.	
Warning Time	1	Self-defined	More than 24 hours	10%
	2	Self-defined	12 to 24 hours.	
	3	Self-defined	6 to 12 hours.	
	4	Self-defined	Less than 6 hours.	
Duration	1	Brief	Up to 6 hours.	10%
	2	Intermediate	Up to one day.	
	3	Extended	Up to one week.	

DRAFT

Risk Index Factor	Degree of Risk Level		Criteria	Factor Weight for Degree of Risk Level
	4	Prolonged	More than one week.	
Response Capacity	1	High	Significant resources and capability to respond to this kind of event; staff are trained, experienced, and ready.	10%
	2	Medium	Some resources and capability to respond to this kind of staff; some staff may be trained, experienced, and ready while others may need additional support.	
	3	Low	Limited resources and capability to respond to this kind of event; additional staff or staff training needed.	
	4	None	No resources and capability to respond this kind of event; additional outside support would be required.	

RISK FACTOR (RF) EQUATION

RF Value = [(Probability x 0.30) + (Spatial Extent x 0.10) + (Severity of Life/Property Impact x 0.30) + (Warning Time x 0.10) + (Duration x 0.10) + (Response Capacity x 0.10)]

Hazards with an RF value greater than or equal to 2.5 are considered high risk. Those with RF values of 2.0 to 2.4 are considered moderate risk hazards, and those with an RF value less than 2.0 are considered low risk. The highest possible RF value is 4.

Hazard Event History

Examining hazard event histories provides valuable insights to inform decision-making and help prioritize resources for risk prevention and response efforts. Table 6 lists the hazard events impacting the city of Draper since the 2019 plan update, as recorded in the Storm Events Database from the National Centers for Environmental Information.

Table 6: History of Hazard Events in the City of Draper

Type of Hazard Event	FEMA Disaster #	Date(s)	Damage or Impacts	Description
Avalanche		N/A		
Drought		N/A	Drought is a recurring problem in the region	Air quality issues, water restrictions
Earthquake	DR-4548-UT	03/18/2020	No significant damage in Draper	5.7 magnitude

DRAFT

Type of Hazard Event	FEMA Disaster #	Date(s)	Damage or Impacts	Description
Extreme Heat		N/A	Summers of 2020–2024	Reported 9 deaths in Northern Utah, an upward trend in heat exposure and heat-related deaths since 2015. Excessive heat can also affect infrastructure. General impacts include increased risk for heat-related illness and increased power demand for cooling systems.
Extreme Cold		N/A	Winter of 2022 and 2023	2022: 5 people experiencing homelessness died from cold-related exposure in Salt Lake City, but this threat could impact neighboring jurisdictions. Extreme cold can contribute to hypothermia and other cold-related illness/injury. Increased demand for heating systems. Potential for frozen pipes or other service disruptions.
Flooding		08/03/2023	Significant damage to drainage, creating several landslides Heavy flooding in multiple residential communities Undercutting of roadway leading to road collapse Estimated $5,500,000 in city, plus residential damage	Massive storm cell sat over Draper dropping 2+ inches of rain in approximately one hour
Landslide/ Slope Failure		04/22/2023	Two homes slid in during a landslide. Two neighboring homes were evacuated.	Heavy winter snow and water, and failure of retaining wall.
		06/18/2009, 06/21/2009	Post-fire mudslides in Corner Canyon area. The cost of damage to homes and yards is not available.	Two homes near Bear Mountain Drive were affected on the 18th, but a second mudflow was diverted between homes by a flood-prevention canal on the 21st. The second mudflow passed

DRAFT

Type of Hazard Event	FEMA Disaster #	Date(s)	Damage or Impacts	Description
				between the homes onto Bear Mountain Drive.
Radon		N/A	52% of homes in Draper are at or above WHO's mitigation threshold.	
Heavy Rain		08/03/2023	Significant damage to drainage, creating several landslides Heavy flooding in multiple residential communities Undercutting of roadway leading to road collapse Estimated $5,500,000 in city, plus residential damage	Massive storm cell sat over Draper dropping 2+ inches of rain in approximately one hour
High Wind		03/5/2017	$100,000 property damage.	68 mph winds
		03/13/2016	$500,000 property damage	59 mph winds
		04/22/2014		72 mph winds
		03/26/2012	Damage at shopping center. Large commercial windows blown out Extensive roof damage to several homes	$20,000 in property damage
		03/29/2009		???
Lightning		N/A		
Severe Winter Weather		01/21/2019	8 inches	
		01/19/2018	13.5 inches	
		12/13/2015	widespread power outages	
		12/19/2013	7 inches	
		3/22/2013	6 inches	
		01/27/2013	8 inches	
Tornado		N/A		
Wildfire		6/12/2014	Orson Smith Trailhead fire	
		8/15/2011	Bell Canyon Fire	
		8/8/2008	Corner Canyon Fire	680 acres burned, but no homes impacted
Dam Failure				
Civil Disturbance		N/A		
Cyberattack		N/A		

DRAFT

Type of Hazard Event	FEMA Disaster #	Date(s)	Damage or Impacts	Description
Hazardous Materials Incident (Transportation & Fixed Facility)		N/A		
Public Health Epidemic/ Pandemic	DR-4525-UT	03/2019	COVID-19	Temporary business closures, economic impacts
Terrorism		N/A		

National Flood Insurance Program Summary

The city of Draper participates in the National Flood Insurance Program (NFIP). Table 7 displays statistics related to the NFIP. The city of Draper does not participate in the Community Rating System (CRS).

Table 7: National Flood Insurance Program Status for the City of Draper[2]

Initial FHBM Identified	Initial FIRM Identified	Current Effective Map Date	Adopted Date	Date Joined NFIP	Tribal
N/A	12/18/85	11/19/21	2021	12/18/85	No

Table 8: National Flood Insurance Overview for the City of Draper

Community ID	Number of Losses	Total Net Payment	Active Policies	Total Coverage
490244	0	$0	5	Unknown

The city of Draper designated the senior engineer manager, or another engineer as designated by the city engineer, as the floodplain administrator. The city's Flood Damage Regulations were adopted on 10/19/2021. The current FIRM is dated 11/19/2021. The city requires floodplain development permits, referred to as land disturbance permits, in Draper. The Building Division is responsible for reviewing permits. Applicants are encouraged to coordinate with the city engineer before submitting a request for a land disturbance permit. Substantial damage/substantial improvements are assessed through the permitting process. In addition to submitting a permit application, Draper requires inspections before construction begins in any Special Flood Hazard Area. Permits may be denied if proper measures are not taken to mitigate risk, such as confirming with current relevant building codes in accordance with the NFIP requirements outlined in the City's Flood Damage Regulations.

[2] FHBM = Flood Hazard Boundary Map, FIRM = Flood Insurance Rate Map.

Jurisdiction-Specific Vulnerabilities and Impacts

Table 9 provides information on the vulnerable assets in the city of Draper, including its critical facilities, highlighting the city's vulnerability to identified hazards. It also describes the potential impacts on the community arising from those vulnerabilities. By understanding the risks associated with these assets, local authorities can develop proactive strategies to mitigate vulnerabilities and ensure the safety and functionality of these important assets during hazard events. These data are invaluable for decision-making and prioritizing resources for emergency response and preparedness efforts, ultimately contributing to more effective risk management and greater resilience in the community.

The Draper population of 50,017 individuals is potentially vulnerable to various hazards. Other community assets at risk include critical facilities such as 1 EOC, 3 fire stations, 1 police station, 1 hospital, and 14 schools. Community centers such as the Draper Library, Draper Senior Center, Draper Recreation Center, and outdoor recreation sites such as Whedon Farm Regional Park, South Mountain Park, Draper City Park, The Draper Outdoor Pool, South Mountain Golf Course, and Flight Park and numerous trailheads. Major transportation routes include I-15, Bangerter Highway, 12300 South, Highland Drive, Fort Street, and Traverse Ridge Road. Thirteen homes and three other historic sites in Draper are recognized on the National Register of Historic Places which are vulnerable to unique hazard impacts.

Table 9: Jurisdiction-Specific Vulnerabilities and Impacts in the City of Draper

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
Avalanche	People	*Vulnerability:* In Draper, several residential neighborhoods are located along the Wasatch Range foothills, where avalanche potential is not nonexistent. Households in these areas, particularly those with limited winter emergency preparedness, could be at risk during periods of heavy snowfall or rapid temperature fluctuations. *Impacts:* Avalanche can cause injury or death to those caught in its path. Residents who recreate in nearby backcountry terrain, including hikers and winter sports enthusiasts, may face increased danger if conditions shift unexpectedly and avalanche warnings go unheeded.
	Structures	*Vulnerability:* Homes constructed along steep slopes and in canyons within the eastern part of Draper may be exposed to avalanche risk under the right conditions. Continued development in hillside areas increases the potential for property impacts. *Impacts:* Residences with exposed elevations, poorly designed snow retention systems, or inadequate setback from natural chutes are especially vulnerable to damage from snow movement and structural loading.
	Economic Assets	*Vulnerability:* Property values and economic disruption from road closures are concerns for areas vulnerable to avalanches. *Impacts:* Properties located in or near avalanche-prone terrain could experience significant damage, reducing home values and increasing insurance premiums. Avalanches can also lead to temporary road closures on mountain access routes, such as Corner Canyon Road or other canyon trails, requiring debris removal and repairs that place

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		financial strain on city services and disrupt commuting and recreation-based economic activity.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Vegetation, habitat, and cultural sites are vulnerable to avalanches. *Impacts:* An avalanche in Draper's foothill areas could severely impact local vegetation, strip forested slopes, and damage sensitive wildlife habitats. These natural areas, which are part of the broader watershed feeding into Utah's urban corridor, may suffer long-term ecological damage. Additionally, scenic and culturally valued open spaces used by residents for outdoor activities could become inaccessible or permanently altered.
	Critical Facilities and Infrastructure	*Vulnerability:* Key infrastructure, including utility lines that cross or run along canyon corridors, could be damaged in an avalanche event. *Impacts:* Power outages, gas line ruptures, and interruptions to water delivery systems are possible if utility corridors lie within the runout zones of unstable slopes. These disruptions could affect large portions of Draper's residential areas and public services, especially those near the foothills.
	Community Activities	*Vulnerability:* Recreation opportunities are vulnerable to avalanche risk. *Impacts:* Draper residents frequently use the foothills for outdoor recreation, especially in areas like Corner Canyon and Suncrest. During or after heavy snowfall, these activities carry avalanche risk, particularly for individuals traveling off marked trails. Public trail closures and the potential for rescue operations may limit access and strain emergency response resources.
Drought	People	*Vulnerability:* All Draper residents are vulnerable to drought. *Impacts:* Drought may lead to water restrictions for residents and increased costs for water. Hundreds to thousands of residents and recreationists live and explore the foothills of Draper. High-drought seasons pose high risks of wildfires in these areas.
	Structures	*Vulnerability:* All homes are vulnerable to drought. *Impacts:* Drought increases the risk of wildfire. Hundreds of homes sit in the foothills of Draper, with estimated values in the hundreds of millions of dollars. Drought can cause the contraction of soils, which may damage walls or foundations of buildings.
	Economic Assets	*Vulnerability:* Property values are vulnerable to the impacts of drought. *Impacts:* The Draper foothills and Corner Canyon are significant attractions for building residential structures and vacationing for outdoor activities.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Vegetation and the risk of wildfire are vulnerable to drought conditions. *Impacts:* Drought stresses trees and other vegetation, which may increase the risk of wildfire in the foothills or river bottoms. Several water runoffs and retention basins surround the area.
	Critical Facilities and Infrastructure	*Vulnerability:* City water resources are vulnerable to drought. *Impacts:* Drought can reduce reservoir and groundwater levels, straining water supplies for homes, businesses, and emergency

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		services. Prolonged drought can lead to soil shrinkage and cracking, causing damage to roads, bridges, and pipelines.
	Community Activities	*Vulnerability:* Outdoor recreation activities are vulnerable to drought. *Impacts:* Drought can diminish the desirability of the outdoor environment, making it less inviting for hiking, mountain biking, running, and cross-country skiing. Fewer visitors may also affect the local economy.
Earthquake	People	*Vulnerability:* Approximately 50,000 residents and thousands of patrons could be affected if an earthquake of magnitude 7+ hits. *Impacts:* People can be injured by falling objects or trapped under collapsed structures. Residents may be displaced from their homes. Day-to day activities will likely be disrupted. Businesses may close, contributing to financial hardship for residents.
	Structures	*Vulnerability:* All Draper structures are vulnerable to earthquakes. Unreinforced masonry and other older structures are more susceptible to damage. Much of Northwest Draper has moderate liquefaction susceptibility, which increases the vulnerability of structures. *Impacts:* The 5.8 magnitude earthquake in Magna on March 18, 2020, caused minor damage to several city buildings and residential structures. In a large earthquake, structural damage could be widespread and may require costly repairs that can take months or years to complete.
	Economic Assets	*Vulnerability:* Large commercial shopping centers and restaurants located in Draper are vulnerable to earthquakes. *Impacts:* Many businesses may experience losses from building damage or damage to equipment or inventory. Businesses may be closed due to interruptions of power, utility, or other services.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Riparian ecosystems are vulnerable to earthquakes. *Impacts:* Earthquakes can potentially disrupt the Draper river bottom and its ecosystems.
	Critical Facilities and Infrastructure	*Vulnerability:* Most city facilities would be affected by an earthquake, including City Hall, fire stations, public works, and school facilities in Draper. *Impacts:* An earthquake is likely to cause physical damage to multiple critical facilities and damage infrastructure such as power, transportation, and utility systems.
	Community Activities	*Vulnerability:* All community events and activities are vulnerable to disruption from earthquakes. *Impacts:* Day-to-day activities, education, business, government operations, and recreational outdoor activities would be disrupted.
Extreme Heat	People	*Vulnerability:* All residents are vulnerable to extreme heat. Some groups face higher risks, such as 3,200 residents over 65; 16,000 under the age of 18; 2,200 with disability status; and 2,400 living below the poverty line. *Impacts:* Extreme heat can cause heat-related illnesses, such as dehydration, heat exhaustion, and heat stroke. Vulnerable groups may find it extremely difficult to access alternative means of cooling during

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		times of extreme heat. Residents may face financial hardship from increased costs associated with cooling.
	Structures	*Vulnerability:* All structures are vulnerable to extreme heat. *Impacts:* Prolonged heat exposure can weaken building materials, causing cracks in concrete, warping of wood, and deterioration of roofing materials.
	Economic Assets	*Vulnerability:* All businesses are vulnerable to the impacts of extreme heat. *Impacts:* Businesses may face increased energy costs and reduced worker productivity due to heat-related stress.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Vegetation, parks, forests, historical sites, and cultural sites are vulnerable to extreme heat. *Impacts:* Extreme heat can dry out vegetation, increasing wildfire risks that can destroy forests, parks, and historic sites. Outdoor events and supporting events may need to be postponed or canceled due to heat risks.
	Critical Facilities and Infrastructure	*Vulnerability:* Power systems, transportation networks, and water systems are vulnerable to extreme heat. *Impacts:* Increased use of air conditioning can overload the power grid. Extreme heat can cause roads to soften, crack, or buckle, creating transportation hazards. Prolonged extreme heat can also increase water demand while leading water reservoirs to evaporate faster, putting pressure on water systems.
	Community Activities	*Vulnerability:* Outdoor recreation and city events are vulnerable to extreme heat. *Impacts:* Outdoor activities may become more dangerous due to the risk of heat exhaustion, heatstroke, and dehydration. Parks, hiking trails, and outdoor facilities may see decreased activity. Summer markets, sports, and outdoor events may be canceled.
Extreme Cold	People	*Vulnerability:* All residents are vulnerable to extreme cold. Residents who face higher risks include 3,200 residents over 65; 16,000 under the age of 18; 2,200 with disability status; and 2,400 living below the poverty line. *Impacts:* Extreme cold can lead to hypothermia or frostbite. These groups may find it extremely difficult to access alternative means of heating during times of extreme cold.
	Structures	*Vulnerability:* All structures are vulnerable to extreme cold. Older buildings that have seen more wear may be more vulnerable. *Impacts:* Water in pipes can freeze and expand, causing pipes to burst. Heavy snow accumulation can also collapse roofs, especially on older/weaker structures. Freeze–thaw cycles can also weaken building foundations and cause cracks in roads, bridges, and sidewalks.
	Economic Assets	*Vulnerability:* All businesses are vulnerable to the impacts of extreme cold. *Impacts:* Extreme cold can lead to temporary closures of businesses and community activities. High heating demand can also raise energy costs for businesses and residents.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Natural, Historic, and Cultural Resources	*Vulnerability:* Wildlife is vulnerable to extreme cold conditions. *Impacts:* Extreme cold can impact local wildlife by reducing food sources.
	Critical Facilities and Infrastructure	*Vulnerability:* Power and heating, transportation systems, water systems. *Impacts:* Increased demand for electricity and natural gas for heating can overload systems. Transportation can also be disrupted due to secondary hazards, leading to closures, accidents, and delays. Lower temperatures can also freeze water infrastructure, leading to supply disruptions and costly repairs.
	Community Activities	*Vulnerability:* Community activities, schools, and public offices are vulnerable to extreme cold. *Impacts:* Extreme cold can cause schools and offices to close or delay their start. It can also reduce participation in outdoor sports/events and activities.
Flooding	People	Areas that may be impacted by thunderstorm and snowmelt flooding include the Bear Canyon Neighborhood, Springdale Way near the foothills, and Corner Canyon Creek. In addition, while the potential is small, the Jordan River, which runs west of I-15 from north to south on the west side of Draper, could overtop due to thunderstorms, severe weather, or rapid snowmelt. The following areas of mitigation interest were identified by the city of Draper and through FEMA's Geographic Information System (GIS) flood exposure analysis: • The Bear Canyon neighborhood encroaches into the natural floodplain. During high flows, certain parts of the neighborhood experience flooding along historic flow paths. • In 2011, houses along Springdale Way near the foothills experienced mudflows, flooding, and debris flow from small drainages coming off the foothills. • Along Corner Canyon Creek, downstream of I-15, commercial development in the Special Flood Hazard Area is planned. The city is considering flood detention and an irrigation facility as well as a culvert or channelization for Corner Canyon Creek at 1100 East. The Draper Elementary School is vulnerable to the 0.2% annual chance flood. *Vulnerability:* Four thousand residents might be affected during natural flooding, not including failure of storm drains and waterlines. Flooding may occur along the Jordan River, Corner Canyon Creek, Big Willow Creek, or other low-lying areas without adequate drainage. *Impacts:* Fast-moving floodwaters are dangerous and can sweep people away. Floodwaters can also spread waterborne contaminants.
	Structures	*Vulnerability:* Hundreds of residential homes, and some commercial buildings and schools, are vulnerable to flooding. *Impacts:* Flooding can cause extensive damage to foundations, walls, and contents of buildings, and in some cases can lead to complete destruction of structures.
	Economic Assets	*Vulnerability:* Businesses located in or near flood hazard zones are vulnerable to flooding.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		Impacts: Commercial buildings can be damaged and require costly repairs. Closures during the initial incident and throughout the recovery phase can contribute to lost revenue.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Habitats near waterways and areas prone to erosion are vulnerable to flooding. *Impacts:* Excessive water can erode soil, destabilize hillsides, and increase the risks of landslides in mountainous and foothill areas.
	Critical Facilities and Infrastructure	*Vulnerability:* School and commercial buildings, stormwater systems, roads, and utility systems are vulnerable to flooding. *Impacts:* Storm drains may be overwhelmed. Floodwater can damage roads and utilities and disrupt emergency response from police, fire, and EMS.
	Community Activities	*Vulnerability:* Community events, recreation, daily activities of work and school are vulnerable to flooding. *Impacts:* Flooding can cause extensive damage to roadways, homes, workplaces, and open spaces like parks. These disruptions may affect many events and day-to-day activities.
Landslide/ Slope Failure	People	*Vulnerability:* Moderate landslide susceptibility is found throughout the eastern and southern areas of Draper in the foothills of the Wasatch and Traverse Mountains. Some areas of high susceptibility are in the Traverse Mountains, near Suncrest. *Impacts:* Hundreds of potential residents could be affected. If landslides are fast-moving, residents can be injured or killed. Homes can be destroyed and residents displaced.
	Structures	*Vulnerability:* Hundreds of residential structures, as well as commercial and public buildings in the foothills, are vulnerable. Numerous geological hazards exist in Draper and throughout the Salt Lake Valley that could create an emergency situation or disaster. Steep mountains adjacent to the city create the potential for landslides, debris flows, rock falls, and snow avalanches. Draper has experienced landslide-debris flow in the past. Steep slopes on the eastern and southern sides of Draper also have a high potential for landslides and slope failure. Buildings along the ridgetops of some areas increase the potential for slides due to added weight and hill disturbance. Repairs to structures and roadways and stabilization of slopes can be costly. *Impacts:* Landslides and slope failures can cause extensive damage to structures, ranging from minor damage to complete loss.
	Economic Assets	*Vulnerability:* Property values and business operations are vulnerable to landslide impacts. *Impacts:* Landslides can decrease the values of residential properties near the site of landslides. Damage to businesses can contribute to overall economic losses. Damage to roads or other infrastructure may disrupt business functions if workers or customers cannot access workplaces. Damage or inaccessibility of outdoor recreation sites could also negatively impact the economy.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Recreation sites are vulnerable to landslides. *Impacts:* Landslides could block access to hiking and biking trails.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Critical Facilities and Infrastructure	*Vulnerability:* Roadways, drainages, retention basins, and catch basins are vulnerable to landslides. *Impacts:* Roads and other infrastructure could be damaged or blocked. Major roadways such as Traverse Ridge Road could impede access to other roads in the southeast area of the city.
	Community Activities	*Vulnerability:* Outdoor recreation businesses and leisure activities are vulnerable to landslides. *Impacts:* Corner Canyon activities, mountain biking, hiking, and cross-country skiing could be inaccessible.
Radon	People	*Vulnerability:* Draper is considered to be at moderate to high risk of radon exposure. According to utahradon.org 52% of homes tested in Draper had dangerous levels of radon. *Impacts:* Radon is the second-leading cause of lung cancer after smoking. There is a higher risk for certain populations such as children, the elderly, and those with respiratory conditions.
	Structures	*Vulnerability:* All structures in Draper are vulnerable. Structures with weaknesses are at higher risk for accumulating dangerous levels. *Impacts:* Radon enters buildings and homes through cracks in foundations, basements, and crawl spaces, exposing occupants to health risks.
	Economic Assets	*Vulnerability:* Healthcare costs are vulnerable to increases due to radon exposure. *Impacts:* Long-term exposure can lead to increased medical expenses for lung cancer treatment and respiratory issues.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Historic sites and older homes are vulnerable to radon exposure. *Impacts:* Older structures may lack modern radon-resistant designs, which makes mitigation more difficult and expensive.
	Critical Facilities and Infrastructure	*Vulnerability:* Water sources are vulnerable to radon exposure. *Impacts:* Radon can dissolve into groundwater, potentially affecting well water sources.
	Community Activities	None
Heavy Rain	People	*Vulnerability:* Heavy rain could occur anywhere in Draper. Those near waterways, alluvial fans, or low-lying areas may be at risk. *Impacts:* Ideally, few people are affected by heavy rains. The ones most likely to be affected are those in flood zones and those without the economic means to recover. Heavy rain can cause flash flooding, which can lead to bodily harm if people do not avoid fast-moving waters. It can also damage homes, leading to temporary displacement.
	Structures	*Vulnerability:* Several residential structures and commercial buildings are vulnerable to heavy rain in Draper. *Impacts:* Homes and contents can be damaged, and residents may be displaced during cleanup and repairs.
	Economic Assets	*Vulnerability:* Businesses in low-lying areas or near flood zones are vulnerable.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		Impacts: Flooding or water damage may close businesses or damage inventory, leading to financial losses.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Soil erosion and ecosystems are vulnerable to heavy rain. *Impacts:* Heavy rains can wash away topsoil, destabilize slopes, and damage local ecosystems in the foothills.
	Critical Facilities and Infrastructure	*Vulnerability:* Roads and stormwater systems are vulnerable to heavy rain. *Impacts:* Heavy rains can damage roadways, retention and catch basins, and storm drains, leading to significant recovery costs.
	Community Activities	*Vulnerability:* Outdoor recreation and sports are vulnerable to heavy rain. *Impacts:* Hiking, biking, and other outdoor activities could be dangerous due to muddy trails, landslides, or flash floods. Sporting events and other outdoor activities may be postponed or canceled.
High Wind	People	*Vulnerability:* Draper frequently experiences strong winds, particularly in areas near the Point of the Mountain, where gusts are often intensified due to local terrain. Residents in this area are exposed to sudden high wind events, including microbursts, which can pose safety risks. Outdoor workers, elderly individuals, and those without immediate access to shelter are especially vulnerable during these occurrences. *Impacts:* People can be injured or killed by blowing debris or falling trees. They can be affected by roads blocked by debris, damage to utility services, or other disruptions.
	Structures	*Vulnerability:* All structures are vulnerable to high winds. *Impacts:* Homes, businesses, and accessory structures such as carports and sheds are susceptible to wind-related damage, particularly those with older construction or lighter materials. In Draper's higher elevation neighborhoods, flying debris can break windows, damage roofing, and topple fences. Poorly anchored structures and those lacking wind-resistant features face increased risk during severe windstorms. The Mountain Shadows RV park and mobile homes may experience greater damage.
	Economic Assets	*Vulnerability:* All businesses are vulnerable to high winds. *Impacts:* Frequent wind events in Draper can disrupt local businesses by damaging signs, outdoor equipment, and storefronts. Extended power outages and structural repairs may lead to operational downtime and lost revenue. Recurrent wind-related damage can also drive up insurance premiums for both commercial and residential property owners.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Parks, trees, trails, and amenities are vulnerable to high winds. Habitats, historic sites, and cultural landmarks are also at risk. *Impacts:* Gusty conditions can uproot mature trees in Draper's parks and along popular trail systems such as those in Corner Canyon. Soil erosion and trail washouts may occur on exposed ridgelines and open spaces, affecting both recreational use and wildlife habitats. Historic structures and cultural landmarks, especially those not retrofitted for high wind events, may be subject to deterioration or surface damage.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Critical Facilities and Infrastructure	*Vulnerability:* Power and communication systems and transportation networks are vulnerable to high winds. *Impacts:* Strong winds can damage power poles, transformers, and overhead utility lines throughout Draper, causing electricity and communication outages. High-profile vehicles on I-15 and Bangerter Highway are vulnerable to tipping, while flights out of nearby airfields may be delayed or grounded. Critical roads may become hazardous or impassable due to downed trees or debris.
	Community Activities	*Vulnerability:* City events, sports, and recreation activities are vulnerable to high winds. *Impacts:* City-sponsored outdoor events, sports practices, and markets may be canceled or delayed when wind speeds reach unsafe levels. Damage to park facilities, stages, or tents may prevent use for days after a storm. Community engagement may be reduced if recurring wind events affect planned gatherings or recreation.
Lightning	People	*Vulnerability:* Lightning can occur anywhere in Draper, and all residents are at risk. Lightning presents a serious risk during summer thunderstorms, especially for individuals engaged in outdoor activities such as hiking, cycling, or team sports in Draper's foothills and open spaces. *Impacts:* Those caught in exposed areas without shelter face the risk of injury from direct strikes or ground currents. Children, seniors, and those unfamiliar with lightning safety may be more susceptible to harm.
	Structures	*Vulnerability:* Outbuildings, barns, and utility sheds in Draper's agricultural and rural zones are particularly vulnerable. *Impacts:* Lightning can strike buildings directly or cause fires through indirect contact, especially in homes with metal roofing or poor grounding. Surges caused by strikes can damage appliances and internal electrical systems if protective devices are not in place.
	Economic Assets	*Vulnerability:* Businesses throughout Draper are vulnerable to lightning impacts. *Impacts:* Power surges and outages resulting from lightning can interrupt business operations, damage electronic equipment, and result in costly repairs or data loss. Businesses that rely on uninterrupted power or internet access may suffer immediate financial setbacks. Outdoor attractions or venues may also face liability or cleanup costs after a strike.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Vegetation, trails, historical markers, parks, and wildfire-prone areas are vulnerable to lightning. *Impacts:* Draper's open lands and foothill vegetation, particularly during dry months, are susceptible to ignition from lightning. Trees struck directly may split or fall, blocking trails or damaging nearby structures. Cultural resources such as historical markers or art installations in public parks may also be damaged by heat, fire, or debris caused by a lightning strike.
	Critical Facilities and Infrastructure	*Vulnerability:* Power, communication, and public facilities are vulnerable to lightning strikes.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		Impacts: Lightning strikes on power substations, communication towers, or utility poles can lead to outages across large parts of Draper. Emergency communications may be disrupted if radio or cellular infrastructure is affected. Schools, healthcare facilities, and city offices can experience temporary shutdowns if backup systems fail to activate.
	Community Activities	*Vulnerability:* Outdoor events, sports, recreation activities are vulnerable to lightning. *Impacts:* Events held outdoors may be canceled or evacuated due to lightning. Sudden thunderstorms create hazardous conditions for public gatherings, especially in areas without nearby shelter. Continued lightning threats can delay recovery efforts or reduce participation in rescheduled events.
Severe Winter Weather	People	Corner Canyon and the Suncrest Area receive large amounts of snow, which can interrupt business, including city services, such as police, fire, and public works tasks. Winter weather systems and snowstorms over northern Utah can have a dramatic effect on regional commerce, transportation, and daily activity and are a major forecast challenge for local meteorologists. This challenge is heightened in the city of Draper because of the wide variety of local climatic features, such as significant elevation changes, atypical wind patterns, and mountainous slopes located immediately adjacent to city boundaries. These local features can impact the severity of winter storms. Winter Storms additionally bring lower temperatures which can adversely impact the elderly. Additionally. Draper has a number of community members without health insurance which would impact medical care.
	Structures	Heavy snow loads can cause roofs to collapse, especially for older buildings, barns, or poorly maintained structures. Prolonged freezing temperatures can cause pipes to burst, leading to water damage. Freeze–thaw cycles can crack foundations, driveways, and roads.
	Economic Assets	Severe winter weather may shut down businesses and schools. Retail and tourism industries may see fewer customers during extreme winter weather. There will also be an increased demand for heating and electricity, raising energy costs for homes and businesses. Severe winter weather can also delay or halt deliveries, affecting grocery stores, fuel, and other essential goods.
	Natural, Historic, and Cultural Resources	Heavy snow can break tree branches, damage parks and trails.
	Critical Facilities and Infrastructure	Heavy snow can weigh down power lines, causing widespread outages and leaving homes without heat. Roads might be impassable due to snowdrifts or accidents. Buses, trains, and flights may be delayed or canceled. Emergency services may be delayed due to road conditions.
	Community Activities	Severe winter weather may force schools to close, and outdoor activities like skiing, snow shoeing, may be too hazardous. Recreational facilities and city parks may close. Homeless shelters and warming centers may see increased demand as people seek protection from the extreme cold.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
Tornado	People	*Vulnerability:* Although tornadoes are relatively rare in Draper, the area is no stranger to strong wind events, especially near the Point of the Mountain, where wind speeds frequently exceed state and national averages. All residents are potentially vulnerable to tornadoes. *Impacts:* In the event of a tornado, residents could face serious risks from airborne debris, uprooted trees, and structural collapses. Individuals without access to basements or storm shelters, including seniors and families living in mobile or older homes, are especially vulnerable.
	Structures	*Vulnerability:* Homes and businesses in Draper could sustain heavy damage during a tornado. *Impacts:* Roofs may be lifted off, windows shattered, and walls compromised. Larger structures like shopping centers or restaurants may be at risk of partial or total collapse, resulting in extended closures and major repair costs.
	Economic Assets	*Vulnerability:* Businesses throughout Draper are vulnerable to tornado impacts. *Impacts:* Tornado damage in Draper could have long-lasting impacts on the local economy. Retail businesses, hotels, restaurants, and industrial sites may face significant operational downtime due to structural damage or power outages. Temporary closures can lead to layoffs, interrupted supply chains, and loss of revenue, especially for small businesses without the resources for quick recovery.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Draper's scenic parks, open spaces, and trail systems are vulnerable to tornado winds. *Impacts:* Mature trees and vegetation may be uprooted, leading to habitat destruction and increased erosion risk. Historic buildings and cultural landmarks may suffer irreparable harm.
	Critical Facilities and Infrastructure	*Vulnerability:* Essential services in Draper, including power distribution lines, substations, and communications systems, are susceptible to tornado damage. *Impacts:* Downed infrastructure can leave neighborhoods and business corridors without electricity, internet, or water service. Major roadways such as I-15 and Bangerter Highway could be blocked by debris, while traffic signals, public safety buildings, and schools may require emergency repairs to maintain functionality.
	Community Activities	*Vulnerability:* Tornado events can disrupt everyday life and halt scheduled activities. *Impacts:* Public schools and city-owned facilities may need to close for inspections or repairs, while parks and community centers could be temporarily unsafe. Events such as farmers markets, sports tournaments, and local festivals may be postponed or canceled, reducing opportunities for social engagement and community support.
Wildfire	People	*Vulnerability:* Perhaps the most likely and significant hazard in the city of Draper is the potential for damage and loss of life and property through fire events. The terrain of steep slopes adds to the dangers and difficulties of wildfire suppression. Many homes on the east and south sides of Draper have a high potential for being impacted by wildfires. Fires can occur in the urban fabric of the community or as

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		wildfires in the hillside areas of the community and mountainous areas adjacent to the city. Each incident may require a unique response from the city of Draper. The potential for structure and wildfires is increased by lightning events. *Impacts:* Residents could be displaced by evacuations. Individuals with disabilities or access and functional needs may have more difficulty evacuating and be more at risk of injury from wildfire. Wildfire smoke impacts air quality, which has negative health effects for individuals not near the fire, particularly people with other respiratory or cardiac conditions. Wildfires can remove necessary vegetation, which can make soils unstable for extended periods. Utah's fire season typically occurs during the warmer and drier months between May and October. Although traditionally a majority of wildfires have been caused naturally, mostly by lightning, as development encroaches on the hillsides and lower slopes of the Wasatch Mountains, wildfires caused by humans will likely increase.
	Structures	*Vulnerability:* Hundreds of structures are vulnerable, especially those near Corner Canyon, Suncrest, and other wooded areas. Homes without defensible space are most vulnerable. *Impacts:* Wildfires can burn entire neighborhoods, resulting in significant property loss.
	Economic Assets	*Vulnerability:* Businesses near foothills are vulnerable to wildfire impacts. *Impacts:* Stores, restaurants, and offices may be forced to shut down due to fire damage, evacuations, or power outages, leading to financial losses.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Vegetation and wildlife habitats are vulnerable to wildfires. *Impacts:* Wildfires can burn thousands of acres of forests, grasslands, and habitats, displacing wildlife. Loss of vegetation can lead to erosion, landslides, and long-term environmental damage.
	Critical Facilities and Infrastructure	*Vulnerability:* Power, water, and transportation infrastructure are vulnerable to wildfire damage. *Impacts:* Fire can damage electrical grids, transformers, and transmission lines. Roads may be closed due to flames, smoke, or fallen trees. If the water supply systems are damaged, firefighting efforts become more difficult. Emergency services and hospitals may be overwhelmed.
	Community Activities	*Vulnerability:* Community events/activities are vulnerable to disruption from wildfires. *Impacts:* Fairs, markets, or recreation events may be canceled or postponed. Schools may close due to damage. Workplaces may remain closed for days or weeks due to evacuation and/or damage.
Dam Failure	People	*Vulnerability:* The Draper Irrigation Company has a storage reservoir located at the mouth of Corner Canyon, which is classified as a high-hazard dam by the state of Utah. In addition, the Point of the Mountain Raw Water Reservoir poses risks. The failure of these reservoirs could have an impact on residential areas in the city.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Structures	*Vulnerability:* Homes and buildings in inundation areas are vulnerable to dam failure impacts. *Impacts:* Structures can be damaged; basements and lower floors of buildings may be completely submerged or filled with mud or debris.
	Economic Assets	*Vulnerability:* Businesses in inundation areas and property values are vulnerable to dam failure. *Impacts:* Homeowners, businesses, and the city may face millions in damage, leading to rising insurance premiums.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Ecosystems are vulnerable to dam failure impacts. *Impacts:* Floodwaters can wash away soil, trees, and plant life, resulting in damage to local ecosystems.
	Critical Facilities and Infrastructure	*Vulnerability:* No critical facilities were located within dam inundation boundaries. However, infrastructure such as power and transportation are vulnerable is vulnerable. *Impacts:* Flooding could damage electrical grids, substations, and transformers leading to power outages. Gas lines could be damaged, increasing the risk of fires and explosions, roads could be impassable, and emergency services may struggle to reach people due to these conditions and may become overwhelmed.
	Community Activities	*Vulnerability:* Community events are vulnerable to disruption from dam failure. *Impacts:* Community events and activities may be postponed or canceled.
Civil Disturbance	People	If demonstrations escalate, people could suffer injuries from physical altercations, tear gas, and projectiles.
	Structures	Businesses, government buildings, and public spaces could be targeted for graffiti, broken windows, arson, or other damage.
	Economic Assets	Civil unrest can force store closures, reducing revenue. Tourists and shoppers may avoid certain areas, affecting local businesses and restaurants. Businesses may struggle with costly repairs.
	Natural, Historic, and Cultural Resources	Demonstrations in parks or streets may result in environmental damage.
	Critical Facilities and Infrastructure	Protestors may block access to roads, delaying emergency response.
	Community Activities	Large community gatherings or activities may be postponed or canceled due to safety concerns.
Cyberattack	People	Cyberattacks could interrupt government work, public safety, and critical infrastructure operation. A data breach could result in cybercriminals stealing personal information, tax documents, and other critical records.
	Structures	Cyberattacks on government or private businesses could disable security systems, HVAC controls, and other infrastructure management systems, potentially causing significant damage

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Economic Assets	Cyberattacks can disrupt financial systems, causing delays in payroll and payment processing, licensing and permitting, and other essential services and records management.
	Natural, Historic, and Cultural Resources	A cyberattack on Draper's water supply or power grid could disrupt irrigation systems, impacting parks and other natural areas.
	Critical Facilities and Infrastructure	A cyberattack on Rocky Mountain Power or Enbridge gas could lead to power outages, gas shortages, and water system failures. A breach at Intermountain Healthcare could compromise patient records, delay medical treatment, and disrupt emergency services. Attacks on 911 dispatch systems could increase emergency response times.
	Community Activities	Cyberattacks can disrupt school and education, delay government services, and spread misinformation, which can lead to public distrust
Hazardous Materials Incident (Transporta-tion & Fixed Facility)	People	Exposure to toxic chemicals, fumes, or radiation can cause burns, respiratory issues, poisoning, and long-term diseases (cancer or organ damage). Immediate health effects include nausea, dizziness, difficulty breathing, and skin irritation. Residents and businesses near the spill or explosion site may need to evacuate, and people may need to temporarily shelter somewhere.
	Structures	A hazardous materials explosion at a gas station, industrial site, or transportation route could destroy nearby homes, businesses, and other critical infrastructure.
	Economic Assets	Businesses within hazard zones may be forced to close for weeks or months for cleanup. Road closures due to a spill on I-15, Bangerter, or nearby railways could disrupt supply chains and daily commutes. Government agencies and businesses may face millions of dollars in cleanup expenses and legal claims from affected residents.
	Natural, Historic, and Cultural Resources	Chemicals could seep into groundwater, rivers, and wetland areas, impacting Draper's water supply and local ecosystems
	Critical Facilities and Infrastructure	Firefighters, police, and local hospitals could be overwhelmed, delaying response times for other emergencies. Powerlines could be damaged, causing power outages. A train derailment or truck accident involving hazardous chemicals could close transportation routes.
	Community Activities	Community events and activities may be postponed or canceled due to air quality concerns or evacuation orders.
Public Health Epidemic/ Pandemic	People	A public Health Epidemic/Pandemic could infect thousands of residents, with elderly individuals, children, and immunocompromised people at higher risk. Fear of infection could cause panic, distrust, and social unrest. Isolation from quarantines, lockdowns, and social distancing can lead to depression, anxiety, and stress.
	Structures	Public buildings, public transportation systems, and shared public spaces may require frequent cleaning and modifications to prevent the spread of disease.
	Economic Assets	Retail stores, restaurants, and small businesses may suffer from reduced foot traffic, workforce shortages, or mandatory shutdowns.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		Increased demand for hospital care, medications, and vaccines could become costly.
	Natural, Historic, and Cultural Resources	Parks and natural hiking trails and events may close or have limited access to prevent gatherings and disease spread.
	Critical Facilities and Infrastructure	Hospitals and urgent care clinics may become overwhelmed, leading to long wait times and shortages of medical staff. Fewer people may use public transportation systems, if utility workers and emergency service providers get sick, critical services may slow down, leading to increased response times.
	Community Activities	Large gatherings like sports games, religious services, and community events may be canceled or restricted. Schools and workplaces may implement virtual classes and remote work.
Terrorism	People	A terrorist attack in a public area (such as a shopping center, school, or public event) could result in mass casualties and injuries.
	Structures	A terrorist attack could damage businesses, schools, government buildings, transportation hubs, and other public facilities.
	Economic Assets	Attacks on business, districts, bans, or commercial centers could result in closures and loss of revenue. Tourism and local businesses may suffer if people avoid public places out of fear. Businesses, schools, and government/public buildings may need to invest in security upgrades, increasing operational costs. Property and business owners may have higher insurance premiums and expensive rebuilding costs after an attack.
	Natural, Historic, and Cultural Resources	If an attack targeted churches or monuments it would be devastating for the community. A biological, chemical, or radiological attack could cause environmental damage.
	Critical Facilities and Infrastructure	Physical attacks on substations, transformers, and water treatment facilities could cause long-term power outages and water shortages. Disruptions in communications systems could delay emergency response efforts. A terrorist attack on a major highway like I-15 or public transit could shut down travel and disrupt supply chains. Hospitals and ERs can become overwhelmed, delaying care for other medical emergencies that do not just stop.
	Community Activities	Schools, shopping centers, and office buildings may close temporarily or indefinitely after an attack. Large community gatherings and events may be postponed or canceled due to safety concerns.

Jurisdiction-Specific Changes in Vulnerability

Hazard events can impact communities, infrastructures, and ecosystems. The severity of these impacts can be influenced by climate change, population patterns, and land use developments. Understanding these factors is crucial for the city of Draper in developing a resilient community and minimizing the impacts of hazards. Table 10 displays the changes within the city and the related effects of each hazard on the city of Draper.

Table 10: Jurisdiction-Specific Changes in Vulnerability in the City of Draper

Type of Hazard Event	Description of Potential Impacts	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
Avalanche	The likelihood of avalanches impacting the city of Draper is limited. The area on the east side of the city is adjacent to the Wasatch Mountains, but there has been no historical avalanche activity in that area of the city. Avalanches pose a threat to outdoor enthusiasts, leading to injuries and fatalities.	More-extreme winter storms and changes in temperature may increase the risk of avalanche in new areas or larger avalanches in expected areas. It is unknown if risk is greater in the city due to climate change.	Development may continue in the city, and may expand into the foothills, but no known avalanche paths are mapped in the area, and risk is not expected to increase.	Development in Draper has not been on the eastern side of the city where the avalanche risk is located and has not changed avalanche risk.	Stayed the Same
Drought	The city of Draper has large swings in temperature and in precipitation amounts during any year and is susceptible to drought. The city encourages landscaping that is friendly to the desert climate of Utah and when drought conditions occur the city would restrict the use of water for outdoor landscaping. Recreational activities may decline, harming tourism, while the risk of wildfires increases, threatening safety and property. In addition, lower water levels can lead to water quality issues and public health concerns.	Climate change affects drought incidents by altering precipitation patterns and increasing temperatures. Warmer weather can lead to longer dry periods and more severe droughts, while changes in rainfall can reduce snowpack in nearby mountains, crucial for summer water supply. Higher temperatures also increase evaporation rates, further straining local water resources.	Drought can significantly influence population patterns by impacting economic opportunities and the quality of life. Water scarcity often leads to reduced agricultural productivity, prompting residents to migrate to areas with more stable job prospects. Increased water costs can make living less affordable, driving some residents away. Conversely, efforts to address drought, such as sustainable development or improved water management, may attract newcomers, resulting in changes in the community's	The increase in residential and commercial facilities across Draper City will increase the demand for water.	Increased

DRAFT

Type of Hazard Event	Description of Potential Impacts	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
			demographic composition over time.		
Earthquake	Perhaps the most feared incident in Draper is the potential for a large earthquake. Reports indicate that thousands of deaths, billions of dollars of damage to private property, extended loss of utility services, overwhelmed medical facilities, and other catastrophic incidents will occur if a major earthquake occurs in the Salt Lake and/or Utah Valley. Fine-grained, lake-bottom sediments are common in western Draper and are susceptible to liquefaction-induced ground failure during a large earthquake. Each incident may require a unique response from the city of Draper and for a major earthquake, outside assistance will be necessary.	Increased rainfall and flooding can erode soils, weakening structural integrity and heightening vulnerability during earthquakes. Although the direct links between climate change and earthquakes are still under investigation, environmental effects may impact the region's seismic risk.	Earthquakes can significantly alter population patterns by prompting residents to leave for safer areas after a seismic event. This migration can lead to changes in population density and attract new residents and businesses during the rebuilding process. The perception of the area as a safe place to live may shift, impacting long-term demographics, as some residents return to rebuild while others relocate permanently.	Newly constructed homes and business do slightly increase the risk from earthquakes, but these new buildings are constructed according to the 2021 building codes, which provide advanced protection against earthquakes.	Stayed the Same

DRAFT

Type of Hazard Event	Description of Potential Impacts	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
Extreme Heat	Extreme heat can significantly affect public health, increasing the risk of heat-related illnesses, especially among vulnerable populations. It also strains energy resources due to the higher demand for air-conditioning, potentially leading to power outages. In addition, extreme temperatures worsen air quality by raising ozone levels, which poses respiratory risks. Urban infrastructure may also suffer damage, leading to increased maintenance costs and safety concerns.	Climate change significantly impacts extreme heat by increasing the frequency and intensity of heat waves. Rising global temperatures lead to longer and hotter summers, affecting residents and local infrastructure while heightening health risks, especially for vulnerable populations. Urban heat islands from reduced vegetation and extensive pavement further amplify these effects.	Extreme heat can lead residents to relocate due to damaged homes or safety concerns. Some may move to areas perceived as safer or seek better job opportunities elsewhere. The economic impact and infrastructure damage can also make certain neighborhoods less desirable, leading to shifts in demographics and the socioeconomic landscape as new residents with different backgrounds move in.	Higher density from increased development, particularly in the northern and central parts of the city, may lead to more frequent extreme heat events.	Unknown
Extreme Cold	Extreme cold can lead to health risks such as frostbite and hypothermia, especially among vulnerable populations. Transportation may be disrupted by icy conditions, affecting commutes and emergency services. Infrastructure is at risk, with water pipes potentially freezing and bursting, resulting in costly repairs. In addition, energy demands surge as residents rely on heating, straining the	By increasing the intensity of winter storms. Higher atmospheric temperatures allow for more moisture, resulting in heavier snowfall and potentially lower temperatures during these events. In addition, fluctuations in weather patterns may disrupt seasonal cycles, leading to unpredictable periods of extreme cold	By driving some residents to relocate to warmer areas. Harsh winters can hinder economic activities and deter new residents and businesses, influencing housing demand and the attractiveness of certain neighborhoods. This may disproportionately affect lower-income families, leading to changes in demographics and socioeconomic	New subdivisions mean the city has increased responsibility for plowing and evacuation during heavy snow events.	Unknown

DRAFT

Type of Hazard Event	Description of Potential Impacts	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	electrical grid and increasing utility costs. Low temperatures can also impact local agriculture and wildlife.	mixed with warmer spells.	stratification in the community.		
Flooding	The city of Draper is subject to thunderstorms and snowmelt flooding. Significant flooding occurred in the Salt Lake Valley in 1983 and to a lesser extent in 1984, and again in 2011 resulted in the construction of some sediment basins, installation of stream-bank protection, and the cleaning of stream channels to reduce flood hazards. Flood plains along the Jordan River and its tributaries have been rated for expected flood heights by the Federal Emergency Management Agency (FEMA) and areas susceptible to flooding have been delineated on the Federal Insurance Rate Maps (FIRM). These maps are updated as development occurs and channel obstructions, culvert modifications, and other changes alter potential flood heights and velocities.	Higher temperatures increase the frequency and intensity of extreme weather events and alter precipitation patterns. They lead to more intense rainstorms and accelerated snowmelt from nearby mountains, raising water levels in rivers and streams. This combination raises the risk of flooding, especially in areas with inadequate drainage and urban development in flood-prone zones, heightening the potential for damage to homes and infrastructure.	Flooding can significantly alter population patterns by displacing residents from affected areas, leading them to seek shelter elsewhere. This may cause a population decline where flooding occurs, as individuals might hesitate to return due to ongoing risks or property damage. As neighborhoods become less desirable, people may migrate to safer areas, changing demographic trends and putting pressure on housing in those regions. Over time, these shifts can influence urban planning and development, as local governments address flooding risks and changing population needs.	Several streams run through the City of Draper and converge with the Jordan River that runs along the western border. Thirty-seven (37) structures are vulnerable to the 1% annual chance event and there is additional development planned in the 1% annual chance floodplain.	Increased
Landslide/ Slope Failure	Steep mountains adjacent to the city create a potential for landslides, debris flows, rock	Climate change increases the risk of landslides through	Landslides and slope failures can impact population patterns by	The new developments have mostly not been in the eastern or	Stayed the Same

DRAFT

Type of Hazard Event	Description of Potential Impacts	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	falls, and snow avalanches. The town's steep terrain is vulnerable, especially during heavy rainfall or rapid snowmelt. Properties on slopes may suffer damage, resulting in displacement and economic losses. Transportation networks can be disrupted, complicating emergency responses. In addition, landslides can harm local ecosystems by displacing vegetation.	heavier rainfall and greater temperature fluctuations. Intense rain saturates soil, destabilizing slopes, while freeze–thaw cycles weaken the ground. Changes in vegetation can also reduce stability, leading to a higher potential for landslides.	making some areas unsafe, leading to displacement and lower property values. This prompts residents to move to safer regions, thereby increasing density in more stable areas. Concerns about future landslides may also deter newcomers from high-risk zones, shaping long-term demographic trends.	southeastern parts of the city, where landslides are most likely to occur.	
Radon	Radon poses significant health risks, particularly lung cancer, as it can enter homes through foundation cracks. Many residents may not test for radon, making them unaware of dangerous levels. Increased awareness and public health initiatives are vital for protection, especially with regard to population growth. Incorporating radon-resistant construction in new developments is also essential for safety.	Climate change can affect radon levels by altering soil temperatures and moisture conditions. Higher temperatures may increase radon emissions from the ground, while heavy rainfall can change groundwater and soil saturation, impacting radon migration into buildings.	Radon exposure can influence population patterns, as increased health awareness may drive families to move away from areas with high radon levels. This shift could particularly affect vulnerable groups, changing demographics and demand in the housing market. Homes with lower radon levels may become more sought after, and public health campaigns can encourage community action, making previously undesirable areas more attractive once mitigation	Changes in development have affected the risk from radon.	Unknown

DRAFT

Type of Hazard Event	Description of Potential Impacts	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
			measures are implemented.		
Heavy Rain	Heavy rain can cause flash floods, particularly in low-lying areas, disrupting traffic and emergency services. It may also lead to soil erosion, infrastructure damage, and increased landslide risk in hilly regions. In addition, heavy rainfall can overwhelm waterways, resulting in water quality issues from runoff, impacting public safety, local businesses, and agriculture.	Climate change increases the frequency and intensity of heavy rain, as higher temperatures allow the atmosphere to hold more moisture. This leads to stronger storms, flash flooding, and overwhelmed drainage systems.	Heavy rain can shift population patterns by pushing residents out of flood-prone areas and attracting them to safer neighborhoods. Frequent flooding may lead to evacuations and economic disruptions, prompting relocations. Over time, ongoing heavy rains can affect housing demand and community stability, altering the town's population distribution.	Higher density in the city, particularly in the northern and central areas, increases the risk of pluvial flooding due to more impervious surfaces.	Unknown
High Wind	High winds can cause property damage to roofs and windows, topple trees and power lines, and lead to power outages. They pose hazards for pedestrians and drivers and can worsen air quality by stirring up dust and pollutants, affecting residents' health.	Climate change affects high winds by altering atmospheric patterns and increasing extreme weather events. Rising temperatures may lead to more substantial, unpredictable winds and more frequent thunderstorms, posing risks to infrastructure and air quality.	High winds can alter population patterns by making certain areas less desirable. Frequent damage may drive residents to safer neighborhoods, deter newcomers, and slow growth in affected regions.	Increased development has not altered the risks associated with high winds.	
Lightning	Lightning can have several impacts, primarily posing risks to public safety with the potential for injuries or fatalities. It can spark wildfires	Climate change increases temperatures and alters precipitation, leading to more intense thunderstorms and	Lightning can influence population patterns by causing property damage and wildfires, leading some residents to	Increased development has not affected the risk associated with lightning.	

DRAFT

Type of Hazard Event	Description of Potential Impacts	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	in nearby areas, threatening property and the environment. In addition, lightning strikes can damage infrastructure, leading to electrical surges that cause power outages and service disruptions. This phenomenon also affects outdoor activities and tourism, while the economic burden includes increased insurance claims and repair costs.	frequent lightning strikes. Urbanization can enhance this effect, posing risks to public safety and infrastructure.	relocate. Areas with higher lightning activity may deter new residents, while safer locations could increase migration as people seek protection from severe weather.		
Severe Winter Weather	Heavy snow or blizzards can disrupt transportation, hinder emergency services, and cause infrastructure damage, such as roof collapses. These conditions can lead to increased municipal costs for snow removal and have a substantial economic impact on businesses, particularly in retail and tourism. Power outages may also occur, affecting heating during cold months.	Climate change impacts heavy snow and blizzards by altering precipitation patterns. Higher temperatures can lead to more rain than snow, affecting snowpack levels—additionally, increased storm intensity results in heavier, more unpredictable snowfall.	Increased population means more people need to get to work and snow removal must be quicker. Heavy snow or blizzards can impact population patterns by influencing where people live and work. Transportation disruptions may lead residents to seek housing closer to jobs, increasing density in some areas while depopulating others. Families might also avoid regions with frequent heavy snowfall, shifting demand to milder areas. Over time, these trends can alter community demographics and economic activity,	New development increases Draper City's responsibility for plowing and evacuating residents from new subdivisions.	

DRAFT

Type of Hazard Event	Description of Potential Impacts	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
			prompting adjustments in town planning and resource allocation.		
Tornado	Tornadoes can cause serious damage to property and infrastructure, leading to injuries and economic challenges. Urban areas are especially vulnerable, complicating emergency responses and disrupting essential services. The psychological impact can affect community well-being, potentially leading to changes in demographics and land use as residents seek safer locations.	Climate change may increase the frequency and intensity of tornadoes. Higher temperatures lead to more moisture in the air, creating conditions for severe thunderstorms. Changes in wind patterns and precipitation can also heighten tornado risks, resulting in more destructive storms and greater threats to infrastructure and communities.	Tornadoes can influence population patterns by prompting residents to move to safer areas after damage occurs. This can decrease density in affected neighborhoods while increasing the demand for housing in safer regions. New residents may also move in for recovery opportunities, altering demographics. Over time, repeated tornado threats might push long-term residents to areas with better disaster preparedness, reshaping the town's population distribution.	New development has not affected the risk associated with tornadoes.	
Wildfire	Wildfires pose serious risks, including habitat damage, degraded air quality, and health issues for vulnerable populations. They can also lead to economic losses, property damage, and increased erosion that affects water quality.	By raising temperatures and creating drier conditions, prolonged droughts lead to more dry vegetation, which serves as fuel for fires. Erratic seasons extend the growing period, while more lightning strikes can ignite wildfires. These factors	Displaced individuals often seek safer areas, shifting demographics, while declining property values or perceived risk might deter newcomers. Conversely, some may be drawn to rebuilding efforts, impacting long-term growth and community dynamics.	A few developments have been constructed in southeastern Draper, where wildfire risk is highest.	

DRAFT

Type of Hazard Event	Description of Potential Impacts	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
		heighten the threat to ecosystems and community safety.			
Dam Failure	The Draper Irrigation Company has a storage reservoir located at the mouth of Corner Canyon, which is classified as a dam by the State of Utah. The impacts of the failure of this storage reservoir could have impacts on residential areas in the city. Any dam failures in other areas of Utah would have little impact on Draper, except for the potential impact on water supplies. Dam failure could lead to severe flooding, damaging homes and infrastructure, isolating communities, and hindering emergency responses. This may cause loss of life, especially among vulnerable groups, and trigger economic losses for local businesses and property values. Long-term effects could affect community stability and public health, while floodwaters may contaminate local waterways and disrupt ecosystems.	Climate change raises the risk of dam failure by causing heavier rainfall and rapid snowmelt. These changes can overwhelm dams and compromise their integrity, highlighting the need for urgent safety assessments and upgrades to protect communities downstream.	Dam failure can impact population patterns by displacing residents and altering demographics. Evacuations can lead to an influx in safer areas, while destruction may deter new residents and contribute to population decline. Fear of future disasters may also prompt individuals to relocate, changing the community's composition and affecting population density and economic activity.	New development has not affected the risk associated with dam failure.	Stayed the Same
Civil Disturbance	Civil disturbances can cause economic losses for	Climate change can increase civil	By encouraging residents to move for safety,	New development has not affected the risk	Increased

DRAFT

Type of Hazard Event	Description of Potential Impacts	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	businesses, create social division, and increase tensions among community groups. They may overwhelm law enforcement, leading to fear and mistrust among residents. Essential services could be disrupted, affecting quality of life, while long-term impacts may include changes in community dynamics and public policy.	disturbances by intensifying environmental stresses and social tensions. Rising temperatures may lead to droughts, wildfires, and poor air quality, particularly affecting vulnerable communities. Resource scarcity, especially water, can spark conflicts and protests. In addition, an influx of migrants from harder-hit areas may strain local resources, further escalating tensions. This cycle of unrest is driven by the impacts of climate change on the environment and community dynamics.	leading to outflows and new arrivals. These events can reveal social issues, impacting community dynamics, employment, and property values, ultimately reshaping demographics, and social cohesion.	associated with civil disturbances.	

DRAFT

Type of Hazard Event	Description of Potential Impacts	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
Cyberattack	Cyberattacks can disrupt critical infrastructure like power and water services, complicating emergency responses. Businesses may face financial losses from downtime and data breaches, eroding consumer trust. The public sector's essential services, including law enforcement and public health, could be compromised, leading to fear and reduced community confidence.	Possible attack on the industry, which is seen as producing large amounts of greenhouse gases and burning fossil fuels. Climate change can heighten cyberattack risk by increasing vulnerabilities during extreme weather. Disruptions like power outages offer cybercriminals opportunities, but focusing on emergency responses can weaken cybersecurity measures. As organizations adopt new technologies to cope with climate impacts, they may unintentionally introduce additional vulnerabilities.	Cyberattacks can change population patterns by eroding trust in essential services. Compromised systems may cause residents to leave due to safety concerns, while high-profile incidents can deter businesses, leading to job losses. This perception of vulnerability may also make the town less appealing to newcomers, resulting in demographic shifts and affecting local development.	New development has not affected the risk associated with cyberattacks.	Increased

DRAFT

Type of Hazard Event	Description of Potential Impacts	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
Hazardous Materials Incident (Transportation & Fixed Facility)	Hazardous materials incidents can severely impact public health, the environment, and the economy. Health risks include serious illnesses from exposure, while environmental damage may lead to soil and water contamination. Economically, incidents can cause property damage, lower property values, and disrupt businesses. The community also faces stress from evacuations and anxiety over safety.	Climate change elevates the risk of hazardous materials incidents by increasing extreme weather events like heavy rain and wildfires. These events can breach storage tanks and heighten material volatility. Vulnerable infrastructure can lead to more spills or accidents, while climate shifts may also introduce new challenges for managing hazardous substances and public health.	By causing evacuations and temporary declines in density. In the long run, unsafe areas may deter new residents, affecting growth and diversity. In addition, negative perceptions can lower property values and economic prospects, leading families to relocate, which impacts local demographics.	New development has not affected the risk associated with hazardous materials incidents.	Increased
Public Health Epidemic/ Pandemic	Epidemics and pandemics can disrupt healthcare by overwhelming facilities and leading to resource shortages, diminishing care for all patients. Economic impacts may include business closures and job losses, particularly in hospitality and retail. The strain on public health services can affect routine care, while mental health issues may arise due to isolation and uncertainty. Shifts to remote learning can	By increasing the spread of vector-borne diseases and raising the risk of waterborne illnesses due to flooding or drought. Worsening air quality can also exacerbate respiratory conditions like asthma, especially in vulnerable populations.	By prompting migration for safety and better healthcare. Vulnerable groups may move to areas with improved services, while economic instability can drive people to seek new employment opportunities. In addition, restrictions like quarantine measures can limit movement and social interactions, reshaping the community's	New development has not affected the risk associated with epidemics/pandemics.	Increased

DRAFT

Type of Hazard Event	Description of Potential Impacts	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	hinder student development, and vulnerable populations face heightened risks. Erosion of public trust in health authorities might reduce compliance with guidelines.		demographics and impacting local economies.		
Terrorism	Terrorism incidents can have significant impacts, including loss of life and emotional trauma for the community. Economically, they disrupt local businesses and tourism while creating fear and anxiety that affect social cohesion. Emergency services might be overwhelmed, requiring additional support, and increased security measures can alter daily life and raise concerns about civil liberties. Damage to critical infrastructure necessitates long-term repairs, and such incidents may deepen social divisions and prompt changes in security policies, highlighting the need for effective preparedness and response strategies.	Terroristic activity is sometimes centered around climate change. Climate change impacts terrorism incidents by creating conditions of resource scarcity and social unrest. Increased competition for essential resources, such as water, can fuel tensions, making communities more vulnerable to extremist ideologies. Extreme weather events may disrupt social order and infrastructure, offering terrorist groups opportunities to exploit crises. In addition, climate-driven population displacement can heighten tensions in receiving areas, raising the risk of domestic	Terrorism incidents can alter population patterns by instilling fear and prompting residents to relocate to perceived safer areas, resulting in demographic shifts and potential declines in property values. Some neighborhoods may see an outflow of residents, while others could experience an influx of people seeking refuge from violence. In addition, increased security measures may deter businesses and residents from certain locations, leading to long-term changes in population density and urban development patterns.	New development has not affected the risk associated with terrorism incidents.	Increased

DRAFT

Type of Hazard Event	Description of Potential Impacts	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
		terrorism. Law enforcement's focus on climate-related challenges can also limit its capacity to address terrorism threats.			

DRAFT

Additional Public Involvement

The city of Draper provided several opportunities for public participation. Figure 1 is an example of public outreach.

Figure 1: Social Media Post for Public Participation

Plan Integration

Incorporating the underlying principles of the Hazard Mitigation Plan and its recommendations into other plans is a highly effective and low-cost way to expand their influence. All plan participants will use existing methods and programs to implement hazard mitigation actions where possible. As previously stated, mitigation is most successful when it is incorporated into the day-to-day functions and priorities of government and public service. This plan builds on the momentum developed through previous and related planning efforts and mitigation programs, and it recommends implementing actions where possible through these other program mechanisms. These existing mechanisms include the following:

- Regularity Capabilities
- Administrative Capabilities
- Fiscal Capabilities

Respective planning stakeholders will conduct implementation and incorporation into existing planning mechanisms and will be done through the routine actions of:

- Monitoring other planning/program agendas
- Attending other planning/program meetings
- Participating in other planning processes; and

DRAFT

- Monitoring community budget meetings for other community program opportunities.

The successful implementation of this plan will require constant and vigilant review of existing plans and programs for coordination and multi-objective opportunities that promote a safe, sustainable community. Regular efforts should be made to monitor the progress of mitigation actions implemented through other planning mechanisms. Where appropriate, priority actions should be incorporated into planning updates. Table 11 lists existing planning mechanisms in which the Hazard Mitigation Plan has been integrated. Table 12 lists the opportunities for integrating elements of this plan into other plans.

Table 11: Integration of Previous Plans by the City of Draper

Plan	Description
None	N/A

Table 12: Opportunities to Integrate into Future Plans of the City of Draper

Plan	Description
General Plan	Overview of the city's long-term goals and strategies.
Comprehensive Emergency Management Plan	Future update of the Emergency Operations Plan—a framework for mitigation, preparedness, response, and recovery from disasters in the city.
Suncrest and Traverse Mountain Community Wildfire Protection Plan	Identifies wildfire hazards, education, and mitigation actions needed to reduce risk in areas of Draper.
Active Transportation Plan	A collaborative effort between Draper, Sandy City, and the Wasatch Front Regional Council to enhance transportation options for pedestrians, bicycles, and transit.
Drinking Water System Master Plan	Identifies water use needs, growth projections, source and storage requirements, and distribution system needs.
Master Transportation Plan	Addresses transportation goals and future development needs to address growth. Anticipates traffic impacts as a result of development.
Storm Drain Master Plan	Presents activities and public policies to manage and regulate stormwater runoff caused by development to help mitigate flooding and environmental impacts.
Stormwater Pollution Prevention Plan	Identifies potential pollutant sources, procedures to prevent spills/leaks, erosion and sediment control, runoff management, employee training, and inspection procedures.
Town Center Station Area Plan	Guides the future of the area surrounding the Draper Town Center TRAX Station.
Parks, Recreation, and Trails Master Plan	Addresses existing conditions, priorities, levels of service, and other considerations of the city's comprehensive parks, recreation, and trail system.
Open Space Plan	Provides an analysis and detailed description of the natural resource and recreation issues, strategies and recommendations for management, and potential funding opportunities.

Capability Assessment

Local mitigation capabilities are existing authorities, policies, programs, and resources that reduce hazard impacts or could help carry out hazard mitigation activities.

Planning and Regulatory Capabilities

Planning and regulatory capabilities are the plans, policies, codes, and ordinances that prevent and reduce the impacts of hazards.

Table 13: Assessment of the Planning Capabilities of the City of Draper

Plan	Does it address hazards? (Y/N)	How can it be used to implement mitigation actions?	When was the last update? When is the next update?
General Plan	Y	Inform mitigation strategies based on long-term goals	2024
Capital Improvement Plan	Y	Can inform funding sources for mitigation actions	2025
Climate Change Adaptation Plan		N/A	
Community Wildfire Protection Plan	Y	Can inform wildfire mitigation actions	2023
Economic Development Plan	Y	Can inform funding sources for mitigation actions	Unknown
Land Use Plan	Y	Can inform any land use-related mitigation actions and responsible parties	Unknown
Local Emergency Operations Plan	Y	Can inform priorities for mitigation actions	2017
Stormwater Management Plan	Y	Can inform flood mitigation actions	2012
Transportation Plan	Y	The transportation plan can provide information on known transportation challenges to inform mitigation actions.	2023
Substantial Damage Plan	Y	Can inform mitigation actions concerning clean up or damage assessments	Unknown
Other? (Describe)			

DRAFT

Table 14: Assessment of the Regulations and Ordinances of the City of Draper

Regulation/Ordinance	Does it effectively reduce hazard impacts?	Is it adequately administered and enforced?	When was the last update? When is the next update?
Building Code	Y; the most recent code adopted by the state includes international building code (IBC 2021), international residential code (IRC 2021), international plumbing code, international mechanical code, national electrical code, international energy conservation code, international fuel gas code, the HUD code, and the model manufactured home installation standard.	Y	2021
Flood Insurance Rate Maps	Y	Y	2024
Floodplain Ordinance	Y	Y	2009
Subdivision Ordinance	Y	Y	2019
Zoning Ordinance	Y	Y	2020
Natural Hazard-Specific Ordinance (Stormwater, Steep Slope, Wildfire)	Y	Y	2023
Acquisition of Land for Open Space and Public Recreation Use	Y	Y	2022
Prohibition of Building in At-Risk Areas	Y	Y	2023
Other? (Describe)			

Administrative and Technical Capabilities

Administrative and technical capabilities include staff and their skills. They also include tools that can help carry out mitigation actions.

Table 15: Assessment of the Administrative Capabilities of the City of Draper

Administrative Capability	In Place? (Y/N)	Is staffing adequate?	Are staff trained on hazards and mitigation?	Is coordination between agencies and staff effective?
Chief Building Official	Y	N	Y	Y
Civil Engineer	Y	Y	Y	Y
Community Planner	Y	Y	N	Y
Emergency Manager	Y	N	Y	Y

DRAFT

Administrative Capability	In Place? (Y/N)	Is staffing adequate?	Are staff trained on hazards and mitigation?	Is coordination between agencies and staff effective?
Floodplain Administrator	Y	Y	Y	Y
Geographic Information System (GIS) Coordinator	Y	Y	N	Y
Planning Commission	Y	Y	N	Y
Fire Safe Council	Y	Y	Y	Y
CERT (Community Emergency Response Team)	Y	N	N	Somewhat
Active VOAD (Voluntary Agencies Active in Disasters)	Y	N	N	Somewhat
Other? (Please describe.)				

Table 16: Assessment of the Technical Capabilities of the City of Draper

Technical Capability	In Place? (Y/N)	How has it been used to assess/mitigate risk in the past?	How can it be used to assess/mitigate risk in the future?
Mitigation Grant Writing	Y	Wildfire mitigation	Can be used to mitigation actions
Hazard Data and Information	Y	Identify at-risk areas	Identify at-risk areas and determine priority of mitigation projects
GIS	Y	Used to map and track mitigation efforts	Can be used to track mitigation projects over time
Mutual Aid Agreements	Y	Used to complete mitigation projects	Established agreements in place to assist in completing mitigation actions over time
Other? (Please describe.)			

Financial Capabilities

Financial capabilities are the resources to fund mitigation actions. Talking about funding and financial capabilities is important to determine what kinds of projects are feasible, given their cost. Mitigation actions like outreach programs are lower cost and often use staff time and existing budgets. Other actions, such as earthquake retrofits, could require substantial funding from local, state, and federal partners. Partnerships, including those willing to donate land, supplies, in-kind matches, and cash, can be included.

DRAFT

Table 17: Assessment of the Financial Capabilities of the City of Draper

Funding Resource	In Place? (Y/N)	Has it been used in the past and for what types of activities?	Could it be used to fund future mitigation actions?	Can it be used as the local cost match for a federal grant?
Capital Improvement Project Funding	Y	Wildfire mitigation	Can be used to mitigation actions	Wildfire mitigation
General Funds	Y	Identify at-risk areas	Identify at-risk areas and determine priority of mitigation projects	Identify at-risk areas
Hazard Mitigation Grant Program (HMGP/404)	Y	Used to map and track mitigation efforts	Can be used to track mitigation projects over time	Used to map and track mitigation efforts
Building Resilient Infrastructure & Communities (BRIC)	Y	Used to complete mitigation projects	Established agreements in place to assist in completing mitigation actions over time	Used to complete mitigation projects
Flood Mitigation Assistance (FMA)	Y	Wildfire mitigation	Can be used for mitigation actions	Wildfire mitigation
Public Assistance Mitigation (PA Mitigation/406)	Y	Identify at-risk areas	Identify at-risk areas and determine priority of mitigation projects	Identify at-risk areas
Community Development Block Grant (CDBG)	Y	Used to map and track mitigation efforts	Can be used to track mitigation projects over time	Used to map and track mitigation efforts
Natural Resources Conservation Services (NRCS) Programs	Y	Used to complete mitigation projects	Established agreements in place to assist in completing mitigation actions over time	Used to complete mitigation projects
U.S. Army Corps (USACE) Programs	Only dealing with wetlands	Wildfire mitigation	Can be used for mitigation actions	Wildfire mitigation
Property, Sales, Income, or Special Purpose Taxes	Y	Identify at-risk areas	Identify at-risk areas and determine priority of mitigation projects	Identify at-risk areas
Stormwater Utility Fee	Y	Used to map and track mitigation efforts	Can be used to track mitigation projects over time	Used to map and track mitigation efforts

DRAFT

Funding Resource	In Place? (Y/N)	Has it been used in the past and for what types of activities?	Could it be used to fund future mitigation actions?	Can it be used as the local cost match for a federal grant?
Fees for Water, Sewer, Gas, or Electric Services	Y	Used to complete mitigation projects	Established agreements in place to assist in completing mitigation actions over time	Used to complete mitigation projects
Impact Fees from New Development and Redevelopment	Y-Not adequate	Wildfire mitigation	Can be used for mitigation actions	Wildfire mitigation
General Obligation or Special Purpose Bonds	Y	Identify at-risk areas	Identify at-risk areas and determine priority of mitigation projects	Identify at-risk areas
Federal-funded Programs (Please describe)	Y	Used to map and track mitigation efforts	Can be used to track mitigation projects over time	Used to map and track mitigation efforts
Private Sector or Nonprofit Programs	N	Used to complete mitigation projects	Established agreements in place to assist in completing mitigation actions over time	Used to complete mitigation projects
Other?		Wildfire mitigation	Can be used for mitigation actions	Wildfire mitigation

Education and Outreach Capabilities

Education and outreach capabilities are programs and methods that could communicate about and encourage risk reduction. These programs may be run by a participant or a community-based partner. Partners, especially those who work with underserved communities, can help identify additional education and outreach capabilities.

Table 18: Assessment of the Education and Outreach Capabilities of the City of Draper

Education and Outreach Capability	In Place? (Y/N)	Does it currently incorporate hazard mitigation?	Could it be used to support mitigation in the future?
Community Newsletter(s)	Y	Wildfire mitigation	Can be used to track mitigation actions
Hazard Awareness Campaigns (such as Firewise, Storm Ready, Severe Weather Awareness Week, School Programs)	Y	Identify at-risk areas	Identify at-risk areas and determine priority of mitigation projects

DRAFT

Education and Outreach Capability	In Place? (Y/N)	Does it currently incorporate hazard mitigation?	Could it be used to support mitigation in the future?
Public Meetings/Events (Please describe.)	Y	Used to map and track mitigation efforts	Can be used to track mitigation projects over time
Emergency Management Listserv		Used to complete mitigation projects	Established agreements in place to assist in completing mitigation actions over time
Local News	Y	Wildfire mitigation	Can be used to track mitigation actions
Distributing Hard Copies of Notices (e.g., public libraries, door-to-door outreach)	Y	Identify at-risk areas	Identify at-risk areas and determine priority of mitigation projects
Insurance Disclosures/ Outreach	Y	Used to map and track mitigation efforts	Can be used to track mitigation projects over time
Organizations that Represent, Advocate for, or Interact with Underserved and Vulnerable Communities (Please describe.)	N	Used to complete mitigation projects	Established agreements in place to assist in completing mitigation actions over time
Social Media (Please describe.)	Y	Wildfire mitigation	Can be used to track mitigation actions
Other? (Please describe.)		Identify at-risk areas	Identify at-risk areas and determine priority of mitigation projects

Opportunities to Expand and/or Improve Capabilities

Actions that can expand and improve existing authorities, plans, policies, and resources for mitigation include budgeting for mitigation actions, passing policies and procedures for mitigation actions, adopting and implementing stricter mitigation regulations, approving mitigation updates, and making additions to existing plans as new needs are recognized. Table 19 lists the opportunities for the city of Draper.

Table 19: Opportunities to Expand or Improve the Capabilities of the City of Draper

Capability	Opportunity to Expand and/or Improve
Planning and Regulation	The city can expand current wildfire planning capabilities by developing and publicizing evacuation plans. Evaluating and designating clear evacuation routes can help reduce the risk of loss of life from hazards like wildfire. These activities can also be aligned with future Community Wildfire Protection Plan updates for high-risk areas.
Administrative and Technical	The city could expand its early warning systems and technical capabilities. Acquiring an enhanced emergency notification communications system would help reduce the loss of life.
Financial	Developing sources for local match, including through impact fees or other private/nonprofit partners, could help expand the city's mitigation financial capabilities. Additionally, Draper has experience in developing wildfire mitigation grants. This capability could be expanded to other types of grant applications, which could be utilized for other types of hazards as well, such as addressing flooding

DRAFT

Capability	Opportunity to Expand and/or Improve
	through Flood Mitigation Assistance or earthquakes through the Hazard Mitigation Grant Program.
Education and Outreach	In addition to sharing local progress on mitigation, Draper can expand current public education and outreach capabilities by promoting a deeper understanding of how the public can take steps to mitigate their own risk as well as what local resources are available to support their efforts. Stakeholders, including community organizations such as the Community Emergency Response Team (CERT), can help spread the mitigation message. An improved understanding of local resources and mitigation opportunities will help improve overall understanding of hazard risk and what to do about it.

Mitigation Strategy

Mitigation strategies provide proactive measures that are designed to minimize the impacts of hazards on the city of Draper. Table 20 shows mitigation action alternatives, and

Table 21 shows the status of previous mitigation activities. Table 22 is the 2025 mitigation action plan for the city of Draper

Table 20: Mitigation Action Alternatives for the City of Draper

Action	Type of Action	Selected for inclusion in the plan?	If not selected, why not?
Improve regulations for development to reduce damage from landslides.	Planning and Regulatory	Yes	

Table 21: Status of Prior Mitigation Actions of the City of Draper[3]

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update
Conduct seismic retrofitting	Earthquake	Draper EM	Public Works	Ongoing
Design Wildfire Evacuation Plan and Route designations	All hazards	Draper EM	GIS, Fire Department, Police Department	Ongoing
Install Notification System to Alert the Public	All hazards	Draper EM	Draper Communications	Ongoing – Civic Ready alerting/ notification system. (Must sign up or be in a geographical range

[3] EM = Emergency Management, IPAWS = Integrated Public Alert and Warning System, PIO = Public Information Officer, SLCo = Salt Lake County, WUI = Wildland–Urban Interface.

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update
				of tower for cell phones). SLCo, IPAWS
Bury powerlines	All hazards	Draper EM	Public Works	Ongoing
Increase Defensible Space and Wildfire Mitigation	Flood (Riverine and Urban/ Flash Flooding)	Draper EM	Fire Department – Wildland Fuels Crew	Ongoing Large project in the WUI areas
Assess critical facilities for hazard exposure, structural weaknesses, power, communications and equipment resources and redundancy, and adequate emergency procedures	All hazards	Draper EM	Engineering Building Planning and Zoning	Ongoing
Compile inventory of mutual-aid agreements and memoranda of understanding (MOU) and identify deficiencies	All hazards	City of Draper	Unknown	Ongoing
Pursue and implement needed mutual-aid agreements	All hazards	City of Draper	Unknown	Ongoing
Provide education regarding all natural hazards through live trainings and web-based, print, and broadcast media	All hazards	City of Draper	Fire, Police, Public Works, Draper PIO	Ongoing Completed on as-needed basis and seasonally
Repair, maintain, and improve water distribution infrastructure to prevent loss from leakage, breaks, etc.	Drought	City of Draper	Public Works	Ongoing Scheduled projects
Identify structures at risk of earthquake damage	Earthquake	City of Draper	Engineering/ Building	Ongoing
Complete seismic rehabilitation/ retrofitting projects at public buildings at risk	Earthquake	City of Draper	Engineering/ Building	Ongoing
Provide educational materials to unreinforced masonry home and business owners	Earthquake	City of Draper	Engineering/ Building	Ongoing

DRAFT

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update
Procure engineering consultant to perform the nonstructural design and geotechnical assessment and review.	Earthquake	City of Draper	Engineering/ Building	Ongoing
Determine potential flood impacts and identify areas in need of additional flood control structures	Flooding	City of Draper	Public Works, Engineering	Incomplete
Address identified problems through construction of debris basins, flood retention ponds, energy dissipaters, or other flood control structures	Flooding	City of Draper	Public Works, Engineering	Ongoing
Establish maintenance and repair programs to remove debris, improve resistance, and otherwise maintain effectiveness of stormwater and flood control systems	Flooding	City of Draper	Public Works	Ongoing
Identify and assess structures for deficiencies	Flooding	City of Draper	Engineering/ Building	Ongoing
Modify structures as needed to address deficiencies	Flooding	City of Draper	Engineering/ Building	Ongoing
Coordinate with the Utah Geological Survey and other agencies to understand current slope failure threats/potential	Landslide/ Slope Failure	City of Draper	Engineering, Public Works, GIS	Incomplete
Increase public awareness through "Firewise" program	Wildfire	City of Draper	Fire Department	Ongoing – Annually Combined with Firewise action listed in 2025 Mitigation action plan
Educate homeowners on the need to create defensible space near structures in wildland–urban interface (WUI)	Wildfire	City of Draper	Fire Department	Ongoing – Annually
Work with experts and communities to develop or update evacuation plans	Wildfire	City of Draper	Emergency Management, School Districts, Local Hospitals	Ongoing Repeats the previously listed evacuation action. Not carried forward.

DRAFT

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update
Reduce fuels around publicly owned structures	Wildland Fire	City of Draper	Fire Department, Parks/Rec	Ongoing –As needed
Assess existing water flow capabilities, both public and private, and address deficiencies	Wildland Fire	City of Draper	Public Works/ Draper Water, Water Pro	Ongoing
Assist communities in developing Community Wildfire Protection Plans or similar plans	Wildland Fire	Draper EM	Fire Department	Ongoing
Establish Firewise Community Program for SunCrest and the entire East Bench.	Wildland Fire	Draper EM	Draper City Emergency Preparedness, Draper City Public Works, Fire Department	Ongoing
Continue to enforce master drainage plan requirements	Flood	Draper City Engineering and Public Works		Ongoing
Continue Utah Shakeout activities to promote earthquake awareness	Earthquake	Emergency Manager, Police Department, and the City's Emergency Preparednes s Committee		Ongoing Annually
Purchase hazard public notification boards	All hazards	Draper City Public Works and Police Department		Ongoing Two boards purchased and in use. Additional boards needed. Combined with other alert action for 2025 mitigation action plan.
Educate residents and businesses through the city of Draper website and Twitter	All hazards	Public Relations Officer, Emergency Manager, Draper City Building Inspection Division and Draper City Community	Draper PIO	Ongoing – Continual updates Combined with other public education action in 2025 action plan.

DRAFT

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update
		Development Department		

DRAFT

Table 22: 2025 Mitigation Action Plan for the City of Draper[4]

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
1	Develop an enhanced emergency notification communications system.	Avalanche, Civil Disturbance, Dam Failure, Drought, Wildfire, Earthquake, Extreme Heat, Extreme Cold, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide, Lightning, Public Health Epidemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	Draper PIO	Draper EM, SLCo EM, Draper FD, Draper PD, Civic Plus/ Ready	Early notification of impending disasters to decrease loss of life. Improved relationships with the public and stakeholders. Faster delivery of information with plans ready to go.	Medium	Draper City General Fund	Short term	Medium	
2	Design or update wildfire evacuation plan and route designations.	Wildfire	Draper FD	Draper EM, Draper PD, GIS, SLCo EM, FFSL	Improve Fire safety in the WUI areas, Cut fire breaks into the mountain side also functioning as trails.	Medium	Draper City General Fund, CWDG grant, WUIPPM	Medium	High	Currently working on and completing a prior 3-year grant commitment
3	Enhance security at critical infrastructure locations to prevent potential for terrorist acts.	Terrorism (including Cyberattacks)	Draper EM	Draper IT, Draper PD, Draper Public Works, SIAC, SLCo EM	Increased security protocols (both in technology and policy) for staff/first responders, clear expectations/understanding for the public.	Medium	Draper City General Fund, Draper EM, SHSP Grant	Short term	Medium	
4	Promote the Firewise initiative and regularly review/update the Community Wildfire Protection Plans (CWPP) for at-risk communities.	Wildfire	Draper FD	Draper EM, Draper Fuels Crew, SLCo EM, FFSL	Increased awareness of plans (for the public and stakeholders), improved eligibility for grants/other funding sources, and regular review of CWPP.	Medium	Draper City General Fund, Draper EM, CWDG grant	Short term	Medium	
5	Partner with SLCo EM to develop a city-wide single source of information sharing/ gathering for intelligence.	Civil Disturbance, Terrorism	Draper EM	Other Draper City departments, SLCo EM, Draper PD, SLCo Sheriff's Office, SIAC, local jurisdictions	Improve communication and coordination between Draper City agencies and SLCo.	Medium	Draper City General Fund, Draper EM, SHSP grant.	Short term	Medium	One platform to report and share information
6	Install xeriscaping on government-owned buildings.	Drought	Draper Facilities	Draper Water, Water Pro, State of Utah, SLCo EM, local utility companies	Decrease the cost of landscape irrigation, decrease water use.	Low	Water districts, Draper Facilities, Draper Parks and Recreation	Short term	Low	
7	Complete seismic retrofitting for critical facilities and other community assets.	Earthquake	Draper City Building and Engineering	Draper City, MSD, Draper EM	Decrease the potential for building collapse and catastrophic injury to occupants.	High	Draper City General Fund, BRIC grant, HMGP grant	Medium	Low	

[4] BRIC = Building Resilient Infrastructure and Communities, CWDG = Community Wildfire Defense Grant, EM = Emergency Management, EMPG = Emergency Management Performance Grant, FD = Fire Department, FFSL = Division of Forestry, Fire, and State Lands, FMA = Flood Mitigation Assistance, GIS = Geographic Information System, HHPD = High Hazard Potential Dam, HMGP = Hazard Mitigation Grant Program, IPAWS = Integrated Public Alert and Warning System, IT = Information Technology, LEPC = Local Emergency Planning Committee, MSD = Municipal Services District, NWS = National Weather Service, PD = Police Department, PIO = Public Information Officer, SHSP = State Homeland Security Program, SIAC = Statewide Information and Analysis Center, SLCo EM = Salt Lake County Emergency Management, UDEM = Utah Division of Emergency Management, WUI = Wildland–Urban Interface, WUIPPM = Wildland Urban Interface Prevention, Preparedness, and Mitigation Fund.

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
8	Improve communication to the public and stakeholders on resources available when Code Blue is in effect during severe winter weather.	Severe Winter Weather, Extreme Cold	Draper EM	Draper City PIO, Draper EM, SLCo EM, The Office of Homeless and Criminal Justice Reform	Prevents further damage to critical infrastructure, ensures that homeless individuals have warming resources available, offloads some of the pressure on local homeless resource providers with standard protocols to follow with Code Blue.	Low	Draper City General Fund, Draper EM	Short term	Low	
9	Determine potential flood impacts and identify areas in need of additional flood control structures.	Flooding and Heavy Rain	Draper Public Works	Draper City, Draper EM, SLCo. Flood Control Engineering, Water Districts	Improve understanding of where flood mitigation is a priority.	High	Draper City General Fund, Draper Public Works, SLCo, FMA, HMGP grant, EMPG grant	Long term	Medium	
10	Address identified problems through construction of debris basins, flood retention ponds, energy dissipaters, or other flood control structures.	Flooding, Heavy Rain, Dam Failure	City of Draper	Public Works Engineering	Reduce risk of damage or injury from flooding.	High	Draper City General Fund, Draper Capital Improvement Fund, HMGP grant	Medium	Medium	
11	Identify and assess structures for deficiencies.	Flooding, Heavy Rain, High Wind, Lightning, Tornado, Severe Winter Weather	City of Draper	Engineering/Building	Identify and prioritize facilities for hardening to reduce damage and loss of functionality during hazard events.	Low	Draper City General Fund	Medium	Medium	
12	Modify structures as needed to address deficiencies.	Flooding, Heavy Rain, High Wind, Lightning, Tornado, Severe Winter Weather	City of Draper	Engineering/Building	Hardening facilities can reduce damage and maintain functionality during hazard events.	High	Draper City General Fund, Draper Capital Improvement Fund, HMGP grant	Long term	Medium	
13	Reinforce or rebuild existing culverts and bridges, and add new culverts and bridges in newly identified hazard areas.	Flooding and Heavy Rain	Draper Public Works	Draper City, Draper EM, SLCo. Flood Control Engineering, Water Districts	Allow for greater handling of heavy rain and spring melt runoff, and decrease potential debris buildup.	High	Draper City General Fund, Draper Public Works, SLCo, FMA, HMGP grant, EMPG grant	Long term	Medium	
14	Establish maintenance and repair programs to remove debris, improve resistance, and otherwise maintain the effectiveness of stormwater and flood control systems.	Flooding and Heavy Rain	Draper Public Works	Draper City, Draper EM, SLCo. Flood Control Engineering, Water Districts	Allow for greater handling of spring melt runoff and a decrease in the potential debris buildup.	High	Draper City General Fund, Draper Public Works, SLCo, FMA, HMGP grant, EMPG grant	Long term	Medium	
15	Conduct a public awareness campaign on Tier 2 reporting software for chemical reporting.	Hazardous Materials incident	Draper Fire Marshal	Draper FD, Draper EM, Draper PD, SLCo EM, LEPC	Improved understanding of tier 2 reporting and how local agencies/jurisdictions can find and submit information. A common operating platform for hazardous materials reporting.	Low	Draper City General Fund LEPC	Long term	Medium	
16	Enact city regulations and codes for development to reduce damage to critical infrastructure and buildings from landslides and slope failure.	Landslide and Slope Failure	SLCo Office of Regional Development	Draper Building and Engineering, MSD, SLCo EM	Reduce the likelihood of landslides and critical infrastructure/building damage. Ensure that future development is up to code and follows policy to avoid repetitive loss properties.	Low	Draper City General Fund	Long term	Medium	

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
17	Develop and implement public education programs on disaster awareness and mitigation.	Avalanche, Civil Disturbance, Dam Failure, Drought, Wildfire, Earthquake, Extreme Heat, Extreme Cold, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide, Lightning, Public Health Epidemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	Draper EM	Draper City, Draper FD, Draper PD, Draper Public Works, SLCo EM, NWS, UDEM	Improve understanding of local resources, improve relationships with the public and stakeholders. Outline plans/SOPs for programs.	Low	Draper City General Fund	Short term	Medium	
18	Enhance and promote the implementation of CERT and SAFE Hubs.	Avalanche, Civil Disturbance, Dam Failure, Drought, Wildfire, Earthquake, Extreme Heat, Extreme Cold, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide, Lightning, Public Health Epidemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	Draper EM	Draper City, Draper FD, Draper PD, SLCo EM	Improved awareness of local resources	Low	Draper City General Fund, Draper EM, SLCo EM	Short term	Medium	
19	Provide education regarding all natural hazards through live trainings and web-based, print, broadcast, and social media.	Avalanche, Civil Disturbance, Dam Failure, Drought, Wildfire, Earthquake, Extreme Heat, Extreme Cold, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide, Lightning, Public Health Epidemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	Draper EM	Draper City, Draper Public Relations Officer, Draper PIO, Draper Community Development, Draper FD, Draper PD, Draper Public Works, Draper PIO, SLCo EM, NWS, UDEM	Improved awareness of potential natural hazards affecting the city of Draper. For example, materials can be shared on: home weatherization (extreme heat/extreme cold/severe winter weather), avalanche warning signs and safety protocols (avalanche), tree trimming and reinforced window installation (high wind, tornado), and home retrofits including elevation and utility elevations (flooding, heavy rain, dam failure), and defensible space and home hardening (wildfire).	Low	Draper City General Fund, BRIC grant, HMGP grant	Short term	Low	
20	Install a notification system for public alerts. Expand opportunities for sharing information with the public through communication systems, public notification boards, and other tools.	Avalanche, Civil Disturbance, Dam Failure, Drought, Earthquake, Extreme Heat, Extreme Cold, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide, Lightning, Public Health Epidemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	Draper EM	Draper Communications, SLCo EM	Reduce the loss of life and injury from hazards by facilitating timely information to the public.	Medium	Draper General Fund	Medium	Medium	Civic Ready alerting/ notification system. (Must sign up or be in a geographical range of a tower for cell phones). SLCo EM has been working on developing IPAWS templates and identifying

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
										streamlined communication.
21	Bury power lines.	Extreme Heat, Extreme Cold, Flooding, Heavy Rain, High Wind, Lightning, Tornado, Severe Winter Weather.	Draper EM	Public Works	Reduce the risk of power outages from severe weather. Reduce risk of wildfire sparked by power lines.	Medium	Draper General Fund, Utility Company	Medium	Medium	
22	Assess critical facilities for hazard exposure, structural weaknesses, power, communications and equipment resources, and redundancy, and adequate emergency procedures.	All hazards	Draper EM	Engineering, Building, Planning and Zoning	Use data to identify city assets and possible vulnerabilities to hazards to plan risk reduction actions.	Low	Draper General Fund	Medium	Medium	
23	Compile inventory of mutual-aid agreements and memoranda of understanding (MOU) and identify deficiencies.	All hazards	City of Draper	SLCo EM, Neighboring Jurisdictions' EM, Police, Fire and Public Works	Clarify capabilities for addressing various hazards. Improved relationships with other agencies and improved capabilities will reduce hazard risk.	Low	Draper General Fund	Short term	Medium	
24	Pursue and implement needed mutual-aid agreements.	All hazards	City of Draper	SLCo EM, neighboring jurisdictions EM, Police, Fire and Public Works	Strengthened relationships with local jurisdictions, agencies, and organizations for assistance and outlined options for assistance depending on the incident.	Low	Draper General Fund	Medium	Medium	
25	Coordinate with the Utah Geological Survey and other agencies to understand current slope failure threats/potentials.	Landslide/Slope Failure	City of Draper	Engineering, Public Works, GIS	Greater understanding of hazard potential can guide efforts to reduce future losses.	Low	Draper General Fund	Short-term	Medium	
26	Educate homeowners on the need to create defensible space near structures in the wildland–urban interface (WUI).	Wildfire	City of Draper	Fire Department	Encourage and empower residents to take steps to protect their homes and reduce potential losses from wildfire.	Low	Draper General Fund	Short-term	Medium	
27	Reduce fuels around publicly owned structures.	Wildland Fire	City of Draper	Fire Department, Parks/Rec	Reduce the potential for a fire to spread to public buildings and reduce losses and impacts to the community.	Medium	Draper General Fund, Draper Fire Dept. General Fund	Short-term	Medium	
28	Assess existing water flow capabilities, both public and private, and address deficiencies.	Wildland Fire	City of Draper	Public Works/Draper Water, Water Pro	Ensure that water flow can sustain firefighting capabilities in the event of a wildfire and help reduce potential losses.	Medium	Draper General Fund	Short-term	Medium	
29	Assist communities in developing Community Wildfire Protection Plans or similar plans.	Wildland Fire	Draper EM	Fire Department	Develop long-term planning to reduce risk of wildfire to community.	Medium	Draper General Fund	Medium	Medium	
30	Establish a Firewise Community Program for SunCrest and the entire East Bench.	Wildland Fire	Draper EM	Draper City Emergency Preparedness, Draper City Public Works, Fire Department	Use Firewise or a similar program to educate residents regarding wildfire risk and potential mitigation such as defensible space, and focus efforts in areas of high risk.	Medium	Draper General Fund	Medium	Medium	

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
31	Continue to enforce master drainage plan requirements.	Flood, Heavy Rain	Draper City Engineering and Public Works	Draper EM	Reduce potential losses from flooding or heavy rain.	Low	Draper General Fund	Medium	Medium	
32	Continue participating in Utah Shakeout activities to promote earthquake awareness.	Earthquake	Draper EM	Draper Police Department, and the City's Emergency Preparedness Committee, Draper PIO	Improved awareness and information regarding earthquake risk and safety precautions that people can take to reduce potential loss of life or injury from an earthquake.	Low	Draper General Fund	Medium	Medium	
33	Conduct risk studies or engineering assessments to determine approaches to address issues identified in dam safety inspection reports.	Dam Failure	SLCo EM	Salt Lake County Public Works Flood Control Engineering, Utah Division of Water Rights Dam Safety Section, Salt Lake City Public Utilities, Local Governments	Reduce potential losses from failure of HHPDs.	Medium	Salt Lake County General Fund, HHPD Grant, HMGP Grant	Medium	Medium	
34	Rehabilitate or complete other safety projects for high hazard dams based on dam safety reports or risk studies.	Dam Failure	SLCo EM	Salt Lake County Public Works Flood Control Engineering, Utah Division of Water Rights Dam Safety Section, Salt Lake City Public Utilities, Local Governments	Reduce potential losses from failure of HHPDs.	High	Salt Lake County General Fund, HHPD Grant, HMGP Grant	Long term	High	

DRAFT

THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT

City of Emigration Canyon

Jurisdictional Annex to the
Salt Lake County Hazard Mitigation Plan

Month XXXX | Draft X.X

EMIGRATION CANYON

Salt Lake County Emergency Management EM

SALT LAKE COUNTY

THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT

Table of Contents

City of Emigration Canyon Annex 1

Planning Process Contact Information 1
Jurisdiction Profile 1
Date of Incorporation 1
Location and Description 1
Population 2
Demographics 2
Brief History 2
Climate 2
Public Services 2
Governing Body 2
Development Trends 2
Jurisdiction-Specific Hazards and Risk 3
Hazard Event History 6
National Flood Insurance Program Summary 7
Jurisdiction-Specific Vulnerabilities and Impacts 8
Jurisdiction-Specific Impacts Changes in Vulnerability 26
Additional Public Involvement 40
Plan Integration 40
Capability Assessment 41
Planning and Regulatory Capabilities 41
Administrative and Technical Capabilities 43
Financial Capabilities 45
Education and Outreach Capabilities 46
Opportunities to Expand and/or Improve Capabilities 47
Mitigation Strategy 48

DRAFT

List of Figures

Figure 1: Social Media Posts for the Mitigation Survey and Draft Plan Review 40

List of Tables

Table 1: Contact Information for the City of Emigration Canyon 1
Table 2: Participant List for the City of Emigration Canyon 1
Table 3: Calculated Priority Risk Index Values for the City of Emigration Canyon 3
Table 4: Criteria for the Calculated Priority Risk Index 4
Table 5: History of Hazard Events in the City of Emigration Canyon 6
Table 6: National Flood Insurance Program Status for the City of Emigration Canyon 8
Table 7: National Flood Insurance Overview for the City of Emigration Canyon 8
Table 8: Jurisdiction-Specific Vulnerabilities and Impacts in the City of Emigration Canyon 9
Table 9: Jurisdiction-Specific Changes in Vulnerability in the City of Emigration Canyon 27
Table 10: Previous Plan Integration by the City of Emigration Canyon 41
Table 11: Opportunities for Integration with Future Plans of the City of Emigration Canyon 41
Table 12: Assessment of the Planning Capabilities of the City of Emigration Canyon 41
Table 13: Assessment of the Regulations and Ordinances of the City of Emigration Canyon 42
Table 14: Assessment of the Administrative Capabilities of the City of Emigration Canyon 43
Table 15: Technical Capabilities of the City of Emigration Canyon 44
Table 16: Assessment of the Financial Capabilities of the City of Emigration Canyon 45
Table 17: Assessment of the Education and Outreach Capabilities of the City of Emigration Canyon 46
Table 18: Opportunities to Expand and/or Improve the Capabilities of the City of Emigration Canyon 47
Table 19: Mitigation Action Alternatives for the City of Emigration Canyon 48
Table 20: Status of Prior Mitigation Actions of the City of Emigration Canyon 48
Table 21: 2025 Mitigation Action Plan for the City of Emigration Canyon 49

DRAFT

City of Emigration Canyon Annex

To participate in this multi-jurisdictional hazard mitigation plan (MJHMP) update for Salt Lake County (SLCo), the governing body of the city of Emigration Canyon passed a formal resolution, a copy of which is maintained at the local government offices.

Planning Process Contact Information

Table 1 provides information on the point of contact during the updating of the MJHMP.

Table 1: Contact Information for the City of Emigration Canyon

Name	Contact Information
Joe Smolka	**Phone: 801-560-3543 email:** smolka@ecmetro.org
Brian Buckhout	**Phone:** 925-315-1671 **email:** bbuckhout@unifiedfire.org

The city of Emigration Canyon has a fully integrated approach to hazard mitigation planning and program implementation. During the 2024 update process, the MJHMP participation roles in Table 2 were recorded.

Table 2: Participant List for the City of Emigration Canyon

Name	Title	Jurisdiction
Brian Buckhout	Municipal Emergency Planner	Unified Fire Authority
Brian Hartsell	Associate General Manager	Municipal Services District
Joe Smolka	Mayor	Emigration Canyon

Jurisdiction Profile

Date of Incorporation

Emigration Canyon became a metro township in January 2017.On May 1, 2024, it was converted to a city.

Location and Description

The city of Emigration Canyon is located east of Salt Lake City in the Wasatch Range. The city is approximately 18.22 square miles in area and is approximately 6,500 feet above sea level. Emigration Canyon is known for its historical significance, especially its role in the Mormon migration of the 19th century.

DRAFT

Population

The 2022 American Community Survey 5-Year Estimate from the U.S. Census Bureau records the population of the city of Emigration Canyon as 1,465 people.

Demographics

Most of the 1,465 people are between the ages of 65 and 74, with a median age of 50;1. 737 are males (50.3%) and 728 are females (49.7%). English is the primary language in 84% of homes,, with 6.4% Spanish, and 9.6% other languages.

Brief History

Emigration Canyon has a rich historical significance, due primarily to its role along a critical route during the westward migration of Mormon pioneers in the mid-19th century. The canyon was used by Mormon pioneers led by Brigham Young as they journeyed toward the Salt Lake Valley, making it an integral part of their trek. Eventually, Emigration Canyon developed into a community that reflects its historical roots while evolving with modern amenities and attractions. It is known for its scenic beauty and historical landmarks.

Climate

The city of Emigration Canyon experiences a continental climate (Dsa Köppen classification) characterized by dry, hot summers and cold winters. Average high temperatures are approximately 85°F in the summer and approximately 40°F in the winter. Rain each year is approximately 18 inches, and snowfall averages 67 inches.

Public Services

The city of Emigration Canyon offers a wide range of public services through the Greater Salt Lake Municipal Services District (MSD). The MSD oversees services including public works which encompasses the construction and maintenance of roads, snow removal, and street lighting. The MSD also handles planning and zoning, business licensing, inspections, emergency planning, and other municipal services.

Governing Body

The governing body of the city of Emigration Canyon consists of a Mayor and a five-member Council, who have the power to create and enforce laws including the authority to levy taxes.

Development Trends

Emigration Canyon has observed notable development trends. The adoption of the first General Plan in 2022 provided a strategic guide for planning and development, emphasizing key areas such as land use, transportation, economic growth, environmental resilience, and infrastructure enhancement.

DRAFT

The area has experienced a steady increase in population, with a mix of full-time and part-time residents, with an average residency length of approximately 18 years. Economic development in Emigration Canyon is closely linked to the Salt Lake City area, with job growth reflecting this connection. Notably, rental costs have declined between 2010 and 2017, a pattern that is expected to persist.

Jurisdiction-Specific Hazards and Risk

The Calculated Priority Risk Index (CPRI) is a comprehensive assessment tool for evaluating and prioritizing risks in a given context. It considers various factors, such as probability, impact, and urgency, to determine the level of risk associated with events or situations. The results for each hazard, including its risk factor (RF) value, are shown in Table 3. The results are based on the criteria in

Table 4 and the equation that follows it. The CPRI helps organizations and individuals make informed decisions about risk management and mitigation strategies. It provides a systematic approach to identifying and addressing potential issues, allowing for a more efficient allocation of resources and proactive risk prevention. With the CPRI, stakeholders can prioritize their focus on the most critical risks, leading to more effective risk management and, ultimately, better outcomes.

Table 3: Calculated Priority Risk Index Values for the City of Emigration Canyon

Type of Hazard Event	Probability of Future Events	Spatial Extent	Severity of Life/ Property Impact	Warning Time	Duration	Response Capacity	Risk Factor Value
Avalanche	4	1	2	4	2	1	2.6
Drought	4	4	2	1	4	1	2.8
Earthquake	3	4	4	4	3	2	3.4
Extreme Heat	4	4	3	1	3	1	3
Extreme Cold	3	4	2	1	3	1	2.4
Flooding	4	3	3	3	3	1	3.1
Landslide/ Slope Failure	2	1	2	4	1	2	2
Radon	4	4	2	1	4	2	2.9
Heavy Rain	4	3	2	3	1	1	2.6
High Wind	4	3	3	3	2	1	3
Lightning	4	2	2	4	1	1	2.6
Severe Winter Weather	4	3	2	2	2	1	2.6
Tornado	2	2	3	4	1	2	2.4
Wildfire	4	3	3	4	3	1	3.2
Dam Failure	2	2	3	2	2	3	2.4
Civil Disturbance	2	1	2	4	2	2	2.1

DRAFT

Type of Hazard Event	Probability of Future Events	Spatial Extent	Severity of Life/ Property Impact	Warning Time	Duration	Response Capacity	Risk Factor Value
Cyberattack	2	3	3	4	3	2	2.7
Hazardous Materials Incident (Transportation & Fixed Facility)	3	1	2	4	1	1	2.2
Public Health Epidemic/ Pandemic	3	4	3	1	4	1	2.8
Terrorism	2	1	3	4	2	1	2.3

Table 4: Criteria for the Calculated Priority Risk Index

Risk Index Factor	Degree of Risk Level		Criteria	Factor Weight for Degree of Risk Level
Probability of Future Events	1	Unlikely	Less than 1 percent probability of occurrence in the next year or a recurrence interval of greater than every 100 years.	30%
	2	Occasional	1 to 10 percent probability of occurrence in the next year or a recurrence interval of 11 to 100 years.	
	3	Likely	11 to 90 percent probability of occurrence in the next year or a recurrence interval of 1 to 10 years.	
	4	Highly Likely	91 to 100 percent probability of occurrence in the next year or a recurrence interval of less than 1 year.	
Spatial Extent	1	Limited	Less than 10% of the planning area could be impacted.	10%
	2	Small	10%–25% of the planning area could be impacted	
	3	Significant	25%–50% of the planning area could be impacted.	
	4	Extensive	50%–100% of the planning area could be impacted.	
Severity of Life/Property Impact	1	Negligible	Less than 5% of the affected area's critical and non-critical facilities and structures are damaged/ destroyed. Only minor property damage and minimal disruption of life. Temporary shutdown of critical facilities.	30%
	2	Limited	More than 5% and less than 25% percent of property in the affected area is damaged/	

DRAFT

Risk Index Factor	Degree of Risk Level		Criteria	Factor Weight for Degree of Risk Level
			destroyed. Complete shutdown of critical facilities for more than one day but less than one week.	
	3	Critical	More than 25% and less than 50% of property in the affected area was damaged/ destroyed. Complete shutdown of critical facilities for over a week but less than one month.	
	4	Catastrophic	Over 50% of critical and non-critical facilities and infrastructures in the affected area are damaged/ destroyed. Complete shutdown of critical facilities for more than one month.	
Warning Time	1	Self-defined	More than 24 hours	10%
	2	Self-defined	12 to 24 hours.	
	3	Self-defined	6 to 12 hours.	
	4	Self-defined	Less than 6 hours.	
Duration	1	Brief	Up to 6 hours.	10%
	2	Intermediate	Up to one day.	
	3	Extended	Up to one week.	
	4	Prolonged	More than one week.	
Response Capacity	1	High	Significant resources and capability to respond to this kind of event; staff are trained, experienced, and ready.	10%
	2	Medium	Some resources and capability to respond to this kind of staff; some staff may be trained, experienced, and ready while others may need additional support.	
	3	Low	Limited resources and capability to respond to this kind of event; additional staff or staff training needed.	
	4	None	No resources and capability to respond this kind of event; additional outside support would be required.	

RISK FACTOR (RF) EQUATION

RF Value = [(Probability x 0.30) + (Spatial Extent x 0.10) + (Severity of Life/Property Impact x 0.30) + (Warning Time x 0.10) + (Duration x 0.10) + (Response Capacity x 0.10)]

Hazards with an RF value greater than or equal to 2.5 are considered high risk. Those with RF values of 2.0 to 2.4 are considered moderate risk hazards, and those with an RF value less than 2.0 are considered low risk. The highest possible RF value is 4.

DRAFT

Hazard Event History

Examining hazard event histories provides valuable insights to inform decision-making and help prioritize resources for risk prevention and response efforts. Table 5 lists the hazard events impacting the city of Emigration Canyon planning area since the 2019 plan update, as recorded in the Storm Events Database from the National Centers for Environmental Information.

Table 5: History of Hazard Events in the City of Emigration Canyon

Type of Hazard Event	FEMA Disaster #	Date(s)	Damage or Impacts	Description
Avalanche		February 2023	Smaller, animal-triggered slides.	
Drought		2023	Emigration Creek is getting drier.	Emigration Improvement District dug more wells to keep up with residential demands and there hasn't been enough water to sustain needs.
Earthquake	DR-4548-UT	March 18, 2020	M 5.7 earthquake that caused extensive damage throughout the county including downed trees, buildings, and debris on roads. Damage was primarily centered in Magna, but shaking was felt throughout the county.	The state received a major disaster declaration on July 9, 2020.
Extreme Heat		2020–2024	Increased temperatures in the summer months	Contributes to drought conditions
Extreme Cold			Code blue days in Emigration Canyon	Shelters throughout the county expanded capacity for unsheltered groups
Flooding	DR-4752-UT	04/13/2023	Snowpack melt from warm weather caused flooding. Local emergency was declared.	A few homes were damaged along with roadways.
Landslide/ Slope Failure	DR-4752-UT	04/13/2023	Warm weather and snowpack melt caused flooding and a number of landslides.	A few homes were damaged along with roadways. Local emergency was declared.
Radon			Medium household radon levels.	There are medium household radon levels in Emigration Canyon.
Heavy Rain	DR-4752-UT	04/13/2023	Flooding at Emigration Creek in June 2023.	Led to landslides from record snowpack and higher temperatures.

DRAFT

Type of Hazard Event	FEMA Disaster #	Date(s)	Damage or Impacts	Description
High Wind	4578-DR-UT	09/07/2020	High winds throughout the county	100+ mph winds caused extensive property and road damage.
Lightning				
Severe Winter Weather		2023 and 2024	Heavy snow loads from record snowpack caused roofs to collapse.	Property damage, downed trees, and access to essential services disrupted.
Tornado		August 11, 1999	Tornado in Salt Lake City that impacted access to Emigration Canyon.	Emigration Canyon was impacted as far as access to the city.
Wildfire		2019	Wildfire at the top of the canyon.	Helicopters with buckets and a tanker used.
Dam Failure			No dams within city boundaries but do have three high hazard dams surrounding the city.	There is concern that flooding from the dam near the entrance of Emigration Canyon could affect the road and other services to the city.
Civil Disturbance		May 2020	Civil disturbance, protests in Salt Lake City. No direct impacts, but this occurred in neighboring city.	
Cyberattack				
Hazardous Materials Incident (Transporta-tion & Fixed Facility)				
Public Health Epidemic/ Pandemic		2020–2023	COVID-19 pandemic	Impacted local residents and businesses as far as the local economy and ability to access resources.
Terrorism				

DRAFT

National Flood Insurance Program Summary

The city of Emigration Canyon participates in the National Flood Insurance Program (NFIP). Table 6 displays statistics related to the NFIP. The city of Emigration Canyon does not participate in the Community Rating System (CRS).

Table 6: National Flood Insurance Program Status for the City of Emigration Canyon[1]

Initial FHBM Identified	Initial FIRM Identified	Current Effective Map Date	Adopted Date	Date Joined NFIP	Tribal
12/18/1985	12/18/1985	09/25/2009	2009	06/03/2020	No

Table 7: National Flood Insurance Overview for the City of Emigration Canyon

Community ID	Number of Losses	Total Net Payment	Active Policies	Total Coverage
490268	0	$0.00	1	$350,000

The city of Emigration Canyon has designated the Director of Planning and Development Services as the Floodplain Administrator. The duties of the Floodplain Administrator are supported by the Greater Salt Lake Municipal Services District (MSD). The current Flood Damage Prevention and Control Ordinance was adopted on 9/28/2021. The current Flood Insurance Rate Map (FIRM) became effective 9/25/2009. In addition to the FIRM, Emigration Canyon acquired separate flood mapping data, which is considered the best available data and is currently used in the permitting process. It is in the process of being incorporated into the FEMA flood maps. The MSD is responsible for issuing floodplain permits in MSD Member Communities, including Emigration Canyon. The permits include a description of all work, including the kind and type of construction, proposed intent, and location. Substantial damage/substantial improvement structures are identified through the permitting process. Structures that are determined to be substantially damaged or substantial improvements are required to come into compliance with current codes. The MSD Building Department provides guidance on how to build in accordance with existing building codes.

Jurisdiction-Specific Vulnerabilities and Impacts

Table 8 provides information on the vulnerable assets in the city of Emigration Canyon, including its critical facilities, highlighting the city's vulnerability to identified hazards. By understanding the risks associated with these assets, local authorities can develop proactive strategies to mitigate vulnerabilities and ensure the safety and functionality of these important assets during hazard events. These data are invaluable for decision-making and prioritizing resources for emergency response and preparedness efforts, ultimately contributing to more effective risk management and greater resilience in the community.

The primary assets in Emigration Canyon are the 1,465 residents and their homes. One fire station is located within Emigration Canyon, but the remaining critical facilities and infrastructure are located in neighboring jurisdictions. Emigration Canyon Road is the primary transportation route, connecting to Salt Lake City at the mouth of the canyon on the west, and at the upper end connects to State Route 65 near Little Dell Reservoir. This route also provides connectivity to I-80. Several markers for historic sites and monuments are located in Emigration Canyon, such as Donner Hill and Last Campsite, acknowledging pioneers who traveled through the canyon.

[1] FIRM = Flood Insurance Rate Map, FHBM = Flood Hazard Boundary Map

DRAFT

Table 8: Jurisdiction-Specific Vulnerabilities and Impacts in the City of Emigration Canyon

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
Avalanche	People	*Vulnerability:* There are no avalanche paths mapped in Emigration Canyon, so the risk to the population is not well defined. Residents may be at risk under certain snow accumulation conditions. Residents living near canyon slopes or in isolated mountainous areas are also exposed to avalanche threats. *Impacts:* Avalanches can lead to injury or death for those caught in their path. In Emigration Canyon, outdoor enthusiasts face the highest risk from avalanches, particularly during the winter months when snowpack accumulates along steep terrain. Limited awareness of avalanche risks, inadequate safety gear, and lack of routine monitoring of weather and snow conditions increase susceptibility.
	Structures	*Vulnerability:* Homes and cabins situated near avalanche paths or steep inclines, especially at the base of canyon walls, face a heightened risk of damage or burial from snow slides. *Impacts:* Structures without reinforced foundations or roofs designed to withstand heavy snow loads are particularly vulnerable to damage. Poor vegetation cover, slope instability, and building orientation all contribute to structural risk in Emigration Canyon.
	Economic Assets	*Vulnerability:* Property values and local businesses are at risk from avalanches. *Impacts:* Homes located along slopes may suffer significant property damage, potentially lowering home values and affecting insurability. Local tourism businesses that support winter recreation may be disrupted by avalanche-related closures or safety concerns. Canyon roads and utility infrastructure, including electrical lines and access routes, may be blocked or damaged by snow movement, disrupting services and local economies.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Vegetation and wildlife habitat are at risk from avalanches. *Impacts:* Avalanches can damage alpine habitats and affect wildlife corridors. Forested slopes may lose tree cover, increasing erosion. If historic trailheads, cabins, or interpretive signs lie in potential slide areas, they risk damage or total loss.
	Critical Facilities and Infrastructure	*Vulnerability:* Roads, power, and water systems are vulnerable to avalanches. *Impacts:* Transportation through the canyon, including Emigration Canyon Road, may be shut down during high-risk periods, impacting residents, emergency services, and visitors. Power lines and water delivery systems near slopes may be disrupted by snow slides or debris flow triggered by avalanches.
	Community Activities	*Vulnerability:* Recreation opportunities are vulnerable to avalanches. *Impacts:* Community and recreational use of canyon trails, ski runs, and winter events may be limited or postponed during avalanche season. These interruptions impact local participation and outdoor tourism.
Drought	People	*Vulnerability:* Drought occurs over large regions, and all Emigration Canyon residents are vulnerable.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		Impacts: During dry periods, Emigration Canyon residents, especially those on private wells, may experience water scarcity. Older adults, young children, and those with limited income may have difficulty coping with restrictions, rising water costs, and lack of water-efficient appliances or irrigation options.
	Structures	*Vulnerability:* All Emigration Canyon structures are vulnerable to drought. *Impacts:* Extended drought conditions can cause soil shrinkage, which may shift foundations and damage aging infrastructure. Landscape watering limits may result in browning lawns or dead vegetation around homes and public buildings, affecting aesthetics and fire risk.
	Economic Assets	*Vulnerability:* Local businesses and recreation amenities are at risk from drought. *Impacts:* Rising water costs and scarcity can challenge residents and local service providers. Recreational businesses may be impacted by fire closures or degraded trail conditions. Infrastructure maintenance costs can also rise due to erosion and fire-related damage during dry seasons.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Ecosystems and historical sites are vulnerable to drought. *Impacts:* Local plant communities, already adapted to a semi-arid climate, may face die-off or a shift in species distribution under prolonged drought, impacting the local ecosystem. Historic structures or public buildings may face increased maintenance costs due to water restrictions affecting cooling and vegetation.
	Critical Facilities and Infrastructure	*Vulnerability:* Fire response and water systems are vulnerable to drought. *Impacts:* Drought may limit available water for emergency response, including firefighting efforts. Systems that rely on surface or shallow groundwater sources may experience drops in output. Aging infrastructure is especially susceptible to damage due to dry soil conditions.
	Community Activities	*Vulnerability:* Recreation activities are vulnerable to drought. *Impacts:* Recreational activities like gardening, picnics, and local trail use may be affected by poor air quality, fire risk, and reduced access to water. Drought awareness campaigns may be needed to promote conservation and mitigate risk.
Earthquake	People	*Vulnerability:* All Emigration Canyon's residents are at risk due to its proximity to the Wasatch Fault. *Impacts:* Those living in older homes not designed for seismic resistance, especially households with children, seniors, or individuals with limited mobility, may have difficulty responding quickly during a quake. A lack of preparedness supplies or knowledge about earthquake response further increases vulnerability.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Structures	*Vulnerability:* All structures in Emigration Canyon are at risk from earthquakes. *Impacts:* Homes and buildings constructed prior to modern seismic standards are most likely to sustain damage. Structures on soft soils or near fault traces are at greater risk of foundational cracking or collapse.
	Economic Assets	*Vulnerability:* Businesses, property loss, and devaluation are vulnerable to earthquakes. *Impacts:* Damage to homes, roadways, and hillside retaining walls can result in high repair costs and long-term recovery expenses. Businesses that depend on pass-through traffic or trail-based tourism may see economic disruptions if access routes are compromised. Any disruption in utility service can further strain economic activity in the canyon.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Natural habitats and historical markers are vulnerable to earthquakes. *Impacts:* Rockslides or soil movement triggered by seismic activity can degrade natural habitats and water quality. Historic cabins or interpretive features not designed to endure ground shaking are particularly vulnerable.
	Critical Facilities and Infrastructure	*Vulnerability:* Transportation and utility systems are vulnerable to earthquakes. *Impacts:* Emigration Canyon's limited transportation routes, including its main road, are at risk of rockfall or collapse in the event of an earthquake. Utility systems, including water lines and electrical infrastructure, may be damaged by ground movement or slope failure, delaying recovery.
	Community Activities	*Vulnerability:* All city events and activities are vulnerable to earthquakes. *Impacts:* Community meetings, trail gatherings, and outdoor recreation could be interrupted by earthquakes and their aftermath. Public safety communications and mutual aid access are essential in such scenarios due to the canyon's relative isolation.
Extreme Heat	People	*Vulnerability:* All residents are potentially vulnerable to extreme heat. Adults over 65, individuals with pre-existing health conditions, young children, outdoor workers, and low-income households are at greater risk. *Impacts:* Extreme heat can cause illness such as dehydration, heat exhaustion, and heat stroke. Older, younger, and health-compromised individuals have higher risk because they struggle to regulate body temperature. Socioeconomically disadvantaged individuals may lack access to cooling resources, while outdoor workers are at higher risk of heat-related illnesses due to physical labor without adequate hydration and rest. Extreme heat can hinder students' learning.
	Structures	*Vulnerability:* All structures are potentially at risk from extreme heat. *Impacts:* Residential buildings with inadequate insulation and ventilation and commercial buildings lacking reflective roofing and proper shading may be vulnerable. Materials like metal and glass can

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		amplify heat retention, while areas with limited green space typically experience higher temperatures.
	Economic Assets	*Vulnerability:* Agriculture and recreation businesses are vulnerable to extreme heat. *Impacts:* Agricultural operations can have reduced yields and higher water demand due to heat stress. The outdoor recreation industry may see decreased participation during heat waves, affecting local businesses that rely on visitors. In addition, the energy infrastructure could face strain from increased cooling demands, leading to outages.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Plants, wildlife, recreation amenities, and historic markers are vulnerable to extreme heat. *Impacts:* Local plant species and wildlife habitats can suffer from extreme heat conditions, leading to reduced biodiversity. Historic buildings may degrade due to high temperatures, causing materials to deteriorate and paint to peel. In addition, parks and recreational areas may experience overuse and risk of their preservation, as residents seek relief from the heat.
	Critical Facilities and Infrastructure	*Vulnerability:* Transportation and power systems are vulnerable to extreme heat. *Impacts:* Homes and businesses can suffer from the strain on cooling resources. Power grids may be strained by higher demands for electricity for cooling, leading to potential outages. Transportation systems are at risk of damage, such as buckling roads and warped train tracks.
	Community Activities	*Vulnerability:* Outdoor events and recreation are vulnerable to extreme heat. *Impacts:* Activities like outdoor sports, fairs, and agricultural practices are vulnerable to extreme heat. These events can pose risks, particularly for participants such as youth athletes and elderly residents who may suffer from heat-related illnesses. In addition, high temperatures can stress crops, impacting local farming.
Extreme Cold	People	*Vulnerability:* All residents are vulnerable to extreme cold, but some groups may have more severe risks. *Impacts:* Extreme cold can lead to hypothermia or frostbite. The elderly face increased risks due to health issues and mobility challenges, while children may be susceptible if they lack proper winter clothing. Individuals experiencing homelessness or financial hardship often lack access to heated shelters and resources for protection against the cold. Those with pre-existing health conditions may experience worsened symptoms at low temperatures.
	Structures	*Vulnerability:* All residential homes, commercial buildings, and unheated spaces like sheds may be vulnerable to extreme cold. *Impacts:* Homes with poor insulation or inadequately sealed windows and doors are prone to significant heat loss. Older buildings lacking modern energy efficiency standards may also suffer from freezing pipes and structural damage. Public infrastructure, such as bridges and roads, also can be impacted.
	Economic Assets	*Vulnerability:* Agriculture, infrastructure, and energy-related businesses are at risk from extreme cold.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		Impacts: Agricultural operations, such as greenhouses and livestock farms, may experience crop and livestock losses, impacting revenue. Icy roads can disrupt transportation networks, affecting logistics and supply chains, while power lines risk outages from ice accumulation, impacting local businesses. Energy-intensive facilities may face higher operational costs due to increased heating needs.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Plants, wildlife, and historic and cultural sites are vulnerable to extreme cold. *Impacts:* Due to prolonged cold, local vegetation and wildlife habitats may suffer from plant stress and reduced food availability. Historic structures, especially those not built for severe weather, can deteriorate due to below-freezing temperatures and ice. Culturally significant sites, including monuments and public art, also may be damaged, while infrastructure such as water pipes and roadways may be compromised during extreme cold events, leading to service disruptions and safety hazards.
	Critical Facilities and Infrastructure	*Vulnerability:* Water systems and roads are vulnerable to extreme cold. *Impacts:* Water treatment plants can face frozen pipes and equipment failures. Icy conditions may increase accident risks on transportation infrastructure, and power generation facilities may struggle to meet heating demands. Residential and commercial buildings lacking proper insulation are also at risk of heating system failures, endangering occupants.
	Community Activities	*Vulnerability:* Outdoor recreation activities are vulnerable to extreme cold. *Impacts:* Youth sports, festivals, and outdoor markets are vulnerable to extreme cold. Harsh temperatures can deter participation, impacting community engagement. At-risk groups, such as the elderly and young children, face health risks like frostbite and hypothermia, further limiting outdoor involvement. In addition, poorly insulated buildings or inadequate heating in community centers can make gatherings uncomfortable.
Flooding (and Heavy Rain)	People	*Vulnerability:* Flooding primarily affects residents in low-lying areas near rivers and streams, especially during heavy rainfall or snowmelt. Homes along Emigration Creek are at risk. *Impacts:* Flooding can lead to injury or death for individuals swept away in fast moving water. Residents may be displaced from their homes. Individuals without reliable transportation may struggle to evacuate quickly, while low-income families often lack resources for flood-prevention measures. The elderly and those with disabilities may face mobility challenges, increasing their risk during emergencies. Overall, factors such as geographic location, economic status, and physical ability contribute to the community's varying levels of vulnerability to flooding.
	Structures	*Vulnerability:* Homes and other structures near Emigration Creek are vulnerable. High runoff and heavy rain may affect other areas as well, near smaller canyon mouths or in low-lying areas. *Impacts:* Residential properties in floodplains and commercial buildings without proper drainage systems or flood-resistant designs

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		face significant risks during heavy rain or snowmelt. Older structures may be more susceptible due to outdated construction standards. Overall, a combination of location and construction features contributes to their vulnerability to flooding.
	Economic Assets	*Vulnerability:* Businesses near waterways are at risk from flooding, and property values may be affected. *Impacts:* Emigration Canyon does not have many large commercial properties, retail centers, or warehouses near rivers or low-lying areas, but the town relies on businesses in neighboring jurisdictions that may be at risk. Residential developments in flood-prone zones can also suffer damage, impacting property values. Public infrastructure, such as roads and utilities, may experience disruptions, leading to costly repairs. Agricultural land can be affected by excess water, reducing crop yields.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Natural habitats and historic markers are vulnerable to flooding. *Impacts:* Natural areas like wetlands and streams are at risk of habitat destruction, while historic sites and landmarks may sustain structural damage. Cultural resources, such as parks and public spaces, can become unusable, affecting community events. Factors contributing to their vulnerability include inadequate flood management, urban development that alters water flow, and the increasing frequency of extreme weather events due to climate change.
	Critical Facilities and Infrastructure	*Vulnerability:* Transportation networks, including Emigration Canyon Road, and water systems are vulnerable to flooding. *Impacts:* Transportation networks are vulnerable to flooding due to their proximity to rivers and low-lying areas, which can overflow during heavy rain or snowmelt. Flooding could damage Emigration Canyon Road, which is the primary route to and from Emigration Canyon. Flooding can disrupt emergency services, block transportation routes, and isolate communities. In addition, inadequate drainage systems and urban development encroaching on floodplains increase these risks.
	Community Activities	*Vulnerability:* Community activities are vulnerable to flooding. *Impacts:* Due to the area's geography and infrastructure, outdoor events, sports, and farmers' markets are vulnerable to flooding. Parks and open spaces can quickly become inundated during heavy rainfall or rapid snowmelt. Residential neighborhoods near rivers, roads, and bridges are at risk of flash floods, which can disrupt transportation and emergency services.
Landslide/ Slope Failure	People	*Vulnerability:* Most of Emigration Canyon has moderate landslide susceptibility. Residents living along the steep inclines of Emigration Canyon are particularly susceptible to landslides and slope failures. *Impacts:* Residents can be injured or displaced from homes due to landslides. The area's geological makeup, combined with factors like heavy rainfall and rapid snowmelt, can destabilize slopes. Older homes, especially those constructed without modern engineering standards, may lack adequate protection against such events. Limited awareness about early warning signs and insufficient emergency preparedness further heighten the risk for these communities.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Structures	*Vulnerability:* Nearly all structures in Emigration Canyon are vulnerable to landslides. *Impacts:* Buildings situated on or near the canyon's slopes, including homes and essential infrastructure, face significant threats from potential landslides. The combination of loose soil, inadequate drainage, and historical construction practices without modern slope stabilization techniques increases vulnerability. Roads and bridges, vital for daily commutes and emergency responses, are also at risk, especially during periods of intense precipitation.
	Economic Assets	*Vulnerability:* Property values and business losses are vulnerable to landslides. *Impacts:* Properties perched on hillsides may experience devaluation due to the looming threat of slope instability. Damage to infrastructure, such as roads and utility lines, can disrupt daily life and incur substantial repair costs. Local businesses might suffer from accessibility issues, leading to economic downturns in the community.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Waterways, habitats, and historic sites are vulnerable to landslides. *Impacts:* The natural beauty of Emigration Canyon, characterized by its diverse ecosystems, can be compromised by landslides that alter habitats and watercourses. Historic sites, reflecting the area's rich heritage, may be endangered by soil movements that threaten their structural integrity. Cultural landmarks and community gathering spots could also be affected, impacting the social fabric of the region.
	Critical Facilities and Infrastructure	*Vulnerability:* Water supply systems, power systems, and roads are vulnerable to landslides. *Impacts:* Essential services, including water supply systems and power lines, are vulnerable to disruptions caused by slope failures. The canyon's topography can hinder repair efforts, prolonging outages and affecting residents' quality of life. Emergency response times may be delayed if access routes are compromised, emphasizing the need for proactive infrastructure planning.
	Community Activities	Recreational pursuits, such as hiking and mountain biking, are integral to life in Emigration Canyon. However, trails and outdoor facilities located on unstable slopes pose risks to enthusiasts. Community events held in areas prone to landslides may face cancellations or relocations, affecting local traditions and economies.
Radon	People	*Vulnerability:* Residents of Emigration Canyon, particularly those in older homes, may be exposed to elevated radon levels due to the area's geological characteristics. According to utahradon.org, 39% of homes near Emigration Canyon have dangerous radon levels. *Impacts:* Families with young children and elderly members are especially at risk, as prolonged exposure to radon can lead to serious health issues. Awareness and regular testing are crucial to mitigate these risks.
	Structures	*Vulnerability:* All structures in the area may have elevated levels of radon. *Impacts:* Homes with basements or built on certain soil types prevalent in the canyon are more susceptible to radon infiltration. Cracks in

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		foundations and inadequate ventilation can exacerbate the problem, allowing radon gas to accumulate indoors. Implementing mitigation systems can significantly reduce exposure levels.
	Economic Assets	*Vulnerability:* Property values are vulnerable to radon levels. *Impacts:* Properties with high radon levels may face decreased market value and potential challenges during real estate transactions. The cost of installing mitigation systems, while necessary for health, can be a financial burden for homeowners. Moreover, public awareness of radon risks can influence property desirability in the area.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Water systems and historic structures are vulnerable to radon. *Impacts:* Radon, emanating from the natural decay of uranium in the soil, can affect underground water sources and soil quality. Historic buildings, often constructed without modern ventilation systems, may trap radon, posing health risks to occupants and visitors. Preserving these structures requires careful consideration of radon mitigation strategies.
	Critical Facilities and Infrastructure	*Vulnerability:* Public buildings, including one fire station, are vulnerable to radon. *Impacts:* Public buildings such as schools, daycare centers, and healthcare facilities in Emigration Canyon are limited. Residents may be exposed to radon in these facilities in neighboring jurisdictions. Emigration Canyon must ensure regular radon testing and implement necessary mitigation measures in public buildings. Protecting vulnerable populations, such as children and the elderly, is paramount. Infrastructure planning should incorporate radon-resistant construction techniques.
	Community Activities	*Vulnerability:* Community activities are vulnerable to radon, though radon risk is more commonly associated with long-term exposures. *Impacts:* Indoor community events, especially those held in basements or ground-level rooms, may inadvertently expose participants to higher radon levels. Ensuring that public buildings are tested and, if necessary, equipped with radon mitigation systems is essential for community health and safety.
High Wind	People	*Vulnerability:* The unique topography of Emigration Canyon can channel and intensify wind speeds, posing risks to all residents. *Impacts:* High winds can cause injury or death to individuals who do not have proper shelter. Blowing debris, broken windows, and collapsing roofs or structures can injure residents, especially the elderly, children, and individuals with mobility challenges. Sudden gusts can lead to injuries from flying debris or falling branches. Outdoor workers and recreational enthusiasts should be particularly cautious during high wind events.
	Structures	*Vulnerability:* Buildings with older construction or those not designed to withstand strong winds are vulnerable to damage from high winds. *Impacts:* Roofs, windows, and siding can be compromised, leading to costly repairs. Outbuildings, sheds, and other auxiliary structures may be at higher risk due to their lighter construction.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Economic Assets	*Vulnerability:* All businesses are vulnerable to high winds. *Impacts:* High winds can disrupt power lines and communication networks, affecting businesses and daily life. Agricultural operations may suffer losses due to damaged crops or infrastructure. Repair and maintenance costs following wind events can strain local economies.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Trees, ecosystems, and landmarks are vulnerable to high winds. *Impacts:* Strong winds can uproot trees and damage natural landscapes, affecting local ecosystems. Historic landmarks and cultural sites may suffer structural damage, threatening their preservation. Community parks and outdoor art installations are also susceptible to wind-related harm.
	Critical Facilities and Infrastructure	*Vulnerability:* Roads, power systems, and fire station response are vulnerable to high winds. *Impacts:* Essential services, including emergency response centers and utilities, must be fortified against high wind events. Power outages and blocked roads can impede emergency services, highlighting the need for resilient infrastructure planning.
	Community Activities	*Vulnerability:* Outdoor events and recreation activities are vulnerable to high winds. *Impacts:* Outdoor events, such as festivals and markets, are at risk during high wind conditions. Temporary structures like tents and stages can become hazardous if not properly secured. Event organizers should have contingency plans to ensure public safety.
Lightning	People	*Vulnerability:* Lightning can strike anywhere in the city, and all populations are potentially at risk. *Impacts:* Lightning can cause injury or death to those in close proximity to a strike. Outdoor enthusiasts, including hikers and campers, are at heightened risk of lightning strikes, especially during sudden summer storms. Children and the elderly may be less able to seek shelter promptly. Education on lightning safety and awareness of weather forecasts are vital for all residents and visitors.
	Structures	*Vulnerability:* Homes and communication facilities are vulnerable to lightning. *Impacts:* Tall structures, such as communication towers and buildings with metal components, are more likely to attract lightning. Homes without proper grounding systems are at risk of electrical surges, which can damage appliances and pose fire hazards.
	Economic Assets	*Vulnerability:* Businesses and electrical systems are vulnerable to lightning. *Impacts:* Lightning can cause significant damage to electrical systems, leading to costly repairs and business interruptions. Agricultural operations may experience losses due to fires ignited by lightning strikes. Insurance claims following such events can impact local economies.
	Natural, Historic, and	*Vulnerability:* Vegetation, wildlife, historic markers, and wildfire risk are vulnerable to lightning.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Cultural Resources	*Impacts:* Lightning-induced fires can devastate natural landscapes and wildlife habitats. Historic buildings, often constructed with flammable materials, are particularly vulnerable. Protecting these resources requires proactive measures, such as installing lightning rods and fire suppression systems.
	Critical Facilities and Infrastructure	*Vulnerability:* Power distribution, water systems, and the fire station are vulnerable to lightning. *Impacts:* Power stations, water treatment plants, and emergency services facilities must be equipped with lightning protection systems to ensure continuity of operations during storms. Disruptions to these services can have cascading effects on community well-being.
	Community Activities	*Vulnerability:* Outdoor events are vulnerable to lightning. *Impacts:* Outdoor gatherings, including sports events and festivals, should have lightning safety protocols in place. Organizers must monitor weather conditions and have plans to evacuate or shelter attendees if necessary.
Severe Winter Weather	People	*Vulnerability:* All residents are vulnerable to severe winter weather. Emigration Canyon often receives higher snow accumulations than communities in the valley due to its elevation and topography near the Wasatch Mountains. *Impacts:* Residents, especially the elderly and those with mobility issues, face challenges during heavy snowfall and icy conditions. Limited access to medical care and essential services can exacerbate health risks. Preparedness plans, including emergency supplies and heating alternatives, are crucial.
	Structures	*Vulnerability:* All buildings are vulnerable, and older structures may be more susceptible to damage from severe winter weather. *Impacts:* Buildings with flat or aging roofs are susceptible to collapse under heavy snow loads. Frozen pipes and inadequate insulation can lead to property damage and increased heating costs. Regular maintenance and weatherproofing are essential to mitigate these risks.
	Economic Assets	*Vulnerability:* Businesses and supply chains are vulnerable to severe winter weather. *Impacts:* Severe winter storms can disrupt transportation, affecting local businesses and supply chains. Snow removal and infrastructure repairs impose financial burdens on municipalities. Tourism, a vital part of the local economy, may decline during prolonged adverse weather conditions.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Trees, habitats, and historic markers are vulnerable to severe winter weather. *Impacts:* Heavy snowfall can damage trees and natural habitats, impacting local ecosystems. Historic structures may suffer from moisture infiltration and freeze–thaw cycles, leading to deterioration. Preservation efforts must account for winter weather impacts.
	Critical Facilities and Infrastructure	*Vulnerability:* Roads, utilities, and emergency response systems are vulnerable to severe winter weather. *Impacts:* Emigration Canyon Road, which provides the main access to and from the community, may become impassable during heavy snow or other severe winter weather. Utilities such as power and water

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		supply systems are at risk of disruptions from damaged lines. Communications signals may be impeded.
	Community Activities	*Vulnerability:* All community activities are vulnerable to severe winter weather. *Impacts:* Mobility around town can be limited during severe winter weather. Community activities may be delayed or canceled due to travel difficulties.
Tornado	People	*Vulnerability:* Tornadoes are rare in the area, and the terrain contributes to low likelihood of tornado. However, even a weak tornado or microburst could affect residents. *Impacts:* In Emigration Canyon, individuals living in manufactured or lightweight housing are particularly susceptible to tornado-related damage, as these structures offer limited protection against strong winds. Older adults, people with disabilities, and families with young children may encounter difficulties reaching safe shelter in time. Residents who are new to the area or unfamiliar with Utah's weather patterns may not recognize warning signs or have access to timely alerts. Additionally, individuals with limited financial resources may reside in areas without designated safe rooms or sufficient emergency planning in place, increasing their vulnerability during such events.
	Structures	*Vulnerability:* Weaker or older structures are vulnerable to tornado damage. *Impacts:* Structures in Emigration Canyon that are not built to modern wind-resistant standards—especially older homes and those with flat or lightweight roofs—face increased risk during tornadoes. Mobile homes, given their lighter construction and less secure anchoring, are especially prone to severe damage. Commercial properties built decades ago without structural reinforcements may also be impacted, particularly large-span buildings with wide roof areas that can lift under pressure. The steep terrain may offer some natural protection in places, but wind funneling through canyons can amplify localized impacts.
	Economic Assets	*Vulnerability:* Businesses and property values are vulnerable to tornadoes. *Impacts:* Damage to Emigration Canyon's homes, small businesses, and local infrastructure such as overhead power lines or communication systems can result in economic setbacks. Tornadoes that knock down trees or power poles may disrupt utility services and road access, impacting both emergency response and daily operations. Property values could be affected in areas where storm damage occurs repeatedly or where protective infrastructure is lacking.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Vegetation, habitats, and historic markers are vulnerable to tornadoes. *Impacts:* Emigration Canyon's forested areas and natural drainage systems may be affected by high winds, leading to tree falls, habitat disturbance, and increased erosion. Emigration Canyon's historic cabins and heritage sites, often built with traditional materials, may not be resilient to tornadic winds. Parks, trailheads, and other cultural

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		gathering places are also at risk of structural and environmental damage.
	Critical Facilities and Infrastructure	*Vulnerability:* Water, electricity, communication systems, and the fire station are vulnerable to tornado damage. *Impacts:* Essential systems in and around Emigration Canyon—including water infrastructure, electrical lines, and emergency communications—are vulnerable to outages or failures during a tornado. Facilities not constructed or retrofitted to withstand high winds, especially those on exposed ridgelines or near open spaces, may experience structural damage. Disruption to these systems can isolate residents, delay emergency services, and strain local resources during recovery efforts.
	Community Activities	*Vulnerability:* Community events are vulnerable to tornadoes. *Impacts:* Community activities that take place in open-air environments can be disrupted or may pose safety risks if a tornado occurs. Temporary structures like tents and event canopies are especially prone to wind damage. Additionally, buildings with large windows or aging roofs used for public meetings or educational purposes may not provide sufficient shelter during severe weather.
Wildfire	People	*Vulnerability:* All of Emigration Canyon is at moderate to high risk of wildfire. *Impacts:* Wildfire can injure or kill residents who are unable to get away from spreading flames. Residents may be temporarily displaced by evacuations or permanently if homes are destroyed by fire. Residents near the wildland–urban interface (WUI), individuals with physical disabilities or health issues who may struggle to evacuate, and low-income families lacking resources for fire safety measures may be vulnerable. Older adults might have reduced mobility, making them more dependent on others for assistance.
	Structures	*Vulnerability:* All structures in Emigration Canyon are vulnerable to wildfire. *Impacts:* Residential homes, especially those made of wood or in heavily vegetated areas may be vulnerable. Properties near the WUI are at higher risk due to surrounding flammable vegetation. Inadequate defensible space, such as insufficient clearing of dry grass and shrubs, increases susceptibility. Roofs made of combustible materials and buildings that lack fire-resistant features are particularly at risk during wildfire events.
	Economic Assets	*Vulnerability:* Businesses and property values are vulnerable to wildfire. *Impacts:* Residential properties near wildland areas are at high risk, especially if they lack defensible space and fire-resistant landscaping. Commercial assets, such as retail centers close to forested regions, can suffer damage from flames and smoke, affecting the local economy. Agricultural lands are also susceptible, as wildfires can destroy crops and livestock, leading to financial losses. Vital infrastructure, such as power lines and water pipelines, can be disrupted, causing further economic repercussions. These vulnerabilities are heightened by dry conditions and high winds, which can facilitate the spread of fires.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Natural, Historic, and Cultural Resources	*Vulnerability:* Vegetation, wildlife, and historic sites are vulnerable to wildfire. *Impacts:* Natural resources like forests and grasslands are at risk because dry vegetation and accumulated brush can easily ignite. Historic sites made of wood and cultural landmarks can also be affected, particularly when located near wildland areas. The increasing frequency of drought and extreme heat, exacerbated by climate change, heightens these vulnerabilities. In addition, urban development encroaching on wildland areas increases the risk to these essential resources.
	Critical Facilities and Infrastructure	*Vulnerability:* Utility and gas lines, as well as fire response capabilities, are vulnerable to wildfire. *Impacts:* Utilities like power lines and gas pipelines are also at risk, as sparks or falling trees can ignite fires. Residential neighborhoods adjacent to natural landscapes are particularly susceptible to embers, making them vulnerable during dry conditions and high winds. A wildfire could quickly exceed the capability of the single fire station and support from neighboring jurisdictions would be required.
	Community Activities	*Vulnerability:* Community events and day-to-day activities are vulnerable to wildfire. *Impacts:* Outdoor events like festivals and sports, especially during hot, windy conditions, may be at risk. Recreational activities, such as hiking and camping near wooded areas, are also at risk from open flames or sparks. In addition, landscaping with dry grasses and shrubs increases susceptibility during fire season, putting local infrastructure and neighborhoods at risk.
Dam Failure	People	*Vulnerability:* Dam failure risk in Emigration Canyon is low. No significant or high hazard dams are within the city, and mapped inundation boundaries from dam failure do not intersect the town. However, dam failure could affect Emigration Canyon Road to the west of the Emigration Canyon border, which would affect resident access. *Impacts:* Residents may face risks in the event of a dam breach in neighboring communities. They may be cut off from services. Families with limited mobility may find it challenging to navigate via alternate routes. Populations with fewer resources may also lack access to transportation, alerts, or temporary shelter, further increasing their exposure to harm during a sudden flood event.
	Structures	*Vulnerability:* No Emigration Canyon structures were identified within potential inundation zones. *Impacts:* Emigration Canyon could experience indirect impacts of damage to structures downstream of the canyon. Resident workplaces or county facilities that serve the city could be affected.
	Economic Assets	*Vulnerability:* Businesses are vulnerable to dam failure. Impacts: Many residents travel to neighboring jurisdictions for services, shopping, work, etc.; structures located in or near potential inundation zones are particularly at risk. Bridges crossing Emigration Creek and any emergency access routes along narrow canyon roads could be severely impacted or impassable. Aging water control infrastructure or inadequate emergency notification systems can

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		worsen the situation, delaying protective actions and threatening both life and property.
	Natural, Historic, and Cultural Resources	Flooding triggered by a dam failure could harm riparian zones, disturb wildlife habitats, and degrade water quality in Emigration Creek and downstream areas. Historic cabins and early settlement sites along the canyon may be damaged or lost. Recreational and cultural assets such as trailheads, parks, and community gathering spots could also be impacted, diminishing both ecological and cultural values.
	Critical Facilities and Infrastructure	*Vulnerability:* Transportation, water systems, and utility lines are vulnerable to dam failure. *Impacts:* While Emigration Canyon does not host large-scale critical infrastructure, essential utilities such as private wells, septic systems, and community roads remain vulnerable. A dam breach could compromise water quality and disrupt emergency access routes, particularly on Emigration Canyon Road. Other utility lines that run through the entrance of the canyon could be damaged or disrupted. Recovery may be difficult due to the canyon's geographic isolation and reliance on a small number of entry and exit points.
	Community Activities	*Vulnerability:* Activities near mouth of Emigration Canyon are vulnerable to dam failure. *Impacts:* Outdoor recreation in and around Emigration Creek could be disrupted or made hazardous by flooding. Sudden water surges from a structural failure could threaten anyone in or near affected zones. In addition, road closures following such an event would limit access to key community spaces and delay rescue or recovery operations.
Civil Disturbance	People	Low-income individuals may lack the resources for safety, while the elderly or disabled may struggle to navigate emergencies. Young people, particularly teenagers, may be drawn into unrest, influenced by social dynamics. In addition, marginalized individuals may feel targeted or compelled to participate. A lack of community cohesion and trust in authorities can further heighten tensions.
	Structures	Government buildings, commercial properties, and infrastructure, such as bridges and transportation hubs may be vulnerable. Government buildings may be targeted for their symbolic authority, while retail stores can attract crowds during protests. Residential neighborhoods also can be affected, especially in areas with heightened tensions. The vulnerability of these structures stems from their visibility and importance to the community, combined with factors such as location and ongoing social issues.
	Economic Assets	Retail establishments, especially shopping centers, are at risk as they often become focal points for protests. Transportation systems can be disrupted by blockades, hindering access to services. Financial institutions may face vandalism or theft, while critical service providers could experience strain during unrest. Several economic assets are vulnerable to civil disturbances, primarily due to their visibility and reliance on foot traffic.
	Natural, Historic, and	Parks and open spaces may suffer from vandalism or destruction during uncontrolled events. Historic sites can become targets, as they symbolize authority or cultural significance. Cultural resources such as community centers and places of worship also may be affected, as

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Cultural Resources	they play a vital role in community identity. Their vulnerability lies in the potential for damage during protests.
	Critical Facilities and Infrastructure	Governmental facilities may be at risk, since they often symbolize authority and serve as community hubs, making them targets during unrest. Utility infrastructure, such as water and power facilities, is also at risk of disruption. Its visibility and essential services contribute to its vulnerability during civil disturbances.
	Community Activities	Public demonstrations, parades, and local government meetings are particularly vulnerable to civil disturbances. These events often attract large crowds and can become tense, especially around contentious social or political issues. Factors such as the local demographic, economic conditions, and recent events can heighten these vulnerabilities, making it easier for conflicts to arise during passionate public gatherings.
Cyberattack	People	Older adults often lack familiarity with technology and online security, making them easy targets for phishing scams. Individuals engaging in online banking or shopping without strong security measures also face heightened risks. Families with children may be less vigilant about internet safety, allowing cybercriminals to exploit personal information. In addition, small business owners without robust cybersecurity practices are prime targets for attacks that can disrupt operations.
	Structures	Critical infrastructure, such as power plants, water treatment facilities, and transportation systems, often lack robust cybersecurity measures. Commercial businesses, especially financial institutions and healthcare providers, also are at risk due to weaker data protection and employee training. Educational institutions may be vulnerable because of limited funding for cybersecurity and outdated software. Obsolete technology and insufficient training enhance the susceptibility of these structures to cyber threats.
	Economic Assets	Financial institutions, such as banks and credit unions, are at risk of data theft and service disruption. Small and medium-sized businesses often lack robust cybersecurity measures, making them attractive targets. In addition, local government agencies and critical infrastructure, such as water treatment facilities, might have outdated security protocols, posing threats to public safety. The rise of remote work further exacerbates vulnerabilities, as employees accessing networks from home can unintentionally expose systems to risks. Overall, the combination of outdated technology and insufficient cybersecurity practices increases the vulnerability of an area's economic assets.
	Natural, Historic, and Cultural Resources	Natural resources like water management systems and wildlife databases can be compromised, disrupting ecosystems. Historic sites and museums that digitize collections are at risk of losing valuable artifacts and data. In addition, cultural organizations managing events may face threats if their systems lack adequate security. The limited resources of smaller organizations further increase this vulnerability.
	Critical Facilities and Infrastructure	Energy and utility services, such as electricity and water systems, which often rely on outdated technology, may be vulnerable. Transportation infrastructure, such as traffic management and public transit, is also at risk due to networked systems. Facilities that use

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		electronic records and connected medical devices face vulnerabilities that can compromise patient safety.
	Community Activities	Online registration for events, local government services, and educational programs that rely on digital tools may be targeted due to inadequate security measures, outdated software, and insufficient staff training.
Hazardous Materials Incident (Transporta-tion & Fixed Facility)	People	Individuals with pre-existing health conditions, such as respiratory issues, and the elderly are at higher risk due to their compromised health. Children also are more susceptible. Those living near industrial areas or transport routes for hazardous materials face increased exposure risk, while low-income families may lack resources and information to effectively prepare for incidents.
	Structures	Industrial facilities, such as manufacturing plants and warehouses, often store hazardous chemicals which may leak. Residential buildings are at risk, particularly if located along transportation routes for hazardous materials. Older buildings may lack modern safety features, increasing their vulnerability.
	Economic Assets	Industrial facilities, transportation infrastructure, and nearby commercial properties may be affected. Industrial facilities handling chemicals are at risk of spills or leaks, while roads and railways used for transporting hazardous materials can lead to accidents and contamination. In addition, nearby commercial and residential areas face potential health risks and economic losses.
	Natural, Historic, and Cultural Resources	Waterways and habitats are vulnerable to hazardous materials incidents, which can disrupt ecosystems. Historic sites and structures may suffer damage from toxic exposure, leading to degradation over time. In addition, cultural landmarks risk losing their significance due to contamination events. The proximity of these resources to industrial areas or transport routes exacerbates their risk.
	Critical Facilities and Infrastructure	Chemical manufacturing plants, waste treatment facilities, and transportation networks, such as highways and railroads may be at risk. Their vulnerability stems from factors such as proximity to residential areas, aging infrastructure, and inadequate safety measures. Natural hazards, such as flooding and earthquakes, can further increase risks by damaging containment systems.
	Community Activities	Local markets and outdoor gatherings are vulnerable to hazardous materials incidents if they are near industrial zones and transport corridors. This risk is heightened by inadequate emergency preparedness, lack of public awareness, and the potential for spills during transport. Large crowds at events can complicate evacuation efforts, increasing the risks for participants and nearby residents.
Public Health Epidemic/ Pandemic	People	Individuals with pre-existing health conditions like asthma and heart disease and adults over 65 may be vulnerable. Low-income families may struggle to access healthcare and vaccinations, increasing their risk. Marginalized communities with limited access to information and those living in high-density conditions also are at greater risk due to the rapid spread of diseases and the challenges in implementing preventive measures.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Structures	Several structures are vulnerable to public health epidemics or pandemics, particularly due to their ability to facilitate the spread of disease. High-density residential areas, such as apartment complexes, are at risk, as close living quarters can lead to faster transmission. Public gathering spaces, such as community centers, also pose significant threats because large groups are in confined spaces. , Workplaces with high foot traffic, such as retail stores, contribute to vulnerability.
	Economic Assets	Small businesses in retail, hospitality, and food service are particularly vulnerable to public health epidemics or pandemics. These sectors face risks from fluctuating consumer demand and potential operational restrictions. The tourism industry also is affected, as travelers may avoid high-risk areas. Healthcare facilities can become overwhelmed, straining resources and impacting operations. In addition, local supply chains may experience disruptions, leading to shortages and inflation. Overall, the direct effects of illness, along with prolonged shutdowns and consumer hesitance, leave these economic assets exposed to significant downturns.
	Natural, Historic, and Cultural Resources	Natural resources like wildlife and ecosystems can be disrupted by increased human activity, raising the risk of zoonotic diseases. Historic sites may deteriorate due to reduced visitor access and funding, while cultural resources, such as community events, face cancellations, impacting social connections.
	Critical Facilities and Infrastructure	Public health epidemic or pandemic incidents can affect nursing homes, public transportation systems, and food supply chains. Vulnerable populations in nursing homes are at higher risk. Public transportation can facilitate the spread of disease, thereby increasing transmission potential. These facilities often lack adequate resources, including medical supplies and testing capabilities, making them more susceptible to the impacts of a health crisis.
	Community Activities	Large gatherings like festivals and sporting events can facilitate the rapid spread of diseases due to close contact. Public transportation also is at risk, as it serves many people in confined spaces. Childcare facilities are particularly susceptible, given that children can easily transmit infections. In addition, food-related events, such as farmers' markets, can pose risks if hygiene practices are not followed. The interconnectedness of community members and varying adherence to health guidelines further exacerbate these vulnerabilities.
Terrorism	People	Young children and newcomers may lack awareness of potential threats, while the elderly and individuals with disabilities may struggle to respond quickly in emergencies. Marginalized communities often face bias, making them more susceptible to targeting. In addition, those with lower socioeconomic status may lack access to security measures and emergency preparedness resources.
	Structures	Government buildings, transportation hubs, commercial centers, and public spaces are particularly vulnerable to terrorism incidents. Government buildings are symbolic targets, while transportation hubs and commercial centers are attractive due to their potential for high casualties and crowd presence. Public spaces also are at risk due to their open nature and lack of security. Their vulnerability is heightened

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		by inadequate security measures, high occupancy rates, and their locations in densely populated areas, which can amplify the impact of incidents.
	Economic Assets	Infrastructure, commercial establishments, and community facilities may be vulnerable. Critical infrastructure, such as transportation networks and power grids, could disrupt the economy if targeted. Commercial establishments, especially those with high foot traffic, and community facilities are at risk, as they can provoke widespread concern and disruption. Their accessibility and interconnectivity increase vulnerability, meaning that damage to one asset can have a broader economic impact and hinder recovery efforts.
	Natural, Historic, and Cultural Resources	Natural resources like water supplies and parks could be targeted for their significance to the community. Historic sites and cultural resources, such as museums or community centers, also are at risk due to their accessibility and importance to local identity. Their vulnerability is often heightened by inadequate security measures.
	Critical Facilities and Infrastructure	Public transportation systems and utility services like water and power plants may be affected. Their vulnerability arises from high accessibility and the potential impact of an attack, as crowded transportation and public spaces can lead to mass casualties and panic. Attacking utility services could disrupt the town's essential functions, creating chaos.
	Community Activities	Festivals, parades, and sporting events are particularly vulnerable to terrorism incidents. These events attract large crowds, making it easier for perpetrators to inflict harm and instill fear. In addition, community centers and places of worship serve as social hubs, increasing their risk. Factors such as limited security measures and open access to public spaces, contribute to this vulnerability.

Jurisdiction-Specific Impacts Changes in Vulnerability

Hazard events can impact communities, infrastructures, and ecosystems. The severity of these impacts can be influenced by climate change, population patterns, and land use developments. Understanding these factors is crucial for the city of Emigration Canyon to develop a resilient community and minimize the impacts of hazards. Table 9 displays the unique changes within the community and the related effects on each identified hazard affecting the city of Emigration Canyon.

DRAFT

Table 9: Jurisdiction-Specific Changes in Vulnerability in the City of Emigration Canyon

Type of Hazard Event	Description of Potential Impacts	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
Avalanche	Avalanches pose a direct threat to outdoor enthusiasts, leading to injuries or fatalities. Property damage can occur at ski resorts and along transportation routes, disrupting emergency response and logistics. The local economy may suffer, especially businesses reliant on winter tourism, and there can be a psychological toll on the community, along with increased insurance costs.	Higher temperatures can lead to more rain, destabilizing snowpack and increasing the risk of wet avalanches. In addition, changes in snowfall can cause denser snow layering on slopes, making them more prone to sliding.	Avalanches can influence population patterns by deterring people from moving to or remaining in high-risk areas, leading to decreased density in these locations. The threat of avalanches prompts many to seek safer environments in urban or lower-risk regions. In addition, when avalanches occur, they can disrupt infrastructure, causing residents to relocate.	Burying power lines has reduced the risk of power outages due to avalanches.	Decreased
Drought	Drought can cause water scarcity, impacting agriculture and reducing crop yields. Recreational activities may decline, harming tourism, while the risk of wildfires increases, threatening safety and property. In addition, lower water levels can lead to water quality issues and public health concerns.	Climate change affects drought incidents by altering precipitation patterns and increasing temperatures. Warmer weather can lead to longer dry periods and more severe droughts, while changes in rainfall can reduce snowpack in nearby mountains, crucial for summer water supply. Higher temperatures also increase evaporation rates, further straining local water resources.	Drought can significantly influence population patterns by impacting economic opportunities and the quality of life. Water scarcity often leads to reduced agricultural productivity, prompting residents to migrate to areas with more stable job prospects. Increased water costs can make living less affordable, driving some residents away. Conversely, efforts to address drought, such	Development since the previous hazard mitigation plan has not changed drought risk.	Increased

DRAFT

Type of Hazard Event	Description of Potential Impacts	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
			as sustainable development or improved water management, may attract newcomers, resulting in changes in the community's demographic composition over time.		
Earthquake	The impacts of earthquakes can be substantial. Immediate damage to infrastructure may disrupt essential services such as water, electricity, and transportation, complicating recovery efforts. Homes and businesses might sustain significant structural damage, posing safety risks. In addition, psychological effects, such as increased anxiety, can affect the community. Economically, repairs can lead to high costs, potential declines in property values, and disruptions to local businesses, ultimately impacting job availability and the overall economy.	Rising temperatures can lead to glacial melting, which affects pressure on tectonic plates and may trigger seismic activity through isostatic rebound. In addition, increased rainfall and flooding can erode soils, weakening structural integrity and heightening vulnerability during earthquakes. Although the direct links between climate change and earthquakes are still under investigation, environmental effects may impact the region's seismic risk.	Earthquakes can significantly alter population patterns by prompting residents to leave for safer areas after a seismic event. This migration can lead to changes in population density and attract new residents and businesses during the rebuilding process. The perception of the area as a safe place to live may shift, impacting long-term demographics, as some residents return to rebuild while others relocate permanently.	Burying power lines in Emigration Canyon has reduced the risk of losing power during an earthquake.	Stayed the same
Extreme Heat	Extreme heat can significantly affect public health, increasing the risk	Climate change significantly impacts extreme heat by	By causing residents to relocate due to damaged homes or safety	Development has not affected extreme heat	Increased

DRAFT

Type of Hazard Event	Description of Potential Impacts	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	of heat-related illnesses, especially among vulnerable populations. It also strains energy resources due to the higher demand for air-conditioning, potentially leading to power outages. In addition, extreme temperatures worsen air quality by raising ozone levels, which poses respiratory risks. Urban infrastructure may also suffer damage, leading to increased maintenance costs and safety concerns.	increasing the frequency and intensity of heat waves. Rising global temperatures lead to longer and hotter summers, affecting residents and local infrastructure while heightening health risks, especially for vulnerable populations. Urban heat islands from reduced vegetation and extensive pavement further amplify these effects.	concerns. Some may move to areas perceived as safer or seek better job opportunities elsewhere. The economic impact and infrastructure damage can also make certain neighborhoods less desirable, leading to shifts in demographics and the socioeconomic landscape as new residents with different backgrounds move in.	risk in Emigration Canyon.	
Extreme Cold	Extreme cold can lead to health risks such as frostbite and hypothermia, especially among vulnerable populations. Transportation may be disrupted due to icy conditions, affecting commutes and emergency services. Infrastructure is at risk, with water pipes potentially freezing and bursting, resulting in costly repairs. In addition, energy demands surge as residents rely on heating, straining the electrical grid and increasing utility costs. Cold temperatures can	By increasing the intensity of winter storms. Higher atmospheric temperatures allow for more moisture, resulting in heavier snowfall and potentially lower temperatures during these events. In addition, fluctuations in weather patterns may disrupt seasonal cycles, leading to unpredictable periods of extreme cold mixed with warmer spells.	By driving some residents to relocate to warmer areas. Harsh winters can hinder economic activities and deter new residents and businesses, influencing housing demand and the attractiveness of certain neighborhoods. This may disproportionately affect lower-income families, leading to changes in demographics and socioeconomic stratification in the community.	Development has not affected extreme cold risk in Emigration Canyon.	Increased

DRAFT

Type of Hazard Event	Description of Potential Impacts	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	also impact local agriculture and wildlife.				
Flooding	Damaging infrastructure, such as roads and utilities, disrupts transportation and essential services. Homes and businesses may experience costly water damage, causing potential displacement. Environmental effects include erosion and contamination of local waterways, impacting wildlife and recreation. Economically, flooding can cause lost income for businesses, increased insurance costs, and declining property values. Public health may also be compromised due to waterborne diseases and stress-related issues.	Higher temperatures increase the frequency and intensity of extreme weather events and alter precipitation patterns. They lead to more intense rainstorms and accelerated snowmelt from nearby mountains, raising water levels in rivers and streams. This combination raises the risk of flooding, especially in areas with inadequate drainage and urban development in flood-prone zones, heightening the potential for damage to homes and infrastructure.	Flooding can significantly alter population patterns by displacing residents from affected areas, leading them to seek shelter elsewhere. This may cause a population decline where flooding occurs, as individuals might hesitate to return due to ongoing risks or property damage. As neighborhoods become less desirable, people may migrate to safer areas, changing demographic trends and putting pressure on housing in those regions. Over time, these shifts can influence urban planning and development, as local governments address flooding risks and changing population needs.	By making some areas unsuitable for construction due to flood risks, planners may prioritize higher ground and impose stricter zoning laws, such as requiring elevated structures. This results in a more resilient urban landscape but may also limit growth and raise property values in safer areas.	Decreased
Landslide/ Slope Failure	The town's steep terrain is vulnerable, especially during heavy rainfall or rapid snowmelt. Properties on slopes may suffer damage, resulting in	Climate change increases the risk of landslides through heavier rainfall and temperature fluctuations. Intense rain saturates	Landslides and slope failures can impact population patterns by making some areas unsafe, leading to displacement and lower	Burying power lines in Emigration Canyon has reduced the risk of losing power during a landslide.	Increased

DRAFT

Type of Hazard Event	Description of Potential Impacts	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	displacement and economic losses. Transportation networks can be disrupted, complicating emergency responses. In addition, landslides can harm local ecosystems by displacing vegetation.	soil, destabilizing slopes, while freeze–thaw cycles weaken the ground. Changes in vegetation can also reduce stability, leading to a higher potential for landslides.	property values. This prompts residents to move to safer regions, thereby increasing density in more stable areas. Concerns about future landslides may also deter newcomers from high-risk zones, shaping long-term demographic trends.		
Radon	Radon poses significant health risks, particularly lung cancer, as it can enter homes through foundation cracks. Many residents may not test for radon, making them unaware of dangerous levels. Increased awareness and public health initiatives are vital for protection, especially with regard to population growth. Incorporating radon-resistant construction in new developments is also essential for safety.	Climate change can affect radon levels by altering soil temperatures and moisture conditions. Higher temperatures may increase radon emissions from the ground, while heavy rainfall can change groundwater and soil saturation, impacting radon migration into buildings.	Radon exposure can influence population patterns as increased health awareness may drive families to move away from areas with high radon levels. This shift could particularly affect vulnerable groups, changing demographics and demand in the housing market. Homes with lower radon levels may become more sought after, and public health campaigns can encourage community action, making previously undesirable areas more attractive once mitigation measures are implemented.	Development has not changed risk to radon.	Decreased
Heavy Rain	Heavy rain can cause flash floods, particularly in low-	Climate change increases the frequency	Heavy rain can shift population patterns by	Development has not affected the risk of heavy	Increased

DRAFT

Type of Hazard Event	Description of Potential Impacts	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	lying areas, disrupting traffic and emergency services. It may also lead to soil erosion, infrastructure damage, and increased landslide risk in hilly regions. In addition, heavy rainfall can overwhelm waterways, resulting in water quality issues from runoff, impacting public safety, local businesses, and agriculture.	and intensity of heavy rain, as higher temperatures allow the atmosphere to hold more moisture. This leads to stronger storms, flash flooding, and overwhelmed drainage systems.	pushing residents out of flood-prone areas and attracting them to safer neighborhoods. Frequent flooding may lead to evacuations and economic disruptions, prompting relocations. Over time, ongoing heavy rains can affect housing demand and community stability, altering the town's population distribution.	rain in Emigration Canyon.	
High Wind	High winds can cause property damage to roofs and windows, topple trees and power lines, and lead to power outages. They pose hazards for pedestrians and drivers and can worsen air quality by stirring up dust and pollutants, affecting residents' health.	Climate change affects high winds by altering atmospheric patterns and increasing extreme weather events. Rising temperatures may lead to more substantial, unpredictable winds and more frequent thunderstorms, posing risks to infrastructure and air quality.	High winds can alter population patterns by making certain areas less desirable. Frequent damage may drive residents to safer neighborhoods, deter newcomers, and slow growth in affected regions.	Burying power lines in Emigration Canyon has reduced the risk of losing power during a high wind event.	Increased
Lightning	Lightning can have several impacts, primarily posing risks to public safety with the potential for injuries or fatalities. It can spark wildfires in nearby areas, threatening property and the environment. In addition, lightning strikes	Climate change increases temperatures and alters precipitation, leading to more intense thunderstorms and frequent lightning strikes. Urbanization can enhance this effect,	Lightning can influence population patterns by causing property damage and wildfires, leading some residents to relocate. Areas with higher lightning activity may deter new residents, while safer locations	Development has not affected the risk of lightning in Emigration Canyon.	Increased

DRAFT

Type of Hazard Event	Description of Potential Impacts	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	can damage infrastructure, leading to electrical surges that cause power outages and service disruptions. This phenomenon also affects outdoor activities and tourism, while the economic burden includes increased insurance claims and repair costs.	posing risks to public safety and infrastructure.	could increase migration as people seek protection from severe weather.		
Severe Winter Weather	Heavy snow or blizzards can disrupt transportation, hinder emergency services, and cause infrastructure damage, such as roof collapses. These conditions can lead to increased municipal costs for snow removal and have a substantial economic impact on businesses, particularly in retail and tourism. Power outages may also occur, affecting heating during cold months.	Climate change impacts heavy snow and blizzards by altering precipitation patterns. Higher temperatures can lead to more rain than snow, affecting snowpack levels—additionally, increased storm intensity results in heavier, more unpredictable snowfall.	Increased population equals an increased number of people needing to get to work and quicker snow removal. Heavy snow or blizzards can impact population patterns by influencing where people live and work. Transportation disruptions may lead residents to seek housing closer to jobs, increasing density in some areas while depopulating others. Families might also avoid regions with frequent heavy snowfall, shifting demand to milder areas. Over time, these trends can alter community demographics and economic activity,	Burying power lines in Emigration Canyon has reduced the risk of losing power during a heavy snow event.	Increased

DRAFT

Type of Hazard Event	Description of Potential Impacts	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
			prompting adjustments in town planning and resource allocation.		
Tornado	Tornadoes can cause serious damage to property and infrastructure, leading to injuries and economic challenges. Urban areas are especially vulnerable, complicating emergency responses and disrupting essential services. The psychological impact can affect community well-being, potentially leading to changes in demographics and land use as residents seek safer locations.	Climate change may increase the frequency and intensity of tornadoes. Higher temperatures lead to more moisture in the air, creating conditions for severe thunderstorms. Changes in wind patterns and precipitation can also heighten tornado risks, resulting in more destructive storms and greater threats to infrastructure and communities.	Tornadoes can influence population patterns by prompting residents to move to safer areas after damage occurs. This can decrease density in affected neighborhoods while increasing the demand for housing in safer regions. New residents may also move in for recovery opportunities, altering demographics. Over time, repeated tornado threats might push long-term residents to areas with better disaster preparedness, reshaping the town's population distribution.	Development has not affected the risk of tornadoes in Emigration Canyon.	Increased
Wildfire	Wildfires pose serious risks, including habitat damage, degraded air quality, and health issues for vulnerable populations. They can also lead to economic losses, property damage, and increased erosion that affects water quality.	By raising temperatures and creating drier conditions, prolonged droughts lead to more dry vegetation, which serves as fuel for fires. Erratic seasons extend the growing period, while more lightning strikes can ignite wildfires. These factors heighten	Displaced individuals often seek safer areas, shifting demographics, while declining property values might deter newcomers. Conversely, some may be drawn to rebuilding efforts, impacting long-term growth and community dynamics.	Burying power lines in Emigration Canyon has reduced the risk of losing power during a wildfire.	Increased

DRAFT

Type of Hazard Event	Description of Potential Impacts	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
		the threat to ecosystems and community safety.			
Dam Failure	Dam failure could lead to severe flooding, damaging homes and infrastructure, isolating communities, and hindering emergency responses. This may cause loss of life, especially among vulnerable groups, and trigger economic losses for local businesses and property values. Long-term effects could affect community stability and public health, while floodwaters may contaminate local waterways and disrupt ecosystems.	Climate change raises the risk of dam failure by causing heavier rainfall and rapid snowmelt. These changes can overwhelm dams and compromise their integrity, highlighting the need for urgent safety assessments and upgrades to protect communities downstream.	Dam failure tornadoes can impact population patterns by displacing residents and altering demographics. Evacuations can lead to an influx in safer areas, while destruction may deter new residents and contribute to population decline. Fear of future disasters may also prompt remaining individuals to relocate, changing the community's composition and affecting population density and economic activity.	Development has not affected the risk of dam failure in Emigration Canyon.	Increased
Civil Disturbance	Civil disturbances can cause economic losses for businesses, create social divisions, and increase tensions among community groups. They may overwhelm law enforcement, leading to fear and mistrust among residents. Essential services could be disrupted, affecting quality of life, while long-term impacts may include	Climate change can increase civil disturbances by intensifying environmental stresses and social tensions. Rising temperatures may lead to droughts, wildfires, and poor air quality, particularly affecting vulnerable communities. Resource scarcity, especially water, can spark	By encouraging residents to move for safety, leading to outflows and new arrivals. These events can reveal social issues, impacting community dynamics, employment, and property values, ultimately reshaping demographics, and social cohesion.	Development has not affected the risk of civil disturbance in Emigration Canyon.	Increased

DRAFT

Type of Hazard Event	Description of Potential Impacts	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	changes in community dynamics and public policy.	conflicts and protests. In addition, an influx of migrants from harder-hit areas may strain local resources, further escalating tensions. This cycle of unrest is driven by the impacts of climate change on the environment and community dynamics.			
Cyberattack	Cyberattacks can disrupt critical infrastructure like power and water services, complicating emergency responses. Businesses may face financial losses from downtime and data breaches, eroding consumer trust. The public sector's essential services, including law enforcement and public health, could be compromised, leading to fear and reduced community confidence.	Possible attack on the industry, which is seen as producing large amounts of greenhouse gases and burning fossil fuels. Climate change can heighten cyberattack risk by increasing vulnerabilities during extreme weather. Disruptions like power outages offer cybercriminals opportunities, but focusing on emergency responses can weaken cybersecurity measures. As organizations adopt new technologies to cope with climate impacts, they may unintentionally introduce additional vulnerabilities.	Cyberattacks can change population patterns by eroding trust in essential services. Compromised systems may cause residents to leave due to safety concerns, while high-profile incidents can deter businesses, leading to job losses. This perception of vulnerability may also make the town less appealing to newcomers, resulting in demographic shifts and affecting local development.	Development has not affected the risk of cyberattacks in Emigration Canyon.	Increased

DRAFT

Type of Hazard Event	Description of Potential Impacts	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
Hazardous Materials Incident (Transportation & Fixed Facility)	Hazardous materials incidents can severely impact public health, the environment, and the economy. Health risks include serious illnesses from exposure, while environmental damage may lead to soil and water contamination. Economically, incidents can cause property damage, lower property values, and disrupt businesses. The community also faces stress from evacuations and anxiety over safety.	Climate change elevates the risk of hazardous materials incidents by increasing extreme weather events like heavy rain and wildfires. These events can breach storage tanks and heighten material volatility. Vulnerable infrastructure can lead to more spills or accidents, while climate shifts may also introduce new challenges for managing hazardous substances and public health.	By causing evacuations and temporary declines in density. In the long run, unsafe areas may deter new residents, affecting growth and diversity. In addition, negative perceptions can lower property values and economic prospects, leading families to relocate, which impacts local demographics.	Widened roads in Emigration Canyon have reduced the risk of transportation accidents involving hazardous materials.	Increased
Public Health Epidemic/ Pandemic	Epidemics and pandemics can disrupt healthcare by overwhelming facilities and leading to resource shortages, diminishing care for all patients. Economic impacts may include business closures and job losses, particularly in hospitality and retail. The strain on public health services can affect routine care, while mental health issues may arise due to isolation and uncertainty. Shifts to remote learning can hinder student	By increasing the spread of vector-borne diseases and raising the risk of waterborne illnesses due to flooding or drought. Worsening air quality can also exacerbate respiratory conditions like asthma, especially in vulnerable populations.	By prompting migration for safety and better healthcare. Vulnerable groups may move to areas with improved services, while economic instability can drive people to seek new employment opportunities. In addition, restrictions like quarantine measures can limit movement and social interactions, reshaping the community's demographics and	Development has not affected the risk of epidemics/pandemics in Emigration Canyon.	Increased

DRAFT

Type of Hazard Event	Description of Potential Impacts	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	development, and vulnerable populations face heightened risks. Erosion of public trust in health authorities might reduce compliance with guidelines.		impacting local economies.		
Terrorism	Terrorism incidents can have significant impacts, including loss of life and emotional trauma for the community. Economically, they disrupt local businesses and tourism while creating fear and anxiety that affect social cohesion. Emergency services might be overwhelmed, requiring additional support, and increased security measures can alter daily life and raise concerns about civil liberties. Damage to critical infrastructure necessitates long-term repairs, and such incidents may deepen social divisions and prompt changes in security policies, highlighting the need for effective preparedness and response strategies.	Terroristic activity is sometimes centered around climate change. Climate change impacts terrorism incidents by creating conditions of resource scarcity and social unrest. Increased competition for essential resources, such as water, can fuel tensions, making communities more vulnerable to extremist ideologies. Extreme weather events may disrupt social order and infrastructure, offering terrorist groups opportunities to exploit crises. In addition, climate-driven population displacement can heighten tensions in receiving areas, raising the risk of domestic terrorism. Law enforcement's focus on climate-related	Terrorism incidents can alter population patterns by instilling fear and prompting residents to relocate to perceived safer areas, resulting in demographic shifts and potential declines in property values. Some neighborhoods may see an outflow of residents, while others could experience an influx of people seeking refuge from violence. In addition, increased security measures may deter businesses and residents from certain locations, leading to long-term changes in population density and urban development patterns.	Development has not affected the risk of terrorism in Emigration Canyon.	Increased

DRAFT

Type of Hazard Event	Description of Potential Impacts	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
		challenges can also limit its capacity to address terrorism threats. Ultimately, while climate change may not directly cause terrorism, its effects can create an environment conducive to extremist activities.			

DRAFT

Additional Public Involvement

The city of Emigration Canyon provided several opportunities for public participation. Figure 1 displays examples of public outreach.

Figure 1: Social Media Posts for the Mitigation Survey and Draft Plan Review

Plan Integration

Incorporating the underlying principles of the Hazard Mitigation Plan and its recommendations into other plans is a highly effective and low-cost way to expand their influence. All plan participants will use existing methods and programs to implement hazard mitigation actions where possible. As previously stated, mitigation is most successful when it is incorporated into the day-to-day functions and priorities of government and public service. This plan builds on the momentum developed through previous and related planning efforts and mitigation programs, and it recommends implementing actions where possible through these other program mechanisms. These existing mechanisms include the following:

- Regularity Capabilities
- Administrative Capabilities
- Fiscal Capabilities

Respective planning stakeholders will conduct implementation and incorporation into existing planning mechanisms and will be done through the routine actions of:

- Monitoring other planning/program agendas
- Attending other planning/program meetings
- Participating in other planning processes; and

DRAFT

- Monitoring community budget meetings for other community program opportunities.

The successful implementation of this plan will require constant and vigilant review of existing plans and programs for coordination and multi-objective opportunities that promote a safe, sustainable community. Regular efforts should be made to monitor the progress of mitigation actions implemented through other planning mechanisms. Where appropriate, priority actions should be incorporated into planning updates. Table 10 lists existing planning mechanisms in which the Hazard Mitigation Plan has been integrated. Table 11 lists the opportunities for integrating elements of this plan into other plans.

Table 10: Previous Plan Integration by the City of Emigration Canyon

Plan	Description
Continuity of Operations (COOP) Plan	Describes operations for the city if a major event or disaster were to occur that disrupted daily operations
Community Wildfire Protection Plan	Provides information on wildfire mitigation and response efforts

Table 11: Opportunities for Integration with Future Plans of the City of Emigration Canyon

Plan	Description
General Plan	Overview of resident/municipal concerns, priorities, and long-term goals
Comprehensive Emergency Management Plan	Overall framework for preparedness, mitigation, response to and recovery from disaster.

Capability Assessment

Local mitigation capabilities are existing authorities, policies, programs, and resources that reduce hazard impacts or could help carry out hazard mitigation activities.

Planning and Regulatory Capabilities

Planning and regulatory capabilities are the plans, policies, codes, and ordinances that prevent and reduce the impacts of hazards.

Table 12: Assessment of the Planning Capabilities of the City of Emigration Canyon[2]

Plan	Does it address hazards? (Y/N)	How can it be used to implement mitigation actions?	When was the last update? When is the next update?
General Plan	Y	Long-term goals and resident concerns can be incorporated into mitigation actions and funding sources.	2022.

[2] CEMP = Comprehensive Emergency Management Plan, CWPP = Community Wildfire Protection Plan, MSD = Municipal Services District.

DRAFT

Plan	Does it address hazards? (Y/N)	How can it be used to implement mitigation actions?	When was the last update? When is the next update?
Capital Improvement Plan (CIP)	N – this was identified as a need in the 2022 General Plan	As Emigration Canyon develops into a city, a plan would help them start outlining projects and priorities for leadership in coordination with MSD. The CIP can inform the funding sources.	To be accomplished in the MSD 2024 Strategic Plan
Climate Change Adaptation Plan	N	N/A	N/A
Community Wildfire Protection Plan	Y	CWPP outlines mitigation efforts that would be applicable to wildfire.	2021
Economic Development Plan	Y – in General Plan	Highlights economic development to inform funding for mitigation actions.	2022
Land Use Plan	Y – in General Plan	Highlights land use to inform mitigation actions.	2022
Local Emergency Operations Plan	Y	Emigration Canyon adopted the MSD CEMP.	2024
Stormwater Management Plan	Y – MSD's plan	Stormwater management can inform flooding/heavy rain mitigation actions.	2020
Transportation Plan	Y – in General Plan	Can inform mitigation strategies and funding sources related to transportation.	2022
Substantial Damage Plan	N	N/A	N/A
Other? (Describe)			

Table 13: Assessment of the Regulations and Ordinances of the City of Emigration Canyon

Regulation/ Ordinance	Does it effectively reduce hazard impacts?	Is it adequately administered and enforced?	When was the last update? When is the next update?
Building Code	Yes, building codes ensure that structures are built to standard and brought up to code when remodeling occurs. Emigration Canyon has several commercial buildings and many residential homes. The city adopted the state's building codes, including the International Building Code (IBC 2021) and International Residential Code (IRC 2021), with amendments such as	Y	2022

DRAFT

Regulation/ Ordinance	Does it effectively reduce hazard impacts?	Is it adequately administered and enforced?	When was the last update? When is the next update?
	Appendix C, Group U, and Appendix K of the IBC.		
Flood Insurance Rate Maps	Y	Y	2023
Floodplain Ordinance	Y	Y	2021
Subdivision Ordinance	Y	Y	2018
Zoning Ordinance	Y	Y	2018
Natural Hazard-Specific Ordinance (Stormwater, Steep Slope, Wildfire)	Y – defensible space/building materials for wildfire	Y	2023
Acquisition of Land for Open Space and Public Recreation Use	Y	Y	2018
Prohibition of Building in At-Risk Areas	Y	Y	2018
Other? (Describe)			

Administrative and Technical Capabilities

Administrative and technical capabilities include staff and their skills. They also include tools that can help carry out mitigation actions.

Table 14: Assessment of the Administrative Capabilities of the City of Emigration Canyon[3]

Administrative Capability	In Place? (Y/N)	Is staffing adequate?	Are staff trained on hazards and mitigation?	Is coordination between agencies and staff effective?
Chief Building Official	Y	No, need more building inspectors.	Yes, but could always use more training.	Yes
Civil Engineer	Y – through MSD	Yes	Yes, but could always use more training.	Yes
Community Planner	Y – through MSD	Yes	Yes, but could always use more training.	Yes
Emergency Manager	Y – designated by MSD	No	Very minimal – a dedicated Emergency Manager is needed as it is currently the mayor who is the	Yes

[3] MSD =Municipal Services District, SLCo = Salt Lake County, UFA = Unified Fire Authority.

DRAFT

Administrative Capability	In Place? (Y/N)	Is staffing adequate?	Are staff trained on hazards and mitigation?	Is coordination between agencies and staff effective?
			appointed Emergency Manager.	
Floodplain Administrator	Y – through SLCo	Yes	Yes, but could always use more training.	Yes
Geographic Information System (GIS) Coordinator	Y – through MSD	Yes	Yes, but could always use more training.	Yes
Planning Commission	Y	Yes	Yes, but could always use more training.	Yes
Fire Safe Council	N – UFA contracted for fire service	N/A	N/A	N/A
CERT (Community Emergency Response Team)	N	N/A	N/A	N/A
Active VOAD (Voluntary Agencies Active in Disasters)	Y	Yes	Yes, but could always use more training.	Yes
Other? (Please describe.)				

Table 15: Technical Capabilities of the City of Emigration Canyon[4]

Technical Capability	In Place? (Y/N)	How has it been used to assess/mitigate risk in the past?	How can it be used to assess/mitigate risk in the future?
Mitigation Grant Writing	Y – through MSD	Used for funding to support mitigation projects in Emigration Canyon	Can be used to fund future mitigation projects
Hazard Data and Information	Y – through MSD	Used to identify hazards that the city is vulnerable to	Can inform mitigation strategies
GIS	Y – through MSD	Can be used to prioritize areas of concern as far as hazards	Can be used for mitigation project tracking and planning efforts
Mutual Aid Agreements	Y	Agreements in place to support mitigation actions	Outlines funding sources and organizations

[4] MSD =Municipal Services District.

DRAFT

Technical Capability	In Place? (Y/N)	How has it been used to assess/mitigate risk in the past?	How can it be used to assess/mitigate risk in the future?
			responsible for mitigation actions
Other? (Please describe.)			

Financial Capabilities

Financial capabilities are the resources to fund mitigation actions. Talking about funding and financial capabilities is important to determine what kinds of projects are feasible, given their cost. Mitigation actions like outreach programs are lower cost and often use staff time and existing budgets. Other actions, such as earthquake retrofits, could require substantial funding from local, state, and federal partners. Partnerships, including those willing to donate land, supplies, in-kind matches, and cash, can be included.

Table 16: Assessment of the Financial Capabilities of the City of Emigration Canyon

Funding Resource	In Place? (Y/N)	Has it been used in the past and for what types of activities?	Could it be used to fund future mitigation actions?	Can it be used as the local cost match for a federal grant?
Capital Improvement Project Funding	Y	Slope stabilization	Yes	Yes
General Funds	Y	Operating expenses	Yes	Yes
Hazard Mitigation Grant Program (HMGP/404)	Y	No, could be used.	Yes	No
Building Resilient Infrastructure & Communities (BRIC)	Y	No, could be used.	Yes	No
Flood Mitigation Assistance (FMA)	Y	No, could be used.	Yes	No
Public Assistance Mitigation (PA Mitigation/406)	Y	No, could be used.	Yes	No
Community Development Block Grant (CDBG)	Y	No, could be used.	Yes	No
Natural Resources Conservation Services (NRCS) Programs	N	No, could be used.	Yes	No

DRAFT

Funding Resource	In Place? (Y/N)	Has it been used in the past and for what types of activities?	Could it be used to fund future mitigation actions?	Can it be used as the local cost match for a federal grant?
U.S. Army Corps (USACE) Programs	N	No, could be used.	Yes	No
Property, Sales, Income, or Special Purpose Taxes	Y	Operating costs	Yes	Yes
Stormwater Utility Fee	Y	Stormwater management	Yes	Yes
Fees for Water, Sewer, Gas, or Electric Services	Y	Maintenance	Yes	Yes
Impact Fees from New Development and Redevelopment	Y	Road overlays, fire management	Yes	Yes
General Obligation or Special Purpose Bonds	Y	No, could be used.	Yes	Yes
Federal-funded Programs (Please describe)	N	No, could be used.	Yes	No
Private Sector or Nonprofit Programs	N	No, could be used.	Yes	Yes
Other?				

Education and Outreach Capabilities

Education and outreach capabilities are programs and methods that could communicate about and encourage risk reduction. These programs may be run by a participant or a community-based partner. Partners, especially those who work with underserved communities, can help identify additional education and outreach capabilities.

Table 17: Assessment of the Education and Outreach Capabilities of the City of Emigration Canyon[5]

Education and Outreach Capability	In Place? (Y/N)	Does it currently incorporate hazard mitigation?	Could it be used to support mitigation in the future?
Community Newsletter(s)	Y	Community council newsletter.	Yes

[5] EM = Emergency Management, MSD = Municipal Services District, PIO = Public Information Officer, SLCo EM = Salt Lake County Emergency Management, UFA = Unified Fire Authority, UPD = Unified Police Department, VOAD = Voluntary Agencies Active in Disasters.

DRAFT

Education and Outreach Capability	In Place? (Y/N)	Does it currently incorporate hazard mitigation?	Could it be used to support mitigation in the future?
Hazard Awareness Campaigns (such as Firewise, Storm Ready, Severe Weather Awareness Week, School Programs)	Y	Through UFA and UPD's outreach. SLCo EM has monthly valley EM meeting to get all Emergency Managers together.	Yes
Public Meetings/Events (Please describe.)	Y	Community council meetings.	Yes
Emergency Management Listserv	Y – through MSD/UFA	PIO for SLCo EM assists.	Yes
Local News	Y	Work with SLCo EM PIO to get feedback on outreach strategies.	Yes
Distributing Hard Copies of Notices (e.g., public libraries, door-to-door outreach)	Y	Posted on website, local buildings.	Yes
Insurance Disclosures/ Outreach	N	Could be used	Yes
Organizations that Represent, Advocate for, or Interact with Underserved and Vulnerable Communities (Please describe.)	Y	Through VOAD and community council.	Yes
Social Media (Please describe.)	Y	Facebook, Instagram, and X	Yes
Other? (Please describe.)			

Opportunities to Expand and/or Improve Capabilities

Actions that can expand and improve existing authorities, plans, policies, and resources for mitigation include budgeting for mitigation actions, passing policies and procedures for mitigation actions, adopting and implementing stricter mitigation regulations, approving mitigation updates, and making additions to existing plans as new needs are recognized. Table 18 lists the opportunities for the city of Emigration Canyon.

Table 18: Opportunities to Expand and/or Improve the Capabilities of the City of Emigration Canyon

Capability	Opportunity to Expand and/or Improve
Planning and Regulation	The city can adopt a new regulation incorporating higher standards for developing critical infrastructure in high-risk areas in order to reduce landslide risk.
Administrative and Technical	The city can expand its Geographic Information System (GIS) capabilities, particularly for tracking hazard risks like pandemics. In addition to response and recovery, data collected can be utilized when demonstrating benefits and historic costs during a mitigation grant application.

DRAFT

Capability	Opportunity to Expand and/or Improve
Financial	The city can pursue new grant programs, such as the Flood Mitigation Assistance grant program.
Education and Outreach	The city can expand its outreach to the public on how to mitigate risk, such as programs for radon and tree maintenance which reduces the risks of wind damage. Empowering the public with tools to implement mitigation projects through new hazard-specific public outreach programs will increase the odds of mitigation being successfully accomplished.

Mitigation Strategy

Mitigation strategies provide proactive measures that are designed to minimize the impacts of hazards on the city of Emigration Canyon. Table 19 shows mitigation action alternatives, and Table 20 shows the status of previous mitigation activities. Table 21 is the 2025 mitigation action plan for the city of Emigration Canyon.

Table 19: Mitigation Action Alternatives for the City of Emigration Canyon

Action	Type of Action	Selected for inclusion in the plan?	If not selected, why not?
Continue slope stability program.	Structure and Infrastructure Projects	Yes	
Continue replacing power lines with insulated power lines that reduce risk of fire, reduce power line exposure by routing lines underground.	Structure and Infrastructure Projects	No	This action is performed by local utilities.
Continue fire fuel debris removal community awareness program.	Local Plans and Regulations	Yes	
Increase water storage for fire suppression.	Structure and Infrastructure Projects	Yes	

Table 20: Status of Prior Mitigation Actions of the City of Emigration Canyon

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update
Conduct a slope stabilization Study.	Landslides, Avalanche, Earthquake	Emigration Canyon	Municipal Services District	Completed. Work is ongoing to stabilize slopes – two slopes have been completed so far.
Bury powerlines to mitigate power outages and mitigate wildfires.	All hazards	Emigration Canyon	Utilities	Ongoing – some power lines were put underground in 2019.

DRAFT

Table 21: 2025 Mitigation Action Plan for the City of Emigration Canyon[6]

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Time-frame	Priority	Comments
1	Enhance security at critical infrastructure locations to prevent potential for terrorist acts.	Terrorism, Civil Disturbance	SLCo EM	Emigration Canyon, UPD, UFA, MSD, SLCo IT, SLCo Public Works, SLCo Clerk's Office, SLCo Sheriff's Office	Increased security protocols (both in technology and policy) for staff/first responders, clear expectations/understanding for Emigration Canyon and the public.	Medium	SLCo EM general funds, Emigration Canyon general funds, UPD general funds, SLCo Sheriff's Office general funds, UFA general funds, MSD general funds, HSGP grant	Short-term	Medium	
2	Develop and implement public education programs on disaster awareness and mitigation.	Avalanche, Civil Disturbance, Dam Failure, Drought, Earthquake, Extreme Heat, Extreme Cold, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide/ Slope Failure, Lightning, Public Health Epidemic/Pandemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	SLCo EM	Emigration Canyon, UFA, UPD, SLCo Sheriff's Office, SLCo Public Works, MSD, NWS	Increased understanding of local resources, improved relationships with the public and stakeholders. Outlined plans/SOPs for programs. For example, share posts on how to identify avalanche conditions and what to do to reduce risk (avalanche), how to elevate utilities and structures in high-risk flood zones and dam inundation areas (flooding, heavy rain, dam failure), and structural and non-structural retrofit measures for homes (earthquake).	Low	Emigration Canyon general funds, MSD general funds, BRIC grant, HSGP grant	Short-term	Medium	
3	Integrate WebEOC, Crisis Track, GIS, and other technological enhancements throughout Emigration Canyon.	Avalanche, Civil Disturbance, Dam Failure, Drought, Earthquake, Extreme Heat, Extreme Cold, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide/ Slope Failure, Lightning, Public Health Epidemic/Pandemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	MSD	Emigration Canyon, SLCo EM, UFA, UPD, SLCo Public Works, SLCo Health Department	Common operating platform for stakeholders, increased situational awareness, improved response time.	Low	SLCo EM general funds, UFA general funds, Emigration Canyon general funds, MSD general funds, EMPG grant	Medium-term	Medium	Emigration Canyon already has this software; training and documentation need improvement.
4	Enhance and continue to promote the implementation of CERT and SAFE Hubs.	Avalanche, Civil Disturbance, Dam Failure, Drought, Earthquake, Extreme Heat, Extreme Cold, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide/ Slope Failure, Lightning, Public Health Epidemic/Pandemic,	SLCo EM	Emigration Canyon	Increased awareness of local resources.	Low	SLCo EM general funds, EMPG grant, Emigration Canyon general funds, MSD general funds	Short-term	Medium	SAFE Hubs (previously S.A.F.E. Neighborhoods) are rebranding, with a new public awareness campaign and information for all partners.

[6] ATF = Bureau of Alcohol, Tobacco, Firearms and Explosives, BRIC = Building Resilient Infrastructure and Communities, CWPP = Community Wildfire Protection Plan, DHS = Department of Homeland Security, EM = Emergency Management, EMPG = Emergency Management Performance Grant, FBI = Federal Bureau of Investigation, FMA = Flood Mitigation Assistance, HMA = Hazard Mitigation Assistance, HMGP = Hazard Mitigation Grant Program, HSGP = Homeland Security Grants Program, IT = Information Technology, LEPC = Local Emergency Planning Committee, MSD = Municipal Services District, NRCS = Natural Resources Conservation Service, NWS = National Weather Service, PDM = Pre-Disaster Mitigation, SHSP = State Homeland Security Program, SIAC = Statewide Information & Analysis Center, SLCo = Salt Lake County, SLCo EM = Salt Lake County Emergency Management, SLCo IT = Salt Lake County Information Technology, SOP = Standard Operating Procedure, UCA = Utah Communications Authority, UDEM = Utah Division of Emergency Management, UDEQ = Utah Department of Environmental Quality, UDOT = Utah Department of Transportation, UFA = Unified Fire Authority, UPD = Unified Police Department.

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Time-frame	Priority	Comments
		Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire								
5	Establish an access and functional needs registry and ensure those with access and functional needs are included in plans.	Avalanche, Civil Disturbance, Dam Failure, Drought, Earthquake, Extreme Heat, Extreme Cold, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide/ Slope Failure, Lightning, Public Health Epidemic/Pandemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	SLCo EM	Emigration Canyon, MSD, UFA, UPD, SLCo Sheriff's Office	Increased situational awareness for the public and stakeholders, and greater understanding of resources available for those with access and functional needs.	Low	SLCo EM general funds, Emigration Canyon general funds MSD general funds, State of Utah general funds, HSGP grant	Short-term	High	The state of Utah's Access and Functional Needs Registry will dissolve in 2025. The county needs a way to account for those with access and functional needs, including incorporation into plans and SOPs.
6	Procure generators and transfer switches for public facilities and critical facilities.	Extreme Heat, Extreme Cold, Heavy Rain, High Wind, Tornado, Severe Winter Weather	SLCo EM	MSD, Emigration Canyon, local utilities	Backup generators available at cooling centers and Code Blue centers. An accurate inventory of what the county can provide to other agencies or jurisdictions as needed.	Medium	SLCo EM general funds, MSD general funds, Emigration Canyon general funds, HMA grant	Long-term	Medium	
7	Increase the size of culverts and bridges in areas that have been identified as past or potential flooding concerns.	Flooding, Heavy Rain	SLCo Flood Control Engineering	MSD, Emigration Canyon	Allows for larger runoff during spring melt season, reduce the amount of debris buildup.	High	PDM, HMGP grant, NRCS, MSD capital improvement budget, Emigration Canyon general funds	Long-term	Medium	
8	Procure FMA grants.	Flooding, Heavy Rain	UDEM	Emigration Canyon, SLCo Flood Control Engineering, MSD, SLCo EM	Improved understanding of grants available and how funds can be used for mitigation efforts.	Low	FMA grants	Medium-term	Medium	
9	Be a part of the enhanced emergency notification communications system for the county.	Avalanche, Civil Disturbance, Dam Failure, Drought, Earthquake, Extreme Heat, Extreme Cold, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide/ Slope Failure, Lightning, Public Health Epidemic/Pandemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	SLCo EM	MSD, UFA, UPD, Emigration Canyon, UDOT	Early notification of impending wildfire to decrease loss of life. Improved relationships with the public and stakeholders. Faster delivery of information with templates/plans ready to go.	Medium	SLCo EM general funds, MSD general funds, Emigration Canyon general funds, HSGP grant,	Short-term	Medium	
10	Promote the Firewise initiative and regularly review/update the Community Wildfire Protection Plan (CWPP) for at-risk communities.	Wildfire	SLCo Fire Warden	SLCo EM, UFA, MSD, Emigration Canyon	Increased awareness of the plan (for the public and stakeholders), improved eligibility for grants and other funding sources, regular review of CWPP.	Low	SLCo EM general funds, MSD general funds, Emigration Canyon general funds, Community Wildfire Assistance grant, Fire Prevention and Safety grant	Short-term	Medium	

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Time-frame	Priority	Comments
11	Conduct a public awareness campaign on Tier 2 reporting software for chemical reporting.	Hazardous materials incident	SLCo EM	UFA, UPD, SLCo Health Department, Emigration Canyon, SLCo Sheriff's Office, MSD, LEPC	Improved understanding of Tier 2 reporting and how local agencies/jurisdictions can find and submit information. A common operating platform for hazardous materials reporting.	Low	SLCo EM general funds, LEPC, Emigration Canyon general funds, MSD general funds, State of Utah general funds	Long-term	Medium	
12	Enact citywide regulations and codes for development to reduce landslide and slope failure damage to critical infrastructure and buildings.	Landslide and slope failure	MSD	SLCo EM, UFA, SLCo Office of Regional Development	Reduced likelihood of landslides and damage to critical infrastructure/buildings. Future development will be up to code and follow policies to avoid repetitive loss properties.	Medium	MSD general funds, Emigration Canyon general funds	Long-term	Medium	
13	Leverage WebEOC and GIS to track the spread of contagious diseases.	Public Health Epidemic/Pandemic	SLCo Health Department	SLCo EM, UFA, MSD, UPD, SLCo Sheriff's Office, Emigration Canyon	Use of GIS and WebEOC software to maintain situational awareness and track illnesses in the county.	Low	SLCo EM general funds, Emigration Canyon general funds, MSD general funds, SLCo Health Department general funds, UDEQ general funds	Short-term	Medium	Emigration Canyon already has this software; training and documentation need improvement.
14	Create public awareness campaigns and public education programs on radon risks and provide home testing for radon.	Radon	SLCo Health Department	SLCo Aging and Adult Services, SLCo EM, MSD, Emigration Canyon	Fewer radon-caused cancer deaths. Increased engagement/ understanding with the public on what SLCo can do or help with.	Low	SLCo EM general funds, SLCo Health Department general funds, HMGP grant, Emigration Canyon general funds, MSD general funds	Short-term	Low	
15	Develop road resurfacing project, including permeable pavement for areas with rain-based flooding.	Severe Weather – Heavy Rain, Flooding	MSD	UDOT, SLCo Flood Control Engineering, Emigration Canyon	Reduced discharge of pollutants in runoff, reduced maintenance time/costs on roads, improved traction on roads.	High	SLCo general funds, UDOT general funds, HMGP grant, MSD capital improvement budget, Emigration Canyon general funds	Long-term	Low	
16	Create a public education program to inform property owners about tree	Severe Weather – High Wind	SLCo Health Department	SLCo Aging and Adult Services, SLCo Public Works, UFA,	Reduced damage during high wind event to critical infrastructure. Fewer personal injuries (people driving on roads or walking in	Low	SLCo Flood Control Engineering general funds,	Short-term	Low	

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Time-frame	Priority	Comments
	maintenance and high-strength windows.			Emigration Canyon, MSD	neighborhood). Improved relationships with stakeholders and the public.		SLCo EM general funds, UFA general funds, SLCo Health Department general funds, Emigration Canyon general funds, MSD general funds			
17	Develop a severe winter weather mitigation program to ensure access to primary roadways and evacuation routes.	Severe Winter Weather – Heavy Snow, Blizzard	SLCo Public Works & Municipal Services	SLCo EM, UDOT, Emigration Canyon, MSD	Emergency services, like police, fire, and paramedics, are able to use roads to provide their services.	Medium	MSD general funds, Emigration Canyon general funds, UDOT general funds	Short-term	High	A severe winter storm with heavy snowfall requires our operators and equipment to be used to clear roads and streets for the public and emergency vehicles to use. The primary efforts will be to keep the roads open by clearing snow.
18	Conduct a public awareness campaign about lightning safety.	Severe Weather – Lightning	SLCo EM	SLCo Parks and Recreation, UFA, SLCo Public Works & Municipal Services, Emigration Canyon, MSD, NWS	Lightning strike awareness for the public.	Low	SLCo EM general funds, MSD general funds, Emigration Canyon general funds	Short-term	Low	
19	Improve outreach for “see something, say something” QR code to deter terrorist acts.	Terrorism (including a cyberattack)	SLCo EM	SLCo Sheriff’s Office, UPD, UFA, MSD, Emigration Canyon, SLCo IT	Increased awareness by residents and local agencies about local intelligence resources and ways in which they can report suspicious activity. Increased QR code use/outreach at special events in Emigration Canyon.	Low	SLCo EM general funds, Emigration Canyon general funds	Short-term	Medium	
20	Be a part of the countywide intelligence group/ division to monitor and analyze threats before an incident occurs.	Terrorism (including cyberattacks)	SLCo EM	Emigration Canyon, SLCo Sheriff’s Office, SIAC, DHS, ATF, FBI	Central group to collect and analyze information, development of SOPs for intelligence, greater collaboration.	Low	SHSP grant, SLCo EM general funds, Emigration Canyon general funds, MSD general funds	Short-term	Medium	This will be a core group of stakeholders that meet on a regular basis to share and collaborate on intelligence data.
21	Code Enforcement – Review critical infrastructure facilities to ensure that building materials are up to code and are tornado-resistant.	Tornado, High Wind	MSD	Emigration Canyon, SLCo Public Works & Municipal Services, SLCo EM, UFA	Critical infrastructure facilities that are operational/functional in the event of a disaster. Increased life safety.	Medium	SLCo EM general funds, MSD general funds, Emigration Canyon general funds, UFA general funds	Short-term	Low	
22	Enhance interoperable radio communications systems throughout Emigration Canyon.	Avalanche, Civil Disturbance, Dam Failure, Drought, Earthquake, Extreme Heat, Extreme Cold, Flooding, Hazardous Materials	SLCo Fleet Services	SLCo EM, MSD, Emigration Canyon, UFA Communications Division, UCA	Improved communication between different agencies, a common operating platform.	Medium	SLCo EM general funds, Emigration Canyon general	Short-term	Medium	

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Time-frame	Priority	Comments
		Incident, Heavy Rain, High Wind, Landslide/ Slope Failure, Lightning, Public Health Epidemic/Pandemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire					funds, MSD general funds, HSGP grant			
23	Be a part of the countywide single source of information sharing/gathering for intelligence.	Civil Disturbance, Terrorism	SLCo EM	Emigration Canyon, SLCo Sheriff's Office, SIAC, MSD, UPD	Improved coordination between local agencies/jurisdictions	Medium	HSGP grant. Emigration Canyon general funds, MSD general funds	Short-term	Medium	Have one common operating platform to be used by all agencies in SLCo to collect suspicious activity reports. Develop a public awareness campaign to educate the public on how and what to report.
24	Install xeriscaping at government-owned buildings.	Drought	MSD	Water companies/ districts, local utilities, Emigration Canyon, State of Utah	Reduced cost of landscape irrigation, decreased water use	High	State of Utah general funds, Emigration Canyon general funds, MSD general funds	Short-term	Low	
25	Improve communication to the public and stakeholders on resources available when Code Blue is in effect during severe winter weather.	Severe Winter Weather, Extreme Cold	SLCo EM	SLCo Health Department, NWS, MSD, Emigration Canyon, SLCo Office of Homelessness and Criminal Justice Reform	Reduced damage to critical infrastructure, homeless individuals have access to warming resources, reduced pressure on local homeless resource providers with standard protocols to follow during Code Blue.	Low	SLCo EM general funds, SLCo Health Department general funds, State of Utah general funds, MSD general funds, Emigration Canyon general funds	Short-term	Low	
26	Bury power lines to mitigate power outages and wildfires	Wildfire, Severe Winter Weather, High Wind	Emigration Canyon	MSD	Reduced potential damage to critical energy infrastructure.	High	Emigration Canyon capital improvement fund, HMA grant	Long-term	Medium	

DRAFT

THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT

City of Herriman

Jurisdictional Annex to the
Salt Lake County Hazard Mitigation Plan

Month XXXX | Draft X.X

THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT

Table of Contents

City of Herriman Annex 1

Planning Process Contact Information 1
Jurisdiction Profile 1
Date of Incorporation 1
Location and Description 1
Population 2
Demographics 2
Brief History 2
Climate 2
Public Services 2
Governing Body 3
Development Trends 3
Jurisdiction-Specific Hazards and Risk 3
Hazard Event History 6
National Flood Insurance Program Summary 8
Jurisdiction-Specific Vulnerabilities and Impacts 9
Jurisdiction-Specific Changes in Vulnerability 28
Additional Public Involvement 38
Plan Integration 39
Capability Assessment 41
Planning and Regulatory Capabilities 41
Administrative and Technical Capabilities 44
Financial Capabilities 45
Education and Outreach Capabilities 47
Opportunities to Expand and/or Improve Capabilities 48
Mitigation Strategy 49

DRAFT

List of Figures

Figure 1: Social Media Post for the Hazard Mitigation Survey 39
Figure 2: Website Post Announcing Plan Update and Public Survey 39

List of Tables

Table 1: Contact Information for the City of Herriman 1
Table 2: Participant List for the City of Herriman 1
Table 3: Calculated Priority Risk Index Values for the City of Herriman 4
Table 4: Criteria for the Calculated Priority Risk Index 5
Table 5: History of Hazard Events in the City of Herriman 7
Table 6: National Flood Insurance Program Status for the City of Herriman 8
Table 7: National Flood Insurance Overview for the City of Herriman 8
Table 8: Jurisdiction-Specific Vulnerabilities and Impacts in the City of Herriman 9
Table 9: Jurisdiction-Specific Changes in Vulnerability in the City of Herriman 29
Table 10: Assessment of the Planning Capabilities of the City of Herriman 41
Table 11: Assessment of the Regulations and Ordinances of the City of Herriman 42
Table 12: Assessment of the Administrative Capabilities of the City of Herriman 44
Table 13: Assessment of the Technical Capabilities of the City of Herriman 45
Table 14: Assessment of the Financial Capabilities of the City of Herriman 45
Table 15: Assessment of the Education and Outreach Capabilities of the City of Herriman 47
Table 16: Opportunities to Expand and/or Improve the Capabilities of the City of Herriman 48
Table 17: Mitigation Action Alternatives for the City of Herriman 50
Table 18: Status of Prior Mitigation Actions of the City of Herriman 51
Table 19: 2025 Mitigation Action Plan for the City of Herriman 59

DRAFT

City of Herriman Annex

To participate in this multi-jurisdictional hazard mitigation plan (MJHMP) update for Salt Lake County (SLCo), the governing body of the city of Herriman passed a formal resolution, a copy of which is maintained at the local government offices.

Planning Process Contact Information

Table 1 provides information on the point of contact during the updating of the MJHMP.

Table 1: Contact Information for the City of Herriman

Name	Contact Information
Brent Adamson	**Phone:** 385-695-9239; **email:** Badamson@herrimanpd.gov

The city of Herriman has a fully integrated approach to hazard mitigation planning and program implementation. During the 2024 update process, the MJHMP participation roles in Table 2 were recorded.

Table 2: Participant List for the City of Herriman

Name	Title	Jurisdiction
William Reyes	Emergency Manager	Herriman
Jonathan LaFollette	Public Information Officer	Herriman

Jurisdiction Profile

The following is a summary of key information about the jurisdiction and its history:

Date of Incorporation

Herriman was officially incorporated as a city on June 1, 1999. This allowed residents to establish local governance and services, giving them greater control over their city's future. It marked the beginning of a significant development, laying the groundwork for Herriman's ongoing expansion and transformation into a thriving, dynamic city.

Location and Description

Adjacent to Herriman City on the west are the Oquirrh Mountains and the Bingham Canyon/Rio Tinto Copper Mine. To the south is Camp Williams, nestled in the South Hills, which separates Herriman from Utah County. Adjacent to Herriman on the east is Riverton, and to the north is South Jordan. Herriman has developed commercial and residential areas and significant agricultural holdings. It has 2,412 acres

of open space and 214 acres of park space within its boundaries. This open space is reserved for recreational purposes and has many multi-use trails.

Population

The 2022 American Community Survey 5-Year Estimate from the U.S. Census Bureau records the population of the city of Herriman City in 2024 as 61,328, up from 56,212 in 2020, reflecting a 9.1% increase.[1]

Demographics

Herriman, Utah, is a growing community characterized by its relatively high median household income of approximately $115,198, indicating a prosperous population. The city has a poverty rate of about 5.8%, suggesting that most residents enjoy a stable economic situation. In addition, the demographic profile reflects a youthful population, with a median age of around 27 years for males and 29 years for females. This combination of economic stability and a younger demographic points to a vibrant community that is likely to continue growing and evolving in the coming years.[2]

Brief History

Originally called Butterfield, the town was established in 1849 by Thomas Jefferson Butterfield, John Jay Stocking, Robert Cowan Petty, and Henry Herriman. In 1854, an adobe fort was constructed in the area to protect settlers from hostile native tribes. Fort Herriman, as it was called, was soon disbanded, yet the small settlement remained for more than 130 years. Residents earned a living through dryland farming, sheep and cattle ranching, and as employees at the nearby mines and smelters. Many people from outside Herriman grazed their livestock here. For a period, Herriman was home to some of the largest sheep operations west of the Mississippi River.

Climate

Herriman has an average annual temperature of 53.7°F, with hot, dry summers reaching highs in the upper 90s and cold winters with lows in the teens. Each year, the city receives 20 inches of rain, with most precipitation occurring in the spring and fall, and 68 inches of snow, which contributes to seasonal runoff and potential flooding risks.

Public Services

The city provides most public services. Important to hazard mitigation, the city has stormwater, health, secondary water, GIS, public safety, and “Be Ready Herriman” services. The city adopted its General Plan in July 2022.

[1] World Population Review, “Herriman, Utah Population 2024.” https://worldpopulationreview.com/us-cities/utah/herriman.
[2] Ibid.

DRAFT

Governing Body

The city has an elected mayor and four districts, each having an elected official. The city has a strong manager-council form of government.

Development Trends

Once considered a distant rural area, Herriman has emerged as one of the most desirable and fastest-growing communities in the region. From its incorporation in 1999, the city's growth surged, particularly between 2000 and 2010, when Herriman moved from the 111th to the 32nd largest incorporated place in Utah. (Herriman City Community Development)

Today, Herriman continues to see significant residential and commercial growth, The future development of the Herriman TRAX Station/Transit-Oriented Development District and the Northwest Annexation Area will introduce mixed-use, residential, and commercial spaces, while the extension of U-111/Bacchus Highway will increase traffic and further growth.

To support this growth, Herriman is investing in infrastructure improvements, including the Mountain View Corridor, expanded trails and bikeways, and new parks like the Northwest Regional Park. The city is also implementing hazard mitigation measures in new developments to address environmental risks like flooding and wildfires, ensuring sustainable development and safety for the community.

Jurisdiction-Specific Hazards and Risk

Herriman faces a range of natural and human-caused hazards that pose varying levels of risk to the community. Using the Calculated Priority Risk Index (CPRI),a comprehensive assessment tool for evaluating and prioritizing risks, local officials have assessed these risks based on factors such as probability, severity, warning time, and response capacity. The results for each hazard, including its risk factor (RF) value, are shown in Table 3. The results are based on the criteria in Table 4 and the equation that follows it. The CPRI helps organizations and individuals make informed decisions about risk management and mitigation strategies. It systematically identifies potential issues, allowing for a more efficient allocation of resources and proactive risk prevention. By prioritizing critical risks, stakeholders can enhance their risk management effectiveness, resulting in better outcomes.

Given Herriman's geographic location, earthquakes, wildfires, and radon exposure emerge as the most significant threats, with earthquakes ranking highest (RF 3.2) due to the city's proximity to the Wasatch Fault. Wildfires (RF 2.7) remain a critical concern, particularly in the dry summer months when high winds exacerbate fire spread. Additionally, radon exposure (RF 2.3) is a persistent, less visible hazard due to the region's geological composition.[3] While lower-risk events such as thunderstorms, hail, and high winds frequently impact the area, the city continues to enhance its emergency preparedness and mitigation

[3] https://geology.utah.gov/?s=herriman+radon, https://www.deseret.com/2014/7/15/20544842/geologic-hazard-maps-for-western-salt-lake-valley-released/.

strategies to address all potential threats. By leveraging historical hazard data and predictive modeling, Herriman aims to allocate resources effectively and safeguard residents from future disasters.

Table 3: Calculated Priority Risk Index Values for the City of Herriman

Type of Hazard Event	Probability of Future Events	Spatial Extent	Severity of Life/ Property Impact	Warning Time	Duration	Response Capacity	Risk Factor Value
Avalanche	1	1	1	1	1	1	1
Drought	2	2	2	1	3	1	1.9
Earthquake	2	4	4	4	4	2	3.2
Extreme Heat	2	2	1	1	3	1	1.6
Extreme Cold	2	2	1	1	3	1	1.6
Flooding	3	2	2	3	3	1	2.4
Landslide/ Slope Failure	1	1	1	4	1	2	1.4
Radon	3	1	2	1	4	2	2.3
Heavy Rain	3	2	1	2	2	1	1.9
High Wind	2	2	1	2	2	1	1.6
Lightning	2	1	1	4	1	1	1.6
Severe Winter Weather	2	2	1	1	2	1	1.5
Tornado	1	1	1	4	1	2	1.4
Wildfire	3	3	3	2	3	1	2.7
Dam Failure	2	2	3	2	1	2	2.2
Civil Disturbance	1	1	1	3	1	2	1.3
Cyberattack	2	2	1	4	1	2	1.8
Hazardous Materials Incident (Transportation & Fixed Facility)	2	2	1	4	1	1	1.7
Public Health Epidemic/ Pandemic	2	2	1	1	4	1	1.7
Terrorism	1	1	1	4	1	1	1.3

DRAFT

Table 4: Criteria for the Calculated Priority Risk Index

Risk Index Factor	Degree of Risk Level		Factor Weight for Degree of Risk Level	Factor Weight for Degree of Risk Level
Probability of Future Events	1	Unlikely	Less than 1 percent probability of occurrence in the next year or a recurrence interval of greater than every 100 years.	30%
	2	Occasional	1 to 10 percent probability of occurrence in the next year or a recurrence interval of 11 to 100 years.	
	3	Likely	11 to 90 percent probability of occurrence in the next year or a recurrence interval of 1 to 10 years.	
	4	Highly Likely	91 to 100 percent probability of occurrence in the next year or a recurrence interval of less than 1 year.	
Spatial Extent	1	Limited	Less than 10% of the planning area could be impacted.	10%
	2	Small	10%–25% of the planning area could be impacted	
	3	Significant	25%–50% of the planning area could be impacted.	
	4	Extensive	50%–100% of the planning area could be impacted.	
Severity of Life/Property Impact	1	Negligible	Less than 5% of the affected area's critical and non-critical facilities and structures are damaged/ destroyed. Only minor property damage and minimal disruption of life. Temporary shutdown of critical facilities.	30%
	2	Limited	More than 5% and less than 25% percent of property in the affected area is damaged/ destroyed. Complete shutdown of critical facilities for more than one day but less than one week.	
	3	Critical	More than 25% and less than 50% of property in the affected area was damaged/ destroyed. Complete shutdown of critical facilities for over a week but less than one month.	
	4	Catastrophic	Over 50% of critical and non-critical facilities and infrastructures in the affected area are damaged/ destroyed. Complete shutdown of critical facilities for more than one month.	
Warning Time	1	Self-defined	More than 24 hours	10%
	2	Self-defined	12 to 24 hours.	
	3	Self-defined	6 to 12 hours.	
	4	Self-defined	Less than 6 hours.	
Duration	1	Brief	Up to 6 hours.	10%
	2	Intermediate	Up to one day.	
	3	Extended	Up to one week.	

DRAFT

Risk Index Factor	Degree of Risk Level		Factor Weight for Degree of Risk Level	Factor Weight for Degree of Risk Level
	4	Prolonged	More than one week.	
Response Capacity	1	High	Significant resources and capability to respond to this kind of event; staff are trained, experienced, and ready.	10%
	2	Medium	Some resources and capability to respond to this kind of staff; some staff may be trained, experienced, and ready while others may need additional support.	
	3	Low	Limited resources and capability to respond to this kind of event; additional staff or staff training needed.	
	4	None	No resources and capability to respond this kind of event; additional outside support would be required.	

RISK FACTOR (RF) EQUATION

RF Value = [(Probability x 0.30) + (Spatial Extent x 0.10) + (Severity of Life/Property Impact x 0.30) + (Warning Time x 0.10) + (Duration x 0.10) + (Response Capacity x 0.10)]

Hazards with an RF value greater than or equal to 2.5 are considered high risk. Those with RF values of 2.0 to 2.4 are considered moderate risk hazards, and those with an RF value less than 2.0 are considered low risk. The highest possible RF value is 4.

Hazard Event History

Examining hazard event histories provides valuable insights to inform decision-making and help prioritize resources for risk prevention and response efforts. Table 5 lists the hazard events impacting the city of Herriman planning area since the 2019 plan update, including those recorded in the Storm Events Database from the National Centers for Environmental Information. Drought, extreme heat, and severe winter storms occur in Herriman, although no specific details on damage have been recorded.

DRAFT

Table 5: History of Hazard Events in the City of Herriman[4]

Type of Hazard Event	FEMA Disaster #	Date(s)	Damage or Impacts	Description
Hail	N/A	05/16/2021	No significant damage reported	Scattered severe thunderstorms brought hail and strong winds.
Thunder-storm Wind	N/A	07/22/2021	None reported	An active monsoon surge brought several days of thunderstorms and heavy rain, damaging wind gusts, and hail across the state.
Thunder-storm Wind	N/A	07/03/2023	$1,000 property damage (1-inch tree limbs broken; shingles blown off)	Following scattered convection all afternoon, a more cohesive squall line formed over Utah's West Desert region, producing strong to very strong gusts of very dry winds.
Thunder-storm Wind	N/A	08/02/2023	None reported	A deep monsoonal event impacted Utah, with widespread thunderstorms and flooding. Very heavy rainfall affected areas like West Valley City, Honeyville, Draper and Herriman.
Thunder-storm Wind and Flooding	N/A	08/02/2023	$5,000 property damage (tree fell on a car) This storm triggered additional flooding in Herriman from August 3-15, causing runoff-related damage to homes and infrastructure.	A deep monsoonal event impacted Utah, with widespread thunderstorms and flooding. Heavy flooding occurred in Herriman between August 3 and 15, 2023, with significant runoff from an undeveloped area saturating the ground and causing flooding. The storm impacted 4-5 homes in one area, with some properties experiencing severe flooding due to runoff along the slopes. The slope from the dog park contributed to the flooding of a surrounding home. Overflow from ponds added to the damage in the area. Cleanup and repair efforts for the affected spillways cost approximately $9,414.15.
Hail	N/A	08/02/2023	None reported	A deep monsoonal event impacted Utah, with widespread thunderstorms and flooding.

[4] National Centers for Environmental Information, "Storm Events Database." https://www.ncdc.noaa.gov/stormevents/listevents.jsp?eventType=ALL&beginDate_mm=01&beginDate_dd=01&beginDate_yyyy=2019&endDate_mm=12&endDate_dd=15&endDate_yyyy=2024&county=SALT%2BLAKE%3A35&hailfilter=0.00&tornfilter=0&windfilter=000&sort=DT&submitbutton=Search&statefips=49%2CUTAH.

Type of Hazard Event	FEMA Disaster #	Date(s)	Damage or Impacts	Description
Flooding	N/A	08/03–15/2023	Runoff-related damage to homes and infrastructure	Significant runoff from an undeveloped area saturated the ground and causing flooding. The storm impacted 4 or 5 homes in one area, with some properties experiencing severe flooding due to runoff along the slopes. The slope from the dog park contributed to the flooding of a nearby home. Overflow from ponds added to the damage in the area. Cleanup and repair efforts for the affected spillways cost approximately $9,414.15.
Thunder-storm Wind	N/A	07/13/2024	None reported	A strong mid-level ridge resulted in excessive heat, followed by thunderstorms that produced strong wind gusts. A wind gust of 67 mph was recorded.
Earthquake	DR-4548-UT	March 2020	Minor ground shaking in Herriman from M 5.7 Magna earthquake	The Wasatch Fault is considered overdue for a major earthquake, with a 57% chance of an M 6.0 or greater earthquake occurring in the next 50 years.
Public Health Epidemic/ Pandemic	DR-4525-UT	2020–2023	Business closures and economic loss, temporary school closures	COVID-19 Pandemic

National Flood Insurance Program Summary

The City of Herriman participates in the National Flood Insurance Program (NFIP). Table 6 displays statistics related to the NFIP.

Table 6: National Flood Insurance Program Status for the City of Herriman[5]

Init FHBM Identified	Init FIRM Identified	Current Effective Map Date	Adopted Date	Date Joined NFIP	Tribal Status
08/30/1977	12/18/1985	11/19/2021	2021	03/12/2002	No

Table 7: National Flood Insurance Overview for the City of Herriman

Community ID	Number of Losses	Total Net Payment	Active Policies	Total Coverage
490244	1	$14,071.50	29	$8,072,000

[5] FIRM = Flood Insurance Rate Map, FHBM = Flood Hazard Boundary Map

The city of Herriman has designated the Community Development Director as the Floodplain Administrator. The current flood damage prevention regulations were adopted on 5/14/2025. The current Flood Insurance Rate Map (FIRM) is dated 11/19/2021. The Building Department is responsible for permitting, while the City Engineer reviews Floodplain Development Permits. These permits require significant details of the project that can be used by the Floodplain Administrator to make substantial damage/substantial improvement determinations. When the permit is approved with conditions, applicants will be informed via the permitting process of what additional steps, such as coming into compliance with current codes and standards, are required. Additionally, the Building Department conducts inspections of all additions/remodels prior to construction beginning. These inspections are also an opportunity to identify substantial damage/substantial improvement structures.

Jurisdiction-Specific Vulnerabilities and Impacts

Table 8 provides information on the vulnerable assets within Herriman, including its critical facilities and infrastructure that may be impacted by identified hazards. It also describes the potential impacts on the community arising from those vulnerabilities. By understanding the risks associated with these assets, local authorities can develop proactive strategies to mitigate vulnerabilities and ensure the safety and functionality of these important assets during hazard events. This data is invaluable for decision-making and prioritizing resources for emergency response and preparedness efforts, ultimately contributing to more effective risk management and greater resilience within the community.

Vulnerable assets in Herriman City include two fire stations, one emergency operations center (EOC), one police station, and nine schools. Community centers such as the Herriman Library, J.L. Sorenson Recreation Center, and outdoor recreation sites such as Butterfield Park, Blackridge Reservoir, J. Lynn Crane Park, Rosecrest Park, and several other parks and trailheads are also important assets. Rose Creek, Butterfield Creek, and Copper Creek are notable waterways in the city. Major transportation routes include Mountain View Corridor, 13400 South, Main Street, Rosecrest Road, Rose Canyon Road, and 6400 West. The Jordan Valley Water Treatment Plant is located in southeast Herriman, which also serves several other cities in the county. The Zions Bank Training Center is a large sports facility with high capacity in the southeast area of the city. There are residents of unincorporated Salt Lake County who access their homes through Herriman City via Hi Country Estates and Shaggy Mountain Road.

Table 8: Jurisdiction-Specific Vulnerabilities and Impacts in the City of Herriman

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
Avalanche	People	*Vulnerability:* While Herriman itself is generally considered low-risk for avalanches, residents who venture into nearby mountainous areas, such as the Oquirrh Mountains, may face avalanche dangers during winter months. *Impacts:* Avalanches can cause injury or death to individuals caught in their path. Outdoor enthusiasts, including hikers and snowmobilers, should be aware of avalanche forecasts and exercise caution when exploring these regions.

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Structures	*Vulnerability:* Within Herriman, structures are not typically at risk from avalanches due to the city's location. However, properties situated near steep slopes or in adjacent mountainous terrains could be susceptible under unique conditions. *Impacts:* Most areas in Herriman do not have the slope angle, aspect, or snow accumulation necessary to produce avalanches. Under unique conditions, avalanches could cause damage to structures. Proper land use planning and adherence to building codes are essential to mitigate potential risks in these areas.
	Economic Assets	*Vulnerability:* Outdoor recreation businesses and businesses near affected roads are vulnerable to avalanches. *Impacts:* Avalanche-related disruptions in nearby recreational areas can impact local businesses in Herriman that rely on tourism and outdoor activities. Road closures or safety concerns may lead to decreased visitor numbers, affecting the local economy.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Vegetation and wildlife are vulnerable to avalanches. *Impacts:* Avalanches in surrounding mountainous regions can alter natural landscapes, affecting wildlife habitats and recreational trails. While Herriman's immediate environment may not be directly impacted, changes in nearby ecosystems can have indirect effects on the community's natural resources.
	Critical Facilities and Infrastructure	*Vulnerability:* Herriman's critical infrastructure is not directly threatened by avalanches. *Impacts:* Emergency services may need to respond to avalanche incidents in nearby areas, emphasizing the importance of preparedness and coordination with regional agencies.
	Community Activities	*Vulnerability:* Winter recreation activities are vulnerable to avalanches. *Impacts:* Community members engaging in winter sports or backcountry activities in adjacent mountainous regions should be educated on avalanche safety. Local programs promoting awareness and training can enhance public safety during the winter season.
Drought	People	*Vulnerability:* All residents are vulnerable to drought. *Impacts:* Herriman residents may face water use restrictions during drought periods, affecting daily activities such as landscaping and gardening. Prolonged drought can also lead to increased health concerns due to dust and reduced air quality.
	Structures	*Vulnerability:* All structures are vulnerable to drought. *Impacts:* Extended dry conditions can cause soil shrinkage, potentially impacting building foundations and leading to structural issues. Implementing drought-resistant landscaping and proper irrigation systems can help mitigate these effects.
	Economic Assets	*Vulnerability:* All local businesses, particularly those related to agriculture or landscaping, are vulnerable to drought. *Impacts:* Local businesses, particularly those in agriculture and landscaping, may experience financial strain due to water shortages and increased operational costs. Drought conditions can also deter new developments, affecting the city's economic growth.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Natural, Historic, and Cultural Resources	*Vulnerability:* Vegetation and wildlife are vulnerable to drought, which also increases wildfire risk. *Impacts:* Drought can stress local vegetation and wildlife, leading to habitat degradation. Historic sites may suffer from reduced maintenance due to water limitations, and cultural events might be curtailed to conserve resources.
	Critical Facilities and Infrastructure	*Vulnerability:* All city facilities, including water supply systems, are vulnerable to drought. *Impacts:* Public facilities may face water restrictions. Water supply systems may be strained during droughts, necessitating conservation measures and infrastructure upgrades. Emergency services might also face challenges in responding to drought-induced issues like wildfires.
	Community Activities	*Vulnerability:* Parks and recreational facilities are vulnerable to drought. *Impacts:* Public parks and recreational facilities may impose restrictions on water usage, affecting community events and activities. Educational campaigns promoting water conservation can help maintain community engagement during drought periods.
Earthquake	People	*Vulnerability:* All residents are vulnerable to earthquakes. *Impacts:* Although Herriman is not situated directly on major faults, it is likely to experience impacts from a major earthquake elsewhere in Salt Lake County. Residents could face injuries from falling objects. Workplaces, schools, and facilities may be affected, interrupting daily routines. Populations in older buildings or those with limited mobility may be more vulnerable during seismic events.
	Structures	*Vulnerability:* All structures are potentially vulnerable to earthquakes. *Impacts:* Many of the structures within Herriman have been built more recently, according to modern seismic codes, but they may still experience damage to contents, fixtures, or other materials. Buildings constructed before modern seismic codes may be susceptible to damage during earthquakes. Retrofitting older structures and adhering to current building standards are crucial for minimizing potential harm.
	Economic Assets	*Vulnerability:* Businesses throughout Herriman and the region are vulnerable to earthquakes *Impacts:* An earthquake could disrupt local businesses, especially if infrastructure is damaged. Businesses in Herriman are likely to experience losses from an earthquake. Buildings and contents may be damaged, and businesses may be slow to reopen while repairs are completed. Damage to roads and utility systems, such as power, water, and communication, may also limit businesses' ability to operate. The flow of goods may be severely limited, and employees may not be able to travel to work. Spending may also be reduced due to losses experienced by consumers. The local economy, reliant on retail and services, could face significant disruptions during seismic events. Ensuring business continuity plans and insurance coverage can aid in economic recovery post-event.
	Natural, Historic, and	*Vulnerability:* Ecosystems, historic structures, and cultural sites are vulnerable to earthquakes.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Cultural Resources	*Impacts:* Natural resources like geological formations and local ecosystems can be disrupted, leading to habitat loss. Historic structures and landmarks often lack modern seismic retrofitting, making them susceptible to damage. Cultural resources, including community centers, may also be at risk due to their architectural styles and inadequate building codes, compromising their integrity and the heritage they represent. Seismic activity in Herriman can impact natural landscapes and historic sites, leading to erosion or structural damage.
	Critical Facilities and Infrastructure	*Vulnerability:* All critical facilities and infrastructure in Herriman are vulnerable. *Impacts:* Schools, healthcare facilities, and emergency services buildings within Herriman are vulnerable to earthquakes due to age and construction standards. Bridges and overpasses that lack modern engineering safeguards are also at risk. Damage to emergency response facilities and vehicles may delay response and contribute to the vulnerability of residents. In addition, water supply systems and power lines are susceptible to disruption from ground shaking. The absence of retrofitting in older structures increases these vulnerabilities.
	Community Activities	*Vulnerability:* Public gatherings, school events, and large festivals within Herriman are vulnerable to earthquakes due to the area's geological conditions and urban infrastructure. Vulnerability stems from factors such as the buildings' age and structural integrity, inadequate emergency preparedness, and high population density, which can lead to increased risks and casualties during an earthquake.
Extreme Heat	People	*Vulnerability:* All residents are vulnerable, but some are more susceptible to the effects of extreme heat. *Impacts:* Extreme heat can cause dehydration, heat exhaustion, or heat stroke. Vulnerable populations during extreme heat include adults over 65, individuals with pre-existing health conditions, and young children, as they struggle to regulate body temperature. Socioeconomically disadvantaged individuals may lack access to cooling resources, while outdoor workers are at higher risk of heat-related illnesses due to physical labor without adequate hydration and rest. Extreme heat can hinder students' learning.
	Structures	*Vulnerability:* All structures are at risk from extreme heat. *Impacts:* Residential buildings with inadequate insulation and ventilation and commercial buildings lacking reflective roofing and proper shading may be vulnerable. Materials like metal and glass can amplify heat retention, while areas with limited green space typically experience higher temperatures.
	Economic Assets	*Vulnerability:* Agriculture and recreation businesses are vulnerable to extreme heat. *Impacts:* Agricultural operations can have reduced yields and higher water demand due to heat stress. The outdoor recreation industry may see decreased participation during heat waves, affecting local businesses that rely on visitors. In addition, the energy infrastructure could face strain from increased cooling demands, leading to outages.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Natural, Historic, and Cultural Resources	*Vulnerability:* Plants, wildlife, and historic and cultural sites are vulnerable to extreme heat. *Impacts:* Local plant species and wildlife habitats can suffer from drought conditions, leading to reduced biodiversity. Historic buildings may degrade due to high temperatures, causing materials to deteriorate and paint to peel. In addition, parks and recreational areas may experience overuse and risk their preservation, as residents seek relief from the heat.
	Critical Facilities and Infrastructure	*Vulnerability:* Healthcare facilities, schools, transportation systems, and power infrastructure are vulnerable to extreme heat. *Impacts:* Healthcare facilities may experience increased demand because of heat-related medical issues, while schools can suffer from the strain on cooling resources. Transportation systems are at risk of damage, such as buckling roads and warped train tracks. Power grids may be strained by higher demands for electricity for cooling, leading to potential outages.
	Community Activities	*Vulnerability:* Outdoor recreation and events are vulnerable to extreme heat. *Impacts:* Activities like outdoor sports, fairs, and agricultural practices are vulnerable to extreme heat. These events can pose risks, particularly for participants such as youth athletes and elderly residents who may suffer from heat-related illnesses. As a result, some events may be canceled.
Extreme Cold	People	*Vulnerability:* Extreme cold occurs throughout the city, and all residents are vulnerable. Some may experience higher risks. *Impacts:* Extreme cold can lead to hypothermia or frostbite. The elderly face increased risks due to health issues and mobility challenges, while children may be susceptible if they lack proper winter clothing. Individuals experiencing homelessness or financial hardship often lack access to heated shelters and resources for protection against the cold. Those with pre-existing health conditions may worsen their symptoms at low temperatures.
	Structures	*Vulnerability:* Extreme cold is a risk to all structures in Herriman. *Impacts:* Residential homes, commercial buildings, and unheated spaces like sheds may be vulnerable. Homes with poor insulation or inadequately sealed windows and doors are prone to significant heat loss. Older buildings lacking modern energy efficiency standards may also suffer from freezing pipes and structural damage. Public infrastructure, such as bridges and roads, can also be impacted.
	Economic Assets	*Vulnerability:* Agricultural and other local businesses are vulnerable to extreme cold. *Impacts:* Agriculture, infrastructure, and energy-related businesses may be at risk. Agricultural operations, such as greenhouses and livestock farms, may experience crop and livestock losses, impacting revenue. Icy roads can disrupt transportation networks, affecting logistics and supply chains, while power lines risk outages from ice accumulation, impacting local businesses. Energy-intensive facilities may face higher operational costs due to increased heating needs.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Natural, Historic, and Cultural Resources	*Vulnerability:* Vegetation, wildlife, and cultural sites are vulnerable to extreme cold. *Impacts:* Due to prolonged cold, local vegetation and wildlife habitats may suffer from plant stress and reduced food availability. Historic structures, especially those not built for severe weather, can deteriorate from below-freezing temperatures and ice. Culturally significant sites, including monuments and public art, may also be damaged, while infrastructure such as water pipes and roadways may be compromised during extreme cold events, leading to service disruptions and safety hazards.
	Critical Facilities and Infrastructure	*Vulnerability:* Water, transportation, and power infrastructure are vulnerable to extreme cold. *Impacts:* Water treatment plants can face frozen pipes and equipment failures. Icy conditions may increase accident risks on transportation infrastructure, and power generation facilities may struggle to meet heating demands. Residential and commercial buildings lacking proper insulation are also at risk of heating system failures, endangering occupants.
	Community Activities	*Vulnerability:* All community events are vulnerable to extreme cold. *Impacts:* Youth sports, festivals, and outdoor markets are vulnerable to extreme cold. Harsh temperatures can deter participation, impacting community engagement. At-risk groups, such as the elderly and young children, face health risks like frostbite and hypothermia, further limiting outdoor involvement. In addition, poorly insulated buildings or inadequate heating in community centers can make gatherings uncomfortable.
Flooding (and Heavy Rain)	People	*Vulnerability:* Flooding primarily affects residents in low-lying areas near rivers and streams, especially during heavy rainfall or snowmelt. In Herriman, this is most likely in Special Flood Hazard Areas along Rose Creek, Copper Creek, and Butterfield Creek. *Impacts:* Residents could be displaced from homes due to flooding. In the case of flash flooding or swift-moving waters in high runoff situations, individuals can be swept away and drown. Individuals without reliable transportation may struggle to evacuate quickly, while low-income families often lack resources for flood-prevention measures. The elderly and those with disabilities may face mobility challenges, increasing their risk during emergencies. Overall, factors such as geographic location, economic status, and physical ability contribute to the community's varying levels of vulnerability to flooding.
	Structures	*Vulnerability:* Structures vulnerable to flooding primarily include those in low-lying areas or near Rose Creek, Butterfield Creek, or Copper Creek. *Impacts:* Residential properties in flood plains and commercial buildings without proper drainage systems or flood-resistant designs face significant risks during heavy rain or snowmelt. Older structures may be more susceptible due to outdated construction standards. Overall, a combination of location and construction features contributes to their vulnerability to flooding.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Economic Assets	*Vulnerability:* Businesses near waterways, floodplains, or in low-lying areas are vulnerable to flooding. *Impacts:* Commercial properties, especially retail centers and warehouses near rivers or low-lying areas, are at high risk during heavy rainfall. Residential developments in flood-prone zones also can suffer damage, impacting property values. Public infrastructure, such as roads and utilities, may experience disruptions, leading to costly repairs. Agricultural land can be affected by excess water, reducing crop yields.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Waterways, riparian habitats, and cultural sites are vulnerable to flooding. *Impacts:* Natural areas like wetlands and streams are at risk of habitat destruction, while historic sites and landmarks may sustain structural damage. Cultural resources, such as parks and public spaces, can become unusable, affecting community events. Factors contributing to their vulnerability include inadequate flood management, urban development that alters water flow, and the increasing frequency of extreme weather events due to climate change.
	Critical Facilities and Infrastructure	*Vulnerability:* No critical facilities in Herriman were identified within flood zones. Transportation and utility networks are vulnerable to flooding. *Impacts:* Roads can be damaged, inundated, washed out or otherwise made inaccessible due to flooding. This can disrupt emergency services, require schools to evacuate, block transportation routes, and isolate communities. In addition, inadequate drainage systems and urban development encroaching on floodplains increase these risks.
	Community Activities	*Vulnerability:* Parks and open spaces, and community events are vulnerable to flooding. *Impacts:* Due to the area's geography and infrastructure, outdoor events, sports, and farmers' markets are vulnerable to flooding. Parks and open spaces can quickly become inundated during heavy rainfall or rapid snowmelt. Residential neighborhoods near rivers, roads, and bridges are at risk of flash floods, which can disrupt transportation and emergency services.
Landslide/ Slope Failure	People	*Vulnerability:* In Herriman, residents living near the foothills of the Oquirrh Mountains and along canyon benches are at elevated risk from landslides and slope failures. *Impacts:* Residents can be injured by landslides, or may be displaced if their homes are damaged by a landslide. This risk is driven by a combination of steep terrain, soil saturation from intense storms or snowmelt, and urban development encroaching into geologically unstable zones. Areas where stormwater systems are underdeveloped or poorly maintained further increase exposure, particularly for individuals in older housing stock or those unfamiliar with signs of slope movement. Limited local warning infrastructure and uneven public awareness contribute to greater vulnerability among hillside neighborhoods.
	Structures	*Vulnerability:* Structures constructed along hillsides or on terrain affected by previous slope instability, such as in the Butterfield Canyon and South Hills areas, face elevated threats.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		Impacts: Structures can be damaged or destroyed by landslides. Homes with shallow foundations, improperly engineered retaining walls, or built prior to modern geotechnical standards are especially at risk. Drainage inefficiencies and unreinforced slopes in rapidly expanding subdivisions can lead to sudden ground movement, endangering not just individual properties but also adjacent infrastructure.
	Economic Assets	*Vulnerability:* Businesses near slopes and community financial resources are vulnerable to landslides. *Impacts:* Herriman's hillside developments, utility corridors, and collector roadways may suffer economic losses if landslides disrupt access or damage buried infrastructure. Repairing landslide-prone streets or restoring slope-stabilized water mains and electrical conduits can place a significant burden on the local budget. Recurrent damage can also lower nearby property values and delay real estate transactions.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Habitats and landmarks are vulnerable to landslides. *Impacts:* Landslides can harm Herriman's ecological corridors and native plant habitats in open space preserves. Unstable slopes also threaten historic remnants from early settlement or mining operations in nearby canyons. Community landmarks and parks adjacent to elevated terrain, such as W&M Butterfield Park, are susceptible to erosion, slope washouts, and trail damage during storm events.
	Critical Facilities and Infrastructure	*Vulnerability:* Utilities and roads are vulnerable to landslides. *Impacts:* Utilities crossing sloped terrain face potential service interruptions or structural compromise from slope failure. Steep areas without robust vegetation or engineered slope protections are more prone to runoff and soil displacement during spring melts or heavy precipitation. Emergency response access can be impeded by road damage or blocked routes following a slide.
	Community Activities	*Vulnerability:* Outdoor recreation access is vulnerable to landslides. *Impacts:* Popular outdoor spaces used for hiking, mountain biking, or community events may become hazardous during or after slope instability events. Recreation trails, trailhead parking lots, and hillside picnic shelters may require closure or repair following heavy weather, limiting resident access to key community amenities.
Radon	People	*Vulnerability:* Herriman is located in a geologic zone with elevated radon potential due to uranium-bearing soils in the region. Residents living in homes with basements or slab-on-grade foundations are particularly susceptible to indoor radon accumulation. According to utahradon.org, 58% of homes tested had dangerous levels of radon. *Impacts:* Exposure to radon increases the risk of lung-cancer. Households with young children, seniors, or individuals with chronic health conditions face greater long-term health risks from exposure. In newer subdivisions built rapidly during growth booms, many residents may be unaware of radon testing or mitigation needs.
	Structures	*Vulnerability:* All structures in Herriman are vulnerable to radon. Homes and buildings constructed over high-radon soils are at increased risk.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		Impacts: Residences with foundation cracks, crawlspaces, or unfinished basements can allow radon gas to infiltrate from the ground. Older homes, built before widespread adoption of radon-resistant construction practices, are particularly vulnerable.
	Economic Assets	*Vulnerability:* Property value is vulnerable to radon. *Impacts:* The presence of radon can impact property values and hinder real estate transactions in Herriman. Homeowners may face additional costs for mitigation systems and health monitoring. Rental properties and commercial buildings also face liability if radon levels exceed safe thresholds, particularly in structures lacking consistent maintenance or up-to-date air quality systems.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Soil, groundwater, and historic and cultural sites are vulnerable to radon. *Impacts:* Soils and groundwater in the Herriman area can naturally trap and transport radon, especially in areas near old mining sites or granite-rich terrain. Historic stone buildings or preserved pioneer-era structures may retain radon in enclosed spaces if not properly ventilated. Community heritage sites that attract visitors may require indoor air testing to ensure safety.
	Critical Facilities and Infrastructure	*Vulnerability:* Public buildings, critical facilities, schools, and assisted living centers are vulnerable to radon. *Impacts:* Public buildings may harbor elevated radon levels if air exchange systems are insufficient. Facilities serving vulnerable populations, including daycares and assisted living centers, should undergo regular monitoring to ensure compliance with safety guidelines. Occupants such as employees, students, or residents are vulnerable to the health effects of radon. Some of these buildings were developed before radon was a routine construction consideration.
	Community Activities	*Vulnerability:* Community events are generally low risk for radon exposure as radon is typically a long-term exposure risk. *Impacts:* Basement-level community spaces and home gatherings pose a risk if radon mitigation systems are absent. Activities in churches, schools, and event halls with below-ground areas may increase exposure without adequate ventilation. Construction and remodeling projects must consider soil gas intrusion and incorporate radon barriers and ventilation into design.
High Wind	People	*Vulnerability:* Residents of Herriman are exposed to strong canyon winds, especially in the evenings and during transitional seasons. *Impacts:* Children, older adults, and individuals with mobility limitations may face difficulty seeking shelter during sudden wind events. Outdoor workers and individuals in temporary housing or RVs are particularly vulnerable during high-wind warnings.
	Structures	*Vulnerability:* All structures are vulnerable to high winds. *Impacts:* Wind can damage roofs and break windows. Single-story homes with light roofing materials, outbuildings, and carports may be damaged by wind gusts common in Herriman's open western landscapes. Commercial buildings with large signs or glass façades also face the risk of damage. Poorly anchored sheds, fences, and trampolines frequently become windborne debris during storms.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Economic Assets	*Vulnerability:* All businesses are vulnerable to high winds. *Impacts:* Businesses with exterior signage, temporary shelters, or unreinforced structures face interruptions from wind damage. Local farms and small-scale agricultural operations, especially those with greenhouses or metal-frame storage units, are vulnerable to collapse or tearing. Utilities such as overhead lines and service poles may experience outages, disrupting commerce and daily activity.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Trees, parks, outdoor art, and historic structures are vulnerable to high winds. *Impacts:* Trees lining Herriman's parks and greenbelts may be uprooted or lose large limbs, affecting the local landscape and increasing fire fuel load. Outdoor public art, wayfinding signs, and flag displays are prone to damage or loss. Historic wooden structures or pioneer-era remnants without reinforcement may suffer wind damage, further threatening their preservation.
	Critical Facilities and Infrastructure	*Vulnerability:* All critical facilities are vulnerable, as well as power, communication, and road infrastructure, are vulnerable to high winds. *Impacts:* Emergency response facilities and city buildings can experience damage from high winds. Essential infrastructure can be impacted by sustained winds or falling debris. Older public buildings without wind-resistant design may sustain structural damage or broken windows. Emergency vehicle access routes can be obstructed by fallen branches, street debris, or overturned fencing. Power lines and communication towers can be damaged, which can further disrupt emergency response.
	Community Activities	*Vulnerability:* Outdoor events and recreation are vulnerable to high winds. *Impacts:* Outdoor community events at parks, school fields, or open-air markets in Herriman are often impacted by strong winds. Canopies, tents, and play equipment can be blown over or damaged, increasing injury risks. High winds may also discourage participation in community programming, affecting seasonal recreation schedules and public engagement.
Lightning	People	*Vulnerability:* Lightning can occur anywhere in the city, so all residents are vulnerable. Some outdoor activities place residents at higher risk. *Impacts:* Lightning can cause serious injury or death to those in proximity to a strike. Outdoor recreationists, hikers in Rose Canyon, and participants in local sports leagues are particularly exposed to lightning risk. Youth athletes, spectators, and outdoor workers often lack immediate access to shelter, putting them at elevated risk during sudden thunderstorms. Those without access to weather alerts may not receive adequate warning.
	Structures	*Vulnerability:* All structures are at risk from lightning strikes. *Impacts:* Tall buildings, church steeples, cell towers, and barns located in elevated or open terrain around Herriman may be struck by lightning. Structures with metal roofs, rooftop antennas, or no grounding system face elevated risk. Lightning can also damage HVAC systems, appliances, and wiring if surge protection is inadequate.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Economic Assets	*Vulnerability:* Businesses throughout Herriman are vulnerable to lightning. *Impacts:* Damage to power lines and telecommunications infrastructure during thunderstorms can disrupt local businesses. Facilities with outdoor operations may suffer equipment loss. Parks and recreation facilities may need temporary closure or repair, resulting in reduced use and revenue.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Wildfire risk, historic sites, and outdoor markers are vulnerable to lightning. *Impacts:* Lightning strikes in dry terrain can ignite grass or brush fires, threatening Herriman's open spaces and nearby developments. Historic wooden buildings, particularly older churches or log structures are at risk of fire or structural damage if struck. Outdoor monuments, flagpoles, and trail signage are also vulnerable to strikes or indirect electrical effects.
	Critical Facilities and Infrastructure	*Vulnerability:* Public buildings, schools, and community centers, power, and communication infrastructure are vulnerable to lightning. *Impacts:* Schools, community centers, and utility facilities must ensure appropriate grounding and surge protection to prevent service disruption. Cell towers and radio repeaters serving Herriman's emergency communications are especially at risk. Public safety operations could be interrupted by lightning-related outages if systems are not adequately shielded.
	Community Activities	*Vulnerability:* Outdoor events and recreation are vulnerable to lightning. *Impacts:* Outdoor events, such as summer concerts, youth sports, or community races, may need to be canceled or delayed due to thunderstorm risk. Lightning near public pools or water parks, such as those at local splash pads, can pose life-threatening danger if evacuation procedures aren't in place.
Severe Winter Weather	People	*Vulnerability:* Severe winter weather can affect the entire city, making all residents vulnerable. *Impacts:* Winter storms in Herriman can isolate neighborhoods, particularly those in higher elevations or along steep grades. Older adults, people with disabilities, and individuals who lack vehicle access may be unable to seek supplies or medical care during extended snowfall. Families in mobile homes or in older houses with poor insulation may face heating shortages. Slips and falls or vehicle collisions can cause injuries.
	Structures	*Vulnerability:* All structures are vulnerable to severe winter weather. *Impacts:* Flat-roofed commercial buildings and older residential homes may experience structural strain or roof damage from snow accumulation. Improperly insulated homes are susceptible to frozen pipes, ice dams, and inefficient heating. Detached garages and temporary structures are especially vulnerable to collapse under heavy snow loads.
	Economic Assets	*Vulnerability:* All businesses are at risk from severe winter weather. *Impacts:* Retail and service businesses in Herriman may experience delayed shipments, reduced customer traffic, and staffing issues

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		during snowstorms. Snow and ice buildup can also damage signage, loading docks, and parking structures. Public works departments may face increased costs for plowing, salting, and emergency repairs.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Trees, parks, and historic or cultural structures are vulnerable to severe winter weather. *Impacts:* Heavy snow and ice can cause tree limbs to snap in city parks, damaging habitats and landscapes. Historic structures face deterioration from freeze-thaw cycles. Community gathering spaces and public monuments may become inaccessible due to snowdrifts or ice hazards.
	Critical Facilities and Infrastructure	*Vulnerability:* Roads, power infrastructure, and emergency response systems are vulnerable to severe winter weather. *Impacts:* Key roadways such as Mountain View Corridor are essential for emergency access during snow events. Power outages may occur due to falling branches, while snow-laden roofs on schools and public buildings require prompt maintenance to prevent collapse. Public safety services can be delayed due to impassable side streets and driveways.
	Community Activities	*Vulnerability:* Community events, commuting, and school schedules are vulnerable to disruptions from severe winter weather. *Impacts:* Winter weather frequently disrupts school schedules, community events, and local sports leagues. Travel restrictions and hazardous conditions reduce public participation in city programs and religious gatherings. Vulnerable populations may struggle to access warming centers or emergency aid during prolonged snow events.
Tornado	People	*Vulnerability:* While rare, tornadoes in the Salt Lake Valley region—including Herriman—pose a serious threat when they do occur. All residents within a tornado path are vulnerable. *Impacts:* Tornadoes can cause serious injury or death to people caught in their destructive path. Mobile home residents and those who do not have basements are at elevated risk. Individuals with limited mobility, such as seniors or those with disabilities, may struggle to find shelter quickly. Language barriers and a lack of timely alerts can also hinder preparedness.
	Structures	*Vulnerability:* All structures, particularly those directly in the path of a tornado, are at risk. *Impacts:* Homes with lightweight construction, garages, and commercial structures with large-span roofs (such as gyms or warehouses) may be especially vulnerable. Structures that are not anchored to foundations, such as sheds or temporary trailers, face the highest risk of destruction. Many newer homes may not be built to withstand tornadic winds unless local codes require specific reinforcements.
	Economic Assets	*Vulnerability:* Businesses throughout Herriman are vulnerable to tornadoes. *Impacts:* Damage to homes, retail centers, and transportation corridors can cause significant financial disruption. Businesses may face extended closures if structural repairs are needed. Utility loss following a tornado can further impact local commerce and service delivery.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Natural, Historic, and Cultural Resources	*Vulnerability:* Trees and habitats, as well as historic and cultural sites, are vulnerable to tornadoes. *Impacts:* Herriman's natural landscapes, including trees and open space trails, may be uprooted or damaged by tornado winds. Historical landmarks or older buildings—especially those with brick exteriors or unreinforced walls—may not withstand strong gusts. Community art installations and public parks could also sustain damage from debris.
	Critical Facilities and Infrastructure	*Vulnerability:* Critical facilities, power infrastructure, and roads are vulnerable to tornado impacts. *Impacts:* Schools, fire stations, and healthcare centers with large open areas may be vulnerable to tornadoes and high winds if not designed to specific hazard standards. Damage to water towers, transformers, and power substations could result in cascading service outages. Roads blocked by debris can also hinder emergency response efforts.
	Community Activities	*Vulnerability:* Outdoor markets, festivals, and sports events face high exposure during sudden tornado warnings, especially if safe shelter is not nearby. *Impacts*: Temporary installations such as tents or inflatables can become airborne hazards. Community centers and schools serving as emergency shelters must be ready to handle post-storm response.
Wildfire	People	*Vulnerability:* Much of the west and south perimeter of Herriman is at moderate to high risk of wildfire. Dangerous wildfires have occurred near Herriman previously. Thousands of residents in or near the wildland–urban interface (WUI) are potentially vulnerable. *Impacts:* Wildfire can cause injury or death for those unable to reach safety from flames. Residents may be temporarily displaced due to evacuations, or displaced long-term if homes are destroyed. Residents near the wildland–urban interface (WUI), individuals with physical disabilities or health issues who may struggle to evacuate, and low-income families who lack resources for fire safety measures may be vulnerable. Older adults might have reduced mobility, making them more dependent on others for assistance. People with respiratory conditions may have negative impacts from poor air quality due to wildfire smoke.
	Structures	*Vulnerability:* Hundreds of homes near the WUI are vulnerable in Herriman. *Impacts:* Residential homes, especially those made of wood or located in heavily vegetated areas may be vulnerable. Properties near the WUI are at higher risk due to surrounding flammable vegetation. Inadequate defensible space, such as insufficient clearing of dry grass and shrubs, increases susceptibility. Roofs made of combustible materials and buildings that lack fire-resistant features are particularly at risk during wildfire events.
	Economic Assets	*Vulnerability:* Businesses near the WUI, property values, and agriculture are vulnerable to wildfire impacts. *Impacts:* Residential properties near wildland areas are at high risk, especially if they lack defensible space and fire-resistant landscaping. Commercial assets, such as retail centers close to forested regions, can suffer damage from flames and smoke, affecting the local economy. Agricultural lands also are susceptible, as wildfires can

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		destroy crops and livestock, leading to financial losses. Vital infrastructure, such as power lines and water pipelines, can be disrupted, causing further economic repercussions. These vulnerabilities are heightened by dry conditions and high winds, which can facilitate the spread of fires.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Vegetation and historic and cultural sites are vulnerable to wildfires. *Impacts:* Natural resources like forests and grasslands are at risk because dry vegetation and accumulated brush can easily ignite. Historic sites made of wood and cultural landmarks can also be affected, particularly when located near wildland areas. The increasing frequency of drought and extreme heat, exacerbated by climate change, heightens these vulnerabilities. Urban development that encroaches on wildland areas increases the risk to these essential resources.
	Critical Facilities and Infrastructure	*Vulnerability:* Utility systems and schools in southern Herriman are vulnerable to wildfires. *Impacts:* Schools, healthcare facilities, and emergency services buildings, particularly those near the WUI, may be vulnerable. Utilities like power lines and gas pipelines also are at risk, as sparks or falling trees can ignite fires. Residential neighborhoods adjacent to natural landscapes are particularly susceptible to embers, which makes them vulnerable during dry conditions and high winds.
	Community Activities	*Vulnerability:* Outdoor events and recreation are vulnerable to wildfire impacts. *Impacts:* Outdoor events like festivals and sports, especially during hot, windy conditions may experience risk. Recreational activities, such as hiking and camping near wooded areas, also pose risks from open flames or sparks. In addition, landscaping with dry grasses and shrubs increases susceptibility during fire season, putting local infrastructure, such as schools and neighborhoods, at risk.
Dam Failure	People	*Vulnerability:* Blackridge Reservoir, Juniper Canyon Detention Basin 3, and JVWCD Upper Reservoir are high hazard dams, meaning they have the potential to cause loss of life from a failure. Herriman Springs and JVWCD Lower Reservoir are significant hazard dams, which may result in property damage. Residents located downstream of key dam structures, including areas influenced by the Blackridge and Yellow Fork watersheds, are among the most at risk in the event of a dam failure. *Impacts:* Residents in dam inundation areas could be injured or killed. They may be displaced if homes are damaged. Households with limited mobility may encounter significant challenges evacuating quickly. Populations with limited access to transportation or emergency alerts, including some lower-income residents in rapidly developing subdivisions, may experience delays in response time during a flood emergency triggered by structural dam issues.
	Structures	*Vulnerability:* Structures in lower-lying parts of Herriman and downstream areas, including homes near natural drainage paths and stormwater detention basins, are vulnerable to rapid inundation.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		Impacts: Critical community facilities such as schools, clinics, and fire stations could be affected if they are located in downstream hazard zones or rely on vulnerable access routes. Risk factors include outdated dam components, spillway limitations, and insufficient public alert systems that may not provide adequate warning during a breach.
	Economic Assets	*Vulnerability:* Businesses near inundation areas are vulnerable to dam failure. *Impacts:* A dam failure in or near Herriman could result in severe impacts to roads, utilities, and service corridors. Floodwaters may damage homes, small businesses, and industrial areas, leading to high repair costs and business interruptions. Irrigated lands and community gardens could suffer extensive losses if water supplies are disrupted or contaminated. Businesses dependent on water infrastructure may face temporary closures and financial setbacks.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Waterways, habitats, and historic and cultural sites are vulnerable to dam failure. *Impacts:* Streams, stormwater channels, and natural reserves near dam spill zones may experience habitat destruction and soil erosion following a failure event. Historical irrigation structures or remnants of early settler infrastructure could be washed out or irreparably damaged. Public gathering spaces, including parks or amphitheaters downstream of reservoirs, may be rendered unsafe or unusable following flood events.
	Critical Facilities and Infrastructure	*Vulnerability:* Water systems and transportation networks are vulnerable to dam failure. *Impacts:* Essential services, including water pumping stations, schools, and healthcare centers could face direct or indirect impacts from dam-related flooding. Inundation of critical facilities may force emergency evacuations, disrupt utility services, and compromise health and safety. In addition, neighborhood access roads could be washed out, delaying emergency responders and impeding evacuation routes for entire subdivisions.
	Community Activities	*Vulnerability:* Outdoor events and recreation activities are vulnerable to dam failure. *Impacts:* Outdoor recreation near reservoirs and detention basins may be disrupted or become dangerous during periods of high risk. Parks located along natural drainage routes or stormwater channels could be flooded with little warning. Community events and day-to-day travel could be severely affected if major routes are flooded, which could isolate neighborhoods and interfere with public services and transportation networks.
Civil Disturbance	People	Low-income individuals may lack the resources for safety, while the elderly or disabled may struggle to navigate emergencies. Young people, particularly teenagers, may be drawn into unrest, influenced by social dynamics. In addition, marginalized individuals may feel targeted or compelled to participate. A lack of community cohesion and trust in authorities can further heighten tensions.

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Structures	Government buildings, commercial properties, and infrastructure, such as bridges and transportation hubs may be vulnerable. Government buildings may be targeted for their symbolic authority, while retail stores can attract crowds during protests. Residential neighborhoods also can be affected, especially in areas with heightened tensions. The vulnerability of these structures stems from their visibility and importance to the community, combined with factors such as location and ongoing social issues.
	Economic Assets	Retail establishments, especially shopping centers, are at risk as they often become focal points for protests. Transportation systems can be disrupted by blockades, hindering access to services. Financial institutions may face vandalism or theft, while critical service providers, such as healthcare facilities, could experience strain during unrest. Several economic assets are vulnerable to civil disturbances, primarily due to their visibility and reliance on foot traffic.
	Natural, Historic, and Cultural Resources	Parks and open spaces may suffer from vandalism or destruction during uncontrolled events. Historic sites can become targets, as they symbolize authority or cultural significance. Cultural resources such as community centers and places of worship may also be affected, as they play a vital role in community identity. Their vulnerability lies in the potential for damage during protests.
	Critical Facilities and Infrastructure	Governmental buildings, schools, and healthcare facilities may be at risk, since they often symbolize authority and serve as community hubs, making them targets during unrest. Utility infrastructure, such as water and power facilities, is also at risk of disruption. Its visibility and essential services contribute to its vulnerability during civil disturbances.
	Community Activities	Public demonstrations, parades, and local government meetings are particularly vulnerable to civil disturbances. These events often attract large crowds and can become tense, especially around contentious social or political issues. Factors such as the local demographic, economic conditions, and recent events can heighten these vulnerabilities, making it easier for conflicts to arise during passionate public gatherings.
Cyberattack	People	Older adults often lack familiarity with technology and online security, making them easy targets for phishing scams. Individuals engaging in online banking or shopping without strong security measures also face heightened risks. Families with children may be less vigilant about internet safety, allowing cybercriminals to exploit personal information. In addition, small business owners without robust cybersecurity practices are prime targets for attacks that can disrupt operations.
	Structures	Critical infrastructure, such as power plants, water treatment facilities, and transportation systems, often lack robust cybersecurity measures. Commercial businesses, especially financial institutions and healthcare providers are at risk due to weaker data protection and employee training. Educational institutions may be vulnerable because of limited funding for cybersecurity and outdated software. Obsolete technology and insufficient training enhance the susceptibility of these structures to cyber threats.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Economic Assets	Financial institutions, such as banks and credit unions, are at risk of data theft and service disruption. Small and medium-sized businesses often lack robust cybersecurity measures, making them attractive targets. In addition, local government agencies and critical infrastructure, such as water treatment facilities, might have outdated security protocols, posing threats to public safety. The rise of remote work further exacerbates vulnerabilities, as employees accessing networks from home can unintentionally expose systems to risks. Overall, the combination of outdated technology and insufficient cybersecurity practices increases the vulnerability of an area's economic assets.
	Natural, Historic, and Cultural Resources	Natural resources like water management systems and wildlife databases can be compromised, disrupting ecosystems. Historic sites and museums that digitize collections are at risk of losing valuable artifacts and data. In addition, cultural organizations managing events may face threats if their systems lack adequate security. The limited resources of smaller organizations further increase this vulnerability
	Critical Facilities and Infrastructure	Energy and utility services, such as electricity and water systems, which often rely on outdated technology, may be vulnerable. Transportation infrastructure, such as traffic management and public transit, is also at risk due to networked systems. Healthcare facilities that use electronic records and connected medical devices face vulnerabilities that can compromise patient safety.
	Community Activities	Online registration for events, local government services, and educational programs that rely on digital tools may be targeted due to inadequate security measures, outdated software, and insufficient staff training.
Hazardous Materials Incident (Transporta-tion & Fixed Facility)	People	Individuals with pre-existing health conditions, such as respiratory issues, and the elderly are at higher risk due to their compromised health. Children also are more susceptible. Those living near industrial areas or transport routes for hazardous materials face increased exposure risk, while low-income families may lack resources and information to effectively prepare for incidents.
	Structures	Industrial facilities, such as manufacturing plants and warehouses, often store hazardous chemicals which may leak. Residential buildings, schools, and healthcare facilities also are at risk, particularly if located along transportation routes for hazardous materials. Older buildings may lack modern safety features, increasing their vulnerability.
	Economic Assets	Industrial facilities, transportation infrastructure, and nearby commercial properties may be affected. Industrial facilities handling chemicals are at risk of spills or leaks, while roads and railways used for transporting hazardous materials can lead to accidents and contamination. In addition, nearby commercial and residential areas face potential health risks and economic losses.
	Natural, Historic, and Cultural Resources	Waterways and habitats are vulnerable to hazardous materials incidents, which can disrupt ecosystems. Historic sites and structures may suffer damage from toxic exposure, leading to degradation over time. In addition, cultural landmarks risk losing their significance due to

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		contamination events. The proximity of these resources to industrial areas or transport routes exacerbates their risk.
	Critical Facilities and Infrastructure	Chemical manufacturing plants, waste treatment facilities, and transportation networks, such as highways and railroads may be at risk. Their vulnerability stems from factors such as proximity to residential areas, aging infrastructure, and inadequate safety measures. Natural hazards, such as flooding and earthquakes, can further increase risks by damaging containment systems.
	Community Activities	Local markets, school events, and outdoor gatherings are vulnerable to hazardous materials incidents if they are near industrial zones and transport corridors. This risk is heightened by inadequate emergency preparedness, lack of public awareness, and the potential for spills during transport. Large crowds at events can complicate evacuation efforts, increasing the risks for participants and nearby residents.
Public Health Epidemic/ Pandemic	People	Individuals with pre-existing health conditions like asthma and heart disease and adults over 65 may be vulnerable. Low-income families may struggle to access healthcare and vaccinations, increasing their risk. Marginalized communities with limited access to information and those living in high-density conditions also are at greater risk due to the rapid spread of diseases and the challenges in implementing preventive measures.
	Structures	Several structures are vulnerable to public health epidemics or pandemics, particularly due to their ability to facilitate the spread of disease. High-density residential areas, such as apartment complexes, are at risk, as close living quarters can lead to faster transmission. Public gathering spaces, such as schools and community centers, also pose significant threats because large groups are in confined spaces. Healthcare facilities can become hotspots for infections if infection control measures are insufficient. In addition, workplaces with high foot traffic, such as retail stores, contribute to vulnerability.
	Economic Assets	Small businesses in retail, hospitality, and food service are particularly vulnerable to public health epidemics or pandemics. These sectors face risks from fluctuating consumer demand and potential operational restrictions. The tourism industry also is affected, as travelers may avoid high-risk areas. Healthcare facilities can become overwhelmed, straining resources and impacting operations. In addition, local supply chains may experience disruptions, leading to shortages and inflation. Overall, the direct effects of illness, along with prolonged shutdowns and consumer hesitance, leave these economic assets exposed to significant downturns.
	Natural, Historic, and Cultural Resources	Natural resources like wildlife and ecosystems can be disrupted by increased human activity, raising the risk of zoonotic diseases. Historic sites may deteriorate due to reduced visitor access and funding, while cultural resources, such as community events, face cancelations, impacting social connections.
	Critical Facilities and Infrastructure	Public health epidemic or pandemic incidents can affect healthcare facilities, nursing homes, public transportation systems, schools, and food supply chains. Healthcare facilities and clinics may become overwhelmed with patients, while vulnerable populations in nursing homes are at higher risk. Public transportation can facilitate the spread

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		of disease, and schools gather large groups, thereby increasing transmission potential. These facilities often lack adequate resources, including medical supplies and testing capabilities, making them more susceptible to the impacts of a health crisis.
	Community Activities	Large gatherings like festivals and sporting events can facilitate the rapid spread of diseases due to close contact. Public transportation also is at risk, as it serves many people in confined spaces. Schools and childcare facilities are particularly susceptible, given that children can easily transmit infections. In addition, food-related events, such as farmers' markets, can pose risks if hygiene practices are not followed. The interconnectedness of community members and varying adherence to health guidelines further exacerbate these vulnerabilities.
Terrorism	People	Young children and newcomers may lack awareness of potential threats, while the elderly and individuals with disabilities may struggle to respond quickly in emergencies. Marginalized communities often face bias, making them more susceptible to targeting. In addition, those with lower socioeconomic status may lack access to security measures and emergency preparedness resources.
	Structures	Government buildings, transportation hubs, commercial centers, and public spaces are particularly vulnerable to terrorism incidents. Government buildings are symbolic targets, while transportation hubs and commercial centers are attractive due to their potential for high casualties and crowd presence. Public spaces also are at risk due to their open nature and lack of security. Their vulnerability is heightened by inadequate security measures, high occupancy rates, and their locations in densely populated areas, which can amplify the impact of incidents.
	Economic Assets	Infrastructure, commercial establishments, and community facilities may be vulnerable. Critical infrastructure, such as transportation networks and power grids, could disrupt the economy if targeted. Commercial establishments, especially those with high foot traffic, and community facilities like schools and healthcare facilities also are at risk, as they can provoke widespread concern and disruption. Their accessibility and interconnectivity increase vulnerability, meaning that damage to one asset can have a broader economic impact and hinder recovery efforts.
	Natural, Historic, and Cultural Resources	Natural resources like water supplies and parks could be targeted for their significance to the community. Historic sites and cultural resources, such as museums or community centers, also are at risk due to their accessibility and importance to local identity. Their vulnerability is often heightened by inadequate security measures.
	Critical Facilities and Infrastructure	Public transportation systems, healthcare facilities, schools, and utility services like water and power plants may be affected. Their vulnerability arises from high accessibility and the potential impact of an attack, as crowded transportation and public spaces can lead to mass casualties and panic. Attacking utility services could disrupt the town's essential functions, creating chaos.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Community Activities	Festivals, parades, and sporting events are particularly vulnerable to terrorism incidents. These events attract large crowds, making it easier for perpetrators to inflict harm and instill fear. In addition, community centers and places of worship serve as social hubs, increasing their risk. Factors such as limited security measures and open access to public spaces, contribute to this vulnerability.

Jurisdiction-Specific Changes in Vulnerability

Hazard events can impact communities, infrastructures, and ecosystems. The severity of these impacts can be influenced by climate change, population patterns, and land use developments. Understanding these factors is crucial for the city of Herriman to develop a resilient community and minimize the impacts of hazards. Table 9 displays the unique changes within the community and the related effects on each identified hazard affecting the city of Herriman.

DRAFT

Table 9: Jurisdiction-Specific Changes in Vulnerability in the City of Herriman

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
Avalanche	Higher temperatures can lead to more rain, destabilizing snowpack and increasing the risk of wet avalanches. In addition, changes in snowfall can cause denser snow layering on slopes, making them more prone to sliding.	Avalanches can influence population patterns by deterring people from moving to or remaining in high-risk areas, leading to decreased density in these locations. The threat of avalanches prompts many to seek safer environments in urban or lower-risk regions. In addition, when avalanches occur, they can disrupt infrastructure, causing residents to relocate.	Although Herriman has experienced increased development and land use, it has not altered the risk of avalanches.	Same
Drought	Climate change affects drought incidents by altering precipitation patterns and increasing temperatures. Warmer weather can lead to longer dry periods and more severe droughts, while changes in rainfall can reduce snowpack in nearby mountains, crucial for summer water supply. Higher temperatures also increase evaporation rates, further straining local water resources.	Drought can significantly influence population patterns by impacting economic opportunities and the quality of life. Water scarcity often leads to reduced agricultural productivity, prompting residents to migrate to areas with more stable job prospects. Increased water costs can make living less affordable, driving some residents away. Conversely, efforts to address drought, such as sustainable development or improved water management, may attract newcomers, resulting in changes in the community's demographic composition over time.	More businesses and residences in Herriman have led to increased water demands and a heightened drought risk.	Increased
Earthquake	Rising temperatures can lead to glacial melting, which affects pressure on tectonic plates and may trigger	Earthquakes can significantly alter population patterns by prompting residents to leave for safer areas after a seismic event.	There has been a lot of new development in Herriman since the previous hazard mitigation plan, which increases	Stayed the same

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	seismic activity through isostatic rebound. In addition, increased rainfall and flooding can erode soils, weakening structural integrity and heightening vulnerability during earthquakes. Although the direct links between climate change and earthquakes are still under investigation, environmental effects may impact the region's seismic risk.	This migration can lead to changes in population density and attract new residents and businesses during the rebuilding process. The perception of the area as a safe place to live may shift, impacting long-term demographics, as some residents return to rebuild while others relocate permanently.	earthquake risk. However, these new developments have been built to 2021 building standards, including earthquake safety measures. These measures mitigate the risk of earthquake damage.	
Extreme Heat	Climate change significantly impacts extreme heat by increasing the frequency and intensity of heat waves. Rising global temperatures lead to longer and hotter summers, affecting residents and local infrastructure while heightening health risks, especially for vulnerable populations. Urban heat islands from reduced vegetation and extensive pavement further amplify these effects.	By causing residents to relocate due to damaged homes or safety concerns. Some may move to areas perceived as safer or seek better job opportunities elsewhere. The economic impact and infrastructure damage can also make certain neighborhoods less desirable, leading to shifts in demographics and the socioeconomic landscape as new residents with different backgrounds move in.	Increased development can lead to more extreme heat due to the urban heat island effect.	Increased
Extreme Cold	By increasing the intensity of winter storms. Higher atmospheric temperatures allow for more moisture, resulting in heavier snowfall and potentially lower temperatures during these events. In addition,	By driving some residents to relocate to warmer areas. Harsh winters can hinder economic activities and deter new residents and businesses, influencing housing demand and the attractiveness of certain neighborhoods. This may	New developments like the Olympia Housing Development put a strain on the electric grid during extreme cold events increasing risk of dangerous power outages.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	fluctuations in weather patterns may disrupt seasonal cycles, leading to unpredictable periods of extreme cold mixed with warmer spells.	disproportionately affect lower-income families, leading to changes in demographics and socioeconomic stratification in the community.		
Flooding	Higher temperatures increase the frequency and intensity of extreme weather events and alter precipitation patterns. They lead to more intense rainstorms and accelerated snowmelt from nearby mountains, raising water levels in rivers and streams. This combination raises the risk of flooding, especially in areas with inadequate drainage and urban development in flood-prone zones, heightening the potential for damage to homes and infrastructure.	Flooding can significantly alter population patterns by displacing residents from affected areas, leading them to seek shelter elsewhere. This may cause a population decline where flooding occurs, as individuals might hesitate to return due to ongoing risks or property damage. As neighborhoods become less desirable, people may migrate to safer areas, changing demographic trends and putting pressure on housing in those regions. Over time, these shifts can influence urban planning and development, as local governments address flooding risks and changing population needs.	New development is not located in flood zones and is at low risk of flooding.	Decreased
Landslide/ Slope Failure	Climate change increases the risk of landslides through heavier rainfall and temperature fluctuations. Intense rain saturates soil, destabilizing slopes, while freeze–thaw cycles weaken the ground. Changes in vegetation can also reduce	Landslides and slope failures can impact population patterns by making some areas unsafe, leading to displacement and lower property values. This prompts residents to move to safer regions, thereby increasing density in more stable areas. Concerns about future landslides may also deter newcomers from	Increased development on the western edge of Herriman has increased the risk of landslides.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	stability, leading to a higher potential for landslides.	high-risk zones, shaping long-term demographic trends.		
Radon	Climate change can affect radon levels by altering soil temperatures and moisture conditions. Higher temperatures may increase radon emissions from the ground, while heavy rainfall can change groundwater and soil saturation, impacting radon migration into buildings.	Radon exposure can influence population patterns as increased health awareness may drive families to move away from areas with high radon levels. This shift could particularly affect vulnerable groups, changing demographics and demand in the housing market. Homes with lower radon levels may become more sought after, and public health campaigns can encourage community action, making previously undesirable areas more attractive once mitigation measures are implemented.	Changes in development has not changed risk of radon.	Same
Heavy Rain	Climate change increases the frequency and intensity of heavy rain, as higher temperatures allow the atmosphere to hold more moisture. This leads to stronger storms, flash flooding, and overwhelmed drainage systems.	Heavy rain can shift population patterns by pushing residents out of flood-prone areas and attracting them to safer neighborhoods. Frequent flooding may lead to evacuations and economic disruptions, prompting relocations. Over time, ongoing heavy rains can affect housing demand and community stability, altering the city's population distribution.	More impervious surfaces may lead to an increased risk of pluvial flooding.	Increased
High Wind	Climate change affects high winds by altering atmospheric patterns and increasing extreme weather events. Rising temperatures may lead to more substantial,	High winds can alter population patterns by making certain areas less desirable. Frequent damage may drive residents to safer neighborhoods, deter	Increased development with taller buildings has increased the risk of damage from high winds.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	unpredictable winds and more frequent thunderstorms, posing risks to infrastructure and air quality.	newcomers, and slow growth in affected regions.		
Lightning	Climate change increases temperatures and alters precipitation, leading to more intense thunderstorms and frequent lightning strikes. Urbanization can enhance this effect, posing risks to public safety and infrastructure.	Lightning can influence population patterns by causing property damage and wildfires, leading some residents to relocate. Areas with higher lightning activity may deter new residents, while safer locations could increase migration as people seek protection from severe weather.	Increased development with taller buildings has increased the risk of damage from lightning strikes.	Increased
Severe Winter Weather	Climate change impacts heavy snow and blizzards by altering precipitation patterns. Higher temperatures can lead to more rain than snow, affecting snowpack levels—additionally, increased storm intensity results in heavier, more unpredictable snowfall.	Increased population equals an increased number of people needing to get to work and quicker snow removal. Heavy snow or blizzards can impact population patterns by influencing where people live and work. Transportation disruptions may lead residents to seek housing closer to jobs, increasing density in some areas while depopulating others. Families might also avoid regions with frequent heavy snowfall, shifting demand to milder areas. Over time, these trends can alter community demographics and economic activity, prompting adjustments in town planning and resource allocation.	New developments like the South Herriman and Olympia require the city to plow more and provide evacuations in the event of heavy snow.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
Tornado	Climate change may increase the frequency and intensity of tornadoes. Higher temperatures lead to more moisture in the air, creating conditions for severe thunderstorms. Changes in wind patterns and precipitation can also heighten tornado risks, resulting in more destructive storms and greater threats to infrastructure and communities.	Tornadoes can influence population patterns by prompting residents to move to safer areas after damage occurs. This can decrease density in affected neighborhoods while increasing the demand for housing in safer regions. New residents may also move in for recovery opportunities, altering demographics. Over time, repeated tornado threats might push long-term residents to areas with better disaster preparedness, reshaping the town's population distribution.	Increased development has led to more structures at risk from tornadoes.	Increased
Wildfire	By raising temperatures and creating drier conditions, prolonged droughts lead to more dry vegetation, which serves as fuel for fires. Erratic seasons extend the growing period, while more lightning strikes can ignite wildfires. These factors heighten the threat to ecosystems and community safety.	Displaced individuals often seek safer areas, shifting demographics, while declining property values might deter newcomers. Conversely, some may be drawn to rebuilding efforts, impacting long-term growth and community dynamics.	Developments like Olympia in eastern Herriman are at higher risk of wildfire than other neighborhoods in Herriman.	Increased
Dam Failure	Climate change raises the risk of dam failure by causing heavier rainfall and rapid snowmelt. These changes can overwhelm dams and compromise their integrity, highlighting the need for urgent safety assessments	Dam failure can impact population patterns by displacing residents and altering demographics. Evacuations can lead to an influx in safer areas, while destruction may deter new residents and contribute to population decline. Fear of future disasters may also prompt	New developments do not increase the risk of dam failure.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	and upgrades to protect communities downstream.	remaining individuals to relocate, changing the community's composition and affecting population density and economic activity.		
Civil Disturbance	Climate change can increase civil disturbances by intensifying environmental stresses and social tensions. Rising temperatures may lead to droughts, wildfires, and poor air quality, particularly affecting vulnerable communities. Resource scarcity, especially water, can spark conflicts and protests. In addition, an influx of migrants from harder-hit areas may strain local resources, further escalating tensions. This cycle of unrest is driven by the impacts of climate change on the environment and community dynamics.	By encouraging residents to move for safety, leading to outflows and new arrivals. These events can reveal social issues, impacting community dynamics, employment, and property values, ultimately reshaping demographics, and social cohesion.	New developments do not increase the risk of civil disturbances.	Increased
Cyberattack	Possible attack on the industry, which is seen as producing large amounts of greenhouse gases and burning fossil fuels. Climate change can heighten cyberattack risk by increasing vulnerabilities during extreme weather. Disruptions like power outages offer cybercriminals opportunities,	Cyberattacks can change population patterns by eroding trust in essential services. Compromised systems may cause residents to leave due to safety concerns, while high-profile incidents can deter businesses, leading to job losses. This perception of vulnerability may also make the town less appealing to	New developments do not increase the risk of cyberattacks.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	but focusing on emergency responses can weaken cybersecurity measures. As organizations adopt new technologies to cope with climate impacts, they may unintentionally introduce additional vulnerabilities.	newcomers, resulting in demographic shifts and affecting local development.		
Hazardous Materials Incident (Transportation & Fixed Facility)	Climate change elevates the risk of hazardous materials incidents by increasing extreme weather events like heavy rain and wildfires. These events can breach storage tanks and heighten material volatility. Vulnerable infrastructure can lead to more spills or accidents, while climate shifts may also introduce new challenges for managing hazardous substances and public health.	By causing evacuations and temporary declines in density. In the long run, unsafe areas may deter new residents, affecting growth and diversity. In addition, negative perceptions can lower property values and economic prospects, leading families to relocate, which impacts local demographics.	New developments do not increase the risk of hazardous materials incidents.	Increased
Public Health Epidemic/ Pandemic	By increasing the spread of vector-borne diseases and raising the risk of waterborne illnesses due to flooding or drought. Worsening air quality can also exacerbate respiratory conditions like asthma, especially in vulnerable populations.	By prompting migration for safety and better healthcare. Vulnerable groups may move to areas with improved services, while economic instability can drive people to seek new employment opportunities. In addition, restrictions like quarantine measures can limit movement and social interactions, reshaping the community's demographics and impacting local economies.	New developments do not increase the risk of pandemics/epidemics.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
Terrorism	Terroristic activity is sometimes centered around climate change. Climate change impacts terrorism incidents by creating conditions of resource scarcity and social unrest. Increased competition for essential resources, such as water, can fuel tensions, making communities more vulnerable to extremist ideologies. Extreme weather events may disrupt social order and infrastructure, offering terrorist groups opportunities to exploit crises. In addition, climate-driven population displacement can heighten tensions in receiving areas, raising the risk of domestic terrorism. Law enforcement's focus on climate-related challenges can also limit its capacity to address terrorism threats. Ultimately, while climate change may not directly cause terrorism, its effects can create an environment conducive to extremist activities.	Terrorism incidents can alter population patterns by instilling fear and prompting residents to relocate to perceived safer areas, resulting in demographic shifts and potential declines in property values. Some neighborhoods may see an outflow of residents, while others could experience an influx of people seeking refuge from violence. In addition, increased security measures may deter businesses and residents from certain locations, leading to long-term changes in population density and urban development patterns.	New developments do not increase the risk of terrorism incidents.	Increased

DRAFT

Additional Public Involvement

Public involvement in Herriman is vital to fostering community awareness and preparedness. The city actively engages residents through various initiatives and platforms.

One key component is the community newsletter, which effectively disseminates important information, event announcements, and safety tips. This newsletter keeps residents informed about local issues, programs, and opportunities for involvement, ensuring everyone stays connected and engaged with the happenings in Herriman.

Herriman also participates in various Hazard Awareness Campaigns, such as Firewise, StormReady, and Severe Weather Awareness Week. These campaigns educate the community about the risks associated with wildfires, storms, and severe weather events. They provide residents with crucial information on preparing their homes and families for emergencies, promoting safety and resilience.

Schools in Herriman play a significant role in public involvement. Educational programs and activities focused on safety awareness teach students about natural hazards, emergency preparedness, and community responsibility, instilling these values at a young age.

Public meetings and events, like the Health and Safety Fair, offer residents a platform to learn more about health resources, safety practices, and emergency preparedness. These gatherings foster community spirit and encourage dialogue between residents and local officials, enhancing transparency and collaboration.

Furthermore, local news and social media are essential to informing the community. Social media platforms allow for real-time information sharing, updates on public safety initiatives, and engagement with the public. Local news outlets also play a crucial role in covering events and announcements, ensuring all residents can access important information.

Through these various channels of involvement, Herriman fosters a well-informed and prepared community, emphasizing the importance of safety and collaboration among its residents.

Specifically as part of this plan update, Herriman City shared an announcement about the plan update and an opportunity to participate in the public outreach survey via social media and the city website (see Figure 1 and Figure 2). This information was also in the City Journal mailer.

DRAFT

Figure 1: Social Media Post for the Hazard Mitigation Survey

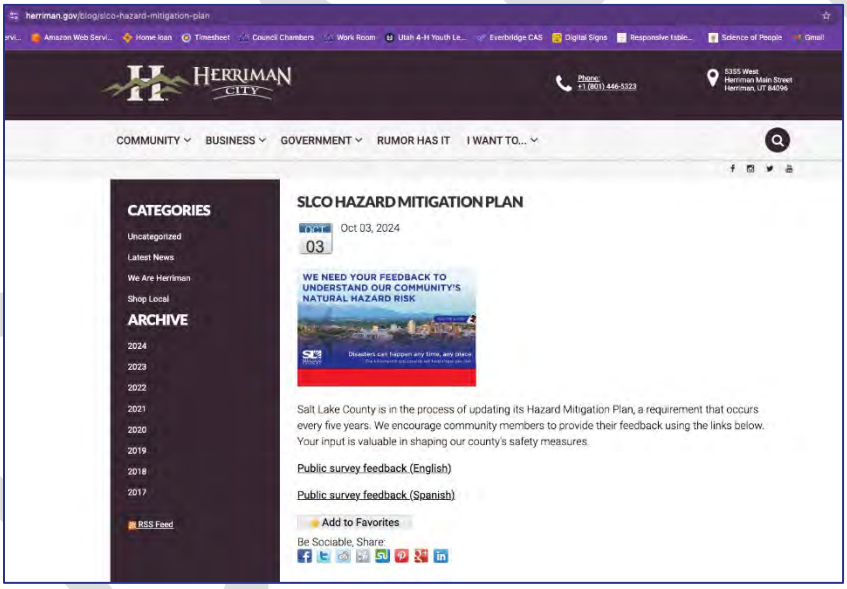


Figure 2: Website Post Announcing Plan Update and Public Survey

Plan Integration

Incorporating the underlying principles of the Hazard Mitigation Plan and its recommendations into other plans is a highly effective and low-cost way to expand their influence. All plan participants will use existing methods and programs to implement hazard mitigation actions where possible. As previously stated, mitigation is most successful when it is incorporated into the day-to-day functions and priorities of government and public service. This plan builds on the momentum developed through previous and

related planning efforts and mitigation programs, and it recommends implementing actions where possible through these other program mechanisms. These existing mechanisms include the following:

- Regularity Capabilities
- Administrative Capabilities
- Fiscal Capabilities

Respective planning stakeholders will conduct implementation and incorporation into existing planning mechanisms and will be done through the routine actions of:

- Monitoring other planning/program agendas
- Attending other planning/program meetings
- Participating in other planning processes; and
- Monitoring community budget meetings for other community program opportunities.

The successful implementation of this plan will require constant and vigilant review of existing plans and programs for coordination and multi-objective opportunities that promote a safe, sustainable community. Regular efforts should be made to monitor the progress of mitigation actions implemented through other planning mechanisms. Where appropriate, priority actions should be incorporated into planning updates. Table 9 lists existing planning mechanisms in which the Hazard Mitigation Plan has been integrated. Table 10 lists the opportunities for integrating elements of this plan into other plans.

Table 9: Previous Plan Integration by the City of Herriman

Plan	Description
Comprehensive Emergency Management Plan (CEMP) (https://www.utah.gov/pmn/files/1172293.pdf)	The CEMP establishes the framework through which Herriman City responds to and recovers from emergencies. It incorporates hazard mitigation strategies to enhance community resilience.
Be Ready Herriman Program (https://www.herriman.gov/be-ready-herriman)	This program focuses on community preparedness, offering meetings, training, drills, and organizing emergency response efforts. It integrates hazard mitigation by educating residents and promoting proactive measures to reduce risks.
Flood Hazard Mitigation Study (https://www.herriman.gov/blog/city-council-recap-2-12-25)	Herriman City has initiated this study to assess potential flooding risks, evaluate infrastructure improvements, and recommend preventive measures. This study is a direct implementation of hazard mitigation actions aimed at reducing flood risks.
2025 General Plan Amendment (https://www.herriman.org/uploads/files/1621/2025GPAmend.pdf)	The amendment outlines long-term development goals and policies. It integrates hazard mitigation by addressing fire risks in adjacent unincorporated areas and promoting sustainable land use planning.
Storm Water Management Program Plan (https://www.herriman.org/u	This plan describes the city's approach to managing stormwater to prevent flooding and water pollution. It includes hazard mitigation

Plan	Description
ploads/files/4318/Appendix-IndexDraft-2024-0213.pdf)	measures such as infrastructure improvements and regulatory policies to manage stormwater effectively.

Table 10: Future Plan Integration Opportunities for the City of Herriman

Plan	Description
General Plan	The General Plan outlines long-term development goals and policies. It can integrate hazard mitigation strategies by incorporating land use planning, infrastructure resilience, and hazard-prone area restrictions.
Capital Improvement Plan	This plan guides infrastructure investments. It can integrate hazard mitigation by prioritizing resilient infrastructure, flood control projects, and seismic retrofits.
Community Wildfire Protection Plan	Provides guidance on fire hazard areas and evacuation zones. It can be further integrated by aligning mitigation efforts with wildfire-prone areas and emergency preparedness initiatives.
Local Emergency Operations Plan	Outlines emergency response and preparedness efforts. It can incorporate hazard mitigation strategies for disaster response coordination, evacuation procedures, and community preparedness initiatives.
Stormwater Management Plan	Addresses stormwater infrastructure and drainage concerns. It can support flood mitigation strategies, stormwater retention projects, and erosion control measures.
Land Use Plan	Defines zoning and development regulations. It can integrate hazard mitigation by restricting development in high-risk areas and incorporating resilient building requirements.

Capability Assessment

Local mitigation capabilities are existing authorities, policies, programs, and resources that reduce hazard impacts or could help carry out hazard mitigation activities.

Planning and Regulatory Capabilities

Planning and regulatory capabilities are the plans, policies, codes, and ordinances that prevent and reduce the impacts of hazards.

Table 10: Assessment of the Planning Capabilities of the City of Herriman

Plan	Does it address hazards? (Y/N)	How can it be used to implement mitigation actions?	When was the last update?	When is the next update?
General Plan	Y	Guides land use, zoning, and infrastructure planning with mitigation in mind	2020	Fall 2024 (CEMP)

DRAFT

Plan	Does it address hazards? (Y/N)	How can it be used to implement mitigation actions?	When was the last update?	When is the next update?
Capital Improvement Plan	Y	Funds infrastructure projects that reduce risk (e.g., stormwater improvements)	2024	As needed – city council reviews capital improvement projects each year
Climate Change Adaptation Plan	N	N/A	N/A	N/A
Community Wildfire Protection Plan	Y	Provides guidance on fire hazard areas to address and evacuation zones, and defensible space	2020	TBD
Economic Development Plan	Y- in General Plan	Could include hazard risk reduction strategies for business continuity	2020	The General Plan is reviewed annually.
Land Use Plan	Y	Influences zoning and development in hazard-prone areas	Ongoing	Area-specific updates (during build out) conducted annually.
Local Emergency Operations Plan	Y	Guides emergency response and preparedness efforts	2021	Fall 2024 (CEMP)
Stormwater Management Plan	Y	Manages flooding and water quality impacts	2022	2026
Transportation Plan	N	Could inform priority areas for mitigation actions as far as high traffic or high population areas	2019	Reviewed annually
Substantial Damage Plan	N	N/A	N/A	N/A
Other? (Describe)				

Table 11: Assessment of the Regulations and Ordinances of the City of Herriman

Regulation/ Ordinance	Does it effectively reduce hazard impacts?	Is it adequately administered and enforced?	When was the last update?	When is the next update?
Building Code	Y; Herriman effectively enforces the following codes:	Y	2021	2026

DRAFT

Regulation/ Ordinance	Does it effectively reduce hazard impacts?	Is it adequately administered and enforced?	When was the last update?	When is the next update?
	• 2021 International Residential Code (IRC), including Appendix E & Q • Residential provisions of the 2021 International Swimming Pool & Spa Code (ISPSC) • 2021 International Energy Conservation Code (IECC) • 2020 National Electrical Code (NEC) • 2021 International Building Code (IBC), including Appendix C & J • 2021 International Plumbing Code (IPC) • 2021 International Mechanical Code (IMC) • 2021 International Fuel Gas Code (IFGC) • Commercial provisions of the 2021 International Energy Conservation Code • 2021 International Existing Building Code (subject to HUD & IRC Appendix E) • ICC / ANSI A117.1-2009 and A117.1-2017 • Applicable Utah State Amendments			
Flood Insurance Rate Maps	Y	Y	2021	2025/TBD
Floodplain Ordinance	Yes	Y	2025	TBD
Subdivision Ordinance	Y	Y	2024	TBD
Zoning Ordinance	Y	Y	2022	TBD
Natural Hazard-Specific Ordinance (Stormwater, Steep Slope, Wildfire)	Y	Y	2020 (partial including stormwater and fire)	TBD
Acquisition of Land for Open Space and	Y	Y	2025 (Herriman City General	TBD

DRAFT

Regulation/ Ordinance	Does it effectively reduce hazard impacts?	Is it adequately administered and enforced?	When was the last update?	When is the next update?
Public Recreation Use			Plan Amendment)	
Prohibition of Building in At-Risk Areas	Y	Y	2020	TBD
Other? (Describe)				

Administrative and Technical Capabilities

Administrative and technical capabilities include staff and their skills. They also include tools that can help carry out mitigation actions.

Table 12: Assessment of the Administrative Capabilities of the City of Herriman

Administrative Capability	In Place? (Y/N)	Is staffing adequate?	Are staff trained on hazards and mitigation?	Is coordination between agencies and staff effective?
Chief Building Official	Y	Y	Y	Y
Civil Engineer	Y	Y	Y	Y
Community Planner	Y	Y	Y	Y
Emergency Manager	Y	Shared duty with other tasks, needs full time attention	limited	Needs improvement
Floodplain Administrator	Y	Y	Y	Y
Geographic Information System (GIS) Coordinator	Y	Y	Y	Y
Planning Commission	Y	Y	Y	Y
Fire Safe Council	N – fire service provided by UFA	N/A	N/A	N/A
CERT (Community Emergency Response Team)	Y	Limited participation	No	Need improvement
Active VOAD (Voluntary Agencies Active in Disasters)	Y	Y	Y	Y
Other? (Please describe.)				

DRAFT

Table 13: Assessment of the Technical Capabilities of the City of Herriman

Technical Capability	In Place? (Y/N)	How has it been used to assess/mitigate risk in the past?	How can it be used to assess/mitigate risk in the future?
Mitigation Grant Writing	Y	Operational costs, stormwater management, flood hazard study	Needs development for accessing federal and state funding
Hazard Data and Information	Y	Identification of areas to prioritize for mitigation actions	Can be used to improve risk assessments and mitigation planning
GIS	Y	Used for mapping hazards, evacuation zones, and risk areas	Can enhance emergency response and land use planning
Mutual Aid Agreements	Y	Used to secure emergency resources and partnerships with local entities (e.g., agreements with local grocery stores to reserve emergency water supplies, shelters with religious buildings, and RSL Academy)	Can be expanded to ensure water, food, shelter, transportation, medical services, fuel, communication, and law enforcement support during emergencies (i.e., pre-arranged contracts for critical resources and services)
Other? (Please describe.)			

Financial Capabilities

Financial capabilities are the resources to fund mitigation actions. Talking about funding and financial capabilities is important to determine what kinds of projects are feasible, given their cost. Mitigation actions like outreach programs are lower cost and often use staff time and existing budgets. Other actions, such as earthquake retrofits, could require substantial funding from local, state, and federal partners. Partnerships, including those willing to donate land, supplies, in-kind matches, and cash, can be included.

Table 14: Assessment of the Financial Capabilities of the City of Herriman

Funding Resource	In Place? (Y/N)	Has it been used in the past and for what types of activities?	Could it be used to fund future mitigation actions?	Can it be used as the local cost match for a federal grant?
Capital Improvement Project Funding	Y	Stormwater management	Y	Y
General Funds	Yes	Funding various city services, including emergency management and animal services.[6]	Y	Y

[6] https://www.utah.gov/pmn/files/1172293.pdf.

Funding Resource	In Place? (Y/N)	Has it been used in the past and for what types of activities?	Could it be used to fund future mitigation actions?	Can it be used as the local cost match for a federal grant?
Hazard Mitigation Grant Program (HMGP/404)	Y	Has not been used yet	Y	N
Building Resilient Infrastructure & Communities (BRIC)	Y	Flood hazard study	Y	N
Flood Mitigation Assistance (FMA)	Y	Flood relief efforts, sandbags	Y	N
Public Assistance Mitigation (PA Mitigation/406)	Y	Has not been used yet	Y	N
Community Development Block Grant (CDBG)	Y	Transportation services, plan development for grant funds, building renovations	Y	N
Natural Resources Conservation Services (NRCS) Programs	Y	Has not been used yet	Y	N
U.S. Army Corps (USACE) Programs	Y	Has not been used yet	Y	N
Property, Sales, Income, or Special Purpose Taxes	Y	Funding various city services.	Yes, for mitigation projects.	Y
Stormwater Utility Fee[7]	Y	Funding stormwater management activities.	Yes, for flood mitigation projects.	Y
Fees for Water, Sewer, Gas, or Electric Services	Y	Operational costs for utility management and service	Y	Y
Impact Fees from New Development and Redevelopment	Y	Funding stormwater infrastructure improvements.	Yes, for infrastructure projects.	Y
General Obligation or Special Purpose Bonds	Y	Capital improvement projects	Y	Y
Federal-funded Programs (Please describe)	Y	COVID-19 funds for economic relief	Y	N
Private Sector or Nonprofit Programs	Y	Friends of Herriman	Y	Y
Other?				

[7] https://www.herriman.gov/uploads/files/897/SWFeePolicy.pdf.

DRAFT

Education and Outreach Capabilities

Education and outreach capabilities are programs and methods that could communicate about and encourage risk reduction. These programs may be run by a participant or a community-based partner. Partners, especially those who work with underserved communities, can help identify additional education and outreach capabilities.

Table 15: Assessment of the Education and Outreach Capabilities of the City of Herriman

Education and Outreach Capability	In Place? (Y/N)	Does it currently incorporate hazard mitigation?	Could it be used to support mitigation in the future?
Community Newsletter(s)	Y	No	Yes, it could include emergency preparedness tips and seasonal hazard awareness (e.g., wildfire safety in summer, winter storm prep).
Hazard Awareness Campaigns (such as Firewise, Storm Ready, Severe Weather Awareness Week, and School Programs)	Y	No	Yes, expand to include evacuation routes, shelter locations, and emergency response planning.
Public Meetings/Events (e.g., Health and Safety Fair.)	Y	Y	Yes, Health and Safety fair, focus on family preparedness, would like to incorporate Firewise training, evacuation information, and flood preparedness.
Emergency Management Listserv	Y	Y	Could be used to disseminate emergency alerts, preparedness tips, and hazard mitigation strategies.
Local News	Y	Y	Could be used for emergency preparedness awareness, updates on mitigation projects, and public service announcements.
Distributing Hard Copies of Notices (e.g., public libraries, door-to-door outreach)	Y	Y	Could provide preparedness guides, evacuation maps, and safety checklists in multiple languages.
Insurance Disclosures/ Outreach	Y	Y	Could include flood insurance education and incentives for mitigation actions.
Organizations that Represent, Advocate for, or Interact with Underserved and Vulnerable Communities (e.g., local faith groups, community centers like the Columbus Center.)	Y	Y	Could assist in targeted outreach, ensuring inclusive communication for hazard preparedness.

DRAFT

Education and Outreach Capability	In Place? (Y/N)	Does it currently incorporate hazard mitigation?	Could it be used to support mitigation in the future?
Social Media (e.g., Facebook, Twitter, Instagram, X, and YouTube.)	Y	Y	Limited emergency preparedness messaging. Could expand messaging to include interactive preparedness campaigns, real-time updates, and hazard-specific guidance.
Other? (Please describe.)			

Opportunities to Expand and/or Improve Capabilities

Herriman has various opportunities to expand and improve its mitigation capabilities by addressing gaps in planning, staffing, financial resources, and public outreach. Strengthening these areas will enhance the city's resilience to hazards and ensure the long-term sustainability of mitigation efforts. Table 16 lists the opportunities for the city of Herriman.

Table 16: Opportunities to Expand and/or Improve the Capabilities of the City of Herriman

Capability	Opportunity to Expand and/or Improve
Planning and Regulation	• Conduct a **comprehensive assessment** of current regulations, policies, and plans to identify areas for improvement in hazard mitigation. • Update **zoning and building codes** to enhance disaster resilience, particularly for wildfire and flood-prone areas. • Strengthen floodplain ordinances and stormwater management policies to mitigate flood risks. • Ensure mitigation strategies are fully integrated into **the General Plan, Capital Improvement Plan, and Community Wildfire Protection Plan** to align citywide development with risk reduction.
Administrative and Technical	• Evaluate staffing levels to ensure adequate personnel for hazard mitigation roles, including emergency management, GIS mapping, and floodplain administration. • Provide ongoing training for city staff on hazard mitigation, grant applications, and emergency response coordination. • Improve interagency collaboration with local, state, and federal partners to streamline mitigation planning and response. • Expand the use of GIS mapping and hazard data analysis to enhance risk assessment capabilities.
Financial	• Conduct a review of **existing funding sources** (Capital Improvement Funds, General Funds) to determine how they have been used and how they can be optimized for future mitigation projects. • Pursue **additional grant funding**, including Hazard Mitigation Grant Program (HMGP), Building Resilient Infrastructure & Communities (BRIC), and Community Development Block Grants (CDBG), to finance large-scale mitigation projects.

DRAFT

Capability	Opportunity to Expand and/or Improve
	• Explore **public-private partnerships** to fund mitigation efforts, including businesses and nonprofit organizations willing to support community resilience projects. • Assess the feasibility of implementing **stormwater utility fees or special purpose taxes** to fund local hazard mitigation initiatives.
Education and Outreach	• Integrate hazard mitigation messaging into **existing community newsletters, social media platforms, and public meetings.** • Expand partnerships with **local media and schools** to educate residents on risk reduction strategies. • Develop **targeted outreach campaigns** for underserved and vulnerable populations, ensuring accessibility of mitigation resources. • Increase participation in **state and federal preparedness programs**, such as Firewise, StormReady, and Severe Weather Awareness initiatives.

Mitigation Strategy

Mitigation strategies provide proactive measures that are designed to minimize the impacts of hazards on the city of Herriman. These strategies aim to reduce risks, enhance resilience, and improve response and recovery capabilities. Table 17 shows mitigation action alternatives, and Table 18 shows the status of previous mitigation activities. Table 19 is the 2025 mitigation action plan for the city of Herriman.

DRAFT

Table 17: Mitigation Action Alternatives for the City of Herriman

Action	Type of Action	Selected for inclusion in the plan?	If not selected, why not?
Strengthen building codes and enforce stricter construction standards to mitigate earthquake and windstorm damage	Prevention	Yes	N/A
Develop and implement a defensible space ordinance to reduce wildfire risk	Property Protection	Yes	N/A
Expand public education campaigns on flood preparedness, including distributing evacuation maps and emergency kits	Public Education & Awareness	Yes	N/A
Retrofit critical infrastructure (e.g., bridges, utilities, emergency shelters) to withstand seismic activity	Structural Projects	Yes	N/A
Improve stormwater management systems to mitigate flooding in high-risk areas	Natural Resource Protection	Yes	N/A
Enhance emergency communication systems, including redundant alert methods for severe weather and other hazards	Emergency Services	Yes	N/A
Conduct community-wide hazard mitigation drills with public participation	Public Education & Awareness	No	budget limitations and prioritization of infrastructure improvements
Acquire and remove properties in frequently flooded areas to prevent repetitive flood losses	Property Protection	No	Not feasible due to property ownership and funding constraints

DRAFT

Table 18: Status of Prior Mitigation Actions of the City of Herriman[8]

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update
Fire protection: Fuel mitigation in foothills to protect existing development. Install fire breaks, clear fuels in drainage, grazing, property acquisition to protect from new developments	Wildfire	Herriman City EM	SLCo EM, Herriman City EM, Herriman City Public Works	Ongoing – Annual fuel reduction efforts have been conducted in high-risk areas. Additional funding is being pursued for expanding mitigation efforts.
Flash Flooding Protection	Dam Failure, Flood (Urban/ Flash Flooding), Landslide/Slope Failure	Herriman City EM	Utah Dam Safety, SLCo Flood Control, SLCo EM, local jurisdictions	Ongoing – Drainage improvements have been made in select locations. Continued evaluation of flood-prone areas.
Conduct an inventory and assessment of communications equipment and systems and identify needs	All hazards	Herriman City EM	SLCo EM, SLCo Public Works, NGO partners, UFA, Herriman PD, Herriman Public Works, UDEM, VECC, UCA	Ongoing – Inventory completed; assessment of gaps and necessary upgrades underway.
Conduct training and awareness activities on communications equipment, tools, and systems	All hazards	Herriman City EM	UFA, Herriman PD, Herriman Public Works, SLCo Public Works, SLCo EM, NGO partners, UDEM, VECC, UCA	Ongoing – Annual training conducted for emergency responders, with updates on new equipment when available.
Establish agreements to share communications equipment between agencies involved in emergency operations	All hazards	Herriman City EM	Herriman City Communications, Herriman City Public Works, Herriman City PD, UFA, SLCo EM, NGO partners, SLCo Public Works, local jurisdictions, UDEM, VECC, UCA	Ongoing – No formal agreements established yet; discussions in progress

[8] EM = Emergency Management, SLCo EM = Salt Lake County Emergency Management, UFA = Unified Fire Authority, UDEM = Utah Division of Emergency Management, UDOT = Utah Department of Transportation, USSC = Utah Seismic Safety Commission.

DRAFT

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update
Establish multiagency notification capabilities and procedures for emergency personnel	All hazards	Herriman City Planning and Zoning	SLCo EM, UFA, Herriman Communications, Herriman Public Works, Herriman PD, NGO partners	Ongoing – Initial framework in place; testing and refinements needed. Other Jurisdictions have to opt in to receiving Everbridge notifications
Establish redundancy for dispatch centers and other critical communications	All hazards	Herriman City Communications	– Herriman City Communications, Herriman PD, UFA, SLCo EM, SLCo Public Works, Herriman Public Works, VECC, NGO partners	Ongoing
Establish a coordinating group to address long-term communications needs and implementation strategies	All hazards	Herriman City Public Works	Local jurisdictions, SLCo Public Works, Herriman Communications, Herriman Public Works, NGO partners	Ongoing – No formal group established; needs reassessment.
Pursue and implement needed mutual aid agreements	All hazards	Herriman City Public Works	SLCo EM, UFA, SLCo Public Works, Herriman City Communications, Herriman City PD, Herriman City Public Works, NGO partners, local jurisdictions	Ongoing – Several agreements in place, additional partnerships under negotiation.
Provide education regarding all natural hazards through live trainings and web-based, print, and broadcast media	All hazards	Herriman City Building	Local jurisdictions, SLCo EM, SLCo Public Works, SLCo Flood Control, NWS, Herriman City Communications, UFA, Herriman City Public Works, Herriman City PD, SIAC	Ongoing – Public outreach conducted through city website and social media; additional community workshops planned.
Incorporate information about cascading effects of hazards in education programs	All hazards	Herriman City Public Works	Local jurisdictions, SLCo EM, SLCo Public Works, SLCo Flood Control, NWS, Herriman City Communications, UFA, Herriman City Public Works, Herriman City PD, SIAC	Ongoing – Coordination with county emergency management to see if they have materials that available

DRAFT

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update
Develop education programs to target specific groups, including homeowners, developers, schools, and people with special needs	All hazards	Herriman City Public Works	Local jurisdictions, SLCo EM, SLCo Public Works, SLCo Flood Control, NWS, Herriman City Communications, UFA, Herriman City Public Works, Herriman City PD, Jordan School District	Ongoing – School-based programs established with JSD; expansion to other groups needed.
Use maps and similar products on county EM website and other media to educate public on areas at risk of hazards	All hazards	Herriman City Public Works	Herriman City GIS, Herriman City Public Works, SLCo EM, SLCo Public Works, SLCo Flood Control, Herriman City Communications	Ongoing – Updated hazard maps published online
Coordinate with existing public education programs such as the American Red Cross, Ready, Set, Go!, Fire Adapted Communities or Firewise, Be Ready Utah, and the National Weather Service.	All hazards	Herriman City Public Works	NGO partners, SLCo EM, SLCo Public Works, UFA, Herriman City Communications, Herriman City PD, Herriman City Public Works, NWS, FFSL	Ongoing – Partnerships maintained; collaboration on public safety messaging continues.
Establish and enforce appropriate planning, zoning, and building code ordinances	All hazards	Herriman City Public Works	Herriman City Communications, Herriman City Building	Ongoing – Codes reviewed periodically; updates implemented based on new risk assessments.
Ensure current hazard ordinances are available for viewing online	All hazards	Herriman City Public Works	Herriman City Planning and Zoning, Herriman City Building	Ongoing – verify relevant ordinances accessible via city website.
Include dam inundation maps in current county, city, and special service district emergency operations plans	Dam Failure	Herriman City EM	State Dam Safety, SLCo Flood Control, SLCo EM, SLCo Public Works, Herriman GIS, SLCo Surveyor	Ongoing – Integrated GIS maps into emergency plans; conduct periodic updates.

DRAFT

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update
Continue to encourage water conservation using outreach material from all water districts in the county	Drought	Herriman City EM	SLCo EM, SLCo Public Works, water districts	Ongoing – City promotes conservation messaging through local utility partners, message boards, and social media.
Identify structures at risk of earthquake damage	Earthquake	UFA	Herriman City Planning and Zoning, Herriman City EM, SLCo EM	Ongoing – Conduct preliminary assessments; funding possibly needed for full seismic evaluations.
Encourage communities to actively participate in National Flood Insurance Program (NFIP)	Flooding	UFA	SLCo Flood Control, SLCo EM, Herriman City Communications, Herriman City EM	Ongoing – Public encouraged to obtain flood insurance; participation rates increasing.
Determine potential flood impacts, and identify areas in need of additional flood control structures	Flooding	UFA	SLCo Flood Control, SLCo EM, Herriman City EM	Ongoing – Conduct hazard assessment; determine funding needed for additional mitigation projects.
Address identified problems through construction of debris basins, flood retention ponds, energy dissipaters, and other flood control structures	Flooding	Herriman City Public Works	SLCo Flood Control, SLCo EM, Herriman City EM	Ongoing – Some flood control structures completed; additional projects planned.
Establish maintenance and repair programs to remove debris, improve resistance, and otherwise maintain effectiveness of stormwater and flood control systems	Flooding	Herriman City EM	SLCo Flood Control, SLCo EM, Herriman City EM, Herriman City Communications	Ongoing – Routine maintenance program in place; additional funding sought for improvements.
Identify and assess structures for deficiencies	Flooding	Herriman City EM	SLCo Flood Control	Ongoing
Modify structures as needed to address deficiencies	Flooding	Herriman City GIS	SLCo Flood Control	Ongoing

DRAFT

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update
Develop a protocol for working with state and federal agencies to reduce the impact of post-fire debris-flow hazard	Slope Failure	Herriman City GIS	Utah Geological Survey, UFA, SLCo EM, FFSL	Ongoing Coordinate efforts; review response plan.
Coordinate with the Utah Geological Survey and other agencies to understand current slope failure threats/potential	Slope Failure	Herriman City Public Works	Herriman City Public Works, Herriman City Building, Herriman City Planning and Zoning, SLCo EM, UGS	Ongoing – Data collection and mapping efforts ongoing.
Increase public awareness through Firewise program	Wildland Fire	UFA	Herriman City EM, SLCo EM	Ongoing – Implement community outreach efforts; increase participation.
Educate homeowners on the need to create defensible space near structures in the wildland–urban interface (WUI)	Wildland Fire	Herriman City EM	Herriman City EM, SLCo EM, Herriman City Communications	Ongoing – Fire and city provide guidance and site assessments.
Designate and promote county-wide annual initiative for clearing fuels	Wildland Fire	UFA	SLCo EM, Herriman City Public Works, Herriman City EM, Herriman City Communications	Ongoing
Provide waste removal, such as chipping of green waste by public works, following designated fuel clearing day/week	Wildland Fire	Herriman City Public Works and Police Department	UFA, Wasatch Front Waste and Recycling District, SLCo EM, Herriman City Communications	Ongoing – Weekly and Seasonal green waste disposal services offered.
Work with experts and communities to develop or update evacuation plans	Wildland Fire	Herriman City Building Community Development , and Engineering	NGO partners, SLCo EM, FFSL, Herriman City Public Works, local jurisdictions, Herriman City Communications	Ongoing – Evacuation routes mapped; additional GIS and neighboring jurisdictions input needed.
Evaluate transportation network and address needed improvements to facilitate evacuation and emergency response	Wildland Fire	Herriman City Emergency Manager	UDOT, Herriman City Public Works, SLCo Public Works, local jurisdictions, Herriman City Communications	Ongoing – Verify current traffic flow analysis

DRAFT

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update
Identify all facilities, businesses, and residences, particularly in the areas, and assigned addresses according to current county addressing standards	Wildland Fire	Herriman City Engineering and Public Works	SLCo EM, SLCo Addressing, SLCo Surveyor, UFA, Herriman City PD, VECC, Herriman City EM, Herriman City Communications, Herriman City GIS	Complete – updated address information is sent to the addressing department at the county and UFA on a regular basis.
Incorporate improved addresses in fire-dispatch and other databases	Wildland Fire	UFA and Herriman City EM	Herriman City EM, SLCo EM, SLCo Surveyor, SLCo Addressing, Herriman City Communications, VECC, UFA, Herriman City PD, Herriman City GIS	Complete - updated address information is sent to the addressing department at the county and UFA on a regular basis.
Reduce vegetation and fuels around publicly owned structures	Wildland Fire	Herriman City EM	FFSL, UFA, SLCo EM, Herriman City EM, SLCo Parks and Recreation, SLCo Health Department	Ongoing
Implement fire breaks and other protective measures	Wildland Fire	Herriman City EM	Herriman City EM, FFSL, SLCo EM, Herriman City GIS	Ongoing
Assist communities in developing Community Wildfire Protection Plans or similar plans	Wildland Fire	Herriman City EM	UFA, FFSL, SLCo EM, Herriman City GIS	Ongoing
Define the Wildland–Urban Interface (WUI) and develop digital maps of it	Wildland Fire	Herriman City EM	Herriman City GIS, SLCo EM, Herriman City EM	Ongoing
Procure a Drinking water trailer for emergency response.	Emergency Response, Drought, Extreme Heat	Herriman City EM	Herriman City EM, SLCo EM	Ongoing
Continue to enforce building codes, development codes and zoning ordinance	Earthquake	Herriman City Planning and Zoning	Utah Seismic Safety (USSC), Utah Division of Emergency Management (DEM), SLCo EM	Ongoing

DRAFT

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update
Continue Utah Shakeout activities to promote earthquake awareness	Earthquake	Herriman City Communications	SLCo EM, local jurisdictions, UFA, Herriman City PD, Herriman City Public Works, Herriman City Communications, NGO partners	Ongoing
Continue to enforce storm drain master plan requirements	Flood	Herriman City Public Works	Herriman City Communications, Herriman City EM	Ongoing
Establish Firewise community program for Herriman	Wildfire	Herriman City Public Works	SLCo EM, Herriman City Communications	Ongoing

DRAFT

DRAFT

THIS PAGE INTENTIONALLY LEFT BLANK

Table 19: 2025 Mitigation Action Plan for the City of Herriman[9]

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Time-frame	Priority	Comments
1	Fire protection: Fuel mitigation in foothills to protect existing development. Install fire breaks, clear fuels in drainage, grazing, property acquisition to protect from new developments.	Wildfire	UFA	SLCo EM, SLCo Public Works, Herriman City Public Works, FFSL	Reduce potential for wildfire and protect structures from wildfire damage.	Medium	Herriman general funds, Community Wildfire Assistance grant, Fire Prevention and Safety grant	Short-term	High	
2	Determine potential impacts of flash flooding and identify areas in need of additional flood control structures or protection.	Dam Failure, Flood (Urban/Flash Flooding), Heavy Rain, Landslide/ Slope Failure, Hazardous Materials Release	Herriman City Public Works	Utah Division of Dam Safety, dam owners, SLCo Flood Control, SLCo EM	Structure protection and life safety protection. Decreased flood potential from runoff, standing water, dam failure, etc.	High ($5,000,000)	Herriman general funds, HMGP grant, BRIC grant	Short-term	High	
3	Conduct an inventory and assessment of communications equipment and systems and identify needs.	Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Flooding, Heavy Rain, High Wind, Landslide, Lightning, Public Health Epidemic/Pandemic, Radon, Severe Winter Storm, Tornado, Wildfire, Civil Disturbance, Hazardous Materials Incident, Terrorism/ Cyberterrorism	Herriman City EM in coordination with each city department or agency	Herriman City Communications, UCA, VECC, UFA, SLCo EM, NGO partners	Enhances interoperability. Early notification of impending disaster to decrease loss of life. Improved relationships with the public and stakeholders. Faster delivery of information.	Low	Herriman general funds, BRIC grant, HMGP grant	Short-term	Low	
4	Conduct training and awareness activities for communications equipment, tools, and systems.	Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Flooding, Heavy Rain, High Wind, Landslide, Lightning, Public Health Epidemic/Pandemic, Radon, Severe Winter Storm, Tornado, Wildfire, Civil Disturbance, Hazardous Materials Incident, Terrorism/ Cyberterrorism	Herriman City EM	SLCo EM, UDEM, NGO partners, local jurisdictions. Herriman City Communications, Herriman City Public Works, SLCo Public Works, VECC, UCA	Enhances interoperability. Early notification of impending disaster to decrease loss of life. Improved relationships with the public and stakeholders. Faster delivery of information.	Low	Herriman general funds, HMGP grant, BRIC grant	Short-term	Low	
5	Establish agreements to share communications equipment between agencies involved in emergency operations.	Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Flooding, Heavy Rain, High Wind, Landslide, Lightning, Public Health Epidemic/Pandemic, Radon, Severe Winter Storm, Tornado, Wildfire,	Herriman City EM	SLCo EM, Herriman City Communications, Herriman City Public Works, SLCo Public Works, VECC, UCA	Enhances interoperability. Early notification of impending disaster to decrease loss of life. Improved relationships with the public and stakeholders. Faster delivery of information.	Low	Herriman general funds, HMGP grant, BRIC grant	Short-term	Low	

[9] BRIC = Building Resilient Infrastructure and Communities, CWDG = Community Wildlife Defense Grant, EM = Emergency Management, EMPG = Emergency Management Performance Grant, FFSL = Division of Forestry, Fire, and State Lands, FMA = Flood Mitigation Assistance, HMA = Hazard Mitigation Assistance, HMGP = Hazard Mitigation Grant Program, MSD = Municipal Services District, NGO = nongovernmental organization, NWS = National Weather Service, PIO = Public Information Officer, SIAC = Statewide Interagency Advisory Council, SLCo EM = Salt Lake County Emergency Management, SLVECC = Salt Lake Valley Emergency Communications Center, UDEM = Utah Division of Emergency Management, UDOT = Utah Department of Transportation, UFA = Unified Fire Authority, UGS = Utah Geological Survey, USSC = Utah Seismic Safety Commission, WUI = Wildland–Urban Interface, SIAC = Statewide Interagency Advisory Council.

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Time-frame	Priority	Comments
		Civil Disturbance, Hazardous Materials Incident, Terrorism/ Cyberterrorism								
6	Establish multiagency notification capabilities and procedures for emergency personnel.	Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Flooding, Heavy Rain, High Wind, Landslide, Lightning, Public Health Epidemic/Pandemic, Radon, Severe Winter Storm, Tornado, Wildfire, Civil Disturbance, Hazardous Materials Incident, Terrorism/ Cyberterrorism	Herriman City EM	Local jurisdictions, Herriman City PD, Herriman City Public Works, Herriman City Communications, SLCo EM, SLCo Public Works, NGO partners	Common operating platform for stakeholders, increased situational awareness, improved response time.	Medium	Herriman general funds, SLCo EM, BRIC grant, HMGP grant, local jurisdictions	Medium-term	Medium	
7	Establish redundancy for dispatch centers and other critical communications.	Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Flooding, Heavy Rain, High Wind, Landslide, Lightning, Public Health Epidemic/Pandemic, Radon, Severe Winter Storm, Tornado, Wildfire, Civil Disturbance, Hazardous Materials Incident, Terrorism/ Cyberterrorism	Herriman City Communications	VECC, SLCo EM, UCA, Herriman City PD, Herriman City Public Works, Herriman City EM	Ensure communication lifelines remain functional during disaster.	High	Herriman general funds, SLCo EM general fund, HMGP, HMA grants	Medium-term	Medium	
8	Establish a coordinating group to address long-term communications needs and implementation strategies.	Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Flooding, Heavy Rain, High Wind, Landslide, Lightning, Public Health Epidemic/Pandemic, Radon, Severe Winter Storm, Tornado, Wildfire, Civil Disturbance, Hazardous Materials Incident, Terrorism/ Cyberterrorism	Herriman City Communications	Local jurisdictions, Herriman City EM, Herriman City Public Works, NGO partners	Enhances interoperability. Early notification of impending disaster to decrease loss of life. Improved relationships with the public and stakeholders. Faster delivery of information.	Low	Herriman general funds	Short-term	Medium	
9	Pursue and implement needed mutual aid agreements.	Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Flooding, Heavy Rain, High Wind, Landslide, Lightning, Public Health Epidemic/Pandemic, Radon, Severe Winter Storm, Tornado, Wildfire, Civil Disturbance, Hazardous Materials	Herriman City EM	SLCo EM, local jurisdictions, SLCo Public Works, NGO partners, NWS	Established agreements in place for disaster and incident assistance	Low	Herriman general funds	Short-term	Low	

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Time-frame	Priority	Comments
		Incident, Terrorism/ Cyberterrorism								
10	Provide education regarding all natural hazards through live trainings and web-based, print, and broadcast media.	Avalanche, Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Flooding, Heavy Rain, High Wind, Landslide, Lightning, Public Health Epidemic/Pandemic, Radon, Severe Winter Storm, Tornado, Wildfire	Herriman City EM	NWS, NGO partners, SLCo EM, SLCo Public Works, Herriman City Communications, Herriman City PD, Herriman City Public Works	Increased understanding of local hazards, resources improved relationships with the public and stakeholders, and improved safety. For example, share informational brochures, social media posts, or trainings on defensible space and home hardening (wildfire), water conservation (drought), and avalanche warning signs, hazardous conditions, and safety recommendations (avalanche), Reduced risk through the public implementing steps to mitigate their own risk.	Low	Herriman general funds, NWS grant, BRIC grant, HMGP grant	Short-term	Medium	
11	Incorporate information about cascading effects of hazards in education programs.	Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Flooding, Heavy Rain, High Wind, Landslide, Lightning, Public Health Epidemic/Pandemic, Radon, Severe Winter Storm, Tornado, Wildfire, Civil Disturbance, Hazardous Materials Incident, Terrorism/ Cyberterrorism	Herriman City EM	SLCo EM, SLCo Public Works, Herriman City Communications, Herriman City Public Works, NWS, NGO partners, Herriman City PD, SIAC, SLCo Sheriff, UFA	Increased awareness of potential secondary effects of hazards can help residents reduce their risk.	Low	Herriman general funds, NWS, HMGP grant, BRIC grant	Short-term	Medium	
12	Develop education programs to target specific groups, including homeowners, developers, schools, and people with special needs.	Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Flooding, Heavy Rain, High Wind, Landslide, Lightning, Public Health Epidemic/Pandemic, Radon, Severe Winter Storm, Tornado, Wildfire, Civil Disturbance, Hazardous Materials Incident, Terrorism/ Cyberterrorism	Herriman City EM	Herriman City Communications, Herriman City PD, Herriman City Public Works, SLCo EM, NGO partners, water districts, Jordan School District, UFA	Provides educational benefits to underserved populations to increase awareness and improve safety.	Low	Herriman general funds, NWS grant, SLCo EM general fund, BRIC grant, HMGP grant	Short-term	Medium	

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Time-frame	Priority	Comments
13	Use maps and similar products on county EM website and other media to educate public on areas at risk of hazards.	Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Flooding, Heavy Rain, High Wind, Landslide, Lightning, Public Health Epidemic/Pandemic, Radon, Severe Winter Storm, Tornado, Wildfire, Civil Disturbance, Hazardous Materials Incident, Terrorism/ Cyberterrorism	Herriman City EM	Herriman City GIS, SLCo EM, Herriman City Public Works, Herriman City Communications	Improved understanding of location of hazards and potential areas impacted.	Low	Herriman general funds	Short-term	Medium	
14	Coordinate with existing public education programs such as the American Red Cross, Ready, Set, Go!, Fire Adapted Communities or Firewise, Be Ready Utah, and the National Weather Service.	Avalanche, Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Flooding, Heavy Rain, High Wind, Landslide, Lightning, Public Health Epidemic/Pandemic, Radon, Severe Winter Storm, Tornado, Wildfire, Civil Disturbance, Hazardous Materials Incident, Terrorism/ Cyberterrorism	Herriman City EM	SLCo EM, PIO Association, Public Safety & Outreach Groups, NGOs, NWS, UFA, Herriman City Public Works, SLCo Public Works	Partnerships help facilitate information sharing to a larger audience. Provides educational benefits to underserved populations to increase awareness and improve safety	Low	Herriman general funds, NWS grant, SLCo EM general fund	Short-term	Medium	
15	Establish and enforce appropriate planning, zoning, and building code ordinances.	Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Flooding, Heavy Rain, High Wind, Landslide, Lightning, Public Health Epidemic/Pandemic, Radon, Severe Winter Storm, Tornado, Wildfire, Civil Disturbance, Hazardous Materials Incident, Terrorism/ Cyberterrorism	Herriman City Building and Planning and Zoning	Herriman City Communications, SLCo EM, Herriman City Public Works, Herriman City EM	Reduces potential damage to buildings and infrastructure and reduces risk of injury to occupants.	Low	Herriman general funds, BRIC grant, HMGP grant	Short-term	Medium	
16	Ensure current hazard ordinances are available for viewing online.	Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Flooding, Heavy Rain, High Wind, Landslide, Lightning, Public Health Epidemic/Pandemic, Radon, Severe Winter Storm, Tornado, Wildfire, Civil Disturbance, Hazardous Materials Incident, Terrorism/ Cyberterrorism	Herriman City Building and Planning and Zoning	Planning Department Herriman City Communications, Herriman City EM, SLCo EM	Help inform residents and stakeholders. Improved enforcement of codes.	Low	Herriman general funds	Short-term	Low	

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Time-frame	Priority	Comments
17	Include dam inundation maps in current county, city, and special service district emergency operations plans.	Dam Failure	Herriman City EM	Utah Dam Safety, dam owners, water districts, Herriman City Public Works, Herriman City GIS, SLCo Flood Control, local jurisdictions	Identify structures and residents at risk and preserve life through safe evacuation if a dam fails.	Low	Herriman general funds, HMGP grant, BRIC grant	Short-term	Low	
18	Continue to encourage water conservation using outreach material from the water districts in the county.	Drought	Herriman City Public Works	Water Districts, SLCo Public Works, SLCo EM, Herriman City Communications, Herriman City EM	Conserves water supply and reduces costs	Low	Herriman general funds	Short-term	Medium	
19	Identify structures at risk of earthquake damage.	Earthquake	Herriman City Building and Planning and Zoning	Herriman City GIS, Herriman City Public Works, SLCo EM, UFA	Potentially reduce structural damage and reduce personal injuries.	Medium	Herriman general funds, HMGP, BRIC, HMA	Medium-term	Medium	
20	Encourage participation in NFIP	Flooding	Herriman City Public Works	SLCo Flood Control, SLCo EM, Herriman City EM, Herriman City Communications	Improved awareness of flood risk. Reduced risk and reduced costs.	Low	Herriman general funds	Medium-term	Medium	
21	Determine potential flood impacts and identify areas in need of additional flood control structures.	Flooding	Herriman City Public Works	Herriman City EM, SLCo Flood Control, SLCo EM	Decreased flood potential damage from for runoff, standing water, etc.	Low	Herriman general funds, BRIC grant, HMGP grant	Short-term	Medium	
22	Address identified problems through construction of debris basins, flood retention ponds, energy dissipaters, and other flood control structures.	Flooding	Herriman City Public Works	SLCo Flood Control, SLCo EM, Herriman City EM	Reduced potential for loss of structures.	Medium	Herriman general funds, HMGP, FMA, EMPG	Long-term	Medium	
23	Establish maintenance and repair programs to remove debris, improve resistance, and otherwise maintain effectiveness of stormwater and flood control systems.	Flooding	Herriman City Public Works	Herriman City Planning and Zoning, Herriman City Building, Herriman City EM, SLCo Flood Control, SLCo EM	Decreased flood potential damage from for runoff, standing water, etc.	Medium	Herriman general funds, FMA, HMA, HMGP grant, BRIC grant, city capital improvement funding	Medium-term	Medium	
24	Identify and assess structures for deficiencies.	Flooding	Herriman City Public Works	Herriman City EM, SLCo Flood Control, SLCo EM	Reduce damage to buildings from flooding.	Low	Herriman general funds, BRIC grant, HMGP grant	Short-term	Medium	
25	Modify structures as needed to address deficiencies.	Flooding	Herriman City Public Works	Herriman City Building, Herriman City Planning and Zoning, Herriman City EM, SLCo EM, SLCo Flood Control	Reduce damage to buildings from flooding.	High	Herriman general funds, BRIC grant, FMA, HMGP grant	Medium-term	Medium	
26	Develop a protocol for working with state and federal agencies	Slope failure	Herriman City Engineering and Building, UFA	Utah Geological Survey, SLCo EM, Herriman City	Reduce damage to buildings and injury to residents from debris-flows.	Low	Herriman general funds	Short-term	Medium	

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Time-frame	Priority	Comments
	to reduce the impact of post-fire debris-flow hazard.			Public Works, Herriman City EM, UFA, UDEM						
27	Coordinate with the Utah Geological Survey and other agencies to understand current slope failure threats/potential.	Slope Failure	Herriman City Engineering and Building, UFA	Utah Geological Survey, SLCo EM, Herriman City GIS, UDEM, Herriman City EM, Herriman City Public Works	Reduce the likelihood of landslides and critical infrastructure/building damage.	Low	Herriman general funds, UGS budget, SLCo EM general fund	Medium-term	Medium	
28	Increase public awareness through Firewise program.	Wildland Fire	UFA	Herriman City EM, SLCo EM, Herriman City Communications, Herriman City Public Works, FFSL	Increased awareness of wildfire potential. Protect structures from damage from wildfires, reduce risk of loss of life.	Low	Herriman general funds	Short-term	High	
29	Continue to educate homeowners on the need to create defensible space near structures in the wildland–urban interface (WUI).	Wildland Fire	UFA	Herriman City EM, SLCo EM, Herriman City Public Works, Herriman City Communications, FFSL	Increased awareness of wildfire potential. Protect structures from damage from wildfires, reduce risk of loss of life.	Low	Herriman general funds, WUIPPM fund, CWDG grant	Short-term	High	
30	Provide waste removal, such as chipping of green waste by public works, following designated fuel clearing day/week.	Wildland Fire	Herriman City Public Works	Wasatch Front Waste and Recycling District SLCo EM, Herriman City EM, Herriman City Communications, UFA	Protect structures from damage from wildfires, reduce risk of loss of life.	Medium	Herriman general funds, Fire Prevention and Safety grant, CWDG grant, WUIPPM fund	Medium-term	Medium	
31	Work with experts and communities to develop or update evacuation plans.	Wildland Fire	Herriman City EM	SLCo EM, UFA, FFSL, Herriman City Public Works, SLCo Public Works, Herriman City Communications, SLCo Sheriff, Herriman City PD, UDOT	Increase safety for residents if wildfire occurs.	Low	Herriman general funds, BRIC grant, HMGP grant, CWDG grant, WUIPPM fund	Medium-term	Medium	
32	Evaluate transportation network and address needed improvements to facilitate evacuation and emergency response.	Wildland Fire	Herriman City EM	UDOT, Herriman City Public Works, SLCo EM, SLCo Public Works, UFA, Herriman City PD, SLCo Sheriff, FFSL, UDOT	Increase safety for residents if wildfire occurs.	Medium	Herriman general funds, SLCo EM general fund	Long-term	Medium	
33	Identify all facilities, businesses, and residences, particularly in the Wildland–Urban Interface (WUI) areas.	Wildland Fire	Herriman City EM	Herriman City GIS, Herriman City Public Works, SLCo EM, SLCo Public Works, FFSL, UDEM, UFA	Increased awareness of wildfire potential. Protect structures from damage from wildfires, reduce risk of loss of life.	Low	Herriman general funds, CWDG grant	Short-term	Medium	
34	Reduce fuels around publicly owned structures.	Wildland Fire	UFA and Herriman City Public Works	Herriman City EM, FFSL	Protect structures from damage from wildfires, reduce risk of loss of life.	Low	Herriman general funds, CWDG grant, Fire Prevention and Safety grant	Short-term; ongoing annually or biannually	Medium	

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Time-frame	Priority	Comments
35	Implement fire breaks and other protective measures.	Wildland Fire	UFA	Herriman City EM, SLCo EM, Herriman City Public Works	Protect structures from damage from wildfires, reduce risk of loss of life.	Medium	Herriman general funds, CWDG grant, Fire Prevention and Safety grant	Short-term; will need to be repeated	Medium	
36	Update the Community Wildfire Protection Plan.	Wildland Fire	Herriman City EM	Herriman City Public Works, FFSL, SLCo EM, UFA	Increased awareness of wildfire potential and identify actions to reduce risk in areas of high wildfire potential. Protect structures from7damage from wildfires, reduce risk of loss of life.	Low	Herriman general funds, WUIPPM fund, CWDG grant	Medium-term	Medium	
37	Procure drinking water trailer.	Emergency Response, Drought, Extreme Heat	Herriman City Public Works	Herriman City EM, SLCo EM, Police Department	This will prevent the loss of human life and economic and property losses.	Low	Developer-based funding under specific plan requirements	Medium-term	Medium	
38	Continue to enforce building codes, development codes and zoning ordinance.	Earthquake	Herriman City Building Inspection Division	USSC, UDEM, SLCo EM, MSD, Herriman City EM, Herriman City Public Works, Herriman Community Development, Herriman Engineering	This will prevent the loss of human life and economic and property losses.	Low	Developer-based funding under specific plan requirements	Short-term	Medium	
39	Continue Utah Shakeout activities to promote earthquake awareness.	Earthquake	Herriman City EM	SLCo EM, UDEM, SLCo Public Works, Herriman City Public Works, Herriman City Communications, Police Department, Emergency Preparedness Committee	This will prevent the loss of human life and economic and property losses.	Low	Herriman general funds, BRIC grant, HMGP grant	Short-term	High	
40	Continue to enforce storm drain master plan requirements.	Flood	Herriman City Engineering Division	SLCo EM, SLCo Flood Control, UDEM, Herriman City Communications, Herriman City EM, Herriman City Public Works	This will prevent the loss of human life and economic and property losses.	Low	Developer-based funding under specific plan requirements	Short-term	Medium	
41	Continue to promote the Firewise community program in Herriman.	Wildfire	Herriman City EM	FFSL, SLCo EM, Herriman City Public Works, Herriman City Emergency Preparedness, UDEM, UFA	This will prevent the loss of human life and economic and property losses.	Medium	BRIC grant, WUIPPM fund, CWDG grant, HMGP grant, SLCo EM, Herriman general funds, UFA	Short-term	High	
42	Define the Wildland-Urban Interface (WUI) and develop digital maps of it.	Wildfire	Herriman City EM	UFA	Digital maps of the WUI will be a key piece of planning for wildfires	Low	Herriman City general fund,	Medium-term	Medium	

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Time-frame	Priority	Comments
					and ultimately help reduce the loss of life and property.		HMGP grant, CWDG grant			
43	Designate and promote countywide annual initiative for clearing fuels.	Wildfire	UFA	Herriman City EM	Reduces the intensity and danger of wildfires, reducing the risk of loss of life and property	Medium	Herriman City general fund, HMGP grant, CWDG grant	Short-term	Medium	
44	Conduct risk studies or engineering assessments to determine approaches to address issues identified in dam safety inspection reports.	Dam Failure	SLCo EM	Herriman City EM, Riverton City (Black Ridge dam owner), Utah Division of Water Rights Dam Safety Section, Salt Lake City Public Utilities, Local Governments	Reduce potential losses from failure of HHPDs.	Medium	Salt Lake County General Fund, HHPD Grant, HMGP Grant	Medium	Medium	
45	Rehabilitate or complete other safety projects for high hazard dams based on dam safety reports or risk studies.	Dam Failure	SLCo EM	Herriman City EM, Riverton City (Black Ridge dam owner) Utah Division of Water Rights Dam Safety Section, Salt Lake City Public Utilities, Local Governments	Reduce potential losses from failure of HHPDs.	High	Salt Lake County General Fund, HHPD Grant, HMGP Grant	Long term	High	

DRAFT

City of Holladay

Jurisdictional Annex to the
Salt Lake County Hazard Mitigation Plan

Month XXXX | Draft X.X

THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT

Table of Contents

City of Holladay Annex 1

Planning Process Contact Information 1
Contact List 1
Existing Plans and Resources 3
Jurisdiction Profile 3
Date of Incorporation 3
Location and Description 3
Population 3
Demographics 4
Brief History 4
Climate 4
Public Services 4
Governing Body 4
Development Trends 5
Jurisdiction-Specific Hazards and Risk 5
Hazard Event History 8
National Flood Insurance Program Summary 10
Jurisdiction-Specific Vulnerabilities and Impacts 13
Jurisdiction-Specific Changes in Vulnerability 25
Additional Public Involvement 30
Plan Integration 30
Capability Assessment 31
Planning and Regulatory Capabilities 31
Administrative and Technical Capabilities 33
Financial Capabilities 34
Education and Outreach Capabilities 36
Opportunities to Expand and/or Improve Capabilities 37
Mitigation Strategy 38
Mitigation Action Prioritization 49

DRAFT

List of Figures

Figure 1: Email Blast Newsletter (*left*) and Flyer for the City of Holladay (*right*) 30

List of Tables

Table 1: Contact Information for the City of Holladay 1
Table 2: Participant List for the City of Holladay 1
Table 3: Contact and Stakeholder List 2
Table 4: Existing Plans and Resources 3
Table 5: Calculated Priority Risk Index Values for the City of Holladay 5
Table 6: Criteria for the Calculated Priority Risk Index 6
Table 7: History of Hazard Events in the City of Holladay 8
Table 8: National Flood Insurance Program Status 10
Table 9: National Flood Insurance Overview for the City of Holladay 11
Table 10: Responses on Floodplain Management for the City of Holladay 11
Table 11: Jurisdiction-Specific Vulnerabilities and Impacts in the City of Holladay 14
Table 12: Jurisdiction-Specific Changes in Vulnerability in the City of Holladay 26
Table 13: Assessment of the Planning Capabilities of the City of Holladay 31
Table 14: Assessment of the Regulations and Ordinances of the City of Holladay 32
Table 15: Assessment of the Administrative Capabilities of the City of Holladay 33
Table 16: Assessment of the Technical Capabilities of the City of Holladay 34
Table 17: Assessment of the Financial Capabilities of the City of Holladay 35
Table 18: Assessment of the Education and Outreach Capabilities of the City of Holladay 36
Table 19: Opportunities to Expand and/or Improve the Capabilities of the City of Holladay 37
Table 20: Mitigation Action Alternatives for the City of Holladay 38
Table 21: Status of Prior Mitigation Actions of the City of Holladay 39
Table 22: 2025 Mitigation Action Plan for the City of Holladay 45
Table 23: Mitigation Action Prioritization – STAPLEE 49

City of Holladay Annex

To participate in this multi-jurisdictional hazard mitigation plan (MJHMP) update for Salt Lake County (SLCo), the governing body of the city of Holladay passed a formal resolution, a copy of which is maintained at the local government offices.

Planning Process Contact Information

Table 1 provides information on the point of contact during the updating of the MJHMP.

Table 1: Contact Information for the City of Holladay

Name	Contact Information
Allison Jester/Holly Smith	**Phone:** 970-497-0444**; email:** Ajester@holladyut.gov/ hsmith@holladayut.gov

The city of Holladay has a fully integrated approach to hazard mitigation planning and program implementation. During the 2024 update process, the MJHMP participation roles in Table 2 were recorded.

Table 2: Participant List for the City of Holladay

Name	Title	Jurisdiction
Allison Jester	EM Coordinator	City of Holladay
Holly Smith	Assistant City Manager	City of Holladay

Contact List

Table 3 lists the plan contacts and stakeholders.

DRAFT

Table 3: Contact and Stakeholder List

Name	Title	Jurisdiction/Agency	Email
Jared Bunch	City Engineer	City of Holladay	Jbunch@holladayut.gov
Leon Barrett	Public Works Associate Director	Salt Lake County	lberrett@slco.org
Jon Teerlink	Community and Economic Development Director	City of Holladay	jteerlink@holladayut.gov
Ann Garcia	Economic Development and Housing Manager	City of Holladay	Annfgarcia@holldayut.gov
Darren Shepherd	Manager	Holliday Water Company	management@hollidaywatercompany.com
Dean Ayala	Engineer	Mt. Olympus Improvement District	dean@mtoid.org
Wade Skinner	EM Program Manager	Rocky Mountain Power/ PacifiCorp	Wade.Skinner@PacifiCorp.com
Jeff King	EM Coordinator	Jordan Valley Water Conservation District	jeffk@jvwcd.org
Roger Brooks	EM	Granite School District	rabrooks@graniteschools.org
Randy Porter	Police Chief	Granite School District Police	rporter@graniteschools.org

DRAFT

Existing Plans and Resources

Table 4 lists the plans and resources available to the county.

Table 4: Existing Plans and Resources

Plan, Study, Report, or Technical Information	Is it available online?	If online, add the link here	Is it on Share Point? If not, where can we access it?	Comments
Comprehensive Emergency Management Plan,	No			Promulgated in October 2024. Will be online once it is signed.
Community Wildfire Protection Plan	No		Yes	2021
General Plan	Yes	https://www.holladayut.gov/Document%20Center/Building%20Permit%20Process/General%20Plan2031_current%202024.pdf		
City Hall and Park Master Plan	Yes	https://www.holladayut.gov/Document%20Center/Building%20Permit%20Process/City%20Hall%20and%20Park%20SAMP.pdf		

Jurisdiction Profile

Date of Incorporation

November 30, 1999

Location and Description

The city of Holladay is in central Salt Lake County. The city is approximately 8.5 square miles in area and is approximately 4,465 feet above sea level. The city of Holladay features various outdoor activities and historical sites including the Holladay Village Plaza for local shops, Big Cottonwood Regional Park for outdoor activities, and Cottonwood Paper Mill for historical charm.

Population

The 2022 American Community Survey 5-Year Estimate from the U.S. Census Bureau records the population of the city of Holladay as 31,563 people.

DRAFT

Demographics

Most of the 31,563 people are between the ages of 35 and 44, with a median age of 33.6; 15,894 are females (50.4%) and 15,669 are males (49.6%). English is the primary language in 85.9% of homes,, with 4% Spanish and 10.1% other languages.

Brief History

A group of pioneers known as the Mississippi Company and led by John Holladay entered the Salt Lake Valley in July 1847. They discovered a spring-fed stream, which they named Spring Creek. Most of the group returned to Great Salt Lake for the winter, but a few men stayed and built dugouts along the stream, establishing the first village outside Salt Lake City. The village was named Holladay's Settlement after John Holladay. Holladay's Settlement attracted businesses and residents with popular establishments like Neilson's Store and Harper-Bowthorpe Blacksmith Shop calling the settlement home. The city was incorporated on November 30, 1999, driven by the residents' desire for local control over planning and zoning. The city of Holladay expanded its boundaries in 2002 and again in 2015 to include more areas, reflecting its growth and development. Canyon Cove, also referred to as the Cove, is a well-regarded residential neighborhood in the city of Holladay known for its natural beauty, mountain views, and convenient location that offers a mix of urban living and outdoor access. It is located east of Wasatch Boulevard in the southeast corner of the city.

Climate

The city of Holladay experiences a humid continental climate (Dfa Köppen classification) characterized by hot summers and cold winters with significant temperature variations throughout the year. Average high temperatures are approximately 74.5°F in the summer and approximately 22.5°F in the winter. Rain each year is approximately 27.8 inches, and snowfall averages 52.4 inches.

Public Services

Holladay City Hall serves as the administrative hub for the city and offers a variety of municipal services. The Public Services Department maintains and operates the city's infrastructure, including roadways, parks, and buildings, while managing capital projects and engineering tasks. Fire, EMS, and HAZMAT response are contracted through the Unified Fire Authority. Law enforcement is contracted through the Unified Police Department.

Governing Body

The governing body of the city consists of the Mayor who is elected at large and five council members who are elected by districts. The city also has a City Manager who serves as the chief administrative officer under the direction of the city council as the city operates under the Council–Manager form of government.

DRAFT

Development Trends

Holladay Village Project: The city has experienced significant redevelopment in and near the Holladay Village area, including retail, office, and residential development. A significant mixed-use project that will include owned residential units and office and retail space is slated to be completed in early 2025 with some completed in late 2024, and a number of other projects are underway or proposed.

Cottonwood Mall Redevelopment Project: The Cottonwood Mall site has transferred ownership to a local developer, and plans are underway to develop the site using the 2008 site development master plan. This project, known as Holladay Hills, will add residential and commercial sites to the city landscape. Construction on a portion of the project is complete, and both residential and commercial units are expected to be occupied by early 2025.

Future Significant Projects: The City Council has been considering two large potential projects. One focuses on improvements needed at City Hall, including seismic reinforcement of the nearly 100-year-old facility. The other project is a generational opportunity to convert the closed Spring Lane elementary school into the city's largest public park, providing needed open space and recreational amenities in the community. In 2022, the city also pledged future sales tax revenues totaling $28,974,912 to pay debt service on sales tax revenue bonds issued in June 2022. Proceeds from these bonds are to be used to finance construction and maintenance on various road and stormwater projects.

Jurisdiction-Specific Hazards and Risk

The Calculated Priority Risk Index (CPRI) is a comprehensive assessment tool for evaluating and prioritizing risks in a given context. It considers various factors, such as probability, impact, and urgency, to determine the level of risk associated with events or situations. The results for each hazard, including its risk factor (RF) value, are shown in Table 5. The results are based on the criteria in Table 6 and the equation that follows it. The CPRI helps organizations and individuals make informed decisions about risk management and mitigation strategies. It provides a systematic approach to identifying and addressing potential issues, allowing for a more efficient allocation of resources and proactive risk prevention. With the CPRI, stakeholders can prioritize their focus on the most critical risks, leading to more effective risk management and, ultimately, better outcomes.

Table 5: Calculated Priority Risk Index Values for the City of Holladay

Type of Hazard Event	Probability of Future Events	Spatial Extent	Severity of Life/ Property Impact	Warning Time	Duration	Response Capacity	Risk Factor Value
Avalanche	1	1	2	4	2	2	1.8
Drought	4	4	1	1	4	1	2.5
Earthquake	1	4	4	4	4	4	3.1
Extreme Heat	4	4	1	1	4	1	2.5
Extreme Cold	4	4	1	1	4	1	2.5

DRAFT

Type of Hazard Event	Probability of Future Events	Spatial Extent	Severity of Life/ Property Impact	Warning Time	Duration	Response Capacity	Risk Factor Value
Flooding	3	2	2	1	4	2	2.4
Landslide/ Slope Failure	1	1	2	4	4	2	2.0
Radon	4	4	1	1	0	1	2.2
Heavy Rain	3	2	2	2	3	2	2.4
High Wind	3	4	2	2	3	2	2.6
Lightning	4	1	1	3	1	1	2.1
Severe Winter Weather	4	4	1	1	2	1	2.3
Tornado	1	2	3	4	3	4	2.4
Wildfire	3	2	2	4	4	2	2.7
Dam Failure	1	3	2	4	4	3	2.3
Civil Disturbance	2	1	2	4	2	3	2.2
Cyberattack	2	1	2	4	3	4	2.4
Hazardous Materials Incident (Transportation & Fixed Facility)	3	2	2	4	2	2	2.5
Public Health Epidemic/ Pandemic	3	4	1	1	4	2	2
Terrorism	2	1	2	4	2	3	2.2

Table 6: Criteria for the Calculated Priority Risk Index

Risk Index Factor	Degree of Risk Level		Criteria	Factor Weight for Degree of Risk Level
Probability of Future Events	1	Unlikely	Less than 1 percent probability of occurrence in the next year or a recurrence interval of greater than every 100 years.	30%
	2	Occasional	1 to 10 percent probability of occurrence in the next year or a recurrence interval of 11 to 100 years.	
	3	Likely	11 to 90 percent probability of occurrence in the next year or a recurrence interval of 1 to 10 years.	

DRAFT

Risk Index Factor	Degree of Risk Level		Criteria	Factor Weight for Degree of Risk Level
	4	Highly Likely	91 to 100 percent probability of occurrence in the next year or a recurrence interval of less than 1 year.	
Spatial Extent	1	Limited	Less than 10% of the planning area could be impacted.	10%
	2	Small	10%–25% of the planning area could be impacted	
	3	Significant	25%–50% of the planning area could be impacted.	
	4	Extensive	50%–100% of the planning area could be impacted.	
Severity of Life/Property Impact	1	Negligible	Less than 5% of the affected area's critical and non-critical facilities and structures are damaged/ destroyed. Only minor property damage and minimal disruption of life. Temporary shutdown of critical facilities.	30%
	2	Limited	More than 5% and less than 25% percent of property in the affected area is damaged/ destroyed. Complete shutdown of critical facilities for more than one day but less than one week.	
	3	Critical	More than 25% and less than 50% of property in the affected area is damaged/ destroyed. Complete shutdown of critical facilities for over a week but less than one month.	
	4	Catastrophic	Over 50% of critical and non-critical facilities and infrastructures in the affected area are damaged/ destroyed. Complete shutdown of critical facilities for more than one month.	
Warning Time	1	Self-defined	More than 24 hours	10%
	2	Self-defined	12 to 24 hours.	
	3	Self-defined	6 to 12 hours.	
	4	Self-defined	Less than 6 hours.	
Duration	1	Brief	Up to 6 hours.	10%
	2	Intermediate	Up to one day.	
	3	Extended	Up to one week.	
	4	Prolonged	More than one week.	
Response Capacity	1	High	Significant resources and capability to respond to this kind of event; staff are trained, experienced, and ready.	10%
	2	Medium	Some resources and capability to respond to this kind of staff; some staff may be trained,	

DRAFT

Risk Index Factor	Degree of Risk Level		Criteria	Factor Weight for Degree of Risk Level
			experienced, and ready while others may need additional support.	
	3	Low	Limited resources and capability to respond to this kind of event; additional staff or staff training needed.	
	4	None	No resources and capability to respond this kind of event; additional outside support would be required.	

RISK FACTOR (RF) EQUATION

RF Value = [(Probability x 0.30) + (Spatial Extent x 0.10) + (Severity of Life/Property Impact x 0.30) + (Warning Time x 0.10) + (Duration x 0.10) + (Response Capacity x 0.10)]

Hazards with an RF value greater than or equal to 2.5 are considered high risk. Those with RF values of 2.0 to 2.4 are considered moderate risk hazards, and those with an RF value less than 2.0 are considered low risk. The highest possible RF value is 4.

Hazard Event History

Examining hazard event histories provides valuable insights to inform decision-making and help prioritize resources for risk prevention and response efforts. Table 7 lists the hazard events impacting the city of Holladay planning area since the 2019 plan update, as recorded in the Storm Events Database from the National Centers for Environmental Information.

Table 7: History of Hazard Events in the City of Holladay

Type of Hazard Event	FEMA Disaster #	Date(s)	Damage or Impacts	Description
Avalanche		N/A	None	N/A
Drought		Ongoing	The tree canopy in the big cottonwood area is slowly drying out from drought and a lack of irrigation (which was discontinued). Trees in this area are dying as they are stressed and at the end of their expected lifespan.	The city of Holladay has a large tree canopy (riparian area) along Big Cottonwood Creek. Drought stresses the existing, aging trees.
Earthquake		03/18/ 2020	No damage or major impacts in our jurisdiction.	5.7 earthquake in Magna (West of Holladay). The quake was in the morning

DRAFT

Type of Hazard Event	FEMA Disaster #	Date(s)	Damage or Impacts	Description
				hour before regular work hours.
Extreme Heat			No known numbers on people needing/using cooling centers. Public outreach to residents for available cooling centers was completed as applicable through social media and city email blasts. Information was also put in City Newsletter.	Multiple heat warnings issued by NWS for this area. County owned buildings opened to residents who needed a place to cool down.
Extreme Cold		Unknown	None	Unknown
Flooding		N/A	The only flooding was due to a heavy rain event. See below. No spring runoff flooding in 2023, Big Cottonwood Creek is fairly well controlled by Salt Lake County Flood Control.	Unknown
Landslide/ Slope Failure		N/A	None	Unknown
Radon		Ongoing	No event, ongoing health concern for individuals in high concentration areas.	Unknown
Heavy Rain		08/18/ 2021	A poorly maintained and overwhelmed storm drain system resulted in flooding of about a dozen residential properties. One home was later purchased by the city and demolished, the lot will not be rebuilt upon.	Heavy rainfall event two evenings in a row (accumulation .91 and 1.25 inches respectively) resulted in soil saturation and an overwhelmed storm drain system.
High Wind		09/08/ 2020	Downed trees and tree limbs required a four-day cleanup effort and the assistance of some partners to clear canal areas. Some residents/neighborhoods were without power for several days.	A widespread windstorm hit Salt Lake County with wind speeds of up to 99 mph in some areas, estimated to be 50–60 mph in Holladay.
Lightning		Ongoing	Unknown	Ongoing risk at public events, specifically concerts in the park, 4th of July celebration, and Blue Moon.
Severe Winter Weather		N/A	None	
Tornado		N/A	None	

DRAFT

Type of Hazard Event	FEMA Disaster #	Date(s)	Damage or Impacts	Description
Wildfire		N/A	None	
Dam Failure		N/A	None	
Civil Disturbance		2020	Non	
Cyberattack		N/A	None	
Hazardous Materials Incident (Transporta-tion & Fixed Facility)		04/23/ 2024	Directly adjacent neighbors were evacuated for approximately 24 hours, and approximately 430 homes in a half-mile radius were evacuated overnight for five hours. Eight homes were unable to return for an additional 8–10 hours, one home was destroyed, and multiple homes had broken windows and needed major repairs. Major roads were closed for a full day requiring signage and rerouting of traffic. Two families were displaced permanently.	Unstable dynamite and a large amount of unknown hazardous chemicals were found in a private residence. The dynamite could not be relocated for disposal. A controlled detonation was carried out on location after evacuation of surrounding areas.
Public Health Epidemic/ Pandemic		2020	Pivoted to online services model–virtual city hall. Citizens were very supportive of local businesses. The city provided microgrants to help with safety measures.	
Terrorism		N/A		

National Flood Insurance Program Summary

The city of Holladay participates in the National Flood Insurance Program (NFIP). Table 8 displays statistics related to the NFIP. The city of Holladay will continue to adopt and enforce floodplain management requirements, including regulating new construction of Special Flood Hazard Areas, making substantial improvement and/or damage determinations, or determining the permits required of owners to bring a substantially improved or damaged structure back into compliance. The city of Holladay does not participate in the Community Rating System (CRS).

Table 8: National Flood Insurance Program Status

Init FHBM Identified	Init FIRM Identified	Current Effective Map Date	Adopted Date	Date Joined NFIP	Tribal
8/30/77	12/18/85	11/19/21	2021	8/24/04	No

DRAFT

Table 9: National Flood Insurance Overview for the City of Holladay

Community ID	Number of Losses	Total Net Payment	Active Policies	Total Coverage
490253	6	$20,061.95	106	$25,804,000

Table 10: Responses on Floodplain Management for the City of Holladay[1]

Question	Response
Who is the floodplain manager? Is this their primary or secondary role?	Community Development Director – NFIP is secondary role.
Does the floodplain manager have adequate training and capacity for their role? If not, what else is needed?	Floodplain training sessions are offered twice a year, as the applications and theories do not change. Training needs to be more consistent. Capacity – currently there is adequate capacity to deal with incoming permits. However, the 14-day review requirement on permitting does cause issues as the floodplain review takes longer.
How does the community enforce its floodplain rules? Does enforcement include monitoring compliance and acting to correct violations?	Through new development and redevelopment permitting – all rules are applied. Monitoring is difficult as most of that is on private property and not accessible. When issues are known, they are enforced.
When was the community's most recent Community Assistance Visit (CAV)?	Unknown
Were any violations noted on the community's most recent CAV?	N/A
Is there an upcoming CAV? If no, is one needed?	N/A
When was the most recent floodplain management ordinance adopted?	2012
Does your community participate in the Community Rating System (CRS)? If so, describe the steps the community has taken to achieve the CRS goals.	No – planning may investigate this for future.
Does the community's floodplain management ordinance include any higher standards? If so, please list.	Unknown
Who is responsible for permitting?	Floodplain manager and CED Director (one and the same)
How does the community issue development permits in the special flood hazard area?	There is a floodplain permit that is separate from the development permit.
Does the community maintain elevation certificates?	Yes

[1] Add acronyms

Question	Response
Does the community track the number of buildings in the special flood hazard area? If yes, are there any trends?	Not that is currently up to date.
How many repetitive loss (RL) structures does the community have? (List number and type of structure)	0
How many severe repetitive loss (SRL) structures does the community have? (List number and type of structure)	0
Have any RL/SRL properties been mitigated since the last plan update?	0
Who is responsible for making substantial damage/substantial improvement determinations?	City Engineers
How does the substantial damage/substantial improvement process work in your community?	Initiated by a claim, improvements determined after.
Is there sufficient staff and training to make substantial damage/substantial improvement determinations?	There could be more training. If there were a major event, there would not be adequate staffing.
How are substantial damage/substantial improvement requirements messaged to the public before and after an event?	We have never done this before, but it would likely be a notification. Before: all hazards guide After: what to look for guide on website, social media
Have any substantially damaged/substantially improved structures been mitigated since the last plan update?	0
How will the community remain in compliance with the NFIP moving forward? (Simply stating "the community will continue to comply with the NFIP" will not meet FEMA's planning requirements)	Annually notify properties in the floodplain of NFIP requirements for flood mitigation.
How does the community support map change requests? This could be requests during the Risk MAP process or through Letters of Map Amendment or Revision.	Digitally through FEMAs website portal.
When did the latest Flood Insurance Rate Map (FIRM) become effective?	2021
When was the latest FIRM adopted?	2009
Is the FIRM and Flood Insurance Study (FIS) report in an accessible location? How would the public get access to their flood map information?	Send public to FEMA's website. Could add a link on our website.
Does the community use any Risk MAP products? If so, describe.	GIS/Esri

Question	Response
Does the community collect updated floodplain data or modeling? Is this shared with partners and with FEMA?	No
Other comments?	N/A
How does the community educate the public on floodplain management and the availability of flood insurance, in and out of the floodplain?	Website links, permitting processes
How does the community engage with insurance agents on flood insurance?	The city may provide a statement on building code standards.
Does the community (or state) have flood hazard disclosure laws?	The state of Utah does.
How familiar is the public with their flood insurance options?	Most people are familiar if they live in a hazard area. There has been confusion with new flooding maps.
How many properties have flood insurance in the community?	Unknown – we do not monitor that.
Are there any areas where flood insurance is lacking?	Unknown.
Other comments?	N/A

Jurisdiction-Specific Vulnerabilities and Impacts

Table 11 provides information on the vulnerable assets in the city of Holladay, including its critical facilities, highlighting the city's vulnerability to identified hazards. It also describes the potential impacts on the community arising from those vulnerabilities. By understanding the risks associated with these assets, local authorities can develop proactive strategies to mitigate vulnerabilities and ensure the safety and functionality of these important assets during hazard events. These data are invaluable for decision-making and prioritizing resources for emergency response and preparedness efforts, ultimately contributing to more effective risk management and greater resilience in the community.

Vulnerable assets within the city include 1 fire station, 1 police station, 1 emergency operations center (EOC), and 13 schools. Primary transportation routes include I-215, 2300 East/Holladay Boulevard, Highland Drive, Van Winkle, and Big Cottonwood Rd/6200 South. Community centers and recreation assets include Holladay Lions Recreation Center, the Mt. Olympus Senior Center, Holladay City Hall Park, the Big Cottonwood Regional Park Old Mill Golf Course, Knudsen Park, and several trailheads. Big Cottonwood Creek travels from southeast to northwest across the city. There are 10 homes in Holladay listed on the National Register of Historic Places and other unregistered structures of a historic nature. "The Cove" refers to an area in southeast Holladay, near Canyon Cove Drive, that may face unique risks due to its proximity to the mountains.

DRAFT

Table 11: Jurisdiction-Specific Vulnerabilities and Impacts in the City of Holladay

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
Avalanche	People	*Vulnerability*: The cove is the only area where there could be any risk of avalanche in the jurisdiction. There is no data to support a risk of avalanches.
	Structures	N/A – No historic avalanches in the jurisdiction.
Drought	People	*Vulnerability*: All residents are vulnerable to drought conditions. *Impacts*: Residents may face restrictions on water use.
	Structures	*Vulnerability*: Drought increases the risk of wildfire. Homes along I-215, especially on the south end of the jurisdiction, are at risk from potential fires. *Impacts*: Drought may contribute to fire danger from dry grasses and sparks causing fast-moving fires that may threaten structures.
	Economic Assets	*Vulnerability*: Businesses that are reliant on water are vulnerable to drought conditions. *Impacts*: Prolonged drought may lead to water restrictions or increased costs for culinary water and irrigation water for landscaping.
	Natural, Historic, and Cultural Resources	*Vulnerability*: Trees and vegetation are vulnerable to drought impacts. *Impacts*: The Big Cottonwood tree canopy has been impacted by drought and lack of additional irrigation. Trees are stressed and aging, so more of them are dying off.
	Critical Facilities and Infrastructure	*Vulnerability*: Extended droughts can lead to reduced water availability, impacting the reliability of drinking water supplies. *Impacts*: Drought not only affects residents but also places additional stress on water utilities to meet demand. The U.S. Environmental Protection Agency has announced a $110 million loan to enhance drinking water reliability in drought-prone regions in Utah, highlighting the importance of maintaining resilient water infrastructure.
	Community Activities	*Vulnerability*: Community events are vulnerable to restrictions during drought conditions. *Impacts*: Fireworks have been limited during the drought due to dry vegetation, which poses a fire risk.
Earthquake	People	*Vulnerability*: All Holladay residents are vulnerable to earthquakes. The elderly and those with access and functional needs might have special requirements during such events. *Impacts*: People may be injured or killed by falling objects or collapsed structures. Power and water supplies are likely to be disrupted. Depending on weather and other circumstances, vulnerable populations will be affected more severely.
	Structures	*Vulnerability*: All buildings are vulnerable, particularly those with unreinforced masonry (URMs). *Impacts:* All structures could experience damage in a strong earthquake. Past damage estimates indicate greater damage to structures north of Casto Lane and Murray Holladay Road and north of 6200 South.
	Economic Assets	*Vulnerability*: All Holladay businesses are vulnerable to earthquake impacts.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		Impacts: Earthquakes are likely to cause extensive economic losses. Businesses throughout the city could experience damage to their buildings and inventory. Damage to infrastructure can also disrupt the ability of businesses to remain in operation. Roads, rail transit lines, and utilities such as power, water, and communication systems are all vulnerable to damage from earthquakes, which can disrupt economic activity.
	Natural, Historic, and Cultural Resources	*Vulnerability*: Historic homes are vulnerable to earthquake damage. *Impacts*: Older structures are more susceptible to damage during seismic events.
	Critical Facilities and Infrastructure	*Vulnerability*: Transportation networks, water systems, and all critical facilities are vulnerable to earthquakes. *Impacts*: I-215 and other major roadways, such as Wasatch Boulevard, Van Winkle, 4500 South, and 3900 South, are vulnerable to disruption. Infrastructure, such as water systems, may be affected by liquefaction. City Hall and the Unified Police Department precinct are likely to be unusable after a seismic event. St. Mark's Hospital and the Intermountain Medical Center (IMC) may be disrupted. (Neither is within the boundaries of Holladay, but St. Mark's is just outside.) Long-term healthcare centers are also at risk.
	Community Activities	*Vulnerability*: All community activities are vulnerable to disruption by earthquakes. *Impacts*: Earthquakes disrupt community routines, halting gatherings, events, and local services. Key community spaces like schools, parks, and local businesses would face closure or restricted access.
Extreme Heat	People	*Vulnerability*: Approximately 18% of the population is above the age of 64. These individuals are at higher risk during extreme heat events. Low-income populations are also impacted (5% live in poverty). *Impacts*: Those with underlying health conditions or without access to cooling systems can experience heat-related illnesses, such as dehydration, heat exhaustion, and heat stroke.
	Structures	*Vulnerability*: Older structures or those constructed with specific materials are vulnerable to damage from extreme heat. *Impacts*: Prolonged high temperature can cause roads to soften, warp, or crack, especially on older surfaces. Repeated expansion and contraction of materials like wood, metal, or concrete can cause warping, cracking, and weakening over time.
	Economic Assets	*Vulnerability*: All businesses are vulnerable to increased energy costs. *Impacts*: Increased energy costs for cooling systems can affect business operations.
	Natural, Historic, and Cultural Resources	*Vulnerability*: Extreme heat can affect the health of vegetation and trees. *Impacts*: Heat can stress vegetation and lead to poor health.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Critical Facilities and Infrastructure	*Vulnerability*: Long-term care facilities are vulnerable to extreme heat conditions. *Impacts*: Long-term healthcare facilities may be at risk in the event of extreme heat combined with a power outage or rolling blackouts. Holladay has eight care or rehabilitation centers, and several others are on the border of the city.
	Community Activities	*Vulnerability*: Outdoor events are vulnerable to extreme heat impacts. *Impacts*: The city of Holladay hosts an outdoor concert series during the summer and a Fourth of July celebration. Extreme heat during these events can be dangerous for attendees and staff; water and cooling areas are provided to mitigate heat risks.
Extreme Cold	People	*Vulnerability*: Approximately 18% of the population is above the age of 64. These individuals are at higher risk during extreme cold events. Low-income populations are also impacted (5% live in poverty). *Impacts*: Exposed or vulnerable populations could experience health consequences such as hypothermia or frostbite.
	Structures	*Vulnerability*: Some older structures may experience damage from burst pipes during extreme cold conditions. *Impacts*: Burst pipes can cause extensive structural and electrical damage, especially in basements and older homes. Repeated freeze–thaw cycles can cause cracks in bricks, mortar, and stucco, which may lead to long-term structural weakening.
	Economic Assets	*Vulnerability*: All businesses are vulnerable to the impacts of extreme cold. *Impacts*: Increased heating costs can affect business operations and profitability.
	Natural, Historic, and Cultural Resources	None
	Critical Facilities and Infrastructure	*Vulnerability*: Long-term care facilities, power, and transportation systems are vulnerable to extreme cold impacts. *Impacts*: Long-term healthcare facilities may be at risk in the event of extreme cold combined with a power outage. Holladay has eight elderly care or rehabilitation centers, and several are on the border of the city. Transportation routes may be impacted by ice and snow, affecting accessibility and safety.
	Community Activities	*Vulnerability*: Winter events such as the tree lighting ceremony are vulnerable to extreme cold impacts. *Impacts*: Winter events may be canceled or may be poorly attended due to adverse weather conditions.
Flooding	People	*Vulnerability*: Residents along Big Cottonwood Creek in floodplain areas (500-year and 100-year) as determined by the FEMA floodplain maps are vulnerable to flooding. *Impacts*: Fast-moving floodwaters are a safety risk; people may be swept away. If residences are damaged, people will be displaced from homes.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Structures	*Vulnerability*: Homes and businesses in the Knudsen Corner area and along Big Cottonwood Creek are at increased risk of flooding, especially from spring runoff. Flood control measures, such as the Jordan River Canal and structures up the canyon, help mitigate flooding risk in the jurisdiction. By code, ground-floor elevations are required to be above the flood elevation, but some older structures or accessory structures may not be. Homes along Heughs and Tolcate Creeks may be subject to bank erosion and subsequent flooding during high runoff. *Impacts*: Water damage to homes and buildings is possible, especially for those in flood-prone zones without proper elevation or floodproofing.
	Economic Asset	*Vulnerability*: Local businesses along waterways. *Impacts*: Commercial properties could experience damage to structures, contents or inventory.
	Natural, Historic, and Cultural Resources	*Vulnerability*: Knudsen Park is in a flood zone. Big Cottonwood Regional Park (Creekside Park) acts as a flood retention basin for Big Cottonwood Creek. The school to the west of the park might experience flooding. *Impacts*: Community sites might be inaccessible or damaged by flooding.
	Critical Facilities and Infrastructure	*Vulnerability*: There is potential for road flooding from Big Cottonwood Creek along Highland Circle, 6200 South, and Kings Row Drive. *Impacts*: Damaged or closed roads can limit access and cause disruptions for residents and may delay emergency response.
	Community Activities	*Vulnerability*: Recreation at Knudsen and Creekside Park is vulnerable to flooding impacts. *Impacts*: Facilities may be damaged or closed and events canceled.
Landslide/ Slope Failure	People	*Vulnerability*: Residents in the Cove are vulnerable to landslides and slope failure. *Impacts*: These residents may be at increased risk of landslides or debris flows following a wildland fire above this area and in conjunction with heavy rainfall.
	Structures	*Vulnerability*: Homes in the Cove may be at increased risk of rock falls or landslides, especially if there is a wildfire in the area. There are no historical events recorded. *Impacts*: Structures could be damaged or destroyed if a slope failure were to occur.
	Economic Assets	*Vulnerability*: There are none identified in landslide areas.
	Natural, Historic, and Cultural Resources	*Vulnerability*: Heughs Canyon, other hiking areas might have some risk. *Impacts*: Trailhead amenities could be damaged or trails inaccessible.
	Critical Facilities and Infrastructure	*Vulnerability*: Wasatch Boulevard may be subject to rock falls and landslides under the right circumstances.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		Impacts: Damaged or closed roads can limit access that causes disruptions for residents and may delay emergency response.
	Community Activities	*Vulnerability*: Hiking and other recreation activities in canyon areas. *Impacts*: Trailhead amenities could be damaged or trails inaccessible.
Radon	People	*Vulnerability*: Holladay has areas with high concentrations of radon. Utahradon.org states that 42% of homes tested in Holladay have dangerous levels of radon. Individuals may be at risk depending on the location and layout of their homes. *Impacts*: Residents exposed to radon have higher risk of developing lung cancer. Additional public awareness campaigns could benefit the community.
	Structures	N/A – Radon does not affect structures.
	Economic Assets	N/A – Radon is primarily a health risk.
	Natural, Historic, and Cultural Resources	N/A – Radon is primarily a health risk.
	Critical Facilities and Infrastructure	N/A – Radon is primarily a health risk.
	Community Activities	N/A – Radon is primarily a health risk.
Heavy Rain	People	*Vulnerability*: Residents along waterways are vulnerable to heavy rain impacts. *Impacts*: There is a safety risk for people near fast-moving water.
	Structures	*Vulnerability*: Homes and businesses along waterways, especially along Big Cottonwood Creek, and the Kings Row area, are at risk. *Impacts*: Structures and contents inside can be damaged or destroyed by flash flooding or pooling of water during or following heavy rain.
	Economic Assets	*Vulnerability*: Businesses situated along waterways or in flooding zones are vulnerable to heavy rain impacts. *Impacts*: Structures or inventory may be damaged by flooding.
	Natural, Historic, and Cultural Resources	N/A
	Critical Facilities and Infrastructure	*Vulnerability*: The storm drain system is dated in some areas and can be overwhelmed by heavy rainfall, especially when soil saturation is high or multiple events occur in succession. *Impacts*: Roadways may be impassable due to standing water. This disrupts travel for residents and may delay emergency response.
	Community Activities	*Vulnerability*: Prolonged rain can damage grass, sport fields, or playgrounds and may lead to temporary closures. *Impacts*: Community events and recreation activities may be postponed or canceled.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
High Wind	People	*Vulnerability*: Holladay has many trees, and any resident may be impacted by fallen trees, limbs, or power lines. *Impacts*: Residents may be injured by falling trees. In past windstorms, many people were without power for days before Rocky Mountain Power could reconnect lines to homes. Due to older infrastructure, connections from streets to homes were impacted.
	Structures	*Vulnerability*: Large and old trees can fall on structures; tree limbs may also damage structures. This can happen all over the city, but there is a higher risk in the Cottonwoods due to the old and dying trees there. *Impacts*: Falling trees and limbs can cause significant damage to structures.
	Economic Assets	*Vulnerability*: Businesses throughout Holladay are vulnerable to high wind impacts. *Impacts*: Businesses may be adversely affected by power outages caused by high winds.
	Natural, Historic, and Cultural Resources	*Vulnerability*: Mature trees are vulnerable to high wind impacts. *Impacts*: Trees in the cottonwood/tree canopy may be damaged or lost in high wind events. As these trees age, they are more susceptible to damage and loss.
	Critical Facilities and Infrastructure	*Vulnerability*: Power lines and communications lines are vulnerable to damage from downed trees. Debris on roads can also cause disruptions *Impacts*: Power outages can disrupt activity throughout the city. Roads may be blocked by fallen trees, tree limbs, and powerlines until cleanup can be facilitated.
	Community Activities	*Vulnerability*: Outdoor activities, marathons, outdoor concert series, the Blue Moon Festival, and Fourth of July events can be impacted by sudden gusts of high winds or incoming storms. *Impacts*: Events may be postponed or canceled. Wind has been a factor in past events, but no major damage or injuries have been reported.
Lightning	People	*Vulnerability*: Those recreating outdoors may be subject to sudden lightning storms. Holladay is an active community with many outdoor events and nearby outdoor recreation opportunities. *Impacts*: People can be injured or killed by a lightning strike.
	Structures	*Vulnerability*: Homes and businesses in the Cove and along Wasatch Boulevard are vulnerable to lightning impacts. *Impacts*: These structures are in the wildland–urban interface (WUI) and are at higher risk of fire damage from lightning strikes.
	Economic Assets	*Vulnerability*: Businesses and homeowners are vulnerable to lightning-related impacts. *Impacts*: Fires or electrical or communication system failures can increase repair costs for homeowners and businesses.
	Natural, Historic, and Cultural Resources	*Vulnerability*: Historic trees and homes are vulnerable to lightning impacts. *Impacts*: Lightning can damage trees or historic homes and can cause fires.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Critical Facilities and Infrastructure	*Vulnerability*: Power networks may be impacted by lightning (Rocky Mountain Power owns the power network). *Impacts*: Power outages can disrupt public services, emergency response, and other community activities.
	Community Activities	*Vulnerability*: Outdoor concerts, the Blue Moon Festival, Fourth of July celebration, and marathons are vulnerable to lightning impacts.. *Impacts*: There are safety concerns for attendees if shelter is not available. Events may be postponed or canceled.
Severe Winter Weather	People	*Vulnerability*: All residents are vulnerable to severe winter weather. The east benches tend to get higher snow accumulation. *Impacts*: Residents may be temporarily affected by heavy snow and snow squalls due to transportation impacts. Residents along the east bench may be unable to get in and out of their neighborhoods for a few hours until plows can get to their smaller, steep streets. Many residents commute outside the city. Approximately 13,000 residents leave the city for work daily. If heavy snow results in power loss, those with access and functional needs, the elderly, and lower-income individuals may be at higher risk of adverse effects from cold.
	Structures	*Vulnerability*: All structures are vulnerable; older buildings may have higher risks. *Impacts*: Ice buildup can clog and tear down gutters, leading to water pooling and foundation damage. When accompanied by extreme cold temperatures, storms can result in burst pipes, causing extensive structural and electrical damage, especially in basements and older homes. Repeated freeze–thaw cycles can cause cracks in bricks, mortar, and stucco, which can lead to long-term structural weakening.
	Economic Assets	*Vulnerability*: Employers, such as schools, may be temporarily affected by severe winter weather when roads are unsafe to travel on. *Impacts*: Employees may be unable to get to work. Some businesses may close temporarily.
	Natural, Historic, and Cultural Resources	N/A – Structures are built to withstand typical winter weather.
	Critical Facilities and Infrastructure	*Vulnerability*: Power and transportation systems are vulnerable to severe winter weather impacts. Impacts: Power may be interrupted during heavy snow or blizzard. Transportation may be temporarily disrupted in heavy snow, blizzard, icing, and snow squall conditions. Mobility may be limited, and emergency response may be delayed.
	Community Activities	*Vulnerability*: Community activities face temporary disruption due to severe winter weather if transportation is affected. *Impacts*: Events may be postponed or canceled. Attendance at events may be low.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
Tornado	People	*Vulnerability*: Any member of our population could be affected by a tornado, although those on the west end of the city would be at higher risk due to topography (though the risk remains very low). *Impacts*: Those in path of tornado could be injured or killed by blowing debris or collapsing structures.
	Structures	*Vulnerability*: Any structures in the path of a tornado are vulnerable to damage. *Impacts*: Powerful tornado winds can damage or destroy structures, particularly those that are not securely anchored to foundations, such as manufactured homes or recreational vehicles. Damage to roofs and broken windows is likely.
	Economic Assets	*Vulnerability*: Any local small businesses in the path of a tornado are vulnerable to disruption. *Impacts*: Businesses may be damaged by a tornado, or their ability to operate may be disrupted if power or communication systems fail.
	Natural, Historic, and Cultural Resources	*Vulnerability*: Historic homes, trees, and community centers/parks, including the library and Lions Rec Center, are vulnerable to tornado impacts. *Impacts*: Older structures may not be able to withstand strong winds. Community buildings may also be damaged.
	Critical Facilities and Infrastructure	*Vulnerability*: City Hall, the police precinct, the fire station, and essential infrastructure—including power and water systems—are vulnerable to tornado impacts. *Impacts*: Critical facilities may be damaged or unable to function due to power outages.
	Community Activities	*Vulnerability*: Summer outdoor activities are vulnerable to tornado impacts. *Impacts*: There are safety concerns for people outside without shelter. Events could be postponed or canceled.
Wildfire	People	*Vulnerability*: Residents in the Cove are at higher risk of being impacted by wildfire as they are situated along the WUI. *Impacts*: There is a safety risk for those near the fire if they are unable to evacuate quickly. Residents may be temporarily displaced by evacuations. Older residents and those with access or functional needs may face difficulty if evacuation is needed. Older and younger residents, as well as those with underlying pulmonary or cardiac health conditions, may face serious health consequences from poor air quality.
	Structures	*Vulnerability*: There are approximately 180 housing units in the Cove area at risk. Structures in the Cottonwood area may be at increased risk of fire due to the tree canopy and old water pipes, low water pressure, and limited access. *Impacts*: Fire is destructive to structures. Those with inadequate defensible space or made of combustible materials may be at higher risk. Wind-blown embers can start spot fires and damage structures not immediately in the WUI. Structures can also be damaged by secondary hazards, such as post-fire debris flows.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Economic Assets	*Vulnerability*: Assets such as the golf course, three hotels, a few corporate offices are vulnerable to wildfire impacts. *Impacts*: These are unlikely to be impacted, but under the right conditions, they may experience damage. Businesses in fire zones may suffer structural damage or closure due to poor air quality or may be affected by evacuations. Those not directly affected by fire may see a decline in customer visits and revenue during and following a wildfire.
	Natural, Historic, and Cultural Resources	*Vulnerability*: Heughs Canyon Trail and other recreational areas in the foothills are vulnerable to wildfire impacts. *Impacts*: Recreation areas may be inaccessible or damaged by fire.
	Critical Facilities and Infrastructure	*Vulnerability*: Wasatch Boulevard and I-215 could be closed temporarily during a wildfire. *Impacts*: Roads may be closed due to flames, smoke, fallen trees, or to evacuation efforts. Traffic around the valley could be affected if these major routes are closed.
	Community Activities	*Vulnerability*: Recreation and outdoor events are vulnerable to wildfire impacts. *Impacts*: Marathons and general recreation in the canyons may be interrupted in case of wildfire.
Dam Failure	People	*Vulnerability*: Residents along Big Cottonwood Creek who reside in an inundation zone for Spencer's Dam, Lake Mary-Phoebe Dam, or Twin Lakes Dam are vulnerable to dam failure impacts. *Impacts*: These residents may be subject to evacuation and flooding of their homes and businesses. Fast-moving water is a safety concern. One senior living home is in the inundation zone for Twin Lakes Dam. These are high hazard potential dams, which indicates that a failure can result in loss of life.
	Structures	*Vulnerability*: Homes and businesses in the inundation area are vulnerable to damage from dam failure. *Impacts*: Flooding following a dam failure can damage or destroy structures and their contents.
	Economic Assets	*Vulnerability*: Businesses in the Cottonwood Mall site area and Knudsen Corner are vulnerable to dam failure impacts. *Impacts*: Businesses may be damaged or may be closed following dam failure. Flooded commercial properties can lead to prolonged business interruptions, revenue losses, and costly rebuilding.
	Natural, Historic, and Cultural Resources	*Vulnerability*: Knudsen Corner is vulnerable to dam failure impacts. *Impacts*: Trees and park amenities may be damaged by flooding.
	Critical Facilities and Infrastructure	*Vulnerability*: Roadways, power lines, and water infrastructure are vulnerable to damage from dam failure. *Impacts*: I-215, Wasatch Boulevard, and other major roadways could be damaged and disrupt mobility in the community. Emergency response could be delayed. Power and water infrastructure could be damaged and lead to outages for residents and businesses.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Community Activities	*Vulnerability*: The Senior Center and Lions Rec Center (just outside Holladay) are in inundation zones. *Impacts*: Loss or damage to these facilities would impact community activities.
Civil Disturbance	People	Business owners (looting), those attending community events or large gatherings.
	Structures	City Hall/Police Precinct, Fire Station, The Plaza
	Economic Assets	The Plaza, shopping centers.
	Natural, Historic, and Cultural Resources	The Plaza
	Critical Facilities and Infrastructure	City Hall/Police Precinct, Fire Station, The Plaza.
	Community Activities	Any gathering with a lot of people – Blue Moon, 4th of July Celebration are our largest gatherings.
Cyberattack	People	Residents could have their private information stolen—social security numbers, banking information, medical records—from local services (schools, clinics, or city systems). Online services (like utility billing, permit applications, or emergency alerts) could be interrupted, limiting how people interact with the city.
	Structures	In homes or businesses with smart locks or security systems, hackers could gain access or disable them, increasing the risk of break-ins.
	Economic Assets	Schools, St. Marks Hospital (just outside city boundary), Utah Transit Authority public transit. Financial records, payroll systems, or transaction histories could be manipulated or stolen.
	Natural, Historic, and Cultural Resources	None
	Critical Facilities and Infrastructure	Power systems (Rocky Mountain Power), water systems (partner agencies)
	Community Activities	Online calendars, permit systems, or event registration platforms could be taken offline.
Hazardous Materials Incident (Transporta-tion & Fixed Facility)	People	Residents along the I-215 corridor may be impacted by a HAZMAT incident along the roadway which wraps around the south and eastern boarders of the city. Residents would be impacted if the I-215 corridor were shut down, traffic would be very congested. Toxic fumes, spills, or explosions can cause respiratory problems, skin burns, or other health emergencies. Vulnerable groups (children, elderly, people with asthma) are especially at risk. Residents near the incident may need to evacuate or stay indoors, possibly for hours or even days.
	Structures	Homes are situated along I-215. Homes and businesses near the site may absorb chemicals into walls, floors, or HVAC systems, requiring

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		deep cleaning or even demolition. Some HAZMAT materials are flammable or reactive. A transportation crash or leak at a facility could trigger explosions or structural fires. Buildings may be deemed unlivable until cleared by HAZMAT teams, especially if the material is long-lasting or highly toxic.
	Economic Assets	Stores, restaurants, and offices in the hazard zone may have to close during clean-up, losing days or weeks of revenue. Property owners or companies found responsible could face steep environmental clean-up costs, legal liability, and fines.
	Natural, Historic, and Cultural Resources	Knudsen Park and Olympus Hills Park are situated near I-215.
	Critical Facilities and Infrastructure	A HAZMAT spill on Holladay Blvd, Highland Drive, or nearby freeways like I-215 could shut down traffic and limit access to schools, fire stations, or clinics. Firefighters, HAZMAT crews, and medical responders might be overwhelmed or exposed during cleanup.
	Community Activities	Outdoor events near the spill may be called off due to poor air quality or safety risks. Recreation centers, churches, or schools near the incident might need to close temporarily, disrupting routines.
Public Health Epidemic/ Pandemic	People	13% of the population in Holladay is elderly and may be disproportionally affected by an epidemic or pandemic, both through isolation and ill health effects. 5% of the population is low income and might have healthcare access issues. Depending on the severity of the epidemic/pandemic, all populations may be impacted.
	Structures	None
	Economic Assets	Schools (Granite School District), local businesses, and hospitals (St. Marks just outside boundary) may be affected.
	Natural, Historic, and Cultural Resources	Lions Rec Center. county library. schools (Granite District – 5 elementary, 2 junior high, 1 high school.)
	Critical Facilities and Infrastructure	None
	Community Activities	Community gatherings may be canceled or postponed or changed.
Terrorism	People	None in particular
	Structures	City Hall, Police Precinct, Justice Court.
	Economic Assets	Shopping and commercial centers (The Plaza (Holladay Village), Cottonwood Mall Site, VanWinkle, Millrock).
	Natural, Historic, and Cultural Resources	Schools

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Critical Facilities and Infrastructure	I-215 (Utah Department of Transportation)
	Community Activities	4th of July, Blue Moon, marathons (private).

Jurisdiction-Specific Changes in Vulnerability

Hazard events can impact communities, infrastructures, and ecosystems. The severity of these impacts can be influenced by climate change, population patterns, and land use developments. Understanding these factors is crucial for the city of Holladay to develop a resilient community and minimize the impacts of hazards. Table 12 displays the unique changes within the community and the related effects of each hazard on the city of Holladay.

DRAFT

Table 12: Jurisdiction-Specific Changes in Vulnerability in the City of Holladay

Type of Hazard Event	Description of Potential Impacts	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
Avalanche	N/A – Avalanche is historically not a risk within our jurisdictional boundaries.	More-extreme winter storms and changes in temperature may increase the risk of avalanche in new areas or larger avalanches in expected areas. Unknown if risk is greater in the city due to climate change.	N/A – Holladay is fairly built out, no new areas of growth.	N/A – The cove has been and remains a residential area.	Stayed the same
Drought	Loss of tree canopy, dying trees and increased fire/wind damage risk.	Extreme weather may lead to worsening drought in some years.	N/A – Holladay is fairly built out, no large areas of growth.	N/A – Drought is widespread.	Stayed the same
Earthquake	Widespread loss of buildings, damage to water systems, damage to power systems, damage to transportation routes (especially bridges)	N/A – weather does not impact likelihood of earthquake	N/A – Holladay is fairly built out, no new areas of growth.	Development has not changed greatly. Earthquakes are widespread and will affect every area. Holladay Hills and the Village have added over 300 units. Overall population change is around 3000.	Stayed the same
Extreme Heat	Impacts to elderly on high-heat days. May indirectly lead to wildfire	There are more high-heat days and warnings for when temperatures do not cool overnight. The incidence and duration of heat waves have increased.	N/A – Holladay is fairly built out, no new areas of growth.	N/A – Heat is widespread.	Stayed the same

DRAFT

Type of Hazard Event	Description of Potential Impacts	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
Extreme Cold	Freezing temperatures occur annually in Holladay. They impact the elderly and low-income/transient population the most.	Extremes in weather may bring some colder days than expected, but as a general rule, heat has been a larger issue in recent years.	N/A	N/A	Stayed the same
Flooding	Areas along Big Cottonwood Creek, especially in Knudsen Corner, are in floodplain. This area is mainly residential, with a few businesses. Homes and small businesses may experience limited flooding.	Warmer weather in the spring can contribute to runoff flooding, as snow melts all at once, especially in the mid elevations. There has been increased concern about this the last few years with no direct flooding in Holladay.	N/A	Holladay Hills is no longer in a floodplain, per updates. Commercial use has declined, but residential units have increased by about 250.	Increased
Landslide/ Slope Failure	The Cove and East Bench areas of Holladay may be subject to slope instability and rockfalls, especially in wet years. Risk levels are unknown.	Wetter years and repeated rain events can increase soil saturation and the risk of landslide/slope failure, as has occurred in nearby jurisdictions over the last few years.	N/A – Cove and areas along Wasatch Blvd. are built out.	N/A –The Cove and areas along Wasatch Boulevard are built out.	Stayed the same
Radon	Effects on public health depend on area of residence and availability of mitigation systems for individuals living in those areas.	N/A	Increase of around 3000 who may be impacted by radon, depending on area and dwelling.	N/A	Increased
Heavy Rain	Heavy rain events have overwhelmed storm drain systems in the city in the last five years and caused flooding of residential areas (up to 12 homes).	Storms have become more severe in recent years. When they are frequent, soil becomes saturated, and the water has nowhere to go.	The population has remained steady; there are no areas for increased growth aside from building more high density housing. New construction has up-to-date	No large changes in land use or development. The city has identified storm drain issues and conducted mitigation.	Stayed the same

DRAFT

Type of Hazard Event	Description of Potential Impacts	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
			storm drains and fewer issues.		
High Wind	Damaged tree limbs block roads and interfere with powerlines. Some older trees may fall on structures and damage them. Widespread loss of power can take days to restore.	Stronger storms have brought more down-slope wind events and other sudden high winds.	N/A	N/A – Areas of growth not impacted more than others by high wind.	Increased
Lightning	Lightning can start fires in dry areas (in conjunction with drought) and cause injuries to people who are recreating outdoors.	More extreme weather may increase occurrences of lightning.	N/A	N/A	Stayed the same
Severe Winter Weather	Heavy snow, blizzards, snow squalls happen frequently in the winter. Holladay is situated along the bench and can get more snow and have larger transportation impacts along the east side of the city.	The last few winters have had larger, more extreme storms and widespread transportation impacts.	N/A	N/A	Stayed the same
Tornado	Tornadoes have been documented in Salt Lake County from F0–F2 strength. All areas have equal risk.	N/A	N/A	N/A	Stayed the same
Wildfire	The Cove and residential areas near Wasatch Blvd. are at risk of being evacuated or lost to wildfire as they are situated in the wildland–urban interface (WUI).	Drought conditions, high winds, and heat waves have increased over the last 5–10 years.	N/A	N/A – The Cove and WUI areas are built out	Stayed the same
Dam Failure	Widespread evacuation and flooding of areas along Big Cottonwood Creek that lie in inundation zones from Twin Lakes, Lake Mary-Phoebe, and Spencer's Dam. All three dams are high risk;	More extreme heat and cold and years of drought and then years of high snowmelt may impact the stability of dams. Unknown if that is specifically an issue with Twin	N/A	The Cottonwood Mall site is being redeveloped to include ~600 more residential units.	Stayed the same

DRAFT

Type of Hazard Event	Description of Potential Impacts	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	Spencer's is the closest with a lead time of less than 30 minutes to begin evacuating the nearest residential areas.	Lakes, Lake Mary-Phoebe, or Spencer's.			
Civil Disturbance	Civil unrest has been a nationwide issue with growing political tension. There have not been any large issues in Holladay as yet.	N/A	Population demographics have stayed the same in Holladay.	N/A	Stayed the same
Cyberattack	Cyberattack is a growing risk worldwide. Cities nearby have had security issues resulting in loss of funds.	N/A	N/A	N/A	Stayed the same
Hazardous Materials Incident (Transporta-tion & Fixed Facility)	Holladay has very few facilities with HAZMAT, However, I-215 is a major transportation corridor and tankers carrying HAZMAT can have accidents. Homes and businesses along the south and east side would be at highest risk due to proximity to the highway.	N/A	N/A	N/A	Stayed the same
Public Health Epidemic/ Pandemic	In the last 10 years, there has been an increase in public health concern, especially after COVID. The elderly continue to be impacted by COVID.	N/A	N/A	N/A	Stayed the same
Terrorism	Terrorism is a risk everywhere, especially with political tension growing nationwide. However, Holladay is not at higher risk than surrounding areas and has not had any notable incidents related to terrorism.	N/A	N/A	N/A	Stayed the same

DRAFT

Additional Public Involvement

The city of Holladay provides several opportunities for public participation. Figure 1 displays examples of outreach sharing the public survey. An announcement about the mitigation plan update and link to the survey was also included in the City Journal mailer sent to city residents.

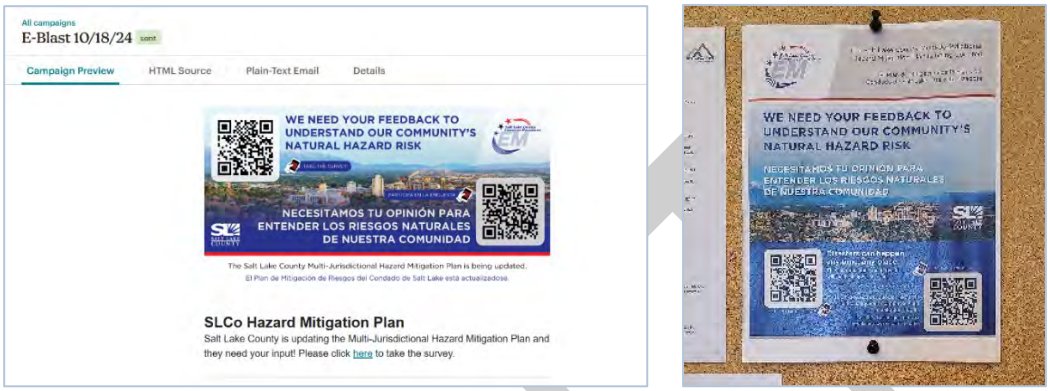


Figure 1: Email Blast Newsletter (*left*) and Flyer for the City of Holladay (*right*)

Plan Integration

Incorporating the underlying principles of the Hazard Mitigation Plan and its recommendations into other plans is a highly effective and low-cost way to expand their influence. All plan participants will use existing methods and programs to implement hazard mitigation actions where possible. As previously stated, mitigation is most successful when it is incorporated into the day-to-day functions and priorities of government and public service. This plan builds on the momentum developed through previous and related planning efforts and mitigation programs, and it recommends implementing actions where possible through these other program mechanisms. These existing mechanisms include the following:

- Regularity Capabilities
- Administrative Capabilities
- Fiscal Capabilities

Respective planning stakeholders will conduct implementation and incorporation into existing planning mechanisms and will be done through the routine actions of:

- Monitoring other planning/program agendas
- Attending other planning/program meetings
- Participating in other planning processes; and
- Monitoring community budget meetings for other community program opportunities.

The successful implementation of this plan will require constant and vigilant review of existing plans and programs for coordination and multi-objective opportunities that promote a safe, sustainable community. Regular efforts should be made to monitor the progress of mitigation actions implemented through other

DRAFT

planning mechanisms. Where appropriate, priority actions should be incorporated into planning updates. Table 9 lists existing planning mechanisms in which the Hazard Mitigation Plan has been integrated.

Table 9: Previous Plan Integration by the City of Holladay

Plan	Description
City of Holladay Comprehensive Emergency Management Plan (CEMP)	The city recently promulgated a CEMP which references the mitigation plan and incorporates mitigation actions from the previous plan update (2019).

Table 10: Future Plan Integration Opportunities for the City of Holladay

Plan	Description
General Plan	The city is currently working to update its General Plan.
Community Wildfire Protection Plan (CWPP)	The CWPP will be updated in 2026. The updated Mitigation Plan and associated mitigation actions will be referenced to inform current and future goals, capabilities, and gaps.
Evacuation Plan	An evacuation plan and map are under development. Hazard profiles and areas of concern from the Mitigation Plan will help inform areas of high risk in the evacuation plan.

Capability Assessment

Local mitigation capabilities are existing authorities, policies, programs, and resources that reduce hazard impacts or could help carry out hazard mitigation activities.

Planning and Regulatory Capabilities

Planning and regulatory capabilities are the plans, policies, codes, and ordinances that prevent and reduce the impacts of hazards.

Table 13: Assessment of the Planning Capabilities of the City of Holladay

Plan	Does it address hazards? (Y/N)	How can it be used to implement mitigation actions?	When was the last update? When is the next update?
General Plan	Y	Help identify current and future gaps in capabilities	2016. Next update 2025–2026
Capital Improvement Plan	Y	Identifies projects where mitigation actions can be implemented.	2024
Climate Change Adaptation Plan	Y	Accounts for natural constraints and hazards when considering city planning, growth, and goals.	2016. Next update 2025–2026
Community Wildfire Protection Plan	Y	Informs area of concern for wildfire and identifies gaps specific to Wildland–Urban Interface areas.	2021, Next update 2025

DRAFT

Plan	Does it address hazards? (Y/N)	How can it be used to implement mitigation actions?	When was the last update? When is the next update?
Economic Development Plan	N	Unknown	2016. Next update 2025–2026
Land Use Plan	Y	Shows areas of growth/ change, historic areas that may impact future mitigation needs	2016. Next update 2025–2026
Local Emergency Operations Plan	Y	Outlines current emergency operations procedures, may help identify areas of improvement.	Promulgated October 2024
Stormwater Management Plan	Y	Identifies high priority areas and potential hazards.	2024
Transportation Plan	N	Unknown	Unknown
Substantial Damage Plan	N/A	N/A	N/A
Other? (Describe)	N/A	N/A	N/A

Table 14: Assessment of the Regulations and Ordinances of the City of Holladay

Regulation/Ordinance	Does it effectively reduce hazard impacts?	Is it adequately administered and enforced?	When was the last update? When is the next update?
Building Code	Yes, in relation to unreinforced masonry. The city adopted the state's building code, the International Building Code (IBC 2021) with amendments. Additionally, the city adopted the 1997 edition of the Uniform Code for the Abatement of Dangerous Buildings (UCADB) and the 2003 edition of the International Property Maintenance Code.	Enforced during additions and new construction	2021
Flood Insurance Rate Maps	Y	Y	2019
Floodplain Ordinance	Y	Y	2021
Subdivision Ordinance	Yes, evaluates natural hazards	Y	2024
Zoning Ordinance	Y	Y	2024
Natural Hazard-Specific Ordinance (Stormwater, Steep Slope, Wildfire)	Yes, for some hazards. There are no specific wildfire ordinances at this time.	Y	Steep Slopes 2021 Stormwater 2020

DRAFT

Regulation/Ordinance	Does it effectively reduce hazard impacts?	Is it adequately administered and enforced?	When was the last update? When is the next update?
Acquisition of Land for Open Space and Public Recreation Use	Y	Y	2018
Prohibition of Building in At-Risk Areas	Yes, for slopes steeper than 40%	Y	1999
Other? (Describe)	Fault Study Zones and High Liquefaction Areas	Creates new engineering suggestions for construction in known fault areas.	2021

Administrative and Technical Capabilities

Administrative and technical capabilities include staff and their skills. They also include tools that can help carry out mitigation actions.

Table 15: Assessment of the Administrative Capabilities of the City of Holladay[2]

Administrative Capability	In Place? (Y/N)	Is staffing adequate?	Are staff trained on hazards and mitigation?	Is coordination between agencies and staff effective?
Chief Building Official	Y	Currently have one building inspector	Yes, more training could be useful	Yes
Civil Engineer	Y	Yes	Yes	Yes
Community Planner	Y	Yes	Yes	Yes
Emergency Manager	Y	This is currently a part time position.	Yes.	Yes
Floodplain Administrator	Y	This is a secondary position.	Yes	Yes
Geographic Information System (GIS) Coordinator	Y	Yes	Yes	Yes
Planning Commission	Y	Unknown	Unknown	Unknown
Fire Safe Council	Y	Through UFA	Unknown	Yes with UFA

[2] UFA = UFA = Unified Fire Authority.

Administrative Capability	In Place? (Y/N)	Is staffing adequate?	Are staff trained on hazards and mitigation?	Is coordination between agencies and staff effective?
CERT (Community Emergency Response Team)	Rebuilding	No, there is a need for more volunteers and participation.	Could use more training specific to the area and CERT.	Unknown
Active VOAD (Voluntary Agencies Active in Disasters)	Y	Unknown	Unknown	No. Unable to make connections with current VOAD.
Other? (Please describe.)	N/A	N/A	N/A	N/A

Table 16: Assessment of the Technical Capabilities of the City of Holladay

Technical Capability	In Place? (Y/N)	How has it been used to assess/mitigate risk in the past?	How can it be used to assess/mitigate risk in the future?
Mitigation Grant Writing	N	N/A	More grant funding would allow for more mitigation measures.
Hazard Data and Information	Y	Use Hazus and local GIS mapping available to community.	Use current mapping and information to inform future plan updates and needs.
GIS	Y	GIS has created a myriad of maps to address hazards and assist city and residents in understanding risk.	Continue to update maps, use new maps to help with emergency response strategies and understanding in the community.
Mutual Aid Agreements (MOUs)	N	N/A	MOUs to address specific hazards, needs, gaps have to be developed.
Other? (Please describe.)	N/A	N/A	N/A

Financial Capabilities

Financial capabilities are the resources to fund mitigation actions. Talking about funding and financial capabilities is important to determine what kinds of projects are feasible, given their cost. Mitigation actions like outreach programs are lower cost and often use staff time and existing budgets. Other actions, such as earthquake retrofits, could require substantial funding from local, state, and federal partners. Partnerships, including those willing to donate land, supplies, in-kind matches, and cash, can be included.

DRAFT

Table 17: Assessment of the Financial Capabilities of the City of Holladay

Funding Resource	In Place? (Y/N)	Has it been used in the past and for what types of activities?	Could it be used to fund future mitigation actions?	Can it be used as the local cost match for a federal grant?
Capital Improvement Project Funding	Y	Roadway Improvement, stormwater system enhancements, and other infrastructure upgrades.	Yes	Yes
General Funds	Y	Maintenance and operations of roadways, stormwater and infrastructure. Staff salaries, emergency management program funds.	Y	Unknown
Hazard Mitigation Grant Program (HMGP/404)	N	N	Not at this time. Possibly after an event causing significant damage.	N
Building Resilient Infrastructure & Communities (BRIC)	N	We applied and were not selected.	N	N
Flood Mitigation Assistance (FMA)	N	N	Not at this time. Possibly after an event causing significant damage.	N
Public Assistance Mitigation (PA Mitigation/406)	N	Yes, post high wind event.	Unknown	N
Community Development Block Grant (CDBG)	N	Yes, to address building accessibility at Police Department.	Possibly	N
Natural Resources Conservation Services (NRCS) Programs	N	N	Possibly	N
U.S. Army Corps (USACE) Programs	N	N	N	N
Property, Sales, Income, or Special Purpose Taxes	Y	Goes into General Fund.	Y	Y

DRAFT

Funding Resource	In Place? (Y/N)	Has it been used in the past and for what types of activities?	Could it be used to fund future mitigation actions?	Can it be used as the local cost match for a federal grant?
Stormwater Utility Fee	Y	For constructing and maintaining new drainage systems, testing water quality, monitoring pollution and cleanup.	Y	Y
Fees for Water, Sewer, Gas, or Electric Services	N	N	N	N
Impact Fees from New Development and Redevelopment	Y	Provide services to support new development.	N	N
General Obligation or Special Purpose Bonds	Y	Stormwater and road maintenance, public safety projects.	Y	N
Federal-funded Programs (Please describe)	Unknown	Unknown	Unknown	Unknown
Private Sector or Nonprofit Programs	Unknown	Unknown	Unknown	Unknown
Other?	N/A	N/A	N/A	N/A

Education and Outreach Capabilities

Education and outreach capabilities are programs and methods that could communicate about and encourage risk reduction. These programs may be run by a participant or a community-based partner. Partners, especially those who work with underserved communities, can help identify additional education and outreach capabilities.

Table 18: Assessment of the Education and Outreach Capabilities of the City of Holladay

Education and Outreach Capability	In Place? (Y/N)	Does it currently incorporate hazard mitigation?	Could it be used to support mitigation in the future?
Community Newsletter(s)	Y	Yes – as a community education and awareness tool.	Yes – as a community education and awareness tool.
Hazard Awareness Campaigns (such as Firewise, Storm Ready, Severe Weather Awareness Week, School Programs)	Y	Y	Y

DRAFT

Education and Outreach Capability	In Place? (Y/N)	Does it currently incorporate hazard mitigation?	Could it be used to support mitigation in the future?
Public Meetings/Events (Please describe.)	Y	N	Y
Emergency Management Listserv	N	N	Y
Local News	N	N	N
Distributing Hard Copies of Notices (e.g., public libraries, door-to-door outreach)	N	N	Y
Insurance Disclosures/ Outreach	N	N	N
Organizations that Represent, Advocate for, or Interact with Underserved and Vulnerable Communities (Please describe.)	N	N	Y
Social Media (Please describe.)	Y – use social platforms to send out monthly preparedness public outreach	Y	Y
Other? (Please describe.)	N/A		

Opportunities to Expand and/or Improve Capabilities

Actions that can expand and improve existing authorities, plans, policies, and resources for mitigation include budgeting for mitigation actions, passing policies and procedures for mitigation actions, adopting and implementing stricter mitigation regulations, approving mitigation updates, and making additions to existing plans as new needs are recognized. Table 19 lists the opportunities for the city of Holladay.

Table 19: Opportunities to Expand and/or Improve the Capabilities of the City of Holladay

Capability	Opportunity to Expand and/or Improve
Planning and Regulation	The city can develop a five-year water conservation plan. Plan integration, such as incorporating this plan into the general plan, can also help expand current capabilities.
Administrative and Technical	The city could support additional training for staff and volunteers on hazard mitigation. For example, providing hazard-specific mitigation training for the Chief Building Official and the Community Emergency Response Team (CERT) team.
Financial	The city can focus on expanding mitigation grant writing capabilities, such as by participating in state or federal Direct Technical Assistance programs, to be able to apply and win pre- and post-disaster mitigation grants like the Hazard Mitigation Grant Program (HMGP).
Education and Outreach	The city has many opportunities to expand current public education capabilities, such as public meetings, to include hazard specific information. Further, the city can implement new methods to engage the public such as developing and

DRAFT

Capability	Opportunity to Expand and/or Improve
	distributing hard copies or working with local champions to promote hazard mitigation information. In particular, the city can focus on expanding public awareness on specific hazards of concern including but not limited to earthquakes (particularly for unreinforced masonry construction), extreme heat, flooding, severe weather, radon, wildfire, and more.

Mitigation Strategy

Mitigation strategies provide proactive measures that are designed to minimize the impacts of hazards on the city of Holladay. Table 20 shows mitigation action alternatives, and Table 22 shows the status of previous mitigation activities. Table 22 is the 2025 mitigation action plan for the city of Holladay.

Table 20: Mitigation Action Alternatives for the City of Holladay

Action	Type of Action	Selected for inclusion in the plan?	If not selected, why not?
Add a link on Holladay's website to the Utah Avalanche Center to facilitate public awareness.	Education and Awareness Programs	No.	A more targeted and applicable action was included to help mitigate against Avalanche within city boundaries.
Update of the city's Stormwater Master Plan to include specific flood mitigation projects and flood-prone areas of the city.	Structure and Infrastructure Projects	No.	The current stormwater plan includes high risk areas; the plan was recently updated.
Bury powerlines along Highland Drive (previously in plan)	Structure and Infrastructure Projects	No.	Although this project may still be completed, it is very expensive, will likely be more than five years out, and does not mitigate against wind damage in wider areas of the city.
Provide information and encourage radon testing during the building permitting process.	Education and Awareness Programs	No.	This action does not reach residents not upgrading or building properties. A different approach to public education was selected as it aligns with public health goals and presents more effective ways to interface with the community.

DRAFT

Table 21: Status of Prior Mitigation Actions of the City of Holladay[3]

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update (if ongoing, explain)
Bury power lines.	All hazards	Holladay	Utilities	Complete • Buried powerlines through Knutzen park and the village. • Plans to bury powerlines along Highland Drive from arbor lane to VanWinkle by 2030, possibly longer – looking for funding sources to achieve this goal. – reasoning is aesthetic. • Trees are regularly trimmed. • Plan to remove from future projects.
Develop a robust cyber security program, incorporating components of the NIST Cybersecurity Framework.[4]	Cyberattack	Holladay	IT Contractor	Complete • A cyber security program has been implemented using the Utah Cyber Center recommended software and Tecserv best practices.
Increase adult influenza vaccination rates to the Healthy Salt Lake target rate. Currently the rate is 70%.	Public Health Epidemic/ Pandemic	Holladay	SLCo Public Health	Ongoing • In 2022, Influenza Vaccination rates in the city of Holladay were 62.2% (most current date I could find). Highest rates were at 73% post-covid. The COVID-19 pandemic and loss of confidence in vaccinations has impacted vaccine rates negatively.

[3] CED = Community and Economic Development, CERT = Community Emergency Response Team, SLCo = Salt Lake County, SLCo EM = Salt Lake County Emergency Management, SLCo PW = Salt Lake County Public Works, UFA = Unified Fire Authority.

[4] https://pages.compassmsp.com/nist-guide?utm_content=nist_guide&utm_term=nist%20cybersecurity%20framework&utm_campaign=00_Downloads&%20utm_source=adwords&utm_medium=ppc&hsa_acc=7605309347&hsa_cam=22154122960&hsa_grp=174268822775&hsa_ad=730407604998&hsa_src=g&hsa_tgt=kwd-294642129307&hsa_kw=nist%20cybersecurity%20framework&hsa_mt=b&hsa_net=adwords&hsa_ver=3&gad_source=1&gclid=Cj0KCQjwhMq-BhCFARIsAGvo0KebwTn--N3M0AC_hXY1rp2QjTOGL4RIl_JMSg22oUDXsgpgrAWGIfcaAqzjEALw_wcB

DRAFT

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update (if ongoing, explain)
Develop an outreach program to encourage residents to strengthen structures that are built of unreinforced masonry.	Earthquake	Holladay		Ongoing • This would be a great very long-term goal but is not feasible to complete with current resources.
Road surface improvements.	All hazards	Holladay		Complete – Maintenance ongoing. • Improved all roadways at risk of failing.
Retrofit City Hall.	Earthquake	Holladay		Ongoing • Building plans have been developed, funding is forthcoming. Estimated target for beginning construction is January 2026.
Canal bank stabilization (such as, but not limited to netting and/or wire mesh).	Flooding	Holladay	Upper Canal Water Co.	Complete • Banks are stable. Improvements were made in specific places. Continue to monitor monthly.
Continue to encourage water conservation using Jordan Valley Water Conservation outreach material and information from Salt Lake City Department of Public Utilities and the State of Utah's "Slow the Flow" program.	Drought	Holladay Emergency Management		Ongoing • Materials are available, promoted on the Holladay Website – sustainability page.
Develop outreach document specific to fire resistant natural vegetation.	Drought	Holladay Emergency Management		Complete • UFA – outreach to homeowners to make homes more defensible. 2018–2020.
Assess current communications and interoperable emergency/warning systems.	Earthquake	Holladay Emergency Management	Communications	Ongoing • Plans to purchase Starlink and form a PACE program and communications annex.

DRAFT

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update (if ongoing, explain)
Ensure that current natural hazard ordinance(s) are online, linked to Emergency Services website, and easily accessible and can be download. Provide personal, CERT and amateur radio training for the citizens of the city.	Earthquake	Holladay Emergency Management	Planning and Zoning	Ongoing • Hazard Maps are available on Holladay website. • CERT training and outreach is ongoing. Training is offered regionally for CERT.
The city of Holladay is participating in the National Flood Insurance Program.	Flood	Holladay Emergency Management		Ongoing • Info is available on the city website: https://www.holladayut.gov/departments/community_development/planning_division/natural_hazards.php
Update & digitize floodplain maps.	Flood	GIS	Holladay Emergency Management	Complete • Flood Hazard maps have been developed and are available online for viewing or download at the city Website.
Develop protocol for working with State and Federal agencies in developing impact of post fire debris flow hazard.	Landslide	Holladay Emergency Management	Fire and Planning and Zoning	Ongoing
Create outreach materials (what to do when severe weather strikes) specific to this group and insert the information the into city-wide newspaper, and phone books specific to 55 age group developed by County Aging services.	Severe Weather	Holladay Emergency Management		Ongoing • No Specific materials produced in the last few years. Possibly pre-COVID.

DRAFT

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update (if ongoing, explain)
Encourage avalanche preparedness for backcountry users.	Severe Weather	Holladay Emergency Management		Deleted Do not plan to continue this goal in future mitigation.
Public awareness through "Fire Wise" programs.	Wildland Fire	Holladay Emergency Management	Fire	Ongoing through UFA and CED. • Permitting and planning processes encourage defensible homes and landscaping in vulnerable areas.
Create defensible space.	Wildland Fire	Fire	Holladay Emergency Management	Ongoing through UFA and CED. • Permitting and planning processes encourage defensible homes and landscaping in vulnerable areas.
Continue to support and take part in annual Utah Shakeout exercises to promote earthquake awareness.	Earthquake	Emergency Manager, Emergency Manage		Ongoing • The city completes a shakeout or evacuation drill annually in conjunction with the Great Utah Shakeout. We also support citizen led fairs and exercises and provide earthquake related outreach in the form of journal articles, social media, and community courses.
Continue to enforce building codes, development of new codes and zoning ordinances as needed or state codes are updated.	Earthquake	City of Holladay Community Development Department.		Ongoing
Continue to execute training and exercise programs.	Earthquake	Emergency Management Committee		Ongoing • Training is being tracked and developed for department heads and city council. Tabletop exercises, drills, and functional exercises are conducted as appropriate and in accordance with the IPP.
Educate residents and business through public information and events.	Earthquake	Emergency Management Committee and		Ongoing • We support citizens through providing emergency preparedness outreach in the form of journal

DRAFT

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update (if ongoing, explain)
		Citizen Corps Council		articles, social media, community courses, and other events.
Continue to work Salt Lake County Flood Control.	Flooding	City of Holladay, SLCo PW		Complete • Everyone knows their responsibilities; no emergency planning needs to be done. Preparations occurred in 2023, everyone participated, and processes are in place.
Continue to enforce building codes/water disposal codes.	Flooding	City of Holladay Community Development Department		Ongoing
Continue enforce development codes.	Flooding	Community Development Department		Ongoing
Educate residents and business through public information.	Flooding	Community Development Department		Ongoing

DRAFT

DRAFT

THIS PAGE INTENTIONALLY LEFT BLANK

Table 22: 2025 Mitigation Action Plan for the City of Holladay[5]

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
1	Post a sign at the trailhead to Heughs Canyon warning of winter avalanche danger.	Avalanche	City of Holladay Parks and Recreation	SLCo, USFS	Increase public awareness, educate residents and visitors, and improve safety.	Low	City general fund	Short term	Medium	
2	Include parking offsets on the north and south sides of City Hall as part of the retrofit to prevent parking near the building.	Civil Disturbance	City of Holladay Emergency Management		Ensure safety for city staff and elected officials. Ensure continuity of government.	Medium	Federal earmark funding, City general fund	Medium term	High	New element being explored for the building upgrade and retrofit.
3	Gather pertinent information on dams up Big Cottonwood Canyon, including inundation mapping, timing, water levels, and EAPs from partners.	Dam Failure	City of Holladay Emergency Management	Salt Lake City, SLCo, UDNR	Provide information for future planning and mitigation.	Low	City general fund	Short term	High	Need more information to plan for possibilities in our jurisdiction. The city does not own or operate these dams.
4	Develop a five-year water conservation plan and include it in the General Plan update.	Drought	City of Holladay Emergency Management		Plan for long-term environmental impacts.	Low	City general fund	Medium term	Medium	
5	Produce a drought map to inform residents of the drought status.	Drought	City of Holladay CED Department/ GIS		Educate residents to conserve water resources.	Low	City general fund	Short term	Low	
6	Update and retrofit City Hall to account for life safety in an earthquake and increase security for city staff and the Police Department.	Civil Disturbance Earthquake	City of Holladay Emergency Management		Ensure the safety of city staff and elected officials and ensure continuity of government.	High	Federal earmark funding, BRIC, PDM, City general fund	Medium term	High	This is an ongoing project—the city has been working to secure funding for several years. Plans are currently underway. Construction is slated to begin in 2026.
7	Build a dedicated Emergency Communications Center (ECC) with power and communications redundancy.	Earthquake, Tornado, Extreme Weather, Hazardous Materials Incident, Wildfire	City of Holladay Emergency Management		Coordinate efficient and effective responses to reduce loss of life and property.	Medium	City general fund, EOC grant program	Medium term	High	Currently we do not have a dedicated space for an ECC, which means setting it up during an incident. Post building update, there will be a dedicated space.
8	Create a handout to include in permit packets about buildings with unreinforced masonry (URM) regarding risks and low-cost retrofits, such as strapping water tanks and flexible pipes.	Earthquake	City of Holladay CED Department		Educate residents about URMs to reduce loss of life and property damage.	Low	City general fund	Short term	Medium	Large areas of Holladay are made up of URMs. Small and large retrofit projects can protect residents in an earthquake – many are not aware of the risks.
9	Participate in Code Blue and provide information and links to Salt Lake County warming centers and resources.	Extreme Cold	City of Holladay Emergency Management	SLCo	Educate the public on actions they can take during extreme cold events.	Low	City general fund	Short term	Low	

[5] BRIC = Building Resilient Infrastructure and Communities, CED = Community and Economic Development, CERT = Community Emergency Response Team, CWPP = Community Wildfire Protection Plan, EAP = Emergency Action Plan, ECC = Emergency Communications Center, EM = Emergency Management, EOC = Emergency Operations Center, FMA = Flood Mitigation Assistance, HMGP = Hazard Mitigation Grant Program, NFIP = National Flood Insurance Program, NWS = National Weather Service, PDM = Pre-Disaster Mitigation, SIAC = Statewide Information and Analysis Center, SLCo = Salt Lake County, SLCo EM = Salt Lake County Emergency Management, UDNR = Utah Department of Natural Resources, UFA = Unified Fire Authority, UGS = Utah Geological Survey, UPD = Unified Police Department, URM = Unreinforced Masonry, USFS = United States Forest Service, WUI = Wildland–Urban Interface.

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
10	Gather information and begin comprehensive mapping of the tree canopy (Cottonwoods), compare every five years to determine its status.	Extreme Heat	City of Holladay CED Department		Provide information for future planning and mitigation.	Low	City general fund	Medium term	Medium	Tree canopy is a delicate balance between water conservation and conservation to reduce heat effect. More data is needed to make informed decisions.
11	Communicate heat warning information and appropriate responses to residents through social media, newsletters, and other outgoing information. (e.g., encourage staying indoors, provide symptom reminders).	Extreme Heat	City of Holladay Emergency Management	The City Journal	Provide education to residents and vulnerable populations.	Low	City general fund	Short term	Low	
12	Continue to comply with all requirements of the NFIP.	Flooding	City of Holladay CED Department		Prevent property damage and loss of life.	Low	City general fund	Short term	Medium	
13	Identify risks of earthquake and canal flooding throughout the jurisdiction.	Flooding, Earthquake	City of Holladay CED Department		Provide information for future planning and mitigation.	Low	City general fund, FMA if flood risk reducing projects identified.	Long term	Low	The city has many canals that follow along fault lines, which could present flooding issues after an earthquake. More information is needed to mitigate risks in the future.
14	Train personnel on emergency plans and establish notification procedures for emergency personnel and city officials.	Hazardous Materials Incident	City of Holladay Emergency Management	UFA, UPD, Salt Lake County	Coordinate efficient and effective responses to reduce loss of life and property.	Low	City general fund	Short term	High	A recent HAZMAT incident in the city highlighted the need to establish clear procedures and training for incident notification.
15	Evaluate undeveloped properties for possible acquisition in areas of high risk (mostly along Wasatch Blvd.).	Landslide/Slope Failure	City of Holladay CED Department	UGS	Prevent development in potentially dangerous areas.	High	City general fund	Long term	Medium	
16	Provide the public with information about radon risk, mitigation, and funding programs on the city website and at events.	Radon	City of Holladay, Happy Healthy Holladay		Educate residents and vulnerable populations about radon risks and mitigation strategies.	Low	City general fund	Short term, ongoing	Medium	
17	Promote regular tree trimming and the “Right Tree in the Right Place” program to residents. Educate the public on old trees and the risks associated with pine trees.	Severe Weather – High Wind, Tornado	City of Holladay CED Department		Educate residents about tree maintenance and the risks associated with pine trees.	Low	City general fund	Short term, ongoing	Low	There are numerous old trees in the area, and specific issues with aging pines.
18	Partner with NWS to address lightning and severe weather during outdoor city-sponsored events.	Severe Weather – Heavy Rain, High Wind Tornado, Lightning	City of Holladay Emergency Management	National Weather Service	Plan and coordinate efficient and effective responses to reduce loss of life and property.	Low	City general fund	Short term	High	
19	Continue to educate residents on appropriate stormwater practices to keep gutters and canals clear of debris.	Severe Weather – Heavy Rain, High Wind, Lightning	City of Holladay		Provide education to residents on stormwater practices to prevent blockages and reduce flooding risks.	Low	City general fund	Short term, ongoing	Low	

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
20	Create a plan to support assisted living facilities and areas of high vulnerability during severe winter weather events.	Severe Winter Weather – Heavy Snow, Blizzard	City of Holladay Emergency Management	Private partners, Health Care Coalition	Enhance future planning and response.	Low	City general fund	Short term	Low	
21	Hold a community preparedness workshop.	Severe Winter Weather – Heavy Snow, Blizzard	City of Holladay Emergency Management	Be Ready Utah	Educate residents to reduce risks, injuries, or property damage from hazards.	Low	City general fund	Short term	Low	
22	Participate in monitoring threats from the SIAC.	Terrorism (including Cyberattacks)	City of Holladay Emergency Management	SLCo EM, UPD	Coordinate efficient and effective responses to reduce loss of life and property.	Low	City general fund	Short term, Ongoing	Low	
23	Work with partner agencies to update the CWPP.	Wildfire	City of Holladay Emergency Management	UFA	Identify areas of higher wildfire risk and potential actions to reduce risk through planning and coordination.	Low	City general fund	Short term	Low	
24	Distribute defensible space information for any redevelopment in the Cottonwoods and WUI areas.	Wildfire	City of Holladay CED Department	Unified Fire Authority, Forest Service	Provide education and resources to residents.	Low	City general fund	Short term	Low	
25	Create an evacuation zone plan and annex.	Wildfire, Hazardous Materials Incident	City of Holladay Emergency Management	Unified Fire Authority, Unified Police Department, Salt Lake County Emergency Management	Improve the safety of residents by identifying potential problems and facilitating smoother evacuation through planning and coordination.	Low	City general fund	Short term	Medium	
26	Map hydrant locations and areas of low water pressure for internal purposes.	Wildfire	City of Holladay CED Department	UFA, Salt Lake City, water agencies	Enhance the safety of residents and ensure the ability to protect structures through planning and coordination.	Low	City general fund	Short term	Medium	
27	Increase adult influenza vaccination rates to the Healthy Salt Lake target rate. Currently the rate is 70%.	Epidemic/Pandemic	SLCo Public Health	City of Holladay Emergency Management	Improve community immunity to influenza, reducing illness and potential death in Holladay.	Low	City general fund	Short term	Medium	
28	Develop an outreach program to encourage residents to strengthen structures that are built of unreinforced masonry.	Earthquake	City of Holladay Emergency Management	UFA	Reduce damage to unreinforced masonry structures during earthquakes.	Low	City general fund	Short term	Low	
29	Continue to encourage water conservation using Jordan Valley Water Conservation outreach material and information from Salt Lake City Department of Public Utilities and the State of Utah's "Slow the Flow" program.	Drought	City of Holladay Emergency Management	Jordan Valley Water Conservation District, SLCo Public Utilities	Reduce water usage per household, increasing the amount of water available to the city during droughts.	Low	City general fund	Short term	Medium	
30	Assess current communications and interoperable emergency/ warning systems.	Earthquake	City of Holladay Emergency Management	SLCo EM, UFA	Improve communication and coordination among emergency response agencies during a disaster.	Low	City general fund	Short term	Medium	
31	Provide personal, CERT, and amateur radio training for the citizens of the city.	Earthquake	City of Holladay Emergency Management	SLCo EM, UFA	Enable the city to tap into citizen CERT members to support disaster response and recovery.	Low	City general fund	Short term	Medium	
32	Continue participating in the National Flood Insurance Program.	Flooding	City of Holladay Emergency Management	SLCo EM	Reduce losses from flooding through enhanced flood ordinances, building codes, and flood insurance.	Low	City general fund	Short term	High	

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
33	Develop protocol for working with State and Federal agencies in developing impact of post fire debris flow hazard.	Landslide	City of Holladay Emergency Management	Utah Emergency Management, FEMA	Improve efficiency in coordination to provide support for those impacted by post-fire debris flow.	Low	City general fund	Short term	Medium	
34	Create outreach materials on actions to take when severe weather strikes and include this information in citywide newspapers and phone books targeted at the 55+ age group, developed by County Aging Services.	Severe weather	City of Holladay Emergency Management	SLCo Aging Services	Ensure that the aging population knows how to remain safe during severe weather by targeting media they utilize.	Low	City general fund	Short term	Medium	
35	Facilitate public awareness through “Fire Wise” programs.	Wildland Fire	City of Holladay Emergency Management	UFA, CED	Encourage local governments to work with residents to prepare for wildfire and mitigate potential damage.	Low	City general fund	Short term	High	
36	Create defensible space.	Wildland Fire	City of Holladay Emergency Management	UFA, CED	Reduce the intensity and chances of catastrophic wildland fire.	Medium	Paid for by those developing homes	Medium term	High	
37	Continue to support and take part in annual Utah Shakeout exercises to promote earthquake awareness.	Earthquake	City of Holladay Emergency Management	Utah Division of Emergency Management	Prepare citizens to protect themselves during a disaster.	Low	City general fund	Short term	Medium	
38	Continue to enforce building codes and develop new codes and zoning ordinances as needed or when state codes are updated.	Earthquake, Flooding	City of Holladay Emergency Management	SLCo Emergency Management	Reduce the likelihood of buildings to sustain damage during an earthquake.	Low	City general fund	Short term	High	
39	Continue to execute training and exercise programs.	Earthquake, Wildfire, Severe Weather	City of Holladay Emergency Management	SLCo Emergency Management	Improve communication and coordination between emergency response partners.	Low	City general fund	Short term	Medium	
40	Educate residents and businesses through public information and events.	Earthquake	City of Holladay Emergency Management	SLCo Emergency Management	Support citizens through providing emergency preparedness outreach in the form of journal articles, social media, community courses, and other events.	Low	City general fund	Short term	Low	
41	Collaborate with partners to rehabilitate Lake Mary-Phoebe dam structure. Address spillway capacity and seepage control measures.	Dam Failure	Salt Lake City Corporation	SLCo EM, Holladay EM, Utah Division of Water Rights Dam Safety, Salt Lake City Public Utilities	Reinforce the dam structure, including addressing spalling and deterioration as indicated in dam inspection reports to reduce the risk of failure.	High	Salt Lake City General Fund, SLCo General Fund, HHPD Grant, HMGP, Utah Bureau of Water Resources revolving fund	Short term	High	

DRAFT

Mitigation Action Prioritization

The mitigation actions were evaluated based on the STAPLEE criteria.

Table 23: Mitigation Action Prioritization – STAPLEE

Action	Social	Technical	Administrative	Political	Legal	Economic	Environmental	Priority
1	3	4	4	4	3	4	4	High
2	3	2	1	3	3	2	3	Low
3	3	2	3	2	3	4	4	Medium
4	3	3	3	3	4	2	3	Medium
5	4	4	4	3	4	4	4	High
6	3	3	3	4	4	3	3	High
7	3	4	3	4	4	4	3	High
8	3	4	3	3	4	4	3	High
9	3	4	4	4	3	4	4	High
10	3	2	2	3	4	3	4	Medium
11	3	4	4	4	4	4	4	High
12	3	4	3	3	4	3	4	High
13	2	2	2	2	3	2	2	Low
14	4	4	4	4	4	4	3	High
15	2	2	2	2	2	2	4	Low
16	3	4	4	3	4	4	3	High
17	3	4	4	3	3	4	4	High
18	3	4	4	3	4	4	4	High
19	3	4	4	4	4	4	4	High
20	3	3	2	2	3	4	4	Medium
21	3	3	3	4	4	4	4	High
22	3	4	4	4	4	4	4	High
23	3	3	3	3	4	4	4	High
24	3	4	4	4	4	4	4	High
25	3	3	3	3	4	4	3	High
26	3	4	4	4	3	4	4	High

DRAFT

THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT

Jordan School District

Jurisdictional Annex to the
Salt Lake County Hazard Mitigation Plan

Month XXXX | Draft X.X

THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT

Table of Contents

Jordan School District Annex 1

Planning Process Contact Information 1
Jurisdiction Profile 1
Date of Incorporation 1
Location and Description 1
Population 2
Brief History 2
Climate 2
Public Services 2
Demographics 4
Governing Body 4
Development Trends 4
Jurisdiction-Specific Hazards and Risk 5
Hazard Event History 8
National Flood Insurance Program Summary 8
Jurisdiction-Specific Vulnerabilities and Impacts 9
Hazards Not Profiled 21
Jurisdiction-Specific Changes in Vulnerability 21
Additional Public Involvement 30
Plan Integration 31
Capability Assessment 32
Planning and Regulatory Capabilities 32
Administrative and Technical Capabilities 33
Financial Capabilities 34
Education and Outreach Capabilities 36
Opportunities to Expand and/or Improve Capabilities 37
Mitigation Strategy 37

DRAFT

List of Figures

Figure 1: Schools of the Jordan School District 3
Figure 2: Demographics of Students in the Jordan School District 4
Figure 3: Facebook (*left*) and X (*right*) Posts for the Hazard Mitigation Survey 30
Figure 4: Website Posting of Public Survey 31

List of Tables

Table 1: Contact Information for the Jordan School District 1
Table 2: Participant List for the Jordan School District 1
Table 3: Calculated Priority Risk Values for the Jordan School District 5
Table 4: Criteria for the Calculated Priority Risk Index 6
Table 5: Hazard Events Specific to the Jordan School District Since 2013 8
Table 6: Jurisdiction-Specific Vulnerabilities and Impacts in the Jordan School District 9
Table 7: Jurisdiction-Specific Changes in Vulnerability in the Jordan School District 22
Table 8: Integration of Previous Plans by Jordan School District 32
Table 9: Opportunities for Integration with Future Plans of the Jordan School District 32
Table 10: Assessment of the Planning Capabilities of the Jordan School District 32
Table 11: Assessment of the Regulations and Ordinances of the Jordan School District 33
Table 12: Assessment of the Administrative Capabilities of the Jordan School District 33
Table 13: Assessment of the Technical Capabilities of the Jordan School District 34
Table 14: Assessment of the Financial Capabilities of the Jordan School District 35
Table 15: Assessment of the Education and Outreach Capabilities of the Jordan School District 36
Table 16: Opportunities to Expand and/or Improve the Capabilities of the Jordan School District 37
Table 17: 2025 Mitigation Action Plan for the Jordan School District 39

DRAFT

Jordan School District Annex

To participate in this multi-jurisdictional hazard mitigation plan (MJHMP) update for Salt Lake County (SLCo), the governing body of the Jordan School District passed a formal resolution, a copy of which is maintained at the local government offices.

Planning Process Contact Information

Table 1 provides information on the point of contact during the updating of the MJHMP.

Table 1: Contact Information for the Jordan School District

Name	Contact Information
Ian Roberts	**Phone**: 801-567-8885 **email:** ian.roberts@jordandistrict.org

The Jordan School District has a fully integrated approach to hazard mitigation planning and program implementation. During the 2024 update process, the MJHMP participation roles in Table 2 were recorded.

Table 2: Participant List for the Jordan School District

Name	Title	Jurisdiction
Ian Roberts	Capital Outlay Manager	Jordan School District
David Bullock	Inspector	Jordan School District
Dave Rostrom	Facilities Services Director	Jordan School District

Jurisdiction Profile

Date of Incorporation

1904

Location and Description

The Jordan School District, in the southwestern part of Salt Lake County, encompasses a vibrant and diverse community that includes several suburban neighborhoods and rural areas. Established in 1904, it has grown to serve a large student population, making it one of the largest school districts in the state, with 68 schools. The district prides itself on its commitment to providing a high-quality education, offering various academic programs, extracurricular activities, and support services to meet the needs of its students. With many elementary, middle, and high schools, the district is dedicated to fostering an inclusive environment that promotes student achievement and well-being, making it a vital part of the local community. Jordan School District provides educational opportunities for students living in the cities

DRAFT

of Bluffdale, Herriman, Riverton, South Jordan, West Jordan, and Copperton, and southwest portions of unincorporated Salt Lake County (see Figure 1).

Population

For the 2024–2025 school year, the Jordan School District had 57,083 students enrolled.[1] Figure 2 presents the demographics of the students in the district.

Brief History

The district was established in 1904, starting with a student population 3,354.[2] Its name and initial boundaries derived from the Jordan Stake of the LDS Church, which then stretched across the entire Salt Lake Valley, from east to west, and extended from around Midvale to the valley's southern end.[3]

Climate

Salt Lake County experiences a semi-arid climate characterized by hot, dry summers and cold, snowy winters. The region typically has four seasons, with average summer temperatures reaching the 80s to 90s°F (27–37°C). In comparison, winter temperatures can drop into the 20s to 30s°F (-6 to 4°C). Precipitation is relatively low, mostly occurring during the spring and early summer months. Snowfall is common in winter, contributing to the area's overall water supply. The surrounding mountains can influence weather patterns, leading to occasional heavy snowfall in the winter months. The climate can impact various aspects of school life, including outdoor activities and commuting conditions.[4]

Public Services

The Jordan School District provides public services to support student education and well-being. These services include comprehensive academic programs, extracurricular activities, and specialized support for students with diverse needs. The district offers counseling and mental health services; nutritional programs, such as free and reduced lunch options; and opportunities for advanced placement and career and technical education. In addition, the district emphasizes community engagement through family support services and partnerships that enhance learning environments. These services aim to ensure that students have the necessary resources to thrive academically and personally.

DRAFT

[1] Jordan School District, "Statistics." https://jordandistrict.org/resources/statistics/.
[2] Utah Department of Government Operations, "Division of Archives and Records Service." https://archives.utah.gov/research/entities/550/.
[3] Plewe, Brandon S. (2014). Mapping Mormonism: An Atlas of Mormon History (2nd ed.). Provo, Utah: BYU Press. p. 128. ISBN 978-0-8425-2879-5.
[4] Salt Lake County Emergency Management, "2019 Salt Lake County Hazard Mitigation Plan." https://slcoem.org/wp-content/uploads/2022/04/2019-Salt-Lake-County-Hazard-Mitigation-Plan.pdf

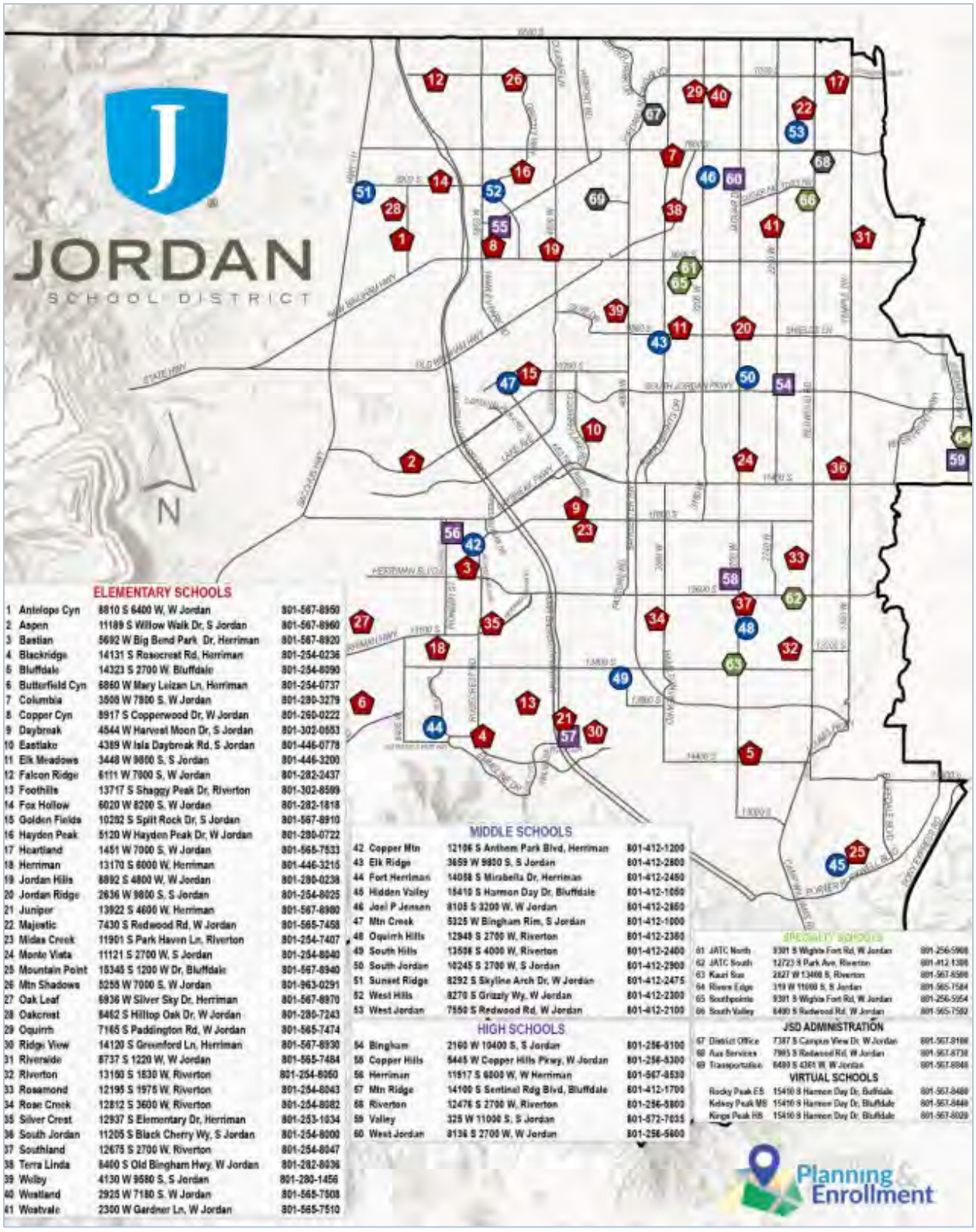


Figure 1: Schools of the Jordan School District[5]

[5] Jordan Planning & Enrollment, "Boundaries, Maps & Bus Stops." https://planning.jordandistrict.org/boundaries/.

Demographics

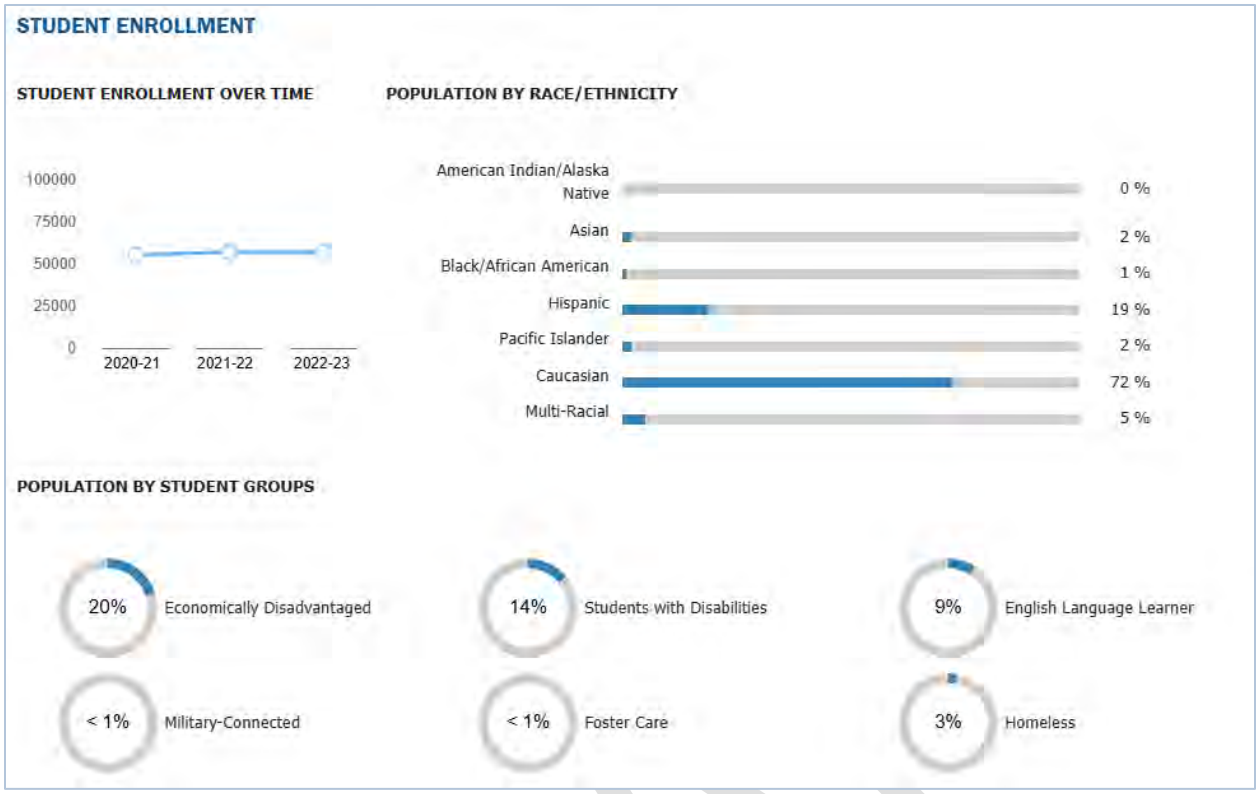


Figure 2: Demographics of Students in the Jordan School District[6]

Governing Body

The district is overseen by the seven members of the Board of Education, elected by voters from the district's five precincts. Elections for the School Board take place every two years in November alongside the general election. When new members are sworn in, they also select a president and a vice president. The Board values public involvement, providing various opportunities for community members to participate in decision-making through School Community Groups, ad hoc committees, task forces, and other organizations. The Board of Education appoints both the Superintendent of Schools and the Business Administrator, and the district operates under the general oversight of the Utah State Office of Education.[7]

Development Trends

The Jordan School District is poised for several development trends to enhance educational quality and community engagement. In May 2023, the district established a new elementary school in Herriman,

[6] Jordan School District, "Profile." https://reportcard.schools.utah.gov/District/Profile?DistrictID=653&schoolyearendyear=2023.
[7] Utah Department of Government Operations, "Division of Archives and Records Service." https://archives.utah.gov/research/entities/550/.

serving students in Herriman and Riverton.[8] One significant trend is integrating technology into the classroom, with plans to expand access to digital resources and learning platforms that cater to diverse learning styles. In addition, there is a growing focus on sustainable practices, including developing green school buildings and eco-friendly programs that promote environmental stewardship among students. The district also prioritizes mental health and wellness initiatives, recognizing the importance of supporting students' emotional well-being and academic success. As these trends unfold, the Jordan School District strives to create an inclusive and innovative learning environment that prepares students for future challenges.

Jurisdiction-Specific Hazards and Risk

The Calculated Priority Risk Index (CPRI) is a comprehensive assessment tool for evaluating and prioritizing risks in a given context. It considers various factors, such as probability, impact, and urgency, to determine the level of risk associated with events or situations. The results for each hazard, including its risk factor (RF) value, are shown in Table 3. The results are based on the criteria in Table 4 and the equation that follows it. The CPRI helps organizations and individuals make informed decisions about risk management and mitigation strategies. It provides a systematic approach to identifying and addressing potential issues, allowing for a more efficient allocation of resources and proactive risk prevention. With the CPRI, stakeholders can prioritize their focus on the most critical risks, leading to more effective risk management and, ultimately, better outcomes.

Table 3: Calculated Priority Risk Values for the Jordan School District

Type of Hazard Event	Probability of Future Events	Spatial Extent	Severity of Life/ Property Impact	Warning Time	Duration	Response Capacity	Risk Factor Value
Avalanche	1	1	1	1	1	1	1
Drought	2	2	2	1	3	1	1.9
Earthquake	2	4	4	4	4	2	3.2
Extreme Heat	2	2	1	1	3	1	1.6
Extreme Cold	2	2	1	1	3	1	1.6
Flooding	3	2	2	3	3	1	2.4
Landslide/ Slope Failure	1	1	1	4	1	2	1.4
Radon	3	1	2	1	4	2	2.3
Heavy Rain	3	2	1	2	2	1	1.9
High Wind	2	2	1	2	2	1	1.6
Lightning	2	1	1	4	1	1	1.6

[8] Jordan School District, "Students and Community Come Together to Break Ground for Brand New Elementary School in Herriman." https://jordandistrict.org/2023/05/students-and-community-come-together-to-break-ground-for-brand-new-elementary-school-in-herriman/.

Type of Hazard Event	Probability of Future Events	Spatial Extent	Severity of Life/ Property Impact	Warning Time	Duration	Response Capacity	Risk Factor Value
Severe Winter Weather	2	2	1	1	2	1	1.5
Tornado	1	1	1	4	1	2	1.4
Wildfire	2	2	2	2	3	2	2.1
Dam Failure	1	1	1	2	1	2	1.2
Civil Disturbance	1	1	1	3	1	2	1.3
Cyberattack	2	2	1	4	1	2	1.8
Hazardous Materials Incident (Transportation & Fixed Facility)	2	2	1	4	1	1	1.7
Public Health Epidemic/ Pandemic	2	2	1	1	4	1	1.7
Terrorism	1	1	1	2	1	1	1.1

Table 4: Criteria for the Calculated Priority Risk Index

Risk Index Factor	Degree of Risk Level		Criteria	Factor Weight for Degree of Risk Level
Probability of Future Events	1	Unlikely	Less than 1 percent probability of occurrence in the next year or a recurrence interval of greater than every 100 years.	30%
	2	Occasional	1 to 10 percent probability of occurrence in the next year or a recurrence interval of 11 to 100 years.	
	3	Likely	11 to 90 percent probability of occurrence in the next year or a recurrence interval of 1 to 10 years.	
	4	Highly Likely	91 to 100 percent probability of occurrence in the next year or a recurrence interval of less than 1 year.	
Spatial Extent	1	Limited	Less than 10% of the planning area could be impacted.	10%
	2	Small	10%–25% of the planning area could be impacted	
	3	Significant	25%–50% of the planning area could be impacted.	

DRAFT

Risk Index Factor	Degree of Risk Level		Criteria	Factor Weight for Degree of Risk Level
	4	Extensive	50%–100% of the planning area could be impacted.	
Severity of Life/Property Impact	1	Negligible	Less than 5% of the affected area's critical and non-critical facilities and structures are damaged/ destroyed. Only minor property damage and minimal disruption of life. Temporary shutdown of critical facilities.	30%
	2	Limited	More than 5% and less than 25% percent of property in the affected area is damaged/ destroyed. Complete shutdown of critical facilities for more than one day but less than one week.	
	3	Critical	More than 25% and less than 50% of property in the affected area was damaged/ destroyed. Complete shutdown of critical facilities for over a week but less than one month.	
	4	Catastrophic	Over 50% of critical and non-critical facilities and infrastructures in the affected area are damaged/ destroyed. Complete shutdown of critical facilities for more than one month.	
Warning Time	1	Self-defined	More than 24 hours	10%
	2	Self-defined	12 to 24 hours.	
	3	Self-defined	6 to 12 hours.	
	4	Self-defined	Less than 6 hours.	
Duration	1	Brief	Up to 6 hours.	10%
	2	Intermediate	Up to one day.	
	3	Extended	Up to one week.	
	4	Prolonged	More than one week.	
Response Capacity	1	High	Significant resources and capability to respond to this kind of event; staff are trained, experienced, and ready.	10%
	2	Medium	Some resources and capability to respond to this kind of staff; some staff may be trained, experienced, and ready while others may need additional support.	
	3	Low	Limited resources and capability to respond to this kind of event; additional staff or staff training needed.	
	4	None	No resources and capability to respond this kind of event; additional outside support would be required.	

DRAFT

RISK FACTOR (RF) EQUATION

RF Value = [(Probability x 0.30) + (Spatial Extent x 0.10) + (Severity of Life/Property Impact x 0.30) + (Warning Time x 0.10) + (Duration x 0.10) + (Response Capacity x 0.10)]

Hazards with an RF value greater than or equal to 2.5 are considered high risk. Those with RF values of 2.0 to 2.4 are considered moderate risk hazards, and those with an RF value less than 2.0 are considered low risk. The highest possible RF value is 4.

Hazard Event History

Examining hazard event histories provides valuable insights to inform decision-making and help prioritize resources for risk prevention and response efforts. Table 5 lists the hazard events impacting the Jordan School District since 2013.

Table 5: Hazard Events Specific to the Jordan School District Since 2013

Type of Hazard Event	FEMA Disaster #	Date(s)	Damage or Impacts	Description
Flooding	N/A	09/14/2013	Flooding of Herriman High School required extensive exterior cleanup, but there was minimal interior damage to finishes.	Heavy rain and large surface areas brought sheets of water into the school.
Heavy Rain	N/A	09/14/2013	Flooding of Herriman High School required extensive exterior cleanup, but there was minimal interior damage to finishes.	Heavy rain and large surface areas brought sheets of water into the school.
Public Health Epidemic/ Pandemic	DR-4525-UT, 3478	2020–2023	School closures, online schooling	COVID-19 pandemic
Earthquake	Unknown	March 18, 2020	Stress cracks from lateral shaking, loss of a portion of rock veneer to an entryway	5.7 magnitude Magna earthquake. Most schools and district facilities had no damage. One middle school needed structural connection at the main entrance and one elementary school lost a few piece of rock veneer which were replaced by EIFS.

National Flood Insurance Program Summary

The Jordan School District does not participate in the National Flood Insurance Program.

DRAFT

Jurisdiction-Specific Vulnerabilities and Impacts

Table 6 provides information on the vulnerable assets in the Jordan School District, including its critical facilities, highlighting the district's vulnerability to identified hazards. By understanding the risks associated with these assets, local authorities can develop proactive strategies to mitigate vulnerabilities and ensure the safety and functionality of these important assets during hazard events. These data are invaluable for decision-making and prioritizing resources for emergency response and preparedness efforts, ultimately contributing to more effective risk management and greater resilience in the community.

Vulnerabilities include over 57,000 children served by JSD, as well as 7,048 faculty and staff. Structures include 42 elementary schools, 13 middle schools, 10 high schools and technical schools, and 3 special schools. The district also maintains office buildings, school buses, and other vehicles that may be vulnerable to loss from hazards.

Table 6: Jurisdiction-Specific Vulnerabilities and Impacts in the Jordan School District

Hazard	Vulnerable Asset	Description of Vulnerabilities and Impacts
Avalanche	People	N/A—not relevant to Jordan School District (JSD) schools.
Drought	People	*Vulnerability:* All students and staff are vulnerable to the effects of drought, including the lack of drinking/culinary water, as well as poor air quality that may arise. *Impacts:* Droughts can reduce municipal water supplies, which are essential for everyday activities such as drinking, cooking, and cleaning. Individuals with underlying health conditions, particularly young children and other medically vulnerable individuals, may experience heightened effects due to drought-related poor air quality and dust storms.
	Structures	*Vulnerability:* District buildings, foundations, landscaping, and sports fields are vulnerable to drought conditions. *Impacts:* Drought can lead to restrictions on the irrigation of landscaping and sports fields at school facilities. In addition, severe or prolonged drought can cause soil contraction due to decreased soil moisture, potentially damaging structural foundations or building walls, necessitating repairs.
	Economic Assets	*Vulnerability:* The district may face increased costs associated with water usage during drought conditions. *Impacts:* Drought can lead to shortages in water supply for various school activities, resulting in usage restrictions or increased costs.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Schools and schoolyards are vulnerable to drought conditions. *Impacts:* Droughts can reduce municipal water supplies, which can damage vegetation on school grounds and limit recreation opportunities for students and the community.
	Critical Facilities and Infrastructure	*Vulnerability:* Water supply systems are at risk during drought conditions. *Impacts:* Utah is the second driest state in the U.S., and drought could affect water supply and delivery systems over large regions, potentially affecting all of Salt Lake County. This situation could

Hazard	Vulnerable Asset	Description of Vulnerabilities and Impacts
		limit the availability of water for irrigation and culinary purposes across the district.
	Community Activities	*Vulnerability:* JSD schools and properties, which hold many events each year for education, recreation, and performing arts, are vulnerable to drought conditions. *Impacts:* School fields and auditoriums are used daily as part of education programs and are also rented for community events. Serious drought conditions could impact or limit the community use of these facilities for education and community activities.
Earthquake	People	*Vulnerability:* All students and staff are vulnerable to the impacts of an earthquake. *Impacts:* Interruption and/or displacement of student learning. There is a risk of possible injuries from falling objects if an earthquake occurs during school hours. In addition, students may be displaced from their homes following an earthquake and may be unable to attend school.
	Structures	*Vulnerability:* All schools and district facilities are vulnerable to damage and other disruptions resulting from an earthquake. *Impacts:* There is a potential for collapse or damage to schools and district structures during a seismic event. Classes may be disrupted or canceled due to damage. Although no JSD schools were identified in the K–12 Public Schools Unreinforced Masonry Inventory, they may still require extensive repairs after an earthquake.
	Economic Assets	*Vulnerability:* District budgets are vulnerable due to the potential need for repairs or replacement of instructional materials. *Impacts:* Repairing or rebuilding damaged schools could be very costly. Reconstruction and retrofitting of old buildings is expensive. There could also be a loss of educational equipment, such as computers or lab equipment, which may get damaged. Buses and district-owned vehicles could be damaged, leading to costly replacement or repair. Temporary relocation of students to alternate facilities to provide education may require leasing costs.
	Natural, Historic, and Cultural Resources	*Vulnerability:* JSD buildings are often used as community centers to house displaced families during emergencies. *Impacts*: JSD buildings may be unavailable for sheltering or other community activities.
	Critical Facilities and Infrastructure	*Vulnerability:* Utility systems such as water, power, and communication may be damaged and inoperable. In addition, emergency response and medical care may be overwhelmed. *Impacts:* The schools may not be functional if water, power, communication or other systems are disrupted, and emergency responders may not be available to respond to schools immediately.
	Community Activities	*Vulnerability:* Education and community activities are vulnerable to earthquakes. *Impacts:* JSD buildings may be unavailable for daily school operations or for other community activities. Schools are often used

Hazard	Vulnerable Asset	Description of Vulnerabilities and Impacts
		as community centers or shelters to house displaced families but may be unsafe for use following an earthquake.
Extreme Heat	People	*Vulnerability:* Students and staff are vulnerable to health issues related to extreme heat. *Impacts:* Extreme heat can lead to potential heat-related illnesses among students and faculty if schools have inadequate cooling systems or if A/C is disrupted. Furthermore, extreme heat can contribute to illness for school staff and students, as well as attendees at outdoor events/games in the summer. Heat-related illnesses, such as dehydration, heat exhaustion, and heat stroke, may occur if temperatures continue to rise and there are not adequate resources (e.g., EMS staff, drinking water, restrooms, shade) available. These conditions can pose significant health issues.
	Structures	*Vulnerability:* School HVAC systems, power systems, blacktops, parking areas, and sidewalks are vulnerable to extreme heat. *Impacts:* Extreme heat can place a strain on power grids and lead to interruptions in service. Extreme heat may strain cooling systems and contribute to increased power costs. In addition, pavement can buckle in extreme heat and require repairs.
	Economic Assets	*Vulnerability*: The district may face increased costs or damage to HVAC systems due to extreme heat. *Impacts:* Increased energy use raises financial costs for schools, businesses, and residents. In addition, damage to roadways and sidewalks from heat-related buckling can require costly emergency repairs and may cause secondary disruptions while transportation routes are closed.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Air and water quality may be reduced due to extreme heat. *Impacts:* Extreme heat can contribute to an increase in evaporation rates, reduce water availability for agriculture, recreation, and culinary use, exacerbate the effects of drought, and increase wildfire risk. In addition, heat can contribute to increased ozone levels, which can impact respiratory health.
	Critical Facilities and Infrastructure	*Vulnerability:* Power system failures and power outages, as well as road/transportation system damage, can occur during extreme heat events.. *Impacts:* One of the most significant secondary hazards associated with excessive heat events is the failure of motorized systems, such as ventilation systems used to control temperatures inside buildings. Extreme heat can increase demand for power and water resources and may contribute to widespread power outages. Heat can cause roads to buckle and may lead to road closures for emergency repairs. In addition, increased demand for healthcare services can put a strain on providers.
	Community Activities	*Vulnerability:* Extreme heat may lead to the cancellation of sports or activities. *Impacts:* Precautions are taken to ensure student, spectator and other participants' safety during high temperature activities. There

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerabilities and Impacts
		are no current impacts or history of event cancellations, but this is a possibility if extreme heat worsens.
Extreme Cold	People	*Vulnerability:* Students, particularly those who walk to school, and staff are vulnerable to extreme cold conditions. *Impacts:* Potential exposure to cold-related health problems for students and faculty may occur, particularly if schools have inadequate heating systems or if power is disrupted. Prolonged exposure can lead to hypothermia, frostbite, and death. Windy conditions can exacerbate these risks.
	Structures	*Vulnerability:* HVAC equipment and water lines are vulnerable to increased demand during extreme cold conditions. *Impacts:* Although water lines have not frozen previously, they could be affected if heating systems are not operational and cold temperatures are severe.
	Economic Assets	*Vulnerability:* The district is vulnerable to increased costs associated with extreme cold conditions. *Impacts:* The district's budget may be impacted by increased heating costs and possible emergency repairs to HVAC systems. Schools could potentially have to close if they are unable to keep buildings warm, leading to missed school or work for students and staff.
	Natural, Historic, and Cultural Resources	Extreme cold conditions are not directly relevant to JSD schools, but they can be harmful to wildlife or other natural systems.
	Critical Facilities and Infrastructure	*Vulnerability:* Water, power, or transportation systems are vulnerable to extreme cold conditions. *Impacts:* Freezing temperatures can lead to various infrastructure disruptions. They can cause insulators to fail and conductors to break. Extreme cold can also cause water in pipes to freeze, leading to burst pipes and water damage. Schools may not be able to stay in session if power, communication, or heating system outages occur or if there is water damage. Transportation may be disrupted due to icy conditions, affecting commutes and emergency services.
	Community Activities	*Vulnerability:* Recess, sports, and school or community events are vulnerable to extreme cold conditions. *Impacts:* Student recess is held indoors if temperature, weather, or air quality conditions present a safety concern to students and staff. Sports are typically indoors during cold months and will be canceled if travel conditions are deemed unsafe or if building systems are not operational.
Flooding and Heavy Rain	People	*Vulnerability:* Students/families and staff in flood-prone areas are vulnerable to the impacts of flooding and heavy rain. *Impacts:* Heavy rain or rapid snowmelt can lead to flooding, particularly if drainage systems are overwhelmed. This could affect school accessibility, disrupt classes, damage facilities, and pose a risk to student safety. The potential for flooding could impact the occupancy of school buildings, or buildings could receive minor to significant damage. Students and families in the school district may

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerabilities and Impacts
		be forced to evacuate homes, causing disruptions to education and daily life.
	Structures	*Vulnerability:* School buildings and district vehicles are vulnerable to flooding. Although no schools were identified in flood zones, they could be affected by localized or flash flooding following heavy rain or other severe weather events. *Impacts:* Buildings or vehicles can be damaged by floodwaters. The potential for flooding could impact the occupancy of school buildings, or buildings could receive minor to significant damage. Electrical and HVAC systems could be damaged, leading to replacement costs. Computers, books, equipment, and classrooms may suffer loss of supplies and learning materials. Athletic facilities and gymnasiums could be damaged, requiring repairs.
	Economic Assets	*Vulnerability:* Costs of flood damage to school assets. *Impacts:* Water damage to walls, floors, and roofs could require costly repairs. Prolonged disruptions could delay school operations, increasing expenses.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Floodwaters can damage school grounds, parks, and playgrounds. *Impacts:* The inability to use school facilities/grounds during repairs can disrupt educational and recreational activities.
	Critical Facilities and Infrastructure	*Vulnerability:* Community lifelines, such as power, communication, and transportation systems, could be damaged or disrupted by flooding. *Impacts:* Power outages, broken water mains, and sewage system failures could make schools unsafe for operation. Flooded roads and bridges can block bus routes, making it challenging for students and staff to commute. In addition, JSD buildings are often used as community centers to house displaced families during emergencies.
	Community Activities	*Vulnerability:* Education routines and community events held at schools are vulnerable to disruption from flooding. *Impacts:* Flooding could impact the occupancy of school buildings, and day-to-day school activities or other events may be temporarily canceled due to safety concerns.
Landslide/ Slope Failure	People	*Vulnerability:* There is minimal vulnerability for the JSD school population. *Impacts:* Students and staff are not likely to be affected by a landslide at school, but their homes might be affected. Families, students, and staff may need to evacuate affected areas, leading to temporary displacement and disruption of daily life.
	Structures	*Vulnerability:* There is minimal potential to impact JSD schools, as no structures have been identified in landslide-susceptible areas. *Impacts:* Schools and district facilities are not likely to be damaged, but homes and other structures located near slopes or unstable terrain may suffer foundation cracks or damage, making these buildings unsafe to occupy.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerabilities and Impacts
	Economic Assets	N/A—not relevant to JSD schools.
	Natural, Historic, and Cultural Resources	N/A—not relevant to JSD schools.
	Critical Facilities and Infrastructure	*Vulnerability:* Transportation networks are vulnerable to landslides, and there is possible damage to utility systems. *Impacts:* School buses may be unable to reach students due to road blockages. Students and staff may be unable to travel to school due to closed roads. Landslides elsewhere in the region could affect utility systems like power, water, or communication, which may disrupt school activities.
	Community Activities	*Vulnerability:* N/A—not relevant to JSD schools. *Impacts:* Other areas in the community may be affected. Parks, hiking trails, and other community recreational areas may be closed due to instability.
Radon	People	*Vulnerability:* All students and staff are vulnerable to radon exposure. *Impacts:* Radon could be present in school facilities and all faculty and students could be exposed to radon in school facilities. Long-term radon exposure is the second leading cause of lung cancer, particularly in enclosed spaces like classrooms and offices. Young children, teachers, and school staff who spend many hours in affected buildings may face greater health risks. Radon could also potentially affect residences of staff and students.
	Structures	*Vulnerability:* The district's vulnerability is minimal, as radon is primarily a health risk. *Impacts:* Some schools could potentially have high levels of radon that might require foundation repairs or ventilation for radon mitigation.
	Economic Assets	N/A—not relevant to JSD schools.
	Natural, Historic, and Cultural Resources	N/A—not relevant, as radon is primarily a health risk.
	Critical Facilities and Infrastructure	N/A—not relevant, as radon is primarily a health risk.
	Community Activities	N/A—not relevant to JSD schools.
High Wind	People	*Vulnerability:* All students and staff are vulnerable to high winds. *Impacts:* Students or staff could be injured by blowing debris or falling tree limbs.
	Structures	*Vulnerability:* All school facilities and vehicles are vulnerable. High winds can occur over a large area and may affect the whole district. *Impacts:* High winds can damage school buildings, harm roofs, and break windows. Schools may be inoperable if damage is severe or

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerabilities and Impacts
		during power and communication outages. Classes may be canceled or moved online, impacting the academic calendar.
	Economic Assets	*Vulnerability:* There are potential costs for structure or vehicle repairs. *Impacts:* Significant budget impacts can result from physical damage to structures and building contents. Debris removal can be costly and may strain budgets.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Schoolyards, playgrounds, and outdoor/indoor recreational facilities can be damaged from high winds. *Impacts:* Activities may be canceled, or areas may be closed for use.
	Critical Facilities and Infrastructure	*Vulnerability:* Schools and district facilities, including utility systems, are vulnerable to high winds. *Impacts:* Roof damage and broken windows can make school facilities unsafe. Damaged power lines and communication equipment may interrupt in-person and online learning. School buses and other transportation may be delayed due to fallen debris or road closures. Transportation disruptions can make it difficult for students or staff to travel to class. Classes may be canceled or moved online, impacting the academic calendar.
	Community Activities	*Vulnerability:* Recreation activities are vulnerable to disruption. *Impacts:* High winds may force the cancellation or delay of school sports, fairs, or other school gatherings.
Lightning	People	*Vulnerability:* Students and staff are vulnerable to lightning strikes. A large area is at risk of lightning strikes during every thunderstorm. If thunder can be heard, lightning is close enough to strike and shelter should be sought. Because it is impossible to know where lightning will strike, all people, structures, and infrastructure are considered vulnerable to lightning. *Impacts:* Students or staff could be injured if lightning strikes, particularly during outdoor activities. The district monitors safe conditions for outdoor events.
	Structures	*Vulnerability:* Structures are vulnerable to damage or power surges caused by lightning. *Impacts:* Lightning strikes can cause fires, structural damage, or power surges that damage electrical systems and disrupt learning in schools.
	Economic Assets	*Vulnerability:* Structures, computers, and electronic tools are vulnerable to lightning damage. *Impacts:* Damage from lightning can result in expensive repairs to electrical systems, computers, and other infrastructure.
	Natural, Historic, and Cultural Resources	N/A—not relevant to JSD.
	Critical Facilities and Infrastructure	*Vulnerability:* Lightning can damage power and communication systems.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerabilities and Impacts
		Impacts: Power and communication outages can affect operations for schools, homes, businesses, emergency responders, and medical facilities.
	Community Activities	*Vulnerability:* Recreation activities are vulnerable to lightning. *Impacts:* Lightning may force the cancellation or delay of school sports, fairs, or other school gatherings.
Severe Winter Weather	People	*Vulnerability:* Students and staff are vulnerable to severe winter weather, which occurs over large areas and could affect the entire district. *Impacts:* Travel to school facilities may be difficult for students and staff during severe winter weather. Roads may be slick or impassable due to ice, snow, or traffic from collisions. Pedestrians may incur injuries from slips and falls.
	Structures	*Vulnerability:* Minimal damage to school facilities is expected. *Impacts:* There is possible damage from heavy snow loads on roofs and an increased need for facilities/maintenance staff to clear parking lots and sidewalks.
	Economic Assets	*Vulnerability:* The district is vulnerable to increased costs associated with severe winter weather. *Impacts:* Severe winter weather can lead to increased maintenance and repair costs. Schools will have an increase in operational costs to keep buildings warm. Transportation and fuel costs can also increase due to snow plowing and de-icing parking lots and sidewalks.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Trees, landscaping, playgrounds or outdoor equipment are vulnerable to severe winter weather. *Impacts:* Heavy snow can break tree limbs, causing damage to school landscaping and outdoor equipment.
	Critical Facilities and Infrastructure	*Vulnerability:* Utility networks are vulnerable to damage or outages. *Impacts:* Heavy snow can damage power lines, affecting heating, lighting, and communication systems. Heating systems can overload, leading to failures. Frozen pipes and water breaks can disrupt water access in schools. Snow-covered roads can delay emergency response times as well as make it harder for school buses to operate safely, leading to delays or snow days.
	Community Activities	*Vulnerability:* School functions are vulnerable to severe winter weather. *Impacts:* Daily school or other school gatherings may be postponed or canceled due to unsafe travel conditions, causing disruptions to learning and class schedules.
Tornado	People	*Vulnerability:* Students and staff are vulnerable to tornadoes, which are rare but could occur anywhere in the district. *Impacts:* Flying debris, collapsed structures, and vehicle/bus accidents caused by high winds can lead to injuries or fatalities. Families may be temporarily or permanently displaced due to damaged homes, and student access to education may be interrupted.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerabilities and Impacts
	Structures	*Vulnerability:* All district facilities, schools, and vehicles are vulnerable to tornado damage. *Impacts:* Tornadoes can damage or destroy school buildings. Roofs can be torn off, windows shattered, and buildings leveled.
	Economic Assets	*Vulnerability:* The district is vulnerable to significant costs to structures and equipment due to tornado damage. *Impacts:* High costs are associated with rebuilding and repairing damaged property, including vehicles and classroom materials.
	Natural, Historic, and Cultural Resources	N/A—not relevant to JSD.
	Critical Facilities and Infrastructure	*Vulnerability:* Utility network outages and transportation access are vulnerable to tornado impacts. *Impacts:* Damage can occur to electrical grids, water systems and communication systems. Debris can block roads, hindering emergency response and transportation access to school.
	Community Activities	*Vulnerability:* Parks, playgrounds, sport facilities, and fields for schools are vulnerable to tornado damage. *Impacts:* Outdoor recreation areas may be damaged or littered with debris, making them unsafe or temporarily unusable, and activities may be canceled.
Wildfire	People	*Vulnerability:* Students and staff are vulnerable to the effects of wildfires. *Impacts:* Smoke and poor air quality can cause respiratory issues, especially for children and those with pre-existing conditions like asthma. Outdoor events may be canceled, and indoor recess may be required. Families in evacuated areas may need to leave their homes, disrupting daily life and interrupting access to education.
	Structures	*Vulnerability:* No structures have been identified in high wildfire risk areas. *Impacts:* Schools are not expected to be directly impacted by wildfire. However, evacuation or damage to homes near the interface might impact students or employees and disrupt school attendance.
	Economic Assets	*Vulnerability:* There is minimal direct vulnerability, but indirect impacts may arise from the community. *Impacts:* Local businesses may be destroyed or forced to close temporarily. Reconstructing homes and infrastructure can put financial strain on residents and government resources.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Watershed and air quality are at risk due to wildfires. *Impacts:* Water sources may be contaminated and could affect the water supply. Smoke pollution can linger for weeks.
	Critical Facilities and Infrastructure	*Vulnerability:* Utility systems and emergency response capabilities are vulnerable to wildfire impacts. *Impacts:* Fires can damage power lines, leaving homes and critical facilities without electricity. Evacuations and road closures can impact travel to and from school. Resources devoted to fire

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerabilities and Impacts
		response may strain emergency response capabilities in the community.
	Community Activities	*Vulnerability:* Daily school activities and other school events are vulnerable to disruption from wildfires. *Impacts:* Smoke, evacuations, or direct fire damage may cause schools to close temporarily, affecting student learning. School events or gatherings may be postponed or canceled.
Dam Failure	People	*Vulnerability:* Students and staff, particularly at schools in potential inundation areas, are vulnerable to dam failure. *Impacts:* Dam failures can occur suddenly, but those downstream might have some warning. The failure of high-hazard dams may lead to injuries and loss of life for those caught in the resulting floodwaters. Homes may be damaged or destroyed, resulting in potential long-term displacement for residents, which may affect school enrollment.
	Structures	*Vulnerability:* Four school district facilities are in potential dam inundation areas in West Jordan, two in Riverton, and one in Bluffdale. *Impacts:* Significant structural and infrastructural losses can result from a dam failure. Homes, businesses, schools, and government service facilities can be damaged.
	Economic Assets	*Vulnerability:* The district budget is vulnerable to dam failure impacts. *Impacts:* Possible costs include school building repairs and equipment or classroom material replacement. Debris, sediment, and other material deposited following a dam failure can require extensive cleanup efforts.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Playgrounds and landscaping are vulnerable to damage from dam failure. *Impacts:* Equipment could be damaged.
	Critical Facilities and Infrastructure	*Vulnerability:* Utility networks are vulnerable to outages caused by dam failure. *Impacts:* Schools could be disrupted by power outages, communication network outages, or damage to transportation systems. If roads are damaged or blocked, transportation to or from school could be difficult for students and staff. Disruption of public water supply or wastewater treatment facilities could lead to reduced water quality, water shortages, exposure to sewage, and other health hazards. Damage or disruption to major roads, railroads, power, communications, or other public utilities could delay vital services and disrupt school functionality.
	Community Activities	*Vulnerability:* School events are vulnerable to disruption from dam failure. *Impacts:* Evacuations or direct damage may cause schools to close temporarily, affecting students' learning. School events or gatherings may be postponed or canceled.
Civil Disturbance	People	During a civil disturbance, students and staff can be impacted in several ways. They may experience disruptions to essential

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerabilities and Impacts
		services, such as transportation, healthcare, and utilities. There is also potential for personal injury, fatality and emotional distress.
	Structures	Civil disturbances can result in property damage.
	Economic Assets	Civil disturbances can lead to economic repercussions, including loss of income and damage to buildings.
	Natural, Historic, and Cultural Resources	No direct impact on JSD. Civil disturbances can have several impacts on the environment. These include increased pollution from burning vehicles, buildings, and other materials and the use of chemical agents to disperse crowds. In addition, large gatherings during civil disturbances can increase the generation of waste, including litter and potentially hazardous materials.
	Critical Facilities and Infrastructure	Schools and other essential facilities may be impacted if they are near or the target of civil disorder or riots. Civil disturbances can lead to various impacts and losses to a community's critical infrastructure. This can include damage to transportation systems, such as roadways, bridges, and public transit facilities, and disruption to communications networks, including phone lines and internet services. In addition, civil disturbances can damage power plants, electrical grids, and water supply systems, leading to power outages and water supply disruptions. These disruptions can significantly impact on the daily lives of community members and hinder the delivery of essential services.
	Community Activities	Schools may be impacted if they are near or the target of civil disorder or riots, school events or gatherings may be postponed or canceled
Cyberattack	People	Cyberattacks can expose student and employee data that can be used for identity theft, leading to financial and emotional distress for individuals and families. Teachers may be unable to access lesson plans, online resources, and student records, disrupting the learning environment.
	Structures	A cyberattack can damage public and private buildings. If private buildings or businesses utilize HVAC & Smart Building systems cybercriminals can control heating, ventilation, and security systems making them unsafe or unusable. If 911 systems are compromised, response times, medical emergencies, or crimes can be delayed leading to property damage or loss of life. If a cyberattack triggers a failure in gas, water, or electrical systems it could lead to a fire, flooding, or other property damage from a cascading effect
	Economic Assets	Financial exploitation of local government and business may occur. School operations may be disrupted, leading to loss in revenue from events, programs, and other activities.
	Natural, Historic, and Cultural Resources	Vulnerabilities are not currently known for this topic.
	Critical Facilities and Infrastructure	Cyberattacks, especially ransomware, can render critical systems (like computers, email, and school databases) inaccessible.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerabilities and Impacts
	Community Activities	A cyberattack can disrupt the student learning environment as well as can postpone, delay, or cancel student activities and gatherings.
Hazardous Materials Incident (Transportation & Fixed Facility)	People	Salt Lake County is significantly vulnerable to hazardous materials in various locations, including industrial sites, transportation routes, and waste management facilities. The proximity of residential areas and schools to these sites increases the risk of exposure to toxic substances in the event of accidental releases or spills. Unknown exposure to toxic chemicals, flammable substances, or other hazardous materials can cause respiratory issues, burns, poisoning, or long-term health complications whether caused by a transportation accident or a fixed facility release. A spill or gas leak may require evacuations resulting in the relocation of students and staff.
	Structures	Hazardous substances could result in the infiltration of homes, businesses, and public buildings such as schools making them unsafe to occupy. Certain chemicals are also highly flammable and could cause structural damage if ignited.
	Economic Assets	Buildings and/or infrastructure exposed to toxic materials may require extensive cleanup. Businesses or transportation companies responsible for the incident may face lawsuits, fines, or compensation claims from the affected parties.
	Natural, Historic, and Cultural Resources	No direct impact on JSD. Hazmat spills can severely damage the environment by contaminating the air, soil, and water. Cleanup can take weeks, months, or even years to complete, depending on the extent of the spill.
	Critical Facilities and Infrastructure	Schools may need to be evacuated or closed due to chemical spills, gas leaks, or other toxic exposures. A Hazmat incident on highways or local roads could block access to schools. A chemical spill could contaminate local water supplies, air systems, or power infrastructure which can affect school operations.
	Community Activities	Evacuations, or direct damage may cause schools to close temporarily, affecting student's learning. School events or gatherings may be postponed or canceled.
Public Health Epidemic/ Pandemic	People	In-person student learning/activities might not be available at this event. Students, teachers, and staff may contract illnesses leading to hospitalizations or fatalities, especially among vulnerable populations.
	Structures	Schools may need physical changes such as ventilation upgrades, sanitation stations, and modified classroom layouts. Schools, buses, and public spaces may require frequent deep cleaning and new health protocols
	Economic Assets	The district may have to spend more money on technology for remote learning, personal protective equipment (PPE), and sanitation supplies.
	Natural, Historic, and Cultural Resources	School performances and activities may be postponed or canceled.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerabilities and Impacts
	Critical Facilities and Infrastructure	In-person student learning/activities might not be available at this event. Reduced or modified school bus services may occur due to social distancing requirements. Delays in supply chain might occur affecting school meal programs, shortage in cleaning supplies, PPE, etc.
	Community Activities	In-person student learning/activities might not be available at this event.
Terrorism	People	Educational facilities could be targets for terrorist activities or active shooter scenarios which can result in the loss of life and injuries.
	Structures	Attacks involving explosives, arson, or sabotage could destroy or severely damage school buildings and administrative offices.
	Economic Assets	Implementing enhanced security measures (security, screening, emergency drills) requires significant funding
	Natural, Historic, and Cultural Resources	Educational facilities could be targets for terrorist activities or active shooter scenarios.
	Critical Facilities and Infrastructure	Physical attacks on power grids, communication infrastructure, and water supplies could impact school operations and the public's health.
	Community Activities	Threats or actual attacks could lead to the suspension of sports events or other school activities.

Hazards Not Profiled

Avalanche has been omitted from further discussion of hazard impacts and from mitigation actions. As shown in the description in Volume 1, avalanche risk is primarily in the Wasatch Mountains in Salt Lake County. No JSD schools or facilities are located within known avalanche paths or near slopes where avalanche is likely to occur. Additionally, there have been no previous occurrences of avalanches impacting JSD facilities or assets.

Jurisdiction-Specific Changes in Vulnerability

Hazard events can impact communities, infrastructures, and ecosystems. The severity of these impacts can be influenced by climate change, population patterns, and land use developments. Understanding these factors is crucial for the Jordan School District to develop a resilient community and minimize the impacts of hazards. Table 7 displays the unique changes each identified hazard has had on the Jordan School District.

DRAFT

Table 7: Jurisdiction-Specific Changes in Vulnerability in the Jordan School District

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
Avalanche	N/A	N/A	N/A	N/A
Drought	Climate change affects drought incidents by altering precipitation patterns and increasing temperatures. Warmer weather can lead to longer dry periods and more severe droughts.	Drought can influence population patterns. Increased water costs can affect the cost of living. Sustainable development efforts and improved water management may attract newcomers.	Local governments to adjust zoning laws and promote sustainable practices in new projects. As a result, prolonged drought conditions can reshape the area's landscape and influence future development trends.	Same
Earthquake	Rising temperatures can lead to glacial melting, which affects pressure on tectonic plates and may trigger seismic activity through isostatic rebound. In addition, increased rainfall and flooding can erode soils, weakening structural integrity and heightening earthquake vulnerability. Although the direct links between climate change and earthquakes are still under investigation, the environmental effects may impact the region's seismic risk.	Population growth may contribute to the potential for more residents displaced from shelter when a disaster occurs.	The Jordan School District (JSD) may implement land use and development changes to enhance safety and resilience. Key impacts could include assessing existing buildings to ensure that they meet updated safety standards, leading to renovations, or constructing new earthquake-resistant structures. In addition, land use planning may restrict development in high-risk areas and designate open spaces for emergency evacuation. The district might also develop facilities for emergency preparedness, such as shelters and resource centers, while expanding green spaces for emergency gatherings. Increased collaboration with local government and emergency services would promote community engagement through joint response strategies and educational programs on earthquake preparedness.	Increased
Extreme Heat	Climate change significantly impacts extreme heat by increasing the	Some may move to areas perceived as safer or seek	Rising temperatures may lead government planners to adopt heat	Increase

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	frequency and intensity of heat waves. Rising global temperatures lead to longer and hotter summers, affecting residents and local infrastructure while heightening health risks, especially for vulnerable populations. Urban heat islands from reduced vegetation and extensive pavement further amplify these effects.	better job opportunities elsewhere. The economic impact and infrastructure damage can also make certain neighborhoods less desirable, leading to shifts in demographics and the socioeconomic landscape as new residents with different backgrounds move in.	mitigation strategies, such as increasing green spaces and using reflective materials. Zoning regulations might shift to promote mixed-use developments that enhance walkability and reduce vehicle reliance during peak heat. As concerns about heat-related health risks grow, there may be greater demand for improvements like shaded sidewalks and cooling centers, influencing future development toward resilience and sustainability.	
Extreme Cold	Higher atmospheric temperatures allow for more moisture, resulting in heavier snowfall and potentially lower temperatures during these events.	By driving some residents to relocate to warmer areas. Harsh winters can hinder economic activities and deter new residents and businesses, influencing housing demand and the attractiveness of certain neighborhoods. This may disproportionately affect lower-income families, leading to changes in demographics and socioeconomic stratification in the community.	Extreme cold can impact land use and development by shifting priorities toward indoor facilities like shopping centers and community spaces, as outdoor activities are curtailed. Developers may focus on energy-efficient designs to cope with harsh winter conditions, which can lead to increased construction costs and adjusted project timelines.	Same
Flooding and Heavy Rain	Higher temperatures increase the frequency and intensity of extreme weather events and alter precipitation patterns. They lead to more-intense rainstorms and accelerated snowmelt from nearby mountains, raising water levels in rivers and streams. This combination	Population growth may contribute to the potential for more residents displaced from shelter when a disaster occurs.	Flooding can impact land use at JSD schools by necessitating zoning changes and limiting construction in flood-prone areas. Existing buildings may need retrofitting, while new facilities might be built on higher ground. Effective drainage and	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	increases the risk of flooding, especially in areas with inadequate drainage and urban development in flood-prone zones, heightening the potential for damage to homes and infrastructure.		resilience planning will be crucial in addressing these challenges.	
Landslide/ Slope Failure	Climate change increases the risk of landslides through heavier rainfall and temperature fluctuations. Intense rain saturates soil, destabilizing slopes, while freeze–thaw cycles weaken the ground. Changes in vegetation can also reduce stability, leading to a higher potential for landslides.	Landslides and slope failures can impact population patterns by making some areas unsafe, leading to displacement and lower property values. This prompts residents to move to safer regions, thereby increasing density in more stable areas. Concerns about future landslides may also deter newcomers from high-risk zones, shaping long-term demographic trends.	Landslides and slope failures can impact land use and development by rendering certain areas unsafe for construction. This often results in stricter zoning laws, pushing developers to focus on more stable regions. Consequently, property values may decline in affected areas, and infrastructure investments shift to increase safety, ultimately guiding growth toward safer locations.	Same
Radon	Climate change can affect radon levels by altering soil temperatures and moisture conditions. Higher temperatures may increase radon emissions from the ground, while heavy rainfall can change groundwater and soil saturation, impacting radon migration into buildings.	Radon exposure can influence population patterns as increased health awareness may drive families to move away from areas with high radon levels. This shift could particularly affect vulnerable groups, changing demographics in the JSD.	Radon can impact land use and development by necessitating site assessments and mitigation, which can increase costs. Developers might prioritize areas with lower radon risks and adopt designs that reduce gas infiltration. This awareness may prompt stricter building codes and zoning regulations, influencing where new projects are located and shaping community planning.	Same
High Wind	Climate change affects high winds by altering atmospheric patterns and increasing extreme weather events.	Population growth may contribute to the potential for more residents displaced	High winds could change land use and development in JSD classes by requiring windbreaks, such as trees,	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	Rising temperatures may lead to more substantial, unpredictable winds and more frequent thunderstorms, posing risks to infrastructure and air quality.	from shelter when a disaster occurs.	to protect buildings and reduce erosion. Outdoor spaces may be redesigned for safety, incorporating sheltered areas. New construction could also focus on better anchoring and resilience against wind, leading to a reevaluation of class planning with an emphasis on sustainability.	
Lightning	Climate change may alter atmospheric patterns and contribute to more extreme events. Climate change increases temperatures and alters precipitation, leading to more intense thunderstorms and frequent lightning strikes. Urbanization can enhance this effect, posing risks to public safety and infrastructure.	Minimal	As climate change causes more intense storms, urban planners may adapt zoning and building codes to enhance resilience, thereby influencing the town's growth.	Same
Severe Winter Weather	Climate change impacts heavy snow and blizzards by altering precipitation patterns. Higher temperatures can lead to more rain than snow, affecting snowpack levels. In addition, increased storm intensity results in heavier, more unpredictable snowfall.	Population growth may contribute to the potential for more residents displaced from shelter when a disaster occurs.	Heavy snow or blizzard conditions may prompt land use and development changes at JSD to enhance safety and accessibility. The district could invest in better snow removal systems and features like heated sidewalks to prevent snow buildup. Parking areas might be redesigned for easier access during winter weather, and outdoor spaces could be adapted for winter activities. In addition, building layouts may be modified to minimize the impact of snow on entrances and walkways, ensuring that the class remains functional during severe conditions.	Increased
Tornado	Climate change may increase the frequency or intensity of tornadoes.	Not expected to affect the school population.	Tornadoes can significantly alter land use and development by	Same

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
			leading to stricter construction codes and zoning laws for resilience. Communities may invest in tornado shelters, relocate critical facilities away from high-risk areas, and create open spaces for emergency response, all while promoting economic development through sustainable practices.	
Wildfire	Climate change contributes to raising temperatures and creating drier conditions, prolonged droughts lead to more dry vegetation, which serves as fuel for fires.	Not expected to affect the school population.	Recovery efforts often focus on resilient infrastructure and green spaces, leading to stricter building codes and encouraging development in safer areas. As wildfires increase with climate change, adapting land use is vital for community resilience.	Increased
Dam Failure	Climate change raises the risk of dam failure by causing heavier rainfall and rapid snowmelt. These changes can overwhelm dams and compromise their integrity, highlighting the need for urgent safety assessments and upgrades to protect communities downstream.	Dam failure can impact population patterns by displacing residents and altering demographics. Evacuations can lead to an influx in safer areas, while destruction may deter new residents and contribute to population decline. Fear of future disasters may also prompt remaining individuals to relocate, changing the community's composition and affecting population density.	Dam failure can reshape land use and development by making areas prone to flooding unsuitable for growth. This may lead planners to focus on safer regions and implement stricter zoning laws to enhance resilience. The emphasis on sustainable practices and flood mitigation can ultimately transform the urban landscape, prioritizing disaster preparedness in future developments.	Same

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
Civil Disturbance	Climate change can increase civil disturbances by intensifying environmental stresses and social tensions. Rising temperatures may lead to droughts, wildfires, and poor air quality, particularly affecting vulnerable communities. Resource scarcity, especially water, can spark conflicts and protests. In addition, an influx of migrants from harder-hit areas may strain local resources, further escalating tensions.	By encouraging residents to move for safety, leading to outflows and new arrivals. These events can reveal social issues, impacting community dynamics, employment, and property values, ultimately reshaping demographics, and social cohesion.	By shifting community priorities toward safety and stability. Developers may hesitate to invest in troubled areas, leading to a focus on public spaces and community centers. Residents might also push for zoning changes favoring low-density housing and community-oriented efforts, prompting a reevaluation of land use strategies.	Same
Cyberattack	Possible attack on the industry, which is seen as producing large amounts of greenhouse gases and burning fossil fuels. Climate change can heighten cyberattack risk by increasing vulnerabilities during extreme weather. Disruptions like power outages offer cybercriminals opportunities, but focusing on emergency responses can weaken cybersecurity measures.	Cyberattacks can change population patterns by eroding trust in essential services. Compromised systems may cause residents to leave due to safety concerns, while high-profile incidents can deter businesses, leading to job losses. This perception of vulnerability may also make the city less appealing to newcomers, resulting in demographic shifts and affecting local development.	Cyberattacks can impact land use and development by undermining confidence in public infrastructure. If essential systems are compromised, investors may be discouraged, slowing economic activity. Local governments might also redirect funds to increase cybersecurity rather than new infrastructure, altering development timelines and urban planning priorities. This can significantly reshape the city's growth and land use.	Same
Hazardous Materials Incident (Transportation & Fixed Facility)	Climate change elevates the risk of hazardous materials incidents by increasing extreme weather events like heavy rain and wildfires. These events can breach storage tanks and heighten material volatility. Vulnerable infrastructure can lead to more spills or accidents, while climate shifts may also introduce new challenges for managing	By causing evacuations and temporary declines in density. In the long run, unsafe areas may deter new residents, affecting growth and diversity. In addition, negative perceptions can lower property values and economic prospects, leading	Contaminated areas may be designated as hazardous sites, limiting their residential or commercial use and decreasing property values. This can drive developers to seek safer locations, altering growth patterns. Over time, such incidents may lead to new zoning regulations focused on public safety and environmental protection.	Same

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	hazardous substances and public health.	families to relocate, which impacts local demographics.		
Public Health Epidemic/ Pandemic	Worsening air quality can also exacerbate respiratory conditions like asthma, especially in vulnerable populations, by increasing the spread of vector-borne diseases and raising the risk of waterborne illnesses due to flooding or drought.	Public health crises, like the COVID-19 pandemic, have notably affected JSD enrollment. There may be declines as prospective students delay education due to health concerns, while some existing students might drop out or take leaves of absence. Conversely, there could be an increase in enrollment in healthcare-related programs in response to public health needs, resulting in a fluctuating enrollment landscape.	Public health considerations may lead to significant changes at JSD, focusing on land use and infrastructure. To enhance well-being, outdoor spaces like gardens and recreational areas could be prioritized. In addition, buildings may be upgraded for better air quality, and new wellness centers could be established, promoting a culture of health among students.	Increased
Terrorism	Terroristic activity is sometimes centered around climate change. Climate change impacts terrorism incidents by creating resource scarcity and social unrest. Increased competition for essential resources like water can fuel tensions, making communities more vulnerable to extremist ideologies. Extreme weather events may disrupt social order and infrastructure, offering terrorist groups opportunities to exploit crises. In addition, climate-driven population displacement can heighten tensions in receiving areas, raising the risk of domestic terrorism. Law enforcement's focus on climate-	Terrorism could lead to a decline in enrollment at JSD due to safety concerns. Potential students might defer their education or choose other institutions perceived as safer. Following any incidents, increased security measures may lead to a temporary drop in enrollment.	Changes in land use at JSD due to terrorism could involve enhanced security measures, such as increased surveillance and emergency response facilities. Access points may be redesigned to restrict vehicle entry, and outdoor spaces could be modified to improve safety, limiting gatherings and reshaping the class environment to prioritize security over open communal areas.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	related challenges can also limit its capacity to address terrorism threats.			

DRAFT

Additional Public Involvement

The Jordan School District proactively informs students and families about potential hazards and safety issues. The district uses a multi-faceted approach to public outreach, which includes regular communication through newsletters, social media updates, and community meetings. It also provides essential resources on its official website, offering guidelines on preparing for and responding to various emergencies, such as natural disasters and health concerns. In addition, the school district collaborates with local emergency services to hold safety drills and workshops, ensuring that families are well-informed and equipped to handle potential threats. This commitment to transparency and education helps to foster a safe and informed community for all students and their families. Figure 3 and Figure 4 show examples of public outreach.

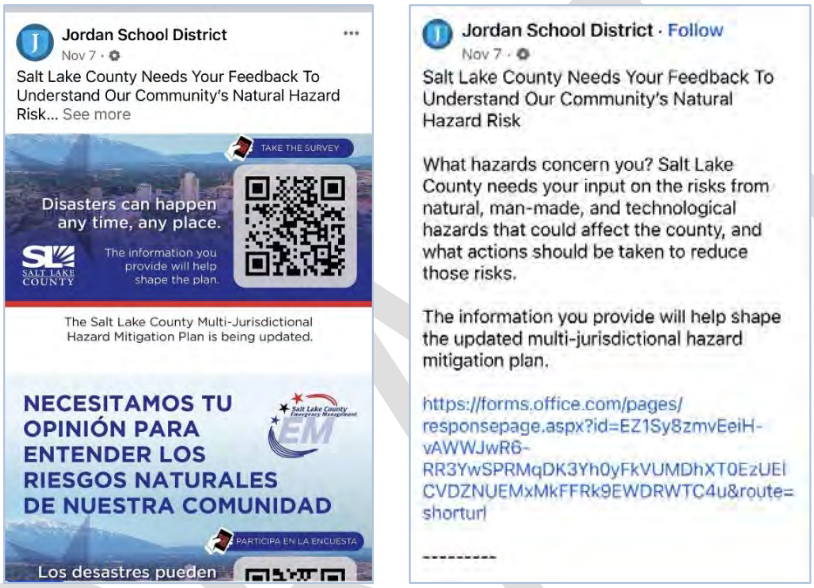


Figure 3: Facebook (*left*) and X (*right*) Posts for the Hazard Mitigation Survey

Figure 4: Website Posting of Public Survey

Plan Integration

Incorporating the underlying principles of the Hazard Mitigation Plan and its recommendations into other plans is a highly effective and low-cost way to expand their influence. All plan participants will use existing methods and programs to implement hazard mitigation actions where possible. As previously stated, mitigation is most successful when it is incorporated into the day-to-day functions and priorities of government and public service. This plan builds on the momentum developed through previous and related planning efforts and mitigation programs, and it recommends implementing actions where possible through these other program mechanisms. These existing mechanisms include the following:

- Regularity Capabilities
- Administrative Capabilities
- Fiscal Capabilities

Respective planning stakeholders will conduct implementation and incorporation into existing planning mechanisms and will be done through the routine actions of:

- Monitoring other planning/program agendas
- Attending other planning/program meetings
- Participating in other planning processes; and
- Monitoring community budget meetings for other community program opportunities.

The successful implementation of this plan will require constant and vigilant review of existing plans and programs for coordination and multi-objective opportunities that promote a safe, sustainable community.

DRAFT

Regular efforts should be made to monitor the progress of mitigation actions implemented through other planning mechanisms. Where appropriate, priority actions should be incorporated into planning updates. Table 8 lists existing planning mechanisms into which the Hazard Mitigation Plan has been integrated. Table 9 lists the opportunities for integrating elements of this plan into other plans.

Table 8: Integration of Previous Plans by Jordan School District

Plan	Description
None	N/A

Table 9: Opportunities for Integration with Future Plans of the Jordan School District

Plan	Description
Annual District-wide Facilities Assessment Plan	These facility assessments identify items at each building in the Jordan School District and prioritize the mitigation of the identified risk or need.
District Policy AA435 – Community Emergency Management Programs	Because the school district does not have the same long-term planning mechanisms as a municipality, this policy outlines how the district can coordinate with local and county agencies for education and training programs and community organizations to develop preparedness and response procedures. This could also integrate mitigation planning.
City Building Codes	The school district will work with city planning departments to ensure that new school construction aligns with building codes and can withstand local hazards.
Capital Projects Plans	Capital projects planning addresses the remodel and renovation of existing facilities in support of educational needs. It also provides inspections for life safety needs and preservation of existing facilities.

Capability Assessment

Local mitigation capabilities are existing authorities, policies, programs, and resources that reduce hazard impacts or could help carry out hazard mitigation activities.

Planning and Regulatory Capabilities

Planning and regulatory capabilities are the plans, policies, codes, and ordinances that prevent and reduce the impacts of hazards.

Table 10: Assessment of the Planning Capabilities of the Jordan School District

Plan	Does it address hazards? (Y/N)	How can it be used to implement mitigation actions?	When was the last update? When is the next update?
General Plan	Yes	Unknown	Unknown
Capital Improvement Plan	Yes	Unknown	Unknown
Climate Change Adaptation Plan	N/A	N/A	N/A

DRAFT

Plan	Does it address hazards? (Y/N)	How can it be used to implement mitigation actions?	When was the last update? When is the next update?
Community Wildfire Protection Plan	N/A	N/A	N/A
Economic Development Plan	N/A	N/A	N/A
Land Use Plan	N/A	N/A	N/A
Local Emergency Operations Plan	Yes	Unknown	Unknown
Stormwater Management Plan	Yes	Unknown	Unknown
Transportation Plan	Yes	Unknown	Unknown
Substantial Damage Plan	N/A	N/A	N/A
Other? (Describe)			

Table 11: Assessment of the Regulations and Ordinances of the Jordan School District

Regulation/Ordinance	Does it effectively reduce hazard impacts?	Is it adequately administered and enforced?	When was the last update? When is the next update?
Building Code	Yes	Yes	Unknown
Flood Insurance Rate Maps	N/A	N/A	N/A
Floodplain Ordinance	N/A	N/A	N/A
Subdivision Ordinance	N/A	N/A	N/A
Zoning Ordinance	N/A	N/A	N/A
Natural Hazard-Specific Ordinance (Stormwater, Steep Slope, Wildfire)	N/A	N/A	N/A
Acquisition of Land for Open Space and Public Recreation Use	N/A	N/A	N/A
Prohibition of Building in At-Risk Areas	N/A	N/A	N/A
Other? (Describe)			

Administrative and Technical Capabilities

Administrative and technical capabilities include staff and their skills. They also include tools that can help carry out mitigation actions.

Table 12: Assessment of the Administrative Capabilities of the Jordan School District

Administrative Capability	In Place? (Y/N)	Is staffing adequate?	Are staff trained on hazards and mitigation?	Is coordination between agencies and staff effective?
Chief Building Official	Yes	Yes	Yes	Yes

Administrative Capability	In Place? (Y/N)	Is staffing adequate?	Are staff trained on hazards and mitigation?	Is coordination between agencies and staff effective?
Civil Engineer	N/A	N/A	N/A	N/A
Community Planner	N/A	N/A	N/A	N/A
Emergency Manager	Yes	Yes	Yes	Yes
Floodplain Administrator	N/A	N/A	N/A	N/A
Geographic Information System (GIS) Coordinator	N/A	N/A	N/A	N/A
Planning Commission	N/A	N/A	N/A	N/A
Fire Safe Council	N/A	N/A	N/A	N/A
CERT (Community Emergency Response Team)	N/A	N/A	N/A	N/A
Active VOAD (Voluntary Agencies Active in Disasters)	N/A	N/A	N/A	N/A
Other? (Please describe.)				

Table 13: Assessment of the Technical Capabilities of the Jordan School District

Technical Capability	In Place? (Y/N)	How has it been used to assess/mitigate risk in the past?	How can it be used to assess/mitigate risk in the future?
Mitigation Grant Writing	Yes	Unknown	Unknown
Hazard Data and Information	N/A	N/A	N/A
GIS	N/A	N/A	N/A
Mutual Aid Agreements	N/A	N/A	N/A
Other? (Please describe.)			

Financial Capabilities

Financial capabilities are the resources to fund mitigation actions. Talking about funding and financial capabilities is important to determine what kinds of projects are feasible, given their cost. Mitigation actions like outreach programs are lower cost and often use staff time and existing budgets. Other actions, such as earthquake retrofits, could require substantial funding from local, state, and federal partners. Partnerships, including those willing to donate land, supplies, in-kind matches, and cash, can be included.

DRAFT

Table 14: Assessment of the Financial Capabilities of the Jordan School District

Funding Resource	In Place? (Y/N)	Has it been used in the past and for what types of activities?	Could it be used to fund future mitigation actions?	Can it be used as the local cost match for a federal grant?
Capital Improvement Project Funding	Yes	Yes, District wide upgrades.	Yes	No
General Fund	Yes	N/A	Yes	No
Hazard Mitigation Grant Program (HMGP/404)	N/A	N/A	Yes	No
Building Resilient Infrastructure & Communities (BRIC)	This grant was used in 2024 for seismic scoping (tier 1 and tier 2 seismic reports)	Yes	Yes	No
Flood Mitigation Assistance (FMA)	N/A	N/A	Yes	No
Public Assistance Mitigation (PA Mitigation/406)	N/A	N/A	Yes	No
Community Development Block Grant (CDBG)	N/A	N/A	N/A	N/A
Natural Resources Conservation Services (NRCS) Programs	N/A	N/A	N/A	N/A
U.S. Army Corps (USACE) Programs	N/A	N/A	N/A	N/A
Property, Sales, Income, or Special Purpose Taxes	N/A	N/A	N/A	N/A
Stormwater Utility Fee	N/A	N/A	N/A	N/A
Fees for Water, Sewer, Gas, or Electric Services	N/A	N/A	N/A	N/A
Impact Fees from New Development and Redevelopment	N/A	N/A	N/A	N/A
General Obligation or Special Purpose Bonds	N/A	N/A	N/A	N/A

DRAFT

Funding Resource	In Place? (Y/N)	Has it been used in the past and for what types of activities?	Could it be used to fund future mitigation actions?	Can it be used as the local cost match for a federal grant?
Federal-funded Programs (Please describe)	N/A	N/A	N/A	N/A
Private Sector or Nonprofit Programs	N/A	N/A	N/A	N/A
Other?				

Education and Outreach Capabilities

Education and outreach capabilities are programs and methods that could communicate about and encourage risk reduction. These programs may be run by a participant or a community-based partner. Partners, especially those who work with underserved communities, can help identify additional education and outreach capabilities.

Table 15: Assessment of the Education and Outreach Capabilities of the Jordan School District

Education and Outreach Capability	In Place? (Y/N)	Does it currently incorporate hazard mitigation?	Could it be used to support mitigation in the future?
Community Newsletter(s)	Yes	Unknown	Unknown
Hazard Awareness Campaigns (such as Firewise, Storm Ready, Severe Weather Awareness Week, School Programs)	No	N/A	N/A
Public Meetings/Events (Please describe.)	Yes	Unknown	Unknown
Emergency Management Listserv	Yes, Skyward	Unknown	Unknown
Local News	Yes	Unknown	Unknown
Distributing Hard Copies of Notices (e.g., public libraries, door-to-door outreach)	Yes	Unknown	Unknown
Insurance Disclosures/ Outreach	Unknown	Unknown	Unknown
Organizations that Represent, Advocate for, or Interact with Underserved and Vulnerable Communities (Please describe.)	Yes	Unknown	Unknown
Social Media (Please describe.)	Yes	Unknown	Unknown
Other? (Please describe.)			

DRAFT

Opportunities to Expand and/or Improve Capabilities

Actions that can expand and improve existing authorities, plans, policies, and resources for mitigation include budgeting for mitigation actions, passing policies and procedures for mitigation actions, adopting and implementing stricter mitigation regulations, approving mitigation updates, and making additions to existing plans as new needs are recognized. Table 16 lists the opportunities for the Jordan School District.

Table 16: Opportunities to Expand and/or Improve the Capabilities of the Jordan School District

Capability	Opportunity to Expand and/or Improve
Planning and Regulation	The district does not develop or participate in many plans that relate to mitigation, but these plans can still impact the district's planning for its own assets. The district can review the current building codes, including seismic standards, and identify which schools can be upgraded in alignment with current codes.
Administrative and Technical	The district can identify partners to help fill in gaps in capabilities, such as GIS, hazard data collection, and experience with mitigation grants. SLCo is one example of a partner that could help expand this type of capability, in addition to the communities where the school district operates.
Financial	The district can pursue new funding sources like the Hazard Mitigation Grant Program. Additionally, the district can consider if and when BRIC is replaced to assess whether the new grant is a viable opportunity for further mitigation financing.
Education and Outreach	The district can share additional information with students, staff and faculty on hazards and how to reduce their risk. For example, the district's current ability to offer handouts and host public meetings could incorporate additional hazard information like regular earthquake or seasonal flood notices. Partners, such as SLCo, could help identify and provide relevant information to share.

Mitigation Strategy

Mitigation strategies provide proactive measures that are designed to minimize the impacts of hazards on the Jordan School District. The Jordan School district did not participate in the previous plan; therefore, no previous mitigation actions were available. Table 17 is the 2025 mitigation action plan for the Jordan School District.

DRAFT

THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT

Table 17: 2025 Mitigation Action Plan for the Jordan School District[9]

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
1	Conduct seismic evaluations of district facilities and pursue mitigation/retrofitting where needed.	Earthquake	Jordan School District	Cities within district boundaries	Reduce structural losses to buildings, furnishings, and equipment while minimizing interruption of education activities. Reduce the risk of injury to students and staff.	High	BRIC/FEMA, district budget	Long-term	High	
2	Grade all sites for proper drainage and evaluate storm drain capacity to reduce flood risk.	Heavy Rain/Flooding	Jordan School District	Cities within district boundaries	Reduce structural losses to buildings, furnishings, and equipment while minimizing interruption of education activities. Reduce the risk of injury to students and staff.	High	Currently unknown, could use local or federal grants such as FMA	Long-term	Medium	Sites are typically graded to address drainage issues during early construction.
3	Assess the vulnerability of all properties and mitigate deficiencies. Include school site and building security updates.	Terrorism	Jordan School District	Cities within district boundaries	Reduce risk of injury to students, staff, and faculty.	High	Currently unknown, might have potential funding with HB84, local and federal grants, district budget	Long-term	High	
4	Update equipment and landscaping to promote water conservation.	Drought	Jordan School District	Cities within district boundaries	Conserve water supply and ensure the landscape is resilient to drought.	Medium	District budget	Ongoing	Low	
5	Establish and/or expand policies and public education opportunities for district-wide emergency notifications and provide information on hazards and mitigation.	Drought, Earthquake, Extreme Heat, Extreme Cold, Flooding, High Wind, Heavy Rain, Landslide/Slope Failure, Lightning, Radon, Tornado Severe Winter Weather, Wildfire, Dam Failure, Cyberattack, Hazardous Materials Incident, Public Health Epidemic/Pandemic, Terrorism	Jordan School District	Cities within district boundaries	Increased awareness of potential impacts of hazards among student community and staff may help reduce interruptions to district operations. Can also contribute to reducing the risk of structural damage and injuries from hazards. Sharing information via the website or take-home notices to parents can increase awareness of hazard mitigation measures such as water conservation (drought), home retrofitting (earthquake), flood maps, inundation areas, and elevation projects for utilities (flood, dam failure, heavy rain), home weatherization (extreme heat, extreme cold, severe winter weather), tree pruning and wind-rated building materials (high wind, tornado), recognizing warning signs and methods to stabilize slopes (landslides), and	Low	District budget	Ongoing	Medium	

[9] For H.B. 84, see https://le.utah.gov/~2024/bills/static/HB0084.html. BRIC = Building Resilient Infrastructure and Communities, FEMA = Federal Emergency Management Agency, FMA = Flood Mitigation Assistance.

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
					at-home radon testing and mitigation (radon).					
6	Adopt and enforce updated building codes.	Drought, Earthquake, Extreme Heat, Extreme Cold, Flooding, High Wind, Heavy Rain, Lightning, Severe Winter Weather, Wildfire, Dam Failure, Cyberattack, Hazardous Materials Incident, Public Health Epidemic/Pandemic, Terrorism	Jordan School District	Cities within district boundaries	Reduce structural losses to buildings, furnishings, and equipment while minimizing interruption of education activities. Reduce risk of injury to students and staff.	Medium	District budget	Ongoing	Medium	

DRAFT

City of Kearns

Jurisdictional Annex to the
Salt Lake County Hazard Mitigation Plan

Month XXXX | Draft X.X

THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT

Table of Contents

City of Kearns Annex 1

Planning Process Contact Information 1
Contact List 1
Existing Plans and Resources 3
Jurisdiction Profile 3
Date of Incorporation 3
Location and Description 3
Population 4
Demographics 4
Brief History 4
Climate 4
Public Services 4
Governing Body 4
Development Trends 4
Jurisdiction-Specific Hazards and Risk 5
Hazard Event History 8
National Flood Insurance Program Summary 10
Jurisdiction-Specific Vulnerabilities and Impacts 10
Hazards Not Profiled 21
Jurisdiction-Specific Changes in Vulnerability 21
Additional Public Involvement 26
Plan Integration 26
Capability Assessment 28
Planning and Regulatory Capabilities 28
Administrative and Technical Capabilities 29
Financial Capabilities 31
Education and Outreach Capabilities 33
Opportunities to Expand and/or Improve Capabilities 33
Mitigation Strategy 34

DRAFT

List of Figures

Figure 1: Social Media Posts for the Hazard Mitigation Survey 26
Figure 2: Social Media Posts for the Hazard Mitigation Survey (*left*) and Hazard Draft Plan Review (*right*) 26

List of Tables

Table 1: Contact Information for the City of Kearns 1
Table 2: Participant List for the City of Kearns 1
Table 3: Contact and Stakeholder List for the City of Kearns 2
Table 4: Existing Plans and Resources 3
Table 5: Calculated Priority Risk Index Values for the City of Kearns 5
Table 6: Criteria for the Calculated Priority Risk Index 6
Table 7: History of Hazard Events in the City of Kearns 8
Table 8: National Flood Insurance Program Status for the City of Kearns 10
Table 9: National Flood Insurance Program Overview for the City of Kearns 10
Table 10: Jurisdiction-Specific Vulnerabilities and Impacts in the City of Kearns 11
Table 11: Jurisdiction-Specific Changes in Vulnerability in the City of Kearns 21
Table 12: Integration of Previous Plans by the City of Kearns 27
Table 13: Opportunities for Integration with Future Plans of the City of Kearns 27
Table 14: Assessment of the Planning Capabilities of the City of Kearns 28
Table 15: Assessment of the Regulations and Ordinances of the City of Kearns 29
Table 16: Assessment of the Administrative Capabilities of the City of Kearns 30
Table 17: Assessment of the Technical Capabilities of the City of Kearns 31
Table 18: Assessment of the Financial Capabilities of the City of Kearns 31
Table 19: Assessment of the Education and Outreach Capabilities of the City of Kearns 33
Table 20: Opportunities to Expand and/or Improve the Capabilities of the City of Kearns 34
Table 21: Mitigation Action Alternatives for the City of Kearns 34
Table 22: Status of Prior Mitigation Actions of the City of Kearns 35
Table 23: 2025 Mitigation Action Plan for the City of Kearns 37

DRAFT

City of Kearns Annex

To participate in this multi-jurisdictional hazard mitigation plan (MJHMP) update for Salt Lake County (SLCo), the governing body of the city of Kearns passed a formal resolution, a copy of which is maintained at the local government offices.

Planning Process Contact Information

Table 1 provides information on the point of contact during the updating of the MJHMP.

Table 1: Contact Information for the City of Kearns

Name	Contact Information
Kelly Bush	**Phone:** 801-654-2123; **email:** KBush@kearns.utah.gov

The city of Kearns has a fully integrated approach to hazard mitigation planning and program implementation. During the 2024 update process, the MJHMP participation roles in Table 2 were recorded.

Table 2: Participant List for the City of Kearns

Name	Title	Jurisdiction
Kelly Bush	Mayor	City of Kearns
Madison Warner	Municipal EM Planner	Unified Fire Authority

Contact List

Table 3 lists plan contacts and stakeholders for the City of Kearns.

DRAFT

Table 3: Contact and Stakeholder List for the City of Kearns

Name	Title	Jurisdiction/ Agency	Email	Phone	Stake-holder Type[1]	Should They Receive Meeting Invites?	Should They Complete a Survey?	Should they review the draft plan
Greg Anderson	Manager	Kearns Improvement District	ganderson@kidwater4ut.gov		1	Y	Y	Y
Levi Hughes	Chief	Unified Police Department, Kearns Precinct	lhughes@updsl.org		1	Y	Y	Y
Colin Hilton	Director	Olympic Oval	chilton@uolf.org		1	Y	Y	Y
Kevin Schmidt	Director	Kearns Oquirrh Park	kschmidt@kopfc.com		2	Y	Y	Y
Roger Snow	Chair	Kearns Community Council	rsnow@jerryseiner.com		3	Y	N	Y

DRAFT

[1] 1 – Local and regional agencies involved in hazard mitigation activities; 2 – Agencies that have the authority to regulate development; 3 – Neighboring communities; 4 – Representatives of businesses, academia, and other private organizations; 5 – Representatives of nonprofit organizations, including community-based organizations, that work directly with and/or provide support to underserved communities and socially vulnerable populations.

Existing Plans and Resources

Table 4 lists the plans and resources available to the county.

Table 4: Existing Plans and Resources

Plan, Study, Report, or Technical Information	Is it available online?	If online, add the link here.	Is it on SharePoint? Or where can we access it?	Comments
Municipal Services District Emergency Operations Plan	Y	chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.utah.gov/pmn/files/599603.pdf		Added under Resources folder.
Continuity of Operations Plan	Y		Y	Added under Resources folder.
Community Wildfire Protection Plan	N		Y	Added under Resources folder.
Salt Lake County Hazard Mitigation Plan	Y	chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://slcoem.org/wp-content/uploads/2022/04/2019-Salt-Lake-County-Hazard-Mitigation-Plan.pdf		
Emergency Communications Plan	N		Y	Added under Resources folder.

Jurisdiction Profile

Date of Incorporation

Kearns became a metro township in January 2017, then converted to a city on May 1, 2024.

Location and Description

The city of Kearns is located southwest of Salt Lake City. The city is approximately 4.6 square miles in area and is approximately 4,500 feet above sea level. The city offers a blend of residential neighborhoods and recreational facilities that is home to the Utah Olympic Oval, an indoor speed skating rink built for the 2002 Winter Olympics.

DRAFT

Population

The 2022 American Community Survey 5-Year Estimate from the U.S. Census Bureau records the population of the city of Kearns as 37,058 people.

Demographics

Most of the 37,058 people are between the ages of 35 and 44, with a median age of 32.3; 18,666 are females (50.4%) and 18,392 are males (49.6%). English is the primary language in 62.7% of homes,, with 32.3% Spanish, and 5% other languages.

Brief History

During World War II, the area was initially developed as the Kearns Army Air Base to serve as a critical training facility for aircrew members. The base was decommissioned after the war, and the land was gradually converted to a residential community. Named after Senator Thomas Kearns, the area saw significant growth and development and became a prominent suburb of Salt Lake City. Today, Kearns is known for its diverse population, community spirit, and notable landmarks.

Climate

The city of Kearns experiences a humid continental climate (Dfb Köppen classification) characterized by warm summers and cold winters. Average high temperatures are approximately 85°F in the summer and approximately 36°F in the winter. Rain each year is approximately 15.4 inches, and snowfall averages 60 inches annually.

Public Services

The city of Kearns offers a wide range of public services through the Greater Salt Lake Municipal Services District (MSD). The MSD oversees services like planning and zoning, business licenses, inspections, emergency planning, and other municipal services.

Governing Body

The city of Kearns governing body comprises the Mayor, Deputy Mayor, and a three-member council.

Development Trends

The Kearns General Plan, adopted in 2020 and amended in 2021 and 2022, outlines a community-driven vision for land use, transportation, economic development, and housing, including elements on resilience, infrastructure, and moderate-income housing. Kearns is also experiencing population growth, making it one of the younger and more diverse municipalities in Salt Lake County. This is driving the need for more housing and community services. Efforts are underway to boost the local economy through job creation

DRAFT

and support for local businesses. These trends reflect Kearns' commitment to fostering a vibrant and sustainable community.

Jurisdiction-Specific Hazards and Risk

The Calculated Priority Risk Index (CPRI) is a comprehensive assessment tool for evaluating and prioritizing risks in a given context. It considers various factors, such as probability, impact, and urgency, to determine the level of risk associated with events or situations. The results for each hazard, including its risk factor (RF) value, are shown in Table 5. The results are based on the criteria in Table 6 and the equation that follows it. The CPRI helps organizations and individuals make informed decisions about risk management and mitigation strategies. It provides a systematic approach to identifying and addressing potential issues, allowing for a more efficient allocation of resources and proactive risk prevention. With the CPRI, stakeholders can prioritize their focus on the most critical risks, leading to more effective risk management and, ultimately, better outcomes.

Table 5: Calculated Priority Risk Index Values for the City of Kearns

Type of Hazard Event	Probability of Future Events	Spatial Extent	Severity of Life/ Property Impact	Warning Time	Duration	Response Capacity	Risk Factor Value
Avalanche	0	0	0	0	0	0	0
Drought	2	1	1	1	1	1	1.3
Earthquake	2	4	4	4	4	2	3.2
Extreme Heat	2	2	1	1	1	1	1.4
Extreme Cold	2	2	1	1	1	1	1.4
Flooding	1	2	1	1	1	1	1.1
Landslide/ Slope Failure	1	1	1	1	1	2	1.1
Radon	2	1	1	1	1	2	1.4
Heavy Rain	2	2	1	2	1	1	1.5
High Wind	2	2	1	2	1	1	1.5
Lightning	2	2	1	2	1	1	1.5
Severe Winter Weather	2	2	1	1	1	1	1.4
Tornado	1	1	1	1	1	2	1.1
Wildfire	1	1	1	1	1	1	1
Dam Failure	1	1	1	1	1	3	1.2
Civil Disturbance	1	2	1	2	1	2	1.3
Cyberattack	2	2	1	2	1	2	1.6
Hazardous Materials Incident	2	2	1	2	1	1	1.5

DRAFT

Type of Hazard Event	Probability of Future Events	Spatial Extent	Severity of Life/ Property Impact	Warning Time	Duration	Response Capacity	Risk Factor Value
(Transportation & Fixed Facility)							
Public Health Epidemic/ Pandemic	2	2	1	1	1	1	1.4
Terrorism	1	1	1	2	1	1	1.1

Table 6: Criteria for the Calculated Priority Risk Index

Risk Index Factor	Degree of Risk Level		Criteria	Factor Weight for Degree of Risk Level
Probability of Future Events	1	Unlikely	Less than 1 percent probability of occurrence in the next year or a recurrence interval of greater than every 100 years.	30%
	2	Occasional	1 to 10 percent probability of occurrence in the next year or a recurrence interval of 11 to 100 years.	
	3	Likely	11 to 90 percent probability of occurrence in the next year or a recurrence interval of 1 to 10 years.	
	4	Highly Likely	91 to 100 percent probability of occurrence in the next year or a recurrence interval of less than 1 year.	
Spatial Extent	1	Limited	Less than 10% of the planning area could be impacted.	10%
	2	Small	10%–25% of the planning area could be impacted	
	3	Significant	25%–50% of the planning area could be impacted.	
	4	Extensive	50%–100% of the planning area could be impacted.	
Severity of Life/Property Impact	1	Negligible	Less than 5% of the affected area's critical and non-critical facilities and structures are damaged/destroyed. Only minor property damage and minimal disruption of life. Temporary shutdown of critical facilities.	30%
	2	Limited	More than 5% but less than 25% percent of property in the affected area is damaged/ destroyed. Complete shutdown of critical facilities for more than one day but less than one week.	

DRAFT

Risk Index Factor	Degree of Risk Level		Criteria	Factor Weight for Degree of Risk Level
	3	Critical	More than 25% and less than 50% of property in the affected area was damaged/destroyed. Complete shutdown of critical facilities for over a week but less than one month.	
	4	Catastrophic	Over 50% of critical and non-critical facilities and infrastructures in the affected area are damaged/ destroyed. Complete shutdown of critical facilities for more than one month.	
Warning Time	1	Self-defined	More than 24 hours	10%
	2	Self-defined	12 to 24 hours.	
	3	Self-defined	6 to 12 hours.	
	4	Self-defined	Less than 6 hours.	
Duration	1	Brief	Up to 6 hours.	10%
	2	Intermediate	Up to one day.	
	3	Extended	Up to one week.	
	4	Prolonged	More than one week.	
Response Capacity	1	High	Significant resources and capability to respond to this kind of event; staff are trained, experienced, and ready.	10%
	2	Medium	Some resources and capability to respond to this kind of staff; some staff may be trained, experienced, and ready while others may need additional support.	
	3	Low	Limited resources and capability to respond to this kind of event; additional staff or staff training needed.	
	4	None	No resources and capability to respond this kind of event; additional outside support would be required.	

RISK FACTOR (RF) EQUATION

RF Value = [(Probability x 0.30) + (Spatial Extent x 0.10) + (Severity of Life/Property Impact x 0.30) + (Warning Time x 0.10) + (Duration x 0.10) + (Response Capacity x 0.10)]

Hazards with an RF value greater than or equal to 2.5 are considered high risk. Those with RF values of 2.0 to 2.4 are considered moderate risk hazards, and those with an RF value less than 2.0 are considered low risk. The highest possible RF value is 4.

DRAFT

Hazard Event History

Examining hazard event histories provides valuable insights to inform decision making and help prioritize resources for risk prevention and response efforts. Table 7 lists the hazard events impacting the city of Kearns since the 2019 plan update, as recorded in the Storm Events Database from the National Centers for Environmental Information.

Table 7: History of Hazard Events in the City of Kearns

Type of Hazard Event	FEMA Disaster #	Date(s)	Damage or Impacts	Description
Avalanche		N/A	N/A	N/A
Drought		1930s 1950s–1960s: 2020: 2021:	Air quality issues, potential for greater ecosystem collapse, decreased precipitation.	1930s: The Great Salt Lake and streams experienced low water levels 1950s–1960s: The Great Salt Lake experienced even lower water levels than in the 1930s. 2020: Utah experienced its driest year on record, with record dry soils and low snowpack. 2021: The Great Salt Lake reached an all-time record low due to a drought.
Earthquake	DR-4548-UT	03/18/20	M 5.7 earthquake was felt March 2020. 1962 Magna M 5.2 earthquake and the 1992 Western Traverse Mountains M 4.2 earthquake	M 5.7 earthquake at 7:09 a.m., centered 3.7 miles northeast of Kearns in Magna. The Wasatch Fault is considered overdue for a major earthquake, with a 57% chance of an M 6.0 or greater in the next 50 years.
Extreme Heat	N/A	Summers of 2020, 2021, 2022, 2023, 2024	Reported 9 deaths in Northern Utah, an upward trend in heat exposure and heat-related deaths since 2015. Excessive heat can also affect infrastructure.	Kearns along with Salt Lake County had one of the hottest summers on record, with several days over 105°F.
Extreme Cold	N/A	Winter of 2022 & 2023	2022: 5 people experiencing homelessness died from cold-related exposure. These deaths were in Salt Lake City, but this threat could impact neighboring jurisdictions.	N/A

DRAFT

Type of Hazard Event	FEMA Disaster #	Date(s)	Damage or Impacts	Description
Flooding	N/A	2008, 2011 flooding	Water was 9–12" on some roads, making them impassable & accumulated in low lying areas.	N/A
Landslide/ Slope Failure	N/A	N/A	N/A	N/A
Radon	N/A	Ongoing	N/A	It is believed that 31% of the homes in Kearns have radon in them.
Heavy Rain	N/A	N/A	N/A	Kearns will see local flooding around storm drains through the year when they become clogged with debris or with sudden summer downpours. No damage has been reported from these.
High Wind	N/A	2018 and 2021	Minor structural damage	Salt Lake County and surrounding areas experienced a severe windstorm with winds exceeding 100 mph in some areas.
Lightning	N/A	N/A	N/A	N/A
Severe Winter Weather	N/A	03/06/22, 02/06/2023		Kearns has seen snow totals of up to 30 inches in a 24 hour period. This impacts the ability of residents to get around, causes power outages and has caused structures to collapse due to the heavy snow weight on roofs.
Tornado	N/A	N/A	N/A	N/A
Wildfire	N/A	N/A	N/A	N/A
Dam Failure	N/A	N/A	N/A	N/A
Civil Disturbance	N/A	N/A	N/A	N/A
Cyberattack	N/A	N/A	N/A	N/A
Hazardous Materials Incident (Transporta-tion & Fixed Facility)	N/A	N/A	N/A	N/A
Public Health Epidemic/ Pandemic	DR-4525-UT	January 20, 2020–May 11, 2023	Impacted local businesses with social distancing measures. An increase in medical	SARS-CoV-2 is a strain of coronavirus that causes COVID-19. SARS-CoV-2 is responsible for the worldwide COVID-19

DRAFT

Type of Hazard Event	FEMA Disaster #	Date(s)	Damage or Impacts	Description
			calls led to hospital surges.	pandemic that killed millions and has many medical repercussions that are still being studied.
Terrorism	N/A	N/A	N/A	N/A

National Flood Insurance Program Summary

The city of Kearns participates in the National Flood Insurance Program (NFIP). Table 8 displays statistics related to the NFIP. The city of Kearns does not participate in the Community Rating System (CRS).

Table 8: National Flood Insurance Program Status for the City of Kearns[2]

Initial FHBM Identified	Initial FIRM Identified	Current Effective Map Date	Adopted Date	Date Joined NFIP	Tribal
12/18/85	12/18/85	09/25/09	2009	05/26/20	No

Table 9: National Flood Insurance Program Overview for the City of Kearns

Community ID	Number of Losses	Total Net Payment	Active Policies	Total Coverage
490265	0	$0	1	$350,000

The city of Kearns has designated the Director of Planning and Development Services as the Floodplain Administrator. The duties of the Floodplain Administrator are supported by the Greater Salt Lake Municipal Services District (MSD). The current Flood Damage Prevention and Control Ordinance was adopted on 8/9/2021. The current Flood Insurance Rate Map (FIRM) became effective on9/25/2009. The MSD is responsible for issuing floodplain permits in MSD Member Communities, including Kearns. The permits include a description of all work, including the kind and type of construction, proposed intent, and location. Substantial damage/substantial improvement structures are identified through the permitting process. Structures that are determined to be substantially damaged or substantial improvements are required to come into compliance with current codes. The MSD Building Department provides guidance on how to build in accordance with existing building codes.

Jurisdiction-Specific Vulnerabilities and Impacts

Table 10 provides information on the vulnerable assets in the city of Kearns, including its critical facilities, highlighting the city's vulnerability to identified hazards. It also describes the potential impacts to the community arising from those vulnerabilities. By understanding the risks associated with these assets, local authorities can develop proactive strategies to mitigate vulnerabilities and ensure that the safety and functionality of these important assets during hazard events. These data are invaluable for decision-

[2] FIRM = Flood Insurance Rate Map, FHBM = Flood Hazard Boundary Map

making and prioritizing resources for emergency response and preparedness efforts, ultimately contributing to more effective risk management and greater resilience in the community.

Community assets that may be vulnerable to hazards include 1 fire station, 1 police station, 11 schools, the Kearns Senior Center, Kearns Library, and Kearns Oquirrh Park Fitness Center. The city also has multiple parks including Oquirrh Park, Loader Park, and David Gourley Park. The city sits between Mountain View Corridor and Bangerter Highway, but neither directly intersect the city. Other primary routes include 4700 South, 5400 South, 6200 South, and 5600 West. Element Event Center and the Utah Olympic Oval are other notable facilities in the community.

Table 10: Jurisdiction-Specific Vulnerabilities and Impacts in the City of Kearns

Hazard	Vulnerable Asset	Description of Vulnerabilities and Impacts
Avalanche	People	N/A – Avalanche is not a concern for the City of Kearns.
Drought	People	*Vulnerability:* All Kearns residents are vulnerable to drought. Prolonged drought could disproportionately affect seniors, children, low-income households, and individuals without stable housing. *Impacts:* These populations may face challenges in paying higher water bills or investing in water-saving appliances. Air quality deterioration caused by dust and pollutants during drought can increase respiratory illnesses and strain public health.
	Structures	*Vulnerability:* Older homes are vulnerable to drought due to outdated plumbing or inefficient irrigation systems, making them less adaptable to drought restrictions. *Impacts:* A lack of water-wise landscaping may raise fire risk in residential areas.
	Economic Assets	*Vulnerability:* Businesses such as car washes, food services, and those that rely on water-intensive operations are vulnerable to drought. *Impacts:* Vulnerable businesses could face reduced capacity or higher costs during drought conditions. Prolonged dry spells may reduce demand for outdoor-based services or events.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Parks, wildlife, and vegetation are vulnerable to drought. *Impacts:* Parks and public landscapes may see stressed vegetation and reduced wildlife. Native flora may be lost if water conservation measures limit irrigation, thus reducing aesthetic and ecological value.
	Critical Facilities and Infrastructure	*Vulnerability:* Water systems and public buildings are vulnerable to drought. *Impacts:* Drought can reduce reservoir levels and water pressure, affecting public buildings and firefighting capabilities. Compacted soils may increase flash flood risk when rain returns.
	Community Activities	*Vulnerability:* Outdoor recreation *Impacts:* Outdoor public spaces may become less usable due to poor turf conditions or increased heat. Community programming may need to focus on drought education, heat safety, and water conservation.
Earthquake	People	*Vulnerability:* All residents of Kearns are vulnerable to earthquakes. *Impacts:* Earthquakes can lead to severe injury or death from falling objects or collapsed structures. A major earthquake could severely affect vulnerable populations in Kearns, especially those in mobile

Hazard	Vulnerable Asset	Description of Vulnerabilities and Impacts
		homes or unreinforced dwellings. Limited mobility and access to medical care could increase risk.
	Structures	*Vulnerability:* Kearns has a significant number of unreinforced masonry buildings, many of which are vulnerable to structural failure. *Impacts:* The 2020 earthquake highlighted how older construction types are not built to current seismic standards. Structural damage may result in residents being displaced from homes. Businesses and other facilities may also be damaged, contributing to disruption throughout the community. Recovery could be costly and take months or years depending on the magnitude.
	Economic Assets	*Vulnerability:* All businesses in Kearns are vulnerable to earthquakes. *Impacts:* Businesses can face losses from structural damage or loss of contents or inventory. An earthquake could disrupt commerce and emergency access, especially if transportation networks or utility lines fail. Businesses lacking insurance may not recover.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Trees and historic buildings are vulnerable to earthquakes. *Impacts:* Earthquakes could damage mature trees, disrupt soil integrity, and harm wildlife. Historical buildings with poor structural integrity may collapse or require extensive repairs.
	Critical Facilities and Infrastructure	*Vulnerability:* All critical facilities and infrastructure are vulnerable to earthquakes. *Impacts:* Damage to utilities, roadways, and health centers could delay emergency response and reduce public safety. Police and fire departments may be unable to reach affected areas quickly.
	Community Activities	*Vulnerability:* Large community gatherings are vulnerable to earthquakes. *Impacts:* Large events or community gatherings, especially at high-occupancy buildings like the Olympic Oval, could become hazardous during an earthquake. Emergency plans must address evacuation and shelter-in-place procedures.
Extreme Heat	People	*Vulnerability:* Kearns residents without access to air conditioning face elevated risk during extreme heat events. *Impacts:* Prolonged exposure may lead to heat exhaustion, dehydration, and heat stroke. Vulnerable populations, such as the elderly, young children, low-income individuals, and unsheltered persons, may be disproportionally affected by heat, especially those who work outdoors and/or do not have access to air conditioning. Extreme heat could lead to an increase in hospitalizations and reduced outdoor recreation, especially in the middle of the day when temperatures are the warmest.
	Structures	*Vulnerability:* Older structures are vulnerable to extreme heat. *Impacts:* Older residential buildings or public spaces without updated cooling systems may struggle to maintain safe indoor temperatures. Rising temperatures also increase energy demand and strain HVAC systems. Heat can strain infrastructure and increase cooling costs.
	Economic Assets	*Vulnerability:* Outdoor businesses are vulnerable to extreme heat.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerabilities and Impacts
		Impacts: Businesses that rely on outdoor activity, such as recreation or construction, may see reduced productivity or schedule delays. High cooling costs may strain household and commercial budgets. Employers might have to limit work hours, impacting their profit margins. Construction work done outdoors would be impacted, especially if frequent breaks and shaded areas are required.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Parks, natural ecosystems, and historic sites are vulnerable to extreme heat. *Impacts:* Extended heat can dry out vegetation in parks and open areas, stressing local ecosystems. Historic buildings may experience accelerated deterioration from thermal expansion and contraction.
	Critical Facilities and Infrastructure	*Vulnerability:* Community centers, healthcare facilities, and power infrastructure are vulnerable to extreme heat. *Impacts:* Healthcare facilities may experience an uptick in heat-related emergencies. Cooling centers, shelters, and power infrastructure may become strained during long heatwaves.
	Community Activities	*Vulnerability:* Community events are vulnerable to extreme heat. *Impacts:* Community events may be canceled or rescheduled due to safety concerns. Shade structures, water stations, and medical support will be essential for maintaining safe public gatherings.
Extreme Cold	People	*Vulnerability:* Residents who lack adequate shelter or are part of vulnerable populations are at risk from extreme cold. *Impacts:* Kearns residents who lack adequate heating or live in older homes may face serious risks during winter storms. Elderly residents, children, and those experiencing homelessness are particularly at risk for hypothermia and frostbite.
	Structures	*Vulnerability:* Older structures are vulnerable to extreme cold. *Impacts:* Freezing temperatures can lead to burst pipes, roof damage, and structural degradation—especially in homes without modern insulation. Temperature fluctuations increase building stress.
	Economic Assets	*Vulnerability:* All Kearns businesses are vulnerable to extreme cold. *Impacts:* Cold weather can interrupt daily operations, damage storefronts, and raise heating costs. Unmaintained roads may prevent employees from getting to work or delivering goods.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Vegetation, wildlife, and historical sites are vulnerable to extreme cold. *Impacts:* Severe frost and ice accumulation can damage ornamental trees, wildlife habitats, and historic landmarks, particularly those older structures vulnerable to moisture infiltration.
	Critical Facilities and Infrastructure	*Vulnerability:* Emergency response systems, roads, power systems, and water systems are vulnerable to extreme cold. *Impacts:* Cold weather may impair fire, police, and emergency service response if vehicles or equipment are impacted. Ice and snow accumulation can disrupt road access and power delivery. Burst pipes could impact essential services like electricity and clean, running water.
	Community Activities	*Vulnerability:* Community events are vulnerable to extreme cold.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerabilities and Impacts
		Impacts: Cold snaps may limit participation in community events or public access to outdoor amenities. The Olympic Oval and similar venues may need heating contingency plans and enhanced visitor protocols. Some events may be postponed or canceled. Access to activities, whether indoor or outdoor, could be impacted by the ability to travel there. If cars cannot start, access to both community activities as well as essential services and work may be impacted.
Flooding (and Heavy Rain)	People	*Vulnerability:* Flooding in Kearns is typically low-risk but may result from regional overflow or localized, extreme rain events. No significant waterways or flood hazard zones are in Kearns. *Impacts:* Residents in low-lying areas or near drainage channels may face water intrusion and access issues.
	Structures	*Vulnerability:* The risk to structures from flooding and heavy rain is low. *Impacts:* Buildings exposed to runoff may suffer water damage to foundations and basements. Aging stormwater infrastructure may not handle high rainfall volumes effectively.
	Economic Assets	*Vulnerability:* Business supply chains and transportation are vulnerable to flooding. *Impacts:* Kearns could have indirect impacts from flooding in neighboring jurisdictions that contributes to business losses. Flooding may interrupt supply chains, delay commuting, or result in temporary business closures. Cleanup costs can burden uninsured property owners.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Parks, trails, and historic sites are vulnerable to flooding. *Impacts:* Saturated soils and runoff may erode parks, damage trails, or harm wildlife habitats. Historic structures could deteriorate from moisture exposure.
	Critical Facilities and Infrastructure	*Vulnerability:* Risk to Kearns from flooding is low. However, indirect impacts from road or other infrastructure damage outside Kearns is possible. *Impacts:* Road closures and infrastructure stress may delay emergency services. Overflowing systems may release contaminants into public areas. Damage to major routes like Bangerter Hwy or Mountainview Corridor outside of Kearns due to flooding could impede access to Kearns residents.
	Community Activities	*Vulnerability:* The risk of flooding is low. *Impacts:* Water accumulation may temporarily close recreational areas or community venues like the Olympic Oval, affecting scheduled programming.
Landslide/ Slope Failure	People	*Vulnerability:* The risk of landslide in Kearns is very low. The terrain does not have the variability and slope to generate a landslide.
	Structures	*Vulnerability:* There is little landslide susceptibility, and the risk to structures in Kearns is very low.
	Economic Assets	None
	Natural, Historic, and	None

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerabilities and Impacts
	Cultural Resources	
	Critical Facilities and Infrastructure	None
	Community Activities	None
Radon	People	*Vulnerability:* Radon exposure is a public health concern in Kearns due to naturally occurring uranium in local soils. According to utahradon.org, 13% of homes tested in Kearns had dangerous radon levels. *Impacts:* Long-term exposure increases lung cancer risk, particularly for residents unaware of indoor air quality.
	Structures	*Vulnerability:* Homes with basements or structural weaknesses are vulnerable to radon. *Impacts:* Homes with basements or poor ventilation are more susceptible to high radon accumulation. Testing and mitigation may be limited by cost.
	Economic Assets	*Vulnerability:* Property values are vulnerable to high radon levels. *Impacts:* High radon levels can affect property values and delay real estate transactions. Lack of widespread mitigation may discourage investment.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Water supply and historic buildings are vulnerable to radon exposure. *Impacts:* Elevated radon may seep into natural aquifers or poorly ventilated historic buildings, compromising health and preservation efforts.
	Critical Facilities and Infrastructure	*Vulnerability:* Public buildings such as schools or city buildings are vulnerable to radon exposure. *Impacts:* Radon can collect in any structure that is exposed through the soil and does not have adequate ventilation. Schools, clinics, and municipal buildings must monitor and mitigate radon to maintain safety, especially in below-grade areas.
	Community Activities	*Vulnerability:* The risk of radon affecting community activities is low. *Impacts:* Radon doesn't typically affect activities because it is primarily a long-term exposure risk. Indoor activities may see lower attendance if health concerns about radon persist, particularly among immunocompromised residents or young families.
High Wind	People	*Vulnerability:* High wind can occur across the city, and all residents are potentially vulnerable. *Impacts:* Individuals outdoors or without adequate shelter during wind events are at risk of injury or death from flying debris or falling objects. Vulnerable populations may face increased risk due to limited mobility or lack of warning systems.
	Structures	*Vulnerability:* All structures are vulnerable to high wind, particularly those in Shadow Ridge Estates mobile home park.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerabilities and Impacts
		Impacts: Residential homes with large, flat roofs or lightweight materials may struggle to withstand strong winds. Wind can damage roofs, windows, and utility lines. Trees and debris may fall on buildings, especially in areas with aging infrastructure. Mobile homes or other structures that lack secure foundations are highly vulnerable to damage.
	Economic Assets	*Vulnerability:* All businesses are vulnerable to high wind. *Impacts:* High winds can disrupt travel, close businesses, and require costly debris removal. Extended power outages and structural repairs may lead to operational downtime and lost revenue. Businesses might have large signs and awnings that can be damaged, leading to business interruptions. Businesses without insurance may face long-term recovery challenges.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Trees, parks, and historical sites are vulnerable to high wind. *Impacts:* Strong gusts may damage vegetation and compromise historical landmarks, particularly if not structurally reinforced.
	Critical Facilities and Infrastructure	*Vulnerability:* Critical facilities and infrastructure are vulnerable to high wind. *Impacts:* High wind can damage fire and police facilities. Power lines can be knocked down and lead to power outages. Debris can block roads and disrupt emergency response. Power and communication outages can disrupt emergency response and medical care. Infrastructure such as poles, pipes, and service lines may be compromised.
	Community Activities	*Vulnerability:* Community events and recreation are vulnerable to high wind. *Impacts:* Events and gatherings, especially at outdoor venues like parks and sports fields or other recreation sites like the Olympic Oval, may be canceled due to safety concerns. Outdoor events like festivals and sporting activities may involve injury from falling debris and damaged structures.
Lightning	People	*Vulnerability:* Lightning can occur anywhere in Kearns, and all residents are potentially vulnerable. *Impacts:* Lightning can cause serious injury or death to those near a strike. Individuals caught outside during thunderstorms may be injured by lightning strikes or indirectly via fires or electrical surges. Those participating in outdoor sports and recreation activities, outdoor workers, or unhoused individuals are at higher risk.
	Structures	*Vulnerability:* All structures are vulnerable to lightning impacts. *Impacts:* Lightning can cause fires or internal damage to electrical systems in homes and public buildings.
	Economic Assets	*Vulnerability:* All Kearns businesses are vulnerable to lightning-related incidents. *Impacts:* Businesses may suffer from downtime or structural repair costs following a lightning-related incident, impacting economic stability. Lightning can damage electronic systems due to power surge.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerabilities and Impacts
	Natural, Historic, and Cultural Resources	*Vulnerability:* Parks and open spaces are vulnerable to lightning impacts. *Impacts:* Fires or surges can damage parklands and historical sites. Restoration may be expensive if funding is not available.
	Critical Facilities and Infrastructure	*Vulnerability:* Critical facilities, power infrastructure, and communication systems are vulnerable to lightning strikes. *Impacts:* Power surges or fires may interrupt critical services and lead to an increase in medical calls for injuries or burns. Communications towers attract lightning due to their height and metal structure.
	Community Activities	*Vulnerability:* Outdoor events, recreation, and sports to lightning threats. *Impacts:* Outdoor activities may be suspended or canceled during thunderstorms. Community confidence in safety protocols may influence event attendance. Events at Kearns parks and sports fields could be affected.
Severe Winter Weather	People	*Vulnerability:* Severe winter storms are common in the region and can affect the entire community. All residents are vulnerable. Snow accumulation in the Kearns area is often lower compared to areas on the East Bench of the Wasatch. *Impacts:* Severe snowstorms impact those without reliable heating or transportation. Vulnerable populations (elderly, young children, low income, unsheltered persons) may be disproportionally affected by cold, especially those who work outdoors and/or do not have access to reliable heating or if they are unable to perform snow removal. Commuting to work or essential services could be challenging if snow has not been cleared. Heavy snow can increase the risk of injuries due to slips and falls, along with illnesses and other health consequences from exposure to cold. People can be injured in car accidents while driving in severe winter weather conditions. Poor road conditions may prevent people from getting to and from work.
	Structures	*Vulnerability:* All buildings are potentially vulnerable to severe winter weather. Older or weakened structures may be more at risk. *Impacts:* Snow and ice accumulation can lead to roof collapse, frozen pipes, and weakened building materials. Older homes may have weakened roofs or inadequate insulation.
	Economic Assets	*Vulnerability:* All Kearns businesses are vulnerable to severe winter weather. *Impacts:* Cold weather can halt commerce, increase utility costs, and delay services. Local businesses may struggle with decreased vehicle movement and customer traffic.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Parks and historic structures are vulnerable to severe winter weather. *Impacts:* Snow and ice may damage vegetation and place stress on older buildings and historic structures.
	Critical Facilities and Infrastructure	*Vulnerability:* Emergency response facilities and road networks are vulnerable to severe winter weather. *Impacts:* Transportation networks such as Bangerter Highway or I-215 may become impassable during heavy snow or blizzard conditions.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerabilities and Impacts
		Utilities, such as power and water supply, may be disrupted. Delays in road clearance and increased demand on utilities can hinder emergency operations and access.
	Community Activities	*Vulnerability:* Community events *Impacts:* Activities and services may be delayed or canceled due to poor road conditions. This may affect events at the Olympic Oval or Element Event Center. Ensuring heating and shelter provisions becomes a priority.
Tornado	People	*Vulnerability:* Although tornadoes are not common, they can occur in Kearns. All residents are at risk if a tornado were to occur. *Impacts:* Tornadoes can cause serious injury or death from blowing debris, uprooted trees, and structural collapse. Individuals in mobile homes, such as Shadow Ridge Estates, or older structures that cannot withstand the strong winds of a tornado are at higher risk of injury. Evacuation may be difficult during short-notice events.
	Structures	*Vulnerability:* All homes and other structures in Kearns are vulnerable to tornado. Shadow Ridge Estates mobile homes are at high risk. *Impacts:* Tornadoes can cause complete destruction of homes, businesses, and community landmarks.
	Economic Assets	*Vulnerability*: All businesses in the path of a tornado are vulnerable. *Impacts:* Property loss and business interruptions may take months to recover from, especially for uninsured owners. A tornado can affect roads, power, and communication infrastructure, and these disruptions can also impact a business's ability to operate. Closures may lead to lost wages or layoffs, lost revenue, and interruption of supply chains.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Parks, playgrounds, and vegetation to tornado damage. *Impacts:* High winds may devastate vegetation and damage cultural assets beyond repair.
	Critical Facilities and Infrastructure	*Vulnerability:* Critical facilities and infrastructure are all vulnerable effects. *Impacts:* Emergency response facilities can be damaged by tornado winds and debris, which may affect their operations. Tornadoes can damage power lines or substations, or damage communication towers, which may further disrupt emergency response operations. Roads may be blocked by debris. Essential services and utilities may be overwhelmed by debris or outages. Road access for emergency responders may be blocked. Schools or recreational facilities with large glass windows or weak roofs are at risk.
	Community Activities	*Vulnerability:* All community events, particularly outdoor recreation, are vulnerable to tornadoes. *Impacts:* Community events and services may be postponed indefinitely if venues are damaged or perceived as unsafe.
Wildfire	People	*Vulnerability:* Kearns is not located near the undeveloped foothills. It is mostly urban, so wildfire risk is relatively low. Small brush fires may be possible in open spaces. *Impacts:* Risk to residents in Kearns is relatively low. Wildfire smoke can cause poor air quality throughout the region, and Kearns

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerabilities and Impacts
		residents, particularly those with respiratory conditions, may be affected by wildfires occurring elsewhere.
	Structures	*Vulnerability:* Risk to structures in Kearns from wildfire is low. *Impacts:* A few buildings could be affected if a wildfire were to break out in an undeveloped open lot or park.
	Economic Assets	*Vulnerability:* Direct risk to businesses in Kearns from wildfire is low. *Impacts:* Although Kearns does not have businesses near a wildland urban interface, businesses may experience indirect disruptions if a large fire occurs elsewhere in the county. It could impact transportation routes, power supply, or supply chains. Fires may disrupt commerce, damage service sectors, and result in costly insurance claims or uninsured losses.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Vegetation and parks are vulnerable to wildfire. *Impacts:* Fires may destroy vegetation, wildlife habitats, and historic landmarks. Recovery may take years.
	Critical Facilities and Infrastructure	*Vulnerability:* Power lines and water delivery systems may be threatened by wildfire. *Impacts:* Power or water facilities outside Kearns could be affected by wildfire, disrupting services to the city. Emergency responders from Kearns may be needed for support and may become overloaded.
	Community Activities	*Vulnerability:* Outdoor events are vulnerable to wildfire impacts. *Impacts:* Outdoor gatherings may be restricted or have limited visitation due to wildfire smoke. Seasonal programming may shift or be canceled due to increased wildfire risk.
Dam Failure	People	N/A – Dam failure is not a concern in the City of Kearns.
Civil Disturbance	People	Public unrest can strain emergency services and expose residents to injury or disruption in services.
	Structures	Businesses and public buildings may suffer damage or vandalism.
	Economic Assets	Perception of unrest may reduce investment and deter visitors. Cleanup and security measures may be costly.
	Natural, Historic, and Cultural Resources	Historic districts may be targeted or unintentionally damaged. Recovery may be delayed if funding is limited.
	Critical Facilities and Infrastructure	Emergency access and communications may be compromised during a large-scale disturbance.
	Community Activities	Public events may be canceled due to safety concerns. Community morale and participation may decline.
Cyberattack	People	Vulnerable populations may be disproportionately affected by loss of digital services, especially in medical or financial systems.
	Structures	Security systems and building automation may be compromised, risking physical safety or infrastructure failure.
	Economic Assets	Digital disruptions can delay payroll, billing, and commercial transactions, affecting local economic stability.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerabilities and Impacts
	Natural, Historic, and Cultural Resources	Data loss or infrastructure manipulation may lead to unintentional environmental impacts or failure in preservation systems.
	Critical Facilities and Infrastructure	Water, power, and emergency systems may be disabled or delayed by ransomware or data breaches.
	Community Activities	Community trust may erode if systems managing public events, utilities, or emergency communications are breached.
Hazardous Materials Incident (Transporta-tion & Fixed Facility)	People	With freight rail lines nearby, Kearns residents face risk of exposure in the event of a spill or derailment.
	Structures	Hazmat incidents may require shelter-in-place or evacuation orders. Exposure could damage structural integrity.
	Economic Assets	Local businesses may close temporarily due to contamination risk or cleanup operations.
	Natural, Historic, and Cultural Resources	Flora, fauna, and water quality may suffer. Cultural landmarks may require remediation if affected.
	Critical Facilities and Infrastructure	Emergency access and utilities may be restricted. Hospitals and response teams may face surge capacity.
	Community Activities	The Olympic Oval or nearby public facilities may close or require sanitization, delaying events.
Public Health Epidemic/ Pandemic	People	Contagious disease outbreaks impact all residents, but elderly, immunocompromised, and low-income individuals face the greatest risks.
	Structures	Temporary medical or quarantine structures may be needed if healthcare facilities are overwhelmed.
	Economic Assets	Illness outbreaks disrupt the workforce, commerce, and supply chains, impacting local business operations.
	Natural, Historic, and Cultural Resources	Outdoor spaces may be used more frequently, while access to indoor sites may decline.
	Critical Facilities and Infrastructure	Medical centers may reach capacity, and staffing shortfalls may affect essential services.
	Community Activities	Events may be canceled or modified for distancing and health protocols. Public participation may drop due to fear or illness.
Terrorism	People	An intentional attack can lead to significant casualties, fear, and disruption of daily life. Residents may avoid public places post-incident.
	Structures	Explosive or targeted attacks can cause major structural damage and long-term closures.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerabilities and Impacts
	Economic Assets	The perception of risk may deter investment and tourism. Recovery costs can be substantial, especially for uninsured entities.
	Natural, Historic, and Cultural Resources	Cultural landmarks and historic buildings may be targets or suffer collateral damage.
	Critical Facilities and Infrastructure	Water, power, or emergency systems may be direct targets. Response coordination may be strained.
	Community Activities	Community events may be canceled or permanently relocated due to perceived risk. The Olympic Oval and future Olympic events are high-profile vulnerabilities.

Hazards Not Profiled

Avalanche and dam failure are not profiled for the City of Kearns. The terrain in Kearns is relatively level and not conducive to avalanche, and no previous avalanches have occurred there. No high or significant hazard dams are located in Kearns and no dam inundation boundaries intersect the city.

Jurisdiction-Specific Changes in Vulnerability

Hazard events can impact communities, infrastructures, and ecosystems. The severity of these impacts can be influenced by climate change, population patterns, and land use developments. Understanding these factors is crucial for the city of Kearns to develop a resilient community and minimize the impacts of hazards.

Table 11 displays the unique changes within the community and the related effects on each identified hazard affecting the city of Kearns.

Table 11: Jurisdiction-Specific Changes in Vulnerability in the City of Kearns

Type of Hazard Event	Description of Potential Impacts	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
Avalanche	N/A	N/A	N/A	N/A	N/A
Drought	Public health due to water rationing, loss/damage to green/natural spaces	Extreme/ unusual weather, air/water/soil quality issues, increased snowpack melt	Local restaurants or grocery stores may need to get their groceries from areas that are farther away.	Growth in subdivisions and commercial facilities has put increased strain on water supply. In 2023, a new water line, called Zone E Loop 6600 South, was	Increased due to climate change

Type of Hazard Event	Description of Potential Impacts	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
				built to provide Kearns more access to water sources.	
Earthquake	Residencial building collapse, given age and unreinforced masonry. Lack of proper maintenance to some structures	Extreme or unusual weather patterns, increased greenhouse gas emissions, and rising sea levels can trigger seismic activity on fault lines.	The population may not feel safe and could choose to live in other areas.	New buildings and infrastructure are built to current building codes providing increased protection from earthquake damage.	Same
Extreme Heat	Public health, water rationing, medical surge, reduction in outdoor activities	Extreme/unusual weather, increased snowpack melt, drought conditions, air/water/soil quality issues	Outdoor workers may need more frequent breaks and adequate shade. Outdoor activities may be reduced, and community events would be canceled, unless restrooms, shade, first aid, and water are guaranteed.	Increased density from new buildings increases extreme heat due to the urban heat island effect.	Increased due to climate change
Extreme Cold	Public health, sheltering needs, transportation issues, access to essential services, warming costs	Extreme/unusual weather	People may struggle to pay heating bills or access essential services, especially if they cannot start their cars or get to public transportation.	During extreme cold events, more buildings running heat mean more stress on the electrical grid.	Increased due to climate change
Flooding	Transportation interruptions, road closures, medical surges, access to essential services	Extreme/unusual weather, ecosystem disruptions, water/soil/air quality	Flooding would significantly impact those with access and functional needs.	More impervious surfaces from residences and commercial facilities increase pluvial flooding across Kearns.	Increased due to climate change

DRAFT

Type of Hazard Event	Description of Potential Impacts	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
				To counteract this, Kearns has instituted conservation landscaping across the city. These include Paul F. Walker 9-11 Memorial Park and KID Office Tank Landscaping.	
Landslide/ Slope Failure	Access to essential services, road closures, debris management, medical surges	Air, water and soil quality issues from the debris	Local businesses or homes may not be able to recover if they don't have funds or an insurance policy.	New development in Kearns has not increased risk of landslides.	Increased due to climate change
Radon	Public health	Air, water, and soil quality issues	People may choose to live in other areas if there are high radon levels in Kearns.	New development in Kearns has not increased risk of radon.	Same
Heavy Rain	Public safety and infrastructure, medical surge, access to essential services	Extreme/unusual weather, flooding, increased snowpack melt, ecosystem damage	Heavy rain could delay essential services like police and fire response.	More impervious surfaces from residences and commercial facilities increase pluvial flooding across Kearns. To counteract this, Kearns has instituted conservation landscaping across the city. These include Paul F. Walker 9-11 Memorial Park and KID Office Tank Landscaping.	Increased due to climate change
High Wind	Public safety and infrastructure,	Extreme/unusual weather, increased	People can get injured, or their homes can have	New development in Kearns has not	Increased due to

DRAFT

Type of Hazard Event	Description of Potential Impacts	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	debris management, medical surge, access to essential services	precipitation, soil/water/air quality issues	extensive damage in a high wind event.	increased the risk of high winds.	climate change
Lightning	Public safety and infrastructure, medical surge	Extreme/unusual weather, increased wildfire risk	If there are a lot of lightning events in the same area, it can lead to a medical surge. People may choose to move to a different part of the county.	New development in Kearns has not increased the risk of radon.	Increased due to climate change
Severe Winter Weather	Public health and transportation interruptions, access to essential services, road closures	Extreme/unusual weather	People commuting to and from work might have transportation challenges. It can lead to a medical surge if there are a lot of traffic fatalities or falls.	Increased development requires the city of Kearns to plow and provide evacuation during heavy snow.	Increased due to climate change
Tornado	Medical surge, debris management, access to essential services	Air, water, and soil quality issues	Potential injuries and fatalities from a tornado event	Increased development means that more structures are at risk of damage from hurricanes.	Same
Wildfire	Public safety and infrastructure, access to essential services, medical surge, sheltering needs	Extreme/unusual weather, air/water/soil quality issues	Those with access and functional needs will have to seek shelter or know how to get assistance.	New development has not increased the risk of wildfire.	Increased due to climate change
Dam Failure	N/A	N/A	N/A	N/A	N/A

DRAFT

Type of Hazard Event	Description of Potential Impacts	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
Civil Disturbance	Public safety and infrastructure, medical surge	N/A	Social media can impact the likelihood of civil disturbances, potentially inciting violence.	New development has not increased the risk of civil disturbance.	Same
Cyberattack	Public safety and infrastructure (digital), access to essential services, traffic jams or accidents	N/A	Physical security access is a concern if hackers can get into security systems and let themselves in.	New development has not increased the risk of cyberattacks.	Same
Hazardous Materials Incident (Transporta-tion & Fixed Facility)	Train derailment or other transportation accident with hazardous chemicals, public safety and infrastructure	Soil, water, and air quality issues	Local businesses could suffer if customers cannot access them. Those with access and functional needs could compromise their health, depending on the hazardous materials.	New development has not increased the risk of a hazardous materials incident.	Same
Public Health Epidemic/ Pandemic	Public health and economic damage, social distancing measures	Air, water, and soil quality issues	Socially vulnerable groups are most at risk, especially if certain businesses or residents don't abide by recommended health protocols.	New development has not increased the risk of pandemics or epidemics.	Same
Terrorism	Public safety and infrastructure, medical surge, access to essential services	N/A	There is potential for a medical surge, which would overwhelm local resources.	New development has not increased the risk of terrorism.	Same

DRAFT

Additional Public Involvement

The city of Kearns provided several opportunities for public participation. Figure 1 and Figure 2 are examples of public outreach efforts.

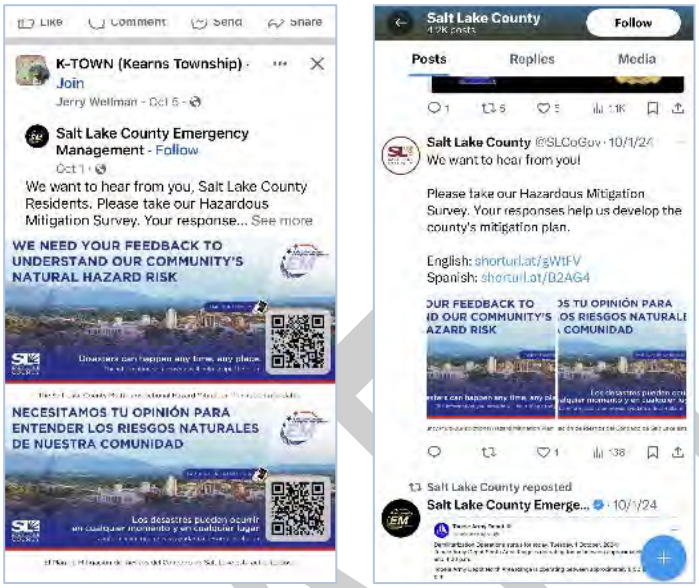


Figure 1: Social Media Posts for the Hazard Mitigation Survey

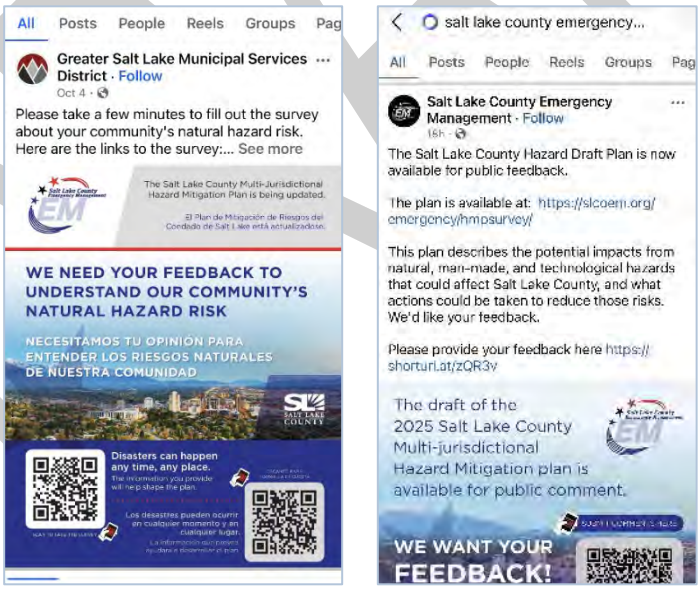


Figure 2: Social Media Posts for the Hazard Mitigation Survey (*left*) and Hazard Draft Plan Review (*right*)

Plan Integration

Incorporating the underlying principles of the Hazard Mitigation Plan and its recommendations into other plans is a highly effective and low-cost way to expand their influence. All plan participants will use existing

methods and programs to implement hazard mitigation actions where possible. As previously stated, mitigation is most successful when it is incorporated into the day-to-day functions and priorities of government and public service. This plan builds on the momentum developed through previous and related planning efforts and mitigation programs, and it recommends implementing actions where possible through these other program mechanisms. These existing mechanisms include the following:

- Regularity Capabilities
- Administrative Capabilities
- Fiscal Capabilities

Respective planning stakeholders will conduct implementation and incorporation into existing planning mechanisms and will be done through the routine actions of:

- Monitoring other planning/program agendas
- Attending other planning/program meetings
- Participating in other planning processes; and
- Monitoring community budget meetings for other community program opportunities.

The successful implementation of this plan will require constant and vigilant review of existing plans and programs for coordination and multi-objective opportunities that promote a safe, sustainable community. Regular efforts should be made to monitor the progress of mitigation actions implemented through other planning mechanisms. Where appropriate, priority actions should be incorporated into planning updates. Table 12 lists existing planning mechanisms in which the Hazard Mitigation Plan has been integrated. Table 13 lists the opportunities for integrating elements of this plan into other plans

Table 12: Integration of Previous Plans by the City of Kearns

Plan	Description
Stormwater Management Plan	Overview of stormwater management efforts for Kearns
General Plan	Overview of strategies and goals for Kearns

Table 13: Opportunities for Integration with Future Plans of the City of Kearns

Plan	Description
Master Transportation Plan	Findings from population growth and transportation needs
Active Transportation Plan	Community feedback on alternative travel methods like biking and walking
Moderate Income Housing Plan	Overview of community demographics and housing needs for Kearns

Capability Assessment

Local mitigation capabilities are existing authorities, policies, programs, and resources that reduce hazard impacts or could help carry out hazard mitigation activities.

Planning and Regulatory Capabilities

Planning and regulatory capabilities are the plans, policies, codes, and ordinances that prevent and reduce the impacts of hazards.

Table 14: Assessment of the Planning Capabilities of the City of Kearns[3]

Plan	Does it address hazards? (Y/N)	How can it be used to implement mitigation actions?	When was the last update? When is the next update?
General Plan	Y	General plan can inform the future of Kearns, which can be incorporated into mitigation actions.	2020
Capital Improvement Plan	Y – in General Plan	Can inform mitigation actions as far as funding sources and the department overseeing the work.	2020
Climate Change Adaptation Plan	N	N/A	N/A
Community Wildfire Protection Plan	Y	CWPP references wildfire mitigation.	2021
Economic Development Plan	Y – Referenced in General Plan	Can inform funding sources for mitigation actions	202
Land Use Plan	Y – Referenced in General Plan	Can inform mitigation actions.	2020.
Local Emergency Operations Plan	Y	Kearns adopted the MSD's plan in 2020. MSD converted its EOP to a CEMP, which was adopted in February 2025.	2025
Stormwater Management Plan	Y	Adopted the MSD's plan and could be incorporated into mitigation actions for flooding.	2020
Transportation Plan	Y	Active Transportation Plan can inform mitigation actions.	2023
Substantial Damage Plan	N	N/A	N/A
Other? (Describe)			

[3] CEMP = Comprehensive Emergency Management Plan, CWPP = Community Wildfire Protection Plan, EOP = Emergency Operations Plan, MSD = Municipal Services District,

DRAFT

Table 15: Assessment of the Regulations and Ordinances of the City of Kearns

Regulation/Ordinance	Does it effectively reduce hazard impacts?	Is it adequately administered and enforced?	When was the last update? When is the next update?
Building Code	Building codes inform how structures are built to standard and brought up to code when remodeling occurs. Kearns has several commercial buildings. Kearns has adopted the state versions of the International Building Code (IBC 2021) and International Residential Code (IRC 2021) with amendments.	Y	2001
Flood Insurance Rate Maps	Y – Kearns does not have flood hazard areas, but it is still vulnerable to flooding from surrounding jurisdictions.	Y	2023
Floodplain Ordinance	Y – This is part of the zoning ordinance updated in 2023	Y	2023
Subdivision Ordinance	Y	Y	2024
Zoning Ordinance	Y	Y	2023
Natural Hazard-Specific Ordinance (Stormwater, Steep Slope, Wildfire)	No steep slope concern in Kearns. Ordinances concerning the obstruction of stormwater along with permit applications not interfering with the safe disposal of natural stormwaters/ floodwaters. A Storm Water Pollution Prevention Plan is required for land disturbance permits. Kearns has floodplain hazard regulations and geological hazard regulations.	Y	2023
Acquisition of Land for Open Space and Public Recreation Use	Kearns is built out to its boundaries in all directions. New growth occurs only when land is rezoned or repurposed.	Y	2023
Prohibition of Building in At-Risk Areas	Y	Y	2023
Other? (Describe)			

Administrative and Technical Capabilities

Administrative and technical capabilities include staff and their skills. They also include tools that can help carry out mitigation actions.

Table 16: Assessment of the Administrative Capabilities of the City of Kearns

Administrative Capability	In Place? (Y/N)	Is staffing adequate?	Are staff trained on hazards and mitigation?	Is coordination between agencies and staff effective?
Chief Building Official	Y – MSD	Need more building inspectors.	Yes, but more training is always good.	Yes
Civil Engineer	Y – MSD	Yes	Yes, but more training is always good.	Yes
Community Planner	Y – MSD	Yes	Yes, but more training is always good.	Yes
Emergency Manager (EM)	Y	No, need designated full-time EM.	Yes, but more training is always good.	Yes
Floodplain Administrator	Y – MSD	Yes	Yes, but more training is always good.	Yes
Geographic Information System (GIS) Coordinator	Y – MSD	Yes	Yes, but more training is always good.	Yes
Planning Commission	Y	Yes	Yes, but more training is always good.	Yes
Fire Safe Council	N – The Unified Fire Authority (UFA) controls fire service.	N/A	N/A	Yes
CERT (Community Emergency Response Team)	N	N/A	N/A	N/A
Active VOAD (Voluntary Agencies Active in Disasters)	Y	Yes	Yes, but more training is always good.	Yes
Other? (Please describe.)				

DRAFT

Table 17: Assessment of the Technical Capabilities of the City of Kearns[4]

Technical Capability	In Place? (Y/N)	How has it been used to assess/mitigate risk in the past?	How can it be used to assess/mitigate risk in the future?
Mitigation Grant Writing	Yes – MSD	Not used yet. Kearns is part of the MSD, Kearns just became a city on May 1, 2024. All services are currently contracted out through UFA, UPD, the MSD, or Salt Lake County.	Can be used to apply for grant funding to complete mitigation work.
Hazard Data and Information	Yes – MSD	Was used to identify known risks and areas of concern.	Can help with project tracking and identifying areas to prioritize for mitigation actions.
GIS	Yes – MSD	Was used to map out known hazards and identify areas of concern. GIS was also used to collect damage assessment information after the 2020 earthquake.	Can help with project tracking and identifying areas to prioritize for mitigation actions.
Mutual Aid Agreements	Yes – MSD & Salt Lake County	Mutual aid agreements for sheltering, damage assessments, public works (debris removal, snow removal)	Mutual aid can be used to prioritize mitigation efforts.
Other? (Please describe.)			

Financial Capabilities

Financial capabilities are the resources to fund mitigation actions. Talking about funding and financial capabilities is important to determine what kinds of projects are feasible, given their cost. Mitigation actions like outreach programs are lower cost and often use staff time and existing budgets. Other actions, such as earthquake retrofits, could require substantial funding from local, state, and federal partners. Partnerships, including those willing to donate land, supplies, in-kind matches, and cash, can be included.

Table 18: Assessment of the Financial Capabilities of the City of Kearns

Funding Resource	In Place? (Y/N)	Has this funding resource been used in the past and for what types of activities?	Could this resource be used to fund future mitigation actions?	Can this be used as the local cost match for a federal grant?
Capital Improvement Project Funding	Y	Yes, storm drain and water management	Yes	Yes
General Funds	Y	Yes	Yes	Yes

[4] UFA = Unified Fire Authority, UPD = Unified Police Department, MSD = Municipal Services District

Funding Resource	In Place? (Y/N)	Has this funding resource been used in the past and for what types of activities?	Could this resource be used to fund future mitigation actions?	Can this be used as the local cost match for a federal grant?
Hazard Mitigation Grant Program (HMGP/404)	N	No, could be used.	No	No
Building Resilient Infrastructure & Communities (BRIC)	N	No, could be used.	No	No
Flood Mitigation Assistance (FMA)	N	No, could be used.	No	No
Public Assistance Mitigation (PA Mitigation/406)	N	No, could be used.	No	No
Community Development Block Grant (CDBG)	Y	Developed interlocal agreement with CDBG and Emergency Solutions Grant Program.	No	No
Natural Resources Conservation Services (NRCS) Programs	N	No, could be used.	No	No
U.S. Army Corps (USACE) Programs	N	No, could be used.	No	No
Property, Sales, Income, or Special Purpose Taxes	Y	Yes, capital improvement projects	No	No
Stormwater Utility Fee	Y	Yes, Stormwater management	Yes	Yes
Fees for Water, Sewer, Gas, or Electric Services	Y	Yes, stormwater maintenance	Yes	Yes
Impact Fees from New Development and Redevelopment	Y	Code enforcement	Yes	Yes
General Obligation or Special Purpose Bonds	Y	Stormwater management	Yes	Yes
Federal-funded Programs (Please describe)	Y	No, could be used	No	No
Private Sector or Nonprofit Programs	N	No, could be used	Yes	Yes
Other?	Y	Small Business Impact Grant for COVID-19 business owners.	Yes	No

DRAFT

Education and Outreach Capabilities

Education and outreach capabilities are programs and methods that could communicate about and encourage risk reduction. These programs may be run by a participant or a community-based partner. Partners, especially those who work with underserved communities, can help identify additional education and outreach capabilities.

Table 19: Assessment of the Education and Outreach Capabilities of the City of Kearns[5]

Education and Outreach Capability	In Place? (Y/N)	Does it currently incorporate hazard mitigation?	Could it be used to support mitigation in the future?
Community Newsletter(s)	Y	Y	Y
Hazard Awareness Campaigns (such as Firewise, Storm Ready, Severe Weather Awareness Week, School Programs)	Y – through UFA and SLCo EM	Y	Y
Public Meetings/Events (Please describe.)	Y – City council meetings are open to the public at the library.	Y	Y
Emergency Management Listserv	Y	Y	Y
Local News	Y	Y	Y
Distributing Hard Copies of Notices (e.g., public libraries, door-to-door outreach)	Y	Y	Y
Insurance Disclosures/Outreach	N	N	Y
Organizations that Represent, Advocate for, or Interact with Underserved and Vulnerable Communities (Please describe.)	Y	Y	Y
Social Media (Please describe.)	Y	Y	Y
Other? (Please describe.)			

Opportunities to Expand and/or Improve Capabilities

Actions that can expand and improve existing authorities, plans, policies, and resources for mitigation include budgeting for mitigation actions, passing policies and procedures for mitigation actions, adopting and implementing stricter mitigation regulations, approving mitigation updates, and making additions to existing plans as new needs are recognized. Table 20 lists the opportunities for the city of Kearns.

[5] UFA = Unified Fire Authority, MSD = Municipal Services District

Table 20: Opportunities to Expand and/or Improve the Capabilities of the City of Kearns[6]

Capability	Opportunity to Expand and/or Improve
Planning and Regulation	Kearns is part of the MSD, and it just became a city on May 3, 2024, so it is now building out a city leadership team. All services are currently contracted out to UPD, UFA, the MSD, or Salt Lake County. As it moves forward, the city must decide if it wants to continue those contracts or start its own. For example, Kearns can evaluate the MSD CEMP and Stormwater Management Plan and determine if all risk is effectively incorporated or if additional local input should be integrated.
Administrative and Technical	Kearns is part of the MSD, and it just became a city on May 3, 2024, so it is now building out a city leadership team. All services are currently contracted out to UPD, UFA, the MSD, or Salt Lake County. As it moves forward, the city must decide if it wants to continue those contracts or start its own. For example, Kearns could acquire additional mitigation grant writing support. The city could seek additional support such as through federal or state direct technical assistance programs for mitigation grants to expand these grant writing capabilities.
Financial	As of this writing, the city's budget is still in development. Adding mitigation actions to the budget would increase the likelihood of their implementation. Additionally, the city could apply for new Hazard Mitigation Assistance (HMA) grants.
Education and Outreach	Kearns is part of the MSD, and it just became a city on May 3, 2024, so it is now building out a city leadership team. All services are currently contracted out to UPD, UFA, the MSD, or Salt Lake County. As it moves forward, the city must decide if it wants to continue those contracts or start its own. UPD, UFA, and Salt Lake County have community outreach programs. Kearns can explore what kinds of programs would be best handled at the County level, versus what kind of educational activities for hazard mitigation such as public meetings or social media posts, could be handled at the local level. Kearns can continue to engage in preparedness activities and incident response training to improve overall readiness and community resilience.

Mitigation Strategy

Mitigation strategies provide proactive measures that are designed to minimize the impacts of hazards on the city of Kearns. Table 21 shows mitigation action alternatives, and Table 22 shows the status of previous mitigation activities. Table 23 is the 2025 mitigation action plan for the city of Kearns.

Table 21: Mitigation Action Alternatives for the City of Kearns

Action	Type of Action	Selected for inclusion in the plan?	If not selected, why not?
Continue social media engagement.	Education and Awareness Programs	Y	
Adopt new building codes as they are approved to bring some existing structures up to current codes.	Structure and Infrastructure Projects	N	Refined this to address code enforcement for specific hazards.

[6] CEMP = Comprehensive Emergency Management Plan, HMA = Hazard Mitigation Assistance, MSD = Municipal Services District UFA = Unified Fire Authority, UPD = Unified Police Department.

DRAFT

Table 22: Status of Prior Mitigation Actions of the City of Kearns[7]

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update
Asbestos removal	Public Health, Hazardous Materials Release	UDEQ	Kearns	Ongoing – Community health programming to abate asbestos in homes
Seismic retrofitting.	Earthquake	Kearns	MSD	Ongoing.
Fireline along the railroad tracks to mitigate wildfires from occurring and affecting nearby neighborhoods.	Wildfire	Union Pacific Railroad	Kearns	Ongoing discussion – land maintenance.
Procure and install an emergency notification system.	All hazards	Kearns	SLCo EM	Complete.
Create an Emergency Operations Plan.	All hazards	Kearns	MSD	Complete.
The bridge at 4015 W lacks load capacity for emergency services vehicles and needs to be replaced or retrofitted. This is an important roadway that connects many communities in the county.	All hazards; Flooding, Winter Storms, Severe Thunderstorms	Kearns	Taylorsville	Incomplete – 4015 W Bridge is being replaced by Kearns in 2024/2025.

[7] MSD = Municipal Services District, UDEQ = SLCo EM = Salt Lake County Emergency Management, Utah Department of Environmental Quality.

DRAFT

THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT

Table 23: 2025 Mitigation Action Plan for the City of Kearns[8]

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
1	Enhance security at critical infrastructure locations to prevent potential for terrorist acts.	Terrorism	SLCo EM	Kearns, UPD, UFA, MSD, SLCo IT, SLCo Public Works, SLCo Clerk's Office, SLCo Sheriff's Office	Increased security protocols (both in technology and policy) for staff/first responders, clear expectations/understanding for Kearns and the public.	Medium	SLCo EM general fund, Kearns general funds, UPD general funds, SLCo Sheriff's Office general funds, UFA general funds, MSD general funds, HSGP grant	Short term	Medium	
2	Develop and implement public education programs on disaster awareness and mitigation.	Civil Disturbance, Drought, Wildfire, Earthquake, Extreme Heat, Extreme Cold, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide/ Slope Failure, Lightning, Public Health Epidemic/ Pandemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	SLCo EM	Kearns, UFA, UPD, SLCo Sheriff's Office, SLCo Public Works, local utilities, NGO partners, MSD	Increased understanding of local resources, improved relationships with the public and stakeholders. Outlined plans/SOPs for programs. For example, educating the public on seismic and non-structural retrofits for homes can enable them to make informed decisions on how to reduce their risk from earthquakes.	Low	SLCo EM general funds, Kearns general funds, MSD general funds, HSGP grant, SHSP grant	Short term	Medium	
3	Integrate WebEOC, Crisis Track, GIS, and other technological enhancements throughout the county.	Civil Disturbance, Drought, Wildfire, Earthquake, Extreme Heat, Extreme Cold, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide/ Slope Failure, Lightning, Public Health Epidemic/ Pandemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	Kearns	SLCo EM, UFA, UPD, SLCo Public Works, SLCo Health Department, MSD, UDEM	Common operating platform for stakeholders, increased situational awareness, improved response time.	Low	SLCo EM general funds, UFA general funds, Kearns general funds, MSD general funds, HSGP grant, Emergency Operations Center grant	Long term	Medium	Kearns already has this software; need to improve training and documentation.
4	Enhance and continue to promote the implementation of CERT and SAFE Hubs.	Civil Disturbance, Drought, Wildfire, Earthquake, Extreme Heat, Extreme Cold, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide/ Slope Failure, Lightning, Public Health Epidemic/ Pandemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	SLCo EM	Kearns, MSD, Granite School District, UFA, UPD, NGO partners	Increased awareness of local resources.	Low	SLCo EM general funds, Kearns general funds, MSD general funds	Short term	Medium	SAFE Hubs (previously S.A.F.E. Neighborhoods) is rebranding, with a new public awareness campaign and information for all partners.
5	Establish access and functional needs registry and ensure that those	Civil Disturbance, Drought, Wildfire, Earthquake, Extreme Heat, Extreme	SLCo EM	Kearns, MSD, UFA, UPD, SLCo Sheriff's Office, SLCo Health Department,	Increased situational awareness for the public and stakeholders, greater	Low	SLCo EM general funds, Kearns general	Short term	High	The State of Utah's Access and Functional Needs Registry is dissolving in 2025. The county

[8] ATF = Bureau of Alcohol, Tobacco, Firearms and Explosives, BRIC = Building Resilient Infrastructure and Communities, CWPP = Community Wildfire Protection Plan, DHS = Department of Homeland Security, ESPG = Enhanced Security Grant Program, FBI = Federal Bureau of Investigation, FFSL = Division of Forestry, Fire, and State Lands, FMA = Flood Mitigation Assistance, HMA = Hazard Mitigation Assistance, HSGP = Homeland Security Grants Program, IPAWS = Integrated Public Alert and Warning System, LEPC = Local Emergency Planning Committee, MSD = Municipal Services District, NGO = nongovernmental organization, NRCS = Natural Resources Conservation Service, NWS = National Weather Service, PDM = Pre-Disaster Mitigation, SHSP = State Homeland Security Program, SIAC = Statewide Information and Analysis Center, SLCo = Salt Lake County, SLCo EM = Salt Lake County Emergency Management, SLCo IT = Salt Lake County Information Technology, SOP = Standard Operating Procedure, UDEM = Utah Division of Emergency Management, UDEQ = Utah Department of Environmental Quality, UDOT = Utah Department of Transportation, UFA = Unified Fire Authority, UPD = Unified Police Department.

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
	with access and functional needs are included in plans.	Cold, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide/ Slope Failure, Lightning, Public Health Epidemic/ Pandemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire		SLCo Aging and Adult Services	understanding of resources available for those with access and functional needs.		funds, MSD general funds, HSGP grant			needs a way to account for those with access and functional needs, including incorporation into plans and SOPs.
6	Procure generators and transfer switches for schools, public facilities, and critical facilities.	Extreme Heat, Extreme Cold, Heavy Rain, High Wind	MSD	Granite School District, SLCo Facilities Management, Kearns, UFA, UPD, SLCo EM, water districts, local utilities	Backup generators available at cooling centers and Code Blue centers. Accurate inventory of what Kearns and the MSD can provide to other agencies or jurisdictions as needed.	Medium	MSD general funds, Kearns general funds, HMA grant	Long term	Medium	
7	Increase the size of culverts and bridges in areas that have been identified as past or potential flooding concerns.	Flooding, Heavy Rain	SLCo Flood Control Engineering	MSD Stormwater, Kearns, water districts, local utilities, UDOT	Allow for larger runoff during spring melt season, reduce the amount of debris build-up.	High	SLCo Flood Control Engineering capital improvement fund, UDOT capital improvement fund, MSD capital improvement funds, Kearns general funds, PDM grant, HMGP grant, FMA, NRCS grant	Long term	Medium	
8	Procure FMA grants.	Flooding, Heavy Rain	SLCo Flood Control Engineering	SLCo MSD Stormwater, Kearns, SLCo EM, water districts, local utilities	Improved understanding of grants available and how money can be used for mitigation efforts.	Low	FMA, Kearns general funds, MSD general funds, SLCo Flood Control Engineering	Long term	Medium	
9	Be a part of the enhanced emergency notification communications system for the county.	Civil Disturbance, Drought, Earthquake, Extreme Cold, Extreme Heat, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide/Slope Failure, Lightning, Public Health Epidemic/Pandemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	SLCo EM	MSD, UFA, UPD, Kearns, UDOT, SLCo Sheriff's Office, NWS	Early notification of impending wildfire to decrease loss of life. Improved relationships with the public and stakeholders. Faster delivery of information with templates/plans ready to go.	Medium	SLCo EM general funds, MSD general funds, Kearns general funds, HSGP grant, BRIC grant	Short term	Medium	Estimation of $1 million, with costs shared between local jurisdictions/agencies and the county. SLCo EM has been working on developing IPAWS templates and identifying streamlined communication.
10	Promote the Firewise initiative and regularly review/update the Community Wildfire Protection Plans (CWPP).	Wildfire	SLCo Fire Warden	SLCo EM, UFA, Kearns, FFSL, MSD	Increased awareness of plans (for the public and stakeholders), improved eligibility for grants and other funding sources, regular review of CWPP.	Low	SLCo EM general funds, MSD general funds, Kearns general funds, Community Wildfire Assistance grant, Fire Prevention and Safety grant	Short term	Medium	

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
11	Conduct public awareness campaign on Tier 2 reporting software for chemical reporting.	Hazardous Materials Incident	SLCo EM	UPD, Kearns, UFA, SLCo Health Department, Utah Department of Environmental Quality, water districts, Granite School District, local utilities, SLCo Sheriff's Office, LEPC	Improved understanding of Tier 2 reporting and how local agencies and Kearns can find and submit information. A common operating platform for hazardous materials reporting.	Low	SLCo EM general funds, LEPC, Kearns general funds, UDEQ general funds, MSD general funds	Long term	Medium	
12	Enact citywide regulations and codes for development to reduce landslide and slope failure damage to critical infrastructure and buildings.	Landslide and Slope Failure	MSD	SLCo EM, UFA, Kearns, SLCo Office of Regional Development, local utilities	Reduced likelihood of landslides and damage to critical infrastructure/ buildings. Future development that is up to code and follows policy to avoid repetitive loss properties.	Medium	SLCo Office of Regional Development general funds, MSD general funds, Kearns general funds	Long term	Medium	
13	Leverage WebEOC and GIS to track the spread of contagious diseases.	Public Health Epidemic/ Pandemic	SLCo Health Department	SLCo EM, UFA, MSD, UPD, SLCo Sheriff's Office, Kearns	Use of GIS and WebEOC software to maintain situational awareness and track illnesses in Kearns.	Low	SLCo EM general funds, Kearns general funds, SLCo Health Department general funds, UDEQ general funds	Short term	Medium	Kearns already has this software; need to improve training and documentation.
14	Create public awareness campaigns and public education programs on radon risks and provide home testing for radon.	Radon	SLCo EM	SLCo Aging and Adult Services, SLCo Health Department, Kearns, MSD, SLCo Health Department	Fewer radon-caused cancer deaths. Increased engagement/understanding with the public on what SLCo can do or help with.	Low	SLCo Health Department general funds, Kearns general funds, MSD general funds	Short term	Low	
15	Develop road resurfacing project, including permeable pavement for areas with rain-based flooding.	Severe Weather – Heavy Rain	SLCo Public Works & Municipal Services	MSD, Kearns, UDOT	Reduced discharge of pollutants in runoff, reduced maintenance time/costs on roads, improve traction on roads	High	SLCo Public Works & Municipal Services capital improvement funds, UDOT capital improvement funds, Kearns general funds, MSD general funds, FMA, HMGP grant	Long term	Low	
16	Create a public education program to inform property owners about tree maintenance and high strength windows.	Severe Weather – High Wind	SLCo EM	SLCo Aging and Adult Services, SLCo Public Works & Municipal Services, UFA, Kearns, MSD, NWS	Reduced damage during high wind event to critical infrastructure. Fewer personal injuries (people driving on roads or walking in neighborhood). Improved relationships with stakeholders and the public.	Low	SLCo Public Works & Municipal Services general funds, SLCo EM general funds, UFA general funds, MSD general funds, Kearns general funds	Short term	Low	
17	Develop a severe winter weather mitigation program to ensure access to primary roadways and evacuation routes.	Severe Winter Weather – Heavy Snow, Blizzard	SLCo Public Works & Municipal Services	SLCo EM, Kearns, MSD, UDOT	Emergency services like police, fire, and paramedics able to use roads to provide their services.	Medium	MSD general funds, SLCo EM general funds, Kearns general funds	Short term	High	A severe winter storm with heavy snowfall requires our operators and equipment to be used to clear roads and streets for the public and emergency vehicles to use. The primary efforts will be to keep the roads open by clearing snow.

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
18	Conduct public awareness campaign about lightning safety.	Severe Weather – Lightning	SLCo EM	SLCo Parks and Recreation, UFA, SLCo Public Works & Municipal Services, Kearns, MSD, NWS	Lightning strike awareness for the public.	Low	SLCo EM general funds, MSD general funds, NWS, Kearns general funds	Short term	Low	
19	Improve outreach for "see something, say something" QR code to deter terrorist acts.	Terrorism (including a Cyberattack)	SLCo EM	SLCo Sheriff's Office, UPD, UFA, MSD, Kearns, SLCo IT	Increased awareness by residents and local agencies/jurisdictions about local intelligence resources and ways in which they can report suspicious activity. Increased QR code use/outreach at special events in Kearns.	Low	SLCo EM general funds, Kearns general fund, MSD general fund	Short term	Medium	
20	Be a part of the countywide intelligence group/division to monitor and analyze threats before an incident occurs.	Terrorism (including Cyberattacks)	SLCo EM	Kearns, SLCo Sheriff's Office, SIAC, DHS, ATF, FBI, MSD	Central group to collect and analyze information, development of SOPs for intelligence, greater collaboration.	Low	ESGP grant, SHSP grant, SLCo EM general funds, Kearns general funds, MSD general funds	Short term	Medium	This would be a core group of stakeholders that meet on a regular basis to share and collaborate on intelligence data.
21	Code Enforcement – Review critical infrastructure facilities to ensure that building materials are up to code and are tornado resistant.	Tornado	MSD	Kearns, SLCo Public Works & Municipal Services, SLCo Facilities Management, UFA, UPD, UDEM	Critical infrastructure facilities that are operational/ functional in the event of a disaster. Increased life safety.	Medium	SLCo EM general funds, MSD general funds, Kearns general funds, UFA general funds, UPD general funds	Short term	Low	
22	Enhance interoperable radio communications systems throughout Kearns.	Civil Disturbance, Drought, Earthquake, Extreme Heat, Extreme Cold, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide/Slope Failure, Lightning, Public Health Epidemic/Pandemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	SLCo EM	Kearns, UFA, UPD, SLCo Sheriff's Office, NGO partners, MSD	Improved communication between different agencies, common operating platform.	Medium	Kearns general funds, MSD general funds, HSGP grant	Short term	Medium	
23	Be a part of the countywide single source of information sharing/gathering for intelligence.	Civil Disturbance, Terrorism	SLCo EM	Kearns, SLCo Sheriff's Office, SIAC, MSD, UPD	Improved coordination between local agencies/jurisdictions.	Medium	HSGP grant, MSD general funds, Kearns general funds	Short term	Medium	Have one common operating platform to be used by all agencies in Kearns to collect suspicious activity reports. Develop a public awareness campaign to educate the public on how and what to report.
24	Install xeriscaping at government-owned buildings.	Drought, Extreme Heat	MSD	Water companies/ districts, Kearns, SLCo Facilities Management, UFA, UPD, local utilities, State of Utah	Reduced cost of landscape irrigation, decreased water use	High	SLCo Facilities Management general funds, Kearns general funds, MSD general funds	Short term	Low	
25	Improve communication to the public and	Severe Winter Weather	SLCo EM	Kearns, MSD, State of Utah, NWS, SLCo Health	Reduced damage to critical infrastructure, homeless	Low	SLCo EM general funds, SLCo Health	Short term	Low	

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
	stakeholders on resources available when Code Blue is in effect during severe winter weather.			Department, SLCo Office of Homelessness and Criminal Justice Reform	individuals have access to warming resources, reduced pressure on local homeless resource providers with standard protocols to follow with Code Blue.		Department general funds, Kearns general funds, MSD general funds			
26	Remove asbestos to prevent health hazards.	Hazardous Materials Release	Kearns Health Department	Utah Department of Environmental Quality	Reduced health damages from asbestos.	Medium	Kearns general funds	Medium term	Low	
27	Retrofit buildings to withstand earthquakes.	Earthquake	Kearns Public Safety	Kearns Code Enforcement	Reduced damages from earthquakes to facilities.	Medium	Kearns general funds, HMGP	Medium term	Medium	
28	Fireline along the railroad tracks to mitigate wildfires from occurring and affecting nearby neighborhoods.	Wildfire	Kearns Public Safety	Union Pacific Railroad	Reduced risk of fire sparking at train tracks.	Medium	Union Pacific Railroad general funds, Kearns general funds	Medium term	Medium	
29	The bridge at 4015 West lacks load capacity for emergency services vehicles and needs to be replaced or retrofitted. This is an important roadway that connects many communities in the county.	Flooding, Winter Storms, Severe Thunderstorms	Kearns Public Safety	SLCo EM	Improved access to sites in Kearns for emergency services.	High	Kearns general funds, HMGP	Short term	High	

DRAFT

THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT

Magna City

Jurisdictional Annex to the
Salt Lake County Hazard Mitigation Plan

Month XXXX | Draft X.X

THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT

Table of Contents

Magna City Annex 1

Planning Process Contact Information 1
Jurisdiction Profile 1
Date of Incorporation 1
Location and Description 1
Population 1
Demographics 2
Brief History 2
Climate 2
Public Services 2
Governing Body 2
Development Trends 2
Jurisdiction-Specific Hazards and Risk 3
Hazard Event History 5
National Flood Insurance Program Summary 8
Jurisdiction-Specific Vulnerabilities and Impacts 9
Jurisdiction-Specific Changes in Vulnerability 24
Additional Public Involvement 28
Plan Integration 28
Capability Assessment 29
Planning and Regulatory Capabilities 29
Administrative and Technical Capabilities 31
Financial Capabilities 32
Education and Outreach Capabilities 34
Opportunities to Expand and/or Improve Capabilities 35
Mitigation Strategy 35

DRAFT

List of Figures

Figure 1: Social Media Posts for the Hazard Mitigation Survey (*left* and *center*) and Draft Plan Review (*right*) 28

List of Tables

Table 1: Contact Information for Magna City 1
Table 2: Participant List for the Magna City 1
Table 3: Calculated Priority Risk Index Values for Magna City 3
Table 4: Criteria for the Calculated Priority Risk Index 4
Table 5: History of Hazard Events in Magna City 6
Table 6: National Flood Insurance Program Status for the Magna City 8
Table 7: National Flood Insurance Policies for Magna City 8
Table 8: Jurisdiction-Specific Vulnerabilities and Impacts in Magna City 9
Table 9: Jurisdiction-Specific Changes in Vulnerability in Magna City 24
Table 10: Previous Plan Integration by Magna City 29
Table 11: Opportunities for Integration with Future Plans of Magna City 29
Table 12: Assessment of the Planning Capabilities of Magna City 29
Table 13: Assessment of the Regulations and Ordinances of Magna City 30
Table 14: Assessment of the Administrative Capabilities of Magna City 31
Table 15: Assessment of the Technical Capabilities of Magna City 32
Table 16: Assessment of the Financial Capabilities of Magna City 33
Table 17: Assessment of the Education and Outreach Capabilities of Magna City 34
Table 18: Opportunities to Expand and/or Improve the Capabilities of Magna City 35
Table 19: Mitigation Action Alternatives for Magna City 36
Table 20: Status of Prior Mitigation Actions of Magna City 36
Table 21: 2025 Mitigation Action Plan for Magna City 37

DRAFT

Magna City Annex

To participate in this multi-jurisdictional hazard mitigation plan (MJHMP) update for Salt Lake County (SLCo), the governing body of Magna City passed a formal resolution, a copy of which is maintained at the local government offices.

Planning Process Contact Information

Table 1 provides information on the point of contact during the updating of the MJHMP.

Table 1: Contact Information for Magna City

Name	Contact Information
Madison Warner	**Phone:** 801-971-4977; **email:** mwarner@unifiedfire.org

Magna City has a fully integrated approach to hazard mitigation planning and program implementation. During the 2024 update process, the MJHMP participation roles in Table 2 were recorded.

Table 2: Participant List for the Magna City

Name	Title	Jurisdiction
Madison Warner	Municipal Emergency Planner	Unified Fire Authority/Salt Lake County Emergency Management
Audrey Pierce	Mayor Pro Tem	Magna City

Jurisdiction Profile

Date of Incorporation

Magna became a metro township in January 2017 then converted to a city on May 1, 2024.

Location and Description

Magna City is located southwest of Salt Lake City. The city is approximately 37.4 square miles in area and is approximately 4,250 feet above sea level. The city's development has been significantly influenced by its historical connection to the copper mining industry. The city maintains a small town appeal with notable landmarks, such as the Empress Theatre and Please Green Cemetery, that reflect Magna's rich history.

Population

The 2022 American Community Survey 5-Year Estimate from the U.S. Census Bureau records the population of Magna City as 29,488 people.

DRAFT

Demographics

Most of the 1,465 people are between the ages of 35 and 34, with a median age of 32.5; 15,239 are males (51.7%) and 14,249 are females (48.3%). English is the primary language in 71.3% of homes,, with 23.7% Spanish, and 5% other languages.

Brief History

Magna City has a rich history rooted in the mining industry. Founded in the early 1900s, Magna quickly became known for its copper mining and processing as it became a community for workers of the Utah Copper Company. The city's name is derived from the Latin word meaning "great" or "large," reflecting the significant copper deposits found in the area. As mining operations expanded, Magna City attracted a diverse population seeking employment opportunities. The city has preserved its historical heritage, and today Magna City offers a blend of historical charm and modern amenities.

Climate

Magna City experiences a cold semi-arid climate (Bsk Köppen classification) characterized by hot, dry summers and cold winters with moderate precipitation. Average high temperatures are approximately 92°F in the summer and approximately 23°F in the winter. Rain each year is approximately 15.4 inches, and snowfall averaged 52 inches.

Public Services

Magna City offers a wide range of public services through the Greater Salt Lake Municipal Services District (MSD). The MSD provides staffing and administrative support and other services and handles planning and zoning, business licensing, code enforcement, inspections, emergency planning, and related municipal services. Public works services are contracted with SLCo Public Works, which encompasses the construction and maintenance of roads, snow removal, and street lighting.

Governing Body

The Magna City governing body consists of a Mayor and City Council, and it has an appointed City Manager.

Development Trends

The city recently approved its first General Plan since incorporating as a metro township in 2017. This plan guides the future of planning and development in Magna, focusing on key elements, such as land use, transportation, housing, economic development, parks, trails, recreation, open space, natural hazards, community facilities, and sustainability. Magna converted from a metro township to a city on May 1, 2024.

DRAFT

Jurisdiction-Specific Hazards and Risk

The Calculated Priority Risk Index (CPRI) is a comprehensive assessment tool for evaluating and prioritizing risks in a given context. It considers various factors, such as probability, impact, and urgency, to determine the level of risk associated with events or situations. The results for each hazard, including its risk factor (RF) value, are shown in Table 3. The results are based on the criteria in

Table 4 and the equation that follows it. The CPRI helps organizations and individuals make informed decisions about risk management and mitigation strategies. It provides a systematic approach to identifying and addressing potential issues, allowing for a more efficient allocation of resources and proactive risk prevention. With the CPRI, stakeholders can prioritize their focus on the most critical risks, leading to more effective risk management and, ultimately, better outcomes.

Table 3: Calculated Priority Risk Index Values for Magna City

Type of Hazard Event	Probability of Future Events	Spatial Extent	Severity of Life/ Property Impact	Warning Time	Duration	Response Capacity	Risk Factor Value
Avalanche	2	2	1	4	1	1	1.7
Drought	3	4	2	1	4	2	2.6
Earthquake	3	4	4	4	4	3	3.6
Extreme Heat	3	4	3	1	4	2	2.9
Extreme Cold	2	4	2	1	3	1	2.1
Flooding	2	1	2	2	3	3	2.1
Landslide/ Slope Failure	2	1	1	0	4	1	1.5
Radon	4	3	3	1	4	1	3
Heavy Rain	3	3	2	3	1	1	2.3
High Wind	2	3	2	1	1	2	1.9
Lightning	3	1	1	1	1	3	1.8
Severe Winter Weather	3	4	2	1	3	2	2.5
Tornado	1	1	3	4	1	1	1.9
Wildfire	2	1	1	4	4	1	1.9
Dam Failure	2	2	2	3	3	3	2.3
Civil Disturbance	3	1	2	3	4	1	2.4
Cyberattack	3	3	2	4	4	3	2.9
Hazardous Materials Incident (Transportation & Fixed Facility)	4	2	2	4	4	3	3.1

DRAFT

Type of Hazard Event	Probability of Future Events	Spatial Extent	Severity of Life/ Property Impact	Warning Time	Duration	Response Capacity	Risk Factor Value
Public Health Epidemic-Pandemic	2	4	3	1	4	2	2.6
Terrorism	1	3	4	4	3	4	2.9

Table 4: Criteria for the Calculated Priority Risk Index

Risk Index Factor	Degree of Risk Level		Criteria	Factor Weight for Degree of Risk Level
Probability of Future Events	1	Unlikely	Less than 1 percent probability of occurrence in the next year or a recurrence interval of greater than every 100 years.	30%
	2	Occasional	1 to 10 percent probability of occurrence in the next year or a recurrence interval of 11 to 100 years.	
	3	Likely	11 to 90 percent probability of occurrence in the next year or a recurrence interval of 1 to 10 years.	
	4	Highly Likely	91 to 100 percent probability of occurrence in the next year or a recurrence interval of less than 1 year.	
Spatial Extent	1	Limited	Less than 10% of the planning area could be impacted.	10%
	2	Small	10%–25% of the planning area could be impacted	
	3	Significant	25%–50% of the planning area could be impacted.	
	4	Extensive	50%–100% of the planning area could be impacted.	
Severity of Life/Property Impact	1	Negligible	Less than 5% of the affected area's critical and non-critical facilities and structures are damaged/ destroyed. Only minor property damage and minimal disruption of life. Temporary shutdown of critical facilities.	30%
	2	Limited	More than 5% and less than 25% percent of property in the affected area is damaged/ destroyed. Complete shutdown of critical facilities for more than one day but less than one week.	
	3	Critical	More than 25% and less than 50% of property in the affected area was damaged/ destroyed. Complete shutdown of critical facilities for over a week but less than one month.	
	4	Catastrophic	Over 50% of critical and non-critical facilities and infrastructures in the affected area are damaged/	

DRAFT

Risk Index Factor	Degree of Risk Level		Criteria	Factor Weight for Degree of Risk Level
			destroyed. Complete shutdown of critical facilities for more than one month.	
Warning Time	1	Self-defined	More than 24 hours	10%
	2	Self-defined	12 to 24 hours.	
	3	Self-defined	6 to 12 hours.	
	4	Self-defined	Less than 6 hours.	
Duration	1	Brief	Up to 6 hours.	10%
	2	Intermediate	Up to one day.	
	3	Extended	Up to one week.	
	4	Prolonged	More than one week.	
Response Capacity	1	High	Significant resources and capability to respond to this kind of event; staff are trained, experienced, and ready.	10%
	2	Medium	Some resources and capability to respond to this kind of staff; some staff may be trained, experienced, and ready while others may need additional support.	
	3	Low	Limited resources and capability to respond to this kind of event; additional staff or staff training needed.	
	4	None	No resources and capability to respond this kind of event; additional outside support would be required.	

RISK FACTOR (RF) EQUATION

RF Value = [(Probability x 0.30) + (Spatial Extent x 0.10) + (Severity of Life/Property Impact x 0.30) + (Warning Time x 0.10) + (Duration x 0.10) + (Response Capacity x 0.10)]

Hazards with an RF value greater than or equal to 2.5 are considered high risk. Those with RF values of 2.0 to 2.4 are considered moderate risk hazards, and those with an RF value less than 2.0 are considered low risk. The highest possible RF value is 4.

Hazard Event History

Examining hazard event histories provides valuable insights to inform decision-making and help prioritize resources for risk prevention and response efforts. Table 5 lists the hazard events impacting the city of Magna since the 2019 plan update, as recorded in the Storm Events Database from the National Centers for Environmental Information.

DRAFT

Table 5: History of Hazard Events in Magna City

Type of Hazard Event	FEMA Disaster #	Date(s)	Damage or Impacts	Description
Avalanche	N/A	N/A	N/A	N/A
Drought	N/A	1930s: The Great Salt Lake and streams experienced low water levels 1950s–1960s: The Great Salt Lake experienced even lower water levels than the 1930s. 2020: Utah experienced its driest year on record, with record dry soils and low snowpack. 2021: The Great Salt Lake reached an all-time record low due to a drought.	Air quality issues, potential for greater ecosystem collapse (local vegetation/ birds), decreased precipitation, decreased brine fly and shrimp populations	The entire county has had a historic drought risk.
Earthquake	DR-4548-UT	5.7 Earthquake was felt March 2020 1962 Magna M 5.2 earthquake and the 1992 Western Traverse Mountains M 4.2 earthquake (Christensen, 1992; University of Utah Seismograph Stations, 2010a; figure 3).	Some structural damage was reported. Walls were cracked, plaster was knocked off, and lead paint dust was released. Some buildings suffered wall failure. The Greater Salt Lake Municipal Services District, which includes Magna, received 219 damage reports online.	The Wasatch Fault is considered overdue for a major earthquake, with a 57% chance of a 6.0 M or greater earthquake occurring in the next 50 years. There is still concern about the stability of Rio Tinto's tailings pond.
Extreme Heat	N/A	Summers of 2020, 2021, 2022, 2023, 2024	Reported 9 deaths in Northern Utah, an upward trend in heat exposure and heat-related deaths since 2015. Excessive heat can also affect infrastructure.	
Extreme Cold	N/A	Winter of 2022 & 2023	Code Blue alerts impacted the city, with vulnerable groups needing shelter from the cold.	Eastbound traffic was restricted.

DRAFT

Type of Hazard Event	FEMA Disaster #	Date(s)	Damage or Impacts	Description
Flooding	N/A	April 27, 2024	Flooding on State Route 201	Rated Minor residential and Minimal commercial
Landslide/ Slope Failure	N/A	N/A	N/A	N/A
Radon	N/A	N/A	N/A	Radon is a concern in Magna due to its proximity to Bingham Canyon Mine & high levels in other nearby areas.
Heavy Rain	N/A	N/A	N/A	There have been some significant rains, but no major damage associated.
High Wind	DR-4578-UT	September 7, 2020	Significant windstorm impacted utilities, residential and commercial properties, and transportation.	Salt Lake County and surrounding areas experienced a severe windstorm with winds exceeding 100 mph in some areas.
Lightning	N/A	N/A	N/A	N/A
Severe Winter Weather	N/A	N/A	N/A	There have been some significant winter storms, but no major damage from them.
Tornado	N/A	N/A	N/A	N/A
Wildfire	N/A	N/A	N/A	N/A
Dam Failure	N/A	N/A	A few significant hazard-rated dams near Magna would impact locals.	Maintenance is behind.
Civil Disturbance	N/A	N/A	N/A	N/A
Cyberattack	N/A	N/A	N/A	N/A
Hazardous Materials Incident (Transporta-tion & Fixed Facility)	N/A	N/A	N/A	N/A
Public Health Epidemic/ Pandemic	COVID Fed Dec	N/A	Unknown degree of damage done to community and local economy	SARS-CoV-2 is a strain of coronavirus that causes COVID-19. SARS-CoV-2 is

DRAFT

Type of Hazard Event	FEMA Disaster #	Date(s)	Damage or Impacts	Description
				responsible for the worldwide COVID-19 pandemic that killed millions and has many medical repercussions that are still being studied. There is no specific data on Magna City residents who were affected medically or otherwise.
Terrorism	N/A	N/A	N/A	N/A

National Flood Insurance Program Summary

Magna City participates in the National Flood Insurance Program (NFIP). Table 6 displays statistics related to the NFIP. Magna City does not participate in the Community Rating System (CRS).

Table 6: National Flood Insurance Program Status for the Magna City[1]

Initial FHBM Identified	Initial FIRM Identified	Current Effective Map Date	Adopted Date	Date Joined NFIP	Tribal
12/18/85	12/18/85	9/25/2009	1985	6/3/20	No

Table 7: National Flood Insurance Policies for Magna City

Community ID	Number of Losses	Total Net Payment	Active Policies	Total Coverage
490266	0	$0	1	$350,000

Magna City has designated the Director of Planning and Development Services as the Floodplain Administrator. The duties of the Floodplain Administrator are supported by the Greater Salt Lake Municipal Services District (MSD). The current Floodplain Hazard Regulations were adopted on 6/16/2023. The current Flood Insurance Rate Map (FIRM) is dated 9/25/2009. The MSD is responsible for issuing floodplain development permits in MSD Member Communities, including Magna City. The permits include a description of all work, including the type of construction, proposed intent, and location. Substantial damage/substantial improvement structures are identified through the permitting process and through utilizing FEMA's Substantial Improvement/Substantial Damage Desk Reference. Structures that are determined to be substantially damaged or substantially improved are required to come into compliance with current codes. The MSD Building Department provides guidance on how to build in accordance with existing building codes.

[1] FIRM = Flood Insurance Rate Map, FHBM = Flood Hazard Boundary Map

DRAFT

Jurisdiction-Specific Vulnerabilities and Impacts

Table 8 provides information on the vulnerable assets in Magna City, including its critical facilities, highlighting the city's vulnerability to identified hazards. It also describes the potential impacts to the community arising from those vulnerabilities. By understanding the risks associated with these assets, local authorities can develop proactive strategies to mitigate vulnerabilities and ensure the safety and functionality of these important assets during hazard events. This data is invaluable for decision-making and prioritizing resources for emergency response and preparedness efforts, ultimately contributing to more effective risk management and greater resilience in the community.

Critical facilities in Magna include two fire stations, one police station, and seven schools. Other community facilities include the Magna Library, Magna Senior Center, Magna Fitness & Recreation Center, and Kennecott-Magna Pool. Parks include Great Salt Lake State Park, Magna Copper Park, Magna Regional Park, Pleasant Green Park, Copper Club Golf Course, and several other neighborhood parks. Primary transportation routes include Highway 201, I-80, Highway 111/8400 West, and 3500 South. The Empress Theater, Magna Community Baptist Church, Great Saltair, and Magna Commercial Downtown Historic District are notable historic sites in the city.

Table 8: Jurisdiction-Specific Vulnerabilities and Impacts in Magna City

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
Avalanche	People	*Vulnerability:* While avalanches are rare in much of Magna due to its valley location, residents living or working in the southwestern foothill areas near the Oquirrh Mountains, especially near canyon roads or trailheads, are vulnerable to avalanches. *Impacts:* Residents could face disruption if a slope failure or snow slide occurs during winter storms. Such events may cut off commuting routes, interrupt access to schools or medical facilities, and limit emergency response during critical timeframes.
	Structures	*Vulnerability:* Buildings located near steep, snow-prone slopes, such as residential properties near mining roads or the base of the Oquirrhs, are at risk from avalanches. *Impacts:* Buildings may be threatened by avalanche debris, including heavy snow and falling trees. Roof structures not designed to withstand large snow loads could suffer damage or collapse if impacted.
	Economic Assets	*Vulnerability:* Local businesses are vulnerable to avalanches. *Impacts:* If an avalanche damages property or disrupts key roadways, recovery costs may be substantial, particularly for homeowners or business owners without insurance or financial capacity for immediate repairs. Local businesses dependent on transportation or regular customer access could experience temporary shutdowns or revenue loss.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Vegetation, wildlife, and historic sites are vulnerable to avalanches. *Impacts:* An avalanche in the foothills could damage local ecosystems, flattening vegetation and altering runoff patterns critical to wildlife. Historical mining remnants, older homesteads, or cultural

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		sites located in or near affected slopes could be buried or destabilized, complicating future preservation efforts.
	Critical Facilities and Infrastructure	*Vulnerability:* Road networks, utility lines, and emergency response are vulnerable to avalanches. *Impacts:* Debris from an avalanche may block access to emergency routes or isolate neighborhoods near the base of the Oquirrh range. If roads are obstructed, fire, law enforcement, or Emergency Medical Services (EMS) response times may be delayed. Utility lines, including power and telecommunications, may also be damaged by heavy snow loads or falling debris.
	Community Activities	*Vulnerability:* Recreation and outdoor activities are vulnerable to avalanches. *Impacts:* Recreational use of the surrounding foothills could be reduced due to avalanche risk, particularly after snowstorms. Public concern about slope stability may deter both residents and visitors from engaging in outdoor activities or attending events near affected areas.
Drought	People	*Vulnerability:* All residents are vulnerable to drought. *Impacts:* Magna's residents may struggle with the impacts of prolonged drought. Rising water rates can make it difficult for some families to afford basic utility costs. The heat and dryness associated with drought also increase the likelihood of respiratory illness, dehydration, and wildfire-related evacuations.
	Structures	*Vulnerability:* All structures are vulnerable; older homes may have higher risks. *Impacts:* Many older homes in Magna may be equipped with outdated plumbing and inefficient fixtures, leading to higher water consumption and utility bills during drought restrictions. Landscape damage and foundation settling caused by dry soil can also contribute to structural wear and reduce home value over time.
	Economic Assets	*Vulnerability:* Small businesses that rely heavily on water, such as nurseries, auto washes, or food production, are vulnerable to drought. *Impacts:* Water-dependent businesses may be economically strained by water restrictions or supply reductions. Costs related to maintaining cooling systems, landscaping, and irrigation infrastructure may increase, reducing profit margins and potentially leading to layoffs or closures.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Parks and open spaces in Magna, such as Magna Regional Park, are vulnerable to drought. Ecosystems and cultural sites are also vulnerable. *Impacts:* Open spaces and parks may experience significant vegetation loss as a result of water shortages. Prolonged drought can degrade soil quality, contribute to invasive species spread, and impact wildlife habitat. Older cultural sites that depend on irrigation for preservation may also deteriorate more rapidly without proper moisture regulation.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Critical Facilities and Infrastructure	*Vulnerability:* Water supply and emergency response facilities are vulnerable to drought. *Impacts:* Drought conditions may force the rationing of culinary water for public buildings, placing stress on services like hospitals and fire departments. A lack of water can hinder firefighting capabilities, while healthcare centers may see more cases of heat-related illness.
	Community Activities	*Vulnerability:* Public events and recreation activities are vulnerable to drought. *Impacts:* Water use restrictions could impact public events, limit irrigation of sports fields, and reduce participation in outdoor gatherings. Heat advisories during drought periods may prompt the cancellation of festivals or recreational programs.
Earthquake	People	*Vulnerability:* All residents in Magna are vulnerable to earthquakes. *Impacts:* People can be injured or killed by falling objects or collapsing structures. Residents may be displaced from their homes. Vulnerable populations (elderly, young children, low income, unsheltered persons) may be more affected by an earthquake. Health impacts could be severe.
	Structures	*Vulnerability:* All structures in Magna are vulnerable to earthquakes, particularly older homes and unreinforced masonry (URM) buildings. *Impacts:* The 2020 Earthquake highlighted risks and the brick houses that are predominant in Magna City, historically known to fail during an earthquake.
	Economic Assets	*Vulnerability:* All businesses in Magna are vulnerable to earthquakes. *Impacts:* Economic impacts could be great due to structural damage and failure of transportation and public health systems. Recovery for community and businesses could be lengthy.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Ecosystems and historic and cultural sites are vulnerable to earthquakes. *Impacts:* Local vegetation and wildlife could be impacted by an earthquake, changing migration patterns or plant die-off. Historical and cultural resources could be severely damaged by an earthquake.
	Critical Facilities and Infrastructure	*Vulnerability:* All city infrastructure is vulnerable to earthquakes and could be negatively affected due to physical damage, utility failure, and medical surges. *Impacts:* Access to emergency services could be compromised.
	Community Activities	*Vulnerability:* All gatherings and events are vulnerable to earthquakes. *Impacts:* Community gatherings could lead to increased risk to public safety if an earthquake were to occur in the middle of an event. Many events may be postponed or canceled during recovery.
Extreme Heat	People	*Vulnerability:* Magna's residents, particularly seniors, children, low-income households, and individuals experiencing homelessness, are highly susceptible to extreme heat conditions. *Impacts:* Extreme heat can lead to dehydration, heat exhaustion, or heat stroke, particularly in vulnerable groups like seniors. Outdoor

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		workers in construction, landscaping, or delivery services face heightened exposure during summer months when temperatures regularly exceed safe thresholds. Limited access to air conditioning or cooling shelters can contribute to increased emergency room visits, dehydration, and heatstroke, especially during prolonged heatwaves.
	Structures	*Vulnerability:* Extended periods of heat put significant strain on buildings, especially older homes and facilities with outdated heating, ventilation, and air conditioning (HVAC) systems or limited insulation. *Impacts:* Schools, municipal buildings, and community centers without modern cooling infrastructure may become unsafe or unusable during peak heat events. Prolonged exposure to extreme temperatures can also deteriorate roofing materials and compromise indoor air quality.
	Economic Assets	*Vulnerability:* Local businesses are vulnerable to extreme heat. *Impacts:* Local employers may need to alter work hours or increase operational costs to ensure employee safety during high-heat periods. Outdoor-based industries, including construction and utility maintenance, often experience project delays or reduced productivity due to mandatory rest breaks and hydration protocols. Small businesses may also face increased utility costs from air conditioning demands, affecting their profit margins.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Parks and open spaces in Magna, such as Copper Park and Pleasant Green are vulnerable to extreme heat. *Impacts:* Parks may suffer from vegetation loss due to heat stress and water scarcity. Prolonged heat can degrade turf, damage shade trees, and impact local wildlife patterns. Historic buildings constructed with traditional materials may deteriorate faster under extreme temperature fluctuations, especially without adequate climate control.
	Critical Facilities and Infrastructure	*Vulnerability:* Healthcare and power infrastructure are vulnerable to extreme heat. *Impacts:* Health clinics and emergency medical services in Magna may experience an uptick in patients presenting with heat-related symptoms, putting strain on healthcare capacity. Prolonged high temperatures can also lead to power surges and brownouts, threatening the stability of air conditioning systems in critical facilities such as senior centers, fire stations, and water treatment plants.
	Community Activities	*Vulnerability:* Outdoor events and recreation are vulnerable to extreme heat. *Impacts:* Outdoor events during the summer are at risk of cancellation or lower turnout due to excessive heat. Ensuring public safety at these events requires additional investments in shade, hydration stations, and emergency medical support. Heat risk may also affect participation in summer road races and community sports leagues, with potential financial impacts on local programming and tourism.
	People	*Vulnerability:* Cold weather events in Magna pose serious risks for vulnerable populations, including the elderly, young children,

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
Extreme Cold		individuals experiencing homelessness, and low-income residents living in poorly insulated homes. *Impacts:* Outdoor workers and transit-dependent individuals face elevated exposure, particularly during early morning hours when temperatures can drop sharply. Health complications, including hypothermia and frostbite, become more likely during extended cold snaps.
	Structures	*Vulnerability:* Homes and other structures, particularly older buildings, are vulnerable to extreme cold. *Impacts:* Extreme cold can cause pipes in homes and businesses to freeze and burst, particularly in older buildings without adequate insulation or heating. Fluctuations between freezing and thawing can lead to foundation cracking, roof damage, and deterioration of concrete or masonry structures. Heating systems may also become overburdened, resulting in potential breakdowns during critical weather conditions.
	Economic Assets	*Vulnerability:* All Magna businesses are vulnerable to extreme cold. *Impacts:* Cold-related damage, such as water leaks and structural cracking, can disrupt business operations and incur significant repair costs. Power outages during severe cold spells may force temporary closures of retail and service establishments. Delays in goods transport, snow removal costs, and reduced foot traffic during cold snaps can further impact Magna's small business economy.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Plants, wildlife, and historic sites are vulnerable to extreme cold. *Impacts:* Persistent low temperatures may harm local vegetation and threaten wildlife habitats in Magna's parks and open lands. Frost damage can kill ornamental plants and young trees, reducing canopy cover and green space aesthetics. Historic properties—especially those using original plumbing or outdated insulation—are at increased risk of water damage from burst pipes or ice accumulation.
	Critical Facilities and Infrastructure	*Vulnerability:* Public utilities, particularly water and wastewater systems, roads, and power infrastructure, are at high risk during freezing temperatures. *Impacts:* Frozen or burst pipes can disrupt services and increase repair workloads for local agencies. Snow and ice buildup may also hamper road access to critical sites, delaying emergency services. Energy demand spikes can stress local power supply systems.
	Community Activities	*Vulnerability:* Community events and recreation are vulnerable to extreme cold. *Impacts:* Cold conditions significantly reduce outdoor community engagement, especially when accompanied by wind or snowfall. Events such as winter markets, parades, or outdoor recreational programming may be canceled or require added infrastructure. Nearby winter tourism, including ski trips to the Wasatch Front, may be indirectly affected if roads are icy or public interest declines due to extreme cold warnings.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
Flooding (and Heavy Rain)	People	*Vulnerability:* Residents near Coon Canyon Creek, Lee Creek, and other waterways, near Kennecott Tailings Pond and the shore of the Great Salt Lake, are vulnerable to flooding. *Impacts:* Individuals may need rescuing from high waters. Water carrying hazardous materials from Rio Tinto's tailings ponds could pose an additional risk. Injuries or fatalities from floodwaters could cause a medical surge.
	Structures	*Vulnerability:* Structures near flood hazard zones, waterways, or low-lying areas are vulnerable to flooding. *Impacts:* Structures may be affected if exposed to flood waters. Recovery efforts could be impacted if there is no insurance or sufficient funds to make repairs.
	Economic Assets	*Vulnerability:* Businesses near waterways are vulnerable to flooding. *Impacts:* Flooding may interrupt commerce and transportation. The local economy could suffer if businesses or community services were unavailable for a significant period.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Historic sites, vegetation, wildlife, and stream ecosystems are vulnerable to flooding *Impacts:* Historic and cultural buildings would be impacted by flooding, potentially leading to extended closures during repairs. Local vegetation could be affected, leading to soil erosion or a change in wildlife patterns.
	Critical Facilities and Infrastructure	*Vulnerability:* No critical facilities in Magna were identified in flood hazard zones. Roads and utilities may be vulnerable to flooding. *Impacts:* Floodwater could damage roads, affect utilities, and carry hazardous materials.
	Community Activities	*Vulnerability:* Community events and recreation are vulnerable to flooding. *Impacts:* Community activities could be postponed or canceled if there is extensive flooding. Flooding can impact local parks, preventing outdoor recreation for residents.
Landslide/ Slope Failure	People	*Vulnerability:* Residents in areas near the western slopes of the Oquirrh Mountains or steeply graded hillsides within Magna's boundary are vulnerable to landslide or slope failure events. The Tailings Pond is a human-made feature but could experience slope failure. *Impacts:* Individuals with access and functional needs may face greater challenges during evacuation or post-event recovery. Blocked or damaged roadways could limit access to healthcare facilities, schools, or emergency shelters, placing further strain on vulnerable populations.
	Structures	*Vulnerability:* Homes and commercial buildings located near steep or unstable terrain are vulnerable to landslide or slope failure. *Impacts:* Structures near slope failure may suffer structural damage from soil displacement or debris flows. Damage to HVAC systems or foundations could make buildings uninhabitable or unsafe. Emergency response capabilities may also be hindered if access routes for police, fire, or EMS are blocked by fallen debris or roadway damage.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Economic Assets	*Vulnerability:* The local economy and outdoor recreation are vulnerable to landslides. *Impacts:* A major landslide event could negatively impact Magna's local economy, particularly if parks, trailheads, or outdoor recreational areas are closed for extended periods. Prolonged cleanup efforts or repeated hazards may discourage investment or tourism. Additionally, if response and recovery efforts are perceived as slow or ineffective, they may affect public confidence and the city's long-term reputation.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Habitats and historic buildings are vulnerable to landslides and slope failure. *Impacts:* Natural areas near slopes, such as slopes west of Magna, could see habitat disruption, tree loss, and long-term erosion due to earth movement. Cultural and historic structures, including any pioneer-era buildings or older infrastructure, may be at risk of collapse if located in affected zones. Inadequate insurance coverage or limited restoration funding could delay or prevent proper repairs, placing these resources at permanent risk. The destabilization of slopes could also increase susceptibility to future landslides in the same area.
	Critical Facilities and Infrastructure	*Vulnerability:* Power, communication, and transportation infrastructure are vulnerable to landslides. *Impacts:* Landslides may bring down utility poles, resulting in power outages that disrupt basic services including water, internet, and emergency communications. Emergency response times may be slowed if major roads are impassable. Facilities such as fire stations, police departments, or public works yards located near vulnerable slopes could also be directly affected or isolated by the event.
	Community Activities	*Vulnerability:* Community events and recreation are vulnerable to landslides and slope failure. *Impacts:* Community gatherings and outdoor recreation in Magna could be curtailed if public spaces are damaged or deemed unsafe. Debris from a slope failure could impact air quality through dust or particulates, while runoff might affect soil and water quality, posing potential public health risks. These impacts could reduce public engagement in community events and place additional burdens on local resources during recovery efforts.
Radon	People	*Vulnerability:* Residents in 31% of homes tested in Magna are exposed to dangerous levels of radon. *Impacts:* Radon exposure causes an increased risk of lung cancer for those exposed.
	Structures	*Vulnerability:* A significant portion of homes in Magna (31%) have tested above the radon mitigation threshold. *Impacts:* Radon enters buildings and homes through cracks in foundations, basements, and crawl spaces, posing health risks to occupants.
	Economic Assets	*Vulnerability:* Real-estate business and property values are vulnerable to high radon levels.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		Impacts: The local economy could be impacted by the health concerns of high radon levels. People may purchase homes in other areas.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Natural habitats, water, and historical buildings are vulnerable to radon exposure. *Impacts:* Local vegetation could be impacted by radon. Soil erosion and water quality issues are possible. Ventilation in historical or cultural buildings is important to decrease radon risk.
	Critical Facilities and Infrastructure	*Vulnerability:* Drinking and irrigation water are vulnerable to high radon levels. *Impacts:* High radon levels in water could impact local vegetation and resident health.
	Community Activities	*Vulnerability:* Water resources and recreation are vulnerable to radon exposure. *Impacts:* Irrigation water might have to be limited if radon levels are very high, impacting landscaping and outdoor recreation. People might not want to engage in recreational activities in Magna if there are high radon levels.
High Wind	People	*Vulnerability:* Residents and visitors in Magna may be at risk during high wind events, especially those engaged in outdoor work or recreation. *Impacts:* Windborne debris can cause injury. People inside homes or public facilities may also be endangered if structural damage occurs or windows shatter during intense gusts.
	Structures	*Vulnerability:* All buildings in Magna are vulnerable to high wind events; the Sunset Vista Manufactured Home Community is particularly vulnerable. *Impacts:* Strong winds can damage buildings by lifting roofing materials, shattering windows, and causing exterior siding to detach. Trees and utility poles falling onto homes, vehicles, or commercial buildings are common hazards. Structures that lack wind-resistant design, particularly older homes or outbuildings and mobile/ manufactured homes, are more susceptible to damage.
	Economic Assets	*Vulnerability:* All businesses are vulnerable to high wind events. *Impacts:* High wind events can interrupt commercial activity by damaging storefronts, disrupting power, or impeding transportation routes. Cleanup and repair costs may burden businesses, especially those without insurance coverage for wind damage. Service providers may experience delays or cancellations.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Natural habitats, parks, and open spaces are vulnerable to high wind events. Historical structures are also vulnerable. *Impacts:* Parks, trail systems, and natural landscapes in Magna may see uprooted trees, damaged vegetation, and soil erosion from intense winds. Historical buildings may face structural harm if not built to current wind-resistance standards. Repairs may be difficult if preservation funds are limited or insurance coverage is insufficient.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Critical Facilities and Infrastructure	*Vulnerability:* Power infrastructure, communication towers, and road networks are vulnerable to high wind events. *Impacts:* Utilities may be impacted by high winds. Downed lines and poles can lead to prolonged outages and communication delays. Access to essential services may be hindered if debris blocks roadways or entrances to fire stations, clinics, or other critical facilities.
	Community Activities	*Vulnerability:* Outdoor events and recreation are vulnerable to high wind events. *Impacts:* Outdoor events, such as farmers' markets, concerts, and youth sports, may be canceled or disrupted during wind advisories. Damage to tents, signs, or recreational infrastructure may limit safe gathering. Public confidence in event safety may decline if shelters and safety protocols are not visible or well-communicated.
Lightning	People	*Vulnerability:* Lightning can happen anywhere in Magna, and all residents are vulnerable. People outdoors are most vulnerable. *Impacts:* Lightning can cause injury or death to those in close proximity to a strike. Individuals caught outside during thunderstorms in Magna face a heightened risk of lightning strikes. Additionally, indirect hazards such as fires caused by lightning or contact with electrified surfaces (e.g., water or metal objects) can endanger public health and safety. Those without access to shelter during fast-moving storms are particularly vulnerable.
	Structures	*Vulnerability:* All structures are vulnerable to lightning strikes. *Impacts:* Lightning can directly strike buildings, causing fires, structural damage, or power surges that destroy electrical systems and appliances. Structures with inadequate grounding or lightning protection systems are especially at risk, including barns, tall buildings, and open-frame facilities.
	Economic Assets	*Vulnerability:* All businesses are vulnerable to lightning impacts. *Impacts:* Businesses may face repair costs following lightning-related fires or electrical damage. Downtime caused by structural or electrical failure can delay services and result in revenue loss. Repeated lightning incidents can affect the perception of area safety, potentially discouraging future investment or residential development.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Undeveloped areas on the western and northern sides of Magna and historical buildings are vulnerable to lightning. *Impacts:* Wildland areas and parks in Magna may be ignited by lightning, especially during dry periods, creating fire risk for surrounding neighborhoods. Historical buildings and cultural sites are particularly vulnerable if they lack fire suppression systems or structural protections against electrical surges. Restoration of these properties may be delayed due to limited funds or insurance.
	Critical Facilities and Infrastructure	*Vulnerability:* Power, communication, and healthcare systems are vulnerable to lightning strikes. *Impacts:* Lightning strikes may lead to power outages, damaged transformers, or disrupted communication systems. Hospitals, emergency dispatch centers, and utilities must maintain surge protection and backup power. Emergency calls may spike following

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		a severe storm, requiring hospitals and public safety personnel to respond rapidly to injuries or fire-related incidents.
	Community Activities	*Vulnerability:* Outdoor events and sports are vulnerable to lightning. *Impacts:* Lightning risk often results in the cancellation of outdoor community events, from sports tournaments to local festivals. Residents may be less inclined to participate in open-air gatherings if there is limited shelter or if prior lightning-related incidents have occurred. Event planners must consider early warning systems and shelter availability.
Severe Winter Weather	People	*Vulnerability:* Cold snaps and winter storms in Magna pose elevated risks to vulnerable populations, including the elderly, low-income households, young children, and individuals experiencing homelessness. *Impacts:* Vulnerable populations and outdoor workers, such as utility or construction personnel, may be exposed to frostbite or hypothermia if safety protocols are not followed. Snow accumulation may also limit access to healthcare or essential services for those without reliable transportation or physical mobility.
	Structures	*Vulnerability:* Homes and commercial buildings in Magna are vulnerable to severe winter weather. *Impacts:* Structures may be damaged by accumulated snow and ice. Roofs may collapse under heavy snow loads, especially if poorly maintained or flat-roofed. Ice dams can cause interior water damage, while frozen pipes in uninsulated structures may burst, requiring costly repairs.
	Economic Assets	*Vulnerability:* Businesses throughout Magna are vulnerable to severe winter weather. *Impacts:* Storm-related power outages, damaged infrastructure, and hazardous road conditions can delay deliveries and affect business continuity. Snow removal and maintenance costs rise significantly during prolonged cold periods, impacting city and business budgets. Service sectors dependent on foot traffic may experience revenue drops during severe storms.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Trees, vegetation, and historic buildings are vulnerable to severe winter weather. *Impacts:* Winter storms may damage trees and other vegetation in public spaces like Magna Regional Park. Persistent ice buildup on historical buildings may deteriorate masonry and woodwork, especially if meltwater seeps into cracks and refreezes. Restoration efforts may be delayed if damage is widespread and resources are limited.
	Critical Facilities and Infrastructure	*Vulnerability:* Roads, power, and public facilities are vulnerable to severe winter weather. *Impacts:* Utilities are highly susceptible to winter storm disruptions. Roads may become impassable if snowplows cannot keep up with accumulation, limiting the ability of police, fire, and EMS to respond. Emergency shelters and warming centers may see increased demand, particularly during extended cold spells.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Community Activities	*Vulnerability:* Community centers and events are vulnerable to severe winter weather. *Impacts:* Outdoor events and sports programs may be suspended or canceled due to snow, ice, or dangerous wind chills. Community centers and local venues must provide heated shelter options to accommodate residents. The city may also need to deploy additional resources for clearing sidewalks and emergency routes.
Tornado	People	*Vulnerability:* Although tornadoes are infrequent in the Salt Lake Valley, Magna is at risk during severe wind events. *Impacts:* Individuals in mobile homes or light-frame housing, such as those Sunset Vista, face the highest danger. Residents may experience injuries from flying debris or collapsing structures, and emergency medical services may face temporary surges in demand following a direct hit.
	Structures	*Vulnerability:* All structures near a tornado part are vulnerable. *Impacts:* Tornadoes can cause substantial destruction to homes, businesses, and public buildings, particularly those not designed to withstand high winds. Roofs may be torn off, walls collapsed, and windows shattered. Mobile homes and temporary structures face near-total loss if struck directly.
	Economic Assets	*Vulnerability:* All local businesses are vulnerable to tornado impacts *Impacts:* Local businesses may suffer long-term setbacks due to property damage, service disruption, and cleanup costs. Facilities lacking insurance for tornado-related losses may struggle to reopen. Prolonged recovery timelines could lead to job losses or displacement of workers and customers.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Trees, parks, and historic buildings are vulnerable to tornado impacts. *Impacts:* High winds associated with tornadoes may flatten trees, rip up landscaping, and destroy vegetation across parks and open spaces. Historic landmarks may sustain irreparable damage, especially if built prior to modern wind-resistant building codes. The loss of such resources could affect community identity and heritage preservation.
	Critical Facilities and Infrastructure	*Vulnerability:* Emergency response, roads, and power are vulnerable to tornado impacts. *Impacts:* Essential services may be damaged or temporarily disabled following a tornado. Roads blocked by debris may delay emergency response times. Continued service delivery depends on the structural integrity and resilience of these facilities. Power and water could be disrupted if there is extensive damage.
	Community Activities	*Vulnerability:* Outdoor events, recreation, and community centers are vulnerable to tornado impacts. *Impacts:* Tornado-related damage to schools, parks, and recreation centers can significantly disrupt community programming. Outdoor activities are especially vulnerable during tornado season, and safe shelter must be readily available. Public confidence may decrease if emergency plans and warning systems are not widely known or visible.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
Wildfire	People	*Vulnerability:* Residents along the western border and those within the northern less-developed area of Magna are vulnerable to wildfires. *Impacts:* Urban interface wildfire areas can pose a health/safety hazard due to unpredictable or fast moving fires. There are health concerns about hazardous materials exposure if the fire starts on Rio Tinto land and moves into Magna.
	Structures	*Vulnerability:* Structures near the wildland-urban interface (WUI) in western and northern Magna are vulnerable to wildfires. *Impacts:* Wildfire can damage structures and affect emergency services. If people do not have insurance, they might not be able to afford repairs.
	Economic Assets	*Vulnerability:* Businesses near the WUI are vulnerable to wildfires. *Impacts:* Local businesses could suffer if they do not have the funds to repair damage. If the area is prone to burning, the city's reputation could be impacted. People might not visit if it is not safe or there is high risk.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Vegetation, habitat, and historic buildings are vulnerable to wildfires. *Impacts:* Loss of natural spaces. Historic buildings would have to be rebuilt. There is a lot of open space on the southwest side of Magna, which is concerning for small brush fires that could grow. Rio Tinto land is nearby and any sort of fire or chemical leak could impact Magna's vegetation and wildlife.
	Critical Facilities and Infrastructure	*Vulnerability:* Utilities and transportation are vulnerable to interruption due to wildfires. *Impacts:* Power could be turned off if it is deemed unsafe by Rocky Mountain Power. Road access and communications service are concerns if emergency services cannot reach residents. Medical services would be impacted if they must run on a generator or other limited power source.
	Community Activities	*Vulnerability:* Community events are vulnerable to wildfire impacts. *Impacts:* Community activities would be impacted, especially in outdoor areas like parks if there is high wildfire risk. Areas with a lot of brush or natural vegetation present a high risk as well, which may deter people from recreating in those areas.
Dam Failure	People	*Vulnerability:* A breach or failure involving the Kennecott tailings ponds above Magna poses a serious hazard to public health and safety. The potential inundation area of the tailings pond is unmapped, and to do so would be difficult due to its size and shape and unknown points of failure. *Impacts:* The rapid release of water and potentially toxic mining byproducts could threaten residents in low-lying areas, particularly those with limited mobility or lacking access to timely emergency alerts. Immediate evacuation could be difficult for vulnerable populations, including seniors and individuals with disabilities.
	Structures	*Vulnerability:* Homes, schools, and commercial properties located downslope of the tailings impoundments are vulnerable to dam failure.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		Impacts: Structures downslope from a failure at the tailings pond could be inundated or contaminated by debris-laden water. Structures exposed to hazardous materials may suffer lasting damage, especially if cleanup is delayed. Contaminated buildings may require extensive remediation or reconstruction before they are safe to occupy.
	Economic Assets	*Vulnerability:* Local businesses are vulnerable to dam failure, particularly those close to the tailings pond. *Impacts:* A significant flood event involving contaminated water could severely disrupt local commerce. Businesses in the affected area may face prolonged closures due to cleanup, structural damage, or loss of customer access. Magna's reputation could be impacted regionally if recovery efforts are slow or if the area is perceived as environmentally unsafe, which could discourage investment or residential growth.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Wildlife, plants, and stream ecosystems are vulnerable to dam failure. *Impacts:* A dam failure involving tailings ponds could release toxic materials into nearby creeks, wetlands, and open spaces, causing widespread damage to ecosystems. Sensitive vegetation and wildlife in the area may be harmed, and restoration could take years. Historic properties and cultural landmarks in Magna may also be at risk if located within the path of the flood or exposed to contamination.
	Critical Facilities and Infrastructure	*Vulnerability:* Critical facilities and utilities are vulnerable to dam failure. *Impacts:* Floodwaters containing industrial waste could disrupt operations at critical facilities such as fire stations, police departments, water utilities, and public health clinics. Utility infrastructure, including water lines, power substations, and stormwater systems, may be damaged or overwhelmed, delaying emergency response and recovery. Long-term environmental testing and infrastructure replacement may be required.
	Community Activities	*Vulnerability:* Outdoor events, recreation and community centers are vulnerable to dam failure. *Impacts:* Local parks, recreation centers, and outdoor event spaces would be significantly affected in the aftermath of a tailings dam failure. Events may be canceled or relocated, and public spaces may remain closed for extended cleanup. Additionally, lingering concerns about environmental safety could reduce participation in outdoor recreation and community programming.
Civil Disturbance	People	Possible risk to health or safety. A civil disturbance could overwhelm local resources and impact access to emergency services if people are injured.
	Structures	Looting or damage to buildings are possible.
	Economic Assets	Theft or interruption of services/transportation. It can affect Magna's reputation if people are afraid to visit or live in the area after a civil disturbance. They also may be concerned about crime.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Natural, Historic, and Cultural Resources	Local business owners may be affected if they cannot afford repairs to their property.
	Critical Facilities and Infrastructure	Service/transportation interruption. Power and water service could be affected if they are struck or shut down. Police and fire could be impacted if roads are inaccessible.
	Community Activities	Outdoor community activities would be impacted if it is not safe or vandalism is likely.
Cyberattack	People	Disruption of power and communications is a concern for vulnerable populations.
	Structures	A cyberattack could impact the physical security of buildings or homes if the security system can be hacked into. In addition, a cyberattack could affect fire suppression systems or evacuation methods, which would exacerbate the issue.
	Economic Assets	Flow of commerce could be interrupted. This could impact payroll or other virtual systems for emergency services, local businesses, and homes (like paying a mortgage or utility bill). If people cannot use the internet or are locked out of a specific account, it is challenging to pay bills, complete projects, and access information.
	Natural, Historic, and Cultural Resources	Natural, historic, and cultural resources could be impacted if the cyberattack accesses critical infrastructure like water or power. This could disrupt the energy grid by manipulating data or overriding emergency systems. It could flood areas, redirect emergency services, or shut off power.
	Critical Facilities and Infrastructure	Delivery of utilities, such as power and water service, could be affected and critical infrastructure could be compromised if the hacker is asking for a ransom or the cyberattack cannot be resolved in a reasonable time. Shelters would need to provide essential services.
	Community Activities	Community activities can be impacted from a reputation perspective if there is not public trust. The public might not want to go to certain areas or visit businesses in Magna if it was affected by a cyberattack.
Hazardous Materials Incident (Transporta-tion & Fixed Facility)	People	High risk of exposure due to proximity of industrial mining operation tailing ponds and railroads that traverse the city. Several key transportation routes also go through Magna which could carry hazardous materials.
	Structures	Could create the need to evacuate or shelter in place. Structures would need to clean up the hazardous materials.
	Economic Assets	Could affect businesses in the area, including financial recovery.
	Natural, Historic, and Cultural Resources	Could severely damage local flora and fauna. Remediation may be needed.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Critical Facilities and Infrastructure	Possible interruption of essential services and access to emergency services.
	Community Activities	Community activities could be canceled until it is safe to recreate outdoors, especially if hazardous materials seeped into water or soil.
Public Health Epidemic/ Pandemic	People	Direct risk of contagious/severe illnesses. Vulnerable populations are especially at risk if they are exposed, which could overwhelm medical facilities or create a medical surge.
	Structures	If medical facilities are overwhelmed, additional local facilities or temporary structures may be needed to accommodate patients.
	Economic Assets	Interruptions of normal business operations, potential reduction in the workforce, and social distancing restrictions that can impact local businesses
	Natural, Historic, and Cultural Resources	Increased use of outdoor spaces as seen with the COVID-19 pandemic. Restricted access to outdoor areas or historical buildings if social distancing is required. This can also impact the visitation to those areas if people do not want to socially distance or are afraid of the potential exposure.
	Critical Facilities and Infrastructure	Increased use of public health resources, leading to a medical surge. Illness for public safety or healthcare professionals if they are working with or exposed to patients experiencing symptoms.
	Community Activities	Indoor community events could be canceled, especially if the number of people in an area at a time is restricted or social distancing is required. Outdoor events might have less attendance or require certain protective health measures, like hand washing and masks.
Terrorism	People	People could be scared to recreate outside after a terrorism event or could sustain injuries from a terrorism event.
	Structures	Structures could sustain damage from a terrorism event and the owner's financial situation could affect their ability to make repairs. Businesses might be concerned about future terrorism events and choose to relocate.
	Economic Assets	The reputation of the area post-terrorism event could affect the local businesses, both existing and new. A new business might not want to move into the area if the land or building had been affected by a terrorism event. In addition, the terrorism event could be costly for a resident or local business to make needed repairs.
	Natural, Historic, and Cultural Resources	Historic buildings or cultural resources could be impacted if there is lower visitation by locals and tourists. Local wildlife may migrate to a different area if there is significant activity where they typically go.
	Critical Facilities and Infrastructure	Critical facilities and infrastructure would be affected by a targeted terrorism event. Essential employees might not be able to perform their jobs, and water/power infrastructure could be shut down or damaged.
	Community Activities	Community activities could be affected by a terrorism event if the reputation of the area declines. If it is deemed unsafe or if there are

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		multiple incidents in the same area, people won't want to recreate or attend events.

Jurisdiction-Specific Changes in Vulnerability

Hazard events can impact communities, infrastructures, and ecosystems. The severity of these impacts can be influenced by climate change, population patterns, and land use developments. Understanding these factors is crucial for Magna City to develop a resilient community and minimize the impacts of hazards. Table 9 displays the changes within the city and the related effects of each hazard on Magna City.

Table 9: Jurisdiction-Specific Changes in Vulnerability in Magna City

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
Avalanche	Higher temperatures could melt snow faster in the spring. This can also carry hazardous materials into water and soil downstream into Magna City.	Population growth in the city increases the number of people who might be affected by an avalanche.	New subdivisions being developed in Magna City near the neighboring Rio Tinto mine are threatened by avalanches.	Same
Drought	Extreme/unusual weather, higher temperatures, reduced local vegetation	Population growth places more people at risk of drought conditions.	Increased commercial and residential buildings add to water demands, increasing the risk of drought.	Increased due to climate change
Earthquake	Extreme or unusual weather patterns, increased greenhouse gas emissions, and rising sea levels can trigger seismic activity.	The 2020 Magna earthquake demonstrated local vulnerabilities to an earthquake, including building and home collapses, debris in roadways, and restricted access to essential services.	As more subdivisions have been built in Magna, more structures are at risk of damage from earthquakes. This risk is partially mitigated by constructing new structures to higher building codes.	Same

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
Extreme Heat	Higher temperatures, reduced vegetation, changes in wildlife	Outdoor workers may need more frequent breaks or adequate shade. Outdoor community activities will need more restrooms, first aid stations, water, and shaded areas.	Slightly increased density due to development can exacerbate extreme heat in certain neighborhoods.	Increased due to climate change
Extreme Cold	Extreme/ unusual weather, reduced vegetation, freezing pipes	People may not recreate outside as much and there may be a decline in outdoor events due to the cold weather.	Increased subdivision and commercial development in Magna increases energy demand during extreme cold events, stressing the electrical grid.	Increased due to climate change
Flooding	Extreme/ unusual weather, increased precipitation, higher temperatures that melt the snowpack	Population growth places more people at risk of flooding.	Development in Magna has not been in the 1% or 0.2% annual chance flood zone, but may increase the likelihood of pluvial flooding.	Increased due to climate change
Landslide/ Slope Failure	Soil erosion, increased precipitation, snowpack melt, increased risk of future landslides or slope failures	Residents near Rio Tinto land would be significantly impacted by a landslide or slope failure. Hazardous materials could move into waterways or soil, impacting vegetation and wildlife.	Development in north and northwest Magna is at higher risk of landslides due to its proximity to the Rio Tinto mine.	Increased due to climate change
Radon	Soil erosion, increased precipitation, water quality issues	Population health is a significant concern as far as air and water quality. Outdoor recreation would be impacted in areas with high radon levels.	Development in Magna has not changed the risk of radon.	Same
Heavy Rain	Extreme/ unusual weather, flooding, soil erosion, water quality issues	Residences and businesses could flood. Recovery efforts would be	Increased impervious surfaces due to development increase	Increased due to climate change

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
		impacted if there is no insurance or enough funds to make repairs.	the risk of pluvial flooding.	
High Wind	Extreme/ unusual weather including thunderstorms, water, air, and soil quality issues	High winds impact homes and businesses. Recovery efforts would be impacted if there is no insurance or enough funds to make repairs.	Development in Magna has not increased the risk from high winds.	Increased due to climate change
Lightning	Extreme/ unusual weather, increased temperatures, increased wildfire risk, damage to local vegetation and wildlife habitats	Medical surges are possible for lightning events, especially if they occur at an outdoor event. Outdoor community events may be less frequent.	Development in Magna has not increased the risk from lightning.	Increased due to climate change
Severe Winter Weather	Extreme/unusual weather	People may stick to indoor activities, which affects the local economy. Roads may be inaccessible, preventing outdoor events from occurring. Sheltering may be necessary for an extended period.	New subdivisions increase the responsibility of Magna to provide plowing and evacuations during extreme winter weather.	Increased due to climate change
Tornado	Soil, water, and air quality issues	Outdoor community events would be challenging in tornado conditions.	With more structures in Magna, there is a slightly higher risk of tornado damage.	Same
Wildfire	Extreme/ unusual weather, higher temperatures, drought, reduced vegetation, air/water/soil quality issues	Those with access and functional needs would be most at risk, especially if evacuations are necessary.	New developments in western Magna are at higher risk of wildfire damage.	Increased due to climate change
Dam Failure	Increased temperatures, increased precipitation, soil erosion, water and	Population growth places more people at risk of flooding due to dam failure. Water and soil	Development in Magna has not increased the risk of dam failure.	Same

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	air quality changes	quality are a concern.		
Civil Disturbance	Conversations concerning climate change could lead to hostility or violence.	Social media continue to have a great impact on society, which may lead to an increase in civil disturbances.	Development in Magna has not increased the risk of civil disturbance.	Same
Cyberattack	N/A	The increasingly digital world poses greater risk of cyber incidents, including hacks of physical security systems of buildings, payroll systems, and communications systems.	Development in Magna has not increased the risk of cyberattacks.	Same
Hazardous Materials Incident (Transporta-tion & Fixed Facility)	More chemicals released into the atmosphere from melting permafrost, leading to potential health concerns when mixed with a hazardous materials spill	A hazardous materials incident could significantly impact travel and commerce for local residents.	Development in Magna has not increased the risk of hazardous materials incidents.	Same
Public Health Epidemic/ Pandemic	Higher temperatures, reduced vegetation, species migrating to other areas (different diseases moving into an area)	Socially vulnerable groups are most at risk in a public health epidemic or pandemic.	Development in Magna has not increased the risk of pandemics/epidemics.	Same
Terrorism	N/A	Sheltering is a concern for a terrorism event, especially if there are road closures.	Development in Magna has not increased the risk of terrorism.	Same

DRAFT

Additional Public Involvement

Magna City provided several opportunities for public participation. Figure 1 displays examples of public outreach.

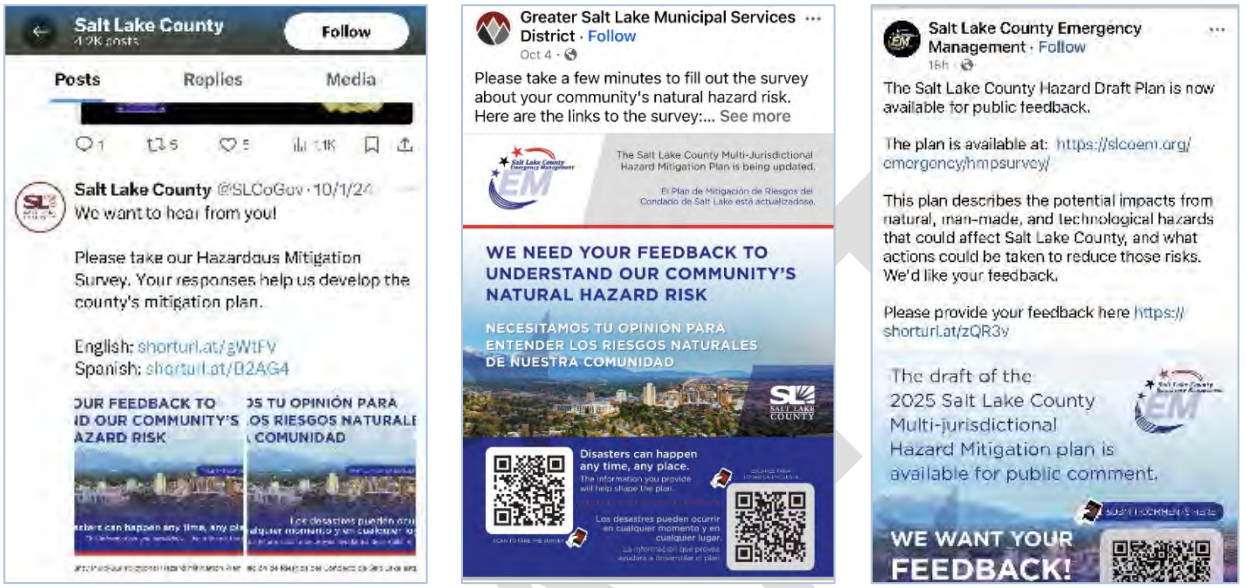


Figure 1: Social Media Posts for the Hazard Mitigation Survey (*left* and *center*) and Draft Plan Review (*right*)

Plan Integration

Incorporating the underlying principles of the Hazard Mitigation Plan and its recommendations into other plans is a highly effective and low-cost way to expand their influence. All plan participants will use existing methods and programs to implement hazard mitigation actions where possible. As previously stated, mitigation is most successful when it is incorporated into the day-to-day functions and priorities of government and public service. This plan builds on the momentum developed through previous and related planning efforts and mitigation programs, and it recommends implementing actions where possible through these other program mechanisms. These existing mechanisms include the following:

- Regularity Capabilities
- Administrative Capabilities
- Fiscal Capabilities

Respective planning stakeholders will conduct implementation and incorporation into existing planning mechanisms and will be done through the routine actions of:

- Monitoring other planning/program agendas
- Attending other planning/program meetings
- Participating in other planning processes; and
- Monitoring community budget meetings for other community program opportunities.

DRAFT

The successful implementation of this plan will require constant and vigilant review of existing plans and programs for coordination and multi-objective opportunities that promote a safe, sustainable community. Regular efforts should be made to monitor the progress of mitigation actions implemented through other planning mechanisms. Where appropriate, priority actions should be incorporated into planning updates. Table 10 lists existing planning mechanisms in which the Hazard Mitigation Plan has been integrated.

Table 11 lists the opportunities for integrating elements of this plan into other plans.

Table 10: Previous Plan Integration by Magna City

Plan	Description
None	N/A

Table 11: Opportunities for Integration with Future Plans of Magna City

Plan	Description
2021 Magna General Plan	The General Plan guides the future of planning and development in Magna. Elements include land use; transportation; housing; economic development; parks, trails, recreation and open space; natural hazards; community facilities; and sustainability.

Capability Assessment

Local mitigation capabilities are existing authorities, policies, programs, and resources that reduce hazard impacts or could help carry out hazard mitigation activities.

Planning and Regulatory Capabilities

Planning and regulatory capabilities are the plans, policies, codes, and ordinances that prevent and reduce the impacts of hazards.

Table 12: Assessment of the Planning Capabilities of Magna City

Plan	Does it address hazards? (Y/N)	How can it be used to implement mitigation actions?	When was the last update? When is the next update?
General Plan	Y	Magna's future goals in general plan can inform mitigation actions.	2021
Capital Improvement Plan	Y – referenced in General Plan.	As Magna becomes a city, a plan would help it start planning out projects and priorities for leadership.	2021
Climate Change Adaptation Plan	N	N/A	N/A

DRAFT

Plan	Does it address hazards? (Y/N)	How can it be used to implement mitigation actions?	When was the last update? When is the next update?
Community Wildfire Protection Plan	Y	CWPP highlights wildfire mitigation activities.	2021
Economic Development Plan	Y – Referenced in General Plan	Goals and strategies that can be incorporated into mitigation actions.	2021
Land Use Plan	Y – Referenced in General Plan and in Future Land Use document	Highlights land use goals over a period, which can feed into mitigation actions.	2021
Local Emergency Operations Plan	Y	Magna adopted the MSD's plan, which was then converted to the CEMP in 2025.	2025
Stormwater Management Plan	Y – MSD plan	Can inform mitigation actions related to flooding and other severe weather hazards.	2020
Transportation Plan	Y	Informs various hazards as far as mitigation actions.	2020
Substantial Damage Plan	N	N/A	N/A
Other? (Describe)			

Table 13: Assessment of the Regulations and Ordinances of Magna City

Regulation/ Ordinance	Does it effectively reduce hazard impacts?	Is it adequately administered and enforced?	When was the last update? When is the next update?
Building Code	Building codes ensure that structures are built to national standard and brought up to code when remodeling occurs. Magna City has several commercial buildings. Magna has adopted the state's building codes, the International Building Code (IBC 2021) and International Residential Code (IRC 2021) with amendments, as its building code.	Y	2017
Flood Insurance Rate Maps	Y	Y	2023
Floodplain Ordinance	Y	Y	2023
Subdivision Ordinance	Y	Y	2023
Zoning Ordinance	Y	Y	2023
Natural Hazard-Specific Ordinance	Y	Y	2023

DRAFT

Regulation/ Ordinance	Does it effectively reduce hazard impacts?	Is it adequately administered and enforced?	When was the last update? When is the next update?
(Stormwater, Steep Slope, Wildfire)			
Acquisition of Land for Open Space and Public Recreation Use	Y	Y	2023
Prohibition of Building in At-Risk Areas	Y	Y	2023
Other? (Describe)			

Administrative and Technical Capabilities

Administrative and technical capabilities include staff and their skills. They also include tools that can help carry out mitigation actions.

Table 14: Assessment of the Administrative Capabilities of Magna City[2]

Administrative Capability	In Place? (Y/N)	Is staffing adequate?	Are staff trained on hazards and mitigation?	Is coordination between agencies and staff effective?
Chief Building Official	Y , MSD	Yes	Yes, more training is always good.	Room for improvement.
Civil Engineer	Y, MSD	Yes	Yes, more training is always good.	Room for improvement.
Community Planner	Y, MSD	Yes	Yes, more training is always good.	Room for improvement.
Emergency Manager	Y	Yes	Yes, more training is always good.	Room for improvement.
Floodplain Administrator	Y, MSD	Yes	Yes, more training is always good.	Room for improvement.
Geographic Information System (GIS) Coordinator	Y, MSD	Yes	Yes, more training is always good.	Room for improvement.
Planning Commission	Y	Yes	Yes, more training is always good.	Room for improvement.
Fire Safe Council	N – UFA is the contracted fire department.	Yes	Yes, more training is always good.	Room for improvement.
CERT (Community Emergency Response Team)	N	N/A	N/A	N/A

[2] MSD = Municipal Services District, UFA = Unified Fire Authority.

Administrative Capability	In Place? (Y/N)	Is staffing adequate?	Are staff trained on hazards and mitigation?	Is coordination between agencies and staff effective?
Active VOAD (Voluntary Agencies Active in Disasters)	Y	Yes. American Red Cross, LDS Church, Salvation Army	Yes, more training is always good.	Room for improvement.
Other? (Please describe.)				

Table 15: Assessment of the Technical Capabilities of Magna City[3]

Technical Capability	In Place? (Y/N)	How has it been used to assess/mitigate risk in the past?	How can it be used to assess/mitigate risk in the future?
Mitigation Grant Writing	Y, MSD and the county	Magna is a part of the MSD, which supports the city in technical capabilities. Magna became a city on May 1, 2024.	Can be used to fund mitigation actions
Hazard Data and Information	Y, MSD	Yes	Hazard data and information were used to determine what areas to prioritize in the city.
GIS	Y, MSD	Yes	Identified areas prone to natural and manmade hazards to reduce risk.
Mutual Aid Agreements	Y, MSD and the county	Mutual aid agreements for sheltering, damage assessments, public works (debris removal, snow removal)	Can be used to complete mitigation actions.
Other? (Please describe.)			

Financial Capabilities

Financial capabilities are the resources to fund mitigation actions. Talking about funding and financial capabilities is important to determine what kinds of projects are feasible, given their cost. Mitigation actions like outreach programs are lower cost and often use staff time and existing budgets. Other actions, such as earthquake retrofits, could require substantial funding from local, state, and federal partners. Partnerships, including those willing to donate land, supplies, in-kind matches, and cash, can be included.

[3] MSD = Municipal Services District.

DRAFT

Table 16: Assessment of the Financial Capabilities of Magna City

Funding Resource	In Place? (Y/N)	Has it been used in the past and for what types of activities?	Could it be used to fund future mitigation actions?	Can it be used as the local cost match for a federal grant?
Capital Improvement Project Funding	Y	Yes, storm drain and water management	Y	Yes
General Funds	Y	Yes	Y	Yes
Hazard Mitigation Grant Program (HMGP/404)	N	No, could be used.	Y	No
Building Resilient Infrastructure & Communities (BRIC)	N	No, could be used.	Y	No
Flood Mitigation Assistance (FMA)	N	No, could be used.	Y	No
Public Assistance Mitigation (PA Mitigation/406)	N	No, could be used.	Y	No
Community Development Block Grant (CDBG)	Y	Developed interlocal agreement with CDBG and Emergency Solutions Grant Program.	Y	No
Natural Resources Conservation Services (NRCS) Programs	N	No, could be used.	Y	No
U.S. Army Corps (USACE) Programs	N	No, could be used.	Y	No
Property, Sales, Income, or Special Purpose Taxes	Y	Yes, capital improvement projects	Y	No
Stormwater Utility Fee	Y	Yes, Stormwater management	Y	Yes
Fees for Water, Sewer, Gas, or Electric Services	Y	Yes, stormwater maintenance	Y	Yes
Impact Fees from New Development and Redevelopment	Y	Code enforcement	Y	Yes
General Obligation or Special Purpose Bonds	Y	Stormwater management	Y	Yes
Federal-funded Programs (Please describe)	Y	Grant from EPA for Magna Water District to replace lead services. Also received funds in 2023 to replace Haynes Well Field well.	Y	No

DRAFT

Funding Resource	In Place? (Y/N)	Has it been used in the past and for what types of activities?	Could it be used to fund future mitigation actions?	Can it be used as the local cost match for a federal grant?
Private Sector or Nonprofit Programs	N	No, could be used	Y	Yes
Other?	Y	Small Business Impact Grant for COVID-19 business owners.	Y	No

Education and Outreach Capabilities

Education and outreach capabilities are programs and methods that could communicate about and encourage risk reduction. These programs may be run by a participant or a community-based partner. Partners, especially those who work with underserved communities, can help identify additional education and outreach capabilities.

Table 17: Assessment of the Education and Outreach Capabilities of Magna City[4]

Education and Outreach Capability	In Place? (Y/N)	Does it currently incorporate hazard mitigation?	Could it be used to support mitigation in the future?
Community Newsletter(s)	Y	Y	Y
Hazard Awareness Campaigns (such as Firewise, Storm Ready, Severe Weather Awareness Week, School Programs)	Y, between SLCo, MSD, and UFA	Y	Y
Public Meetings/Events (Please describe.)	Y – City council meetings are open to the public at the Webster Community Center	Y	Y
Emergency Management Listserv	Yes	Yes, SLCo EM provides.	Y
Local News	Y	Y	Y
Distributing Hard Copies of Notices (e.g., public libraries, door-to-door outreach)	Y	Y	Y
Insurance Disclosures/ Outreach	N	N	Y
Organizations that Represent, Advocate for, or Interact with Underserved and Vulnerable Communities (Please describe.)	Y	Y	Y

[4] MSD = Municipal Services District, SLCo = Salt Lake County, SLCo EM = Salt Lake County Emergency Management, UFA = Unified Fire Authority.

Education and Outreach Capability	In Place? (Y/N)	Does it currently incorporate hazard mitigation?	Could it be used to support mitigation in the future?
Social Media (Please describe.)	Y	Y	Y
Other? (Please describe.)			

Opportunities to Expand and/or Improve Capabilities

Actions that can expand and improve existing authorities, plans, policies, and resources for mitigation include budgeting for mitigation actions, passing policies and procedures for mitigation actions, adopting and implementing stricter mitigation regulations, approving mitigation updates, and making additions to existing plans as new needs are recognized. Table 18 lists the opportunities for Magna City.

Table 18: Opportunities to Expand and/or Improve the Capabilities of Magna City[5]

Capability	Opportunity to Expand and/or Improve
Planning and Regulation	Magna became a city on May 1, 2024, and must now build out a city leadership team. All services are currently contracted out to UPD, UFA, or the MSD/Salt Lake County. As it moves forward, it must decide whether it wants to continue those contracts or start its own. For example, the city can review the MSD's CEMP and Stormwater Management Plan to ensure they include all local data and procedures, updating them as needed.
Administrative and Technical	Staff could receive additional training on hazards and mitigation, including building officials, engineers, planners, emergency management, floodplain management, and GIS personnel. Additionally, coordination between the MSD and Magna can be expanded to ensure thorough understanding and implementation of mitigation measures and related plans, policies, and programs.
Financial	Magna could apply for new grant programs, including HMA grants and NRCS programs.
Education and Outreach	Current education and outreach programs are typically conducted by SLCo, MSD, and the UFA. Developing and implementing hazard-specific public education programs on disaster awareness and mitigation at the local level would expand Magna City's education and outreach capabilities.

Mitigation Strategy

Mitigation strategies provide proactive measures that are designed to minimize the impacts of hazards on the city of Magna. Table 19 shows mitigation action alternatives, and

Table 20 shows the status of previous mitigation activities. Table 21 is the 2025 mitigation action plan for Magna City.

[5] CEMP = Comprehensive Emergency Management Plan, GIS = Geographic Information System, HMA = Hazard Mitigation Assistance, MSD = Municipal Services District, NRCS = Natural Resources Conservation Service, SLCo = Salt Lake County, UFA = Unified Fire Authority, UPD = Unified Police Department,

Table 19: Mitigation Action Alternatives for Magna City

Action	Type of Action	Selected for inclusion in the plan?	If not selected, why not?
Continue social media engagement.	Education and Awareness Programs	N	Incorporated into a new mitigation action as far as outreach efforts and public awareness of local hazards.
Adopt new building codes as they are approved to bring some existing structures up to current codes.	Structure and Infrastructure Projects	Y	

Table 20: Status of Prior Mitigation Actions of Magna City[6]

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update
Conduct wildland urban interface mitigation.	Wildfire	Magna City	UFA, SLCo EM, FFSL	Ongoing
Conduct seismic upgrades.	Earthquake	Magna City	GSL MSD, Granite School District	Ongoing
Storm drain system overhaul.	Flooding, Public Health (Pandemic/ Epidemic)	Magna City	GSL MSD, SLCo PW & Municipal Services	Ongoing.
Slope stabilization at locations like but not limited to: Copper Bend Drive.	Landslide	Magna City	GSL MSD	Ongoing – Rio Tinto did some work nearby.
Radon testing and remediation.	Radon	Magna City	SLCo Health Department, SLCo EM	Ongoing.
Conduct hazardous materials flow study.	Hazardous Materials	Magna City	GSL MSD, LEPC, UFA	Not completed.

[6] FFSL = Division of Forestry, Fire, and State Lands, GSL = Greater Salt Lake, LEPC = Local Emergency Planning Committee, MSD = Municipal Services District, SLCo = Salt Lake County, SLCo EM = Salt Lake County Emergency Management, SLCo PW = Salt Lake County Public Works, UFA = Unified Fire Authority.

Table 21: 2025 Mitigation Action Plan for Magna City[7]

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
1	Enhance security at critical infrastructure locations to prevent potential for terrorist acts.	Terrorism	Magna City	UPD, UFA, MSD, SLCo IT, SLCo Public Works, SLCo Clerk's Office, SLCo Sheriff's Office	Increased security protocols (both in technology and policy) for staff/first responders, with clear expectations/understanding for Magna City employees and the public.	Medium	SLCo EM general funds, Magna City general funds, UPD general funds, SLCo Sheriff's Office general funds, UFA general funds, MSD general funds, HSGP grant	Short term	Medium	
2	Develop and implement public education programs on disaster awareness and mitigation.	Avalanche, Civil Disturbance, Dam Failure, Drought, Wildfire, Earthquake, Extreme Heat, Extreme Cold, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide/ Slope Failure, Lightning, Public Health Pandemic/Epidemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	SLCo EM	UFA, UPD, Sheriff's Office, SLCo Public Works & Municipal Services, Magna City UDEM, local utilities, NGO partners	Increased understanding of local resources and improved relationships with the public and stakeholders. Outlined plans/SOPs for programs. For example, increased avalanche awareness and recognition of hazardous conditions due to avalanche safety and awareness activities could enable the public particularly people who live and work in the foothills to report and avoid problem areas. Additional public outreach activities that strengthen the public's ability to mitigate their risk include programs on defensible space and home hardening (wildfire), utility elevation and floodproof materials (flooding, heavy rain), and non-structural seismic retrofits (earthquake).	Low	Magna City general funds, MSD general funds, SLCo EM general funds, HSGP grant, SHSP grant	Short term	Medium	
3	Integrate WebEOC, Crisis Track, GIS, and other technological enhancements throughout Magna City.	Avalanche, Civil Disturbance, Dam Failure, Drought, Wildfire, Earthquake, Extreme Heat, Extreme Cold, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide/ Slope Failure, Lightning, Public Health Epidemic/Pandemic,	Magna City	UFA, UPD, SLCo Public Works & Municipal Services, SLCo Health Department, SLCo EM, MSD, UDOT, local utilities	Common operating platform for stakeholders, with increased situational awareness, and improved response time.	Low	SLCo EM general funds, UFA general funds, Magna City general funds, MSD general funds, HSGP grant, Emergency	Medium term	Medium	Existing software that we just need to improve documentation/training on.

[7] ATF = Bureau of Alcohol, Tobacco, Firearms and Explosives, BRIC = Building Resilient Infrastructure and Communities, CERT = Community Emergency Response Team, CWDG = Community Wildfire Defense Grant, CWPP = Community Wildfire Protection Plan, DHS = Department of Homeland Security, ESGP = Enhanced Security Grant Program, FBI = Federal Bureau of Investigation, FFSL = Division of Forestry, Fire, and State Lands, FMA = Flood Mitigation Assistance, HHPD = High Hazard Potential Dam, HMA = Hazard Mitigation Assistance, HMGP = Hazard Mitigation Grant Program, HSGP = Homeland Security Grants Program, IPAWS = Integrated Public Alert and Warning System, LEPC = Local Emergency Planning Committee, MSD = Municipal Services District, NGO = nongovernmental organization, NRCS = Natural Resources Conservation Service, NWS = National Weather Service, PDM = Pre-Disaster Mitigation, SAFE = Schools Aid Families in Emergencies, SHSP = State Homeland Security Program, SIAC = Statewide Information and Analysis Center, SLCo = Salt Lake County, SLCo EM = Salt Lake County Emergency Management, SLCo IT = Salt Lake County Information Technology, SLCo PW = Salt Lake County Public Works, SOP = Standard Operating Procedure, UDEM = Utah Division of Emergency Management, UDEQ = Utah Department of Environmental Quality, UDOT = Utah Department of Transportation, UFA = Unified Fire Authority, UPD = Unified Police Department.

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
		Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire					Operations Center grant			
4	Enhance and continue to promote the implementation of CERT and SAFE Hubs.	Avalanche, Civil Disturbance, Dam Failure, Drought, Wildfire, Earthquake, Extreme Heat, Extreme Cold, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide/ Slope Failure, Lightning, Public Health Epidemic/Pandemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	Magna City	SLCo EM, MSD, NGO partners	Increased awareness of local resources.	Low	SLCo EM general funds, Magna City general funds, UDEM general funds, MSD general funds	Short term	Medium	SAFE Hubs (previously S.A.F.E. Neighborhoods) is rebranding, with a new public awareness campaign and information for all partners.
5	Establish access and functional needs registry and ensure that those with access and functional needs are included in plans.	Avalanche, Civil Disturbance, Dam Failure, Drought, Wildfire, Earthquake, Extreme Heat, Extreme Cold, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide/ Slope Failure, Lightning, Public Health Epidemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	SLCo EM	Magna City, MSD, UFA, UPD, SLCo Sheriff's Office, SLCo Aging and Adult Services, SLCo Health Department	Increased situational awareness for the public and stakeholders, and greater understanding of resources available for those with access and functional needs.	Low	SLCo EM general funds, Magna City general funds, MSD general funds, HSGP grant	Short term	High	The state of Utah's Access and Functional Needs Registry is dissolving in 2025. Salt Lake County needs a way to account for those with access and functional needs, including incorporation into plans and SOPs.
6	Bring deficient high hazard dams up to current industry standards.	Dam Failure	SLCo Flood Control Engineering	SLCo EM, Magna City, water districts, dam owners, water companies, MSD Planning and Development	Increased safety (personal injuries, safety of first responders) and reduced damage to critical infrastructure.	High	SLCo Flood Control Engineering capital improvement funds, dam owners, water districts, Utah Division of Water Resources capital improvement funds, HHPD grant, Magna City general funds, MSD general funds	Long term	High	
7	Procure generators and transfer switches for schools, public facilities, and critical facilities.	Extreme Heat, Extreme Cold	MSD	Magna City, SLCo EM, Granite School District, NGO partners, water districts, UFA, UPD, SLCo Health Department, SLCo Sheriff's Office	Backup generators available at cooling centers and Code Blue centers. Accurate inventory of what the county can provide to other agencies or jurisdictions as needed.	Medium	HMA grant, Magna City general funds, MSD general funds, SLCo Health Department general funds, Granite School District general funds	Long term	Medium	

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
8	Increase the size of culverts and bridges in areas Magna City has identified as past or potential flooding concerns.	Flooding, Heavy Rain	MSD Planning and Development	SLCo EM, Magna City, water districts, local utilities, SLCo Flood Control Engineering	Allows for larger runoff during spring melt season, and reduces the amount of debris buildup.	High	SLCo PW capital improvement funds, UDOT capital improvement funds, MSD general funds, Magna City capital improvement projects, PDM, HMGP grant, FMA, NRCS	Long term	Medium	
9	Procure FMA grants.	Flooding, Heavy Rain	MSD	Magna City, SLCo Public Works, SLCo EM	Improved understanding of available grants and how money can be used for mitigation efforts.	Low	SLCo EM general funds, Magna City general funds, MSD general funds, FMA	Medium term	Medium	
10	Develop an enhanced emergency notification communications system for Magna City.	Avalanche, Civil Disturbance, Dam Failure, Drought, Earthquake, Extreme Heat, Extreme Cold, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide/ Slope Failure, Lightning, Public Health Epidemic/Pandemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	Magna City	MSD, UFA, UPD, SLCo EM, UDOT, SLCo Sheriff's Office, SLCo Health Department, local utilities	Early notification of impending wildfire to decrease loss of life. Improved relationships with the public and stakeholders. Faster delivery of information with templates/plans ready to go.	Medium	SLCo EM general funds, MSD general funds, Magna City general funds, HSGP grant, BRIC grant	Short term	Medium	Estimation of $1 million, with costs shared by local jurisdictions/agencies and the county. SLCo EM has been working on developing IPAWS templates and identifying streamlined communication.
11	Promote the Firewise initiative and regularly review/update the Community Wildfire Protection Plan (CWPP).	Wildfire	UFA	SLCo EM, Magna City, SLCo Fire Warden, FFSL	Increased awareness of plans (for the public and stakeholders), improved eligibility for grants and other funding sources, and regular review of CWPP.	Low	SLCo EM general funds, MSD general funds, Magna City general funds, CWDG, Fire Prevention and Safety grant	Short term	Medium	
12	Conduct public awareness campaign on Tier 2 reporting software for chemical reporting.	Hazardous Materials Incident	UFA	SLCo EM, UPD, Magna City, Sheriff's Office, Rio Tinto, SLCo Health Department, UDEQ, water districts, local utilities, LEPC	Improved understanding of Tier 2 reporting and how local agencies/jurisdictions can find and submit information. A common operating platform for hazardous materials reporting.	Low	SLCo EM general funds, LEPC, Magna City general funds, MSD general funds	Long term	Medium	
13	Enact citywide regulations and codes for development to reduce landslide and slope failure damage to critical	Landslide, Slope Failure	MSD	SLCo EM, UFA, Magna City, SLCo Office of Regional Development, local utilities, Granite School District	Reduced likelihood of landslides and damage to critical infrastructure/buildings. Future development that is up to code and follows policy to avoid repetitive loss properties.	Medium	SLCo EM general funds, MSD general funds, Magna City general funds	Long term	Medium	

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
	infrastructure and buildings.									
14	Leverage WebEOC and GIS to track the spread of contagious diseases.	Public Health Epidemic/Pandemic	SLCo Health Department	SLCo EM, UFA, MSD, UPD, SLCo Sheriff's Office, Magna City	Use of GIS and WebEOC software to maintain situational awareness and track illnesses in Magna City.	Low	SLCo EM general funds, SLCo Health Department general funds, UDEQ general funds	Short term	Medium	Existing software that Magna City already has, so just need improved training/ documentation.
15	Create public awareness campaigns and public education programs on radon risks and provide home testing for radon.	Radon	SLCo EM	SLCo Aging and Adult Services, Magna City, MSD, SLCo Health Department	Fewer radon-caused cancer deaths. Increased engagement/ understanding with the public on what SLCo and the city can do or help with.	Low	SLCo EM general funds, Magna City general funds, UDEQ general funds, SLCo Health Department general funds	Short term	Low	
16	Develop road resurfacing project, including permeable pavement for areas with rain-based flooding.	Heavy Rain, Flooding	SLCo Flood Control Engineering	Magna City, UDOT, MSD Planning and Development	Reduced discharge of pollutants in runoff, reduced maintenance time/costs on roads, and improved traction on roads.	High	SLCo Flood Control Engineering capital improvement funds, MSD capital improvement projects, UDOT, HMGP grant, FMA, Magna City general funds	Long term	Low	
17	Create a public education program to inform property owners about tree maintenance and high strength windows.	High Winds	Magna City	SLCo Aging and Adult Services, SLCo Public Works & Municipal Services, UFA, SLCo EM, MSD	Reduced damage during high wind events to critical infrastructure. Fewer personal injuries (people driving on roads or walking in neighborhoods). Improved relationships with stakeholders and the public.	Low	SLCo Public Works & Municipal Services general funds, SLCo EM general funds, UFA general funds	Short term	Low	
18	Develop a severe winter weather mitigation program to ensure that access to primary roadways and evacuation routes.	Severe Winter Weather – Heavy Snow, Blizzard	SLCo Public Works & Municipal Services	SLCo EM, MSD, UDOT, Magna City	Ability of emergency services like police, fire, and paramedics to use roads to provide their services.	Medium	MSD general funds, SLCo Public Works & Municipal Services general funds, Magna City general funds	Short term	High	A severe winter storm with heavy snowfall requires our operators and equipment to be used to clear roads and streets for the public and emergency vehicles to use. The primary efforts will focus on keeping the roads open by clearing snow.
19	Conduct public awareness campaign about lightning safety.	Severe Weather – Lightning	SLCo EM	SLCo Parks and Recreation, UFA, SLCo Public Works &	Lightning strike awareness for the public.	Low	SLCo EM general funds, MSD general	Short term	Low	

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
				Municipal Services, Magna City, MSD, NWS			funds, Magna City general funds, NWS			
20	Improve outreach for "see something, say something" QR code to deter terrorist acts.	Terrorism (including Cyberattacks)	SLCo EM	SLCo Sheriff's Office, UPD, UFA, MSD, Magna City, SLCo IT, UDOT	Increased awareness by residents and local agencies/ jurisdictions about local intelligence resources and ways in which they can report suspicious activity. Increased QR code use/outreach at special events in Magna City.	Low	SLCo EM general funds, Magna City general funds, MSD general funds	Short term	Medium	
21	Be a part of the countywide intelligence group/ division to monitor and analyze threats before an incident occurs.	Terrorism (including Cyberattacks)	SLCo EM	Magna City, SLCo Sheriff's Office, SIAC, DHS, ATF, FBI, MSD	Central group to collect and analyze information, development of SOPs for intelligence, and greater collaboration.	Low	SLCo EM general funds, Magna City general funds, MSD general funds, ESGP grant, SHSP grant	Short term	Medium	This would be a core group of stakeholders who meet on a regular basis to share and collaborate on intelligence data.
22	Code Enforcement – Review critical infrastructure facilities to ensure that building materials are up to code and are tornado-resistant.	Tornado	MSD Planning and Development	SLCo EM, Magna City, SLCo Public Works & Municipal Services, SLCo Facilities Management, UFA, UPD	Critical infrastructure facilities that are operational/ functional during a disaster. Increased life safety.	Medium	SLCo EM general funds, MSD general funds, Magna City general funds, UFA general funds	Short term	Low	
23	Enhance interoperable radio communications systems throughout Magna City.	Avalanche, Civil Disturbance, Dam Failure, Drought, Earthquake, Extreme Heat, Extreme Cold, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide/ Slope Failure, Lightning, Public Health Epidemic/Pandemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	Magna City	SLCo EM, UFA, UPD, SLCo Sheriff's Office, NGO partners	Improved communication between different agencies, common operating platform.	Medium	SLCo EM general funds, Magna City general funds, MSD general funds, HSGP grant	Short term	Medium	
24	Be a part of the countywide single source of information sharing/gathering for intelligence.	Civil Disturbance, Terrorism	SLCo EM	Magna City, SLCo Sheriff's Office, SIAC, MSD, UPD	Improved coordination between local agencies/jurisdictions.	Medium	Magna City general funds, SLCo EM general funds, MSD general funds, HSGP grant	Short term	Medium	Have one common operating platform to be used by all agencies in Salt Lake County to collect suspicious activity reports. Develop a public awareness campaign to educate the public on how and what to report.
25	Install xeriscaping at government-owned buildings.	Drought	Magna City	Water companies/districts, MSD, local utilities, UFA, UPD, SLCo EM	Reduced cost of landscape irrigation, and decreased water use.	High	SLCo Facilities general funds, Magna City general funds, MSD general funds	Short term	Low	

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
26	Improve communication to the public and stakeholders on resources available when Code Blue is in effect during severe winter weather.	Severe Winter Weather	Magna City	The Office of Homeless and Criminal Justice Reform, MSD, NWS, SLCo EM	Reduced damage to critical infrastructure, homeless individuals have access to warming resources, reduced pressure on local homeless resource providers with standard protocols to follow with Code Blue.	Low	SLCo EM general funds, NWS, Magna City general funds, MSD general funds, SLCo Health Department general funds	Short term	Low	
27	Conduct wildland urban interface mitigation.	Wildfire	Magna City Emergency Preparedness	SLCo EM	Reduced risk and intensity of wildfires in Magna through activities like fuel mitigation	Medium	Magna City general funds	Medium term	Medium	
28	Conduct seismic upgrades.	Earthquake	Magna City Emergency Preparedness	SLCo EM	Protects facilities from damage during an earthquake.	Medium	Magna City general funds	Medium term	Medium	
29	Storm drain system overhaul.	Flooding	Magna City Emergency Preparedness	SLCo EM	Reduces flooding during heavy rain events, and protecting structures and roads.	High	Magna City general funds	Long term	Medium	
30	Slope stabilization at locations including but not limited to Copper Bend Drive.	Landslide	Magna City Emergency Preparedness	SLCo EM	Protects critical transportation infrastructure from damage and disruption.	Medium	Magna City general funds	Medium term	Medium	
31	Radon testing and remediation.	Radon	Magna City Emergency Preparedness	SLCo EM	Identifies and protects homes from radon exposure, avoiding harm to residents.	Low	Magna City general funds	Short term	Medium	
32	Conduct hazard materials flow study.	Hazardous Materials	Magna City Emergency Preparedness	SLCo EM	Prepares for a hazardous material spill, reducing chance of harm to people and the environment.	Low	Magna City general funds	Short term	Medium	

DRAFT

City of Midvale

Jurisdictional Annex to the
Salt Lake County Hazard Mitigation Plan

Month XXXX | Draft X.X

THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT

Table of Contents

City of Midvale Annex 1

Planning Process Contact Information 1
Jurisdiction Profile 1
Date of Incorporation 1
Location and Description 1
Population 2
Demographics 2
Brief History 2
Climate 2
Public Services 2
Governing Body 3
Development Trends 3
Jurisdiction-Specific Hazards and Risk 3
Hazard Event History 6
National Flood Insurance Program Summary 8
Jurisdiction-Specific Vulnerabilities and Impacts 9
Jurisdiction-Specific Changes in Vulnerability 26
Additional Public Involvement 36
Plan Integration 36
Capability Assessment 38
Planning and Regulatory Capabilities 38
Administrative and Technical Capabilities 40
Financial Capabilities 41
Education and Outreach Capabilities 42
Opportunities to Expand and/or Improve Capabilities 43
Mitigation Strategy 44

DRAFT

List of Figures

Figure 1: Social Media Post for Public Participant (*left*) and Plan Participant (*right*) 36
Figure 2: City Website Announcement for Plan Participations 36

List of Tables

Table 1: Contact Information for the City of Midvale 1
Table 2: Participant List for the City of Midvale 1
Table 3: Calculated Priority Risk Index Values for the City of Midvale 3
Table 4: Criteria for the Calculated Priority Risk Index 4
Table 5: History of Hazard Events in the City of Midvale 6
Table 6: National Flood Insurance Program Status for the City of Midvale 8
Table 7: National Flood Insurance Overview for the City of Midvale 8
Table 8: Jurisdiction-Specific Vulnerabilities and Impacts in the City of Midvale 9
Table 9: Jurisdiction-Specific Changes in Vulnerability in the City of Midvale 27
Table 10: Integration of Previous Plans by the City of Midvale 37
Table 11: Opportunities for Integration with Future Plans of the City of Midvale 37
Table 12: Assessment of the Planning Capabilities of the City of Midvale 38
Table 13: Assessment of the Regulations and Ordinances of the City of Midvale 39
Table 14: Assessment of the Administrative Capabilities of the City of Midvale 40
Table 15: Assessment of the Technical Capabilities of the City of Midvale 40
Table 16: Assessment of the Financial Capabilities of the City of Midvale 41
Table 17: Assessment of the Education and Outreach Capabilities of the City of Midvale 42
Table 18: Opportunities to Expand and/or Improve the Capabilities of the City of Midvale 43
Table 19: Mitigation Action Alternatives for the City of Midvale 44
Table 20: Status of Prior Mitigation Actions of the City of Midvale 44
Table 21: 2025 Mitigation Action Plan for the City of Midvale 51

DRAFT

City of Midvale Annex

To participate in this multi-jurisdictional hazard mitigation plan (MJHMP) update for Salt Lake County (SLCo), the governing body of the city of Midvale passed a formal resolution, a copy of which is maintained at the local government offices.

Planning Process Contact Information

Table 1 provides information on the point of contact during the updating of the MJHMP.

Table 1: Contact Information for the City of Midvale

Name	Contact Information
Matt Dahl	**Phone:** 801-567-7262; **email:** mdahl@midvaleut.gov

The city of Midvale has a fully integrated approach to hazard mitigation planning and program implementation. During the 2024 update process, the MJHMP participation roles in Table 2 were recorded.

Table 2: Participant List for the City of Midvale

Name	Title	Jurisdiction
Matt Dahl	City Manager	City of Midvale
Brad Jewett	Municipal Emergency Planner	Unified Fire Authority
Brian Buckhout	Municipal Emergency Planner	Unified Fire Authority

Jurisdiction Profile

Date of Incorporation

1909.

Location and Description

The city of Midvale is located south of Salt Lake City in the middle of the Salt Lake Urbanized Metropolitan Area, comprising the Wasatch Front. It is just 12 miles south of downtown Salt Lake City and some 20 miles from four mountain resorts. The city is approximately 5.9 square miles in area and has an elevation of 4,383 feet. The city of Midvale is known for its historical significance, especially its role in the Mormon migration of the 19th century.

DRAFT

Population

The 2020 U.S. Census records the population of the city of Midvale as 36,028 people.

Demographics

According to the U.S. Census Bureau, 48.8% of the population is female. Individuals under the age of 18 make up 21.8% of the population, while 9.4% are 65 years or older. The population is composed of 70.2% White and 17.5% Hispanic residents.

Brief History

In the early 1870s and 1900s, the establishment of smelters at Bingham Junction marked a significant development in Midvale's history, driven by the burgeoning mining activities in nearby canyons. These smelters processed ores from Bingham Canyon and other mines, transforming the area into an industrial hub. The influx of industry spurred the growth of hotels, boarding houses, saloons, schools, and other establishments, making the city's Old Town a vibrant community center.

The smelting operations continued until 1958, when the last facility ceased operations. This closure led to a period of economic contraction for Midvale. However, since the early 2000s, the city has experienced remarkable growth, in part due to the redevelopment of the former smelting sites. These areas have been transformed into thriving commercial and residential zones, contributing to Midvale's revitalization and economic resurgence.

Today, Midvale stands as a testament to resilience and adaptability, evolving from its industrial roots into a dynamic city with a rich heritage and a promising future.

Climate

According to data from Weather Spark, average high temperatures for the summer range from 78°F to 86°F and the winter average low temperatures are around 27°F. Rain each year is approximately 13.7 inches, and snowfall averages 12.5 inches.

Public Services

Midvale participates in several strategic partnerships for community services. The Unified Fire Authority (UFA) provides fire, EMS, and emergency management services. The Unified Police Department (UPD) provides law enforcement, and Salt Lake County Animal Services addresses concerns for animal welfare and safety. The city's Public Works Department provides many other essential functions.

Midvale City launched the Community Building Community Initiative in 1998 to address critical health and social challenges, growing from a small dental chair in City Hall to a 3,000-square-foot facility near the 7200 South transit stop. Since becoming a 501(c)(3) nonprofit in 2014, dedicated volunteers and supporters have helped expand its impact, particularly within the Hispanic/Latino community across the Salt Lake Valley and Summit County.

DRAFT

Governing Body

The city of Midvale's governing body consists of a mayor and five-member City Council, and it has the power to create and enforce laws including the authority to levy taxes.

Development Trends

Midvale City is over 100 years old but has experienced hundreds of millions of dollars in new investment in the past few years. In the 5.9 square miles of Midvale, there is a lot of activity. It is home to a growing population of approximately 36,028 residents and some 1,300 businesses. There are many retailers who take advantage of the city's strategic location with its unparalleled access to the regional transportation system and established trade areas. It is home to many top-performing locations, mom and pop shops, and one-of-a-kind locations.

Jurisdiction-Specific Hazards and Risk

The Calculated Priority Risk Index (CPRI) is a comprehensive assessment tool for evaluating and prioritizing risks in a given context. It considers various factors, such as probability, impact, and urgency, to determine the level of risk associated with events or situations. The results for each hazard, including its risk factor (RF) value, are shown in Table 3. The results are based on the criteria in Table 4 and the equation that follows it. The CPRI helps organizations and individuals make informed decisions about risk management and mitigation strategies. It provides a systematic approach to identifying and addressing potential issues, allowing for a more efficient allocation of resources and proactive risk prevention. With the CPRI, stakeholders can prioritize their focus on the most critical risks, leading to more effective risk management and, ultimately, better outcomes.

Table 3: Calculated Priority Risk Index Values for the City of Midvale

Type of Hazard Event	Probability of Future Events	Spatial Extent	Severity of Life/ Property Impact	Warning Time	Duration	Response Capacity	Risk Factor Value
Avalanche	1	1	1	4	1	3	1.4
Drought	2	4	1	1	4	4	2.2
Earthquake	2	4	2	4	4	1	2.5
Extreme Heat	2	4	1	1	2	3	1.9
Extreme Cold	2	4	1	1	3	3	2
Flooding	2	2	1	3	3	2	1.9
Landslide/ Slope Failure	1	1	1	1	1	3	1.2
Radon	3	2	2	1	1	1	2.0
Heavy Rain	2	4	1	1	1	4	1.9
High Wind	2	4	1	1	1	4	1.9
Lightning	1	1	1	2	1	4	1.4

Type of Hazard Event	Probability of Future Events	Spatial Extent	Severity of Life/ Property Impact	Warning Time	Duration	Response Capacity	Risk Factor Value
Severe Winter Weather	3	4	1	1	3	2	2.2
Tornado	2	2	1	4	1	1	1.7
Wildfire	2	2	1	2	4	1	1.8
Dam Failure	1	1	1	2	2	3	1.4
Civil Disturbance	2	2	1	4	1	1	1.7
Cyberattack	2	2	1	4	4	4	1.9
Hazardous Materials Incident (Transportation & Fixed Facility)	2	2	1	4	3	1	1.9
Public Health Epidemic/ Pandemic	2	4	1	1	4	3	2.1
Terrorism	1	1	1	1	2	1	1.1

Table 4: Criteria for the Calculated Priority Risk Index

Risk Index Factor	Degree of Risk Level		Criteria	Factor Weight for Degree of Risk Level
Probability of Future Events	1	Unlikely	Less than 1 percent probability of occurrence in the next year or a recurrence interval of greater than every 100 years.	30%
	2	Occasional	1 to 10 percent probability of occurrence in the next year or a recurrence interval of 11 to 100 years.	
	3	Likely	11 to 90 percent probability of occurrence in the next year or a recurrence interval of 1 to 10 years.	
	4	Highly Likely	91 to 100 percent probability of occurrence in the next year or a recurrence interval of less than 1 year.	
Spatial Extent	1	Limited	Less than 10% of the planning area could be impacted.	10%
	2	Small	10%–25% of the planning area could be impacted	
	3	Significant	25%–50% of the planning area could be impacted.	

DRAFT

Risk Index Factor	Degree of Risk Level		Criteria	Factor Weight for Degree of Risk Level
	4	Extensive	50%–100% of the planning area could be impacted.	
Severity of Life/Property Impact	1	Negligible	Less than 5% of the affected area's critical and non-critical facilities and structures are damaged/ destroyed. Only minor property damage and minimal disruption of life. Temporary shutdown of critical facilities.	30%
	2	Limited	More than 5% and less than 25% percent of property in the affected area is damaged/ destroyed. Complete shutdown of critical facilities for more than one day but less than one week.	
	3	Critical	More than 25% and less than 50% of property in the affected area was damaged/ destroyed. Complete shutdown of critical facilities for over a week but less than one month.	
	4	Catastrophic	Over 50% of critical and non-critical facilities and infrastructures in the affected area are damaged/ destroyed. Complete shutdown of critical facilities for more than one month.	
Warning Time	1	Self-defined	More than 24 hours	10%
	2	Self-defined	12 to 24 hours.	
	3	Self-defined	6 to 12 hours.	
	4	Self-defined	Less than 6 hours.	
Duration	1	Brief	Up to 6 hours.	10%
	2	Intermediate	Up to one day.	
	3	Extended	Up to one week.	
	4	Prolonged	More than one week.	
Response Capacity	1	High	Significant resources and capability to respond to this kind of event; staff are trained, experienced, and ready.	10%
	2	Medium	Some resources and capability to respond to this kind of staff; some staff may be trained, experienced, and ready while others may need additional support.	
	3	Low	Limited resources and capability to respond to this kind of event; additional staff or staff training needed.	
	4	None	No resources and capability to respond this kind of event; additional outside support would be required.	

DRAFT

RISK FACTOR (RF) EQUATION

RF Value = [(Probability x 0.30) + (Spatial Extent x 0.10) + (Severity of Life/Property Impact x 0.30) + (Warning Time x 0.10) + (Duration x 0.10) + (Response Capacity x 0.10)]

Hazards with an RF value greater than or equal to 2.5 are considered high risk. Those with RF values of 2.0 to 2.4 are considered moderate risk hazards, and those with an RF value less than 2.0 are considered low risk. The highest possible RF value is 4.

Hazard Event History

Examining hazard event histories provides valuable insights to inform decision-making and help prioritize resources for risk prevention and response efforts. Table 5 lists the hazard events impacting the city of Midvale since the 2019 plan update, as recorded in the Storm Events Database from the National Centers for Environmental Information.

Table 5: History of Hazard Events in the City of Midvale[1]

Type of Hazard Event	FEMA Disaster #	Date(s)	Damage or Impacts	Description
Avalanche		N/A	No historical risk but there could be traffic impacts if an avalanche occurs in the surrounding area	Midvale borders Cottonwood Heights and is close to the mountains in unincorporated SLCo.
Drought		2020–present	Minimal risk, minimal response. The state has been in a drought over the last few years.	The state has been in a drought over the last few years.
Earthquake		March 18, 2020	Earthquake in Magna caused power outages and extensive damage throughout the county. It caused road and infrastructure damage.	The USGS database shows that there is a 48.65% chance of a major earthquake within 50km of the city of Midvale in the next 50 years.
Extreme Heat		Summers of 2020-present	Extreme heat is becoming more of a concern in the summers, especially with global warming.	The county opens cooling shelters in the summer that residents can use.
Extreme Cold		N/A	There have been Code Blue days each winter.	Shelters expand their capacity to assist those who need shelter from the cold during Code Blue days.

[1] SLCo = Salt Lake County, USGS = United States Geological Survey, WHO = World Health Organization.

DRAFT

Type of Hazard Event	FEMA Disaster #	Date(s)	Damage or Impacts	Description
Flooding		N/A	There is flood risk near the Jordan River.	People experiencing homelessness have been setting up camps near the Jordan River. This has been a safety and public health concern, especially if debris clogs up the waterway.
Landslide/ Slope Failure		N/A	No historical risk but there is concern about structure collapse and injuries/fatalities	
Radon		N/A	Concerns about public health, especially those who have access and functional needs.	52% of households in Midvale are at or above WHO's mitigation threshold for radon.
Heavy Rain		June 13, 2016	Heavy rain caused flooding in homes.	Around 70 people were displaced, and there were a few traffic accidents.
High Wind		Sept 2020	Impacted travel with debris in roads.	High winds recorded up to 90 mph.
Lightning		N/A	Potential injuries or fatalities at outdoor community events	
Severe Winter Weather		Winters in 2022 and 2023	Traffic accidents and power outages.	Heavy snow could have risk over a short duration
Tornado		N/A	Minimal risk with rare historical risk	1999 Salt Lake City tornado caused extensive damage, which could happen in Midvale.
Wildfire		July 2, 2022	Brush fire spread to a carport and two sheds	Brush fires are a concern in Midvale especially being close to the mountains in unincorporated SLCo. Wildfires coming in from other areas is a concern with the population density of Midvale.
Dam Failure		N/A	No Historical Risk but there is concern of future occurrence, dam inundation boundaries show potential in Midvale.	Midvale is in the dam inundation zone for Flat Iron Mesa and Red Pine dams. There are high and significant hazard dams surrounding Midvale.
Civil Disturbance		N/A	No historical risk but there have been protests throughout the county.	There were violent protests in Salt Lake City in 2020 that had local impacts as far as crime and infrastructure damage.

DRAFT

Type of Hazard Event	FEMA Disaster #	Date(s)	Damage or Impacts	Description
Cyberattack		N/A	No historical risk. Potential of risk to increase as events are on the rise	A cyberattack could impact government operations and essential functions.
Hazardous Materials Incident (Transportation & Fixed Facility)		July 17, 2017 and June 4, 2015	Hazmat teams responded to a synthetic opioid operation.	Midvale has an industrial train transit system that runs straight through the city and runs the risk of a derailment of a train carrying hazardous materials. An acid spill blocked road access until cleanup was completed.
Public Health Epidemic/ Pandemic	COVID 2020–2021 DR-4525-UT	January 20, 2020	Historical risk from COVID-19 as far as the local economy, public health, and societal unrest.	School and business closures, strain on public health resources for testing, long-term economic impacts. Unknown how many residents experienced the illness.
Terrorism		N/A	No historical risk but concern about the rise in social media and potential propaganda.	

National Flood Insurance Program Summary

The city of Midvale participates in the National Flood Insurance Program (NFIP). Table 6 displays statistics related to the NFIP. The city of Midvale does not participate in the Community Rating System (CRS).

Table 6: National Flood Insurance Program Status for the City of Midvale[2]

Initial FHBM Identified	Initial FIRM Identified	Current Effective Map Date	Adopted Date	Date Joined NFIP	Tribal
12/18/85	12/18/1985	09/25/2009	2009	06/03/2020	No

Table 7: National Flood Insurance Overview for the City of Midvale

Community ID	Number of Losses	Total Net Payment	Active Policies	Total Coverage
490211	0	$0	27	$5,756,000

The city of Midvale has designated the city manager or designee as the Floodplain Administrator. The Building & Safety Department supports the duties of the floodplain administrator. The current Flood Damage Prevention Ordinance was adopted 9/22/2009. The current effective FIRMs are dated

[2] FIRM = Flood Insurance Rate Map, FHBM = Flood Hazard Boundary Map.

9/25/2009. The city requires development permits for structures in the SFHA. The Building & Safety Department is responsible for reviewing building permits. Substantial damage/substantial improvement determinations would be made through the permitting and pre-construction building inspection requirements which are accomplished by the Building & Safety Department.

Jurisdiction-Specific Vulnerabilities and Impacts

Table 8 provides information on the vulnerable assets in the city of Midvale, including its critical facilities, highlighting the city's vulnerability to identified hazards. It also describes the potential impacts to the community arising from those vulnerabilities. By understanding the risks associated with these assets, local authorities can develop proactive strategies to mitigate vulnerabilities and ensure the safety and functionality of these important assets during hazard events. This data is invaluable for decision-making and prioritizing resources for emergency response and preparedness efforts, ultimately contributing to more effective risk management and greater resilience in the community.

Community assets at risk include critical facilities such as two fire stations, one police station, one emergency operations center, and nine schools. The Midvale Senior Center, Ruth Vine Tyler Library, and Copperview Community Center are other important facilities in the community. The Salt Lake County Public Works Complex, Sanitation Building & Shop, and Fleet, Sanitation, and Operations facilities are located in Midvale. Midvale City Park, Union Park, Bingham Junction Park, Midvale Museum and the Jordan River Parkway Trail are among the recreation assets in the city. Major transportation routes include I-15, I-215, 7200 South/Fort Union Boulevard, State Street/US 89, Bingham Junction Boulevard, 900 East, and Union Park Avenue. The city is served by Utah Transit Authority Trax Red and Blue lines. The city has invested in revitalizing historic Main Street as Midvale Main Arts and Culture District to increase pedestrian traffic, support businesses, and improve aesthetic appeal with murals. The Connie Crosby Family Resource Center, operated by the Road Home, serves families experiencing homelessness in Salt Lake County.

Table 8: Jurisdiction-Specific Vulnerabilities and Impacts in the City of Midvale

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
Avalanche	People	*Vulnerability:* While Midvale is not typically located in a high-risk avalanche zone, individuals who engage in recreational activities in nearby mountainous areas, such as the Wasatch foothills to the east, could face avalanche dangers. *Impacts:* Hikers, backcountry skiers, and snowmobilers unfamiliar with avalanche forecasting or safety practices are particularly at risk. Residents who frequently travel to nearby canyons during winter months may also be indirectly impacted by access closures or transportation hazards.
	Structures	*Vulnerability:* Structures within Midvale itself are unlikely to be directly affected by avalanches due to the city's flat terrain. *Impacts:* Buildings in the foothill interface or along major travel corridors leading into mountainous areas could experience secondary impacts from snow slides that block access or utility service.

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Economic Assets	*Vulnerability:* While Midvale does not rely directly on mountain tourism, winter road closures due to avalanche control in neighboring areas can affect commuter patterns and commercial deliveries. *Impacts:* Businesses dependent on regional recreation traffic may see disruptions. Additionally, utility disruptions caused by avalanches outside the city could have cascading effects on local commerce and services.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Vegetation and historic sites are vulnerable to avalanches. *Impacts:* Nearby avalanche events can lead to deforestation, erosion, and ecosystem disruption in adjacent recreational lands used by Midvale residents. Historic trails or landmarks in the canyons may be threatened by slides, especially if not protected or maintained seasonally.
	Critical Facilities and Infrastructure	*Vulnerability:* Roads and utilities are vulnerable to avalanches. *Impacts:* Avalanche-related road closures or power line damage near canyons may hinder access to healthcare or disrupt emergency response routes for those commuting into Midvale. Though infrastructure in Midvale is not located in avalanche zones, its connectivity to affected regions can pose indirect risks.
	Community Activities	*Vulnerability:* Outdoor recreation activities are vulnerable to avalanche conditions. *Impacts:* Outdoor winter recreation, including hiking, sledding, and backcountry activities by Midvale residents, may be impacted by avalanche conditions in adjacent areas. Community safety campaigns should emphasize avalanche awareness for residents traveling to higher elevations.
Drought	People	*Vulnerability:* All Midvale residents are vulnerable to drought. *Impacts:* Prolonged drought conditions in Midvale can disproportionately affect individuals with limited financial means, especially when utility costs rise due to water scarcity. Seniors, young children, and people experiencing homelessness may face additional health challenges related to water access and heat exposure. Residents with disabilities may struggle with compliance with water restrictions without adequate support.
	Structures	*Vulnerability:* Landscaping around structures is vulnerable to drought. *Impacts:* Drought does not typically damage buildings directly, but may increase maintenance costs due to landscaping restrictions. Older homes with inefficient plumbing and irrigation systems may see increased utility bills. Fire risk in dry conditions also threatens homes near dry vegetation.
	Economic Assets	*Vulnerability:* All businesses, particularly those dependent on water, are vulnerable to drought. *Impacts:* Businesses reliant on water may experience cost increases and operational limits. Drought can impact economic growth, particularly in sectors related to landscaping, recreation, and hospitality, which may face watering restrictions and customer service constraints.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Natural, Historic, and Cultural Resources	*Vulnerability:* Parks and historic and cultural sites are vulnerable to drought. *Impacts:* Local parks and green spaces may suffer from reduced irrigation, leading to dying vegetation and loss of recreational value. Drought-induced dust and poor air quality may harm sensitive historic buildings, while cultural centers may see decreased attendance due to outdoor discomfort.
	Critical Facilities and Infrastructure	*Vulnerability:* Water systems and emergency response services are vulnerable to drought. *Impacts:* Drought can strain Midvale's water distribution and fire suppression systems. Emergency services may face challenges related to wildfire management, and prolonged dry conditions can degrade soil structure around underground infrastructure.
	Community Activities	Drought: Parks and recreation activities are vulnerable to drought. *Impacts:* Water conservation mandates may limit public park use, community gardening, or water-intensive sports like swimming. Events scheduled during extreme heat or poor air quality days may require cancellation or relocation to indoor, climate-controlled venues.
Earthquake	People	*Vulnerability:* Midvale lies within the Wasatch Front, a known seismically active region. Residents in older, non-retrofitted buildings are at significant risk during a seismic event. *Impacts:* People can be injured by falling objects or trapped under collapsed structures. Residents may be displaced from homes. Vulnerable populations may face difficulty evacuating or accessing emergency services post-event. Households without preparedness kits or emergency communication plans are more likely to be adversely affected.
	Structures	*Vulnerability:* All Midvale structures are vulnerable. The entire city has a moderate to high liquefaction potential, which increases the risk of structural damage. *Impacts:* Many buildings in Midvale predate modern seismic safety codes. Unreinforced masonry buildings and homes with shallow foundations are particularly vulnerable to damage. Commercial properties and multi-family residences that have not been seismically upgraded may suffer major structural damage or collapse during a strong earthquake.
	Economic Assets	*Vulnerability:* All Midvale businesses are vulnerable to earthquakes. *Impacts:* Retail centers, small businesses, and industrial facilities are vital to Midvale's economy and may face prolonged closure or loss if significantly damaged. Disruption of utility services and transportation corridors could limit business operations and recovery timelines. Lack of insurance or retrofitting further increases economic vulnerability.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Historic and cultural sites, as well as Jordan River vegetation, are vulnerable to earthquakes. *Impacts:* Earthquakes may damage historic buildings such as schools, religious sites, or older civic structures. Additionally, ground movement may alter landscapes, affect soil stability, and impact urban tree cover or wetlands near the Jordan River corridor.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Critical Facilities and Infrastructure	*Vulnerability:* All critical facilities and infrastructure are vulnerable to earthquakes. *Impacts:* All city facilities are vulnerable to damage and disruption of services from an earthquake. Key infrastructure are vulnerable if not retrofitted to modern seismic standards. Damage to roads and bridges can impede travel through the city. Water and sewer lines may rupture, and utility poles or substations could be compromised. Communication systems may go down, affecting public information flow during a crisis.
	Community Activities	*Vulnerability:* Community events are vulnerable to earthquakes. *Impacts:* Large gatherings in Midvale could be hazardous during a seismic event if structural protections are lacking. Emergency plans must prioritize evacuation routes, sheltering locations, and continuity of community operations.
Extreme Heat	People	*Vulnerability:* All residents are exposed to extreme heat. Some populations may have higher risks due to socioeconomic or health conditions. *Impacts:* Extreme heat can cause illness such as dehydration, heat exhaustion, and heat stroke. Vulnerable populations during extreme heat include adults over 65, individuals with pre-existing health conditions, and young children, as they may struggle to regulate body temperature. Socioeconomically disadvantaged individuals may lack access to cooling resources, while outdoor workers are at higher risk of heat-related illnesses due to physical labor without adequate hydration and rest. Extreme heat can hinder students' learning.
	Structures	*Vulnerability:* Structures with inadequate cooling or insulation are vulnerable to extreme heat. *Impacts:* Residential buildings with inadequate insulation and ventilation and commercial buildings lacking reflective roofing and proper shading may be vulnerable to extreme heat. Materials like metal and glass can amplify heat retention, while areas with limited green space typically experience higher temperatures.
	Economic Assets	*Vulnerability:* All businesses in Midvale are vulnerable to extreme heat. *Impacts:* All businesses face increased energy costs for cooling systems. Agricultural operations can have reduced yields and higher water demand due to heat stress. The outdoor recreation industry may see decreased participation during heat waves, affecting local businesses that rely on visitors. In addition, the energy infrastructure could face strain from increased cooling demands, leading to outages.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Plants, wildlife, parks, and historic structures are vulnerable to extreme heat. *Impacts:* Local plant species and wildlife habitats can suffer from extreme heat, leading to reduced biodiversity. Historic buildings may degrade due to high temperatures, causing materials to deteriorate and paint to peel. In addition, parks and recreational areas may experience overuse and risk their preservation, as residents seek relief from the heat.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Critical Facilities and Infrastructure	*Vulnerability:* Emergency response and healthcare, transportation, and power infrastructure are vulnerable to extreme heat. *Impacts:* Healthcare facilities may experience increased demand because of heat-related medical issues, while schools can suffer from the strain on cooling resources. Transportation systems are at risk of damage, such as buckling roads and warped train tracks. Power grids may be strained by higher demands for electricity for cooling, leading to potential outages.
	Community Activities	*Vulnerability:* Outdoor events and recreation are vulnerable to extreme heat. *Impacts:* Activities like outdoor sports, fairs, and agricultural practices are vulnerable to extreme heat. These events can pose risks, particularly for participants such as youth athletes and elderly residents, who may suffer from heat-related illnesses. In addition, high temperatures can stress crops, which impacts local farming.
Extreme Cold	People	*Vulnerability:* All Midvale residents are exposed to extreme cold. Residents who are elderly, living with chronic health conditions, or experiencing housing insecurity face heightened risks during periods of severe cold. Children may also be vulnerable if they lack adequate winter clothing or live in underheated homes. *Impacts:* Low-income households may struggle to afford increased heating costs, putting their health and safety at risk. Exposure to freezing temperatures can lead to hypothermia, frostbite, and the exacerbation of existing medical conditions.
	Structures	*Vulnerability:* Older homes and other structures are vulnerable to extreme cold. *Impacts:* Buildings in Midvale constructed prior to modern energy-efficiency standards may experience significant heat loss during cold snaps, particularly if insulation is inadequate or windows and doors are poorly sealed. Frozen pipes can burst, leading to water damage and costly repairs. Detached or unheated structures such as garages and storage sheds are especially vulnerable. Prolonged cold can also damage road surfaces and bridge decks through freeze-thaw cycles.
	Economic Assets	*Vulnerability:* All Midvale businesses are vulnerable to extreme cold. *Impacts:* Cold weather can disrupt supply chains and business operations, particularly for sectors that rely on transportation or energy. Delivery delays, increased heating costs, and utility outages may reduce profitability for local businesses. Small-scale agriculture or garden centers may experience crop losses if frost protection systems are overwhelmed. Energy-dependent operations, including manufacturing and healthcare facilities, may face higher operational costs during extreme cold events.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Plants, ecosystems, parks, and historic and cultural sites are vulnerable to extreme cold. *Impacts:* Extended cold periods can damage native plant species, reduce food availability for wildlife, and disrupt ecosystems in local parks or along the Jordan River corridor. Historic buildings and older community landmarks in Midvale may suffer from weathering or internal damage due to poor insulation and moisture intrusion from

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		melting ice. Public art installations and monuments are also at risk of degradation during freeze-thaw conditions.
	Critical Facilities and Infrastructure	*Vulnerability:* Water, power, and transportation infrastructure, as well as emergency response services, are vulnerable to extreme cold. *Impacts:* Cold temperatures may affect the performance of critical infrastructure such as water treatment facilities, which are susceptible to frozen lines or equipment malfunctions. Power lines and substations may be burdened by increased demand or ice buildup, raising the potential for outages. Emergency services may face access issues due to icy roads, while public buildings may struggle to maintain safe indoor temperatures if heating systems fail. Public facilities may see an increased demand for warming centers and other services.
	Community Activities	*Vulnerability:* Community activities are vulnerable to extreme cold. *Impacts:* Outdoor programming can be canceled or poorly attended during extreme cold, reducing community engagement. Vulnerable populations may avoid public events if adequate heating or indoor shelter is unavailable. Community centers and gathering spaces without reliable heating infrastructure may become uncomfortable or unsafe for group activities.
Flooding (and Heavy Rain)	People	*Vulnerability:* Flooding primarily affects residents in low-lying areas near rivers and streams, especially during heavy rainfall or snowmelt. In Midvale, there is a known 1% annual chance of flood along the Jordan River and a small area in eastern Midvale where Big Cottonwood Creek passes through the city. *Impacts:* Individuals without reliable transportation may struggle to evacuate quickly, while low-income families often lack resources for flood-prevention measures. The elderly and those with disabilities may face mobility challenges, increasing their risk during emergencies. Overall, factors such as geographic location, economic status, and physical ability contribute to the community's varying levels of vulnerability to flooding.
	Structures	*Vulnerability:* Structures vulnerable to flooding primarily include those in low-lying areas, in dam inundation areas, or near the Jordan River. *Impacts:* Residential properties in flood plains and commercial buildings without proper drainage systems or flood-resistant designs face significant risks during heavy rain or snowmelt. Older structures may be more susceptible due to outdated construction standards. Overall, a combination of location and construction features contributes to their vulnerability to flooding.
	Economic Assets	*Vulnerability:* Commercial properties, especially retail centers and warehouses near rivers or low-lying areas, are at high risk during heavy rainfall or high runoff. *Impacts:* Commercial and residential developments in flood-prone zones can suffer damage, impacting property values. Public infrastructure, such as roads and utilities, may experience disruptions, leading to costly repairs. Agricultural land can be affected by excess water, reducing crop yields.
	Natural, Historic, and	*Vulnerability:* Habitat near the Jordan River, as well as historic and cultural sites, are vulnerable to flooding.

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Cultural Resources	*Impacts:* Natural areas like wetlands and streams are at risk of habitat destruction, while historic sites and landmarks may sustain structural damage. Cultural resources, such as parks and public spaces, can become unusable, affecting community events. Factors contributing to their vulnerability include inadequate flood management, urban development that alters water flow, and the increasing frequency of extreme weather events due to climate change.
	Critical Facilities and Infrastructure	*Vulnerability:* No critical facilities were identified within the 1% annual chance of flood zone, but utilities and roads are vulnerable. *Impacts:* Healthcare facilities, schools, and transportation networks may be vulnerable to localized flooding due to their proximity to rivers and low-lying areas, which can overflow during heavy rain or snowmelt. Flooding can disrupt emergency services, require schools to evacuate, block transportation routes, and isolate communities. In addition, inadequate drainage systems and urban development encroaching on floodplains increase these risks.
	Community Activities	*Vulnerability:* Outdoor events and parks are vulnerable to flooding. *Impacts:* Due to the area's geography and infrastructure, outdoor events, sports, and farmers' markets are vulnerable to flooding. Parks and open spaces can quickly become inundated during heavy rainfall or rapid snowmelt. Residential neighborhoods near rivers, roads, and bridges are at risk of flash floods, which can disrupt transportation and emergency services.
Landslide/ Slope Failure	People	*Vulnerability:* Residents in Midvale's eastern neighborhoods, particularly those near the Wasatch foothills, are at increased risk of landslides and slope failures. *Impacts:* Heavy rainfall or rapid snowmelt can saturate soils, leading to instability. Individuals living in areas with inadequate drainage or older infrastructure may face heightened vulnerability. Limited awareness of landslide warning signs and insufficient emergency preparedness further exacerbate risks. Residents could be displaced if homes are damaged.
	Structures	*Vulnerability:* Homes and commercial buildings situated on or near steep slopes are susceptible to damage from ground movement. *Impacts:* Homes and other structures could be damaged by landslide or other slope movement. Poor construction practices, lack of erosion control measures, and inadequate drainage systems can contribute to structural vulnerabilities. Infrastructure such as roads and bridges may also be compromised during slope failures.
	Economic Assets	*Vulnerability:* Businesses have indirect vulnerability to landslides. *Impacts:* Landslides can disrupt transportation networks, affecting commerce and daily commutes. Damage to utility lines and pipelines can lead to service interruptions, impacting businesses and residents alike. Repair and mitigation efforts can impose significant financial burdens on the community.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Soil and water, as well as historic sites, are vulnerable to slope failures. *Impacts:* Slope failures can lead to soil erosion, negatively affecting local ecosystems and water quality. Historic sites and cultural

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		landmarks located near vulnerable slopes may suffer structural damage or loss, diminishing Midvale's cultural heritage.
	Critical Facilities and Infrastructure	*Vulnerability:* Essential services such as water supply lines, power grids, and emergency response routes are at risk from landslides. *Impacts:* Landslide can damage distribution lines for power and water. Roads can be damaged and may be impassable. Disruptions to these services can impede emergency response efforts and daily operations.
	Community Activities	*Vulnerability:* Recreation and community events are vulnerable to slope failures. Impacts; Recreational areas and trails on or near slopes may become hazardous during periods of instability, limiting community engagement and outdoor activities. Public events may face cancellations or relocations due to safety concerns.
Radon	People	*Vulnerability:* Fifty-two percent of homes tested in Midvale have dangerous levels of radon. *Impacts:* Radon is the second leading cause of lung cancer after smoking. There is a higher risk for certain populations such as children, the elderly, and those with respiratory conditions.
	Structures	*Vulnerability:* All structures in Midvale are vulnerable to radon exposure. *Impacts:* Radon enters buildings and homes through cracks in foundations, basements, and crawl spaces, which exposes occupants to health risks.
	Economic Assets	*Vulnerability:* Healthcare costs are vulnerable to radon exposure. *Impacts:* Long-term exposure can lead to increased medical expenses for lung cancer treatment and respiratory issues.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Historic sites and older homes are vulnerable to radon exposure. *Impacts:* Older structures may lack modern radon-resistant designs, making mitigation more difficult and expensive.
	Critical Facilities and Infrastructure	*Vulnerability:* Water sources are vulnerable to radon exposure. *Impacts:* Radon can dissolve into groundwater, potentially affecting well water sources.
	Community Activities	None
High Wind	People	*Vulnerability:* High wind can affect the entire city, and all Midvale residents are potentially vulnerable. *Impacts:* People can be injured or killed by blowing debris or falling trees. High wind events in Midvale can pose dangers to residents, particularly the elderly, children, and individuals with mobility challenges. Outdoor workers and those without access to sturdy shelter are at increased risk of injury from flying debris.
	Structures	*Vulnerability:* Structures throughout Midvale are exposed to high winds. *Impacts:* Buildings with flat roofs, large windows, or lightweight construction materials are susceptible to wind damage. Structures can also be damaged by trees uprooted by high wind. Mobile homes and

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		temporary structures may be particularly vulnerable. Proper anchoring and reinforcement can mitigate risks.
	Economic Assets	*Vulnerability:* All businesses are vulnerable to high winds. *Impacts:* Commercial properties may suffer damage to signage, awnings, and inventory during windstorms. Agricultural operations can experience crop losses and infrastructure damage. Power outages resulting from downed lines can disrupt business activities.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Trees, parks, historic buildings, and murals are vulnerable to high winds. *Impacts:* High winds can uproot trees, damage landscaping, and harm outdoor art installations. Historic buildings may experience structural stress, leading to deterioration over time.
	Critical Facilities and Infrastructure	*Vulnerability:* Utility lines, communication towers, transportation networks, critical facilities, and public buildings are at risk during high wind events. *Impacts:* Damage to these systems can impede emergency response and daily operations. Critical facilities and other public buildings may experience structural damage.
	Community Activities	*Vulnerability:* Outdoor events, markets, and recreational activities are vulnerable to high winds. *Impacts:* Outdoor events may be canceled or pose safety risks during high wind conditions. Ensuring access to shelter and timely weather information is essential for public safety.
Lightning	People	*Vulnerability:* Residents participating in outdoor activities during thunderstorms are at risk of lightning strikes. *Impacts:* Lightning can cause injury or death to those in close proximity to a strike. Children, athletes, and outdoor workers may be particularly vulnerable. Awareness of and adherence to lightning safety protocols is crucial to prevent injuries.
	Structures	*Vulnerability:* Tall buildings, communication towers, and structures with inadequate grounding systems are susceptible to lightning damage. *Impacts:* Fires and electrical surges resulting from strikes can cause significant property damage.
	Economic Assets	*Vulnerability:* All Midvale businesses are vulnerable to lightning-induced damage. *Impacts:* Businesses may experience equipment damage and data loss due to lightning-induced power surges. Outdoor venues and recreational facilities face operational disruptions during thunderstorms.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Trees, vegetation, and historic sites are susceptible to lightning-related damage. *Impacts:* Lightning can ignite wildfires, threatening natural habitats and historic sites. Trees and vegetation struck by lightning may pose additional hazards due to falling limbs or fire spread.
	Critical Facilities and Infrastructure	*Vulnerability:* Power grids, water treatment plants, and emergency services facilities are vulnerable to lightning strikes and require protection systems to maintain functionality during storms.

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		Impacts: Failure to safeguard these infrastructures can lead to service interruptions.
	Community Activities	*Vulnerability:* Outdoor recreation and events are at risk during lightning storms. *Impacts:* Outdoor community events and sports activities may need to be postponed or canceled during lightning storms to ensure public safety. Access to real-time weather alerts and designated shelter areas is essential.
Severe Winter Weather	People	*Vulnerability:* All Midvale residents are vulnerable to severe winter weather. *Impacts:* Heavy snow can increase the risk of injuries due to slips and falls, along with illnesses and other health consequences from exposure to cold. People can be injured in car accidents while driving in severe winter weather conditions. Severe winter conditions in Midvale can pose risks to the elderly, young children, and individuals with health conditions. Limited mobility and inadequate heating can lead to hypothermia and other cold-related illnesses.
	Structures	*Vulnerability:* All structures are vulnerable to severe winter weather. *Impacts:* Heavy snow accumulation can strain roofs, leading to potential collapses, especially in older buildings. Frozen pipes and ice dams can cause water damage and structural issues.
	Economic Assets	*Vulnerability:* All businesses are vulnerable to disruptions caused by severe winter weather. *Impacts:* Retail businesses may experience decreased foot traffic during snowstorms. Transportation delays can disrupt supply chains, affecting local commerce. Increased heating demands can strain energy resources and budgets.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Trees and historic buildings are vulnerable to damage from severe winter weather. *Impacts:* Prolonged snow cover can damage vegetation and disrupt local ecosystems. Historic buildings may suffer from moisture intrusion and freeze-thaw cycles, leading to deterioration.
	Critical Facilities and Infrastructure	*Vulnerability:* Transportation networks and utility networks are vulnerable to disruptions caused by severe winter weather. *Impacts:* Transportation networks like roads and bridges can become impassable, hindering emergency responses. Snow and ice can impede access to emergency services, schools, and healthcare facilities. Power outages resulting from winter storms can disrupt essential services.
	Community Activities	*Vulnerability:* Community events and outdoor facilities are at risk during severe winter weather. *Impacts:* Community events and outdoor activities may be canceled or limited during severe winter weather. Ensuring accessible warming centers and clear communication about weather conditions is vital for public safety.
Tornado	People	*Vulnerability:* While tornadoes are less common in Midvale, residents should remain vigilant. If a tornado were to occur in the city, all residents would be at risk.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		Impacts: Residents are vulnerable to serious injury from blowing debris, uprooted trees, and structural collapse. Individuals in mobile homes or temporary structures are at higher risk. Timely access to weather alerts and designated shelters is crucial for safety.
	Structures	*Vulnerability:* All structures are vulnerable to tornado damage. *Impacts:* Buildings not constructed to withstand high winds may suffer significant damage during tornado events. Proper anchoring and reinforcement can mitigate structural vulnerabilities.
	Economic Assets	*Vulnerability:* All Midvale businesses are susceptible to tornado-related disruptions. *Impacts:* Tornadoes can cause extensive damage to commercial properties, leading to business interruptions and financial losses. Infrastructure repairs can impose additional economic burdens on the community.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Midvale parks, mature trees, and historic buildings are vulnerable to tornado-related damage. *Impacts:* High winds can uproot trees and damage natural landscapes. Historic sites and cultural landmarks may suffer structural damage, affecting their preservation.
	Critical Facilities and Infrastructure	*Vulnerability:* Power lines, water supply systems, and roads are vulnerable to tornado impacts. *Impacts:* Essential services such as power lines, water supply, and emergency response routes are vulnerable to tornado damage. Ensuring these infrastructures are resilient is key to maintaining community functions.
	Community Activities	*Vulnerability:* Outdoor events and recreation are at risk during tornadoes. *Impacts:* Outdoor festivals, sports events, and markets are vulnerable to tornadoes in Midvale due to their open spaces and limited options to provide shelter. Temporary structures, such as tents, can be easily damaged by high winds. Schools and recreational facilities with large glass windows or weak roofs also face significant risks.
Wildfire	People	*Vulnerability:* In Midvale, residents who live near the city's interface along the Jordan River may be more exposed to wildfire risks. *Impacts:* Individuals with limited mobility, such as seniors or those with health conditions, could have difficulty evacuating in a timely manner during a fast-moving fire. Households with limited financial resources may also lack the ability to implement fire safety improvements or emergency preparedness measures. These vulnerabilities are intensified during dry months when fire danger increases.
	Structures	*Vulnerability:* Homes constructed with combustible materials and those located near dense vegetation or undeveloped land are more susceptible to fire damage. *Impacts:* Midvale neighborhoods lacking sufficient defensible space face increased risk. Inadequate roofing materials and homes not built with fire-resistant features may struggle to withstand ember storms or direct flame contact during wildfire incidents.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Economic Assets	*Vulnerability:* Businesses near open spaces along Jordan River are at risk from wildfires. *Impacts:* Wildfires near Midvale could result in substantial economic disruption. Residences in fire-prone zones could lose value or require expensive retrofitting to meet fire resilience standards. Retail and commercial districts may suffer smoke or heat damage, especially if evacuation disrupts business operations. Additionally, power outages or damaged utility systems could interrupt daily services. While Midvale is not a major agricultural center, community gardens, landscaping businesses, and utilities may still experience losses due to wildfire impacts.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Vegetated open spaces and river ecosystems on the west side of Midvale are vulnerable to fire, especially in dry seasons or drought years. *Impacts:* Wildfires can significantly damage wildlife habitats, trees, and soil health. Cultural and historic buildings may also face elevated risks if not adequately protected. As Midvale expands toward previously undeveloped areas, the encroachment into fire-prone zones increases the exposure of important community assets.
	Critical Facilities and Infrastructure	*Vulnerability:* Power infrastructure, roads, and emergency response services are vulnerable to wildfire impacts. *Impacts:* Essential services such as fire stations and healthcare clinics, near the WUI (wildland–urban interface) may experience higher demand for services.. Power infrastructure—including overhead lines—can both spark and be damaged by fires, disrupting electricity for homes and emergency response operations. Road closures due to fire conditions may impede evacuation routes or delay emergency services.
	Community Activities	*Vulnerability:* Outdoor events and recreational activities are at risk during periods of high fire danger. *Impacts:* Community gatherings such as outdoor concerts, farmers markets, and sports events can be disrupted or canceled during periods of high fire risk. Activities like hiking and biking in the foothills also carry additional danger during dry and windy conditions. Moreover, landscaping choices using flammable vegetation increase the exposure of public facilities such as schools, libraries, and recreation centers to wildfire-related damage during the fire season.
Dam Failure	People	*Vulnerability:* Residents of Midvale who live near flood-prone zones along the Jordan River and Big Cottonwood Creek, or within proximity to upstream water infrastructure like the Red Pine, White Pine, Willow Creek, and Flat Iron Mesa dams, may face increased risks if a dam breach occurs. *Impacts:* Dam failure can cause flooding and property damage. People can be injured by fast-moving floodwaters or may be displaced from their homes. Vulnerable populations may encounter challenges evacuating quickly. Delayed warning systems or unfamiliarity with emergency plans could further hinder response and increase risk to life and safety.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Structures	*Vulnerability:* Structures near the Jordan River corridor, Big Cottonwood Creek, or in low-lying areas of the city are at risk of flooding should a dam fail upstream. *Impacts:* Dam failure may cause damage to residential homes, bridges, roadways, and essential community facilities such as schools, fire stations, and healthcare clinics. The age and resilience of these structures can impact their ability to withstand inundation and debris flows.
	Economic Assets	*Vulnerability:* Businesses in dam inundation zones *Impacts:* Key infrastructure and business assets in Midvale, including retail centers, utilities, and service-based industries, could be disrupted by floodwaters resulting from dam failure. Roads like State Street or I-15 may become impassable, disrupting commerce and daily activities. Water-dependent businesses could face prolonged downtime, and any agricultural zones or community gardens could experience loss of crops or irrigation capabilities. These disruptions could have a ripple effect across the local economy.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Riparian zones and historic buildings are vulnerable to flooding from a dam breach. *Impacts:* A dam breach could harm natural areas such as wetlands or riparian zones along the Jordan River, which serve as important ecological buffers. Floodwaters could erode habitats, impact water quality, and disrupt wildlife corridors. Historic or cultural landmarks, including older public buildings or park installations, may be damaged if situated in flood pathways, especially if they were not designed for high water resilience.
	Critical Facilities and Infrastructure	*Vulnerability:* Although no critical facilities were identified within dam inundation zones, they may be indirectly affected by flooding. Power, communication, and road infrastructure are vulnerable to damage in the event of a dam failure. *Impacts:* Vital services in Midvale, such as water treatment facilities, emergency operations centers, and schools, may be compromised in the event of a dam failure. Utilities like power lines, water mains, and telecommunications networks could suffer damage or go offline. Inundation may overwhelm emergency response systems, reducing the city's capacity to provide aid during and after a flood event. Infrastructure lacking redundancy or floodproofing is particularly at risk.
	Community Activities	*Vulnerability:* Community events and recreational activities are at risk from flooding caused by a dam breach. *Impacts:* Community life in Midvale could be disrupted significantly if floodwaters reach public parks, trails, or recreational venues. Events hosted at locations like Midvale City Park or the Jordan River Trail could be canceled or postponed due to damage or accessibility issues. Public confidence in infrastructure safety may also decline, affecting attendance at outdoor gatherings or activities in areas perceived to be vulnerable.
Civil Disturbance	People	Low-income individuals may lack the resources for safety, while the elderly or disabled may struggle to navigate emergencies. Young people, particularly teenagers, may be drawn into unrest, influenced

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		by social dynamics. In addition, marginalized individuals may feel targeted or compelled to participate. A lack of community cohesion and trust in authorities can further heighten tensions.
	Structures	Government buildings, commercial properties, and infrastructure, such as bridges and transportation hubs may be vulnerable. Government buildings may be targeted for their symbolic authority, while retail stores can attract crowds during protests. Residential neighborhoods also can be affected, especially in areas with heightened tensions. The vulnerability of these structures stems from their visibility and importance to the community, combined with factors such as location and ongoing social issues.
	Economic Assets	Retail establishments, especially shopping centers, are at risk as they often become focal points for protests. Transportation systems can be disrupted by blockades, hindering access to services. Financial institutions may face vandalism or theft, while critical service providers, such as healthcare facilities, could experience strain during unrest. Several economic assets are vulnerable to civil disturbances, primarily due to their visibility and reliance on foot traffic.
	Natural, Historic, and Cultural Resources	Parks and open spaces may suffer from vandalism or destruction during uncontrolled events. Historic sites can become targets, as they symbolize authority or cultural significance. Cultural resources, such as community centers and places of worship, also may be affected, as they play a vital role in community identity. Their vulnerability lies in the potential for damage during protests.
	Critical Facilities and Infrastructure	Governmental buildings, schools, and healthcare facilities may be at risk, since they often symbolize authority and serve as community hubs, making them targets during unrest. Utility infrastructure, such as water and power facilities, is also at risk of disruption. Its visibility and essential services contribute to its vulnerability during civil disturbances.
	Community Activities	Public demonstrations, parades, and local government meetings are particularly vulnerable to civil disturbances. These events often attract large crowds and can become tense, especially around contentious social or political issues. Factors such as the local demographic, economic conditions, and recent events can heighten these vulnerabilities, making it easier for conflicts to arise during passionate public gatherings.
Cyberattack	People	Older adults often lack familiarity with technology and online security, making them easy targets for phishing scams. Individuals engaging in online banking or shopping without strong security measures also face heightened risks. Families with children may be less vigilant about internet safety, allowing cybercriminals to exploit personal information. In addition, small business owners without robust cybersecurity practices are prime targets for attacks that can disrupt operations.
	Structures	Critical infrastructure, such as power plants, water treatment facilities, and transportation systems, often lack robust cybersecurity measures. Commercial businesses, especially financial institutions and healthcare providers, also are at risk due to weaker data protection and employee training. Educational institutions may be vulnerable because of limited funding for cybersecurity and outdated software.

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		Obsolete technology and insufficient training enhance the susceptibility of these structures to cyber threats.
	Economic Assets	Financial institutions, such as banks and credit unions, are at risk of data theft and service disruption. Small and medium-sized businesses often lack robust cybersecurity measures, making them attractive targets. In addition, local government agencies and critical infrastructure, such as water treatment facilities, might have outdated security protocols, posing threats to public safety. The rise of remote work further exacerbates vulnerabilities, as employees accessing networks from home can unintentionally expose systems to risks. Overall, the combination of outdated technology and insufficient cybersecurity practices increases the vulnerability of an area's economic assets.
	Natural, Historic, and Cultural Resources	Natural resources like water management systems and wildlife databases can be compromised, disrupting ecosystems. Historic sites and museums that digitize collections are at risk of losing valuable artifacts and data. In addition, cultural organizations managing events may face threats if their systems lack adequate security. The limited resources of smaller organizations further increase this vulnerability
	Critical Facilities and Infrastructure	Energy and utility services, such as electricity and water systems, which often rely on outdated technology, may be vulnerable. Transportation infrastructure, such as traffic management and public transit, is also at risk due to networked systems. Healthcare facilities that use electronic records and connected medical devices face vulnerabilities that can compromise patient safety.
	Community Activities	Online registration for events, local government services, and educational programs that rely on digital tools may be targeted due to inadequate security measures, outdated software, and insufficient staff training.
Hazardous Materials Incident (Transporta-tion & Fixed Facility)	People	Individuals with pre-existing health conditions, such as respiratory issues, and the elderly are at higher risk due to their compromised health. Children also are more susceptible. Those living near industrial areas or transport routes for hazardous materials face increased exposure risk, while low-income families may lack resources and information to effectively prepare for incidents.
	Structures	Industrial facilities, such as manufacturing plants and warehouses, often store hazardous chemicals which may leak. Residential buildings, schools, and healthcare facilities also are at risk, particularly if located along transportation routes for hazardous materials. Older buildings may lack modern safety features, increasing their vulnerability.
	Economic Assets	Industrial facilities, transportation infrastructure, and nearby commercial properties may be affected. Industrial facilities handling chemicals are at risk of spills or leaks, while roads and railways used for transporting hazardous materials can lead to accidents and contamination. In addition, nearby commercial, and residential areas face potential health risks and economic losses.
	Natural, Historic, and	Waterways and habitats are vulnerable to hazardous materials incidents, which can disrupt ecosystems. Historic sites and structures may suffer damage from toxic exposure, leading to degradation over

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Cultural Resources	time. In addition, cultural landmarks risk losing their significance due to contamination events. The proximity of these resources to industrial areas or transport routes exacerbates their risk.
	Critical Facilities and Infrastructure	Chemical manufacturing plants, waste treatment facilities, and transportation networks, such as highways and railroads may be at risk. Their vulnerability stems from factors such as proximity to residential areas, aging infrastructure, and inadequate safety measures. Natural hazards, such as flooding and earthquakes, can further increase risks by damaging containment systems.
	Community Activities	Local markets, school events, and outdoor gatherings are vulnerable to hazardous materials incidents if they are near industrial zones and transport corridors. This risk is heightened by inadequate emergency preparedness, lack of public awareness, and the potential for spills during transport. Large crowds at events can complicate evacuation efforts, increasing the risks for participants and nearby residents.
Public Health Epidemic/ Pandemic	People	Individuals with pre-existing health conditions like asthma and heart disease and adults over 65 may be vulnerable. Low-income families may struggle to access healthcare and vaccinations, increasing their risk. Marginalized communities with limited access to information and those living in high-density conditions also are at greater risk due to the rapid spread of diseases and the challenges in implementing preventive measures.
	Structures	Several structures are vulnerable to public health epidemics or pandemics, particularly due to their ability to facilitate the spread of disease. High-density residential areas, such as apartment complexes, are at risk, as close living quarters can lead to faster transmission. Public gathering spaces, such as schools and community centers, also pose significant threats because large groups are in confined spaces. Healthcare facilities can become hotspots for infections if infection control measures are insufficient. In addition, workplaces with high foot traffic, such as retail stores, contribute to vulnerability.
	Economic Assets	Small businesses in retail, hospitality, and food service are particularly vulnerable to public health epidemics or pandemics. These sectors face risks from fluctuating consumer demand and potential operational restrictions. The tourism industry also is affected, as travelers may avoid high-risk areas. Healthcare facilities can become overwhelmed, straining resources and impacting operations. In addition, local supply chains may experience disruptions, leading to shortages and inflation. Overall, the direct effects of illness, along with prolonged shutdowns and consumer hesitance, leave these economic assets exposed to significant downturns.
	Natural, Historic, and Cultural Resources	Natural resources like wildlife and ecosystems can be disrupted by increased human activity, raising the risk of zoonotic diseases. Historic sites may deteriorate due to reduced visitor access and funding, while cultural resources, such as community events, face cancelations, impacting social connections.
	Critical Facilities and Infrastructure	Public health epidemic or pandemic incidents can affect healthcare facilities, nursing homes, public transportation systems, schools, and food supply chains. healthcare facilities and clinics may become overwhelmed with patients, while vulnerable populations in nursing

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		homes are at higher risk. Public transportation can facilitate the spread of disease, and schools gather large groups, thereby increasing transmission potential. These facilities often lack adequate resources, including medical supplies and testing capabilities, making them more susceptible to the impacts of a health crisis.
	Community Activities	Large gatherings like festivals and sporting events can facilitate the rapid spread of diseases due to close contact. Public transportation also is at risk, as it serves many people in confined spaces. Schools and childcare facilities are particularly susceptible, given that children can easily transmit infections. In addition, food-related events, such as farmers' markets, can pose risks if hygiene practices are not followed. The interconnectedness of community members and varying adherence to health guidelines further exacerbate these vulnerabilities.
Terrorism	People	Young children and newcomers may lack awareness of potential threats, while the elderly and individuals with disabilities may struggle to respond quickly in emergencies. Marginalized communities often face bias, making them more susceptible to targeting. In addition, those with lower socioeconomic status may lack access to security measures and emergency preparedness resources.
	Structures	Government buildings, transportation hubs, commercial centers, and public spaces are particularly vulnerable to terrorism incidents. Government buildings are symbolic targets, while transportation hubs and commercial centers are attractive due to their potential for high casualties and crowd presence. Public spaces also are at risk due to their open nature and lack of security. Their vulnerability is heightened by inadequate security measures, high occupancy rates, and their locations in densely populated areas, which can amplify the impact of incidents.
	Economic Assets	Infrastructure, commercial establishments, and community facilities may be vulnerable. Critical infrastructure, such as transportation networks and power grids, could disrupt the economy if targeted. Commercial establishments, especially those with high foot traffic, and community facilities like schools and healthcare facilities also are at risk, as they can provoke widespread concern and disruption. Their accessibility and interconnectivity increase vulnerability, meaning that damage to one asset can have a broader economic impact and hinder recovery efforts.
	Natural, Historic, and Cultural Resources	Natural resources like water supplies and parks could be targeted for their significance to the community. Historic sites and cultural resources, such as museums or community centers, also are at risk due to their accessibility and importance to local identity. Their vulnerability is often heightened by inadequate security measures.
	Critical Facilities and Infrastructure	Public transportation systems, healthcare facilities, schools, and utility services like water and power plants may be affected. Their vulnerability arises from high accessibility and the potential impact of an attack, as crowded transportation and public spaces can lead to mass casualties and panic. Attacking utility services could disrupt the town's essential functions, creating chaos.

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Community Activities	Festivals, parades, and sporting events are particularly vulnerable to terrorism incidents. These events attract large crowds, making it easier for perpetrators to inflict harm and instill fear. In addition, community centers and places of worship serve as social hubs, increasing their risk. Factors such as limited security measures and open access to public spaces, contribute to this vulnerability.

Jurisdiction-Specific Changes in Vulnerability

Hazard events can impact communities, infrastructures, and ecosystems. The severity of these impacts can be influenced by climate change, population patterns, and land use development. Understanding these factors is crucial for the city of Midvale to develop a resilient community and minimize the impacts of hazards. Table 9 displays the unique changes within the community and the related effects on each identified hazard affecting the city of Midvale.

DRAFT

Table 9: Jurisdiction-Specific Changes in Vulnerability in the City of Midvale

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
Avalanche	Higher temperatures can lead to more rain, destabilizing snowpack and increasing the risk of wet avalanches. In addition, changes in snowfall can cause denser snow layering on slopes, making them more prone to sliding.	Avalanches can influence population patterns by deterring people from moving to or remaining in high-risk areas, leading to decreased density in these locations. The threat of avalanches prompts many to seek safer environments in urban or lower-risk regions. In addition, when avalanches occur, they can disrupt infrastructure, causing residents to relocate.	Development in Midvale has not increased the risk of avalanches.	Same
Drought	Climate change affects drought incidents by altering precipitation patterns and increasing temperatures. Warmer weather can lead to longer dry periods and more severe droughts, while changes in rainfall can reduce snowpack in nearby mountains, crucial for summer water supply. Higher temperatures also increase evaporation rates, further straining local water resources.	Drought can significantly influence population patterns by impacting economic opportunities and the quality of life. Water scarcity often leads to reduced agricultural productivity, prompting residents to migrate to areas with more stable job prospects. Increased water costs can make living less affordable, driving some residents away. Conversely, efforts to address drought, such as sustainable development or improved water management, may attract newcomers, resulting in changes in the community's demographic composition over time.	Increasing population and development will continue to put a strain on Midvale's water sources.	Increased
Earthquake	Rising temperatures can lead to glacial melting, which affects pressure on tectonic plates and may trigger seismic activity through isostatic	Earthquakes can significantly alter population patterns by prompting residents to leave for safer areas after a seismic event. This migration can lead to	Developments in transportation across the city, particularly around TRAX stations, might be vulnerable to damage during an earthquake.	Stayed the same

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	rebound. In addition, increased rainfall and flooding can erode soils, weakening structural integrity and heightening vulnerability during earthquakes. Although the direct links between climate change and earthquakes are still under investigation, environmental effects may impact the region's seismic risk.	changes in population density and attract new residents and businesses during the rebuilding process. The perception of the area as a safe place to live may shift, impacting long-term demographics, as some residents return to rebuild while others relocate permanently.		
Extreme Heat	Climate change significantly impacts extreme heat by increasing the frequency and intensity of heat waves. Rising global temperatures lead to longer and hotter summers, affecting residents and local infrastructure while heightening health risks, especially for vulnerable populations. Urban heat islands from reduced vegetation and extensive pavement further amplify these effects.	By causing residents to relocate due to damaged homes or safety concerns. Some may move to areas perceived as safer or seek better job opportunities elsewhere. The economic impact and infrastructure damage can also make certain neighborhoods less desirable, leading to shifts in demographics and the socioeconomic landscape as new residents with different backgrounds move in.	Increased density, particularly in Downtown Midvale and around TRAX stations, can lead to increased temperatures during extreme heat events.	Increased
Extreme Cold	By increasing the intensity of winter storms. Higher atmospheric temperatures allow for more moisture, resulting in heavier snowfall and potentially lower temperatures during these events. In addition, fluctuations in weather patterns may disrupt seasonal	By driving some residents to relocate to warmer areas. Harsh winters can hinder economic activities and deter new residents and businesses, influencing housing demand and the attractiveness of certain neighborhoods. This may disproportionately affect lower-income families, leading to	Increased growth of commercial and residential developments in Midvale increases energy demand during extreme cold events, stressing the electrical grid.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	cycles, leading to unpredictable periods of extreme cold mixed with warmer spells.	changes in demographics and socioeconomic stratification in the community.		
Flooding	Higher temperatures increase the frequency and intensity of extreme weather events and alter precipitation patterns. They lead to more intense rainstorms and accelerated snowmelt from nearby mountains, raising water levels in rivers and streams. This combination raises the risk of flooding, especially in areas with inadequate drainage and urban development in flood-prone zones, heightening the potential for damage to homes and infrastructure.	Flooding can significantly alter population patterns by displacing residents from affected areas, leading them to seek shelter elsewhere. This may cause a population decline where flooding occurs, as individuals might hesitate to return due to ongoing risks or property damage. As neighborhoods become less desirable, people may migrate to safer areas, changing demographic trends and putting pressure on housing in those regions. Over time, these shifts can influence urban planning and development, as local governments address flooding risks and changing population needs.	Development in Bingham Junction abuts the 0.2% annual chance flood zone. Increased impervious surfaces due to development across Midvale could contribute to ponding and other pluvial flooding.	Decreased
Landslide/ Slope Failure	Climate change increases the risk of landslides through heavier rainfall and temperature fluctuations. Intense rain saturates soil, destabilizing slopes, while freeze–thaw cycles weaken the ground. Changes in vegetation can also reduce stability, leading to a higher potential for landslides.	Landslides and slope failures can impact population patterns by making some areas unsafe, leading to displacement and lower property values. This prompts residents to move to safer regions, thereby increasing density in more stable areas. Concerns about future landslides may also deter newcomers from high-risk zones, shaping long-term demographic trends.	Development in Midvale has not increased the risk of landslides.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
Radon	Climate change can affect radon levels by altering soil temperatures and moisture conditions. Higher temperatures may increase radon emissions from the ground, while heavy rainfall can change groundwater and soil saturation, impacting radon migration into buildings.	Radon exposure can influence population patterns as increased health awareness may drive families to move away from areas with high radon levels. This shift could particularly affect vulnerable groups, changing demographics and demand in the housing market. Homes with lower radon levels may become more sought after, and public health campaigns can encourage community action, making previously undesirable areas more attractive once mitigation measures are implemented.	Development in Midvale has not increased the risk of radon impacts.	Decreased
Heavy Rain	Climate change increases the frequency and intensity of heavy rain, as higher temperatures allow the atmosphere to hold more moisture. This leads to stronger storms, flash flooding, and overwhelmed drainage systems.	Heavy rain can shift population patterns by pushing residents out of flood-prone areas and attracting them to safer neighborhoods. Frequent flooding may lead to evacuations and economic disruptions, prompting relocations. Over time, ongoing heavy rains can affect housing demand and community stability, altering the town's population distribution.	Increased impervious surfaces due to development across Midvale could contribute to ponding and other pluvial flooding.	Increased
High Wind	Climate change affects high winds by altering atmospheric patterns and increasing extreme weather events. Rising temperatures may lead to more substantial, unpredictable winds and more frequent thunderstorms,	High winds can alter population patterns by making certain areas less desirable. Frequent damage may drive residents to safer neighborhoods, deter newcomers, and slow growth in affected regions.	Development in Midvale has not increased the risk of high wind events.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	posing risks to infrastructure and air quality.			
Lightning	Climate change increases temperatures and alters precipitation, leading to more intense thunderstorms and frequent lightning strikes. Urbanization can enhance this effect, posing risks to public safety and infrastructure.	Lightning can influence population patterns by causing property damage and wildfires, leading some residents to relocate. Areas with higher lightning activity may deter new residents, while safer locations could increase migration as people seek protection from severe weather.	Increased development, including multistory buildings, slightly increases the risk of lightning damage in Midvale.	Increased
Severe Winter Weather	Climate change impacts heavy snow and blizzards by altering precipitation patterns. Higher temperatures can lead to more rain than snow, affecting snowpack levels. In addition, increased storm intensity results in heavier, more unpredictable snowfall.	Increased population equals an increased number of people needing to get to work and quicker snow removal. Heavy snow or blizzards can impact population patterns by influencing where people live and work. Transportation disruptions may lead residents to seek housing closer to jobs, increasing density in some areas while depopulating others. Families might also avoid regions with frequent heavy snowfall, shifting demand to milder areas. Over time, these trends can alter community demographics and economic activity, prompting adjustments in town planning and resource allocation.	As new developments and transportation infrastructure (bike lanes, walking paths, roads) have been constructed, there are new risks to the city during extreme winter weather. The city takes on more responsibility for clearing these developments and infrastructure, as well as rescues and evacuations during heavy snow events.	Increased
Tornado	Climate change may increase the frequency and intensity of tornadoes. Higher temperatures lead to more	Tornadoes can influence population patterns by prompting residents to move to safer areas after damage occurs. This can	Increased development slightly increases the risk of tornado damage in Midvale.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	moisture in the air, creating conditions for severe thunderstorms. Changes in wind patterns and precipitation can also heighten tornado risks, resulting in more destructive storms and greater threats to infrastructure and communities.	decrease density in affected neighborhoods while increasing the demand for housing in safer regions. New residents may also move in for recovery opportunities, altering demographics. Over time, repeated tornado threats might push long-term residents to areas with better disaster preparedness, reshaping the town's population distribution.		
Wildfire	By raising temperatures and creating drier conditions, prolonged droughts lead to more dry vegetation, which serves as fuel for fires. Erratic seasons extend the growing period, while more lightning strikes can ignite wildfires. These factors heighten the threat to ecosystems and community safety.	Displaced individuals often seek safer areas, shifting demographics, while declining property values might deter newcomers. Conversely, some may be drawn to rebuilding efforts, impacting long-term growth and community dynamics.	Development in Midvale does not clearly increase or decrease wildfire risk.	Increased
Dam Failure	Climate change raises the risk of dam failure by causing heavier rainfall and rapid snowmelt. These changes can overwhelm dams and compromise their integrity, highlighting the need for urgent safety assessments and upgrades to protect communities downstream.	Dam failure can impact population patterns by displacing residents and altering demographics. Evacuations can lead to an influx in safer areas, while destruction may deter new residents and contribute to population decline. Fear of future disasters may also prompt remaining individuals to relocate, changing the community's composition and affecting population density and economic activity.	Development in Midvale has not increased the risk of dam failure.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
Civil Disturbance	Climate change can increase civil disturbances by intensifying environmental stresses and social tensions. Rising temperatures may lead to droughts, wildfires, and poor air quality, particularly affecting vulnerable communities. Resource scarcity, especially water, can spark conflicts and protests. In addition, an influx of migrants from harder-hit areas may strain local resources, further escalating tensions. This cycle of unrest is driven by the impacts of climate change on the environment and community dynamics.	By encouraging residents to move for safety, leading to outflows and new arrivals. These events can reveal social issues, impacting community dynamics, employment, and property values, ultimately reshaping demographics, and social cohesion.	Development in Midvale has not increased the risk of civil disturbances.	Increased
Cyberattack	Possible attack on the industry, which is seen as producing large amounts of greenhouse gases and burning fossil fuels. Climate change can heighten cyberattack risk by increasing vulnerabilities during extreme weather. Disruptions like power outages offer cybercriminals opportunities, but focusing on emergency responses can weaken cybersecurity measures. As organizations adopt new technologies to cope with climate impacts, they may	Cyberattacks can change population patterns by eroding trust in essential services. Compromised systems may cause residents to leave due to safety concerns, while high-profile incidents can deter businesses, leading to job losses. This perception of vulnerability may also make the town less appealing to newcomers, resulting in demographic shifts and affecting local development.	Development in Midvale has not increased the risk cyberattacks.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	unintentionally introduce additional vulnerabilities.			
Hazardous Materials Incident (Transportation & Fixed Facility)	Climate change elevates the risk of hazardous materials incidents by increasing extreme weather events like heavy rain and wildfires. These events can breach storage tanks and heighten material volatility. Vulnerable infrastructure can lead to more spills or accidents, while climate shifts may also introduce new challenges for managing hazardous substances and public health.	By causing evacuations and temporary declines in density. In the long run, unsafe areas may deter new residents, affecting growth and diversity. In addition, negative perceptions can lower property values and economic prospects, leading families to relocate, which impacts local demographics.	Development in Midvale has not increased the risk of a hazardous materials incident.	Increased
Public Health Epidemic/ Pandemic	By increasing the spread of vector-borne diseases and raising the risk of waterborne illnesses due to flooding or drought. Worsening air quality can also exacerbate respiratory conditions like asthma, especially in vulnerable populations.	By prompting migration for safety and better healthcare. Vulnerable groups may move to areas with improved services, while economic instability can drive people to seek new employment opportunities. In addition, restrictions like quarantine measures can limit movement and social interactions, reshaping the community's demographics and impacting local economies.	Development in Midvale has not increased the risk of an epidemic/pandemic event.	Increased
Terrorism	Terroristic activity is sometimes centered around climate change. Climate change impacts terrorism incidents by creating conditions of resource scarcity and social unrest. Increased competition for essential	Terrorism incidents can alter population patterns by instilling fear and prompting residents to relocate to perceived safer areas, resulting in demographic shifts and potential declines in property values. Some neighborhoods may see an outflow of residents,	Development in Midvale has not increased the risk of terrorism.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	resources, such as water, can fuel tensions, making communities more vulnerable to extremist ideologies. Extreme weather events may disrupt social order and infrastructure, offering terrorist groups opportunities to exploit crises. In addition, climate-driven population displacement can heighten tensions in receiving areas, raising the risk of domestic terrorism. Law enforcement's focus on climate-related challenges can also limit its capacity to address terrorism threats. Ultimately, while climate change may not directly cause terrorism, its effects can create an environment conducive to extremist activities.	while others could experience an influx of people seeking refuge from violence. In addition, increased security measures may deter businesses and residents from certain locations, leading to long-term changes in population density and urban development patterns.		

DRAFT

Additional Public Involvement

The city of Midvale provided several opportunities for public participation. Figure 1 and Figure 2 are examples of public outreach.

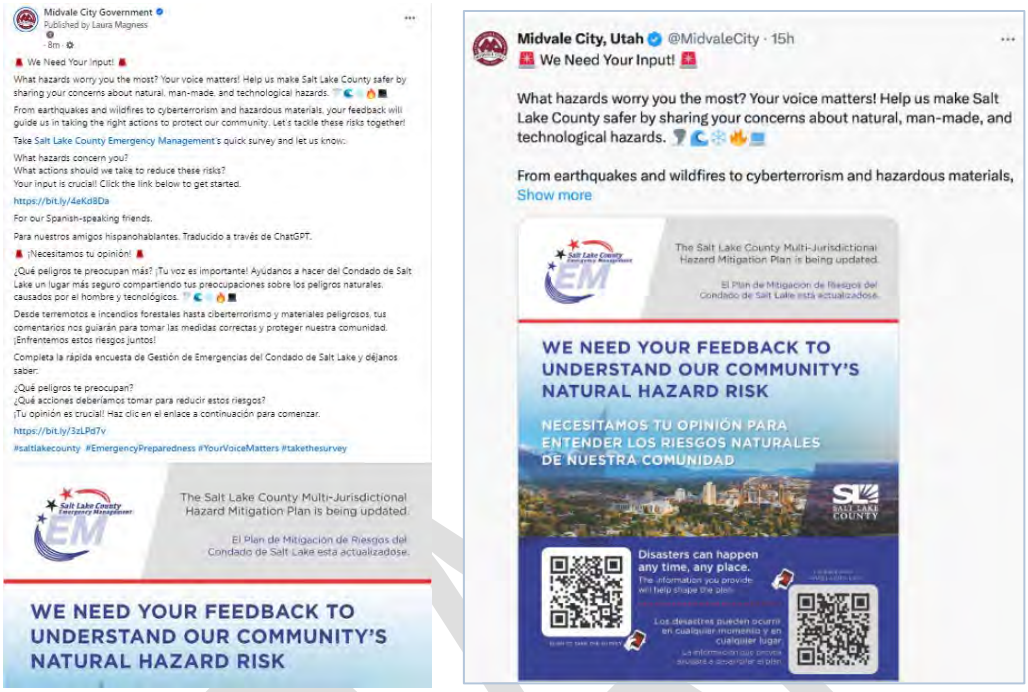


Figure 1: Social Media Post for Public Participant (*left*) and Plan Participant (*right*)

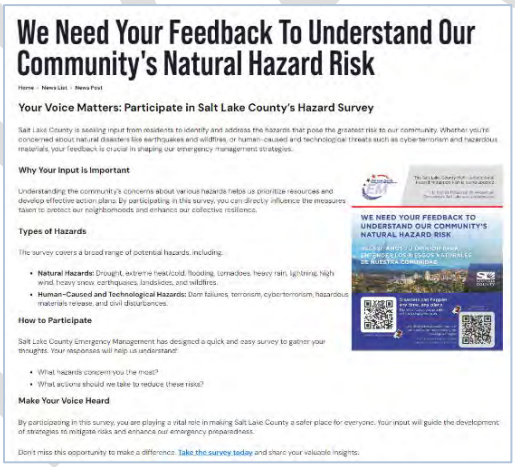


Figure 2: City Website Announcement for Plan Participations

Plan Integration

Incorporating the underlying principles of the Hazard Mitigation Plan and its recommendations into other plans is a highly effective and low-cost way to expand their influence. All plan participants will use existing methods and programs to implement hazard mitigation actions where possible. As previously stated,

mitigation is most successful when it is incorporated into the day-to-day functions and priorities of government and public service. This plan builds on the momentum developed through previous and related planning efforts and mitigation programs, and it recommends implementing actions where possible through these other program mechanisms. These existing mechanisms include the following:

- Regularity Capabilities
- Administrative Capabilities
- Fiscal Capabilities

Respective planning stakeholders will conduct implementation and incorporation into existing planning mechanisms and will be done through the routine actions of:

- Monitoring other planning/program agendas
- Attending other planning/program meetings
- Participating in other planning processes; and
- Monitoring community budget meetings for other community program opportunities.

The successful implementation of this plan will require constant and vigilant review of existing plans and programs for coordination and multi-objective opportunities that promote a safe, sustainable community. Regular efforts should be made to monitor the progress of mitigation actions implemented through other planning mechanisms. Where appropriate, priority actions should be incorporated into planning updates. Table 10 lists existing planning mechanisms in which the Hazard Mitigation Plan has been integrated. Table 11 lists the opportunities for integrating elements of this plan into other plans

Table 10: Integration of Previous Plans by the City of Midvale

Plan	Description
None	N/A

Table 11: Opportunities for Integration with Future Plans of the City of Midvale

Plan	Description
General Plan	Overview of long-term goals and strategies for Midvale
Stormwater Management Plan	Addresses stormwater runoff and limits discharge of pollutants in storm drain system
Water Conservation Plan	Sets goals to conserve water to maintain water supply in the region
Transportation Master Plan	Focused on guiding future transportation investments and ensuring a coordinated approach to managing the city's transportation network
Midvale Center and Fort Union Station Plan	Provides focused direction for improvements to urban design, land use, economic development, and walking and biking facilities within a half-mile from the Midvale Center and Fort Union TRAX stations
Main Street Small Area Plan	Addresses challenges in historic area of Midvale.

Plan	Description
Midvale/West Jordan Station Area Plan	Transportation planning partnership between West Jordan, Midvale City, Wasatch Front Regional Council and Utah Transit Authority

Capability Assessment

Local mitigation capabilities are existing authorities, policies, programs, and resources that reduce hazard impacts or could help carry out hazard mitigation activities.

Planning and Regulatory Capabilities

Planning and regulatory capabilities are the plans, policies, codes, and ordinances that prevent and reduce the impacts of hazards.

Table 12: Assessment of the Planning Capabilities of the City of Midvale[3]

Plan	Does it address hazards? (Y/N)	How can it be used to implement mitigation actions?	When was the last update? When is the next update?
General Plan	Yes	Yes	2024
Capital Improvement Plan	N/A	Can be used to identify funding sources for mitigation actions	Capital improvement projects are reviewed regularly.
Climate Change Adaptation Plan	N – have Water Conservation Plan	Can be used to incorporate sustainability measures into mitigation actions, provide funding sources	2025
Community Wildfire Protection Plan	Y	Can be used to identify wildfire mitigation actions	2021
Economic Development Plan	Y – in General Plan	Improve public transportation to facilitate moving people and supplies in an emergency	2016
Land Use Plan	Y – in General Plan	Provide information on wildfire or flooding mitigation actions	2016
Local Emergency Operations Plan	Y	The city plans to have annexes with actions to mitigate loss of life and property damage. The CEMP can be used to identify responsible departments for mitigation actions.	2024 but a CEMP was promulgated in 2025.
Stormwater Management Plan	Y	Can be used to identify flood mitigation actions	July 2021
Transportation Plan	Y	Can be used to map or identify traffic areas of concern, which	December 2024

[3] CEMP = Comprehensive Emergency Management Plan.

DRAFT

Plan	Does it address hazards? (Y/N)	How can it be used to implement mitigation actions?	When was the last update? When is the next update?
		can be incorporated into mitigation actions	
Substantial Damage Plan	N – have Debris Management Plan	Can inform clean-up efforts that correspond to mitigation actions	2021
Other? (Describe)	Continuity Plan	Ensure municipal operations continue during an incident; supports the response plan with adequate staff	2021

Table 13: Assessment of the Regulations and Ordinances of the City of Midvale

Regulation/ Ordinance	Does it effectively reduce hazard impacts?	Is it adequately administered and enforced?	When was the last update? When is the next update?
Building Code	Y - Building codes ensure that structures are built to standard and brought up to code when remodeling occurs. Midvale has several commercial buildings. Midvale has adopted the Utah State Construction Code as its building code, which includes the International Building Code (IBC 2021) with amendments.	Y	2020
Flood Insurance Rate Maps	Y	Y	2024
Floodplain Ordinance	Y	Y	2009
Subdivision Ordinance	Varies	Y	2022
Zoning Ordinance	Varies	Y	2022
Natural Hazard-Specific Ordinance (Stormwater, Steep Slope, Wildfire)	Y	Y	2020
Acquisition of Land for Open Space and Public Recreation Use	Midvale is built out to its boundaries in all directions. New growth is only when land is rezoned/purposed.	Y	2022
Prohibition of Building in At-Risk Areas	Y	Y	2022
Other? (Describe)			

DRAFT

Administrative and Technical Capabilities

Administrative and technical capabilities include staff and their skills. They also include tools that can help you carry out mitigation actions.

Table 14: Assessment of the Administrative Capabilities of the City of Midvale

Administrative Capability	In Place? (Y/N)	Is staffing adequate?	Are staff trained on hazards and mitigation?	Is coordination between agencies and staff effective?
Chief Building Official	Y	Y	Y	Y
Civil Engineer	Y	Y	Y	Y
Community Planner	Y	Y	Y	Y
Emergency Manager	Y	Y	Y	Y
Floodplain Administrator	Y	Y	Y	Y
Geographic Information System (GIS) Coordinator	Y	Y	Y	Y
Planning Commission	Y	Y	N	Y
Fire Safe Council	N	N	N	N
CERT (Community Emergency Response Team)	N	N/A	N/A	There are active CERTs in the surrounding area.
Active VOAD (Voluntary Agencies Active in Disasters)	Y	Y	Y	Y
Other? (Please describe.)				

Table 15: Assessment of the Technical Capabilities of the City of Midvale[4]

Technical Capability	In Place? (Y/N)	How has it been used to assess/mitigate risk in the past?	How can it be used to assess/mitigate risk in the future?
Mitigation Grant Writing	Y	Capital improvement projects	Funding for mitigation projects
Hazard Data and Information	Y	Identification of at-risk areas for prioritization	Help generate future CEMP annex per hazard
GIS	Y	Identification and mapping of high-risk areas to reduce vulnerabilities and address mitigation projects	Leveraging GIS for data analysis and to identify evacuation zones in evacuation plans, and data analysis.

[4] CEMP = Comprehensive Emergency Management Plan, MOU = memorandum of understanding, SLCo = Salt Lake County, UFA = Unified Fire Authority, UPD = Unified Police Department.

DRAFT

Technical Capability	In Place? (Y/N)	How has it been used to assess/mitigate risk in the past?	How can it be used to assess/mitigate risk in the future?
Mutual Aid Agreements	Y	Coordination with SLCo Public Works, UFA, and UPD	Additional formal MOUs required
Other? (Please describe.)			

Financial Capabilities

Financial capabilities are the resources to fund mitigation actions. Talking about funding and financial capabilities is important to determine what kinds of projects are feasible, given their cost. Mitigation actions like outreach programs are lower cost and often use staff time and existing budgets. Other actions, such as earthquake retrofits, could require substantial funding from local, state, and federal partners. Partnerships, including those willing to donate land, supplies, in-kind matches, and cash, can be included.

Table 16: Assessment of the Financial Capabilities of the City of Midvale

Funding Resource	In Place? (Y/N)	Has it been used in the past and for what types of activities?	Could it be used to fund future mitigation actions?	Can it be used as the local cost match for a federal grant?
Capital Improvement Project Funding	Y	Utilities Transportation, facility improvement and Road projects	Y	Y
General Funds	Y	General operations of the city	Y	Y
Hazard Mitigation Grant Program (HMGP/404)	Y	Has not been used yet	Y	N
Building Resilient Infrastructure & Communities (BRIC)	Y	Has not been used yet	Y	N
Flood Mitigation Assistance (FMA)	Y	Has not been used yet	Y	N
Public Assistance Mitigation (PA Mitigation/406)	Y	Has not been used yet	Y	N
Community Development Block Grant (CDBG)	Y	Community infrastructure projects	N	N
Natural Resources Conservation Services (NRCS) Programs	N	Has not been used yet	Y	N

DRAFT

Funding Resource	In Place? (Y/N)	Has it been used in the past and for what types of activities?	Could it be used to fund future mitigation actions?	Can it be used as the local cost match for a federal grant?
U.S. Army Corps (USACE) Programs	N	Has not been used yet	Y	N
Property, Sales, Income, or Special Purpose Taxes	Y	Used to fund General Purpose including Municipal Emergency Planner position	Y	Y
Stormwater Utility Fee	Y	Operations, maintenance	Y	N
Fees for Water, Sewer, Gas, or Electric Services	Y	Operations, maintenance, and capital improvements	Y	Y
Impact Fees from New Development and Redevelopment	N	Funds fire service	Y	Y
General Obligation or Special Purpose Bonds	Y	Capital Improvements	N	N
Federal-funded Programs (Please describe)	Y	EPA grant	Yes, Mitigates superfund site	N
Private Sector or Nonprofit Programs	Y	Has not been used yet	Y	Y
Other?				

Education and Outreach Capabilities

Education and outreach capabilities are programs and methods that could communicate about and encourage risk reduction. These programs may be run by a participant or a community-based partner. Partners, especially those who work with underserved communities, can help identify additional education and outreach capabilities.

Table 17: Assessment of the Education and Outreach Capabilities of the City of Midvale[5]

Education and Outreach Capability	In Place? (Y/N)	Does it currently incorporate hazard mitigation?	Could it be used to support mitigation in the future?
Community Newsletter(s)	Y	Public Safety Information distributed by City PIO	Y
Hazard Awareness Campaigns (such as Firewise, Storm Ready,	Y	Y	Y

[5] SLCo EM = Salt Lake County Emergency Management, UFA = Unified Fire Authority.

Education and Outreach Capability	In Place? (Y/N)	Does it currently incorporate hazard mitigation?	Could it be used to support mitigation in the future?
Severe Weather Awareness Week, School Programs)			
Public Meetings/Events (Please describe.)	Y	Y	Y
Emergency Management Listserv	Y	Y	Y
Local News	Y	Y	Y
Distributing Hard Copies of Notices (e.g., public libraries, door-to-door outreach)	Y – at City Hall	Y	Y
Insurance Disclosures/ Outreach	N	N	Y
Organizations that Represent, Advocate for, or Interact with Underserved and Vulnerable Communities (Please describe.)	Y	Y	Y
Social Media (Please describe.)	Y	Y - Facebook, Instagram and X	Y
Other? (Please describe.)			

Opportunities to Expand and/or Improve Capabilities

Actions that can expand and improve existing authorities, plans, policies, and resources for mitigation include budgeting for mitigation actions, passing policies and procedures for mitigation actions, adopting and implementing stricter mitigation regulations, approving mitigation updates, and making additions to existing plans as new needs are recognized. Table 18 lists the opportunities for the city of Midvale.

Table 18: Opportunities to Expand and/or Improve the Capabilities of the City of Midvale

Capability	Opportunity to Expand and/or Improve
Planning and Regulations	Midvale can more thoroughly document how substantial damage determinations (including data sources, tools, resources, and staffing) will be made by developing a Substantial Damage Plan or procedure. The procedure could be incorporated into the Flood Damage Prevention Ordinance.
Administrative and Technical	The Planning Commission could receive additional information on hazard risks and mitigation measures, such as through presentations on hazard mitigation, plan maintenance, and mitigation projects.
Financial	The city has grant writing capabilities but has not been awarded any Hazard Mitigation Assistance grants yet. Successfully applying for the Hazard Mitigation Grant Program (HMGP), Flood Mitigation Assistance (FMA), or other pre-disaster mitigation funding could expand the city's funding capabilities.
Education and Outreach	The city can consider connecting with stakeholders such as real estate professionals and developers to promote disclosure of flood risk and understanding of hazard risk reduction development requirements.

DRAFT

Mitigation Strategy

Mitigation strategies provide proactive measures that are designed to minimize the impacts of hazards on the city of Midvale. Table 19 shows mitigation action alternatives, and

Table 20 shows the status of previous mitigation activities. Actions that are not complete or ongoing are being carried forward in the new plan. Those that are not carried forward due to changes in priority or lack of feasibility have been identified as deleted. Table 21 is the 2025 mitigation action plan for the city of Midvale.

Table 19: Mitigation Action Alternatives for the City of Midvale

Action	Type of Action	Selected for inclusion in the plan?	If not selected, why not?
Public education	Education and awareness programs	Y – refined this mitigation action to be more specific.	
Severe weather that shuts down roads/access for residents	Natural systems protection	Y – refined this mitigation action to be more specific.	
Security	Structure and infrastructure projects	Y – refined this mitigation action to be more specific.	

Table 20: Status of Prior Mitigation Actions of the City of Midvale[6]

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update
Ensure that city emergency communication systems (radios, signal boosters, etc.) are functioning and ready for use.	All hazards	Midvale IT	Public Works, UPD, UFA	Ongoing – Midvale has ordered new radios and the supporting equipment. Anticipate full implementation by the end of FY25.
Gather and update GIS data on city infrastructure to ensure smooth operations during emergency operations.	All hazards	Engineering/ GIS	Midvale Public Works and Community Development	Ongoing – Progress has been made in collecting infrastructure data. Data gathering is ongoing and will focus on data required to complete upcoming utility master plans.
Update and ensure that mutual aid agreements and contacts are in place for emergency response operations. This includes other government agencies, private	All hazards	City Manager	City Attorney	Ongoing – Private contracts for pallets of water have been made. Bilateral mutual aid agreements and agreements for other

[6] EM = Emergency Management, IT = Information Technology, NWS = National Weather Service, JVWCD = Jordan Valley Water Conservancy District, SCADA = Supervisory Control and Data Acquisition, UDNR = Utah Department of Natural Resources, UDPH = Utah Department of Public Health, UFA = Unified Fire Authority, UPD = Unified Police Department, VECC = Salt Lake Valley Emergency Communications Center

DRAFT

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update
businesses, etc. so that resources are available and ready when needed.				resources, are still needed.
SCADA system for water and sewer system readings and backup generator systems for sewer lift stations.	All hazards	Midvale Public Works Department	Midvale IT	Complete – SCADA system has been implemented, tested, and is operational.
Separate stormwater from irrigation ditches.	Flooding, Hazardous Materials	City Engineer	Public Works	Ongoing – Several areas where stormwater and irrigation systems were connected have been separated. Additional separation is required. Midvale is currently working on a stormwater master plan, which will include plans for future stormwater improvements.
Develop a robust cyber security program, incorporating components of the NIST Cybersecurity Framework	Cyberattack	Midvale IT		Complete and Ongoing – Midvale IT has implemented robust cybersecurity. IT is also intent on constantly improving the program as new threats and opportunities present themselves.
Increase adult influenza vaccination rates to the Healthy Salt Lake target rate. Currently the rate is 70%	Cyberattack Public Health Epidemic/ Pandemic	Midvale EM	SLCo Public Health	Deleted – The city does not manage flu vaccinations for the community.
Establish redundancy for dispatch centers and other critical communications	All hazards	Midvale EM	VECC	Ongoing – covered by UPD and UFA
Provide education regarding all natural hazards through live trainings and web-based, print, and broadcast media	All hazards	Midvale EM	FEMA	Ongoing – Midvale periodically provides education on natural hazards. In the last year Midvale hosted an Emergency Planning Open House and has information online for residents. In addition, Midvale staff have provided training for community groups upon request.

DRAFT

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update
Incorporate information about cascading effects of hazards in education programs	All hazards	Midvale EM		Completed – The county makes hazard-specific public information available at City Hall.
Develop education programs to target specific groups including homeowners, developers, schools and people with special needs	All hazards	Midvale EM	Local School Districts	Ongoing – Educational opportunities have targeted the community broadly and neighborhood groups.
Utilize maps and similar products on County EM website and other media to educate public on areas at risk of hazards	All hazards	Midvale EM, GIS, and Engineering	County EM GIS	Ongoing – Maps have been used to provide information to the public regarding flooding during the spring runoff.
Coordinate with existing public education programs, such as the American Red Cross, Utah Living with Fire, be Ready Utah, the National Weather Service, etc.	All hazards	Midvale EM	American Red Cross	Incomplete
Establish and enforce appropriate planning, zoning, and building code ordinances	All hazards	Midvale EM and Zoning/ Code		Complete and Ongoing – Zoning code is constantly updated to reflect legislative changes and local land use planning.
Utilize inundation maps to identify potential evacuation areas and routes	Dam Failure	Midvale EM and GIS	SLCo EM GIS	Incomplete
Continue to encourage water conservation, using outreach material from all water districts in the county	Drought	Midvale EM and Water Department		Complete – Midvale has adopted a water conservation plan and ordinance that is in line with policies established by JVWCD. As these changes have been made, they have been promoted on social media.
Emergency Managers will coordinate with local water districts/ public utilities to support ongoing conservation efforts	Drought	Midvale EM and Public Works	Midvale City Engineer sits on the Drought Committee of the JVWCD	Ongoing

DRAFT

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update
Investigate feasibility of implementing an incentive program to encourage the use of low-flow appliances and fixtures in homes and businesses	Drought	Midvale EM and Water Department		Deleted – Midvale has adopted Water Conservation Standards developed by the JVWCC.
Implement water-saving devices and practices in public facilities	Drought	Midvale EM, Public Works – Parks and Facilities Divisions		Ongoing – Changes have been made to irrigation and internal appliances to conserve water. Additional changes will be made as opportunities present themselves.
Repair, maintain and improve water distribution infrastructure to prevent loss from leakage, breaks, etc.	Drought	Midvale EM and Water Department		Ongoing – Midvale has bonded to fund the repairs to significant portions of the water distribution system. Improvements are currently in the design phase, with construction to occur in 2025. Improvements will continue as part of an ongoing maintenance plan.
Coordinate public safety water use, such as hydrant testing	Drought	Midvale EM and Water Department		Ongoing
Provide information on landscaping alternatives for persons subject to green area requirements	Drought	Midvale EM		Complete – Midvale has partnered with the JVECC to provide the public with landscaping ideas and programs. Midvale recently adopted the district's water conservation guidelines by ordinance.
Provide educational materials to unreinforced masonry home and business owners	Earthquake	Midvale EM and Building Department		Incomplete
Procure Engineering Consultant to perform the nonstructural design and geotechnical assessment and review.	Earthquake	Engineering		Deleted
Assist Cities with NFIP application	Flooding	Engineering/ State	FEMA	Incomplete

DRAFT

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update
Encourage Communities to actively participate in NFIP	Flooding	Engineering/ State	FEMA	Incomplete
Identify and assess structures for deficiencies	Flooding	Engineering		Ongoing – Currently happening for new structures.
Modify structures as needed to address deficiencies	Flooding	Building Department.		Incomplete
Maintain Hazardous Weather Operations Plan according to StormReady requirements	Severe Weather	Midvale EM		Incomplete – Midvale is updating its plans to address different emergency that might impact the city.
Maintain Contact with NWS before reapplication	Severe Weather	Midvale EM	NWS	Deleted
Meet with NWS representative on an annual basis to receive information on new services and alerts available	Severe Weather	Midvale EM	NWS	Incomplete
Assist NWS in making other agencies and departments aware of available resources	Severe Weather	Engineering, Water, and City EM	NWS	Incomplete
Work with NWS to develop large event venue weather safety and evacuation procedures	Severe Weather	Engineering, Water, and City EM	NWS	Incomplete
Midvale will implement the "Firewise" program in con-junction with the UFA.	Wildland Fire	EM and Fire	UFA	Ongoing
Midvale has a large number of unreinforced brick residences that poses a large problem in the event of a major earthquake.	Earthquake	Midvale EM		Deleted as this does not identify a specific action.
Canal Mapping will be discussed at the yearly Emergency Managers Meeting and a subcommittee will be formed on earthquake impacts.	Flooding	Midvale EM		Ongoing – GIS has maps of the canals and irrigation lines in Midvale. A committee to discuss earthquake impacts has not been formed.

DRAFT

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update
Our jurisdiction will implement the "Fire is everyone's Fight" program through community outreach.	Severe Weather	Midvale EM		Incomplete
Midvale Emergency Management will work with the County Health Department to assist them in designing their mitigation programs for dealing with pandemics.	Pandemic	Midvale EM	County and UDPH	Incomplete
Emergency Management will conduct a special presentation on "Slow the Flow" to encourage residents to take advantage of the free "Water Check" program.	Drought	Midvale EM	JVWCD	Ongoing – Midvale has taken several steps to implement water conservation policies and programming. However, Midvale has not provided these specific presentations and programs.
Midvale Emergency Management will educate citizens in procuring radon testing kits. A presentation from the Health department will be made. **EM will provide Public Info on home radon test**	Radon	Midvale EM		Incomplete
Midvale Emergency Management will participate in a half-day seminar with the authors of the book *Geologic Hazards of the Magna Quadrangle, Utah,* Jessica J. Castleton, Ashley Elliott, and Greg N. McDonald, to determine testing and mitigation techniques that can be implemented.	Earthquake	Midvale EM	UDNR, Geological Survey Division	Deleted

DRAFT

THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT

Table 21: 2025 Mitigation Action Plan for the City of Midvale[7]

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Time-frame	Priority	Comments
1	Provide public education regarding floods, earthquakes, extreme cold/heat and heavy rain events.	Floods, Earthquakes, Extreme Cold, Extreme Heat, Heavy Rain	Midvale EM	Midvale PIO, UFA, SLCo EM, NWS, SLCo Public Works, Midvale Public Works	Provides educational benefits to underserved populations. Identifies ways to reduce risk, such as elevating electrical systems, installing sump pumps, understanding flood maps, completing non-structural retrofits, and completing home weatherization projects.	Low	Midvale general funds	Long-term	High	These issues involve ongoing education for the public.
2	Conduct an inventory and assessment of communications equipment and systems and identify needs.	Avalanche, Civil Disturbance, Drought, Earthquake, Extreme Heat, Extreme Cold, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide/Slope Failure, Lightning, Public Health Epidemic/ Pandemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	Midvale EM	Midvale Public Works, SLCo EM, VECC, Midvale Communications	Enhances interoperability. Early notification of impending disasters to decrease loss of life. Improved relationships with the public and stakeholders. Faster delivery of information.	Low	Midvale general funds	Short-term	Low	
3	Conduct training and awareness activities on communications equipment, tools, and systems.	Avalanche, Civil Disturbance, Drought, Earthquake, Extreme Heat, Extreme Cold, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide/Slope Failure, Lightning, Public Health Epidemic/ Pandemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	Midvale EM	SLCo EM, SLCo Public Works, Midvale Communications, Midvale Public Works	Enhances interoperability. Early notification of impending wildfires to decrease loss of life. Improved relationships with the public and stakeholders. Faster delivery of information.	Low	Midvale general funds	Short-term	Low	
4	Establish redundancy for dispatch centers and other critical communications.	Avalanche, Civil Disturbance, Drought, Earthquake, Extreme Heat, Extreme Cold, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide/Slope Failure, Lightning, Public Health Epidemic/ Pandemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	Midvale EM	VECC, UCA, SLCo EM, UFA, UPD	Ensure communications lifelines remain functional during a disaster.	High	Midvale general funds, BRIC grant, HMGP grant	Medium term	Medium	
5	Provide education regarding all natural hazards through live trainings and web-based, print, and broadcast media.	Avalanche, Civil Disturbance, Drought, Earthquake, Extreme Heat, Extreme Cold, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide/Slope Failure, Lightning, Public Health Epidemic/ Pandemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	Midvale EM	SLCo EM, UDEM, Midvale Public Works, Midvale Communications, MSD	Increased awareness of potential secondary effects of hazards can help residents reduce their risk. For example, rain-on-snow events, dam failures following landslides, or flooding post-wildfire.	Low	Midvale general funds	Short term	Medium	
6	Incorporate information about the cascading	Avalanche, Civil Disturbance, Drought, Earthquake, Extreme Heat, Extreme Cold,	Midvale EM	UDEM, SLCo EM, Midvale	Increased awareness of potential secondary effects	Low	Midvale general funds	Short term	Medium	

[7] BRIC = Building Resilient Infrastructure and Communities, CDBG = Community Development Block Grant, EM = Emergency Management, EPA – Environmental Protection Agency, FD = Fire Department, FFSL = Division of Forestry, Fire, and State Lands, HMA = Hazard Mitigation Assistance, JVWCD = Jordan Valley Water Conservancy District, MSD = Municipal Services District, NGO = Nongovernmental Organization, NWS = National Weather Service, pCi/L = Picocuries per Liter, PIO = Public Information Officer, SLCo EM = Salt Lake County Emergency Management, UDEM = Utah Division of Emergency Management, UDEQ = Utah Department of Environmental Quality, UDWR = Utah Division of Water Resources, UFA = Unified Fire Authority, UPD = Unified Police Department, VECC = Salt Lake Valley Emergency Communications Center, WUI = Wildland–Urban Interface, WUIPPM = Wildland Urban Interface Prevention, Preparedness, and Mitigation Fund.

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Time-frame	Priority	Comments
	effects of hazards in education programs.	Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide/Slope Failure, Lightning, Public Health Epidemic/ Pandemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire		Public Works, Midvale Communications	of hazards can help residents reduce their risk.					
7	Develop education programs to target specific groups, including homeowners, developers, schools, and people with special needs.	Avalanche, Civil Disturbance, Drought, Earthquake, Extreme Heat, Extreme Cold, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide/Slope Failure, Lightning, Public Health Epidemic/ Pandemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	Midvale EM	SLCo EM, school districts, UDEM, NWS, Midvale Public Works, Midvale Communications	Provides educational benefits to underserved populations to increase awareness and improve safety.	Low	Midvale general funds, BRIC grant, HMGP grant	Short term	Medium	
8	Use maps and similar products on the county EM website and other media to educate the public on areas at risk of hazards.	Avalanche, Civil Disturbance, Drought, Earthquake, Extreme Heat, Extreme Cold, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide/Slope Failure, Lightning, Public Health Epidemic/ Pandemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	Midvale EM	SLCo EM, Midvale Communications, Midvale Public Works, Midvale Community Development, Midvale GIS, and Engineering			Midvale general funds	Short term		
9	Coordinate with existing public education programs, such as the American Red Cross, Utah Living with Fire, Be Ready Utah, and the National Weather Service.	Avalanche, Civil Disturbance, Drought, Earthquake, Extreme Heat, Extreme Cold, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide/Slope Failure, Lightning, Public Health Epidemic/ Pandemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	Midvale EM	NGO partners, SLCo EM, NWS, UFA, UPD	Increased awareness of potential secondary effects of hazards can help residents reduce their risk.	Low	Midvale general funds, NWS grant	Short term	Medium	Revising plan
10	Establish and enforce appropriate planning, zoning, and building code ordinances.	Avalanche, Civil Disturbance, Drought, Earthquake, Extreme Heat, Extreme Cold, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide/Slope Failure, Lightning, Public Health Epidemic/ Pandemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	Midvale EM	Midvale Public Works, Midvale Community Development, SLCo EM, UFA, UPD, Midvale Zoning	Reduces potential damage to buildings and infrastructure and reduces risk of injury to occupants.	Low	Midvale general funds	Short term	Medium	Revising plan
11	Use inundation maps to identify potential evacuation areas and routes.	Dam Failure	Midvale EM	UDWR, SLCo EM, UDEM, SLCo Flood Control, SLCo Public Works, Midvale Public Works, Midvale Communications, UFA, UPD, SLCo Sheriff, Midvale GIS	Identify structures and residents at risk and preserve life through safe evacuation if a dam fails.	Low	Midvale general funds	Short term	Medium	
12	Continue to encourage water conservation,	Drought	Midvale EM	JVWCD, SLCo EM, Midvale EM,	Conserves water supply and reduces costs.	Low	Midvale general funds,	Short term	Medium	

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Time-frame	Priority	Comments
	using outreach materials from all water districts in the county.			Midvale Community Development, Midvale Public Works			JVWCD general funds			
13	Emergency Managers will coordinate with local water districts/ public utilities to support ongoing conservation efforts.	Drought	Midvale EM	JVWCD, SLCo EM, Midvale Communications, Midvale Community Development, Midvale Public Works	Conserves water supply and reduces costs.	Low	Midvale general funds, JVWCD general funds	Short term	Medium	Revising plan
14	Implement water-saving devices and practices in public facilities.	Drought	Midvale EM	JVWCD, SLCo EM, Midvale Community Development, Midvale Public Works	Conserves water supply and reduces costs.	High	Midvale City budget, capital improvement funds, CDBG grant	Medium term	Medium	Water department
15	Repair, maintain, and improve water distribution infrastructure to prevent loss from leakage, breaks, etc.	Drought	Midvale EM	JVWCD, sewer district, local utilities, SLCo Public Works, Midvale Community Development	Conserves water supply and reduces costs.	Medium	Midvale capital improvement funds, HMA funds	Medium term		
16	Coordinate public safety water use, such as hydrant testing.	Drought	Midvale EM	UFA, Midvale Public Works, Midvale Community Development	Conserves water supply and reduces costs.	Low	Midvale general funds, UFA	Short term	Medium	Working on public education campaign.
17	Provide information on landscaping alternatives for persons subject to green area requirements.	Drought	Midvale EM	SLCo EM, Midvale Public Works, Midvale Community Development, water districts, UFA	Reduced cost of landscape irrigation, decreased water use.	Low	Midvale general funds	Short term	Medium	Coordinate with City Mission.
18	Provide educational materials to unreinforced masonry home and business owners.	Earthquake	Midvale EM	Midvale Community Development, Midvale Building Department, UFA, SLCo EM, UDEM	Better educated businesses and homeowners can reduce their risk of injury and damage to their homes.	Low	Midvale general funds	Short term	Medium	
19	Identify and assess structures for deficiencies.	Flooding	Midvale Engineering	Midvale Public Works, Midvale Community Development,	Reduce damage to buildings from flooding.	High	Midvale general funds, BRIC grant, HMGP grant	Short term	High	

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Time-frame	Priority	Comments
				SLCo Flood Control, SLCo EM						
20	Modify structures as needed to address deficiencies.	Flooding	Midvale Building Department	Midvale Public Works, SLCo EM, SLCo Flood Control, Midvale Community Development	Reduce damage to buildings from flooding.	High	HMA, Midvale city capital improvement funds	Medium term	High	Revisions ongoing.
21	Maintain Hazardous Weather Operations Plan according to StormReady Requirements.	Heavy Rain, High Wind, Lightning, Extreme Heat, Extreme Cold, Severe Winter Weather	Midvale EM	NWS, SLCo EM, Midvale Community Development, Midvale Communications, Midvale Public Works	Reduce structural damage and reduce personal injuries from severe weather.	Low	Midvale general funds	Short term	High	Revisions ongoing.
22	Meet with an NWS representative on an annual basis to receive information on new services and alerts available.	Heavy Rain, High Wind, Lightning, Extreme Heat, Extreme Cold, Severe Winter Weather	Midvale EM	NWS, SLCo EM, Midvale Public Works, Midvale Communications, Midvale Community Development	Reduce structural damage and reduce personal injuries from severe weather.	Medium	Midvale general funds, NWS grants	Short term	High	Revising plan.
23	Assist NWS in making other agencies and departments aware of available resources.	Heavy Rain, High Wind, Lightning, Extreme Heat, Extreme Cold, Severe Winter Weather	Midvale Engineering	NWS, SLCo EM, Midvale Communications, Midvale Community Development, Midvale Stormwater, Midvale EM	Reduce structural damage and reduce personal injuries from severe weather.	Low	Midvale general funds, NWS grants	Short term	Medium	
24	Work with NWS to develop large event venue weather safety and evacuation procedures.	Heavy Rain, High Wind, Lightning, Extreme Heat, Extreme Cold, Severe Winter Weather	Midvale Engineering	NWS, SLCo EM, Midvale Community Development, Midvale Stormwater, Midvale EM	Reduce structural damage and reduce personal injuries from severe weather.	Medium	Midvale general funds, HMA funds, NWS grants	Short term	High	
25	Implement the “Firewise” program in conjunction with the UFA.	Wildland Fire	Midvale EM	Utah State Fire Marshal, UDEM, FFSL, SLCo EM, Midvale Communications, UFA	Protect structures from damage from wildfires, reduce the risk of loss of life.	Low	CWDG grant, WUIPPM fund, Midvale general funds	Short term	High	
26	Provide resources to reduce the vulnerability of damage to residences with	Earthquake	Midvale EM	Midvale Public Works, Midvale Community Development,	Reduce risk of damage to URMs during an earthquake and reduce injuries to occupants.	Low	Midvale general funds, BRIC grant, HMGP grant	Short term	High	Midvale Emergency Management will present the “Fix the Bricks” program. This program is part of the Salt Lake City and state of Utah effort to mitigate the

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Time-frame	Priority	Comments
	unreinforced masonry (URM) from an earthquake.			local jurisdictions, SLCo EM, UDEM						effects of a large-scale earthquake by minimizing post-earthquake personal injury and the need for outside assistance.
27	Discuss canal mapping at the yearly Emergency Managers meeting and form a subcommittee on earthquake impacts.	Flooding	Midvale EM	Water districts, SLCo EM, Midvale Public Works, Midvale Community Development, SLCo Flood Control, UFA	Reduce the potential for canal failures and subsequent flooding and damage to structures and infrastructure.	Low	Midvale general funds	Short term	High	Midvale Emergency Management will apply for grants for flood mitigation assistance. As each jurisdiction has already identified its flood-prone areas through Hazus and Risk MAP, Midvale EM will use existing reports to help prepare plans for mitigation and application for funding.
28	Implement the “Fire Is Everyone’s Fight” program through community outreach.	Severe Weather, Wildfire	Midvale EM	UFA, FFSL, SLCo EM, Midvale Communications	Inform residents of the actions they can take to reduce the risk of wildfire.	Low	Midvale general funds, WUIPPM fund, CWDG grant	Short term	High	Severe weather is inevitable. The best mitigation practice is timely communication of the event and actions that can be taken to minimize the effects. The biggest threat of severe weather is winter storms, which usually cause power outages that can last up to several days. Home heating has become a major problem. Each year, Midvale has several devastating fires from homeowners using unsafe heating units.
29	Midvale Emergency Management will work with the county health department in designing its mitigation programs for dealing with pandemics.	Public Health Epidemic/Pandemic	Midvale EM	Utah DHHS, SLCo EM, SLCo Health Department, Midvale Communications	Maintain awareness of potential health consequences from an epidemic/pandemic.	Low	Midvale general funds	Short term	High	“The Salt Lake County Health Department (SLCo HD) continues to improve its emergency response capacity by planning, training, exercising and working with partners and municipalities throughout the county. The SLCo HD Emergency Management Bureau takes the lead in the department and involves all health department staff through planning, training, drills, and exercises. The health department follows the principles of emergency management: to plan for, respond to, recover from, and mitigate natural and man-made emergencies and disasters. Our goal is to do the most good for the most people in the shortest amount of time.“
30	Emergency Management will provide educational materials such as “Slow the Flow” to encourage residents to take advantage of the free “Water Check” program.	Drought	Midvale EM	JVWCD, UDWR, Midvale Public Works, Midvale Community Development	Conserves water supply and reduces costs.	Low	Midvale general funds	Short term	High	Midvale is prone to cyclical droughts, which have been severe enough to require water rationing.

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Time-frame	Priority	Comments
31	Midvale Emergency Management will provide information to educate citizens in procuring radon testing kits.	Radon	Midvale EM	UDEQ, SLCo Health Department, Midvale Communications, SLCo EM, SLCo Aging and Adult Services	Fewer radon-caused cancer deaths. Increased engagement/understanding with the public on what the city can do or help with.	Low	Midvale general funds, UDEQ grant, SLCo Health Dept general fund, SLCo EM general fund	Short term	High	When radon becomes trapped in buildings and homes, people breathe the radon into their lungs and the gas becomes trapped. The Environmental Protection Agency (EPA) has determined that a 4.0 pCi/L action level of radon is dangerous for human health. Utah radon levels are at or above this level, on average.
32	Ensure that city emergency communication systems (radios, signal boosters, etc.) are functioning and ready for use.	Flooding, Severe Winter Weather, Wildfire, Earthquake, High Wind, Heavy Rain	Midvale EM	Public Works, UPD, UFA	Enhanced communication and coordination during a disaster.	Low	Midvale general funds	Short term	High	
33	Gather and update GIS data on city infrastructure to ensure smooth operations during emergency operations.	Flooding, Severe Winter Weather, Wildfire, Earthquake, High Wind, Heavy Rain, Drought, Extreme Temperatures	Midvale EM	Midvale Engineering/GIS	A better understanding of these hazards allows for enhanced planning and quicker reaction time when a disaster occurs.	Medium	Midvale general funds	Medium term	Medium	
34	Update and ensure that mutual aid agreements and contacts are in place for emergency response operations. This includes other government agencies, private businesses, etc. so that resources are available and ready when needed.	Flooding, Severe Winter Weather, Wildfire, Earthquake, High Wind, Heavy Rain, Drought, Extreme Temperatures	Midvale EM	City Attorney	Support from regional partners reduces the risk of impacts from disasters.	Low	Midvale general funds	Short term	High	
35	Separate stormwater from irrigation ditches.	Flooding, Hazardous Materials	Midvale City Engineer	Midvale Public Works	Allows better control over stormwater during heavy rain events to control potential flooding	High	Midvale capital improvement funds	Long term	Medium	
36	Develop a robust cyber security program, incorporating components of the NIST Cybersecurity Framework	Cyberattack	Midvale IT		Protect Midvale data from infiltration that? causes disruption and delay of critical services.	Medium	Midvale general funds	Short term	High	
37	Provide educational materials to public in dam inundation areas.	Dam Failure	Midvale EM	UDWR, SLCo EM, UDEM, SLCo Flood Control, SLCo Public Works, Midvale Public Works, Midvale	Preserve life by informing residents of actions they can take to reduce risk if a dam fails.	Low	Midvale general funds	Short term	Medium	

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Time-frame	Priority	Comments
				Communications, UFA, UPD, SLCo Sheriff, Midvale GIS. Dam owners (Sandy City, Salt Lake City Corp, South Despain Ditch Co)						
38	Coordinate with dam owners and neighboring jurisdictions to support efforts to implement repairs or other rehabilitation for HHPDs.	Dam Failure	Midvale EM	Dam owners (Sandy City, Salt Lake City Corp, South Despain Ditch Co), SLCo EM, SLCo Flood Control, SLCo Public Works, Utah DWR Dam Safety	Use dam inspection reports and other evaluations, and implement measures to reduce potential losses from dam failure.	Low	Midvale general funds	Short term	Medium	

DRAFT

THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT

City of Millcreek

Jurisdictional Annex to the
Salt Lake County Hazard Mitigation Plan

Month XXXX | Draft X.X

THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT

Table of Contents

City of Millcreek Annex 1

Planning Process Contact Information 1
Contact List 1
Existing Plans and Resources 3
Jurisdiction Profile 3
Date of Incorporation 3
Location and Description 3
Population 3
Demographics 3
Brief History 4
Climate 4
Public Services 4
Governing Body 4
Development Trends 5
Jurisdiction-Specific Hazards and Risk 5
Hazard Event History 8
National Flood Insurance Program Summary 9
Jurisdiction-Specific Vulnerabilities and Impacts 10
Jurisdiction-Specific Changes in Vulnerability 24

Additional Public Involvement 36

Plan Integration 36
Capability Assessment 37
Planning and Regulatory Capabilities 37
Administrative and Technical Capabilities 39
Financial Capabilities 40
Education and Outreach Capabilities 41
Opportunities to Expand and/or Improve Capabilities 42
Mitigation Strategy 43
Mitigation Action Prioritization 51
Mitigation Success Story 51

DRAFT

List of Figures

Figure 1: Social Media Post for the Survey (*left*) and the Draft Plan Review (*right*) 36

List of Tables

Table 1: Contact Information for the City of Millcreek 1
Table 2: Participant List for the City of Millcreek 1
Table 3: Contact and Stakeholder List for the City of Millcreek 2
Table 4: Existing Plans and Resources for the City of Millcreek 3
Table 5: Calculated Priority Risk Index Values for the City of Millcreek 5
Table 6: Criteria for the Calculated Priority Risk Index 6
Table 7: History of Hazard Events in the City of Millcreek 8
Table 8: National Flood Insurance Program Status for the City of Millcreek 10
Table 9: National Flood Insurance Policies for the City of Millcreek 10
Table 10: Jurisdiction-Specific Vulnerabilities and Impacts in the City of Millcreek 10
Table 11: Jurisdiction-Specific Changes in Vulnerability in the City of Millcreek 26
Table 12: Integration of Previous Plans by the City of Millcreek 37
Table 13: Opportunities for Integration with Future Plans of the City of Millcreek 37
Table 14: Assessment of the Planning Capabilities of the City of Millcreek 37
Table 15: Assessment of the Regulations and Ordinances of the City of Millcreek 38
Table 16: Assessment of the Administrative Capabilities of the City of Millcreek 39
Table 17: Assessment of the Technical Capabilities of the City of Millcreek 40
Table 18: Assessment of the Financial Capabilities of the City of Millcreek 40
Table 19: Assessment of the Education and Outreach Capabilities of the City of Millcreek 42
Table 20: Opportunities to Expand and/or Improve the Capabilities of the City of Millcreek 42
Table 21: Mitigation Action Alternatives for the City of Millcreek 43
Table 22: Status of Prior Mitigation Actions of the City of Millcreek 44
Table 23: 2025 Mitigation Action Plan for the City of Millcreek 47
Table 24: Mitigation Action Prioritization – STAPLEE 51

DRAFT

City of Millcreek Annex

To participate in this multi-jurisdictional hazard mitigation plan (MJHMP) update for Salt Lake County (SLCo), the governing body of the city of Millcreek passed a formal resolution, a copy of which is maintained at the local government offices.

Planning Process Contact Information

Table 1 provides information on the point of contact during the updating of the MJHMP.

Table 1: Contact Information for the City of Millcreek

Name	Contact Information
Chris Catalano	**Phone: 801-214-2715; email:** CCatalano@millcreekUT.gov

The city of Millcreek has a fully integrated approach to hazard mitigation planning and program implementation. During the 2024 update process, the MJHMP participation roles in Table 2 were recorded.

Table 2: Participant List for the City of Millcreek

Name	Title	Jurisdiction
Chris Catalano	Emergency Manager	Millcreek City

Contact List

Table 3 lists plan contacts and stakeholders for the City of Millcreek update.

DRAFT

Table 3: Contact and Stakeholder List for the City of Millcreek

Name	Title	Jurisdiction/ Agency	Email	Phone	Stake-holder Type[1]	Should they receive meeting invites?	Should they complete a survey?	Should they review the draft plan?
John Miller	Director of Public Works	City of Millcreek	Jmiller@millcreejut.gov		1	N	Y	Y
Cheri Jackson	Council Member	City of Millcreek	Cjackson@millcreekUT.gov		5	N	Y	Y
Michael Lasko	Community Member	City of Millcreek	Mlasko@jub.com		5	N	Y	Y
Tim Bachman	CERT Coordinator	City of Millcreek	Timothybachman@gmail.com		5	N	Y	Y
		Salt Lake City Public Utilities	SLCDPUEngagement@SLCgov.com	801-483-6700	3	Y	Y	Y
		Jordan Valley Water Conservancy District		801-256-4481	3	Y	Y	Y
		Holliday Water Company		801-277-2893	3	Y	Y	Y
		Murray City Water		801-270-2440	3	Y	Y	Y

[1] 1 – Local and regional agencies involved in hazard mitigation activities; 2 – Agencies that have the authority to regulate development; 3 – Neighboring communities; 4 – Representatives of businesses, academia, and other private organizations; 5 – Representatives of nonprofit organizations, including community-based organizations, that work directly with and/or provide support to underserved communities and socially vulnerable populations.

DRAFT

Existing Plans and Resources

Table 4 lists the plans and resources available to the city.

Table 4: Existing Plans and Resources for the City of Millcreek

Plan, Study, Report, or Technical Information	Is it available online?	If online, add the link here.	Is it on SharePoint? Or where can we access it?	Comments
Millcreek Emergency Operations Plan	Yes	https://www.millcreekut.gov/178/Emergency-Management	SharePoint	
General Plan	Yes	https://millcreekut.gov/DocumentCenter/View/3193/Millcreek-Together-General-Plan---Sep-2022		

Jurisdiction Profile

Date of Incorporation

December 28, 2016

Location and Description

The City of Millcreek is a residential community adjacent to Salt Lake City. The city is 12.7 square miles in area and is approximately 4,285 feet above sea level. Situated along the Mill Creek Canyon in the Uinta–Wasatch–Cache National Forest, Millcreek offers an abundance of outdoor recreational activities including miles of hiking trails.

Population

The 2022 American Community Survey 5-Year Estimate from the U.S. Census Bureau records the population of the city of Millcreek as 63,380 people.

Demographics

Most of the 63,520 people are between the ages of 25-34, with a median age of 37.1; 32,003 are females (50.4%) and 31,517 are males (49.6%). English is the primary language in 78.6% of homes,, with 9.7% Spanish, and 11.7% other languages.

DRAFT

Brief History

Pioneers began settling the Canyon Rim and East Mill Creek areas in the Salt Lake Valley in the mid-1800s. By the 20th century, residential and commercial development began in Millcreek. Manufacturing operations and summer homes of the affluent from Salt Lake City also emerged along Mill Creek, particularly what is now known as Evergreen Avenue. Millcreek underwent a wave of growth and transformation during this time. Between the 1930s and 1960s, suburban expansion accelerated, exacerbated by Millcreek's proximity to Salt Lake City, the Wasatch Mountains, and key transportation routes. Millcreek became an attractive location for new starter home subdivisions with many veterans taking advantage of the location after World War II and the Korean War. Development continued throughout the 20th century and into the 21st with a focus on infill projects and smaller subdivisions. The area near I-15 became an industrial and commercial hub that benefited from its access to major highways and railroads. Salt Lake County experienced rapid growth from 2010 onward, prompting Millcreek residents to push for incorporation to better manage the expansion. In 2015, voters approved the creation of a municipal government and Millcreek was incorporated.

Climate

The City of Millcreek experiences a semi-arid climate with hot, dry summers and snowy winters. Millcreek's climate is impacted by the surrounding terrain, which affects both the temperature of the city and the precipitation patterns due to the proximity to the Wasatch Mountains. Summer temperatures can surpass 90°F, and winter temperatures range from 30°F to 40°F. The city of Millcreek experiences significant precipitation, with snowfall ranging from 40 to 50 inches and rainfall ranging from 20 to 30 inches each year.

Public Services

The city of Millcreek offers a variety of public services to enhance the quality of life for its residents. These services include essential utility services, such as power (Rocky Mountain Power), gas (Dominion Energy), water (Salt Lake City Public Utilities and the Jordan Valley Water Conservancy District), sewer (Mt. Olympus Improvement District), and solid waste management (Wasatch Front Waste & Recycling). The Public Works Department focuses on improving infrastructure, such as roads, sidewalks, and stormwater systems; handling snow removal; issuing permits, and ensuring that construction sites comply with city codes. The city of Millcreek also provides various community services, including parks, trails, recreation, and open space maintenance, along with resources for residents to report concerns and request inspections.

Governing Body

The governing body for the City of Millcreek consists of a Mayor and a four-member city council. The city council serves as the city government performing executive functions of different natures. Members of this governing body are elected by the people.

DRAFT

Development Trends

The City of Millcreek adopted its first General Plan as of 2019, a major step forward in guiding the development of the city. Through conversations with the Millcreek community, seven vision themes for future development were identified: unique neighborhoods, vibrant gathering places, a thriving economy, great connections, health and environment, the outdoor lifestyle, and enhanced culture.

Jurisdiction-Specific Hazards and Risk

The Calculated Priority Risk Index (CPRI) is a comprehensive assessment tool for evaluating and prioritizing risks in a given context. It considers various factors, such as probability, impact, and urgency, to determine the level of risk associated with events or situations. The results for each hazard, including its risk factor (RF) value, are shown in Table 5. The results are based on the criteria in Table 6 and the equation that follows it. The CPRI helps organizations and individuals make informed decisions about risk management and mitigation strategies. It provides a systematic approach to identifying and addressing potential issues, allowing for a more efficient allocation of resources and proactive risk prevention. With the CPRI, stakeholders can prioritize their focus on the most critical risks, leading to more effective risk management and, ultimately, better outcomes.

Table 5: Calculated Priority Risk Index Values for the City of Millcreek

Type of Hazard Event	Probability of Future Events	Spatial Extent	Severity of Life/ Property Impact	Warning Time	Duration	Response Capacity	Risk Factor Value
Avalanche	4	1	2	4	2	1	2.6
Drought	4	4	2	1	4	1	2.8
Earthquake	3	4	4	4	3	2	3.4
Extreme Heat	4	4	3	1	3	1	3
Extreme Cold	3	4	2	1	3	1	2.4
Flooding	4	3	3	3	3	1	3.1
Landslide/ Slope Failure	2	1	2	4	1	2	2
Radon	4	4	2	1	4	2	2.9
Heavy Rain	4	3	2	3	1	1	2.6
High Wind	4	3	3	3	2	1	3
Lightning	4	2	2	4	1	1	2.6
Severe Winter Weather	4	3	2	2	2	1	2.6
Tornado	2	2	3	4	1	2	2.4
Wildfire	4	3	3	4	3	1	3.2
Dam Failure	2	2	3	2	2	3	2.4
Civil Disturbance	2	1	2	4	2	2	2.1

DRAFT

Type of Hazard Event	Probability of Future Events	Spatial Extent	Severity of Life/ Property Impact	Warning Time	Duration	Response Capacity	Risk Factor Value
Cyberattack	2	3	3	4	3	2	2.7
Hazardous Materials Incident (Transportation & Fixed Facility)	3	1	2	4	1	1	2.2
Public Health Epidemic/ Pandemic	3	4	3	1	4	1	2.8
Terrorism	2	1	3	4	2	1	2.3

Table 6: Criteria for the Calculated Priority Risk Index

Risk Index Factor	Degree of Risk Level		Criteria	Factor Weight for Degree of Risk Level
Probability of Future Events	1	Unlikely	Less than 1 percent probability of occurrence in the next year or a recurrence interval of greater than every 100 years.	30%
	2	Occasional	1 to 10 percent probability of occurrence in the next year or a recurrence interval of 11 to 100 years.	
	3	Likely	11 to 90 percent probability of occurrence in the next year or a recurrence interval of 1 to 10 years.	
	4	Highly Likely	91 to 100 percent probability of occurrence in the next year or a recurrence interval of less than 1 year.	
Spatial Extent	1	Limited	Less than 10% of the planning area could be impacted.	10%
	2	Small	10%–25% of the planning area could be impacted	
	3	Significant	25%–50% of the planning area could be impacted.	
	4	Extensive	50%–100% of the planning area could be impacted.	
Severity of Life/Property Impact	1	Negligible	Less than 5% of the affected area's critical and non-critical facilities and structures are damaged/destroyed. Only minor property damage and minimal disruption of life. Temporary shutdown of critical facilities.	30%
	2	Limited	More than 5% and less than 25% percent of property in the affected area is damaged/ destroyed. Complete shutdown of critical facilities for more than one day but less than one week.	

DRAFT

Risk Index Factor	Degree of Risk Level		Criteria	Factor Weight for Degree of Risk Level
	3	Critical	More than 25% and less than 50% of property in the affected area was damaged/destroyed. Complete shutdown of critical facilities for over a week but less than one month.	
	4	Catastrophic	Over 50% of critical and non-critical facilities and infrastructures in the affected area are damaged/destroyed. Complete shutdown of critical facilities for more than one month.	
Warning Time	1	Self-defined	More than 24 hours	10%
	2	Self-defined	12 to 24 hours.	
	3	Self-defined	6 to 12 hours.	
	4	Self-defined	Less than 6 hours.	
Duration	1	Brief	Up to 6 hours.	10%
	2	Intermediate	Up to one day.	
	3	Extended	Up to one week.	
	4	Prolonged	More than one week.	
Response Capacity	1	High	Significant resources and capability to respond to this kind of event; staff are trained, experienced, and ready.	10%
	2	Medium	Some resources and capability to respond to this kind of staff; some staff may be trained, experienced, and ready while others may need additional support.	
	3	Low	Limited resources and capability to respond to this kind of event; additional staff or staff training needed.	
	4	None	No resources and capability to respond this kind of event; additional outside support would be required.	

RISK FACTOR (RF) EQUATION

RF Value = [(Probability x 0.30) + (Spatial Extent x 0.10) + (Severity of Life/Property Impact x 0.30) + (Warning Time x 0.10) + (Duration x 0.10) + (Response Capacity x 0.10)]

Hazards with an RF value greater than or equal to 2.5 are considered high risk. Those with RF values of 2.0 to 2.4 are considered moderate risk hazards, and those with an RF value less than 2.0 are considered low risk. The highest possible RF value is 4.

DRAFT

Hazard Event History

Examining hazard event histories provides valuable insights to inform decision-making and help prioritize resources for risk prevention and response efforts. Table 7 lists the hazard events impacting the city of Millcreek since the 2019 plan update, as recorded in the Storm Events Database from the National Centers for Environmental Information.

Table 7: History of Hazard Events in the City of Millcreek

Type of Hazard Event	FEMA Disaster #	Date(s)	Damage or Impacts	Description
Avalanche		N/A	N/A	N/A
Drought		N/A	N/A	N/A
Earthquake		03/18/2020	Minor property damage and temporary power outages.	A 5.7 magnitude earthquake struck near the city of Magna on March 18, 2020. Millcreek, along with the rest of the Salt Lake Valley, experienced strong shaking, which caused property damage and temporary power outages.
Extreme Heat		N/A	N/A	N/A
Extreme Cold		N/A	N/A	N/A
Flooding				Floods have periodically impacted Millcreek, particularly during heavy spring runoff seasons. Although not causing extensive destruction, these events have stressed infrastructure and prompted local emergency responses in Millcreek and Neffs Canyon.
Landslide/ Slope Failure		N/A	N/A	N/A
Radon		N/A	N/A	N/A
Heavy Rain		N/A	N/A	N/A
High Wind		09/07/2020	Widespread damage to trees, power lines, and homes. Power outages, some lasting several days, affected hundreds of thousands of residents.	A severe windstorm hit Millcreek, on September 7–8, 2020. The storm brought hurricane-force winds exceeding 100 mph.
Lightning		N/A	N/A	N/A

DRAFT

Type of Hazard Event	FEMA Disaster #	Date(s)	Damage or Impacts	Description
Severe Winter Weather		N/A	N/A	N/A
Tornado		N/A	N/A	N/A
Wildfire		October 14, 2020	Neffs Canyon Fire burned 80 acres close to Millcreek.	Millcreek's proximity to the Wasatch Mountains places it at risk of wildfires, which have become increasingly frequent in Utah due to rising temperatures and dry conditions. Although there have been no reports of major wildfires in Millcreek itself in the past decade, nearby fires like the one in Neffs Canyon have posed risks to air quality and required readiness for potential evacuations.
Dam Failure		N/A	N/A	N/A
Civil Disturbance		N/A	N/A	N/A
Cyberattack		N/A	N/A	N/A
Hazardous Materials Incident (Transporta-tion & Fixed Facility)		June 18, 2024	HazMat spill in Millcreek caused road/TRAX line shutdowns and an evacuation.	The United Fire Authority responded when a 55-gallon barrel behind a building was producing white smoke.
Public Health Epidemic/ Pandemic	DR-4525	2020-2023	The local economy was affected by the lack of patrons in local businesses and social distancing measures that were needed to stop the spread of the virus.	The global pandemic of COVID-19 heavily impacted Millcreek, with public health measures, emergency planning, and community services being tested and strained during this period. Public health advisories, lockdowns, and social distancing measures were enacted to mitigate the virus's spread.
Terrorism		N/A	N/A	N/A

National Flood Insurance Program Summary

The city of Millcreek participates in the National Flood Insurance Program (NFIP). Table 8 displays statistics related to the NFIP. The city of Millcreek does not participate in the Community Rating System (CRS).

DRAFT

Table 8: National Flood Insurance Program Status for the City of Millcreek[2]

Initial FHBM Identified	Initial FIRM Identified	Current Effective Map Date	Adopted Date	Date Joined NFIP	Tribal
08/30/1977	12/18/1985	11/19/2021	2021	02/16/18	No

Table 9: National Flood Insurance Policies for the City of Millcreek

Community ID	Number of Losses	Total Net Payment	Active Policies	Total Coverage
490231	3	$20,627.98	131	$39,395,000

The city of Millcreek has designated the City Engineer as the Floodplain Administrator. The current Flood Damage Prevention Ordinance was adopted on 11/8/2021. The ordinance includes a freeboard requirement of 1 foot, meaning that the lowest flood floor must be built 1 foot above the base flood elevation. The current effective Flood Insurance Rate Map (FIRM) date is 11/19/2021. In addition to the current effective FIRM, Millcreek provides information on the new maps that are being developed for the Neff's Creek area. Millcreek also requires building permits, which are issued by the Building Department. Both the Building Permit application and the Engineering Review Checklist for projects include multiple opportunities to evaluate flood risk. Substantial damage/substantial improvement determinations are made through the permitting process. Structures that meet this requirement will be required to come into compliance with current codes, including the freeboard requirement.

Jurisdiction-Specific Vulnerabilities and Impacts

Table 10 provides information on the vulnerable assets in the city of Millcreek, including its critical facilities, highlighting the city's vulnerability to identified hazards. It also describes the potential impacts on the community arising from those vulnerabilities. Impacts are the consequences or effects of each hazard on the assets. By understanding the risks associated with these assets, local authorities can develop proactive strategies to mitigate vulnerabilities and ensure the safety and functionality of these important assets during hazard events. These data are invaluable for decision-making and prioritizing resources for emergency response and preparedness efforts, ultimately contributing to more effective risk management and greater resilience in the community.

Table 10: Jurisdiction-Specific Vulnerabilities and Impacts in the City of Millcreek

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
Avalanche	People	*Vulnerability:* Risk to Millcreek residents due to avalanche is low. Avalanche risk is primarily in the canyons. Slope and other conditions that generate avalanche are not typically present in Millcreek. *Impacts:* Residents who recreate in the canyons could be affected by an avalanche if conditions shift unexpectedly or if they do not heed avalanche warnings.

[2] FIRM = Flood Insurance Rate Map, FHBM = Flood Hazard Boundary Map

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Structures	*Vulnerability:* Risk to structures from avalanches is low but may affect residents of Millcreek if an avalanche were to occur in Millcreek Canyon, Neffs Canyon, or Big Cottonwood Canyon. *Impacts:* Residential neighborhoods in the eastern area of the city are not typically affected by avalanches but may be exposed to avalanche under unique conditions. Residences with poor design or with inadequate setback from natural chutes may be vulnerable to snow movement and heavy snow loading.
	Economic Assets	*Vulnerability:* Businesses in eastern Millcreek face a low risk from avalanches. *Impacts:* The probability of an avalanche impacting businesses is low. Avalanche can lead to temporary road closures which may disrupt commuting and recreation-based economic activity. If homeowners or business owners do not have an insurance policy to cover damage, it would significantly affect their ability to make repairs or rebuild.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Vegetation and wildlife on the slopes near Millcreek are vulnerable to damage from avalanches. *Impacts:* An avalanche could strip forested slopes and damage. habitats. There are historic buildings in Millcreek, but they are not located in areas where there would likely be damage from avalanche impact.
	Critical Facilities and Infrastructure	*Vulnerability:* No critical facilities were identified in areas of known avalanche risk, but transportation routes are potentially vulnerable. *Impacts:* Transportation routes could be affected by road closures following an avalanche, such as Millcreek Canyon Road and I-215. An avalanche could hinder access to Millcreek by emergency services.
	Community Activities	*Vulnerability:* Outdoor activities, especially recreation in the nearby canyons, would be impacted. *Impacts:* If access is cut off or if it is dangerous to reach them, there may be less visitation, which would impact the local economy.
Drought	People	*Vulnerability:* Drought could affect all residents of Millcreek. *Impacts:* Drought can limit the water supply for culinary water and landscape irrigation. Drought can affect outdoor recreation, especially in the canyons surrounding Millcreek. People who work or recreate outside may need to take frequent breaks if they are exposed to the sun and have limited water access.
	Structures	*Vulnerability:* All structures in Millcreek are vulnerable to drought. *Impacts:* Depending on the building material, it may be more difficult to cool structures if water is limited or during the warm summer months.
	Economic Assets	*Vulnerability:* All businesses are vulnerable to drought. *Impacts:* Local business owners may face restrictions or higher costs for water they need for cleaning, irrigation, growing food, etc. This could cause businesses to close or reduce their hours in the middle of the day when it is the warmest.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Vegetation, wildlife, and parks are vulnerable to drought. *Impacts:* Drought can cause soil erosion and alter wildlife patterns. In addition, local vegetation might not be able to grow. Any public parks

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		may be at reduced watering levels to conserve resources. Drought increases wildfire risk in the foothills.
	Critical Facilities and Infrastructure	*Vulnerability:* Critical facilities, including hospitals, fire, or police stations, schools, and city facilities, are vulnerable to drought. *Impacts:* Critical infrastructure that requires a significant amount of water to run or cool is vulnerable, especially if water is rationed. There could be increased costs for watering landscaping. It may be challenging for St. Mark's Hospital or other healthcare facilities to provide service to patients.
	Community Activities	*Vulnerability:* Outdoor recreation is vulnerable to drought. *Impacts:* Outdoor recreation in the canyons, at parks, or at golf courses would face significant challenges if there were a lack of water. They would not be able to irrigate those recreation areas, especially if there are restrictions placed on the amount of water used.
Earthquake	People	*Vulnerability:* All of the more than 63,000 residents in Millcreek are potentially vulnerable to earthquakes. The Salt Lake City segment of the Wasatch Fault traverses Millcreek City, and a moderate to large-scale earthquake could cause very strong or severe ground shaking. *Impacts:* People could be injured or killed from objects falling or being trapped in collapsed structures. The most vulnerable populations include the elderly, people with disabilities, and low-income residents who may lack resources to adequately prepare for or respond during an emergency.
	Structures	*Vulnerability:* All structures in Millcreek are vulnerable to earthquakes. Older buildings and homes built before modern seismic codes are particularly vulnerable. *Impacts:* Structures not built to withstand seismic events, such as unreinforced masonry buildings, are at risk of significant damage or collapse during an earthquake. Moderate to high liquefaction potential in the western area of the city may increase the vulnerability to structural damage following an earthquake.
	Economic Assets	*Vulnerability:* All businesses in Millcreek are vulnerable to earthquakes. *Impacts:* Earthquakes are likely to cause extensive economic losses. Businesses throughout the city could experience damage to their buildings and inventory. Damage to infrastructure can also disrupt the ability of businesses to remain in operation. Roads, rail transit lines, and utilities such as power, water, and communication systems are all vulnerable to damage from earthquakes, which disrupts economic activity. Earthquakes can disrupt businesses, damage commercial properties, and cause a loss of revenue for the city. Damage to infrastructure, such as roads and utility lines, could hinder economic recovery by delaying repairs and disrupting daily operations. Repair and recovery could be costly and may take months or years.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Historic buildings, 10 homes, and one district in Millcreek are listed on the National Register of Historic Places. *Impacts:* Historic buildings and landmarks often cannot withstand strong ground shaking and are at risk of damage or destruction, threatening the loss of heritage and cultural identity. These structures

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		often require specialized efforts for preservation and restoration following a disaster.
	Critical Facilities and Infrastructure	*Vulnerability:* Many critical facilities in the city could be affected, including City Hall, fire stations, the police station, hospitals, and schools. Vital services—including power, water, communication, and transportation networks—are vulnerable to earthquake damage. *Impacts:* A major earthquake could disrupt government operations and services, hindering emergency response efforts and recovery operations. I-215 is a critical transportation route through the city. Damage to bridges or other segments of the freeway may not only hinder travel on the freeway itself but also limit movement between the east and west areas of the city.
	Community Activities	*Vulnerability:* All community activities are vulnerable to earthquakes. *Impacts:* Earthquakes disrupt community routines, halting gatherings, events, and local services. Key community spaces like schools, parks, and local businesses would face closure or restricted access, which could disrupt social cohesion and recovery efforts.
Extreme Heat	People	*Vulnerability:* Extreme heat poses significant health risks to residents, particularly vulnerable groups like the elderly, young children, individuals with chronic illnesses, and those without access to cooling resources. *Impacts:* High temperatures can cause heat-related illnesses, such as heat exhaustion and heatstroke, which can be fatal if not properly managed. Figure 10 in Volume 1 indicates that Millcreek has a comparatively high percentage of individuals over age 65, which may indicate a higher vulnerability to heat-related illnesses. Residents will also be affected by increased energy costs due to demand for air conditioning or other cooling systems. In addition, extreme temperatures worsen air quality by raising ozone levels, which poses respiratory risks.
	Structures	*Vulnerability:* All structures are vulnerable to extreme heat. *Impacts:* Buildings, especially older ones, may lack modern insulation and air-conditioning systems, making them vulnerable to internal heat buildup. Prolonged exposure to extreme heat can also cause wear and tear on roofs and damage materials like asphalt.
	Economic Assets	*Vulnerability:* All businesses, particularly those with outdoor workers, are vulnerable to extreme heat. *Impacts:* Outdoor workers are vulnerable to heat-related illness. Businesses that depend on outdoor operations may be vulnerable to reduced productivity. Businesses may be affected by higher energy costs from cooling. High temperatures can impact outdoor workers, reducing productivity and increasing the risk of heat-related injuries. Prolonged heat waves can strain businesses, particularly those dependent on outdoor operations, and lead to increased energy costs for cooling. This places a financial strain on households and commercial establishments.
	Natural, Historic, and	*Vulnerability:* Outdoor cultural sites, activities, and historic buildings are vulnerable to heat waves.

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Cultural Resources	*Impacts:* Extreme heat can deter tourism and participation in outdoor activities. Historic buildings may suffer degradation due to constant exposure to heat, which can accelerate wear on materials and increase the cost of preservation.
	Critical Facilities and Infrastructure	*Vulnerability:* Infrastructure, such as power lines and road surfaces, is at risk during extreme heat. *Impacts:* High temperatures can lead to increased power consumption, risking power outages. The heat can also damage asphalt and rail lines, disrupting transportation on major roadways such as I-215. Damage to roadways can disrupt economic activity and limit the mobility of residents.
	Community Activities	*Vulnerability:* Community events and outdoor activities are vulnerable to extreme heat. *Impacts:* Extreme heat can curtail community events, as gatherings and festivals held outdoors might have to be rescheduled or canceled due to the health risks posed by high temperatures. This can lead to economic and social disruption of the community's normal activities and affect revenue.
Extreme Cold	People	*Vulnerability:* Extreme cold can affect the entire city. All residents are vulnerable to extreme cold events in Millcreek. Children, the elderly, and those experiencing homelessness are particularly vulnerable. *Impacts:* People are vulnerable to hypothermia and frostbite, especially the elderly, young children, and homeless populations without adequate shelter or heating. Approximately 5.9% of residents are under age 5 and 15.7% are over age 65. It is unknown how many individuals experiencing homelessness are in the city who may be vulnerable to cold.
	Structures	*Vulnerability:* All structures are vulnerable to extreme cold. *Impacts:* There is a risk of burst pipes and structural damage from ice buildup, and there might be a strain on heating systems.
	Economic Assets	*Vulnerability:* All businesses are vulnerable to extreme cold. *Impacts:* Businesses may experience increased heating costs, reduced outdoor productivity, and possibly temporary closures.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Historic buildings, outdoor cultural sites, and natural ecosystems are vulnerable to extreme cold. *Impacts:* Structures can experience ice damage, damage from burst water pipes, or a lack of heating infrastructure. Extreme cold can damage ecosystems and wildlife, causing plant die-offs and limiting forage for animal populations.
	Critical Facilities and Infrastructure	*Vulnerability:* Water systems and roads are vulnerable to extreme cold. *Impacts:* Water pipes may freeze and break, disrupting the water supply. Transportation networks are at high risk during freezing conditions.
	Community Activities	*Vulnerability:* Community events are vulnerable to extreme cold. *Impacts:* Outdoor events and community gatherings may be halted, impacting social functions and community cohesion.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
Flooding	People	*Vulnerability:* Millcreek runs through the city flood maps included in Volume 1 show areas of the city that are within the 1% and 0.2% annual chance of flood. Residents who live, work, or engage in recreational activities in these areas are at risk. *Impacts:* Flooding can lead to injury, displacement, and loss of homes.
	Structures	*Vulnerability:* Structures within flood hazard zones are vulnerable to flooding. *Impacts:* Water damage to homes and buildings is possible, especially those in flood-prone zones without proper elevation or floodproofing. Hazus results indicate that an estimated $45 million in structural losses is possible in Millcreek from a 1% annual chance flood.
	Economic Assets	*Vulnerability:* Businesses in flood hazard zones are vulnerable to flooding. *Impacts:* Commercial properties face flood damage, causing business closures and revenue loss. Hazus estimates almost $17 million in indirect/business interruption losses from a 1% annual chance flood.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Historic homes and ecosystems are vulnerable to flooding. *Impacts:* Historic sites are at risk of water damage to their structures and contents. Floodwaters can erode soil, degrade water quality, and damage ecosystems, affecting wildlife habitats.
	Critical Facilities and Infrastructure	*Vulnerability:* One fire station is located within the 1% and 0.2% annual chance flood zone and is at risk of flooding. Major transportation routes that intersect these 1% or 0.2% flood zones and are at risk of damage from flooding include I-215, Highland Drive, 1300 East, 700 East, and 3900 South, as well as numerous other roads. *Impacts:* Flooding of 3900 South could affect access to St. Mark's Hospital. Damage to roads and bridges can cause long-term disruptions for residents and businesses and can affect emergency response.
	Community Activities	*Vulnerability:* City facilities and activities are vulnerable to flooding. *Impacts:* Community centers and public spaces can become unusable, disrupting normal activities and events.
Landslide/ Slope Failure	People	*Vulnerability:* Areas on the east side of Millcreek are built in the foothills and could be affected by landslides and other slope failures. Some neighborhoods are built on alluvial fans or have moderate landslide susceptibility. *Impacts:* A landslide could cause injuries or fatalities to residents in these areas. Residents could be displaced from homes.
	Structures	*Vulnerability:* Homes and businesses in landslide-susceptible areas on the east benches are vulnerable to landslides. *Impacts:* Structures such as homes and businesses could sustain damage or collapse if a landslide/slope failure were to occur. The ability of residents or local business owners to rebuild depends on whether they have insurance or other funds.
	Economic Assets	*Vulnerability:* Businesses in eastern Millcreek are vulnerable to landslides.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		Impacts: Damage to businesses or closures due to transportation disruptions could cause economic losses. The local economy would be affected by road closures from a landslide, especially if this occurs near I-215.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Vegetation and wildlife are vulnerable to landslides. No historic sites were identified in susceptible areas. *Impacts:* Local vegetation and wildlife are at risk. Landslides can cause soil erosion.
	Critical Facilities and Infrastructure	*Vulnerability:* Transportation routes are vulnerable to landslides. No critical facilities were identified in susceptible areas, but they are vulnerable to transportation disruption. *Impacts:* I-215, a major transportation route through Millcreek, or the I-215/I-80 interchange could be damaged by a landslide. Numerous smaller roads in the Mount Olympus and Canyon Rim areas could potentially be damaged by landslides, which could limit access to residences. Critical infrastructure and facilities are at risk due to transportation disruptions, especially if essential services like police or fire departments cannot access the area in a timely manner.
	Community Activities	*Vulnerability:* Recreation access is vulnerable to landslides. *Impacts:* Outdoor recreation could be restricted following a landslide, especially if people engage in recreational activities in the canyons close to Millcreek. Millcreek Canyon Road could be closed, and access to recreation areas could be limited.
Radon	People	*Vulnerability:* Between 35 and 54% of homes tested in Millcreek have elevated radon levels, placing many residents at higher risk of lung cancer. *Impacts:* Radon can impact the health of the local population, causing cancer and respiratory problems. Many residents may not test for radon, making them unaware of dangerous levels. Increased awareness and public health initiatives are vital for protection
	Structures	*Vulnerability:* In Millcreek, 54% of homes have high radon test levels, according to the Utah Radon website (https://utahradon.org/). Structures themselves are not at risk from radon, but radon can accumulate in structures and occupants can be exposed. *Impacts:* If a business owner or homeowner does not have the money to complete radon mitigation, they are at risk of radon exposure.
	Economic Assets	*Vulnerability:* Businesses may be exposed, but losses are expected to be minimal. *Impacts:* People may avoid visiting locations with high radon levels, which may lead to economic losses.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Historic buildings are vulnerable to radon accumulation. *Impacts:* Historic buildings are at risk if they are not properly maintained or ventilated, or if there is insufficient funding to complete mitigation work. Local vegetation and wildlife are not typically impacted by radon, which disperses in open space.
	Critical Facilities and Infrastructure	*Vulnerability:* Critical facilities are vulnerable to radon accumulation.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		Impacts: Schools, fire stations, police stations, and city facilities could potentially accumulate unsafe radon levels, which would expose students, employees, or other occupants.
	Community Activities	*Vulnerability:* There is limited vulnerability to community events. *Impacts:* Indoor community activities could potentially expose people to radon. If people do not feel safe entering a building, they might stay home or go elsewhere, which may disrupt economic activities.
Heavy Rain	People	*Vulnerability:* People near waterways, drainage systems, or low-lying areas are vulnerable to heavy rain. *Impacts:* People near drainage systems and waterways may be at risk of injury or drowning during flash flooding from heavy rain. Residences could be damaged by flooding and occupants may be displaced. Flash flooding places those traveling on roadways in danger, particularly if they choose to drive through floodwaters. Vehicles can be carried away in floodwaters and occupants injured or killed.
	Structures	*Vulnerability:* All structures can be damaged by heavy rain, particularly those near creeks or in low-lying areas. *Impacts:* Heavy rain can lead to water infiltration and damage to roofs, basements, and poorly sealed buildings.
	Economic Assets	*Vulnerability:* Businesses are vulnerable to losses from heavy rain. *Impacts:* Outdoor workers may be unable to work, and outdoor operations or projects may be delayed by heavy rain or related flooding. Fewer people may visit retail businesses during and following heavy rain.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Soil, slope stability, water resources, and historical sites are vulnerable to heavy rain. *Impacts:* Intense rainfall can cause soil erosion and water pollution, harming local ecosystems. Water damage can affect archives, historical structures, and outdoor cultural sites.
	Critical Facilities and Infrastructure	*Vulnerability:* Drainage/stormwater systems and roads are vulnerable to heavy rain. *Impacts:* Drainage systems can be overwhelmed, and floodwaters may begin to accumulate on roadways or other areas. Roads can be inundated or washed out, causing transportation disruptions. Transportation delays or road closures may slow emergency response.
	Community Activities	*Vulnerability:* Outdoor events and recreation are vulnerable to heavy rain. *Impacts:* Rain can cancel or delay outdoor events and social activities, leading to economic losses.
High Wind	People	*Vulnerability:* All of Millcreek is vulnerable to strong winds, including downslope winds, and all residents are at risk. *Impacts:* People could be injured by flying debris, falling tree limbs, and structural collapses. Residents in in mobile homes and older buildings may be more vulnerable to injury because these buildings may be more likely to be damaged. Outdoor workers and those without immediate shelter may be especially vulnerable. Power outages may place those who rely on medical equipment at risk.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		Winds pose hazards for pedestrians and drivers and can worsen air quality by stirring up dust and pollutants, affecting residents' health.
	Structures	*Vulnerability:* All structures in Millcreek are vulnerable to high winds. *Impacts:* High winds can damage roofs, windows, and siding, particularly in buildings not designed to withstand strong gusts such as sheds, carports, or other accessory structures. Older buildings may be more susceptible to damage. Millcreek has one mobile home park. These homes are at higher risk of damage from high wind.
	Economic Assets	*Vulnerability:* All businesses, particularly those with outdoor inventory, are vulnerable to high winds. *Impacts:* Outdoor businesses and agriculture suffer losses from wind damage to crops, signs, storefronts, and outdoor infrastructure. Extended power outages and structural repairs may lead to operational downtime and lost revenue. Recurrent wind-related damage can also drive up insurance premiums for both commercial and residential property owners.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Parks, trees, habitats, and historic buildings are vulnerable to high winds. *Impacts:* Historic buildings and monuments are susceptible to wind damage if not properly maintained or retrofitted for high wind events. Strong winds can uproot mature trees in parks or in open spaces, affecting recreational use. Strong winds can damage trees, destabilize soils, and disrupt animal habitats.
	Critical Facilities and Infrastructure	*Vulnerability:* Power lines, utility poles, transformers, substations, and communications towers are at high risk of damage from high wind and blowing debris. *Impacts:* Damage to these assets can lead to widespread service outages. Roads and transit systems could be blocked by debris, which can contribute to economic losses if people cannot access businesses and workplaces. Emergency responders may be delayed by road closures and communication disruptions.
	Community Activities	*Vulnerability:* Outdoor events are vulnerable to high winds. *Impacts:* Outdoor events are often canceled, and public safety measures must be enacted quickly. People at outdoor events may be unable to find shelter in fast-moving storms and could be injured.
Lightning	People	*Vulnerability:* Lightning presents a serious risk throughout Millcreek during summer thunderstorms, especially for individuals engaged in outdoor activities such as hiking, cycling, or team sports in Millcreek's foothills and open spaces. Outdoor workers may lack adequate shelter from lightning. Unhoused populations are also at high risk. *Impacts:* People can be injured or killed by direct lightning strikes or ground currents.
	Structures	*Vulnerability:* All structures in Millcreek are vulnerable to lightning. *Impacts:* Lightning can strike buildings directly or cause fires through indirect contact, especially in homes with metal roofing or poor grounding. Outbuildings, barns, and utility sheds are particularly vulnerable. Surges caused by strikes can damage appliances and internal electrical systems if protective devices are not in place.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Economic Assets	*Vulnerability:* All businesses, particularly those with outdoor equipment or inventory, are vulnerable to lightning. *Impacts:* Outdoor businesses face operational delays and potential fire hazards from lightning-induced fires. Power surges and outages resulting from lightning can interrupt business operations, damage electronic equipment, and result in costly repairs or data loss. Businesses that rely on uninterrupted power or internet access may suffer immediate financial setbacks. The economic burden includes increased insurance claims and repair costs.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Parks and the natural environment are vulnerable to lightning. *Impacts:* Lightning strikes can start wildfires, which threaten forests and wildlife habitats. The eastern area of Millcreek is at high risk of wildfire due to the proximity of homes and other structures to undeveloped forest land. Lightning can also damage public parks and open spaces where residents engage in recreational activities, including Millcreek Canyon.
	Critical Facilities and Infrastructure	*Vulnerability:* Utility facilities and all critical facilities are vulnerable to lightning. *Impacts:* Lightning strikes on power substations, communication towers, or utility poles can lead to outages. Power outages and damage to communications infrastructure can delay emergency response. Government offices, healthcare facilities such as St. Mark's Hospital, and schools may face closures if they lack backup power or if backup systems fail to activate.
	Community Activities	*Vulnerability:* Outdoor events are vulnerable to lightning. *Impacts:* Sporting events, festivals, and outdoor gatherings may be disrupted or canceled for safety. Sudden storms may cause hazardous conditions for people attending outdoor events, particularly if they are not able to quickly access shelter.
Severe Winter Weather	People	*Vulnerability:* All Millcreek residents are vulnerable to severe winter weather. *Impacts:* All residents are at increased risk of injuries due to slips and falls and health impacts from prolonged exposure to cold. Older residents or people with disabilities may be particularly vulnerable to injury. People can be injured in car accidents while driving in severe winter weather conditions. People who rely on home health or other home delivery services may be at risk due to travel delays.
	Structures	*Vulnerability:* All structures are vulnerable to severe winter weather. *Impacts:* Roofs, particularly flat or poorly maintained ones, are vulnerable to collapse under heavy snow. Walkways and parking areas must be cleared of snow to prevent injury.
	Economic Assets	*Vulnerability:* All businesses are vulnerable to severe winter weather. *Impacts:* Businesses may have fewer customers during severe weather and earn less revenue as a result. Snow disrupts transportation and delivery services, affecting businesses that rely on shipping and commuting.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Natural, Historic, and Cultural Resources	*Vulnerability:* Historic sites, plants, and animals are vulnerable to severe winter weather. *Impacts:* Snow and ice can damage the roofs of historic buildings and outdoor cultural sites not built for heavy winter weather. Heavy snow accumulation can impact plant life and displace animals, altering local ecosystems.
	Critical Facilities and Infrastructure	*Vulnerability:* Roads and power distribution networks are vulnerable to severe winter weather. *Impacts:* Roads and power lines are particularly vulnerable to snow buildup, causing transport delays and power outages. Essential services like police and fire departments could be slow to respond. Neighborhoods in the eastern foothills of the city often receive higher snow accumulation. Access in and out of neighborhoods can be difficult during heavy snow.
	Community Activities	*Vulnerability:* Community events are vulnerable to severe winter weather. *Impacts:* Community activities may be delayed or canceled due to severe winter weather. Community centers may serve as warming stations, but other activities can be halted due to travel difficulties.
Tornado	People	*Vulnerability:* Tornadoes are rare in Millcreek due to the proximity to the Wasatch Mountains. Tornadoes could occur in the western part of the city in the valley, and all residents in proximity are vulnerable. *Impacts:* Similar to downslope and other high wind events, residents are at risk of injury or death from flying debris and collapsing buildings, especially those in mobile homes or weak structures. Individuals without access to basements or similar storm shelters are more vulnerable to injury. Older residents and those with limited mobility or other disabilities are also vulnerable. Outdoor workers or others without shelter are at high risk of injury.
	Structures	*Vulnerability:* Tornadoes are more likely to occur farther away from the Wasatch mountains. All structures in this area are vulnerable. *Impacts:* Tornadoes can cause extensive damage to homes, commercial buildings, and public facilities. Roofs may be torn off, windows shattered, and walls damaged by the wind or by blowing debris. Mature trees can be toppled and land on homes or vehicles. Mobile homes and other structures that are not firmly anchored are at extreme risk.
	Economic Assets	*Vulnerability:* All businesses in or near a tornado path are vulnerable to damage from tornadoes. *Impacts:* Significant property damage disrupts businesses, causing revenue loss and long-term rebuilding. Tornado damage can have long-lasting impacts on the local economy. Retail businesses can experience significant structural damage, inventory loss, and losses from operational downtime due to damage or power outages. Power and transportation interruptions can contribute to lost revenue.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Trees, other vegetation, and historic structures are vulnerable to tornadoes.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		Impacts: Tornadoes can uproot trees and destroy wildlife habitats, impacting local biodiversity. Tornadoes can destroy historic structures and monuments that are not reinforced.
	Critical Facilities and Infrastructure	*Vulnerability:* Essential services in Millcreek—including power distribution lines, substations, and communications systems—are susceptible to tornado damage. Roads, hospitals, and public safety facilities are also vulnerable. *Impacts:* Downed infrastructure can leave neighborhoods and business corridors without electricity, internet, or water service. Major roadways such as I-215, 3900 South, 1300 East, and Highland Drive could be blocked by debris. Traffic signals, public safety buildings, St. Mark's Hospital, and schools may require emergency repairs to remain functional.
	Community Activities	*Vulnerability:* All community events are vulnerable to tornadoes. *Impacts:* Public gatherings and services are halted during and after a tornado. Tornadoes can disrupt everyday life and halt scheduled activities. Public schools and city-owned facilities may need to close for inspections or repairs, while parks and community centers could be temporarily unsafe. Events such as farmers markets, sports tournaments, and local festivals may be postponed or canceled, reducing opportunities for social engagement and community support.
Wildfire	People	*Vulnerability:* Much of the eastern area of Millcreek is in the wildland-urban interface (WUI), due to the proximity of neighborhoods to undeveloped, forested land. Residents in the WUI are at direct risk of fire, smoke inhalation, and evacuation. *Impacts:* Wildfire can result in injury or death if people are unable to flee in time. Older residents and those with access or functional needs may face difficulty if evacuation is needed. Older and younger residents and those with underlying pulmonary or cardiac health conditions may face serious health consequences from poor air quality.
	Structures	*Vulnerability:* Hundreds of residences in eastern Millcreek, such as Mount Olympus and Canyon Rim, are near the WUI and are at risk of damage from wildfire. Homes without defensible space are highly susceptible to fire damage. *Impacts:* Homes and businesses can be damaged or destroyed by wildfire. Wind-blown embers can start spot fires and damage structures not immediately in the WUI. Structures can also be damaged by secondary hazards, such as post-fire debris flows.
	Economic Assets	*Vulnerability:* Businesses throughout Millcreek, but particularly in the eastern part of the city closer to the WUI, are vulnerable to wildfire. Impact: Businesses in fire zones may suffer structural damage or closure due to poor air quality or may be affected by evacuations. Those not directly affected by fire may see a decline in customer visits and revenue during and following a wildfire.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Natural ecosystems, water, vegetation, wildlife, and historic sites are vulnerable to wildfire. *Impacts:* Wildfires devastate forests by destroying vegetation, displacing wildlife, and altering natural landscapes. Wildfire removes

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		surface vegetation, and intense heat can lead to hydrophobic soils, which can increase surface runoff and erosion in burned areas. The risk of debris flow is high following a wildfire, which can cause further damage to natural resources and waterways, as well as additional damage to structures downslope. Fire can destroy historic landmarks and artifacts, especially those in rural or wildland areas.
	Critical Facilities and Infrastructure	*Vulnerability:* Utility lines and roads are vulnerable to wildfire. *Impacts:* Utility lines, such as electrical transformers and transmission lines, can be damaged by fires. Roads may be closed due to flames, smoke, fallen trees, or evacuation facilitation. Emergency services may be overwhelmed. Many of the roads in the eastern foothills are dead end spur roads which can limit the ability of residents to evacuate. Narrow or winding roads can also make it difficult for some firefighting vehicles to access affected areas.
	Community Activities	*Vulnerability:* Outdoor events are vulnerable to wildfire. *Impacts:* Outdoor events may be canceled due to safety concerns and poor air quality. Workplaces may be closed for days or weeks due to evacuation and/or damage.
Dam Failure	People	*Vulnerability:* One high hazard and two significant hazard dams are located within Millcreek. In addition, Millcreek is vulnerable to dam failure from dams upstream. A small area of northern Millcreek is within the inundation boundary for Little Dell Reservoir. Southern portions of Millcreek could be affected by dam failure at Lake Mary-Phoebe or Twin Lakes dams in Big Cottonwood Canyon. All residents within dam inundation boundaries are at risk. *Impacts:* Dam failure from high hazard dams indicates immediate danger to life due to sudden flooding, particularly for those living downstream of dams. Residents are at risk of injury or displacement from flooding caused by significant hazard dams.
	Structures	*Vulnerability:* Potentially hundreds of structures, including homes and businesses, are located within dam failure inundation boundaries and are at risk of damage in Millcreek. *Impacts:* Homes and businesses downstream face destruction from rapid flooding. Millcreek is vulnerable to failure from significant hazard dams, meaning these dams have the potential to cause damage to structures and infrastructure if they were to fail.
	Economic Assets	*Vulnerability:* Businesses in dam inundation boundaries are vulnerable to dam failure. *Impacts:* Flooded commercial properties can lead to prolonged business interruptions, revenue losses, and costly rebuilding.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Plants and habitat are vulnerable to dam failure. *Impacts:* Dam failure can result in catastrophic flooding, disrupting ecosystems and potentially destroying habitats. Soil, trees, and other plants, particularly in riparian areas, can be washed away.
	Critical Facilities and Infrastructure	*Vulnerability:* Roads, bridges, and utilities in the path of floodwaters might be damaged or completely fail. *Impacts:* The I-215/I-80 interchange near Parley's Canyon is within the inundation boundary for Little Dell Reservoir and could be damaged.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		Other roads may become impassable, and emergency services may be unable to reach people. Flooding could also damage electrical power or communication infrastructure and could lead to service outages.
	Community Activities	*Vulnerability:* Events and city services are vulnerable to disruption due to dam failure. *Impacts:* Community evacuation and loss of local resources due to fam failure can disrupt normal activities and social services.
Civil Disturbance	People	Risk of injury from violent confrontations, particularly in areas of concentrated protests or riots.
	Structures	Businesses and public buildings face damage from vandalism, looting, and arson.
	Economic Assets	Widespread property damage impacts local businesses and financial stability.
	Natural, Historic, and Cultural Resources	Public monuments and government buildings can be damaged during disturbances. Parks and public natural areas might have minimal direct impact, but they might be closed or restricted during unrest.
	Critical Facilities and Infrastructure	Key transport routes and government facilities may be targeted or blocked.
	Community Activities	Public services and events may be halted or rescheduled due to security concerns.
Cyberattack	People	Personal information and financial data are at risk, affecting public trust and security.
	Structures	Building security systems can be hacked into, compromising critical infrastructure and local businesses.
	Economic Assets	Businesses are exposed to financial losses and data breaches, impacting operations and trust.
	Natural, Historic, and Cultural Resources	Digital archives and records can be compromised or lost in a cyberattack.
	Critical Facilities and Infrastructure	Power grids, water systems, and communications networks face risks of hacking and disruption.
	Community Activities	Disrupted services and loss of public trust impact community services and governmental functions.
Hazardous Materials Incident (Transporta-tion & Fixed Facility)	People	Direct exposure risks include respiratory issues and chemical burns, with vulnerable populations being the most at risk.
	Structures	Contamination can damage or render structures unusable without extensive cleanup.
	Economic Assets	Businesses in affected areas face closures and costly decontamination processes.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Natural, Historic, and Cultural Resources	Sites in contamination zones are at risk of long-term damage. Hazardous spills can contaminate soil and water sources, harming plants, animals, and entire ecosystems.
	Critical Facilities and Infrastructure	Water supplies and transportation routes can be impacted, leading to service shutdowns.
	Community Activities	Disruption of public services and events is common due to safety and evacuation measures.
Public Health Epidemic/ Pandemic	People	Health risks are widespread, particularly for elderly and immunocompromised individuals.
	Structures	Limited direct impact, but public buildings may require modifications for infection control. This can include social distancing, turning people away if they have a fever, or limiting the number of people in a building.
	Economic Assets	Extended closures and reduced operations lead to economic losses for businesses and public services.
	Natural, Historic, and Cultural Resources	Historical or cultural resources could be affected by reduced tourism. People may choose to stay home or avoid public areas, which impacts revenue.
	Critical Facilities and Infrastructure	Healthcare systems and public services are strained, affecting service availability.
	Community Activities	Events are postponed or moved online, reducing social interactions and community engagement.
Terrorism	People	Threat to public safety and psychological impacts on communities.
	Structures	Key targets include government buildings, public spaces, and transportation hubs.
	Economic Assets	Major financial impacts from property damage, heightened security measures, and loss of consumer confidence.
	Natural, Historic, and Cultural Resources	Certain types of attacks, like those involving explosives or chemicals, could have damaging effects on local environments. Terrorist attacks could target significant historical landmarks, causing irreversible loss of cultural heritage.
	Critical Facilities and Infrastructure	Essential services and public utilities are common targets, affecting large populations.
	Community Activities	Public fear and security concerns lead to event cancellations and changes in social behavior.

Jurisdiction-Specific Changes in Vulnerability

Hazard events can impact communities, infrastructures, and ecosystems. The severity of these impacts can be influenced by climate change, population patterns, and land use developments. Understanding

these factors is crucial for the city of Millcreek to develop a resilient community and minimize the impacts of hazards. Table 11 displays the unique changes within the community and the related effects on each identified hazard affecting the city of Millcreek.

DRAFT

Table 11: Jurisdiction-Specific Changes in Vulnerability in the City of Millcreek

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
Avalanche	Higher temperatures can lead to more rain, destabilizing snowpack and increasing the risk of wet avalanches. In addition, changes in snowfall can cause denser snow layering on slopes, making them more prone to sliding.	Avalanches can influence population patterns by deterring people from moving to or remaining in high-risk areas, leading to decreased density in these locations. The threat of avalanches prompts many to seek safer environments in urban or lower-risk regions. In addition, when avalanches occur, they can disrupt infrastructure, causing residents to relocate.	Development in Millcreek since the previous hazard mitigation plan has not increased avalanche risk. Avalanche risk comes from the Wasatch Mountains to the east of Millcreek and development has been minimal in proximity to the Wasatch Mountains.	Decreased
Drought	Climate change affects drought incidents by altering precipitation patterns and increasing temperatures. Warmer weather can lead to longer dry periods and more severe droughts, while changes in rainfall can reduce snowpack in nearby mountains, crucial for summer water supply. Higher temperatures also increase evaporation rates, further straining local water resources.	Drought can significantly influence population patterns by impacting economic opportunities and the quality of life. Water scarcity often leads to reduced agricultural productivity, prompting residents to migrate to areas with more stable job prospects. Increased water costs can make living less affordable, driving some residents away. Conversely, efforts to address drought, such as sustainable development or improved water management, may attract newcomers, resulting in changes in the community's demographic composition over time.	Increasing development throughout the City will continue to put strain on Millcreek's water sources.	Increased
Earthquake	Rising temperatures can lead to glacial melting, which affects pressure on tectonic plates and may trigger	Earthquakes can significantly alter population patterns by prompting residents to leave for safer areas after a seismic event. This	Development in Millcreek, much of which is infill development, has not substantially increased earthquake risk.	Stayed the same

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	seismic activity through isostatic rebound. In addition, increased rainfall and flooding can erode soils, weakening structural integrity and heightening vulnerability during earthquakes. Although the direct links between climate change and earthquakes are still under investigation, environmental effects may impact the region's seismic risk.	migration can lead to changes in population density and attract new residents and businesses during the rebuilding process. The perception of the area as a safe place to live may shift, impacting long-term demographics, as some residents return to rebuild while others relocate permanently.		
Extreme Heat	Climate change significantly impacts extreme heat by increasing the frequency and intensity of heat waves. Rising global temperatures lead to longer and hotter summers, affecting residents and local infrastructure while heightening health risks, especially for vulnerable populations. Urban heat islands resulting from reduced vegetation and extensive pavement further amplify these effects.	Residents may relocate due to damaged homes or safety concerns. Some may move to areas perceived as safer or seek better job opportunities elsewhere. The economic impact and infrastructure damage can also make certain neighborhoods less desirable, leading to shifts in demographics and the socioeconomic landscape as new residents with different backgrounds move in.	As Millcreek becomes denser around transit hubs through infill development, the possibility of higher temperatures during extreme heat events increases.	Increased
Extreme Cold	By increasing the intensity of winter storms. Higher atmospheric temperatures allow for more moisture, resulting in heavier snowfall and potentially lower temperatures during these	By driving some residents to relocate to warmer areas. Harsh winters can hinder economic activities and deter new residents and businesses, influencing housing demand and the attractiveness of certain	Increased growth of commercial and residential developments in Millcreek increases energy demand during extreme cold events, stressing the electrical grid.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	events. In addition, fluctuations in weather patterns may disrupt seasonal cycles, leading to unpredictable periods of extreme cold mixed with warmer spells.	neighborhoods. This may disproportionately affect lower-income families, leading to changes in demographics and socioeconomic stratification in the community.		
Flooding	Higher temperatures increase the frequency and intensity of extreme weather events and alter precipitation patterns. They lead to more intense rainstorms and accelerated snowmelt from nearby mountains, raising water levels in rivers and streams. This combination raises the risk of flooding, especially in areas with inadequate drainage and urban development in flood-prone zones, heightening the potential for damage to homes and infrastructure.	Flooding can significantly alter population patterns by displacing residents from affected areas, leading them to seek shelter elsewhere. This may cause a population decline where flooding occurs, as individuals might hesitate to return due to ongoing risks or property damage. As neighborhoods become less desirable, people may migrate to safer areas, changing demographic trends and putting pressure on housing in those regions. Over time, these shifts can influence urban planning and development, as local governments address flooding risks and changing population needs.	Development has been outside of the 100-year flood zone, but increased infill development and density may lead to an increase in ponding and pluvial flooding.	Decreased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
Landslide/ Slope Failure	Climate change increases the risk of landslides through heavier rainfall and temperature fluctuations. Intense rain saturates soil, destabilizing slopes, while freeze–thaw cycles weaken the ground. Changes in vegetation can also reduce stability, leading to a higher potential for landslides.	Landslides and slope failures can impact population patterns by making some areas unsafe, leading to displacement and lower property values. This prompts residents to move to safer regions, thereby increasing density in more stable areas. Concerns about future landslides also may deter newcomers from high-risk zones, shaping long-term demographic trends.	Development has not increased the risk of landslides in Millcreek.	Increased
Radon	Climate change can affect radon levels by altering soil temperatures and moisture conditions. Higher temperatures may increase radon emissions from the ground, while heavy rainfall can change groundwater and soil saturation, impacting radon migration into buildings.	Radon exposure can influence population patterns as increased health awareness may drive families to move away from areas with high radon levels. This shift could particularly affect vulnerable groups, changing demographics and demand in the housing market. Homes with lower radon levels may become more sought after, and public health campaigns can encourage community action, making previously undesirable areas more attractive once mitigation measures are implemented.	Development has not increased the risk of radon exposure in Millcreek.	Decreased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
Heavy Rain	Climate change increases the frequency and intensity of heavy rain, as higher temperatures allow the atmosphere to hold more moisture. This leads to stronger storms, flash flooding, and inundated drainage systems.	Heavy rain can shift population patterns by pushing residents out of flood-prone areas and attracting them to safer neighborhoods. Frequent flooding may lead to evacuations and economic disruptions, prompting relocations. Over time, ongoing heavy rains can affect housing demand and community stability, altering the city's population distribution.	Increased impervious surfaces from infill development across Millcreek could contribute to ponding and other pluvial flooding.	Increased
High Wind	Climate change affects high winds by altering atmospheric patterns and increasing extreme weather events. Rising temperatures may lead to more substantial, unpredictable winds and more frequent thunderstorms, posing risks to infrastructure and air quality.	High winds can alter population patterns by making certain areas less desirable. Frequent damage may drive residents to safer neighborhoods, deter newcomers, and slow growth in affected regions.	Development in Millcreek has not increased the risk of high winds.	Increased
Lightning	Climate change increases temperatures and alters precipitation, leading to more intense thunderstorms and frequent lightning strikes. Urbanization can enhance this effect, posing risks to public safety and infrastructure.	Lightning can influence population patterns by causing property damage and wildfires, leading some residents to relocate. Areas with higher lightning activity may deter new residents, while safer locations could increase migration as people seek protection from severe weather.	Development in Millcreek has not increased the risk of lightning strikes.	Increased
Severe Winter Weather	Climate change impacts heavy snow and blizzards by altering precipitation patterns. Higher temperatures can lead to	Increased population equals an increased number of people needing to get to work and quicker snow removal.	Increased density in places like Meadowbrook Station and Olympus Hills Center introduces new risk to Millcreek from heavy snow events, including changes	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	more rain than snow, affecting snowpack levels—additionally, increased storm intensity results in heavier, more unpredictable snowfall.	Heavy snow or blizzards can impact population patterns by influencing where people live and work. Transportation disruptions may lead residents to seek housing closer to jobs, increasing density in some areas while depopulating others. Families might also avoid regions with frequent heavy snowfall, shifting demand to milder areas. Over time, these trends can alter community demographics and economic activity, prompting adjustments in city planning and resource allocation.	in plowing, rescues, and evacuations.	
Tornado	Climate change may increase the frequency and intensity of tornadoes. Higher temperatures lead to more moisture in the air, creating conditions for severe thunderstorms. Changes in wind patterns and precipitation can also heighten tornado risks, resulting in more destructive storms and greater threats to infrastructure and communities.	Tornadoes can influence population patterns by prompting residents to move to safer areas after damage occurs. This can decrease density in affected neighborhoods while increasing the demand for housing in safer regions. New residents may also move in for recovery opportunities, altering demographics. Over time, repeated tornado threats might push long-term residents to areas with better disaster preparedness, reshaping the city's population distribution.	Increased development slightly raises risks of tornado damage in Millcreek.	Increased
Wildfire	By raising temperatures and creating drier conditions, prolonged droughts lead to more dry vegetation, which serves as fuel for fires.	Displaced individuals often seek safer areas, shifting demographics, while declining property values might deter newcomers. Conversely, some	Developments in east Millcreek, like Olympus Hills Center, are adjacent to a high-risk fire area and therefore are at slightly higher risk themselves.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	Erratic seasons extend the growing period, while more lightning strikes can ignite wildfires. These factors heighten the threat to ecosystems and community safety.	may be drawn to rebuilding efforts, impacting long-term growth and community dynamics.		
Dam Failure	Climate change raises the risk of dam failure by causing heavier rainfall and rapid snowmelt. These changes can overwhelm dams and compromise their integrity, highlighting the need for urgent safety assessments and upgrades to protect communities downstream.	Dam failure can impact population patterns by displacing residents and altering demographics. Evacuations can lead to an influx in safer areas, while destruction may deter new residents and contribute to population decline. Fear of future disasters may also prompt remaining individuals to relocate, changing the community's composition and affecting population density and economic activity.	Development in Millcreek has not increased the risk of dam failure.	Increased
Civil Disturbance	Climate change can increase civil disturbances by intensifying environmental stresses and social tensions. Rising temperatures may lead to droughts, wildfires, and poor air quality, particularly affecting vulnerable communities. Resource scarcity, especially water, can spark conflicts and protests. In addition, an influx of migrants from harder-hit areas may strain local resources, further	By encouraging residents to move for safety, leading to outflows and new arrivals. These events can reveal social issues, impacting community dynamics, employment, and property values, ultimately reshaping demographics and social cohesion.	Development in Millcreek has not increased the risk of civil disturbance.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	escalating tensions. This cycle of unrest is driven by the impacts of climate change on the environment and community dynamics.			
Cyberattack	Possible attack on the industry, which is seen as producing large amounts of greenhouse gases and burning fossil fuels. Climate change can heighten cyberattack risk by increasing vulnerabilities during extreme weather. Disruptions like power outages offer cybercriminals opportunities, but focusing on emergency responses can weaken cybersecurity measures. As organizations adopt new technologies to cope with climate impacts, they may unintentionally introduce additional vulnerabilities.	Cyberattacks can change population patterns by eroding trust in essential services. Compromised systems may cause residents to leave due to safety concerns, while high-profile incidents can deter businesses, leading to job losses. This perception of vulnerability may also make the city less appealing to newcomers, resulting in demographic shifts and affecting local development.	Development in Millcreek has not increased the risk of cyberattack.	Increased
Hazardous Materials Incident (Transportation & Fixed Facility)	Climate change elevates the risk of hazardous materials incidents by increasing extreme weather events like heavy rain and wildfires. These events can breach storage tanks and heighten material volatility. Vulnerable infrastructure can lead to more spills or accidents, while climate shifts may	By causing evacuations and temporary declines in density. In the long run, unsafe areas may deter new residents, affecting growth and diversity. In addition, negative perceptions can lower property values and economic prospects, leading families to relocate, which impacts local demographics.	Development in Millcreek has not increased the risk of hazard materials incidents.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	introduce new challenges for managing hazardous substances and public health.			
Public Health Epidemic/ Pandemic	By increasing the spread of vector-borne diseases and raising the risk of waterborne illnesses due to flooding or drought. Worsening air quality can also exacerbate respiratory conditions like asthma, especially in vulnerable populations.	By prompting migration for safety and better healthcare. Vulnerable groups may move to areas with improved services, while economic instability can drive people to seek new employment opportunities. In addition, restrictions like quarantine measures can limit movement and social interactions, reshaping the community's demographics and impacting local economies.	Development in Millcreek has not increased the risk of a pandemic/epidemic.	Increased
Terrorism	Terroristic activity is sometimes centered around climate change. Climate change impacts terrorism incidents by creating conditions of resource scarcity and social unrest. Increased competition for essential resources, such as water, can fuel tensions, making communities more vulnerable to extremist ideologies. Extreme weather events may disrupt social order and infrastructure, offering terrorist groups opportunities to exploit crises. In addition, climate-driven population	Terrorism incidents can alter population patterns by instilling fear and prompting residents to relocate to perceived safer areas, resulting in demographic shifts and potential declines in property values. Some neighborhoods may see an outflow of residents, while others could experience an influx of people seeking refuge from violence. In addition, increased security measures may deter businesses and residents from certain locations, leading to long-term changes in population density and urban development patterns.	Development in Millcreek has not increased the risk of a terrorism incident.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	displacement can heighten tensions in receiving areas, raising the risk of domestic terrorism. Law enforcement's focus on climate-related challenges can also limit its capacity to address terrorism threats. Ultimately, while climate change may not directly cause terrorism, its effects can create an environment conducive to extremist activities.			

DRAFT

Additional Public Involvement

The City of Millcreek offered several opportunities for public involvement and participation. Figure 1 provides examples of public outreach.

Figure 1: Social Media Post for the Survey (*left*) and the Draft Plan Review (*right*)

Plan Integration

Incorporating the underlying principles of the Hazard Mitigation Plan and its recommendations into other plans is a highly effective and low-cost way to expand their influence. All plan participants will use existing methods and programs to implement hazard mitigation actions where possible. As previously stated, mitigation is most successful when it is incorporated into the day-to-day functions and priorities of government and public service. This plan builds on the momentum developed through previous and related planning efforts and mitigation programs, and it recommends implementing actions where possible through these other program mechanisms. These existing mechanisms include the following:

- Regularity Capabilities
- Administrative Capabilities
- Fiscal Capabilities

Respective planning stakeholders will conduct implementation and incorporation into existing planning mechanisms and will be done through the routine actions of:

- Monitoring other planning/program agendas
- Attending other planning/program meetings

- Participating in other planning processes; and
- Monitoring community budget meetings for other community program opportunities.

The successful implementation of this plan will require constant and vigilant review of existing plans and programs for coordination and multi-objective opportunities that promote a safe, sustainable community. Regular efforts should be made to monitor the progress of mitigation actions implemented through other planning mechanisms. Where appropriate, priority actions should be incorporated into planning updates. Table 12 lists existing planning mechanisms in which the Hazard Mitigation Plan has been integrated.

Table 13 lists the opportunities for integrating elements of this plan into other plans

Table 12: Integration of Previous Plans by the City of Millcreek

Plan	Description
None	N/A

Table 13: Opportunities for Integration with Future Plans of the City of Millcreek

Plan	Description
Comprehensive Emergency Management Plan	Framework for preparedness, response, recovery, and mitigation in the city.
General Plan	Can support emergency response efforts
Stormwater Pollution Prevention Plan	Merge flood mitigation and public health efforts into the plan
Development Plan	Merge mitigation efforts with fiscal responsibility

Capability Assessment

Local mitigation capabilities are existing authorities, policies, programs, and resources that reduce hazard impacts or could help carry out hazard mitigation activities.

Planning and Regulatory Capabilities

Planning and regulatory capabilities are the plans, policies, codes, and ordinances that prevent and reduce the impacts of hazards.

Table 14: Assessment of the Planning Capabilities of the City of Millcreek

Plan	Does it address hazards? (Y/N)	How can it be used to implement mitigation actions?	When was the last update? When is the next update?
General Plan	Yes	Provides overarching policy guidance for development in hazard-prone areas.	2019, next significant update in 2029.

DRAFT

Plan	Does it address hazards? (Y/N)	How can it be used to implement mitigation actions?	When was the last update? When is the next update?
Capital Improvement Plan	Yes	Allocates resources to critical infrastructure projects that enhance resilience.	Unknown
Climate Change Adaptation Plan	No	Unknown	Unknown
Community Wildfire Protection Plan	Yes	Unknown	Unknown
Economic Development Plan	Yes	Prioritizes economic activities in low-risk areas, reducing vulnerability.	2019
Land Use Plan	Yes	Directs growth away from hazard-prone areas.	Unknown
Local Emergency Operations Plan	Yes	Facilitates structured response and recovery actions during disasters.	2024. Reviewed annually.
Stormwater Management Plan	Yes	Guides stormwater infrastructure improvements to prevent flooding.	2020. Next update in 2025.
Transportation Plan	Yes	Integrates resilient infrastructure considerations in road planning.	2019
Substantial Damage Plan	Unknown	Unknown	Unknown
Other? (Describe)			

Table 15: Assessment of the Regulations and Ordinances of the City of Millcreek

Regulation/Ordinance	Does it effectively reduce hazard impacts?	Is it adequately administered and enforced?	When was the last update? When is the next update?
Building Code	Yes; Millcreek effectively enforces the adopted building codes, the International Building Code (IBC 2021), and the International Residential Code (IRC 2021).	Yes	2021
Flood Insurance Rate Maps	Yes	Yes	2022
Floodplain Ordinance	Yes	Yes	2021
Subdivision Ordinance	Yes	Yes	2023
Zoning Ordinance	Yes	Yes	2023
Natural Hazard-Specific Ordinance (Stormwater, Steep Slope, Wildfire)	Yes	Yes	2019

Regulation/Ordinance	Does it effectively reduce hazard impacts?	Is it adequately administered and enforced?	When was the last update? When is the next update?
Acquisition of Land for Open Space and Public Recreation Use	Yes	Yes	2018
Prohibition of Building in At-Risk Areas	Yes	Yes	Yes
Other? (Describe)			

Administrative and Technical Capabilities

Administrative and technical capabilities include staff and their skills. They also include tools that can help carry out mitigation actions.

Table 16: Assessment of the Administrative Capabilities of the City of Millcreek

Administrative Capability	In Place? (Y/N)	Is staffing adequate?	Are staff trained on hazards and mitigation?	Is coordination between agencies and staff effective?
Chief Building Official	Yes	Yes	Yes	Yes
Civil Engineer	Yes	Yes	Yes	Yes
Community Planner	Yes	Yes	Yes	Yes
Emergency Manager	Yes	Yes	Yes	Yes
Floodplain Administrator			Yes	Yes
Geographic Information System (GIS) Coordinator	Yes	Yes	Yes	Yes
Planning Commission	Yes	Yes	Yes	Yes
Fire Safe Council	N, served by the United Fire Authority	N	N/A	N/A
CERT (Community Emergency Response Team)	Yes	No	Yes	Yes
Active VOAD (Voluntary Agencies Active in Disasters)	Yes	Yes	Yes	Yes
Other? (Please describe.)				

DRAFT

Table 17: Assessment of the Technical Capabilities of the City of Millcreek

Technical Capability	In Place? (Y/N)	How has it been used to assess/mitigate risk in the past?	How can it be used to assess/mitigate risk in the future?
Mitigation Grant Writing	Yes	Completion of mitigation actions, communication of hazards to the public	Implementation of mitigation actions
Hazard Data and Information	No	Yes	Grant applications, justification for mitigation work, mitigation project tracking, and hazard analysis
GIS	Yes	Yes	Grant applications, justification for mitigation work, mitigation project tracking, and hazard analysis
Mutual Aid Agreements	Yes	Volunteer management and coordination with other agencies	Identify gaps
Other? (Please describe.)			

Financial Capabilities

Financial capabilities are the resources to fund mitigation actions. Talking about funding and financial capabilities is important to determine what kinds of projects are feasible, given their cost. Mitigation actions like outreach programs are lower cost and often use staff time and existing budgets. Other actions, such as earthquake retrofits, could require substantial funding from local, state, and federal partners. Partnerships, including those willing to donate land, supplies, in-kind matches, and cash, can be included.

Table 18: Assessment of the Financial Capabilities of the City of Millcreek

Funding Resource	In Place? (Y/N)	Has it been used in the past and for what types of activities?	Could it be used to fund future mitigation actions?	Can it be used as the local cost match for a federal grant?
Capital Improvement Project Funding	Yes	Infrastructure improvements	Infrastructure and resilience projects	Yes
General Funds	Yes	Operating expenses	Smaller mitigation activities	Yes
Hazard Mitigation Grant Program (HMGP/404)	Yes	No	Yes	No
Building Resilient Infrastructure & Communities (BRIC)	Yes	No, but have applied in the past	Yes	No
Flood Mitigation Assistance (FMA)	Yes	No, but should receive an award soon	Yes	No

Funding Resource	In Place? (Y/N)	Has it been used in the past and for what types of activities?	Could it be used to fund future mitigation actions?	Can it be used as the local cost match for a federal grant?
Public Assistance Mitigation (PA Mitigation/406)	Yes	No	Yes	No
Community Development Block Grant (CDBG)	Yes	Yes, but traditionally has been used for public works projects	Yes	No
Natural Resources Conservation Services (NRCS) Programs	Yes, but have not applied	No	Yes	No
U.S. Army Corps (USACE) Programs	Yes, but have not applied	No	Yes	No
Property, Sales, Income, or Special Purpose Taxes	Yes	No, but could be in the future	Yes	Yes
Stormwater Utility Fee	Yes	Runoff control, water protection	Yes	Yes
Fees for Water, Sewer, Gas, or Electric Services	Yes	Flood mitigation, critical infrastructure protection	Yes	Yes
Impact Fees from New Development and Redevelopment	Yes	Stormwater management	Yes	Yes
General Obligation or Special Purpose Bonds	Yes	Yes	Yes	Yes
Federal-funded Programs (Please describe)	Yes	Could be used	Yes	No
Private Sector or Nonprofit Programs	Yes	Yes	Yes	Yes
Other?				

Education and Outreach Capabilities

Education and outreach capabilities are programs and methods that could communicate about and encourage risk reduction. These programs may be run by a participant or a community-based partner. Partners, especially those who work with underserved communities, can help identify additional education and outreach capabilities.

DRAFT

Table 19: Assessment of the Education and Outreach Capabilities of the City of Millcreek

Education and Outreach Capability	In Place? (Y/N)	Does it currently incorporate hazard mitigation?	Could it be used to support mitigation in the future?
Community Newsletter(s)	Yes	Yes	Yes
Hazard Awareness Campaigns (such as Firewise, Storm Ready, Severe Weather Awareness Week, School Programs)	Yes	Yes	Yes
Public Meetings/Events (Please describe.)	Yes. Fire mitigation events, disaster prep seminars.	Yes	Yes
Emergency Management Listserv	No	No	Yes
Local News	Yes	Yes	Yes
Distributing Hard Copies of Notices (e.g., public libraries, door-to-door outreach)	Yes	Yes	Yes
Insurance Disclosures/ Outreach	No	Unknown	Yes
Organizations that Represent, Advocate for, or Interact with Underserved and Vulnerable Communities (Please describe.)	Yes	Yes	Yes
Social Media (Please describe.)	Yes	Yes	Yes
Other? (Please describe.)			

Opportunities to Expand and/or Improve Capabilities

Actions that can expand and improve existing authorities, plans, policies, and resources for mitigation include budgeting for mitigation actions, passing policies and procedures for mitigation actions, adopting and implementing stricter mitigation regulations, approving mitigation updates, and making additions to existing plans as new needs are recognized. Table 20 lists the opportunities for the city of Millcreek.

Table 20: Opportunities to Expand and/or Improve the Capabilities of the City of Millcreek

Capability	Opportunity to Expand and/or Improve
Planning and Regulation	The updated General Plan can incorporate additional information from the updated hazard mitigation plan, such as on risks, vulnerabilities, and actions. Plan alignment can also help ensure future development takes hazard risk into consideration. Additionally, the city can create a more detailed Substantial Damage Plan that includes identifying the tools and data sources that should be used to make substantial damage determination, guidelines for notifying property owners, and a framework for integrating this information into stormwater management and land use planning strategies.
Administrative and Technical	Millcreek can identify and implement a procedure for collecting current hazard data, such as records of previous disaster events and impacts. This information can be

DRAFT

Capability	Opportunity to Expand and/or Improve
	used to justify additional mitigation projects and assess losses avoided, as well as enhance the next hazard mitigation plan update.
Financial	The city has had limited success with pre-disaster mitigation funding, such as the Building Resilient Infrastructure & Communities (BRIC) and Flood Mitigation Assistance (FMA) grant programs. The city should consider additional opportunities for pre-disaster mitigation and expanding this mitigation funding capability. For example, the city could be supported through a state or FEMA-led technical assistance program.
Education and Outreach	The city could utilize the city council meetings to share key messages regarding mitigation. Additional direct outreach could be conducted through workshops on hazards, including workshops for vulnerable populations, such as seniors. Furthermore, the city could develop an emergency management listserv through which mitigation information could be shared. Additionally, the city can pursue opportunities to engage real estate and development professionals to ensure they are supporting disclosure of risks in high-risk areas and encouraging mitigation.

Mitigation Strategy

Mitigation strategies provide proactive measures that are designed to minimize the impacts of hazards on the city of Millcreek. Table 21 shows mitigation action alternatives, and Table 22 shows the status of previous mitigation activities. Table 23 is the 2025 mitigation action plan for the city of Millcreek.

Table 21: Mitigation Action Alternatives for the City of Millcreek

Action	Type of Action	Selected for inclusion in the plan?	If not selected, why not?
Community Wildfire Protection Plan	Local Plans and Regulations	Yes	N/A
Strengthen Building Codes	Local Plans and Regulations	Yes	N/A
Utility Undergrounding	Structure and Infrastructure Projects	Yes	N/A
Floodwalls and Detention Basins	Structure and Infrastructure Projects	Yes	N/A
Community Tree Planting Program	Natural Systems Protection	Yes	N/A
Erosion Control in Landslide-Prone Areas	Natural Systems Protection	Yes	N/A
Community Outreach on Flood/Wildfire Risks	Education and Awareness Programs	Yes	N/A
Emergency Preparedness Workshop	Education and Awareness Programs	Yes	N/A

Table 22: Status of Prior Mitigation Actions of the City of Millcreek[3]

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update
Install debris basin and/or storm drain/ culvert.	Flood (Riverine), Landslide/ Slope Failure	US Forest Service	SLCo, Millcreek City Emergency Management, SLCo Public Works and Millcreek City Public Works	Ongoing. Undergoing HMGP grant process for improved mitigation.
Hazardous materials removal.	Hazardous Materials Release, Public Health (Pandemic/ Epidemic)	Millcreek	SLCo Health Department, UFA	Ongoing. The mayor, city manager, emergency manager, and public works will be required to maintain situation awareness and coordinate with the Emergency Communications Center.
Reinforce masonry and chimneys.	All hazards	Millcreek	City	Incomplete. 65% of building stock is unreinforced masonry. Of this stock, 80% is residential.
Install generators at assisted living centers.	Extreme Cold and Extreme Heat	Millcreek	SLCO EM	Incomplete. Extreme high and low temperatures adversely impact the aging population. Millcreek has the second highest elderly in the county, with over 55 care and assisted living centers. No known generators installed.
Generators and hookup installation for publicly owned and critical facilities.	All hazards	Millcreek	SLCo, Millcreek City Emergency Management. SLCo Public Works, Millcreek Public Works	Ongoing. Millcreek City Hall has backup power.
Conduct a Hazardous Materials Flow Study.	Hazardous Materials	Millcreek	Millcreek City Emergency Management	Incomplete. No study conducted.
Draft a WUI Plan with fire mitigation goal development including defensible space.	Wildfire	Millcreek	Millcreek City Emergency Management, SLCo EM	Complete, but carried forward as a CWPP update. Millcreek adopted a Community Wildfire Preparedness Plan in 2021. The eastern border of the community is considered a

[3] CWPP = Community Wildfire Protection Plan, SLCo = Salt Lake County, SLCo EM = Salt Lake County Emergency Management, UFA = Unified Fire Authority, WUI = Wildland–Urban Interface.

DRAFT

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update
				WUI and managed by the U.S. Forest Service, in coordination with UFA. Wooded stream channels are also a concern. Other areas of concern are Grandeur Park, Mount Olympus, Mill Creek, Parley's Creek, Big Cottonwood Creek, and Big Cottonwood Park.

DRAFT

THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT

Table 23: 2025 Mitigation Action Plan for the City of Millcreek[4]

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
1	Install debris basin and/or storm drain/ culvert.	Flood (Riverine), Landslide/Slope Failure	U.S. Forest Service	SLCo, Millcreek City Emergency Management, SLCo Public Works and Millcreek City Public Works	Reduce property damage and loss of life from flooding.	High	FMA, HMA, BRIC, Millcreek Capital Improvements Fund, Millcreek staff time	Short-term	High	Undergoing HMGP grant process for improved mitigation.
2	Remove hazardous materials.	Hazardous Materials Release, Public Health (Pandemic/ Epidemic)	Millcreek	SLCo Health Department, UFA		Medium	Millcreek City General Fund	Long-term	Low	
3	Reinforce masonry and chimneys.	Earthquake	Millcreek	City	Reduce structural damage and potential injury from collapsing chimneys and URMs caused by earthquake.	High	Millcreek City General Fund, CWDG grant, HMGP grant, BRIC	Long-term	Medium	Sixty-five percent of building stock is unreinforced masonry. Of this stock, 80% is residential.
4	Install generators at assisted living centers.	Extreme Cold and Extreme Heat, High Wind, Heavy Rain, Lightning, Severe Winter Weather, Tornado	Millcreek	SLCO EM	Ensure life-sustaining medical equipment and general functionality of facilities are operational if severe weather or other events lead to power outages.	Medium	Millcreek City General Fund	Medium	Medium	Millcreek has the second-highest elderly in the county, with over-55 care and assisted living centers. No known generators installed.
5	Install generators and hookups for publicly owned and critical facilities.	Avalanche, Dam Failure, Drought, Earthquake, Extreme Heat, Extreme Cold, Flooding, Heavy Rain, High Wind, Landslide/ Slope Failure, Lightning, Severe Winter Weather, Tornado, Wildfire, Civil Disturbance, Hazardous Materials, Terrorism/ Cyberterrorism, Public Health Epidemic/Pandemic	Millcreek	SLCo, Millcreek City Emergency Management. SLCo Public Works, Millcreek Public Works	Ensure critical facilities, emergency response, and government operations continue to function during all types of hazard events.	Medium	Millcreek City General Fund	Medium	Medium	Millcreek City Hall has backup power. Other facilities still need backup power.
6	Conduct a Hazardous Materials Flow Study.	Hazardous Materials	Millcreek	Millcreek City Emergency Management	Identify potential risks of hazardous materials that may be transported in city.	Medium	Millcreek City General Fund, EMPG	Medium	Medium	
7	Update the Community Wildfire Protection Plan.	Wildfire, Drought, Lightning, Extreme Heat	UFA	Millcreek Emergency Management, U.S. Forest Service, SLCo EM, UDEM	Reduces wildfire spread and protects property, involves the public in mitigation and preparedness activities on their property.	Medium	HMGP, WUIPPM grant, CWDG grant, SLCo EM, Millcreek City General Fund	Medium-term	High	The eastern border of the community is considered a WUI and managed by the U.S. Forest Service, in coordination with UFA. Wooded stream channels are also a concern. Other areas of concern are Grandeur Park, Mount Olympus, Mill Creek, Parley's Creek, Big Cottonwood Creek, and Big Cottonwood Park.

[4] BRIC = Building Resilient Infrastructure and Communities, CWDG = Community Wildfire Defense Grant, FMA Flood Mitigation Assistance, HMA = Hazard Mitigation Assistance, HMGP = Hazard Mitigation Grant Program, SLCo = Salt Lake County, SLCo EM = Salt Lake County Emergency Management, UDEM = Utah Division of Emergency Management, UFA = Unified Fire Authority, UPD = Unified Police Department, USDA = United States Department of Agriculture, WUI = Wildland–Urban Interface, WUIPPM = Wildland–Urban Interface Prevention, Preparedness and Mitigation (Fund).

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
8	Improve Millcreek's building codes to ensure that new structures are earthquake and wind-resistant.	Earthquake, High Winds, Tornado, Flooding, Dam Failure, Avalanche	Millcreek City Building Department	SLCo EM, UFA, UDEM	Enhances building safety, and minimizes damage and recovery costs.	Low	Millcreek City General Fund, UFA, SLCo EM, BRIC grant	Short-term	High	Unreinforced masonry buildings are a concern.
9	Coordinate with private utility companies for Utility undergrounding.	High Wind, Heavy Rain, Severe Winter Weather, Extreme Cold, Landslide/Slope Failure, Wildfire, Flooding, Tornado, Lightning, Dam Failure	Rocky Mountain Power	Millcreek City Public Works, Salt Lake County Public Works, SLCo EM	Reduces power outages and infrastructure damage, including from trees breaking down to hazards like high wind and extreme cold.	High	Millcreek City General Fund, Millcreek Capital Improvements Fund, Private Utility Funding, SLCo EM, BRIC grant	Long-term	Medium	Collaboration with utility companies is needed.
10	Create floodwalls and detention basins in areas identified to be at risk of flooding.	Flood, Landslide/ Slope Failure, Heavy Rain, Severe Winter Weather, Dam Failure	Millcreek City Public Works	Salt Lake County Public Works, SLCo EM	Reduces flood risk and mitigates landslide impacts.	High	HMGP grant, Millcreek City General Fund, Millcreek City Capital Improvements Fund, SLCo Public Works	Long-term	High	Targeting the Neffs Canyon area.
11	Develop a community tree planting program.	Flood, Drought, Extreme Heat, Landslide/Slope Failure	Millcreek City Emergency Management	U.S. Forest Service, SLCo Parks and Recreation, SLCo EM, Millcreek City Planning and Zoning, UFA, Millcreek Public Works, SLCo Public Works	Improves stormwater management and increases shade coverage.	Low	Millcreek City General Fund, SLCo Public Works, SLCo Parks and Recreation, UFA, USDA's Community Forestry Partnership grant	Short-term	Medium	
12	Implement erosion control in landslide-prone areas, such as Canyon Rim area.	Landslide/ Slope Failure, Drought, Dam Failure, Wildfire, Flooding	Millcreek City Public Works	Salt Lake County Public Works, UDEM, UFA	Reduces landslide risk in vulnerable areas.	Medium	Millcreek City General Fund, Millcreek Capital Improvements Fund, SLCo EM, BRIC grant, HMGP grant	Short-term		Focus on the Canyon Rim area.
13	Conduct community outreach about flood, earthquake, and wildfire risks in community council and city meetings.	Flood, Wildfire, Drought, Extreme Heat, Heavy Rain, Severe Winter Weather, Lightning, Landslide/ Slope Failure, Dam Failure	Millcreek City Emergency Management	SLCo EM, UFA, Millcreek Communications	Increases community preparedness, especially in vulnerable areas.	Low	Millcreek City General Fund, SLCo EM, HMGP grant, BRIC grant	Short-term	High	Targeted to high-risk residents.

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
14	Provide education through workshops, websites, print, and social media annually for all hazards impacting Millcreek City. Include educational information for vulnerable populations, particularly the elderly.	Avalanche, Dam Failure, Drought, Earthquake, Extreme Heat, Extreme Cold, Flooding, Heavy Rain, High Wind, Landslide/Slope Failure, Lightning, Radon, Severe Winter Weather, Tornado, Wildfire, Civil Disturbance, Hazardous Materials, Terrorism/ Cyberterrorism, Public Health Epidemic/Pandemic	Millcreek City Emergency Management	UPD, UFA, St. Mark's Hospital, SLCo EM, UDEM, SLCo Public Works	Increased local understanding of natural hazards and ways in which residents can reduce their risk, minimizing displacement. Examples of educational materials to reduce risk: • Avalanche: Share information from UAC on understanding avalanche conditions and areas to avoid during high risk alerts. • Drought: Share water conservation techniques and strategies for drought-resistant landscaping. • Earthquake: Provide instruction or resources on home retrofitting. • Extreme Heat: Offer information on staying cool and hydrated. • Extreme Cold: Discuss home insulation techniques, safe heating practices, and preparing vehicles for winter conditions. • Flood/Heavy Rain/Dam Failure: Teach floodproofing methods, avoiding areas of high risk, and "Turn Around, Don't Drown." • Landslide: Inform residents on recognizing warning signs. • Radon: Explain the risks of radon risks and provide resources for testing radon levels in homes. • Lightning: Share safety tips for outdoor lightning protection. • Severe Winter Weather, Tornado, High Wind: Educate residents on locating safe shelter locations and home weatherization. • Wildfire: Offer information on creating defensible space and using fire-resistant landscaping • Pandemic/Epidemic: Provide resources on hygiene and public health resources.	Low	Millcreek City General Fund, EMPG grant, SLCo EM, BRIC grant	Short-term	High	Includes focus on the elderly. Consider providing education annually.

DRAFT

THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT

Mitigation Action Prioritization

The mitigation actions were evaluated based on the STAPLEE criteria.

Table 24: Mitigation Action Prioritization – STAPLEE

Action	Social	Technical	Administrative	Political	Legal	Economic	Environ-mental	Priority
1	4	4	3	4	4	3	4	High
2	4	4	4	4	4	3	4	High
3	3	4	4	4	3	3	4	Medium
4	3	4	4	4	4	3	3	High
5	4	3	3	4	4	4	4	Medium
6	3	3	4	3	4	4	3	Medium
7	4	3	3	4	4	4	4	High
8	4	4	4	4	4	4	4	High

Mitigation Success Story

Neffs Canyon Emergency Facilities & Flood Mitigation Improvement project is a coordinated effort led by Millcreek, the U.S. Forest Service, Utah Division of Emergency Management (DEM), Salt Lake County Flood Control, including support from the Federal Emergency Management Agency (FEMA) and the Mount Olympus community, to reduce flood risk, improve wildfire response, and enhance public safety in the Neffs Creek area.[5] Neffs Creek is located on an active alluvial fan that is subject to sudden and unpredictable flooding. This risk has increased over time due to development, erosion, severe storms, and wildfire damage. Flooding in 2019 and a wildfire event in 2020 highlighted the risks in this area. A floodplain mapping study was completed in 2016 and was discussed among the collaborating jurisdictions from 2016 to 2019, resulting in a new preliminary FIRM. This has implications for property owners now categorized within newly established flood zones. Additionally, Unified Fire Authority (UFA) Station 112 is located within the floodplain and cannot be upgraded or modernized. Addressing the flood hazard will allow UFA to upgrade Station 112 to expand capabilities for wildfire response and other emergencies.

Phase One includes parking lot improvements to facilitate emergency vehicle access and a helicopter pad and water well to support wildfire response in the mountains on the east side of Salt Lake County, not just Neffs Canyon. Construction is expected to start in the summer of 2025.

Phase Two involves the construction of a below-natural-grade debris basin featuring a stormwater outlet pipe. The proposed basin will be situated near the mouth of the canyon to collect debris, sediment, and

[5] Neffs Canyon Emergency Facilities Improvement. “Project Purpose.” https://millcreekut.gov/584/Neffs-Canyon-Emergency-Facilities-Improv

floodwater from the canyon's catchment area. The design will allow the water to flow through the basin and into a new storm drainpipe below local roads back to Neffs Creek. Millcreek was awarded a Legislative Pre-Disaster Mitigation grant to complete the geotechnical investigation, environmental documents, and design phase of the debris basin. The city was awarded a FEMA Flood Mitigation Assistance (FMA) grant to fund the construction of the project. Phase Two is expected to take place in 2026.

DRAFT

City of Murray

Jurisdictional Annex to the
Salt Lake County Hazard Mitigation Plan

Month XXXX | Draft X.X

MURRAY

THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT

Table of Contents

City of Murray Annex 1

Planning Process Contact Information 1
Jurisdiction Profile 1
Date of Incorporation 1
Location and Description 1
Population 2
Demographics 2
Brief History 2
Climate 2
Public Services 2
Governing Body 3
Development Trends 3
Jurisdiction-Specific Hazards and Risk 4
Hazard Event History 6
National Flood Insurance Program Summary 7
Jurisdiction-Specific Vulnerabilities and Impacts 7
Hazards Not Profiled 27
Jurisdiction-Specific Changes in Vulnerability 27
Additional Public Involvement 37
Plan Integration 37
Capability Assessment 38
Planning and Regulatory Capabilities 38
Administrative and Technical Capabilities 40
Financial Capabilities 42
Education and Outreach Capabilities 43
Opportunities to Expand and/or Improve Capabilities 44
Mitigation Strategy 44

DRAFT

List of Figures

Figure 1: Social Media Posts for the Hazard Mitigation Survey (*left*) and the Draft Plan Review (*right*).... 37

List of Tables

Table 1: Contact Information for the City of Murray 1
Table 2: Participant List for the City of Murray 1
Table 3: Calculated Priority Risk Index Values for the City of Murray 4
Table 4: Criteria for the Calculated Priority Risk Index 5
Table 5: National Flood Insurance Program Status for the City of Murray 7
Table 6: National Flood Insurance Program Status for the City of Murray 7
Table 7: Jurisdiction-Specific Vulnerabilities and Impacts in the City of Murray 7
Table 8: Jurisdiction-Specific Changes in Vulnerability in the City of Murray 28
Table 9: Integration of Previous Plans by the City of Murray 38
Table 10: Opportunities for Integration with Future Plans of the City of Murray 38
Table 11: Assessment of the Planning Capabilities of the City of Murray 39
Table 12: Assessment of the Regulations and Ordinances of the City of Murray 40
Table 13: Assessment of the Administrative Capabilities of the City of Murray 40
Table 14: Assessment of the Technical Capabilities of the City of Murray 41
Table 15: Assessment of the Financial Capabilities of the City of Murray 42
Table 16: Assessment of the Education and Outreach Capabilities of the City of Murray 43
Table 17: Opportunities to Expand and/or Improve the Capabilities of the City of Murray 44
Table 18: Mitigation Action Alternatives for the City of Murray 44
Table 19: Status of Prior Mitigation Actions of the City of Murray 45
Table 20: 2025 Mitigation Action Plan for the City of Murray 49

DRAFT

City of Murray Annex

To participate in this multi-jurisdictional hazard mitigation plan (MJHMP) update for Salt Lake County (SLCo), the governing body of the city of Murray passed a formal resolution, a copy of which is maintained at the local government offices.

Planning Process Contact Information

Table 1 provides information on the point of contact during the updating of the MJHMP.

Table 1: Contact Information for the City of Murray

Name	Contact Information
Nick Haskin	**Phone:** 801-264-2789; **email:** Nhaskin@murray.utah.gov
Joseph Mittelman	**Phone:** 801-264-2780; **email:** jmittelman@murray.utah.gov

The city of Murray has a fully integrated approach to hazard mitigation planning and program implementation. During the 2024 update process, the MJHMP participation roles in Table 2 were recorded.

Table 2: Participant List for the City of Murray

Name	Title	Jurisdiction
Nick Haskin	Battalion Chief/Emergency Manager	Murray City Fire Department.
Joseph Mittelman	Fire Chief	Murray City Fire Department.

Jurisdiction Profile

Date of Incorporation

January 3, 1903

Location and Description

Situated in the heart of Salt Lake Valley, Murray spans 12.32 square miles. It is bordered by Taylorsvile, Millcreek, Holladay, Midvale, and Cottonwood Heights. The area now incorporated as Murray City has been occupied continuously since 1848. Explosive growth occurred after the 1870 construction of the valley's first smelter. Murray's central location in the larger metropolitan area makes it important for the city to be aware of its regional context. Regional issues such as growth, transportation, the economy, natural resources, air quality, and open space all impact the quality of life of Murray and provide the city with many opportunities.

DRAFT

Population

The 2022 American Community Survey 5-Year Estimate from the U.S. Census Bureau records the population of the city of Murray as 49,904 people.

Demographics

Most of the 49,904 people are between the ages of 25 and 34, with a median age of 38.2; 25,051 are males (50.2%) and 24,853 are females (49.8%). English is the primary language in 84.4% of homes,, with 7.7% Spanish, and 7.9% other languages.

Brief History

Mormon pioneers arrived in the Salt Lake Valley in 1847, and in the fall of 1848, the Mississippi Saints followed, establishing a dispersed settlement in the southern part of the valley. This area was known by various names, such as Mississippi Ward, Cottonwood, Big Cottonwood, and South Cottonwood. Historical records indicate that by the 1860s, at least 20 families resided in the South Cottonwood area. The region remained largely agricultural until 1869, when ore was discovered in Park City and Little Cottonwood Canyon. Due to the city's central location and railroad access, the first smelter in the region was constructed in the city of Murray in 1870, leading to the establishment of some of the largest smelters over the next 30 years. That same year, the South Cottonwood Post Office was established. The area evolved with the expansion of the railroad, increased smelting activity, the establishment of the territorial road (later known as State Street), and the development of trolley transportation. A business district began to form along the transportation corridor. The post office, and subsequently the city, officially changed its name from South Cottonwood to Murray in 1883, in honor of territorial governor and Civil War general, Eli Murray.

Climate

The city of Murray experiences a humid continental climate (Dfb Köppen classification) characterized by warm summers and cold winters with constant precipitation throughout the year. Average high temperatures are approximately 85°F in the summer and approximately 18°F in the winter. Rain each year is approximately 20.9 inches, and snowfall averages 22 inches.

Public Services

Over the years, the city of Murray's crews have responded to various disasters, including riverbank flooding, trees being toppled by microburst winds, and other weather-related hazards. Three separate entities in the city provide drinking water: Murray City, the Jordan Valley Water Conservancy District (JVWCD), and Salt Lake City Public Utilities (SLCPU). The city of Murray's water system generally serves areas west of 900 East and relies primarily on well water, which accounts for about 84 percent of the annual demand for system water. Water in the city of Murray's service area is supplied by eight springs and nineteen wells, each dependent on pumps and motors to deliver water to the distribution system. The city has emergency standby power generation at six locations and five tanks or reservoirs with a

DRAFT

combined storage capacity of 12 million gallons for operating and emergency storage. In emergencies, the city of Murray has an exchange agreement with SLCPU to provide water. The JVWCD and SLCPU water systems generally supply areas east of 900 East and provide retail delivery only, with no water sources in the city of Murray.

Murray City Power is unique in Salt Lake County as the only municipally owned power system. Murray City Power operates the power system in a 9.9 square mile service area, comprising 206 miles of transmission and distribution lines, and serving approximately 14,000 residential and 3,000 commercial customers. The system load peaks at just over 100 MW in the summer and 60 MW in the winter. To ensure a reliable energy supply, even during disasters, the city of Murray installed three generators at the central substation with a generating capacity of approximately 39 MW. These generators are used as a peaking resource during summer months and remain idle until needed. In emergencies, they can provide power to necessary areas as long as the natural gas supply is available. Fire Station 81 was rebuilt and opened in early 2020.

Governing Body

The city of Murray originally established a Mayor–Council form of government. In 1911, state legislation changed the government structure for first and second class cities in Utah from the Council form to the Commission form. This change was reversed in 1981, when the city of Murray re-adopted the Mayor–Council form of government, featuring an elected Mayor and five City Council members. To ensure staggered terms, elections are held every two years for half of the Council members, each serving a four-year term.

Development Trends

As the hub of Salt Lake County, the city of Murray provides a strong foundation for flourishing businesses. The community boasts robust medical, transportation, retail/professional office, educational, and community services, creating an ideal environment for businesses. The city is home to Intermountain Medical Center, the largest facility of the Intermountain Healthcare system in the state. In addition, Fashion Place Mall, a premier shopping destination, significantly contributes to sales tax revenue. The loss of either of these employers would displace thousands of employees and create a substantial loss of sales tax revenue.

The city of Murray has seen significant growth in both housing and commercial development. This growth is partly due to the city's proximity to light rail transportation and freeway access, the appeal of its medical services community, and an excellent school district. Known for being a safe, close-knit, and friendly community, the city of Murray is an attractive place to raise a family. However, land in the city is becoming scarce due to land-locked boundaries, limiting future development to infill construction and redevelopment of underutilized areas. Recent zoning changes encourage mixed-use projects and increased building heights in certain commercial zones. Remodeling efforts are underway throughout the city, including the rebuilding/remodeling of Fashion Place Mall and the ongoing renovations at Intermountain Medical Center, which are expected to continue for at least the next five years.

DRAFT

Jurisdiction-Specific Hazards and Risk

The Calculated Priority Risk Index (CPRI) is a comprehensive assessment tool for evaluating and prioritizing risks in a given context. It considers various factors, such as probability, impact, and urgency, to determine the level of risk associated with events or situations. The results for each hazard, including its risk factor (RF) value, are shown in Table 3. The results are based on the criteria in Table 4 and the equation that follows it. The CPRI helps organizations and individuals make informed decisions about risk management and mitigation strategies. It provides a systematic approach to identifying and addressing potential issues, allowing for a more efficient allocation of resources and proactive risk prevention. With the CPRI, stakeholders can prioritize their focus on the most critical risks, leading to more effective risk management and, ultimately, better outcomes.

Table 3: Calculated Priority Risk Index Values for the City of Murray

Type of Hazard Event	Probability of Future Events	Spatial Extent	Severity of Life/ Property Impact	Warning Time	Duration	Response Capacity	Risk Factor Value
Avalanche	4	1	2	4	2	1	2.6
Drought	4	4	2	1	4	1	2.8
Earthquake	3	4	4	4	3	2	3.4
Extreme Heat	4	4	3	1	3	1	3
Extreme Cold	3	4	2	1	3	1	2.4
Flooding	4	3	3	3	3	1	3.1
Landslide/ Slope Failure	2	1	2	4	1	2	2
Radon	4	4	2	1	4	2	2.9
Heavy Rain	4	3	2	3	1	1	2.6
High Wind	4	3	3	3	2	1	3
Lightning	4	2	2	4	1	1	2.6
Severe Winter Weather	4	3	2	2	2	1	2.6
Tornado	2	2	3	4	1	2	2.4
Wildfire	4	3	3	4	3	1	3.2
Dam Failure	2	2	3	2	2	3	2.4
Civil Disturbance	2	1	2	4	2	2	2.1
Cyberattack	2	3	3	4	3	2	2.7
Hazardous Materials Incident (Transportation & Fixed Facility)	3	1	2	4	1	1	2.2

DRAFT

Type of Hazard Event	Probability of Future Events	Spatial Extent	Severity of Life/ Property Impact	Warning Time	Duration	Response Capacity	Risk Factor Value
Public Health Epidemic/ Pandemic	3	4	3	1	4	1	2.8
Terrorism	2	1	3	4	2	1	2.3

Table 4: Criteria for the Calculated Priority Risk Index

Risk Index Factor	Degree of Risk Level		Criteria	Factor Weight for Degree of Risk Level
Probability of Future Events	1	Unlikely	Less than 1 percent probability of occurrence in the next year or a recurrence interval of greater than every 100 years.	30%
	2	Occasional	1 to 10 percent probability of occurrence in the next year or a recurrence interval of 11 to 100 years.	
	3	Likely	11 to 90 percent probability of occurrence in the next year or a recurrence interval of 1 to 10 years.	
	4	Highly Likely	91 to 100 percent probability of occurrence in the next year or a recurrence interval of less than 1 year.	
Spatial Extent	1	Limited	Less than 10% of the planning area could be impacted.	10%
	2	Small	10%–25% of the planning area could be impacted	
	3	Significant	25%–50% of the planning area could be impacted.	
	4	Extensive	50%–100% of the planning area could be impacted.	
Severity of Life/Property Impact	1	Negligible	Less than 5% of the affected area's critical and non-critical facilities and structures are damaged/destroyed. Only minor property damage and minimal disruption of life. Temporary shutdown of critical facilities.	30%
	2	Limited	More than 5% and less than 25% percent of property in the affected area is damaged/destroyed. Complete shutdown of critical facilities for more than one day but less than one week.	
	3	Critical	More than 25% and less than 50% of property in the affected area was damaged/destroyed. Complete shutdown of critical facilities for over a week but less than one month.	

DRAFT

Risk Index Factor	Degree of Risk Level		Criteria	Factor Weight for Degree of Risk Level
	4	Catastrophic	Over 50% of critical and non-critical facilities and infrastructures in the affected area are damaged/destroyed. Complete shutdown of critical facilities for more than one month.	
Warning Time	1	Self-defined	More than 24 hours	10%
	2	Self-defined	12 to 24 hours.	
	3	Self-defined	6 to 12 hours.	
	4	Self-defined	Less than 6 hours.	
Duration	1	Brief	Up to 6 hours.	10%
	2	Intermediate	Up to one day.	
	3	Extended	Up to one week.	
	4	Prolonged	More than one week.	
Response Capacity	1	High	Significant resources and capability to respond to this kind of event; staff are trained, experienced, and ready.	10%
	2	Medium	Some resources and capability to respond to this kind of staff; some staff may be trained, experienced, and ready while others may need additional support.	
	3	Low	Limited resources and capability to respond to this kind of event; additional staff or staff training needed.	
	4	None	No resources and capability to respond this kind of event; additional outside support would be required.	

RISK FACTOR (RF) EQUATION

RF Value = [(Probability x 0.30) + (Spatial Extent x 0.10) + (Severity of Life/Property Impact x 0.30) + (Warning Time x 0.10) + (Duration x 0.10) + (Response Capacity x 0.10)]

Hazards with an RF value greater than or equal to 2.5 are considered high risk. Those with RF values of 2.0 to 2.4 are considered moderate risk hazards, and those with an RF value less than 2.0 are considered low risk. The highest possible RF value is 4.

Hazard Event History

Examining hazard event histories provides valuable insights to inform decision-making and help prioritize resources for risk prevention and response efforts. Per the Storm Events Database from the National Centers for Environmental Information, there have been no significant events to impact the city of Murray planning area since the last update.

DRAFT

National Flood Insurance Program Summary

The city of Murray participates in the National Flood Insurance Program (NFIP). Table 5 and Table 6 display statistics related to the NFIP. The city of Murray does not participate in the Community Rating System (CRS).

Table 5: National Flood Insurance Program Status for the City of Murray[1]

Init FHBM Identified	Init FIRM Identified	Current Effective Map Date	Adopted Date	Date Joined NFIP	Tribal
12/18/1985	12/18/1985	09/25/2009	2009	06/03/2020	No

Table 6: National Flood Insurance Program Status for the City of Murray

Community ID	Number of Losses	Total Net Payment	Active Policies	Total Coverage
490103	54	$256,826.36	212	$48,856,000

The city of Murray has designated the City Engineer as the Floodplain Administrator. The city's current Flood Damage Prevention Ordinance was adopted in 2022. The current effective FIRM maps are dated 9/25/2009. The city issues Floodplain Development Permits including in the SFHA through the Floodplain Administrator. No work is allowed to begin until a permit has been issued. Substantial damage/substantial improvement determinations are made through the permitting process, including inspections.

Jurisdiction-Specific Vulnerabilities and Impacts

Table 7 provides information on the vulnerable assets in the city of Murray, including its critical facilities, highlighting the city's vulnerability to identified hazards. It also describes the potential impacts on the community arising from those vulnerabilities. Impacts are the consequences or effects of each hazard on the assets. By understanding the risks associated with these assets, local authorities can develop proactive strategies to mitigate vulnerabilities and ensure the safety and functionality of these important assets during hazard events. These data are invaluable for decision-making and prioritizing resources for emergency response and preparedness efforts, ultimately contributing to more effective risk management and greater resilience in the community.

Table 7: Jurisdiction-Specific Vulnerabilities and Impacts in the City of Murray

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
Avalanche	People	*Vulnerability:* Avalanche risk is primarily limited to mountains with steep terrain and higher snow accumulation. Murray is located in the valley and does not have terrain or snow accumulations that pose a risk within the city. Individuals vulnerable to avalanches primarily

[1] FIRM = Flood Insurance Rate Map, FHBM = Flood Hazard Boundary Map

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		include outdoor enthusiasts like skiers and hikers who may lack proper avalanche knowledge and safety precautions or do not monitor avalanche forecasts. *Impacts:* No impacts within Murray are expected.
	Structures	*Vulnerability:* No structures in Murray are considered to be at risk from avalanches.
	Economic Assets	*Vulnerability:* Risk to Murray businesses is very low. *Impacts:* Tourism-related businesses, such as ski resorts and outdoor recreation facilities, may face disruptions due to avalanches, leading to financial losses. Murray could experience indirect economic losses if an avalanche affects neighboring jurisdictions.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Risk to natural, historic, and cultural resources from avalanches is minimal in Murray, with no direct impacts expected.
	Critical Facilities and Infrastructure	*Vulnerability:* No critical facilities in Murray are vulnerable to avalanches. *Impacts:* Murray residents may experience indirect impacts if transportation routes near the canyons are closed or damaged by an avalanche.
	Community Activities	*Vulnerability:* Activities within Murray have minimal vulnerability to avalanches. *Impacts:* Residents may be affected if recreating elsewhere in the county. Activities like skiing, snowboarding, snowmobiling, snowshoeing, and other winter outdoor recreation are vulnerable to avalanches due to heavy snowfall, variable temperatures that affect snow stability, and participants' lack of safety knowledge.
Drought	People	*Vulnerability:* All residents in Murray are vulnerable to drought. *Impacts:* Extended drought can lead to restrictions on water use, increased costs for water, or limited drinking water supply. Drought can also contribute to poor air quality and other public health impacts from increased dust and wildfires, which can cause respiratory problems, especially for children and the elderly.
	Structures	*Vulnerability:* All structures are vulnerable to drought. *Impacts:* Limits to water supply may lead officials or developers to restrict growth and place restrictions on water use. Severe drought can contribute to changes in soil conditions that may result in cracking foundations or walls.
	Economic Assets	*Vulnerability:* All businesses are vulnerable to drought, particularly those that rely on water, such as landscaping, car washes, and manufacturing. *Impacts:* Businesses may face water restrictions and financial losses. Water conservation measures may also lead to an increase in costs for water use which may reduce revenue for businesses, Increased water costs may decrease consumer spending due to their impact on household budgets. Agricultural-related business is limited in Murray and does not represent a significant vulnerability.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Natural, Historic, and Cultural Resources	*Vulnerability:* Parks, golf courses, and urban forests are vulnerable to drought. *Impacts:* Open spaces with abundant vegetation may suffer from drought conditions, making the city less green and increasing heat levels. Wheeler Historic Farm and other outdoor recreation areas such as parks and golf courses may experience deterioration in the health of vegetation and a loss of aesthetic appeal during drought.
	Critical Facilities and Infrastructure	*Vulnerability:* Water supply systems are susceptible to drought. *Impacts:* Water suppliers may struggle to deliver an adequate water supply to the community. Reduced precipitation may increase demand on fire departments for wildfire management. Public health facilities face water quality and availability challenges that affect drinking water and sanitation. An adequate water supply needs to be maintained for the Intermountain Medical Center and other healthcare facilities.
	Community Activities	*Vulnerability:* Recreational spaces, such as parks, golf courses, pools, and other open spaces, may be vulnerable to drought. *Impacts:* Outdoor recreation areas may experience poor vegetation health and reduced appeal during drought. Communities may struggle with maintenance and increased costs for landscaping and pools.
Earthquake	People	*Vulnerability:* All of the more than 50,000 Murray residents are potentially vulnerable to earthquakes. The Wasatch Fault and West Valley Fault could both produce very strong ground shaking that would affect Murray. *Impacts:* Those living in older buildings that are not up to seismic standards, such as unreinforced masonry, are vulnerable to injury or death if the building collapses. People can also be injured by falling objects such as bookshelves or other heavy furniture that has not been anchored. Families with young children, the elderly, and individuals with disabilities may be displaced from damaged homes and may struggle to relocate. Residents near fault lines and those in densely populated areas are at higher risk. In addition, individuals lacking resources for disaster preparedness, such as emergency supplies and evacuation information, or those who do not speak English well, may find it difficult to respond effectively during an earthquake, thus increasing their vulnerability.
	Structures	*Vulnerability:* All structures in Murray are vulnerable to damage from earthquakes. *Impacts:* Older buildings that are not built according to modern seismic codes, unreinforced masonry, and homes with inadequate foundations may be vulnerable. Many lack the retrofitting needed to withstand earthquakes, and those built on unstable soil or near fault lines are at higher risk. Most of Murray also has moderate to high liquefaction potential, which makes structures more vulnerable to damage from an earthquake. Large commercial buildings without flexible designs can sustain severe damage. Overall, outdated construction practices and poor site selection contribute to their vulnerability. Hazus estimates structural losses in Murray could total over $51 million.
	Economic Assets	*Vulnerability:* Key economic assets in Murray include commercial buildings that may experience structural damage or damage to contents and inventory from an earthquake.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		Impacts: The local economy, reliant on retail and services, could face significant disruptions during and following seismic events. Many businesses may be slow to reopen in the immediate aftermath of an earthquake. Damage to roads and utility systems, such as power, water, and communication, may also limit businesses' ability to operate. The flow of goods may be severely limited, and employees may not be able to travel to work. Spending may also be reduced due to losses experienced by consumers. Additional economic loss information is available in Volume 1.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Historic structures and landmarks often lack modern seismic retrofitting, making them susceptible to damage. The Murray Downtown Historic District and Historic Residential District near the city center include mixed-use commercial/residential buildings with unique architecture and a distinctive streetscape. Murray also has several other homes, a theater, and other properties on the National Historic Register, which are vulnerable to earthquake damage. *Impacts:* These cultural resources are at risk due to their architectural styles, with many having been built before modern building codes, compromising their integrity and the heritage they represent.
	Critical Facilities and Infrastructure	*Vulnerability:* Schools, hospitals, and emergency services buildings and other government facilities are vulnerable to earthquakes. All infrastructure systems, such as transportation, water and wastewater, power distribution, natural gas, and communications, are also at risk of being damaged. Some facilities or systems may have higher vulnerability due to age and construction standards. *Impacts:* Intermountain Medical Center is a significant asset to Murray and surrounding cities. Though built in 2007 with modern seismic codes, it remains vulnerable to damage to the structure, contents, or supporting systems such as power, communication, or water. Significant transportation routes through or near Murray include Interstate 15, Interstate 215, the Front Runner and Trax lines, Central Station, State Street, and numerous other arterial routes. Bridges and overpasses that lack modern engineering safeguards are also at risk. Seven school campuses were identified as having URM structures vulnerable to earthquake, and retrofits have been performed on six of these to reduce vulnerability. In addition, water supply systems and power lines are susceptible to disruption from ground shaking. The lack of retrofitting in older structures exacerbates these vulnerabilities.
	Community Activities	*Vulnerability:* Public gatherings, school events, and day-to-day activities are vulnerable to earthquakes due to the area's geological conditions and dependence on urban infrastructure. *Impacts:* Many day-to-day activities will be disrupted following a strong earthquake, and there is a possibility of damage to recreational spaces and government services. Vulnerability stems from factors such as buildings' age and structural integrity, and high population density, which can lead to increased risks and casualties during an earthquake.

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
Extreme Heat	People	*Vulnerability:* All individuals in Murray are vulnerable to the effects of extreme heat. Vulnerable populations during extreme heat include adults over 65, individuals with pre-existing health conditions, and young children, as they struggle to regulate body temperature. *Impacts:* Extreme heat can lead to heat-related illnesses such as dehydration, heat exhaustion, or heat stroke. Some populations may be more susceptible to illness, but could affect anyone if they do not have access to a place to get relief from the heat. Socioeconomically disadvantaged individuals may lack access to air conditioning or other cooling resources, while outdoor workers are at higher risk of heat-related illnesses due to physical labor without adequate hydration and rest. Individuals without housing may lack a place to seek relief from extreme heat and are vulnerable to heat-related illnesses. Extreme heat can hinder students' learning.
	Structures	*Vulnerability:* All residential and commercial buildings are vulnerable. *Impacts:* Residential buildings with inadequate insulation and ventilation, and commercial buildings lacking reflective roofing and proper shading, may be vulnerable. Materials like metal and glass can amplify heat retention, while areas with limited green space typically experience higher temperatures.
	Economic Assets	*Vulnerability:* Agricultural and recreation businesses are vulnerable. *Impacts:* Agricultural operations can experience reduced yields and higher water demand due to heat stress. The outdoor recreation industry may see decreased participation during heat waves, affecting local businesses that rely on visitors. In addition, the energy infrastructure could face strain from increased cooling demands, leading to outages.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Local plant species and wildlife habitats, historic buildings, and parks are vulnerable. *Impacts:* Plants and wildlife can suffer from extreme heat conditions, leading to reduced biodiversity. Historic buildings may degrade due to high temperatures, causing materials to deteriorate and paint to peel. In addition, parks and recreational areas may experience overuse and risk their preservation, as residents seek relief from the heat. Extreme heat can have compounding effects on drought conditions affecting plant and wildlife health. It can also contribute to an increased risk of wildfire.
	Critical Facilities and Infrastructure	*Vulnerability:* Healthcare facilities and transportation networks are vulnerable. *Impacts:* Healthcare facilities may experience increased demand because of heat-related medical issues, while schools can suffer from the strain on cooling resources. Transportation systems are at risk of damage, such as buckling roads and warped train tracks. In Murray, this could affect I-15, I-215, State Street, and FrontRunner or Trax transit lines. Power grids may be strained by higher demands for electricity for cooling, leading to potential outages.
	Community Activities	*Vulnerability:* Activities like outdoor sports, fairs, and agricultural practices are vulnerable to extreme heat. *Impacts:* These events can pose risks, particularly for participants such as youth athletes and elderly residents, who may suffer from

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		heat-related illnesses. In addition, high temperatures can stress crops, impacting local farming.
Extreme Cold	People	*Vulnerability:* All Murray residents are potentially vulnerable to extreme cold; however, the elderly face increased risks due to health issues and mobility challenges. Children may be susceptible if they lack proper winter clothing. Approximately 17% of Murray residents are over age 65, and 5.4% are under age 5, which means approximately 21% of residents are at increased vulnerability of extreme cold. *Impacts:* Individuals who do not have adequate shelter during extreme cold are vulnerable to cold related illnesses such as hypothermia and frostbite. Individuals experiencing homelessness or financial hardship often lack access to heated shelters and resources for protection against the cold. It is currently unknown how many people may be without shelter during extreme cold in Murray. Those with pre-existing health conditions may find their symptoms worsening at low temperatures.
	Structures	*Vulnerability:* Residential homes, commercial buildings, and unheated spaces like sheds may be vulnerable. *Impacts:* Homes with poor insulation or inadequately sealed windows and doors are prone to significant heat loss. Older buildings lacking modern energy efficiency standards may also suffer from freezing pipes and related structural damage.
	Economic Assets	*Vulnerability:* Agriculture, infrastructure, and energy-related businesses are at risk. *Impacts:* Agricultural operations, such as greenhouses and livestock farms, may experience crop and livestock losses, impacting revenue. Icy roads can disrupt transportation networks, affecting logistics and supply chains, while power lines risk outages from ice accumulation, impacting local businesses. Energy-intensive facilities may face higher operational costs due to increased heating needs.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Vegetation, wildlife habitat, historic structures, and cultural sites are vulnerable. *Impacts:* Due to prolonged cold, local vegetation and wildlife habitats may suffer from plant stress and reduced food availability. Historic districts and homes in Murray, especially those not built for severe weather, can deteriorate from below-freezing temperatures and ice. Culturally significant sites, including monuments and public art, may also be damaged, while infrastructure such as water pipes and roadways may be compromised during extreme cold events, leading to service disruptions and safety hazards.
	Critical Facilities and Infrastructure	*Vulnerability:* Water systems and transportation systems are vulnerable. *Impacts:* Water systems can experience frozen pipes and equipment failures. Extreme cold can contribute to icy conditions and may increase accident risks and delays on transportation infrastructure. Major routes such as I-15, I-215, State Street, and other roads could experience delays due to traffic accidents. Power generation facilities may struggle to meet heating demands. Residential and commercial buildings lacking proper insulation are also at risk of heating system

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		failures, endangering occupants. City resources or facilities may be needed to provide warming centers during Code Blue alerts.
	Community Activities	*Vulnerability:* Youth sports, festivals, and outdoor markets are vulnerable to extreme cold. *Impacts:* Harsh temperatures can deter participation and reduce community engagement. At-risk groups, such as the elderly and young children, face health risks like frostbite and hypothermia, further limiting outdoor involvement. In addition, poorly insulated buildings or inadequate heating in community centers can make gatherings uncomfortable.
Flooding (and Heavy Rain)	People	*Vulnerability:* Murray is vulnerable to flooding, primarily along Little Cottonwood Creek, which passes through the city, and the Jordan River on the western city border. Flooding in the creek can be caused by rapid snowmelt or heavy rain events, or a combination of both. Localized flooding can also occur following heavy rain, and may accumulate on roadways or other low-lying areas. Residences, commercial areas, and infrastructure can all be affected by flooding. *Impacts:* Both the 1% annual chance flood and 0.2% annual chance flood zones can affect residences in Murray. Flooding can cause injury or death to people who may be swept away by rapid-moving floodwaters. Flooding can also damage homes and may displace residents. Individuals without reliable transportation may struggle to evacuate quickly, while low-income families often lack resources for flood-prevention measures. The elderly and those with disabilities may face mobility challenges, increasing their risk during emergencies. Overall, factors such as geographic location, economic status, and physical ability contribute to the community's varying levels of vulnerability to flooding.
	Structures	*Vulnerability:* Structures vulnerable to flooding primarily include those in low-lying areas or near the Jordan River and Little Cottonwood Creek. Several commercial properties along 900 E and west of I-15 near 4500 South are within the 0.2% flood zone. *Impacts:* Residential properties in flood plains and commercial buildings without proper drainage systems or flood-resistant designs face significant risks of damage during flooding from heavy rain or snowmelt. Overall, a combination of location and construction features contributes to their vulnerability to flooding.
	Economic Assets	*Vulnerability:* Commercial properties, especially retail centers and warehouses near rivers or low-lying areas, are at high risk during heavy rainfall. *Impacts:* As previously noted, several large commercial areas in Murray are within the 0.2% annual chance flood zone and could experience significant economic losses from structural or contents damage in a major flood, and may incur costly repairs. Residential developments in flood-prone zones also can suffer damage, impacting property values. Public infrastructure, such as roads and utilities, may experience disruptions, which may affect businesses' ability to operate and contribute to revenue losses. Agricultural land can be affected by excess water, reducing crop yields.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Natural, Historic, and Cultural Resources	*Vulnerability:* Streams, wetlands, cultural sites, and parks are vulnerable. *Impacts:* Natural areas like wetlands and streams are at risk of habitat destruction, while historic sites and landmarks may sustain structural damage. Cultural resources, such as parks and public spaces, can become unusable, affecting community events. Murray Park has experienced closures in the past due to flooding. Factors contributing to their vulnerability include inadequate flood management, urban development that alters water flow, and the increasing frequency of extreme weather events due to climate change.
	Critical Facilities and Infrastructure	*Vulnerability:* No critical facilities in Murray were identified in the 1% annual chance flood zone. One city facility and one county facility are within the 0.2% annual chance flood. Roads are vulnerable. *Impacts:* Flooding may damage or block transportation networks, particularly those close to rivers, which can overflow during snowmelt, or where water may accumulate in low-lying areas during heavy rain. Flooding can disrupt emergency services, require schools to evacuate, block transportation routes, and isolate individuals and communities. In addition, inadequate drainage systems and urban development encroaching on floodplains increase these risks.
	Community Activities	*Vulnerability:* Outdoor events are vulnerable. *Impacts:* Due to the area's geography and infrastructure, outdoor events, sports, and farmers' markets are vulnerable to flooding. Parks and open spaces can quickly become inundated during heavy rainfall or rapid snowmelt.
Landslide/ Slope Failure	People	*Vulnerability:* Landslides are primarily a risk near steep or unstable slopes. The topography in Murray is relatively flat, and landslide risk to people and structures is minimal. *Impacts:* Residents who commute to neighboring cities could potentially be affected if transportation routes closer to the mountains are blocked by landslides. Small localized slope failure may occur in areas with human-made slopes, such as along freeway over and underpasses or other development, or due to erosion along stream banks.
	Structures	*Vulnerability:* Risk to structures in Murray is minimal due to relatively few steep slopes within the city. *Impacts:* Heavy rainfall, ground shaking from an earthquake, or loose soil may contribute to small, localized slope failures near homes, commercial buildings, roads, or bridges. In addition, inadequate construction practices and a lack of erosion control measures can contribute to the risk of slope failures, particularly for properties not designed with their environmental context in mind.
	Economic Assets	*Vulnerability:* Potential economic impacts from landslides in Murray are low due to relatively low risk of landslide occurrence. *Impacts:* Infrastructure like roads and bridges, and utility services like water and power lines, may be vulnerable to damage from slope failure, which could contribute to economic losses for nearby businesses. These assets are at risk due to heavy rainfall, earthquake-induced landslides, poor drainage systems, and development practices that destabilize slopes.

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Natural, Historic, and Cultural Resources	*Vulnerability:* Landslides pose a low risk in Murray. *Impacts:* Natural resources along creeks and the Jordan River could see minor disruptions to vegetation and wildlife habitat if slopes along the banks fail. No risks to historic and cultural resources from landslides were identified.
	Critical Facilities and Infrastructure	*Vulnerability:* Roadways and essential services like water supply and power lines may be at risk, but the risk in Murray is low. *Impacts:* Heavy rain, earthquake, or destabilization of slopes during development may contribute to small slope failures that may lead to disruptions in infrastructure in the immediate vicinity.
	Community Activities	*Vulnerability:* Landslides pose minimal risk to community activities in Murray.
Radon	People	*Vulnerability*: 35-41% of homes tested in Murray have dangerous levels of radon. *Impacts:* People within homes and other structures with high levels of radon are at an increased risk of lung cancer. Homeowners in older buildings in areas with high radon potential are the most at risk. Families with young children or elderly members are especially at risk due to their increased sensitivity to health impacts.
	Structures	*Vulnerability:* Structures with concrete slabs or basements are particularly vulnerable to radon exposure, as radon can seep in from the soil. *Impacts:* Cracks in floors and walls can allow radon to enter. Although radon does not damage structures directly, some structures may be more likely to accumulate radon gas and increase exposure to occupants. Homes in areas with high uranium content are at greater risk, especially in older houses with inadequate ventilation.
	Economic Assets	*Vulnerability:* Residential properties, commercial buildings, and rental units are vulnerable to radon. *Impacts:* Structures built on radon-prone soil and older buildings lacking modern building standards pose higher risks to occupants. The presence of radon can lead to health issues, decrease property values, and complicate real estate transactions, impacting homeowners and investors alike.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Natural resources, historic structures, and cultural sites are all potentially vulnerable. *Impacts:* Natural resources, such as underground water sources and soil, can accumulate radon, particularly in areas with granite or uranium deposits. Historic structures made from stone or concrete with high uranium content may trap radon indoors, exposing occupants to health risks. Cultural resources such as museums, built with similar materials, also face threats from radon, potentially endangering both the preservation of artifacts and the health of visitors and staff.
	Critical Facilities and Infrastructure	*Vulnerability:* All city facilities can accumulate radon, possibly at similar levels to homes and other structures. *Impacts:* Schools in high-radon areas pose risks for children if they do not have proper ventilation. Healthcare facilities are also at risk,

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		affecting both patients and staff. Inadequate construction practices and a lack of awareness about radon risks may heighten vulnerability.
	Community Activities	*Vulnerability:* Risk to activity communities is low, as exposure at events is short-term. *Impacts:* Indoor gatherings in homes, particularly in basements, where radon tends to accumulate, may increase risk. Construction and renovation can expose workers and residents to radon if proper testing and ventilation are not used.
High Wind	People	*Vulnerability:* All residents of Murray are potentially vulnerable to high wind, which can affect the entire city. Straight-line wind and downslope wind events have previously occurred in Murray. *Impacts:* Wind can cause injury or death from blowing debris or falling tree limbs. The elderly may face mobility challenges that hinder their ability to seek shelter, while children might not fully grasp the dangers of severe weather. Individuals with disabilities or health issues may struggle to react quickly or seek shelter. Mobile homes or poorly constructed houses are at greater risk of damage, and residents are more vulnerable to injury. People who work outdoors and those who are unhoused may be exposed during sudden wind events.
	Structures	*Vulnerability:* Structures throughout Murray are potentially at risk of damage from high wind. *Impacts:* Single-story homes, commercial buildings, and agricultural facilities like barns may be at risk. Residential homes with large, flat roofs or lightweight materials may struggle to withstand strong winds, while commercial buildings with extensive glass can suffer from breakage and structural damage. Structures can also be damaged by trees uprooted by high wind. Carports, sheds, fences, and other accessory structures are easily damaged by high winds and can contribute to blowing debris. The vulnerability of these buildings is heightened in open areas with no landscaping or natural windbreaks, which can help diffuse wind energy.
	Economic Assets	*Vulnerability:* Commercial buildings, such as retail stores, throughout Murray could experience losses from high wind. *Impacts:* Businesses might have large signage and awnings that can be damaged, and damage to roofs could lead to business interruptions or closures. Infrastructure, including power lines and roads, can be compromised, resulting in outages, which may disrupt business operations. Extended power outages and structural repairs may lead to operational downtime and lost revenue. The vulnerability of these assets is largely due to construction quality, location, and the presence of loose materials that can become projectiles.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Parks, trees, historic buildings, and cultural sites are vulnerable. *Impacts:* Natural resources like parks and open spaces with mature trees are vulnerable to high winds, which can cause uprooting and wind erosion. Historic structures also may be at risk if their materials are not resilient, potentially leading to damage or collapse. Cultural resources, such as outdoor art installations and community spaces, can be disrupted or damaged by strong winds. These vulnerabilities

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		are primarily due to the structural integrity of the resources and their exposure to the elements.
	Critical Facilities and Infrastructure	*Vulnerability:* City buildings, hospitals, fire and police stations, and schools could all potentially experience damage or service disruptions due to high wind. Utilities, such as power and communication towers, are at risk. *Impacts:* Utility infrastructure, such as power lines and communications towers, can be damaged by high winds, resulting in outages. Power and communication outages can disrupt emergency response and medical care. Falling tree branches and other debris can block access to property and may block roadways.
	Community Activities	*Vulnerability:* Outdoor events and recreation activities are vulnerable. *Impacts:* Outdoor events like festivals and sporting activities may involve injury from falling debris and damaged structures. Farmers' markets and open-air concerts also can face challenges, with high winds blowing away tents and products. In addition, recreational activities in parks—such as picnics and playground use—become unsafe during high winds. The vulnerability of these activities stems from their outdoor settings, where structures and unattached items can easily be compromised, leading to safety risks and disruptions.
Lightning	People	*Vulnerability:* Lightning can occur anywhere in Murray, and all residents could potentially be exposed. *Impacts:* Lightning can cause severe injury or death to those in close proximity to a strike. Golfing and other forms of outdoor recreation can expose people to lightning risk in open areas during thunderstorms. Athletes and spectators participating in outdoor sports may also struggle to find shelter quickly. In addition, young children and the elderly are more vulnerable, as they may not be aware of the dangers of lightning or may be slower to seek protection. Those lacking access to warning systems or education on lightning safety are at further risk during severe weather.
	Structures	*Vulnerability:* Structures anywhere in Murray could potentially be vulnerable to lightning. Due to their height and exposure, tall buildings, communications towers, and open-frame agricultural barns are particularly vulnerable to lightning strikes. Those with metallic components or inadequate grounding systems face increased risk because metal conducts electricity. In addition, residential homes near tall trees may be at risk if the trees are struck and energy is transferred to the structure. *Impacts:* Lightning can ignite a structural fire. Electrical surges may disrupt power and communication systems within homes and businesses.
	Economic Assets	*Vulnerability:* All businesses are at risk. *Impacts:* Tall structures like communications towers and power lines are at high risk, as are agricultural buildings, such as barns and silos, which can suffer damage to stored crops and livestock. Commercial buildings with metal roofing or equipment may face electrical surges, disrupting operations. In addition, outdoor recreational areas that attract crowds are at risk during thunderstorms, posing dangers to infrastructure and public safety.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Natural, Historic, and Cultural Resources	*Vulnerability:* Trees, parks, and historic buildings are vulnerable. *Impacts:* Mature trees in parks can attract lightning due to their height, while historic buildings made of wood or flammable materials are at risk of igniting. Cultural resources, such as monuments and outdoor sculptures, can also be damaged by lightning. The risk increases in areas with frequent thunderstorms and dry conditions.
	Critical Facilities and Infrastructure	*Vulnerability:* Communications towers and power lines are at risk. *Impacts:* Communications towers attract lightning due to their height and metal structure. Power lines and substations are also susceptible, and lightning strikes can lead to power outages. Power and communication outages can disrupt essential functions of emergency facilities, hospitals, or schools. Schools and hospitals, as public gathering places, can be at risk if they do not have proper lightning protection systems.
	Community Activities	*Vulnerability:* Sports, recreation, and outdoor events are vulnerable. *Impacts:* Sports practices, concerts, picnics, and festivals are particularly vulnerable to lightning strikes. Participants in these events often find themselves in open areas without adequate shelter and may be unprepared for sudden weather changes, leading to dangerous situations. Murray Park, Mick Riley Golf Course, Murray Parkway Golf Course, Wheeler Farm, the Jordan River Parkway, and school sports fields are among the outdoor venues where people may be at risk from lightning. Water-related activities such as swimming, boating, and fishing also increase the risk due to water's conductivity.
Severe Winter Weather	People	*Vulnerability:* All residents in Murray are potentially vulnerable to severe winter weather, such as heavy snow. *Impacts:* People are at risk of injuries from slips and falls on slick conditions on sidewalks and other walkways. Heavy snow and blizzards contribute to traffic accidents, which may cause injury to drivers. Elderly individuals may struggle with mobility and health issues, while young children lack the awareness needed to navigate severe weather safely. People with disabilities often depend on assistance that might not be available during storms. In addition, those without reliable transportation can become stranded, and low-income families in inadequate housing may lack resources for heating and snow removal. Unhoused individuals or others exposed to severe winter weather are at risk of hypothermia or frostbite.
	Structures	*Vulnerability:* Severe winter weather can affect structures anywhere in Murray. *Impacts:* Flat-roofed buildings are prone to snow accumulation, risking roof collapse if not cleared. Older homes might have weakened roofs or inadequate insulation, making them susceptible to snow loads and ice dams. Commercial buildings with large open spaces may face risks if their roofs do not meet snow load requirements. Temporary structures like tents are especially vulnerable, as they are not designed to handle heavy snow. Roof design, material quality, and the age of the building are key factors in determining how well a structure can withstand heavy snowfall.
	Economic Assets	*Vulnerability:* Retail businesses throughout Murray are vulnerable.

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		Impacts: Businesses can experience significant losses from decreased customer traffic and delayed shipments. Construction projects may face delays and increased costs. Transportation and logistics companies are particularly impacted, as snow can hinder vehicle movement, leading to delivery delays. In addition, public services may struggle to maintain continuity during severe weather events.
	Natural, Historic, and Cultural Resources	*Vulnerability:* All trees, historic buildings, and cultural sites in Murray are vulnerable. *Impacts:* Natural resources like trees can break under heavy snow, disrupting habitats. Historic sites risk structural damage from snow accumulation. Historic homes and older structures may be unable to bear the weight of heavy snow accumulation. Cultural resources, including public art and community spaces, face access issues.
	Critical Facilities and Infrastructure	*Vulnerability:* All roads, transportation in Murray, and city facilities are vulnerable. *Impacts:* Transportation networks like roads and bridges throughout Murray can become impassable, hindering emergency responses. I-15, I-215, State Street, and other major routes may become impassable during heavy snow or blizzard conditions and travelers may be temporarily stranded. Power systems are at risk from disruption if high wind or ice accumulation during winter storms damages power lines. Roofs on public buildings, including schools and hospitals, may collapse from the weight of excessive snow. Communications infrastructure can be damaged, impeding signals. These vulnerabilities stem from reliance on systems that may not be equipped to handle extreme winter weather.
	Community Activities	*Vulnerability:* Community events are vulnerable. *Impacts:* Outdoor events, public transportation, and community gatherings may be at risk. Severe weather can lead to low attendance, travel delays, and access issues for essential services, such as emergency response and healthcare. Severe winter weather may force schools to close. Warming centers may see increased demand during extreme cold and severe winter weather conditions.
Tornado	People	*Vulnerability:* Tornadoes are rare in Murray, but could potentially occur anywhere in the city, and all residents are at risk. *Impacts:* If a tornado were to occur, residents are vulnerable to serious injury from blowing debris, uprooted trees, and structural collapse. Individuals living in mobile homes face higher risks, as these structures can be easily damaged. Those with limited mobility, such as the elderly and people with disabilities, may struggle to reach safety quickly. Families with young children might have difficulty ensuring everyone's safety during a warning. In addition, residents unfamiliar with tornado preparedness or without timely weather alerts are at greater risk. Those in lower socioeconomic conditions often live in areas less equipped for disaster response.
	Structures	*Vulnerability:* All structures are vulnerable. *Impacts:* Homes and businesses in Murray could sustain heavy damage from a tornado. Roofs can be torn from homes, windows broken, and walls damaged and compromised. Mobile homes are particularly at risk due to their light weight and insecure foundations.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		Older commercial buildings that do not meet modern codes may also be weak, and large-span structures, such as warehouses, can have roofs easily lifted by tornado winds. Overall, inadequate materials, poor design, and age increase the risk of damage from tornadoes.
	Economic Assets	*Vulnerability:* All Murray businesses are vulnerable. *Impacts:* Tornadoes can cause economic losses in Murray through damage to businesses and interruption of economic activity. Retail businesses, hotels, restaurants, and industrial sites may be damaged and may face operational downtime or closures due to structural damage or interruption of power or communication systems. Closures may lead to lost wages or layoffs, lost revenue, and interruption of supply chains. Roads and bridges can be blocked or compromised, which disrupts transportation and service access.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Historic buildings, cultural sites, and Murray parks are vulnerable to damage from tornadoes. *Impacts:* Historic structures may suffer damage because their age and construction methods might make them less able to withstand high winds. Cultural resources, including monuments and parks that are vital to community heritage, may also be at risk. Murray's parks and open spaces could be severely affected by a tornado. Mature trees could be uprooted, and vegetation damage can affect wildlife habitat and increase erosion.
	Critical Facilities and Infrastructure	*Vulnerability:* Hospitals, schools, and emergency response centers are vulnerable to tornadoes due to their structural design and large open spaces that may not withstand high winds. *Impacts:* Public safety buildings, schools, or other civic facilities may need emergency inspections or repairs. Utilities, like power stations, also are at risk, as damage to these facilities can disrupt essential services. In addition, any structures not built to modern codes might lack the reinforcements necessary to endure severe weather, increasing vulnerability for the facilities and surrounding communities. Major transportation routes, such as I-15, I-215, State Street, and other arterial roads, may be blocked by debris.
	Community Activities	*Vulnerability:* Outdoor recreation and events are vulnerable to disruption by tornadoes. *Impacts:* Outdoor festivals, sports events, and markets are vulnerable to tornadoes due to their open spaces and limited options to provide shelter. Temporary structures, such as tents, can be easily damaged by high winds, and patrons may be unable to find shelter. Events may be postponed or canceled, reducing opportunities for social engagement and community support. Schools and recreational facilities with large glass windows or weak roofs also face significant risks.
Wildfire	People	*Vulnerability:* Wildfire risk is relatively low in Murray due to its location in the middle of the valley, which is mostly urban development. Some areas of open space near parks and along the Jordan River may be vulnerable to wildfire. *Impacts:* Wildfires are likely to be small and only affect a few structures. Wildfire smoke can affect individuals in Murray city, even if the fire is not located within the city itself. Individuals with underlying

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		health conditions may be particularly vulnerable to the effects of poor air quality. Individuals with physical disabilities or health issues might struggle to evacuate, and low-income families lacking resources for fire safety measures may be vulnerable. Older adults might have reduced mobility, making them more dependent on others for assistance.
	Structures	*Vulnerability:* A few structures near open space have some risk. *Impacts:* Residential homes, especially those made of wood or near heavily vegetated areas, may be vulnerable. Inadequate defensible space, such as insufficient clearing of dry grass and shrubs, increases susceptibility. Roofs made of combustible materials, and buildings that lack fire-resistant features, are particularly at risk during wildfire events.
	Economic Assets	*Vulnerability:* Vulnerability to economic assets is relatively low in Murray, as it is primarily developed land. *Impacts:* Commercial assets, such as retail centers close to undeveloped/vegetated regions, can suffer damage from flames and smoke, affecting the local economy. Vital infrastructure, such as power lines and water pipelines, including those outside of Murray, can be disrupted by wildfires, causing further economic repercussions. These vulnerabilities are heightened by drought conditions, extreme heat, and/or high winds, which can facilitate the spread of fires.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Grasslands along the Jordan River are vulnerable to wildfires. *Impacts:* Natural areas are at risk because dry vegetation and accumulated brush can easily ignite. Historic sites made of wood and cultural landmarks can also be affected, particularly when located near undeveloped areas. The increasing frequency of drought and extreme heat, exacerbated by climate change, heightens these vulnerabilities.
	Critical Facilities and Infrastructure	*Vulnerability:* Utilities, like power lines and communication systems, may be at risk. *Impacts:* Critical facilities and infrastructure within Murray have low wildfire risk as they are not in close proximity to the Wildland-Urban Interface. Wildfires outside of Murray City may cause disruptions to services within Murray.
	Community Activities	*Vulnerability:* Outdoor events are vulnerable to the impacts of wildfires. *Impacts:* Wildfire smoke may deter attendance at outdoor events, like festivals and sports, especially during hot, windy conditions. The Jordan River Trail may be inaccessible for recreational activities, such as biking or running, during and following a wildfire in the area.
Dam Failure	People	*Vulnerability:* Murray residents are vulnerable to the failure of dams. Inundation boundaries from dams in upper Big and Little Cottonwood Canyons could affect portions of Murray City near Big Cottonwood and Little Cottonwood Creeks. *Impacts:* Dam failure can cause swift-moving floodwaters downstream that can cause injury. Individuals living near dams or within potential inundation areas, particularly in low-lying areas, are most vulnerable to dam failure and potential flooding. Damage to homes may lead to residents being displaced. Families with young children, the elderly,

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		and low-income residents may struggle to evacuate quickly, while individuals with disabilities may face significant barriers during emergencies.
	Structures	*Vulnerability:* Structures in the northern area of Murray are at risk of flooding from a dam failure. Many of these are commercial or industrial structures, but some residences along creeks could also be affected. *Impacts:* Fast-moving floodwaters can cause significant structural damage downstream.
	Economic Assets	*Vulnerability:* Businesses in the inundation boundaries are vulnerable to flood damage. *Impacts:* Businesses may experience direct losses to structures and inventory if located downstream of a dam failure. They can also be affected by interruptions of services. Roads, bridges, and utilities could suffer damage, disrupting transport and services. Residential and commercial properties downstream face significant flood risks, leading to property damage and economic loss. The proximity of these assets to failure zones highlights their vulnerability to dam failure.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Natural resources, like local waterways such as Big Cottonwood Creek and Little Cottonwood Creek, are vulnerable. Historic buildings and cultural sites are also at risk. *Impacts:* Creeks could suffer damage to ecosystems and habitat loss. Historically significant sites and historic homes may be at risk of flooding and deterioration. Cultural resources, such as community centers and parks, also may face damage, affecting local gatherings.
	Critical Facilities and Infrastructure	*Vulnerability:* One fire station, five schools, and one healthcare facility are in dam failure inundation areas and may be damaged by flooding following a dam failure. *Impacts:* Schools and hospitals face safety risks and evacuation challenges, which could lead to injury or loss of life and property. Transportation infrastructure, such as roads and bridges, may be compromised, hampering emergency response.
	Community Activities	*Vulnerability:* Recreational pursuits, like fishing in creeks downstream, may be at risk from dam failure. *Impacts:* Murray Park and Wheeler Farm are vulnerable to dam failure, and events in these areas may be disrupted. These activities are vulnerable to sudden flooding from a dam breach.
Civil Disturbance	People	Low-income individuals may lack the resources for safety, while the elderly or disabled may struggle to navigate emergencies. Young people, particularly teenagers, may be drawn into unrest, influenced by social dynamics. In addition, marginalized individuals may feel targeted or compelled to participate. A lack of community cohesion and trust in authorities can further heighten tensions.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Structures	Government buildings, commercial properties, and infrastructure, such as bridges and transportation hubs may be vulnerable. Government buildings may be targeted for their symbolic authority, while retail stores can attract crowds during protests. Residential neighborhoods also can be affected, especially in areas with heightened tensions. The vulnerability of these structures stems from their visibility and importance to the community, combined with factors such as location and ongoing social issues.
	Economic Assets	Retail establishments, especially shopping centers, are at risk as they often become focal points for protests. Transportation systems can be disrupted by blockades, hindering access to services. Financial institutions may face vandalism or theft, while critical service providers, such as hospitals, could experience strain during unrest. Several economic assets are vulnerable to civil disturbances, primarily due to their visibility and reliance on foot traffic.
	Natural, Historic, and Cultural Resources	Parks and open spaces may suffer from vandalism or destruction during uncontrolled events. Historic sites can become targets, as they symbolize authority or cultural significance. Cultural resources such as community centers and places of worship also may be affected, as they play a vital role in community identity. Their vulnerability lies in the potential for damage during protests.
	Critical Facilities and Infrastructure	Governmental buildings, schools, and healthcare facilities may be at risk, since they often symbolize authority and serve as community hubs, making them targets during unrest. Utility infrastructure, such as water and power facilities, is also at risk of disruption. Its visibility and essential services contribute to its vulnerability during civil disturbances.
	Community Activities	Public demonstrations, parades, and local government meetings are particularly vulnerable to civil disturbances. These events often attract large crowds and can become tense, especially around contentious social or political issues. Factors such as the local demographic, economic conditions, and recent events can heighten these vulnerabilities, making it easier for conflicts to arise during passionate public gatherings.
Cyberattack	People	Older adults often lack familiarity with technology and online security, making them easy targets for phishing scams. Individuals engaging in online banking or shopping without strong security measures also face heightened risks. Families with children may be less vigilant about internet safety, allowing cybercriminals to exploit personal information. In addition, small business owners without robust cybersecurity practices are prime targets for attacks that can disrupt operations.
	Structures	Critical infrastructure, such as power plants, water treatment facilities, and transportation systems, often lack robust cybersecurity measures. Commercial businesses, especially financial institutions and healthcare providers, also are at risk due to weaker data protection and employee training. Educational institutions may be vulnerable because of limited funding for cybersecurity and outdated software. Obsolete technology and insufficient training enhance the susceptibility of these structures to cyber threats.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Economic Assets	Financial institutions, such as banks and credit unions, are at risk of data theft and service disruption. Small and medium-sized businesses often lack robust cybersecurity measures, making them attractive targets. In addition, local government agencies and critical infrastructure, such as water treatment facilities, might have outdated security protocols, posing threats to public safety. The rise of remote work further exacerbates vulnerabilities, as employees accessing networks from home can unintentionally expose systems to risks. Overall, the combination of outdated technology and insufficient cybersecurity practices increases the vulnerability of an area's economic assets.
	Natural, Historic, and Cultural Resources	Natural resources like water management systems and wildlife databases can be compromised, disrupting ecosystems. Historic sites and museums that digitize collections are at risk of losing valuable artifacts and data. In addition, cultural organizations managing events may face threats if their systems lack adequate security. The limited resources of smaller organizations further increase this vulnerability
	Critical Facilities and Infrastructure	Energy and utility services, such as electricity and water systems, which often rely on outdated technology, may be vulnerable. Transportation infrastructure, such as traffic management and public transit, is also at risk due to networked systems. Healthcare facilities that use electronic records and connected medical devices face vulnerabilities that can compromise patient safety.
	Community Activities	Online registration for events, local government services, and educational programs that rely on digital tools may be targeted due to inadequate security measures, outdated software, and insufficient staff training.
Hazardous Materials Incident (Transporta-tion & Fixed Facility)	People	Individuals with pre-existing health conditions, such as respiratory issues, and the elderly are at higher risk due to their compromised health. Children also are more susceptible. Those living near industrial areas or transport routes for hazardous materials face increased exposure risk, while low-income families may lack resources and information to effectively prepare for incidents.
	Structures	Industrial facilities, such as manufacturing plants and warehouses, often store hazardous chemicals which may leak. Residential buildings, schools, and hospitals also are at risk, particularly if located along transportation routes for hazardous materials. Older buildings may lack modern safety features, increasing their vulnerability.
	Economic Assets	Industrial facilities, transportation infrastructure, and nearby commercial properties may be affected. Industrial facilities handling chemicals are at risk of spills or leaks, while roads and railways used for transporting hazardous materials can lead to accidents and contamination. In addition, nearby commercial and residential areas face potential health risks and economic losses.
	Natural, Historic, and Cultural Resources	Waterways and habitats are vulnerable to hazardous materials incidents, which can disrupt ecosystems. Historic sites and structures may suffer damage from toxic exposure, leading to degradation over time. In addition, cultural landmarks risk losing their significance due to contamination events. The proximity of these resources to industrial areas or transport routes exacerbates their risk.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Critical Facilities and Infrastructure	Chemical manufacturing plants, waste treatment facilities, and transportation networks, such as highways and railroads may be at risk. Their vulnerability stems from factors such as proximity to residential areas, aging infrastructure, and inadequate safety measures. Natural hazards, such as flooding and earthquakes, can further increase risks by damaging containment systems.
	Community Activities	Local markets, school events, and outdoor gatherings are vulnerable to hazardous materials incidents if they are near industrial zones and transport corridors. This risk is heightened by inadequate emergency preparedness, lack of public awareness, and the potential for spills during transport. Large crowds at events can complicate evacuation efforts, increasing the risks for participants and nearby residents.
Public Health Epidemic/ Pandemic	People	Individuals with pre-existing health conditions like asthma and heart disease and adults over 65 may be vulnerable. Low-income families may struggle to access healthcare and vaccinations, increasing their risk. Marginalized communities with limited access to information and those living in high-density conditions also are at greater risk due to the rapid spread of diseases and the challenges in implementing preventive measures.
	Structures	Several structures are vulnerable to public health epidemics or pandemics, particularly due to their ability to facilitate the spread of disease. High-density residential areas, such as apartment complexes, are at risk, as close living quarters can lead to faster transmission. Public gathering spaces, such as schools and community centers, also pose significant threats because large groups are in confined spaces. Healthcare facilities can become hotspots for infections if infection control measures are insufficient. In addition, workplaces with high foot traffic, such as retail stores, contribute to vulnerability.
	Economic Assets	Small businesses in retail, hospitality, and food service are particularly vulnerable to public health epidemics or pandemics. These sectors face risks from fluctuating consumer demand and potential operational restrictions. The tourism industry also is affected, as travelers may avoid high-risk areas. Healthcare facilities can become overwhelmed, straining resources and impacting operations. In addition, local supply chains may experience disruptions, leading to shortages and inflation. Overall, the direct effects of illness, along with prolonged shutdowns and consumer hesitance, leave these economic assets exposed to significant downturns.
	Natural, Historic, and Cultural Resources	Natural resources like wildlife and ecosystems can be disrupted by increased human activity, raising the risk of zoonotic diseases. Historic sites may deteriorate due to reduced visitor access and funding, while cultural resources, such as community events, face cancelations, impacting social connections.
	Critical Facilities and Infrastructure	Public health epidemic or pandemic incidents can affect healthcare facilities, nursing homes, public transportation systems, schools, and food supply chains. Hospitals and clinics may become overwhelmed with patients, while vulnerable populations in nursing homes are at higher risk. Public transportation can facilitate the spread of disease, and schools gather large groups, thereby increasing transmission potential. These facilities often lack adequate resources, including

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		medical supplies and testing capabilities, making them more susceptible to the impacts of a health crisis.
	Community Activities	Large gatherings like festivals and sporting events can facilitate the rapid spread of diseases due to close contact. Public transportation also is at risk, as it serves many people in confined spaces. Schools and childcare facilities are particularly susceptible, given that children can easily transmit infections. In addition, food-related events, such as farmers' markets, can pose risks if hygiene practices are not followed. The interconnectedness of community members and varying adherence to health guidelines further exacerbate these vulnerabilities.
Terrorism	People	Young children and newcomers may lack awareness of potential threats, while the elderly and individuals with disabilities may struggle to respond quickly in emergencies. Marginalized communities often face bias, making them more susceptible to targeting. In addition, those with lower socioeconomic status may lack access to security measures and emergency preparedness resources.
	Structures	Government buildings, transportation hubs, commercial centers, and public spaces are particularly vulnerable to terrorism incidents. Government buildings are symbolic targets, while transportation hubs and commercial centers are attractive due to their potential for high casualties and crowd presence. Public spaces also are at risk due to their open nature and lack of security. Their vulnerability is heightened by inadequate security measures, high occupancy rates, and their locations in densely populated areas, which can amplify the impact of incidents.
	Economic Assets	Infrastructure, commercial establishments, and community facilities may be vulnerable. Critical infrastructure, such as transportation networks and power grids, could disrupt the economy if targeted. Commercial establishments, especially those with high foot traffic, and community facilities like schools and hospitals also are at risk, as they can provoke widespread concern and disruption. Their accessibility and interconnectivity increase vulnerability, meaning that damage to one asset can have a broader economic impact and hinder recovery efforts.
	Natural, Historic, and Cultural Resources	Natural resources like water supplies and parks could be targeted for their significance to the community. Historic sites and cultural resources, such as museums or community centers, also are at risk due to their accessibility and importance to local identity. Their vulnerability is often heightened by inadequate security measures.
	Critical Facilities and Infrastructure	Public transportation systems, healthcare facilities, schools, and utility services like water and power plants may be affected. Their vulnerability arises from high accessibility and the potential impact of an attack, as crowded transportation and public spaces can lead to mass casualties and panic. Attacking utility services could disrupt the town's essential functions, creating chaos.
	Community Activities	Festivals, parades, and sporting events are particularly vulnerable to terrorism incidents. These events attract large crowds, making it easier for perpetrators to inflict harm and instill fear. In addition, community centers and places of worship serve as social hubs, increasing their

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		risk. Factors such as limited security measures and open access to public spaces, contribute to this vulnerability.

Hazards Not Profiled

Avalanche hazard has been omitted from further discussion of hazard impacts and from mitigation actions. As shown in the hazard description in Volume 1, avalanche risk is primarily located in the Wasatch and Oquirrh Mountains in Salt Lake County. Murray City has mostly flat terrain and minimal risk from these hazards. No previous occurrences of avalanches have impacted Murray.

Jurisdiction-Specific Changes in Vulnerability

Hazard events can impact communities, infrastructures, and ecosystems. The severity of these impacts can be influenced by climate change, population patterns, and land use developments. Understanding these factors is crucial for the city of Murray to develop a resilient community and minimize the impacts of hazards. Table 8 displays the unique changes within the community and the related effects on each identified hazard affecting the city of Murray.

DRAFT

Table 8: Jurisdiction-Specific Changes in Vulnerability in the City of Murray

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
Drought	Climate change affects drought incidents by altering precipitation patterns and increasing temperatures. Warmer weather can lead to longer dry periods and more severe droughts, while changes in rainfall can reduce snowpack in nearby mountains, crucial for summer water supply. Higher temperatures also increase evaporation rates, further straining local water resources.	Drought can significantly influence population patterns by impacting economic opportunities and the quality of life. Water scarcity often leads to reduced agricultural productivity, prompting residents to migrate to areas with more stable job prospects. Increased water costs can make living less affordable, driving some residents away. Conversely, efforts to address drought, such as sustainable development or improved water management, may attract newcomers, resulting in changes in the community's demographic composition over time.	Increasing population and development projects (Murray Tower Plaza, Downtown Block One) will continue to put a strain on Murray's water sources.	Increased
Earthquake	Rising temperatures can lead to glacial melting, which affects pressure on tectonic plates and may trigger seismic activity through isostatic rebound. In addition, increased rainfall and flooding can erode soils, weakening structural integrity and heightening vulnerability during earthquakes. Although the direct links between climate change and earthquakes are still under investigation, environmental effects may impact the region's seismic risk.	Earthquakes can significantly alter population patterns by prompting residents to leave for safer areas after a seismic event. This migration can lead to changes in population density and attract new residents and businesses during the rebuilding process. The perception of the area as a safe place to live may shift, impacting long-term demographics, as some residents return to rebuild while others relocate permanently.	Development has increased, but it has been built to current earthquake-building codes to mitigate the risk.	Stayed the same

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
Extreme Heat	Climate change significantly impacts extreme heat by increasing the frequency and intensity of heat waves. Rising global temperatures lead to longer and hotter summers, affecting residents and local infrastructure while heightening health risks, especially for vulnerable populations. Urban heat islands resulting from reduced vegetation and extensive pavement further amplify these effects.	Residents may relocate due to damaged homes or safety concerns. Some may move to areas perceived as safer or seek better job opportunities elsewhere. The economic impact and infrastructure damage can also make certain neighborhoods less desirable, leading to shifts in demographics and the socioeconomic landscape as new residents with different backgrounds move in.	Increased density, particularly in Murray Downtown and Fashion Place West, can lead to increased temperatures during extreme heat events.	Increased
Extreme Cold	Climate change can increase the intensity of winter storms. Higher atmospheric temperatures allow for more moisture, resulting in heavier snowfall and potentially lower temperatures during these events. In addition, fluctuations in weather patterns may disrupt seasonal cycles, leading to unpredictable periods of extreme cold mixed with warmer spells.	Some residents may relocate to warmer areas. Harsh winters can hinder economic activities and deter new residents and businesses, influencing housing demand and the attractiveness of certain neighborhoods. This may disproportionately affect lower-income families, leading to changes in demographics and socioeconomic stratification in the community.	Increased growth of commercial and residential developments in Murray leads to increased energy demand during extreme cold events, stressing the electrical grid.	Increased
Flooding	Higher temperatures increase the frequency and intensity of extreme weather events and alter precipitation patterns. They lead to more intense rainstorms and accelerated snowmelt from nearby mountains, raising water levels in rivers and streams. This	Flooding can significantly alter population patterns by displacing residents from affected areas, leading them to seek shelter elsewhere. This may cause a population decline where flooding occurs, as individuals might hesitate to return due to ongoing risks or property damage. As	Development since the previous hazard mitigation has not been in the 1% and 0.2% annual chance flood zone. Increased impervious surfaces due to development across Murray could contribute to ponding and other pluvial flooding.	Decreased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	combination raises the risk of flooding, especially in areas with inadequate drainage and urban development in flood-prone zones, heightening the potential for damage to homes and infrastructure.	neighborhoods become less desirable, people may migrate to safer areas, changing demographic trends and putting pressure on housing in those regions. Over time, these shifts can influence urban planning and development, as local governments address flooding risks and changing population needs.		
Landslide/ Slope Failure	Climate change increases the risk of landslides through heavier rainfall and temperature fluctuations. Intense rain saturates soil, destabilizing slopes, while freeze–thaw cycles weaken the ground. Changes in vegetation can also reduce stability, leading to a higher potential for landslides.	Landslides and slope failures can impact population patterns by making some areas unsafe, leading to displacement and lower property values. This prompts residents to move to safer regions, thereby increasing density in more stable areas. Concerns about future landslides may also deter newcomers from high-risk zones, shaping long-term demographic trends.	Development in Murray has not increased landslide risk.	Increased
Radon	Climate change can affect radon levels by altering soil temperatures and moisture conditions. Higher temperatures may increase radon emissions from the ground, while heavy rainfall can change groundwater and soil saturation, impacting radon migration into buildings.	Radon exposure can influence population patterns as increased health awareness may drive families to move away from areas with high radon levels. This shift could particularly affect vulnerable groups, changing demographics and demand in the housing market. Homes with lower radon levels may become more sought after, and public health campaigns can encourage community action, making	Development in Murray has not increased radon risk.	Decreased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
		previously undesirable areas more attractive once mitigation measures are implemented.		
Heavy Rain	Climate change increases the frequency and intensity of heavy rain, as higher temperatures allow the atmosphere to hold more moisture. This leads to stronger storms, flash flooding, and overwhelmed drainage systems.	Heavy rain can shift population patterns by pushing residents out of flood-prone areas and attracting them to safer neighborhoods. Frequent flooding may lead to evacuations and economic disruptions, prompting relocations. Over time, ongoing heavy rains can affect housing demand and community stability, altering the town's population distribution.	Increased impervious surfaces due to development across Murray could contribute to ponding and other pluvial flooding.	Increased
High Wind	Climate change affects high winds by altering atmospheric patterns and increasing extreme weather events. Rising temperatures may lead to more substantial, unpredictable winds and more frequent thunderstorms, posing risks to infrastructure and air quality.	High winds can alter population patterns by making certain areas less desirable. Frequent damage may drive residents to safer neighborhoods, deter newcomers, and slow growth in affected regions.	Multistory developments add a slight risk of damage from high winds.	Increased
Lightning	Climate change increases temperatures and alters precipitation, leading to more intense thunderstorms and frequent lightning strikes. Urbanization can enhance this effect, posing risks to public safety and infrastructure.	Lightning can influence population patterns by causing property damage and wildfires, leading some residents to relocate. Areas with higher lightning activity may deter new residents, while safer locations could increase migration as people seek protection from severe weather.	Increased development, including multistory buildings, slightly increases the risk of lightning damage in Murray.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
Severe Winter Weather	Climate change impacts heavy snow and blizzards by altering precipitation patterns. Higher temperatures can lead to more rain than snow, affecting snowpack levels—additionally, increased storm intensity results in heavier, more unpredictable snowfall.	Increased population equals an increased number of people needing to get to work and quicker snow removal. Heavy snow or blizzards can impact population patterns by influencing where people live and work. Transportation disruptions may lead residents to seek housing closer to jobs, increasing density in some areas while depopulating others. Families might also avoid regions with frequent heavy snowfall, shifting demand to milder areas. Over time, these trends can alter community demographics and economic activity, prompting adjustments in town planning and resource allocation.	As new developments have been constructed, additional risks have emerged for the city during extreme winter weather. The city now takes on more responsibility for clearing these developments and infrastructure, as well as conducting rescues and evacuations during heavy snow events.	Increased
Tornado	Climate change may increase the frequency and intensity of tornadoes. Higher temperatures lead to more moisture in the air, creating conditions for severe thunderstorms. Changes in wind patterns and precipitation can also heighten tornado risks, resulting in more destructive storms and greater threats to infrastructure and communities.	Tornadoes can influence population patterns by prompting residents to move to safer areas after damage occurs. This can decrease density in affected neighborhoods while increasing the demand for housing in safer regions. New residents may also move in for recovery opportunities, altering demographics. Over time, repeated tornado threats might push long-term residents to areas with better disaster preparedness, reshaping the town's population distribution.	Increased development slightly raises the risks of tornado damage in Murray.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
Wildfire	By raising temperatures and creating drier conditions, prolonged droughts lead to more dry vegetation, which serves as fuel for fires. Erratic seasons extend the growing period, while more lightning strikes can ignite wildfires. These factors heighten the threat to ecosystems and community safety.	Displaced individuals often seek safer areas, shifting demographics, while declining property values might deter newcomers. Conversely, some may be drawn to rebuilding efforts, impacting long-term growth and community dynamics.	Development in Murray has not increased the risk of wildfire.	Increased
Dam Failure	Climate change raises the risk of dam failure by causing heavier rainfall and rapid snowmelt. These changes can overwhelm dams and compromise their integrity, highlighting the need for urgent safety assessments and upgrades to protect communities downstream.	Dam failure can impact population patterns by displacing residents and altering demographics. Evacuations can lead to an influx in safer areas, while destruction may deter new residents and contribute to population decline. Fear of future disasters may also prompt remaining individuals to relocate, changing the community's composition and affecting population density and economic activity.	Development in Murray has not increased the risk of dam failure.	Increased
Civil Disturbance	Climate change can increase civil disturbances by intensifying environmental stresses and social tensions. Rising temperatures may lead to droughts, wildfires, and poor air quality, particularly affecting vulnerable communities. Resource scarcity, especially water, can spark conflicts and protests. In addition, an influx of	By encouraging residents to move for safety, leading to outflows and new arrivals. These events can reveal social issues, impacting community dynamics, employment, and property values, ultimately reshaping demographics, and social cohesion.	Development in Murray has not increased the risk of civil disturbance.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	migrants from harder-hit areas may strain local resources, further escalating tensions. This cycle of unrest is driven by the impacts of climate change on the environment and community dynamics.			
Cyberattack	Possible attack on the industry, which is seen as producing large amounts of greenhouse gases and burning fossil fuels. Climate change can heighten cyberattack risk by increasing vulnerabilities during extreme weather. Disruptions like power outages offer cybercriminals opportunities, as focusing on emergency responses can weaken cybersecurity measures. As organizations adopt new technologies to cope with climate impacts, they may unintentionally introduce additional vulnerabilities.	Cyberattacks can change population patterns by eroding trust in essential services. Compromised systems may cause residents to leave due to safety concerns, while high-profile incidents can deter businesses, leading to job losses. This perception of vulnerability may also make the town less appealing to newcomers, resulting in demographic shifts and affecting local development.	Development in Murray has not increased the risk of a cyberattack.	Increased
Hazardous Materials Incident (Transportation & Fixed Facility)	Climate change elevates the risk of hazardous materials incidents by increasing extreme weather events like heavy rain and wildfires. These events can breach storage tanks and heighten material volatility. Vulnerable infrastructure can lead to more spills or accidents, while climate shifts may also introduce new challenges for	By causing evacuations and temporary declines in density. In the long run, unsafe areas may deter new residents, affecting growth and diversity. In addition, negative perceptions can lower property values and economic prospects, leading families to relocate, which impacts local demographics.	Development in Murray has not increased the risk of hazardous materials incidents.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	managing hazardous substances and public health.			
Public Health Epidemic/ Pandemic	By increasing the spread of vector-borne diseases and raising the risk of waterborne illnesses due to flooding or drought. Worsening air quality can also exacerbate respiratory conditions like asthma, especially in vulnerable populations.	By prompting migration for safety and better healthcare. Vulnerable groups may move to areas with improved services, while economic instability can drive people to seek new employment opportunities. In addition, restrictions like quarantine measures can limit movement and social interactions, reshaping the community's demographics and impacting local economies.	Development in Murray has not increased the risk of an epidemic/pandemic.	Increased
Terrorism	Terroristic activity is sometimes centered around climate change. Climate change impacts terrorism incidents by creating conditions of resource scarcity and social unrest. Increased competition for essential resources, such as water, can fuel tensions, making communities more vulnerable to extremist ideologies. Extreme weather events may disrupt social order and infrastructure, offering terrorist groups opportunities to exploit crises. In addition, climate-driven population displacement can heighten tensions in receiving areas, raising the risk of domestic terrorism. Law enforcement's focus on climate-	Terrorism incidents can alter population patterns by instilling fear and prompting residents to relocate to perceived safer areas, resulting in demographic shifts and potential declines in property values. Some neighborhoods may see an outflow of residents, while others could experience an influx of people seeking refuge from violence. In addition, increased security measures may deter businesses and residents from certain locations, leading to long-term changes in population density and urban development patterns.	Development in Murray has not increased the risk of terrorism incidents.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	related challenges can also limit its capacity to address terrorism threats. Ultimately, while climate change may not directly cause terrorism, its effects can create an environment conducive to extremist activities.			

DRAFT

Additional Public Involvement

The city of Murray provided several opportunities for public participation. Figure 1 provides examples of public outreach. An announcement of the mitigation plan and a link to the survey was also included in the City Journal mailer sent to residents.

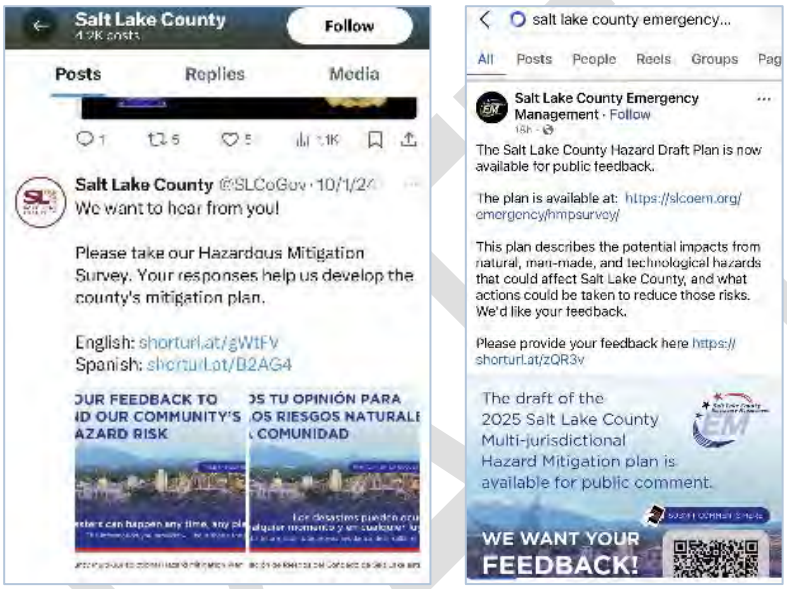


Figure 1: Social Media Posts for the Hazard Mitigation Survey (*left*) and the Draft Plan Review (*right*)

Plan Integration

Incorporating the underlying principles of the Hazard Mitigation Plan and its recommendations into other plans is a highly effective and low-cost way to expand their influence. All plan participants will use existing methods and programs to implement hazard mitigation actions where possible. As previously stated, mitigation is most successful when it is incorporated into the day-to-day functions and priorities of government and public service. This plan builds on the momentum developed through previous and related planning efforts and mitigation programs, and it recommends implementing actions where possible through these other program mechanisms. These existing mechanisms include the following:

- Regularity Capabilities
- Administrative Capabilities
- Fiscal Capabilities

Respective planning stakeholders will conduct implementation and incorporation into existing planning mechanisms and will be done through the routine actions of:

- Monitoring other planning/programming agendas
- Attending other planning/program meetings

- Participating in other planning processes; and
- Monitoring community budget meetings for other community program opportunities.

The successful implementation of this plan will require constant and vigilant review of existing plans and programs for coordination and multi-objective opportunities that promote a safe, sustainable community. Regular efforts should be made to monitor the progress of mitigation actions implemented through other planning mechanisms. Where appropriate, priority actions should be incorporated into planning updates. Table 9 lists existing planning mechanisms into which the Hazard Mitigation Plan has been integrated.

Table 10 lists opportunities for integrating elements of this plan into other plans.

Table 9: Integration of Previous Plans by the City of Murray

Plan	Description
Emergency Operations Plan (soon to be updated to a Comprehensive Emergency Management Plan)	Summary of operations in the event of a major incident or disaster in the city.
City Ordinances	Flood hazard reduction and stormwater management are established in the zoning code.

Table 10: Opportunities for Integration with Future Plans of the City of Murray

Plan	Description
General Plan	Overview of the city's long-term goals and initiatives.
Stormwater Management Plan	Maintain healthy habitats and reduce contaminants from entering waterways.
Transportation Master Plan	The plan does not currently specifically address hazards in its plans to address future transportation needs. Mitigation could be added to the capital facilities planning section.
Fashion Place West, Murray North Station, and Murray Central Station Small Area Plans	Opportunities to address potential hazard mitigation actions in focused areas of development/revitalization.

Capability Assessment

Local mitigation capabilities are existing authorities, policies, programs, and resources that reduce hazard impacts or could help carry out hazard mitigation activities.

Planning and Regulatory Capabilities

Planning and regulatory capabilities are the plans, policies, codes, and ordinances that prevent and reduce the impacts of hazards.

Table 11: Assessment of the Planning Capabilities of the City of Murray

Plan	Does it address hazards? (Y/N)	How can it be used to implement mitigation actions?	When was the last update? When is the next update?
General Plan	Y	Can be incorporated into long-term goals and initiatives that are referenced	2017
Capital Improvement Plan	Y	Provides information on the funding source	2017
Climate Change Adaptation Plan	N/A	N/A	N/A
Community Wildfire Protection Plan	N/A	N/A	N/A
Economic Development Plan	Y – referenced in General Plan	Provides information on funding sources for mitigation actions	2024
Land Use Plan	Y – referenced in General Plan	Provides information on long-term initiatives and goals, which can be incorporated into mitigation actions	2017
Local Emergency Operations Plan	Y	Informs mitigation actions as far as priority tasks and areas within the city	2018
Stormwater Management Plan	Y	Can be used to inform flooding mitigation actions	2020
Transportation Plan	Y	Can inform mitigation actions as far as priority areas and tasks	2021
Substantial Damage Plan	N/A	N/A	N/A
Other? (Describe)	Sanitary Sewer Management Plan	Can inform water-related mitigation actions for the city	2022
Other	Flooding Plan	Provides information on responsibilities and the chain of command in the event of a flood	2011

DRAFT

Table 12: Assessment of the Regulations and Ordinances of the City of Murray

Regulation/Ordinance	Does it effectively reduce hazard impacts?	Is it adequately administered and enforced?	When was the last update? When is the next update?
Building Code	Y; the city effectively enforces the adopted building codes. The adopted codes include the state building codes, the current version being the International Building Code (IBC 2021) as amended, as well as the 1997 edition of the Uniform Code for Abatement of Dangerous Buildings (ISSN 0896-971X), published by the International Conference of Building Officials and Voluntary Seismic Retrofit: The Guidelines for the Seismic Retrofit of Existing Buildings (ISBN 1580010709), published by the International Conference of Building Officials.	Y	2025
Flood Insurance Rate Maps	Y	Y	2024
Floodplain Ordinance	Y	Y	2022
Subdivision Ordinance	Y	Y	2023
Zoning Ordinance	Y	Y	2023
Natural Hazard-Specific Ordinance (Stormwater, Steep Slope, Wildfire)	Y	Y	2023
Acquisition of Land for Open Space and Public Recreation Use	Y	Y	2023
Prohibition of Building in At-Risk Areas	Y	Y	2023
Other? (Describe)			

DRAFT

Administrative and Technical Capabilities

Administrative and technical capabilities include staff and their skills. They also include tools that can help carry out mitigation actions.

Table 13: Assessment of the Administrative Capabilities of the City of Murray

Administrative Capability	In Place? (Y/N)	Is staffing adequate?	Are staff trained on hazards and mitigation?	Is coordination between agencies and staff effective?
Chief Building Official	Y	Y	Y	Y

Administrative Capability	In Place? (Y/N)	Is staffing adequate?	Are staff trained on hazards and mitigation?	Is coordination between agencies and staff effective?
Civil Engineer	Y	Y	Y	Y
Community Planner	Y	Y	Y	Y
Emergency Manager	Y	Y	Y	Y
Floodplain Administrator	Y	Y	Y	Y
Geographic Information System (GIS) Coordinator	Y	Y	Y	Y
Planning Commission	Y	Y	Y	Y
Fire Safe Council	N – have local Fire Department	N/A	N/A	N/A
CERT (Community Emergency Response Team)	Y	Y	Y	Y
Active VOAD (Voluntary Agencies Active in Disasters)	Y	Y	Y	Y
Other? (Please describe.)				

Table 14: Assessment of the Technical Capabilities of the City of Murray

Technical Capability	In Place? (Y/N)	How has it been used to assess/mitigate risk in the past?	How can it be used to assess/mitigate risk in the future?
Mitigation Grant Writing	Y	Grant funds can be used to support mitigation actions.	Grants can be an additional pool of money for mitigation actions.
Hazard Data and Information	Y	Identify areas of concern or areas to prioritize for mitigation actions	Monitor areas of concern or high risk over time
GIS	Y	Heat mapping of areas of concern	Mitigation action tracking and project management
Mutual Aid Agreements	Y	Agreements with surrounding jurisdictions and local agencies/organizations to mitigate risk	Mutual aid agreements are helpful for mitigating risks, especially on projects that cross jurisdictional boundaries.
Other? (Please describe.)			

DRAFT

Financial Capabilities

Financial capabilities are the resources to fund mitigation actions. Talking about funding and financial capabilities is important to determine what kinds of projects are feasible, given their cost. Mitigation actions like outreach programs are lower cost and often use staff time and existing budgets. Other actions, such as earthquake retrofits, could require substantial funding from local, state, and federal partners. Partnerships, including those willing to donate land, supplies, in-kind matches, and cash, can be included.

Table 15: Assessment of the Financial Capabilities of the City of Murray

Funding Resource	In Place? (Y/N)	Has it been used in the past and for what types of activities?	Could it be used to fund future mitigation actions?	Can it be used as the local cost match for a federal grant?
Capital Improvement Project Funding	Y	Stormwater management and operations	Y	Y
General Funds	Y	Operations	Y	Y
Hazard Mitigation Grant Program (HMGP/404)	Y	Has not been used yet	Y	N
Building Resilient Infrastructure & Communities (BRIC)	Y	Has not been used yet	Y	N
Flood Mitigation Assistance (FMA)	Y	Has not been used yet	Y	N
Public Assistance Mitigation (PA Mitigation/406)	Y	Has not been used yet	Y	N
Community Development Block Grant (CDBG)	Y	Housing rehabilitation loans, down payment assistance, and minor home repair service	Y	N
Natural Resources Conservation Services (NRCS) Programs	Y	Has not been used yet	Y	N
U.S. Army Corps (USACE) Programs	Y	Has not been used yet	Y	N
Property, Sales, Income, or Special Purpose Taxes	Y	Operational costs for local services and the Murray School District, adding additional staffing for police and fire department	Y	Y
Stormwater Utility Fee	Y	Stormwater management and operations	Y	Y

DRAFT

Funding Resource	In Place? (Y/N)	Has it been used in the past and for what types of activities?	Could it be used to fund future mitigation actions?	Can it be used as the local cost match for a federal grant?
Fees for Water, Sewer, Gas, or Electric Services	Y	Operations	Y	Y
Impact Fees from New Development and Redevelopment	Y	Operational costs for water and sewer maintenance	Y	Y
General Obligation or Special Purpose Bonds	Y	Stormwater and sewer maintenance, downtown area development	Y	Y
Federal-funded Programs (Please describe)	Y	Has not been used yet	Y	N
Private Sector or Nonprofit Programs	Y	Has not been used yet	Y	Y
Other?				

Education and Outreach Capabilities

Education and outreach capabilities are programs and methods that could communicate about and encourage risk reduction. These programs may be run by a participant or a community-based partner. Partners, especially those who work with underserved communities, can help identify additional education and outreach capabilities.

Table 16: Assessment of the Education and Outreach Capabilities of the City of Murray

Education and Outreach Capability	In Place? (Y/N)	Does it currently incorporate hazard mitigation?	Could it be used to support mitigation in the future?
Community Newsletter(s)	Y	Y	Y
Hazard Awareness Campaigns (such as Firewise, Storm Ready, Severe Weather Awareness Week, School Programs)	Y	Y	Y
Public Meetings/Events (Please describe.)	Y	Y	Y
Emergency Management Listserv	Y	Y	Y
Local News	Y	Y	Y
Distributing Hard Copies of Notices (e.g., public libraries, door-to-door outreach)	Y	Y	Y
Insurance Disclosures/Outreach	Y	Y	Y
Organizations that Represent, Advocate for, or Interact with Underserved and Vulnerable Communities (Please describe.)	Y	Y	Y
Social Media (Please describe.)	Y	Y	Y

DRAFT

Education and Outreach Capability	In Place? (Y/N)	Does it currently incorporate hazard mitigation?	Could it be used to support mitigation in the future?
Other? (Please describe.)			

Opportunities to Expand and/or Improve Capabilities

Actions that can expand and improve existing authorities, plans, policies, and resources for mitigation include budgeting for mitigation actions, passing policies and procedures for mitigation actions, adopting and implementing stricter mitigation regulations, approving mitigation updates, and making additions to existing plans as new needs are recognized. Table 17 lists the opportunities for the city of Murray.

Table 17: Opportunities to Expand and/or Improve the Capabilities of the City of Murray

Capability	Opportunity to Expand and/or Improve
Planning and Regulation	The city can expand the current substantial damage provisions by creating a Substantial Damage Plan, which clearly designates roles and responsibilities, resources and data sources, and approaches to educating and implementing substantial damage determination requirements and retrofits.
Administrative and Technical	Partnerships, including those with organizations like the National Weather Service (NWS), can be expanded to improve coordination on hazard awareness activities and the collection of disaster data, which can be used to demonstrate the cost-effectiveness of mitigation actions.
Financial	This city can apply for federal mitigation grants, such as the Hazard Mitigation Grant Program (HMGP), Flood Mitigation Assistance (FMA), and other pre-disaster mitigation funding as available.
Education and Outreach	The city can develop new multi-modal education approaches (such as live trainings, web, print, and broadcast media materials). Additionally, education programs can be more targeted, focusing on vulnerable populations, such as people with special needs.

Mitigation Strategy

Mitigation strategies provide proactive measures that are designed to minimize the impacts of hazards on the city of Murray. Table 18 shows mitigation action alternatives, and

Table 19 shows the status of previous mitigation activities. Table 20 is the 2025 mitigation action plan for the city of Murray.

Table 18: Mitigation Action Alternatives for the City of Murray

Action	Type of Action	Selected for inclusion in the plan?	If not selected, why not?
Identify evacuation routes and shelters.	All hazards	No	Not mitigation

DRAFT

Action	Type of Action	Selected for inclusion in the plan?	If not selected, why not?
Develop an evacuation plan for the city.	All hazards	No	Not mitigation

Table 19: Status of Prior Mitigation Actions of the City of Murray[2]

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update
Structural improvement in public buildings.	Earthquake	Murray EM	Public Works	Completed. All four Murray schools needing seismic retrofit were completed.
Procure generators for the assisted living facility and schools.	All hazards	Murray EM	Public Works	Incomplete. Funding issue.
Conduct reinforcements for the Power Department headquarters.	Earthquake	Murray EM	Public Works	Complete. New SCADA system in service for off-site operations.
Conduct a Flood Study, improve culverts and drainage, elevate roads and bridges, and build up berms	Flooding	Murray EM	Public Works	Complete. Murray Park upgrades to the riverbank and flood retaining walls installed in trouble spots.
Remove tailings from the old towers.	All hazards	Murray EM	Public Works	Deleted. Tailings are going to be left in place.
Conduct training and awareness activities on communications equipment, tools, and systems.	All hazards	Murray EM	SLCo EM	Ongoing. FD conducts regular trainings. Emergency management training annually with the Mayor's Office and all city department heads.
Improve EOC to allow for a more functional working environment during EOC activations.	All hazards	Murray EM		Ongoing. Chairs added, a large screen TV added, and a plotter/printer added.
Evaluate vulnerability of critical communications systems.	All hazards	Murray EM	SLCo EM, VECC, UCA	Ongoing. Ham radio repeater installed on tower at the Humane Society.
Establish redundancy for dispatch centers and other critical communications systems.	All hazards	Murray EM	SLCo EM, VECC, UCA	Ongoing. Purchase of dual-band radios for the FD.

[2] EM = Emergency Management, FD = Fire Department, NWS = National Weather Service, SCADA = Supervisory Control and Data Acquisition, SLCo EM = Salt Lake County Emergency Management, UCA = Utah Communications Authority, UDEM = Utah Division of Emergency Management, VECC = Valley Emergency Communications Center.

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update
Establish a coordinating group to address long-term communications needs and implementation strategies.	All hazards	Murray EM	SLCo EM, VECC, UCA	Ongoing.
Acquire, upgrade, and/or integrate communications equipment and systems as determined by coordinating group.	All hazards	Murray EM	SLCo EM, VECC, UCA	Ongoing. A new P25 system is being installed across the state.
Provide education regarding all-natural hazards through live trainings and web-based, print, and broadcast media.	All hazards	Murray EM	SLCo EM	Ongoing. The Rotary Club and Monte Cristo Apartments receive education. All Murray second graders receive annual fire prevention and safety training.
Develop education programs to target specific groups including homeowners, developers, schools, and people with special needs.	All hazards	Murray EM	SLCo EM, Murray School District	Ongoing. The Fire Marshal's Office regularly briefs new construction projects. All Murray 2nd graders receive annual fire prevention and safety training.
Ensure that current hazard ordinances are available for viewing online.	All hazards	Murray EM	Murray Planning and Development	Incomplete.
Provide information on landscaping alternatives for persons subject to green area requirements.	Drought	Murray EM	SLCo EM	Ongoing. The city of Murray publishes and provides incentives to Murray residents on the city website.
Identify structures at risk of earthquake damage.	Earthquake	Public Works	SLCo EM, UDEM	Incomplete.
Research feasibility of an incentive program for retrofitting privately owned buildings, particularly unreinforced masonry.	Earthquake	Public Works	SLCo EM, UDEM	Incomplete.
Complete seismic rehabilitation/retrofitting projects of public buildings at risk.	Earthquake	Public Works	SLCo EM, UDEM	Incomplete. Need project leader and funding.

DRAFT

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update
Procure an Engineering Consultant to perform the nonstructural design and geotechnical assessment and review. CUWCD staff will procure contractor and/or install nonstructural bracing per consultant's design.	Earthquake	Public Works		Incomplete.
Determine potential flood impacts and identify areas in need of additional flood control structures.	Flooding	Public Works	SLCo Flood Control, SLCo EM, UDEM	Ongoing. Trouble spot at Little Cottonwood Creek and Murray Power. Six-inch pump purchased with a state grant to help mitigate issues in that area.
Address identified problems through construction of debris basins, flood retention ponds, energy dissipaters, and other flood control structures.	Flooding	Public Works	SLCo Flood Control, SLCo EM, UDEM	Ongoing. Murray Park received multiple upgrades, including retaining walls alongside the creek and flood barriers in all low-lying areas in the park.
Establish maintenance and repair programs to remove debris, improve resistance, and otherwise maintain effectiveness of stormwater and flood control systems.	Flooding	Public Works	SLCo Flood Control	Ongoing. Reporting program to County Flood Control in place to notify of problem areas and debris needing creek bed removal.
Modify/upgrade structures and conveyances as needed to address deficiencies.	Flooding	Public Works	SLCo Flood Control, SLCo EM	Incomplete. Need champion and funding.
Maintain contact with NWS before re-application.	Severe Weather	Murray EM	SLCo EM, NWS	Ongoing. Good communications with the NWS through cell phone contact and online requests for NWS support.
Install larger and higher vent piping.	Gas Turbine Plant	Public Works	Local utility companies	Incomplete.
Fix existing gas line connections that are earthquake resilient.	Gas Turbine Plant	Public Works	Local utility companies	Incomplete. Revised wording.

DRAFT

DRAFT

THIS PAGE INTENTIONALLY LEFT BLANK

Table 20: 2025 Mitigation Action Plan for the City of Murray[3]

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
1	Procure generators for the assisted living facility and schools.	Earthquake, Extreme Heat, Extreme Cold, Flooding, Heavy Rain, High Wind, Lightning, Severe Winter Weather, Tornado, Dam Failure, Cyberattack	Murray EM	SLCo EM	Ensures safety and well-being of residents in assisted living during power outages, including continued operation of life-sustaining medical equipment. Ensures the safety of students and continuing functionality of educational activities.	Medium	Murray General Fund	Ongoing	Medium	Funding has been a barrier to completion.
2	Conduct training and awareness activities on communications equipment, tools, and systems.	Drought, Earthquake, Extreme Heat, Extreme Cold, Flooding, Landslide/Slope Failure, Radon, Heavy Rain, High Wind, Lightning, Severe Winter Weather, Tornado, Wildfire, Dam Failure, Civil Disturbance, Cyberattack, Hazardous Materials, Public Health Epidemic/Pandemic, Terrorism	Murray EM	SLCo EM, VECC, UCA, NGO partners	Ensures key departments and agencies are connected.	Medium	Murray General Fund, SLCo EM, BRIC grant, HMGP grant	Ongoing	High	There is a need for more personnel trained in amateur radio; currently working to try to get fire department members to take an amateur radio class at a local university.
3	Improve EOC to allow for a more functional working environment during EOC activations.	Drought, Earthquake, Extreme Heat, Extreme Cold, Flooding, Landslide/Slope Failure, Radon, Heavy Rain, High Wind, Lightning, Severe Winter Weather, Tornado, Wildfire, Dam Failure, Civil Disturbance, Cyberattack, Hazardous Materials, Public Health Epidemic/Pandemic, Terrorism	Murray EM	SLCo EM, Murray FD, Murray PD	Improves communication and coordination between different departments, agencies, and outside organizations	Medium	Murray General Fund, EMPG, HMGP grant, BRIC grant, EOC grant	Ongoing	High	Some improvements have been completed. An EMPG competitive grant has been obtained, which will allow for the purchase of another monitor, a speaker system in the EOC, and table and chairs for an additional work/break area.
4	Evaluate vulnerability of critical communications systems.	Drought, Earthquake, Extreme Heat, Extreme Cold, Flooding, Landslide/Slope Failure, Radon, Heavy Rain, High Wind, Lightning, Severe Winter Weather, Tornado, Wildfire, Dam Failure, Civil Disturbance, Cyberattack, Hazardous Materials, Public Health Epidemic/Pandemic, Terrorism	Murray EM	Murray Communications, SLCo EM, Murray PD, Murray FD	Improved understanding of vulnerabilities to make needed improvements	Medium	Murray General Fund, SHSP grant	Ongoing	High	Satellite phones have been purchased; there is a need to train more members on their use.
5	Establish redundancy for dispatch centers and other critical communications systems.	Drought, Earthquake, Extreme Heat, Extreme Cold, Flooding, Landslide/Slope Failure, Radon, Heavy Rain, High Wind, Lightning, Severe Winter Weather, Tornado, Wildfire, Dam Failure, Civil Disturbance, Cyberattack,	Murray EM	Murray Communications, SLCo EM, VECC, UCA, Murray PD, Murray FD	Ensures coordination and communication between the city and local agencies/jurisdictions	Medium	Murray General Fund, County General Fund, SHSP grant	Ongoing	High	Installing backup server for the city.

[3] BRIC = Building Resilient Infrastructure and Communities, CUWCD = Central Utah Water Conservancy District, EM = Emergency Management, EOC = Emergency Operations Center, FD = Fire Department, HMGP = Hazard Mitigation Grant Program, MSD = Municipal Services District, NGO = nongovernmental organization, NWS = National Weather Service, PD = Police Department, SCADA = Supervisory Control and Data Acquisition, SLCo EM = Salt Lake County Emergency Management, SHSP = State Homeland Security Program, UCA = Utah Communications Authority, UDEM = Utah Division of Emergency Management, VECC = Valley Emergency Communications Center.

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
		Hazardous Materials, Public Health Epidemic/Pandemic, Terrorism								
6	Utilize coordinating group to address long-term communication needs and implementation strategies.	Drought, Earthquake, Extreme Heat, Extreme Cold, Flooding, Landslide/Slope Failure, Radon, Heavy Rain, High Wind, Lightning, Severe Winter Weather, Tornado, Wildfire, Dam Failure, Civil Disturbance, Cyberattack, Hazardous Materials, Public Health Epidemic/Pandemic, Terrorism	Murray EM	Murray Communications, SLCo EM, VECC, UCA, Murray FD, Murray PD, SLCo Public Works, Murray Public Works	Identifies communication needs and solutions for the city	Medium	Murray General Fund, SLCo EM	Ongoing	High	The group was established as noted in previous plan actions. The administrative staff of the fire department makes up the group. Currently working with amateur radio volunteers to help determine which equipment is still needed.
7	Acquire, upgrade, and/or integrate communications equipment and systems as determined by the coordinating group.	Drought, Earthquake, Extreme Heat, Extreme Cold, Flooding, Landslide/Slope Failure, Radon, Heavy Rain, High Wind, Lightning, Severe Winter Weather, Tornado, Wildfire, Dam Failure, Civil Disturbance, Cyberattack, Hazardous Materials, Public Health Epidemic/Pandemic, Terrorism	Murray EM	Murray Communications, SLCo EM, UCA, Murray Public Works, Murray FD, Murray PD	Improved understanding of communications capabilities	Medium	Murray General Fund, SHSP grant	Ongoing	High	An EMPG competitive grant was awarded in 2014 to help update amateur radio equipment and install speakers in the EOC.
8	Provide education regarding all-natural hazards through live trainings and web-based, print, and broadcast media.	Drought, Earthquake, Extreme Heat, Extreme Cold, Flooding, Landslide/Slope Failure, Radon, Heavy Rain, High Wind, Lightning, Severe Winter Weather, Tornado, Wildfire, Dam Failure, Civil Disturbance, Cyberattack, Hazardous Materials, Public Health Epidemic/Pandemic, Terrorism	Murray EM	NWS, SLCo EM, local jurisdictions, NGO partners, Murray Public Works	Increased local understanding of natural hazards and ways in which residents can reduce their risk. For example, the following techniques will help the public reduce their risk: • Drought: Share water conservation techniques and strategies for drought-resistant landscaping. • Earthquake: Provide instruction on home retrofitting and "Drop, Cover, and Hold On" drills. • Extreme Heat: Offer guidelines on staying hydrated, using cooling centers, and energy-efficient home cooling. • Extreme Cold: Discuss insulation techniques, safe heating practices, and preparing vehicles for winter conditions.	Low	Murray General Fund, BRIC grant, HMGP grant, NWS	Ongoing	High	Mainly through CERT and *Murray Journal* articles.

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
					• Flooding, Dam Failure, Heavy Rain: Teach flood-proofing methods like elevating utilities, using rain barrels, and having proper drainage systems. • Landslide/Slope Failure: Inform residents on recognizing warning signs and stabilizing slopes with vegetation. • Radon: Explain testing procedures and mitigation strategies for radon gas in homes. • Lightning: Share safety tips for indoor and outdoor lightning protection. • Severe Winter Weather, Tornado: Educate residents on identifying safe shelter locations and home weatherization. • Wildfire: Offer guidance on creating defensible space and using fire-resistant landscaping. • Public Health Epidemic/Pandemic: Provide resources on hygiene practices, vaccination, and community health strategies.					
9	Develop education programs to target specific groups, including homeowners, developers, schools, and people with special needs.	Drought, Earthquake, Extreme Heat, Extreme Cold, Flooding, Landslide/Slope Failure, Radon, Heavy Rain, High Wind, Lightning, Severe Winter Weather, Tornado, Wildfire, Dam Failure, Civil Disturbance, Cyberattack, Hazardous Materials, Public Health Epidemic/Pandemic, Terrorism	Murray EM	NGO partners, SLCo EM, NWS, Communications	Increased local understanding of natural hazards and ways in which residents can reduce their risk, as part of a community engagement initiative	Low	Murray General Fund, Murray School District, NGO partners, BRIC grant, HMGP grant, SLCo EM	Ongoing	High	Yearly health safety fair and CERT program.

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
10	Ensure that current hazard ordinances are available for viewing online.	Drought, Earthquake, Extreme Heat, Extreme Cold, Flooding, Landslide/Slope Failure, Radon, Heavy Rain, High Wind, Lightning, Severe Winter Weather, Tornado, Wildfire, Dam Failure, Civil Disturbance, Cyberattack, Hazardous Materials, Public Health Epidemic/Pandemic, Terrorism	Murray Planning and Zoning	Murray EM	Improved local understanding of local laws and regulations related to natural hazards, with better oversight of local ordinances to ensure compliance	Low	Murray General Fund	Short term	High	
11	Provide information on landscaping alternatives for persons subject to green area requirements.	Drought	Murray Public Works	Murray EM, water districts, local utility companies	Increased understanding of landscape alternatives	High	Murray General Fund, HMGP grant, BRIC grant	Short term	High	Information is available on the Murray website.
12	Identify structures at risk of earthquake damage.	Earthquake	Murray Building Division	Murray Emergency Management, SLCo Public Works, SLCo EM, Murray Planning and Zoning, Public Works	Prioritizes areas in need in the event of an earthquake	High	Murray General Fund, HMGP grant, BRIC grant	Short term	High	
13	Research feasibility of an incentive program for retrofitting privately owned buildings, particularly unreinforced masonry.	Earthquake	Murray Building Division	Murray Emergency Management, Murray Public Works, Murray Planning and Zoning	Identifies areas in the city in need of seismic retrofitting; improves communication with local building owners	High	Murray General Fund, Murray , HMGP grant, BRIC grant	Medium	High	
14	Complete seismic rehabilitation/retrofitting for projects for public buildings at risk.	Earthquake	Murray Building Division	Murray Emergency Management, Murray Planning and Zoning, Murray Public Works, SLCo Public Works, MSD	Improves understanding of areas needing prioritization for seismic retrofits; identifies at-risk areas	High	Murray General Fund, Murray Capital Improvement Projects Fund, HMGP grant, BRIC grant	Ongoing	High	Currently upgrading two schools to earthquake standards.
15	Procure an Engineering Consultant to perform the nonstructural design and geotechnical assessment and review. CUWCD staff will procure a contractor and/or install nonstructural bracing per the consultant's design.	Earthquake	Murray Building Division	Murray Emergency Management, Murray Public Works	Ensures buildings are in compliance with seismic safety standards	High	Murray General Fund, Murray Capital Improvement Projects Fund, BRIC grant, HMGP grant	Long term	Medium	
16	Determine potential flood impacts and identify areas in need of additional flood control structures.	Flooding	Murray Public Works	Murray Emergency Management, water districts, local utility companies, SLCo Flood Control	Identifies areas that are at risk for flooding	High	Murray General Fund, BRIC grant, HMGP grant	Ongoing	Medium	
17	Address identified problems through construction of debris basins, flood retention ponds, energy dissipaters,	Flooding, Dam Failure	Murray Public Works	Murray Emergency Management, SLCo Flood Control, water districts, local utility companies	Reduces flood risk	High	Murray General Fund, Murray Capital Improvement Projects Fund,	Ongoing	Medium	

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
	or other flood control structures.						BRIC grant, HMGP grant			
18	Establish maintenance and repair programs to remove debris, improve resistance, and otherwise maintain effectiveness of stormwater and flood control systems.	Flooding	Murray Public Works	Murray Emergency Management, SLCo Public Works, SLCo Flood Control	Improves operational efficiency for public works and flood control, reduces risk of flooding	High	Murray General Fund, Murray Capital Improvement Projects Fund, BRIC grant, HMGP grant	Ongoing	High	
19	Modify/upgrade structures and conveyances as needed to address deficiencies.	Flooding, Heavy Rain	Murray Public Works	Murray Emergency Management, SLCo Public Works	Reduces flood risk, ensures structures/ systems are maintained and updated on a regular basis	High	Murray General Fund, Murray Capital Improvement Projects Fund,	Ongoing	High	Areas identified in capital improvement plan.
20	Maintain contact with NWS	Severe Weather	Murray EM	NWS, SLCo EM, NGO partners	Improves coordination with local agencies and organizations	Low	Murray General Fund, NWS	Ongoing	Low	
21	Install larger and higher vent piping at the gas turbine plant.	Hazardous Materials	Murray Public Works	Murray Emergency Management, local utility companies	Ensures structures and equipment are up to code	High	Murray General Fund, Murray capital improvement budget, HMGP grant, BRIC grant	Long term	High	Valve has been installed, but wiring to activate the valve is not in place.
22	Make existing gas line connections at the gas turbine plan earthquake resilient.	Hazardous Materials	Murray Public Works	Murray Emergency Management, local utility companies	Ensures gas lines are inspected and updated to comply with safety standards	High	Murray General Fund, Murray Capital Improvement Projects Fund, HMGP grant, BRIC grant	Long term	High	Some connections have been improved. We have applied for a pre-mitigation grant to cover the costs.

DRAFT

THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT

City of Riverton

Jurisdictional Annex to the
Salt Lake County Hazard Mitigation Plan

Month XXXX | Draft X.X

THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT

Table of Contents

City of Riverton Annex 1

Planning Process Contact Information 1
Jurisdiction Profile 1
Date of Incorporation 1
Location and Description 2
Population 2
Demographics 2
Brief History 2
Climate 3
Public Services 3
Governing Body 3
Development Trends 4
Jurisdiction-Specific Hazards and Risk 4
Hazard Event History 7
National Flood Insurance Program Summary 7
Jurisdiction-Specific Vulnerabilities and Impacts 8
Hazards Not Profiled 28
Jurisdiction-Specific Changes in Vulnerability 29
Additional Public Involvement 37
Plan Integration 37
Capability Assessment 39
Planning and Regulatory Capabilities 39
Administrative and Technical Capabilities 40
Financial Capabilities 41
Education and Outreach Capabilities 43
Opportunities to Expand and/or Improve Capabilities 44
Mitigation Strategy 44

DRAFT

List of Figures

Figure 1: Social Media Posts for the Hazard Mitigation Survey in English (*left*) and Spanish (*right*) 37

List of Tables

Table 1: Contact Information for the City of Riverton 1
Table 2: Participant List for the City of Riverton 1
Table 3: Population Data for the City of Riverton 2
Table 4: Calculated Priority Risk Index Values for the City of Riverton 4
Table 5: Criteria for the Calculated Priority Risk Index 5
Table 6: History of Hazard Events in the City of Riverton 7
Table 7: National Flood Insurance Program Status for the City of Riverton 7
Table 8: National Flood Insurance Overview for the City of Riverton 7
Table 9: NFIP Floodplain Management Capabilities and Compliance 8
Table 10: Jurisdictional Vulnerabilities and Impacts in the City of Riverton 9
Table 11: Jurisdiction-Specific Changes in Vulnerability in the City of Riverton 30
Table 12: Integration of Previous Plans by the City of Riverton 38
Table 13: Opportunities for Integration with Future Plans of the City of Riverton 38
Table 14: Assessment of the Planning Capabilities of the City of Riverton 39
Table 15: Assessment of the Regulations and Ordinances of the City of Riverton 40
Table 16: Assessment of the Administrative Capabilities of the City of Riverton 40
Table 17: Assessment of the Technical Capabilities of the City of Riverton 41
Table 18: Assessment of the Financial Capabilities of the City of Riverton 42
Table 19: Assessment of the Education and Outreach Capabilities of the City of Riverton 43
Table 20: Opportunities to Expand and/or Improve the Capabilities of the City of Riverton 44
Table 21: Mitigation Action Alternatives for the City of Riverton 44
Table 22: Status of Prior Mitigation Actions of the City of Riverton 45
Table 23: 2025 Mitigation Action Plan for the City of Riverton 49

DRAFT

City of Riverton Annex

To participate in this multi-jurisdictional hazard mitigation plan (MJHMP) update for Salt Lake County (SLCo), the governing body of the city of Riverton passed a formal resolution, a copy of which is maintained at the local government offices.

Planning Process Contact Information

Table 1 provides information on the point of contact during the updating of the MJHMP.

Table 1: Contact Information for the City of Riverton

Primary Point of Contact	Alternate Point of Contact
Jason Jones Title: Emergency Manager Department: Administration Address: 12830 South Redwood Road, Riverton Utah 84065 Office Phone: 385-282-2460 Cell Phone: 385-865-6247 Email Address: jjones@rivertonpd.org Website: https://www.rivertonutah.gov/	Cary Necaise Title: Public Works Director Department: Public Works Address:12525 South 4150 West, Riverton Utah 84096 Office Phone:801-208-3169 Cell Phone:801-717-5469 Email Address: cnecaise@rivertonutah.gov Website: https://www.rivertonutah.gov/

The city of Riverton has a fully integrated approach to hazard mitigation planning and program implementation. During the 2024 update process, the MJHMP participation roles in Table 2 were recorded.

Table 2: Participant List for the City of Riverton

Name	Title	Jurisdiction
Jason Jones	Emergency Manager	Riverton
Cary Necaise	Public Works Director	Riverton

Jurisdiction Profile

Date of Incorporation

July 3, 1967

DRAFT

Location and Description

The city occupies 12.6 square miles (32.6 km²). Riverton shares its borders with South Jordan to the north, Draper to the east, Bluffdale to the south, and Herriman to the west. It is located in the southwestern corner of the Salt Lake Valley.

Population

The city of Riverton had a population in July 2018 of 45,600,[1] an increase of 14.4% from the April 2010 census, which reported a population of 44,419.

Table 3: Population Data for the City of Riverton

2018 Population	22018 Population Estimate	Estimated Change 2010–2023	2023 # of Housing Units	2018 Estimated # of Housing Units	Estimated change 2010–2023
45,600	44,419	2.65%	13,101	11,212	16.85%

Demographics

The city of Riverton is a growing community characterized by its diverse demographics. The median household income in Riverton is approximately $115,869, reflecting the city's economic stability and attraction for families. The poverty rate in the area is around 3.5%, which is lower than the national average, indicating that most residents have access to economic opportunities. The median age of males in Riverton is about 33 years, while for females, it is slightly higher at around 35 years.[2] This age distribution suggests a family-oriented community, with many residents in their prime working years. Overall, Riverton's demographics depict a prosperous and thriving suburban environment. 90% of the population speak English at home, 5.4% speak Spanish, and 1.8% speak Asian and Pacific Island languages.[3]

Brief History

The area that is now the city of Riverton was settled in the 1850s. The people lived in crude, widely scattered dugout homes along the river bottoms. Archibald Gardner was the largest landowner, and he might have been the first to live on Riverton land, though early accounts disagree. Because of this, the land along the Jordan River and the surrounding area was called Gardnerville. Due to the lack of irrigation water, initial growth was slow. However, the town began to grow as settlers developed a cooperative to build a ditch, which was later expanded to a canal. This expanded cultivation, which attracted new residents. Riverton became incorporated into a town in 1948 and a city of the third class on July 3, 1967.

[1] https://www.census.gov/quickfacts/fact/table/rivertoncityutah/PST045218.
[2] Ibid.
[3] U.S. Census, American Community Survey 2023. https://data.census.gov/table/ACSST5Y2023.S1601?q=riverton,+utah+language.

By 1914, Riverton began to prosper as an agricultural community, due to additional water and people. Riverton's business district also thrived. In 1879, a judicial precinct was established, and the settlement's name was officially changed from Gardnerville to Riverton by Judge Charles Smith. The first meetinghouse was constructed in 1879, which also served as a church and a schoolhouse. A new meetinghouse was planned, and the architect selected was Richard Kletting, who also designed the Utah State Capitol. The entire community worked to haul material, by wagons, including granite from Little Cottonwood Canyon. The Old Dome Church, as it came to be known, was used by the residents until it was torn down in 1940.

In the late 1800s, Riverton farmers gradually changed from self-sufficient to commercial farming. They specialized in alfalfa, wheat, sugar beets, tomatoes, poultry, sheep, and dairy cows. At this time, the LDS Church began storing tithed produce and livestock on land at 1150 West 12400 South. This area is now known as Tithing Hill. In 1912, electricity came to Riverton, and in 1913, the Salt Lake and Utah Railroad (Orem Line) passed through Riverton west of Redwood Road. It stretched from Salt Lake to Payson and was used as a commuter and freight line. Riverton had its own train depot, and trains used this line from 1914 to 1945, after which the rails and ties were removed and the depot was torn down.

The city of Riverton has worked with residents to continue traditions such as the annual Town Days event. Residents in the Salt Lake Valley have quick access to many recreational activities. The Wasatch Mountains, ski resorts, and Utah Lake are just a short drive to satisfy the city's many active residents.

Climate

The average high temperature is 67.3°F, and the low temperature is 43.1°F, with an overall average of 55.2°F. The city gets 16 inches of rain each year and 43 inches of snow. Although warmer than many other places in Utah, the city of Riverton has around 133 days each year in which nighttime temperatures drop below freezing, and it has an average of 46 days that reach a temperature above 90°F.

Public Services

The city of Riverton provides a full range of services to its residents and businesses. General governmental services include building inspection, construction, and maintenance of street lighting, roadways, and parks, as well as recreation and cultural events. The city also provides utility services for culinary water, secondary water, sanitation, and stormwater. In July 2019, the police department was created.

Governing Body

Riverton, Utah, is a third class city as defined by the Utah State Code and operates as a "six-member council" form of government. That is, the governing body consists of a mayor and five council members (see: Utah Code § 10-3b-301). City Council members are elected for terms of four years. The city council holds all authority to adopt ordinances, pass resolutions, adopt annual budgets, regulate zoning and land development, establish city fees, create long-range plans for city services and utilities, and set regulatory standards for providing other city services. The mayor serves as chair of the city council and chief

DRAFT

executive officer. On December 6, 2011, the Riverton City Council re-codified its municipal ordinances and reaffirmed the long-standing office of the City Manager, a full-time position that oversees all city departments and directly reports to the city council and mayor.

Development Trends

According to its website, the city of Riverton is one of the fastest-growing cities in America. It has grown from a rural farming town into a suburban city. Businesses, housing, and roads have replaced many farms and cattle ranges. The growth was supported by the opening of the Intermountain Riverton Hospital in November 2009 and the Mountain View Village shopping center in 2018. The city anticipates continued growth and business expansion while maintaining its 30 community parks. Much like the rest of the southwestern corner of the Salt Lake Valley, rapid growth in the community is anticipated in the coming years. To encourage new businesses to come to the city, business licensing fees were eliminated in 2018.

Jurisdiction-Specific Hazards and Risk

The Calculated Priority Risk Index (CPRI) is a comprehensive assessment tool for evaluating and prioritizing risks in a given context. It considers various factors, such as probability, impact, and urgency, to determine the level of risk associated with events or situations. The results for each hazard, including its risk factor (RF) value, are shown in Table 4. The results are based on the criteria in

Table 5 and the equation that follows it. The CPRI helps organizations and individuals make informed decisions about risk management and mitigation strategies. It provides a systematic approach to identifying and addressing potential issues, allowing for a more efficient allocation of resources and proactive risk prevention. With the CPRI, stakeholders can prioritize their focus on the most critical risks, leading to more effective risk management and, ultimately, better outcomes.

Table 4: Calculated Priority Risk Index Values for the City of Riverton

Type of Hazard Event	Probability of Future Events	Spatial Extent	Severity of Life/ Property Impact	Warning Time	Duration	Response Capacity	Risk Factor Value
Avalanche	1	1	1	1	1	1	1
Drought	2	2	2	1	3	1	1.9
Earthquake	2	4	4	4	4	2	3.2
Extreme Heat	2	2	1	1	3	1	1.6
Extreme Cold	2	2	1	1	3	1	1.6
Flooding	1	2	2	3	3	1	1.8
Landslide/ Slope Failure	1	1	1	4	1	2	1.4
Radon	3	1	2	1	4	2	2.3
Heavy Rain	3	2	1	2	2	1	1.9

Type of Hazard Event	Probability of Future Events	Spatial Extent	Severity of Life/ Property Impact	Warning Time	Duration	Response Capacity	Risk Factor Value
High Wind	2	2	1	2	2	1	1.6
Lightning	2	1	1	4	1	1	1.6
Severe Winter Weather	2	2	1	1	2	1	1.5
Tornado	1	1	1	4	1	2	1.4
Wildfire	2	2	2	2	3	2	2.1
Dam Failure	1	2	3	2	1	2	2.1
Civil Disturbance	1	1	1	3	1	2	1.3
Cyberattack	2	2	1	4	1	2	1.8
Hazardous Materials Incident (Transportation & Fixed Facility)	2	2	1	4	1	1	1.7
Public Health Epidemic/ Pandemic	2	2	1	1	4	1	1.7
Terrorism	1	1	1	4	1	1	1.3

Table 5: Criteria for the Calculated Priority Risk Index

Risk Index Factor	Degree of Risk Level		Criteria	Factor Weight for Degree of Risk Level
Probability of Future Events	1	Unlikely	Less than 1 percent probability of occurrence in the next year or a recurrence interval of greater than every 100 years.	30%
	2	Occasional	1 to 10 percent probability of occurrence in the next year or a recurrence interval of 11 to 100 years.	
	3	Likely	11 to 90 percent probability of occurrence in the next year or a recurrence interval of 1 to 10 years.	
	4	Highly Likely	91 to 100 percent probability of occurrence in the next year or a recurrence interval of less than 1 year.	
Spatial Extent	1	Limited	Less than 10% of the planning area could be impacted.	10%
	2	Small	10%–25% of the planning area could be impacted	
	3	Significant	25%–50% of the planning area could be impacted.	

DRAFT

Risk Index Factor	Degree of Risk Level		Criteria	Factor Weight for Degree of Risk Level
	4	Extensive	50%–100% of the planning area could be impacted.	
Severity of Life/Property Impact	1	Negligible	Less than 5% of the affected area's critical and non-critical facilities and structures are damaged/ destroyed. Only minor property damage and minimal disruption of life. Temporary shutdown of critical facilities.	30%
	2	Limited	More than 5% and less than 25% percent of property in the affected area is damaged/ destroyed. Complete shutdown of critical facilities for more than one day but less than one week.	
	3	Critical	More than 25% and less than 50% of property in the affected area was damaged/ destroyed. Complete shutdown of critical facilities for over a week but less than one month.	
	4	Catastrophic	Over 50% of critical and non-critical facilities and infrastructures in the affected area are damaged/ destroyed. Complete shutdown of critical facilities for more than one month.	
Warning Time	1	Self-defined	More than 24 hours	10%
	2	Self-defined	12 to 24 hours.	
	3	Self-defined	6 to 12 hours.	
	4	Self-defined	Less than 6 hours.	
Duration	1	Brief	Up to 6 hours.	10%
	2	Intermediate	Up to one day.	
	3	Extended	Up to one week.	
	4	Prolonged	More than one week.	
Response Capacity	1	High	Significant resources and capability to respond to this kind of event; staff are trained, experienced, and ready.	10%
	2	Medium	Some resources and capability to respond to this kind of staff; some staff may be trained, experienced, and ready while others may need additional support.	
	3	Low	Limited resources and capability to respond to this kind of event; additional staff or staff training needed.	
	4	None	No resources and capability to respond this kind of event; additional outside support would be required.	

DRAFT

RISK FACTOR (RF) EQUATION

RF Value = [(Probability x 0.30) + (Spatial Extent x 0.10) + (Severity of Life/Property Impact x 0.30) + (Warning Time x 0.10) + (Duration x 0.10) + (Response Capacity x 0.10)]

Hazards with an RF value greater than or equal to 2.5 are considered high risk. Those with RF values of 2.0 to 2.4 are considered moderate risk hazards, and those with an RF value less than 2.0 are considered low risk. The highest possible RF value is 4.

Hazard Event History

Examining hazard event histories provides valuable insights to inform decision-making and help prioritize resources for risk prevention and response efforts. Table 6 lists the hazard events impacting the city of Riverton since 2019, according to the Storm Events Database from the National Centers for Environmental Information.

Table 6: History of Hazard Events in the City of Riverton

Location	Date	Event Type	Deaths	Injuries	Property Damage	Crop Damage
Riverton	06/21/2024	Hail	0	0	$0	$0

National Flood Insurance Program Summary

The city of Riverton participates in the National Flood Insurance Program (NFIP). Table 7 displays statistics related to the NFIP. The city of Riverton does not participate in the Community Rating System (CRS).

Table 7: National Flood Insurance Program Status for the City of Riverton[4]

Initial FHBM Identified	Initial FIRM Identified	Current Effective Map Date	Adopted Date	Date Joined NFIP	Tribal
11/01/1974	02/19/1986	11/19/2021	2021	02/19/1986	No

Table 8: National Flood Insurance Overview for the City of Riverton

Community ID	Number of Losses	Total Net Payment	Active Policies	Total Coverage
490104	14	$28,777.17	28	$8,275,000

Questions in Table 9 were answered to the best of the city of Riverton's ability.

[4] FIRM = Flood Insurance Rate Map, FHBM = Flood Hazard Boundary Map.

Table 9: NFIP Floodplain Management Capabilities and Compliance

Question	Response
What department is responsible for floodplain management in your jurisdiction?	Public Works
Who is your jurisdiction's floodplain administrator? (department/position)	Flood Control Engineer, Public Works Department
Are any certified floodplain managers on staff in your jurisdiction?	No
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed? If so, please state what they are.	No
Do your flood hazard maps adequately address the flood risk within your jurisdiction? (If no, please state why)	Yes
Does your floodplain management staff need any assistance or training to support its floodplain management program? If so, what type of assistance/ training is needed?	No
Does your jurisdiction participate in the Community Rating System (CRS)? If so, is your jurisdiction seeking to improve its CRS Classification? If not, is your jurisdiction interested in joining the CRS program?	No

The city of Riverton's Floodplain Administrator is the city manager or designee, in this case the Flood Control Engineer. The current Flood Damage Prevention Ordinance was adopted on 5/20/2025. The current Flood Insurance Rate Map is dated 11/19/2021. The city requires detailed Floodplain Development Permits for construction in the Special Flood Hazard Area. These permits are submitted to the Stormwater Division, which includes the Flood Control Engineer. Substantial damage/substantial improvement determinations are made through the permitting process. Structures that meet these definitions are required to comply with current codes and standards.

Jurisdiction-Specific Vulnerabilities and Impacts

Table 10 provides information on the vulnerable assets in the city of Riverton, including its critical facilities, highlighting the city's vulnerability to identified hazards. It also describes the potential impacts to the community arising from those vulnerabilities. Impacts are the consequences or effects of each hazard on the assets. By understanding the risks associated with these assets, local authorities can develop proactive strategies to mitigate vulnerabilities and ensure the safety and functionality of these important assets during hazard events. These data are invaluable for decision-making and prioritizing resources for emergency response and preparedness efforts, ultimately contributing to more effective risk management and greater resilience in the community.

DRAFT

Table 10: Jurisdictional Vulnerabilities and Impacts in the City of Riverton

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
Avalanche	People	*Vulnerability:* Avalanche risk is primarily limited to mountains with steep terrain and higher snow accumulation. Riverton is located in the valley and does not have terrain or snow accumulations that create avalanche conditions within the city. *Impacts:* There are no known impacts within the city. Individuals vulnerable to avalanches primarily include backcountry outdoor enthusiasts like skiers and hikers who may lack proper avalanche knowledge and safety precautions or do not monitor avalanche forecasts.
	Structures	There are no structures in Riverton that are considered to be at risk from avalanches.
	Economic Assets	The economic risk in Riverton due to avalanches is low. Tourism-related businesses, such as ski resorts and outdoor recreation facilities, may face disruptions, leading to financial losses. In addition, critical infrastructure in neighboring communities, such as roads and power lines, could be compromised, which may have indirect effects on local businesses and emergency response efforts.
	Natural, Historic, and Cultural Resources	Risk to natural, historic, and cultural resources from avalanches is minimal in Riverton.
	Critical Facilities and Infrastructure	There are no critical facilities in Riverton that are vulnerable to avalanches. Riverton residents who commute to other cities may be vulnerable to indirect effects if transportation routes near the canyons are closed or damaged by an avalanche.
	Community Activities	There is no risk to Riverton community activities from avalanches.
Drought	People	*Vulnerability:* All residents in Riverton are vulnerable to drought. Public health is vulnerable to deterioration in air, soil, and water quality. *Impacts:* Extended drought can lead to restrictions on water use, increased costs for water, or limited drinking water supply. Drought can contribute to poor air and water quality, which can increase vulnerability for people with respiratory problems, especially children and the elderly. Limited drinking water places those with access and functional needs at higher risk. Utility bills may be higher, and lower income households are more vulnerable to the effects of higher costs.
	Structures	*Vulnerability:* All structures are vulnerable to drought. *Impacts:* Water use could be restricted and may lead to changes in landscaping. Prolonged drought and limits to water supply may restrict future growth or development. Prolonged drought can lead to contraction of soils, which may lead to cracks in foundations or walls.
	Economic Assets	*Vulnerability:* Riverton businesses are vulnerable to drought. *Impacts:* Prolonged drought may lead to water restrictions or increased costs for culinary water and irrigation water for landscaping. Increased costs may lead to losses for businesses. Consumer spending may decrease due to changes in household budgets. There

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		may be higher operational costs for local businesses. Store hours may be reduced, and local landscaping companies could suffer.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Parks, open spaces, and historic buildings are vulnerable to drought conditions. *Impacts:* Historic and cultural buildings may need alternative landscaping. Drought may affect the health of trees and other vegetation in the city. City parks and open spaces may see deterioration in the health of vegetation and increased erosion. Additionally, scenic and culturally valued open spaces used by residents for outdoor activities could become inaccessible or permanently altered. Riverbend Golf Course, Riverton City Park, CR Hamilton Sports Complex, Jordan River Parkway Trails, and other community gathering spaces are vulnerable.
	Critical Facilities and Infrastructure	*Vulnerability:* Water supply systems, emergency response, and public health facilities are vulnerable to drought conditions. *Impacts:* Water supply systems are susceptible to drought as they strive to deliver adequate water to the community. Emergency services are also susceptible to drought. Reduced precipitation may increase demand on fire departments for wildfire management. Public health facilities face water quality and availability challenges that affect drinking water and sanitation. Riverton Hospital and other healthcare facilities may be vulnerable to restrictions on the water supply.
	Community Activities	*Vulnerability:* Recreational spaces such as parks, golf courses, pools, and other open spaces are vulnerable. *Impacts:* Drought results in poor vegetation health and reduced appeal of parks and open spaces during drought. The city may struggle with maintenance of landscaping at city facilities. Households may encounter restrictions and costs for landscaping and pools.
Earthquake	People	*Vulnerability:* All of the more than 46,000 residents of Riverton are vulnerable to earthquakes. *Impacts:* An earthquake in the Salt Lake Valley or neighboring counties could produce strong ground shaking that would affect Riverton. Residents can be injured by falling objects or heavy furniture that has not been anchored. Those living in older buildings not up to seismic standards are vulnerable to injury or death if buildings collapse. Families with young children, the elderly, and individuals with disabilities who may struggle to seek cover during an earthquake are vulnerable. Residents near fault lines and those in densely populated areas are also at higher risk. In addition, individuals lacking resources for disaster preparedness, such as emergency supplies and evacuation information, may find it difficult to respond effectively during an earthquake, thus increasing their vulnerability.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Structures	*Vulnerability:* Many homes, businesses, and government facilities and their contents are vulnerable to damage from earthquakes. Older buildings not built according to modern seismic codes, unreinforced masonry, and homes with inadequate foundations may be particularly vulnerable. *Impacts:* Structures can experience extensive damage in an earthquake. Some lack the retrofitting needed to withstand earthquakes, and those built on unstable soil or near fault lines are at higher risk. Most of Riverton has low liquefaction potential, but the eastern part of the city near the Jordan River has moderate to high liquefaction potential. Structures in this area are more vulnerable to damage. Large commercial buildings without flexible designs can sustain severe damage. Overall, outdated construction practices and poor site selection contribute to their vulnerability.
	Economic Assets	*Vulnerability:* All businesses in Riverton are vulnerable to earthquakes. *Impacts:* Businesses in Riverton are likely to experience losses from an earthquake. Buildings and contents may be damaged, and businesses may be slow to reopen while repairs are completed. Damage to roads and utility systems, such as power, water, and communication, may also limit businesses' ability to operate. The flow of goods may be severely limited, and employees may not be able to travel to work. Spending may also be reduced due to losses experienced by consumers. Key assets include commercial buildings that may not meet modern earthquake-resistant codes and are at higher risk of damage. The local economy, reliant on retail and services, could face significant disruptions during seismic events. In addition, certain soil types can amplify ground shaking, increasing the risk of damage to these assets.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Riverton City Hall, historic structures, and community centers are vulnerable to earthquakes. *Impacts:* Historic structures and landmarks often lack modern seismic retrofitting, making them susceptible to damage. Riverton City Hall, which was originally constructed in 1925 and is on the National Register of Historic Places, may be vulnerable to damage in an earthquake. Cultural resources, including community centers, may also be at risk due to their architectural styles and inadequate building codes, compromising their integrity and the heritage they represent.
	Critical Facilities and Infrastructure	*Vulnerability:* Schools, Riverton Hospital and other healthcare facilities, and emergency services buildings such as fire and police stations are vulnerable to earthquakes. Transportation, water, wastewater, power, natural gas, and communications infrastructure are also vulnerable. *Impacts:* Damage to emergency response facilities and vehicles may delay response and contribute to the vulnerability of residents. All infrastructure systems may also be damaged and services interrupted due to ground shaking. Some facilities or systems may have higher vulnerability due to age and construction standards. Disruption to these systems may inhibit emergency response and place residents at additional risk. Significant transportation routes through or near Riverton include Bangerter Highway, Redwood Road, 13400 South, and 12600 South.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		No school campuses in Riverton were identified as having unreinforced masonry structures, but they may still be vulnerable to damage in a strong magnitude earthquake. Bridges and overpasses that lack modern engineering safeguards are also at risk.
	Community Activities	*Vulnerability:* All community activities and events are vulnerable to earthquakes. *Impacts:* Public gatherings, school events, and day-to-day activities are vulnerable to earthquakes due to the area's geological conditions and urban infrastructure. Vulnerability stems from factors such as buildings' age and structural integrity, inadequate emergency preparedness, and high population density, which can lead to increased risks and casualties during an earthquake.
Extreme Heat	People	*Vulnerability:* Extreme heat can affect all individuals in Riverton. *Impacts:* Extreme heat contributes to illness such as heat exhaustion, heat stroke, and dehydration. Particularly vulnerable populations during extreme heat include adults over 65, individuals with pre-existing health conditions, and young children, as they struggle to regulate body temperature. Socioeconomically disadvantaged individuals may lack access to cooling resources, while outdoor workers are at higher risk of heat-related illnesses due to physical labor without adequate hydration and rest. Individuals without housing may lack a place to seek relief from extreme heat and are vulnerable to heat-related illness. An estimated 8% of Riverton's population is under age 5, and 11% is over age 65, indicating at least 19% of the population is particularly vulnerable to the effects of extreme heat. In addition, 3.4% of the population is below the poverty level and is also more vulnerable. Extreme heat can worsen air quality by raising ozone levels, which poses respiratory risks.
	Structures	*Vulnerability:* All structures are vulnerable to extreme heat. *Impacts:* Residential buildings with inadequate insulation and ventilation and commercial buildings lacking reflective roofing and proper shading may be vulnerable. Materials like metal and glass can amplify heat retention, while areas with limited green space typically experience higher temperatures.
	Economic Assets	*Vulnerability:* Businesses and agriculture are vulnerable to extreme heat. *Impacts:* Agricultural operations can have reduced yields and higher water demand due to heat stress. The outdoor recreation industry may see decreased participation during heat waves, affecting local businesses that rely on visitors. In addition, the energy infrastructure could face strain from increased cooling demands, leading to outages. Canceled events can lead to economic losses.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Vegetation, wildfires, and historic buildings are vulnerable to extreme heat. *Impacts:* Local plant species and wildlife habitats can suffer from extreme heat conditions, leading to reduced biodiversity. Historic buildings may degrade due to high temperatures, causing materials to deteriorate and paint to peel. In addition, parks and recreational areas may experience overuse and risk their preservation, as residents seek relief from the heat. Extreme heat can have compounding effects on

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		drought and plant and wildlife health. It can also contribute to an increased risk of wildfires.
	Critical Facilities and Infrastructure	*Vulnerability:* Hospitals, schools, roads, and power grids are vulnerable to extreme heat. *Impacts:* Healthcare facilities, including Riverton Hospital, may experience increased demand due to heat-related medical issues, while schools can suffer from the strain on cooling resources. Transportation systems are at risk of damage, such as buckling roads and warped train tracks. In Riverton, this could affect Bangerter Highway, Redwood Road, 13400 South, or 12600 South. Damage to roadways can disrupt economic activity and limit the mobility of residents. Power grids may be strained by higher demand for electricity for cooling, leading to potential outages.
	Community Activities	*Vulnerability:* Activities like outdoor sports, fairs, and agricultural practices are vulnerable to extreme heat. *Impacts:* These events can pose risks, particularly for participants such as youth athletes and elderly residents who may suffer from heat-related illnesses. Parks, walking trails, and outdoor events may see decreased activity.
Extreme Cold	People	*Vulnerability:* Extreme cold could affect all Riverton residents. The elderly, children, and individuals experiencing homelessness face higher risk. *Impacts:* People are vulnerable to hypothermia and frostbite with prolonged exposure to extreme cold. The elderly face increased risks due to health issues and mobility challenges, while children may be susceptible if they lack proper winter clothing. Individuals experiencing homelessness or financial hardship often lack access to heated shelters and resources for protection against the cold. Those with pre-existing health conditions may experience worsened symptoms at low temperatures. An estimated 8% of Riverton's population is under age 5, and 11% is over age 65, indicating at least 19% of the population is particularly vulnerable to effects of extreme cold. In addition, 3.4% of the population is below the poverty level and is also more vulnerable.
	Structures	*Vulnerability:* Residential homes, commercial buildings, and unheated spaces like sheds may be vulnerable to extreme cold. *Impacts:* Homes with poor insulation or inadequately sealed windows and doors are prone to significant heat loss. Older buildings lacking modern energy efficiency standards may also suffer from freezing pipes and structural damage from water if pipes burst.
	Economic Assets	*Vulnerability:* Agriculture, infrastructure, and energy-related businesses may be at risk from extreme cold. *Impacts:* Agricultural operations, such as greenhouses and livestock farms, may experience crop and livestock losses and lost revenue. Icy roads can disrupt transportation networks, affecting logistics and supply chains, while power lines risk outages from ice accumulation, and businesses may close temporarily. Energy-intensive facilities may face higher operational costs due to increased heating needs.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Natural, Historic, and Cultural Resources	*Vulnerability:* Vegetation, wildlife, and historic structures are vulnerable to extreme cold. *Impacts:* Due to prolonged cold, local vegetation and wildlife habitats may suffer from plant stress and reduced food availability. Historic structures in Riverton, especially those not built for severe weather, can deteriorate from below-freezing temperatures and ice. Culturally significant sites, including monuments and public art, may also be damaged, while infrastructure such as water pipes and roadways may be compromised during extreme cold events, leading to service disruptions and safety hazards.
	Critical Facilities and Infrastructure	*Vulnerability:* Water treatment, water distribution systems, and transportation networks are vulnerable to extreme cold. *Impacts:* Water treatment systems and distribution systems can face frozen pipes and equipment failures. Icy conditions may increase the risk of accidents and travel delay on transportation infrastructure. Major routes such as Bangerter Highway could experience a higher volume of accidents and traffic delays. Power generation facilities may struggle to meet heating demands. Residential and commercial buildings lacking proper insulation are also at risk of heating system failures, endangering occupants. City resources or facilities may be needed to provide warming centers during Code Blue alerts.
	Community Activities	*Vulnerability:* Community events and recreational activities are vulnerable to extreme cold conditions. *Impacts:* Youth sports, festivals, and outdoor markets are vulnerable to extreme cold. Harsh temperatures can deter participation, and reduce community engagement. At-risk groups, such as the elderly and young children, face health risks like frostbite and hypothermia, further limiting outdoor involvement. In addition, poorly insulated buildings or inadequate heating in community centers can make gatherings uncomfortable.
Flooding (and Heavy Rain)	People	*Vulnerability:* Riverton is vulnerable to flooding, primarily along the Jordan River along the eastern city border, and Midas and Rose Creeks that pass through the city. People who live or work in these areas are vulnerable. *Impacts:* Flooding in the creeks can be caused by rapid snowmelt or heavy rain events, or a combination of both. Localized flooding can also occur following heavy rain, and may accumulate on roadways or in other low-lying areas. Both the 1% annual chance flood and 0.2% annual chance flood zones can affect residences in Riverton. Flooding can cause injury or death to people who may be swept away by rapid moving floodwaters. Flooding can also damage homes and may displace residents. Flooding primarily affects residents in low-lying areas near rivers and streams, especially during heavy rainfall or snowmelt. Individuals without reliable transportation may struggle to evacuate quickly, while low-income families often lack resources for flood-prevention measures. The elderly and those with disabilities may face mobility challenges, increasing their risk during emergencies. Overall, factors such as geographic location, economic status, and physical ability contribute to the community's varying levels of vulnerability to flooding.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Structures	*Vulnerability:* Structures vulnerable to flooding primarily include those in low-lying areas or near the Jordan River as well as Midas Creek and Rose Creek. *Impacts:* Residential properties in flood plains and commercial buildings without proper drainage systems or flood-resistant designs face significant risks of damage during heavy rain or snowmelt. Older structures may be more susceptible due to outdated construction standards. Overall, a combination of location and construction features contributes to their vulnerability to flooding.
	Economic Assets	*Vulnerability:* Commercial properties, especially retail centers and warehouses near rivers or low-lying areas, are at high risk during heavy rainfall. *Impacts:* Businesses in flooded areas can experience significant losses from flood damage to structures or inventory. Residential developments in flood-prone zones can also suffer damage, which can influence property values. Public infrastructure, such as roads and utilities, may experience disruptions, leading to costly repairs, which may affect businesses' ability to operate and contribute to revenue losses. Agricultural land can be affected by excess water, reducing crop yields.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Streams, wetlands, historic sites, and parks and open spaces are vulnerable to flooding. *Impacts:* Natural areas like wetlands and streams are at risk of habitat destruction, while historic sites and landmarks may sustain structural damage. Cultural resources, such as parks and public spaces, can become unusable, affecting community events. Factors contributing to their vulnerability include inadequate flood management, urban development that alters water flow, and the increasing frequency of extreme weather events due to climate change.
	Critical Facilities and Infrastructure	*Vulnerability:* No critical facilities in Riverton were identified within the 1% of 0.2% annual chance of flood zones. These facilities may be affected by localized flooding from heavy rain or disruptions to transportation or utility networks. Roads are vulnerable. *Impacts:* Flooding can disrupt emergency services, require schools to evacuate, block transportation routes, and isolate communities.
	Community Activities	*Vulnerability:* Outdoor events, sports, and farmers' markets are vulnerable to flooding. *Impacts:* Parks and open spaces can quickly become inundated during heavy rainfall or rapid snowmelt. Events may be canceled and outdoor recreation activities may be unavailable during recovery.
Landslide/ Slope Failure	People	*Vulnerability:* Landslide is primarily a risk near steep or unstable slopes. The topography in Riverton is relatively flat, and landslide risk to people and structures is minimal. *Impacts*: Residents who commute to neighboring cities could potentially be affected if transportation routes closer to the mountains are blocked by landslides. Small localized slope failure may occur in areas with human-made slopes, such as along freeway overpasses and underpasses or other developments, or due to erosion along

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		stream banks. In Riverton, there is some moderate landslide susceptibility near the Jordan River.
	Structures	Risk to structures in Riverton is minimal due to relatively few steep slopes within the city. Heavy rainfall, ground shaking from an earthquake, or loose soil may contribute to small, localized slope failures.
	Economic Assets	Economic vulnerability from landslide in Riverton is low due to relatively low risk of landslide occurrence.
	Natural, Historic, and Cultural Resources	Landslides pose low risk in Riverton. Natural resources along creeks and the Jordan River may see minor disruptions to vegetation and wildlife habitat if slopes along the banks fail. No risks to historic and cultural resources from landslide were identified.
	Critical Facilities and Infrastructure	Roadways, and essential services like water supply and power lines may be at risk, but the likelihood of occurrence in Riverton is low.
	Community Activities	Landslides pose minimal risk to community activities in Riverton.
Radon	People	*Vulnerability:* Sixty-four percent of homes tested in Riverton have dangerous levels of radon. *Impacts:* People within homes and other structures with high levels of radon are vulnerable to increased risk of lung cancer. Homeowners in older buildings in areas with high radon potential are most at risk. Families with young children or elderly members are especially at risk due to their increased sensitivity to illness.
	Structures	*Vulnerability:* Structures throughout Riverton are vulnerable to radon exposure. Homes in areas with high uranium content are at greater risk, especially in older houses with inadequate ventilation. *Impacts:* Structures with concrete slabs or basements are particularly vulnerable to radon exposure, as radon can seep in from the soil. Cracks in floors and walls can allow radon to enter. Although radon does not damage structure directly, some structures may be more likely to accumulate radon gas and increase exposure to occupants.
	Economic Assets	*Vulnerability:* Residential properties, commercial buildings, and rental units are vulnerable to radon due to the area's geological characteristics. *Impacts:* Structures built on radon-prone soil and older buildings lacking modern building standards face higher risks. The presence of radon can lead to health issues, decrease property values, and complicate real estate transactions for homeowners and investors.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Water, soil, and historic structures are vulnerable to radon accumulation. *Impacts:* Natural resources, such as underground water sources and soil, can accumulate radon, particularly in areas with granite or uranium deposits. Historic structures made from stone or concrete with high uranium content may trap radon indoors, thereby exposing occupants to health risks.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Critical Facilities and Infrastructure	*Vulnerability:* City facilities, schools, hospitals, and other critical facilities can accumulate radon, possibly at similar levels to homes and other structures. *Impacts:* Schools in high-radon areas pose risks for children if they do not have proper ventilation. Healthcare facilities also are at risk, which affects both patients and staff. Inadequate construction practices and a lack of awareness about radon risks may heighten vulnerability.
	Community Activities	*Vulnerability:* Community activities have limited vulnerability to radon exposure. *Impacts:* Indoor gatherings in homes, particularly in basements where radon tends to accumulate, may increase risk. Construction and renovation activities can expose workers and residents to radon if proper testing and ventilation are not implemented.
High Wind	People	*Vulnerability:* All Riverton residents are potentially vulnerable to high wind, which can affect the entire city. *Impacts:* Wind can cause injury or death from blowing debris or falling tree limbs. The elderly may face mobility challenges that hinder their ability to seek shelter, while children might not fully grasp the dangers of severe weather. Individuals with disabilities or health issues may struggle to react quickly or seek shelter. Those living in mobile homes or poorly constructed houses are at greater risk of damage, and occupants are more vulnerable to injury. People who work outdoors are particularly exposed during sudden wind events. Winds can worsen air quality by stirring up dust and pollutants, affecting residents' health.
	Structures	*Vulnerability:* Structures throughout Riverton are potentially exposed to damage from high wind. Single-story homes, commercial buildings, and agricultural facilities like barns may be at risk. *Impacts:* Residential homes with large, flat roofs or lightweight materials may struggle to withstand strong winds, while commercial buildings with extensive glass can suffer from breakage and structural damage. Structures can also be damaged by trees uprooted by high wind. Carports, sheds, fences, and other accessory structures are easily damaged by high winds and can contribute to blowing debris. Agricultural structures often lack proper reinforcement, making them prone to collapse. The vulnerability of these buildings is heightened in open areas with no landscaping or natural windbreaks, which can help disperse wind energy.
	Economic Assets	*Vulnerability:* Commercial buildings, such as retail stores throughout Riverton, are vulnerable to losses from high wind. *Impacts:* Businesses might have large signs and awnings that can be damaged, leading to business interruptions. Agricultural assets such as greenhouses and livestock facilities face risks from wind destruction, and crops and animals are vulnerable to damage or injury. Infrastructure, including power lines and roads, can be compromised, resulting in outages that may disrupt business operations. Extended power outages and structural repairs may lead to operational downtime and lost revenue. The vulnerability of these assets is largely due to construction quality, location, and the presence of loose materials that can become projectiles.

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Natural, Historic, and Cultural Resources	*Vulnerability:* Parks, trees, historic and cultural structures. *Impacts:* Natural resources like park and open spaces with mature trees are vulnerable to high winds, which can cause uprooting and wind erosion. Historic structures may also be at risk if their materials are not resilient, potentially leading to damage or collapse. Cultural resources, such as outdoor art installations and community spaces, can be disrupted or damaged by strong winds. These vulnerabilities are primarily due to the structural integrity of the resources and their exposure to the elements.
	Critical Facilities and Infrastructure	*Vulnerability:* City buildings, hospitals, fire and police stations, and schools could all potentially experience damage or service disruptions due to high wind. *Impacts:* Utility infrastructure, such as power lines and communications towers, can be damaged by high winds and are vulnerable to service outages. Power and communication outages can disrupt emergency response and medical care. Falling tree branches and other debris can block access to properties and may block roadways.
	Community Activities	*Vulnerability:* Outdoor activities, recreation are vulnerable to high winds. *Impacts:* Outdoor events like festivals and sporting activities may involve injury from falling debris and damaged structures. Farmers' markets and open-air concerts can also face challenges, with high winds blowing away tents and products. In addition, recreational activities in parks—such as picnics and playground use—can become unsafe during high winds. The vulnerability of these activities stems from their outdoor settings, where structures and unattached items can easily be compromised, leading to safety risks and disruptions.
Lightning	People	*Vulnerability:* Lightning can occur anywhere in Riverton, and all residents could be exposed. People who participate in golfing, swimming, and other outdoor sports and recreation are exposed to lightning risk. *Impacts:* A lightning strike can cause serious injury or death to people near the strike. Athletes and spectators participating in outdoor sports in open areas also may struggle to find shelter quickly, particularly in fast-moving thunderstorms. In addition, young children and the elderly are more vulnerable, as they may not be aware of the dangers of lightning or may be slower to seek protection. Those lacking access to warning systems or education on lightning safety are at further risk during severe weather.
	Structures	*Vulnerability:* Structures anywhere in Riverton could potentially be vulnerable to lightning. *Impacts:* Due to their height and exposure, tall buildings, communications towers, and open-frame agricultural barns are particularly vulnerable to lightning strikes. Those with metallic components or inadequate grounding systems face increased risk because metal conducts electricity. In addition, residential homes near tall trees may be at risk if the trees are struck and energy is transferred to the structure. Electrical surges may disrupt power, internet, and communication systems within homes and businesses.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Economic Assets	*Vulnerability:* Businesses and agricultural structures are vulnerable to lightning strikes. *Impacts:* Agricultural buildings, such as barns and silos, are vulnerable to lightning strikes, which can cause damage to stored crops and livestock. Commercial buildings with metal roofing or equipment may face electrical surges, disrupting operations. In addition, outdoor recreational areas that attract crowds are at risk during thunderstorms, posing dangers to infrastructure and public safety.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Parks, historic buildings, and outdoor sculptures are vulnerable to lightning strikes. *Impacts:* Mature trees in parks can attract lightning due to their height, while historic buildings made of wood or flammable materials are at risk of igniting. Cultural resources, such as monuments and outdoor sculptures, can also be damaged by lightning. The risk increases in areas with frequent thunderstorms and dry conditions.
	Critical Facilities and Infrastructure	*Vulnerability:* Communications towers and power lines may be at risk. *Impacts:* Communications towers attract lightning due to their height and metal structure. Power lines and substations also are susceptible, and lightning strikes can lead to power outages. Power and communication outages can disrupt essential functions of emergency facilities, hospitals, or schools. Schools, fire and police stations, and hospitals can be at risk if they do not have proper lightning protection systems.
	Community Activities	*Vulnerability:* Outdoor events such as sports practices, concerts, picnics, and festivals are particularly vulnerable to lightning strikes. *Impacts:* Participants in these events often find themselves in open areas without adequate shelter and may be unprepared for sudden weather changes, leading to dangerous situations. CR Hamilton Sports Complex, Centennial Park, Riverton City Park, Riverbend Golf Course, the Jordan River Parkway, and school sports fields are among outdoor venues where people may be at risk from lightning. Water-related activities, such as swimming, also increase risk due to water's conductivity.
Severe Winter Weather	People	*Vulnerability:* All Riverton residents are vulnerable to severe winter weather. *Impacts:* Heavy snow can increase the risk of injuries due to slips and falls, along with illnesses and other health consequences from exposure to cold. People can be injured in car accidents while driving in severe winter weather conditions. Elderly individuals may struggle with mobility and health issues, while young children lack the awareness needed to navigate severe weather safely. People with disabilities often depend on assistance that might not be available during storms. Census data indicates that 7.2% of Riverton residents are individuals with disabilities under age 65. In addition, those without reliable transportation can become stranded, and low-income families in inadequate housing may lack resources for heating and snow removal.
	Structures	*Vulnerability:* All structures are vulnerable to severe winter weather. *Impacts:* Flat-roofed buildings are prone to snow accumulation, risking roof collapse if not cleared. Older homes might have weakened roofs

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		or inadequate insulation, making them susceptible to snow load and ice dams. Commercial buildings with large open spaces may face risks if their roofs do not meet snow load requirements. Temporary structures like tents are especially vulnerable, as they are not designed to handle heavy snow. Roof design, material quality, and the age of the building are key factors in how well a structure can withstand heavy snowfall.
	Economic Assets	*Vulnerability:* All businesses are vulnerable to severe winter weather. *Impacts:* Retail businesses can experience significant losses from decreased customer traffic and delayed shipments. Construction projects may face delays and increased costs. Transportation and logistics companies are particularly impacted, as snow can hinder vehicle movement, leading to delivery delays. In addition, public services may struggle to maintain continuity during severe weather events.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Trees, historic buildings, and cultural resources are vulnerable to severe winter weather. *Impacts:* Natural resources like trees can break under heavy snow, disrupting habitats. Historic sites risk structural damage from snow accumulation, while cultural resources, including public art and community spaces, face access issues.
	Critical Facilities and Infrastructure	*Vulnerability:* Transportation and utility networks are vulnerable to severe winter weather. *Impacts:* Transportation networks like roads and bridges can become impassable, hindering emergency responses. Bangerter Highway, Redwood Road, 13400 South, 12600 South, and other major routes may become impassable during heavy snow or blizzard conditions, and travelers may be temporarily stranded. Utilities such as power and water supply systems are at risk of disruptions from downed lines. Roofs on public buildings, including schools and hospitals, may collapse from the weight of excessive snow. Communications infrastructure can be damaged, impeding signals. These vulnerabilities stem from reliance on systems that may not be equipped to handle extreme winter weather.
	Community Activities	*Vulnerability:* Community events and community facilities are vulnerable to severe winter weather. *Impacts:* Community activities may be delayed or canceled due to severe winter weather. Community centers may be repurposed to serve as warming stations, but other activities can be halted due to travel difficulties. Outdoor events, public transportation, and community gatherings may be at risk. Severe weather can lead to low attendance, travel delays, and access issues for essential services, such as emergency response and healthcare.
Tornado	People	*Vulnerability:* Tornadoes are uncommon in Riverton but could potentially occur anywhere in the city, and all residents are vulnerable. *Impacts:* If a tornado were to occur, residents are vulnerable to serious injury from blowing debris, uprooted trees, and structural collapse. Individuals living in mobile homes face higher risks, as these structures can be easily damaged. Those with limited mobility, such as the elderly and people with disabilities, may struggle to reach safety

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		quickly. Families with young children might have difficulty ensuring everyone's safety during a warning. In addition, residents unfamiliar with tornado preparedness or without timely weather alerts are at greater risk. Those in lower socioeconomic conditions often live in areas less equipped for disaster response.
	Structures	*Vulnerability:* Homes and businesses in Riverton are all vulnerable to tornado damage. *Impacts:* All structures could sustain heavy damage from a tornado. Roofs can be torn from homes, windows broken, and walls damaged and compromised. Mobile homes are particularly at risk due to their light weight and insecure foundations. Older commercial buildings that do not meet modern codes also may be weak, and large-span structures, such as warehouses, can have roofs easily lifted by tornado winds. Overall, inadequate materials, poor design, and age increase the risk of damage from tornadoes.
	Economic Assets	*Vulnerability:* All businesses are vulnerable to tornado damage. *Impacts:* Tornadoes can cause economic losses in Riverton through damage to businesses and interruption of economic activity. Retail buildings, warehouses, hotels, restaurants, office complexes, and other businesses can all experience operational downtime or closures due to structural damage or interruption of power or communication systems. Closures may lead to lost wages or layoffs, lost revenue, and interruption of supply chains. Larger commercial spaces may be at risk due to their size and materials. Roads and bridges can be blocked by debris or compromised, disrupting transportation and service access.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Parks, trees, and historic and cultural structures are vulnerable to tornado damage. *Impacts:* Natural resources like trees and wetlands can be severely damaged, disrupting ecosystems. Historic structures may suffer because their age and construction methods might make them less able to withstand high winds. Cultural resources, including monuments and parks that are vital to community heritage, may also be at risk. Riverton's parks and open spaces could be severely affected by a tornado. Mature trees could be uprooted, and damage to vegetation and wildlife habitats can increase erosion.
	Critical Facilities and Infrastructure	*Vulnerability:* Hospitals, schools, and emergency response centers are vulnerable to tornadoes due to their structural design and large open spaces that may not withstand high winds. *Impacts:* Public safety buildings, schools, or other civic facilities may need emergency inspections or repairs. Utilities like power stations and communication facilities also are at risk, as damage to these facilities can disrupt essential services. In addition, any structures not built to modern codes might lack the reinforcements necessary to endure severe weather, increasing vulnerability for the facilities and surrounding communities. Major transportation routes such as Bangerter Highway, Redwood Road, 13400 South, 12600 South, and other arterial roads may be blocked by debris.
	Community Activities	*Vulnerability:* Outdoor festivals, sports events, and markets are vulnerable to tornadoes due to their open spaces and limited options for providing shelter.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		Impacts: Temporary structures, such as tents, can be easily damaged by high winds, and patrons may be unable to find shelter. Events may be postponed or canceled, reducing opportunities for social engagement and community support. Schools and recreational facilities with large glass windows or weak roofs also face significant risks.
Wildfire	People	*Vulnerability:* Wildfire risk is relatively low in Riverton due to its location in the middle of the valley, which is mostly urban development. Some areas of open space near parks and along the Jordan River are vulnerable to wildfire. *Impacts:* Wildfires are likely to be small and affect only a limited number of people. Wildfire smoke can affect individuals in Riverton, even if the fire is not located within the city itself. Individuals with underlying health conditions may be particularly vulnerable to effects of poor air quality. Residents with physical disabilities or health issues may struggle to evacuate. Low-income families lacking resources for fire safety measures may be more vulnerable. Older adults might have reduced mobility, making them more dependent on others for assistance.
	Structures	*Vulnerability:* Residential homes, especially those made of wood or in heavily vegetated areas, may be vulnerable. Properties near the Wildland-Urban Interface are at higher risk due to surrounding flammable vegetation. Inadequate defensible space, such as insufficient clearing of dry grass and shrubs, increases susceptibility. *Impacts:* Structures are at risk from damage or complete loss from wildfire. Roofs made of combustible materials and buildings that lack fire-resistant features are particularly at risk during wildfire events.
	Economic Assets	*Vulnerability:* Businesses near undeveloped lands are vulnerable to wildfire damage. *Impacts:* Commercial assets, such as retail centers close to undeveloped areas, can suffer damage from flames and smoke, affecting the local economy. Agricultural lands also are susceptible, as wildfires can destroy crops and livestock, leading to financial losses. Vital infrastructure, such as power lines and water pipelines, can be disrupted, causing further economic repercussions. These vulnerabilities are heightened by drought conditions, extreme heat, and/or high winds, which can facilitate the spread of fires.
	Natural, Historic, and Cultural Resources	*Vulnerability:* The Jordan River and historic structures are vulnerable to wildfire damage. *Impacts:* Natural resources like grasslands and riparian areas along the Jordan River are at risk because dry vegetation and accumulated brush can easily ignite. Historic sites made of wood and cultural landmarks can also be affected, particularly when located near wildland areas. The increasing frequency of drought and extreme heat, exacerbated by climate change, heightens these vulnerabilities.
	Critical Facilities and Infrastructure	*Vulnerability:* Critical facilities in Riverton have a low risk of damage from wildfire, but power infrastructure may be at risk. *Impacts:* Utilities like power lines and communication systems are at risk, as sparks or falling trees can ignite fires.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Community Activities	*Vulnerability:* Outdoor events and recreation areas are vulnerable to wildfire impacts. *Impacts:* Wildfire smoke may deter attendance at outdoor events like festivals and sports, especially during hot, windy conditions. The Jordan River Trail may be inaccessible for recreational activities, such as biking or running during and following a wildfire.
Dam Failure	People	*Vulnerability:* Riverton residents are vulnerable to failure of dams. There are two significant and one high hazard dam in Riverton. Inundation boundaries from dams in neighboring communities also overlap areas in Riverton. *Impacts:* Failure of dams at Black Ridge Reservoir or Jordan Valley Water Purification Upper Reservoir could cause flooding and property damage in Riverton. Areas vulnerable to flooding following a dam failure include the areas near the southern and eastern borders of the city. Individuals living near dams, particularly in low-lying areas, are most vulnerable to dam failure and potential flooding. They may be injured if caught in fast-moving water or may be displaced if their homes are damaged by flooding. Families with young children, the elderly, low-income residents, and individuals with disabilities may struggle to evacuate quickly and are more vulnerable to dam failure.
	Structures	*Vulnerability:* Structures in dam inundation boundaries are at risk of flooding and damage from a dam failure. Residential homes in low-lying areas, bridges, and roadways may be vulnerable. Commercial and retail buildings in these areas are also vulnerable. Outdated dam infrastructure, insufficient spillway capacity, and a lack of warning systems can worsen the risk of dam failure and increase vulnerability of lives and property downstream. *Impacts:* Structures downstream of a dam can suffer extensive damage from flooding following a dam failure. Damage is often worst close to the dam site because of the volume and velocity of water released. Because dams are not within Riverton, damage may be lessened as water begins to spread out and slow down.
	Economic Assets	*Vulnerability*: Roads, bridges, and utilities are vulnerable to damage, disrupting transport and services. *Impacts:* Residential and commercial properties downstream face significant flood risks, leading to property damage and economic loss. Agricultural assets, including farmland and livestock, can be severely affected, especially if irrigation systems are compromised. In addition, businesses that rely on water, such as manufacturing plants, may experience operational disruptions. The proximity of these assets to failure zones and their dependence on a stable water supply highlight their vulnerability in the event of a dam failure.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Rose Creek, Jordan River, and historic and cultural sites are vulnerable to flooding. *Impacts:* Natural resources like local waterways along Rose Creek and Jordan River could suffer damage to ecosystems and habitat loss. Historically significant sites, such as historic homes, are at risk of flooding and deterioration. Cultural resources, such as community centers and parks, may also face damage, affecting local gatherings.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Critical Facilities and Infrastructure	*Vulnerability:* Jordan Valley Water Conservancy District (JVWDC), two schools, and roads are vulnerable to dam failure. *Impacts:* JVWCD provides retail water service to Riverton. A failure of the JVWCD water purification reservoirs could not only cause flood damage downstream, but it may also affect the city water supply. Inundation maps indicate that two Riverton schools may be vulnerable to damage from dam failure. Transportation infrastructure, such as roads and bridges, may be compromised, hampering emergency response. Bangerter Highway and Redwood Road are also potentially vulnerable to damage following a dam failure. Water treatment plants, schools, hospitals, and nearby residential areas may be vulnerable. Water treatment plants rely on a consistent water supply, and dam failure can disrupt operations and compromise public health. Schools and hospitals face safety risks and evacuation challenges, while residential areas could suffer catastrophic flooding, leading to loss of life and property.
	Community Activities	*Vulnerability:* Community events and recreation activities are vulnerable to flooding from dam failure. *Impacts:* Recreational pursuits like fishing, boating, and swimming in reservoirs, as well as events in parks located downstream, may be at risk. These activities are vulnerable to sudden flooding from a dam breach. Community events and activities may be postponed or canceled.
Civil Disturbance	People	Low-income individuals may lack the resources for safety, while the elderly or disabled may struggle to navigate emergencies. Young people, particularly teenagers, may be drawn into unrest, influenced by social dynamics. In addition, marginalized individuals may feel targeted or compelled to participate. A lack of community cohesion and trust in authorities can further heighten tensions.
	Structures	Government buildings, commercial properties, and infrastructure, such as bridges and transportation hubs may be vulnerable. Government buildings may be targeted for their symbolic authority, while retail stores can attract crowds during protests. Residential neighborhoods also can be affected, especially in areas with heightened tensions. The vulnerability of these structures stems from their visibility and importance to the community, combined with factors such as location and ongoing social issues.
	Economic Assets	Retail establishments, especially shopping centers, are at risk as they often become focal points for protests. Transportation systems can be disrupted by blockades, hindering access to services. Financial institutions may face vandalism or theft, while critical service providers, such as hospitals, could experience strain during unrest. Several economic assets are vulnerable to civil disturbances, primarily due to their visibility and reliance on foot traffic.
	Natural, Historic, and Cultural Resources	Parks and open spaces may suffer from vandalism or destruction during uncontrolled events. Historic sites can become targets, as they symbolize authority or cultural significance. Cultural resources such as community centers and places of worship also may be affected, as they play a vital role in community identity. Their vulnerability lies in the potential for damage during protests.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Critical Facilities and Infrastructure	Governmental buildings, schools, and healthcare facilities may be at risk, since they often symbolize authority and serve as community hubs, making them targets during unrest. Utility infrastructure, such as water and power facilities, is also at risk of disruption. Its visibility and essential services contribute to its vulnerability during civil disturbances.
	Community Activities	Public demonstrations, parades, and local government meetings are particularly vulnerable to civil disturbances. These events often attract large crowds and can become tense, especially around contentious social or political issues. Factors such as the local demographic, economic conditions, and recent events can heighten these vulnerabilities, making it easier for conflicts to arise during passionate public gatherings.
Cyberattack	People	Older adults often lack familiarity with technology and online security, making them easy targets for phishing scams. Individuals engaging in online banking or shopping without strong security measures also face heightened risks. Families with children may be less vigilant about internet safety, allowing cybercriminals to exploit personal information. In addition, small business owners without robust cybersecurity practices are prime targets for attacks that can disrupt operations.
	Structures	Critical infrastructure, such as power plants, water treatment facilities, and transportation systems, often lack robust cybersecurity measures. Commercial businesses, especially financial institutions and healthcare providers, also are at risk due to weaker data protection and employee training. Educational institutions may be vulnerable because of limited funding for cybersecurity and outdated software. Obsolete technology and insufficient training enhance the susceptibility of these structures to cyber threats.
	Economic Assets	Financial institutions, such as banks and credit unions, are at risk of data theft and service disruption. Small and medium-sized businesses often lack robust cybersecurity measures, making them attractive targets. In addition, local government agencies and critical infrastructure, such as water treatment facilities, might have outdated security protocols, posing threats to public safety. The rise of remote work further exacerbates vulnerabilities, as employees accessing networks from home can unintentionally expose systems to risks. Overall, the combination of outdated technology and insufficient cybersecurity practices increases the vulnerability of an area's economic assets.
	Natural, Historic, and Cultural Resources	Natural resources like water management systems and wildlife databases can be compromised, disrupting ecosystems. Historic sites and museums that digitize collections are at risk of losing valuable artifacts and data. In addition, cultural organizations managing events may face threats if their systems lack adequate security. The limited resources of smaller organizations further increase this vulnerability
	Critical Facilities and Infrastructure	Energy and utility services, such as electricity and water systems, which often rely on outdated technology, may be vulnerable. Transportation infrastructure, such as traffic management and public transit, is also at risk due to networked systems. Healthcare facilities

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		that use electronic records and connected medical devices face vulnerabilities that can compromise patient safety.
	Community Activities	Online registration for events, local government services, and educational programs that rely on digital tools may be targeted due to inadequate security measures, outdated software, and insufficient staff training.
Hazardous Materials Incident (Transporta-tion & Fixed Facility)	People	Individuals with pre-existing health conditions, such as respiratory issues, and the elderly are at higher risk due to their compromised health. Children also are more susceptible. Those living near industrial areas or transport routes for hazardous materials face increased exposure risk, while low-income families may lack resources and information to effectively prepare for incidents.
	Structures	Industrial facilities, such as manufacturing plants and warehouses, often store hazardous chemicals which may leak. Residential buildings, schools, and hospitals also are at risk, particularly if located along transportation routes for hazardous materials. Older buildings may lack modern safety features, increasing their vulnerability.
	Economic Assets	Industrial facilities, transportation infrastructure, and nearby commercial properties may be affected. Industrial facilities handling chemicals are at risk of spills or leaks, while roads and railways used for transporting hazardous materials can lead to accidents and contamination. In addition, nearby commercial and residential areas face potential health risks and economic losses.
	Natural, Historic, and Cultural Resources	Waterways and habitats are vulnerable to hazardous materials incidents, which can disrupt ecosystems. Historic sites and structures may suffer damage from toxic exposure, leading to degradation over time. In addition, cultural landmarks risk losing their significance due to contamination events. The proximity of these resources to industrial areas or transport routes exacerbates their risk.
	Critical Facilities and Infrastructure	Chemical manufacturing plants, waste treatment facilities, and transportation networks, such as highways and railroads may be at risk. Their vulnerability stems from factors such as proximity to residential areas, aging infrastructure, and inadequate safety measures. Natural hazards, such as flooding and earthquakes, can further increase risks by damaging containment systems.
	Community Activities	Local markets, school events, and outdoor gatherings are vulnerable to hazardous materials incidents if they are near industrial zones and transport corridors. This risk is heightened by inadequate emergency preparedness, lack of public awareness, and the potential for spills during transport. Large crowds at events can complicate evacuation efforts, increasing the risks for participants and nearby residents.
Public Health Epidemic/ Pandemic	People	Individuals with pre-existing health conditions like asthma and heart disease and adults over 65 may be vulnerable. Low-income families may struggle to access healthcare and vaccinations, increasing their risk. Marginalized communities with limited access to information and those living in high-density conditions also are at greater risk due to the rapid spread of diseases and the challenges in implementing preventive measures.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Structures	Several structures are vulnerable to public health epidemics or pandemics, particularly due to their ability to facilitate the spread of disease. High-density residential areas, such as apartment complexes, are at risk, as close living quarters can lead to faster transmission. Public gathering spaces, such as schools and community centers, also pose significant threats because large groups are in confined spaces. Healthcare facilities can become hotspots for infections if infection control measures are insufficient. In addition, workplaces with high foot traffic, such as retail stores, contribute to vulnerability.
	Economic Assets	Small businesses in retail, hospitality, and food service are particularly vulnerable to public health epidemics or pandemics. These sectors face risks from fluctuating consumer demand and potential operational restrictions. The tourism industry also is affected, as travelers may avoid high-risk areas. Healthcare facilities can become overwhelmed, straining resources and impacting operations. In addition, local supply chains may experience disruptions, leading to shortages and inflation. Overall, the direct effects of illness, along with prolonged shutdowns and consumer hesitance, leave these economic assets exposed to significant downturns.
	Natural, Historic, and Cultural Resources	Natural resources like wildlife and ecosystems can be disrupted by increased human activity, raising the risk of zoonotic diseases. Historic sites may deteriorate due to reduced visitor access and funding, while cultural resources, such as community events, face cancelations, impacting social connections.
	Critical Facilities and Infrastructure	Public health epidemic or pandemic incidents can affect healthcare facilities, nursing homes, public transportation systems, schools, and food supply chains. Hospitals and clinics may become overwhelmed with patients, while vulnerable populations in nursing homes are at higher risk. Public transportation can facilitate the spread of disease, and schools gather large groups, thereby increasing transmission potential. These facilities often lack adequate resources, including medical supplies and testing capabilities, making them more susceptible to the impacts of a health crisis.
	Community Activities	Large gatherings like festivals and sporting events can facilitate the rapid spread of diseases due to close contact. Public transportation also is at risk, as it serves many people in confined spaces. Schools and childcare facilities are particularly susceptible, given that children can easily transmit infections. In addition, food-related events, such as farmers' markets, can pose risks if hygiene practices are not followed. The interconnectedness of community members and varying adherence to health guidelines further exacerbate these vulnerabilities.
Terrorism	People	Young children and newcomers may lack awareness of potential threats, while the elderly and individuals with disabilities may struggle to respond quickly in emergencies. Marginalized communities often face bias, making them more susceptible to targeting. In addition, those with lower socioeconomic status may lack access to security measures and emergency preparedness resources.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Structures	Government buildings, transportation hubs, commercial centers, and public spaces are particularly vulnerable to terrorism incidents. Government buildings are symbolic targets, while transportation hubs and commercial centers are attractive due to their potential for high casualties and crowd presence. Public spaces also are at risk due to their open nature and lack of security. Their vulnerability is heightened by inadequate security measures, high occupancy rates, and their locations in densely populated areas, which can amplify the impact of incidents.
	Economic Assets	Infrastructure, commercial establishments, and community facilities may be vulnerable. Critical infrastructure, such as transportation networks and power grids, could disrupt the economy if targeted. Commercial establishments, especially those with high foot traffic, and community facilities like schools and hospitals also are at risk, as they can provoke widespread concern and disruption. Their accessibility and interconnectivity increase vulnerability, meaning that damage to one asset can have a broader economic impact and hinder recovery efforts.
	Natural, Historic, and Cultural Resources	Natural resources like water supplies and parks could be targeted for their significance to the community. Historic sites and cultural resources, such as museums or community centers, also are at risk due to their accessibility and importance to local identity. Their vulnerability is often heightened by inadequate security measures.
	Critical Facilities and Infrastructure	Public transportation systems, healthcare facilities, schools, and utility services like water and power plants may be affected. Their vulnerability arises from high accessibility and the potential impact of an attack, as crowded transportation and public spaces can lead to mass casualties and panic. Attacking utility services could disrupt the town's essential functions, creating chaos.
	Community Activities	Festivals, parades, and sporting events are particularly vulnerable to terrorism incidents. These events attract large crowds, making it easier for perpetrators to inflict harm and instill fear. In addition, community centers and places of worship serve as social hubs, increasing their risk. Factors such as limited security measures and open access to public spaces, contribute to this vulnerability.

Hazards Not Profiled

Avalanche and landslide/slope failure have been omitted from further discussion of hazard impacts and mitigation actions. As shown in the hazard description in Volume 1, avalanche and landslide risk is primarily located in the Wasatch and Oquirrh Mountains in Salt Lake County. Riverton has mostly flat terrain and faces minimal risk of impacts from these hazards. No previous occurrences of avalanche or landslide have impacted Riverton.

DRAFT

Jurisdiction-Specific Changes in Vulnerability

Hazard events can impact communities, infrastructures, and ecosystems. The severity of these impacts can be influenced by climate change, population patterns, and land use developments. Understanding these factors is crucial for the city of Riverton to develop a resilient community and minimize the impacts of hazards. Table 11 displays the unique changes within the community and the related effects on each hazard affecting Riverton.

DRAFT

Table 11: Jurisdiction-Specific Changes in Vulnerability in the City of Riverton

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
Avalanche	N/A	N/A	N/A	N/A
Drought	Climate change affects drought incidents by altering precipitation patterns and increasing temperatures. Warmer weather can lead to longer dry periods and more severe droughts, while changes in rainfall can reduce snowpack in nearby mountains, crucial for summer water supply. Higher temperatures also increase evaporation rates, further straining local water resources.	Drought can significantly influence population patterns by impacting economic opportunities and the quality of life. Water scarcity often leads to reduced agricultural productivity, prompting residents to migrate to areas with more stable job prospects. Increased water costs can make living less affordable, driving some residents away. Conversely, efforts to address drought, such as sustainable development or improved water management, may attract newcomers, resulting in changes in the community's demographic composition over time.	Riverton has seen a significant amount of growth and development, including thousands of new residential units and hundreds of new commercial spaces. This level of development increases the water demand in Riverton and the risk of drought.	Increased
Earthquake	Rising temperatures can lead to glacial melting, which affects pressure on tectonic plates and may trigger seismic activity through isostatic rebound. In addition, increased rainfall and flooding can erode soils, weakening structural integrity and heightening vulnerability during earthquakes. Although the direct links between climate change and earthquakes are still under investigation, environmental effects may impact the region's seismic risk.	Earthquakes can significantly alter population patterns by prompting residents to leave for safer areas after a seismic event. This migration can lead to changes in population density and attract new residents and businesses during the rebuilding process. The perception of the area as a safe place to live may shift, impacting long-term demographics, as some residents return to rebuild while others relocate permanently.	The high level of development exposes more properties to earthquake risk, but they have also been built to modern codes that protect against earthquake damage.	Stayed the same
Extreme Heat	Climate change significantly impacts extreme heat by increasing the frequency and intensity of heat waves. Rising global temperatures lead to	By prompting residents to relocate due to damaged homes or safety concerns. Some may move to areas perceived as safer or seek better job	The high amount of development increases density and reduces vegetation, both of	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	longer and hotter summers, affecting residents and local infrastructure while heightening health risks, especially for vulnerable populations. Urban heat islands resulting from reduced vegetation and extensive pavement further amplify these effects.	opportunities elsewhere. The economic impact and infrastructure damage can also make certain neighborhoods less desirable, leading to shifts in demographics and the socioeconomic landscape as new residents with different backgrounds move in.	which can increase temperatures during extreme heat events.	
Extreme Cold	Climate change impacts extreme cold by increasing the intensity of winter storms. Higher atmospheric temperatures allow for more moisture, resulting in heavier snowfall and potentially lower temperatures during these events. In addition, fluctuations in weather patterns may disrupt seasonal cycles, leading to unpredictable periods of extreme cold mixed with warmer spells.	By driving some residents to relocate to warmer areas. Harsh winters can hinder economic activities and deter new residents and businesses, influencing housing demand and the attractiveness of certain neighborhoods. This may disproportionately affect lower-income families, leading to changes in demographics and socioeconomic stratification in the community.	Increased growth of commercial and residential developments in Riverton increases energy demand during extreme cold events, stressing the electrical grid.	Increased
Flooding	Higher temperatures increase the frequency and intensity of extreme weather events and alter precipitation patterns. They lead to more intense rainstorms and accelerated snowmelt from nearby mountains, raising water levels in rivers and streams. This combination raises the risk of flooding, especially in areas with inadequate drainage and urban development in flood-prone zones, heightening the potential for damage to homes and infrastructure.	Flooding can significantly alter population patterns by displacing residents from affected areas, leading them to seek shelter elsewhere. This may cause a population decline where flooding occurs, as individuals might hesitate to return due to ongoing risks or property damage. As neighborhoods become less desirable, people may migrate to safer areas, changing demographic trends and putting pressure on housing in those regions. Over time, these shifts can influence urban planning and development, as local governments	No developments in Riverton have been in the special flood hazard area. Increased impervious surfaces due to development across Riverton could contribute to ponding and other pluvial flooding.	Decreased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
		address flooding risks and changing population needs.		
Landslide/ Slope Failure	N/A	N/A	N/A	N/A
Radon	Climate change can affect radon levels by altering soil temperatures and moisture conditions. Higher temperatures may increase radon emissions from the ground, while heavy rainfall can change groundwater and soil saturation, impacting radon migration into buildings.	Radon exposure can influence population patterns as increased health awareness may drive families to move away from areas with high radon levels. This shift could particularly affect vulnerable groups, changing demographics and demand in the housing market. Homes with lower radon levels may become more sought after, and public health campaigns can encourage community action, making previously undesirable areas more attractive once mitigation measures are implemented.	Development in Riverton has not increased radon risk.	Decreased
Heavy Rain	Climate change increases the frequency and intensity of heavy rain, as higher temperatures allow the atmosphere to hold more moisture. This leads to stronger storms, flash flooding, and overwhelmed drainage systems.	Heavy rain can shift population patterns by pushing residents out of flood-prone areas and attracting them to safer neighborhoods. Frequent flooding may lead to evacuations and economic disruptions, prompting relocations. Over time, ongoing heavy rains can affect housing demand and community stability, altering the town's population distribution.	Increased impervious surfaces due to development across Riverton could contribute to ponding and other pluvial flooding.	Increased
High Wind	Climate change affects high winds by altering atmospheric patterns and increasing extreme weather events. Rising temperatures may lead to more substantial, unpredictable winds and	High winds can alter population patterns by making certain areas less desirable. Frequent damage may drive residents to safer	New developments in Riverton do not increase the risk of high wind.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	more frequent thunderstorms, posing risks to infrastructure and air quality.	neighborhoods, deter newcomers, and slow growth in affected regions.		
Lightning	Climate change increases temperatures and alters precipitation, leading to more intense thunderstorms and frequent lightning strikes. Urbanization can enhance this effect, posing risks to public safety and infrastructure.	Lightning can influence population patterns by causing property damage and wildfires, leading some residents to relocate. Areas with higher lightning activity may deter new residents, while safer locations could increase migration as people seek protection from severe weather.	New development in Mountain View Village and Downtown Riverton are at risk of lightning strikes.	Increased
Severe Winter Weather	Climate change impacts heavy snow and blizzards by altering precipitation patterns. Higher temperatures can lead to more rain than snow, affecting snowpack levels—additionally, increased storm intensity results in heavier, more unpredictable snowfall.	Increased population means an increased number of people needing to get to work and requiring quicker snow removal. Heavy snow or blizzards can impact population patterns by influencing where people live and work. Transportation disruptions may lead residents to seek housing closer to jobs, increasing density in some areas while depopulating others. Families might also avoid regions with frequent heavy snowfall, shifting demand to milder areas. Over time, these trends can alter community demographics and economic activity, prompting adjustments in town planning and resource allocation.	With large development increases in Riverton, the risk of damage and increased responsibility due to severe winter storms has gone up. With new subdivisions, the city is responsible for plowing, rescues, and evacuations from heavy snow events.	Increased
Tornado	Climate change may increase the frequency and intensity of tornadoes. Higher temperatures lead to more moisture in the air, creating conditions for severe thunderstorms. Changes in wind patterns and precipitation can also	Tornadoes can influence population patterns by prompting residents to move to safer areas after damage occurs. This can decrease density in affected neighborhoods while increasing the demand for housing	Riverton is not at high risk for tornadoes, but increased development slightly raises the risk by adding more structures	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	heighten tornado risks, resulting in more destructive storms and greater threats to infrastructure and communities.	in safer regions. New residents may also move in for recovery opportunities, altering demographics. Over time, repeated tornado threats might push long-term residents to areas with better disaster preparedness, reshaping the town's population distribution.	in the city that could be damaged.	
Wildfire	By raising temperatures and creating drier conditions, prolonged droughts lead to more dry vegetation, which serves as fuel for fires. Erratic seasons extend the growing period, while more lightning strikes can ignite wildfires. These factors heighten the threat to ecosystems and community safety.	Displaced individuals often seek safer areas, shifting demographics, while declining property values might deter newcomers. Conversely, some may be drawn to rebuilding efforts, impacting long-term growth and community dynamics.	Development, especially in the southwest corner of Riverton, is located close to high-risk wildfire areas. These neighborhoods face heightened risk of wildfire damage.	Increased
Dam Failure	Climate change raises the risk of dam failure by causing heavier rainfall and rapid snowmelt. These changes can overwhelm dams and compromise their integrity, highlighting the need for urgent safety assessments and upgrades to protect communities downstream.	Dam failure tornadoes can impact population patterns by displacing residents and altering demographics. Evacuations can lead to an influx in safer areas, while destruction may deter new residents and contribute to population decline. Fear of future disasters may also prompt remaining individuals to relocate, changing the community's composition and affecting population density and economic activity.	Development in Riverton has not increased the risk of dam failure.	Increased
Civil Disturbance	Climate change can increase civil disturbances by intensifying environmental stresses and social tensions. Rising temperatures may lead to droughts, wildfires, and poor air quality, particularly affecting vulnerable communities. Resource scarcity, especially water, can spark conflicts and	By encouraging residents to move for safety, leading to outflows and new arrivals. These events can reveal social issues, impacting community dynamics, employment, and property values, ultimately reshaping demographics, and social cohesion.	Development in Riverton has not increased the risk of civil disturbance.	Increased

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	protests. In addition, an influx of migrants from harder-hit areas may strain local resources, further escalating tensions. This cycle of unrest is driven by the impacts of climate change on the environment and community dynamics.			
Cyberattack	Possible attack on the industry, which is seen as producing large amounts of greenhouse gases and burning fossil fuels. Climate change can heighten cyberattack risk by increasing vulnerabilities during extreme weather. Disruptions like power outages offer cybercriminals opportunities, but focusing on emergency responses can weaken cybersecurity measures. As organizations adopt new technologies to cope with climate impacts, they may unintentionally introduce additional vulnerabilities.	Cyberattacks can change population patterns by eroding trust in essential services. Compromised systems may cause residents to leave due to safety concerns, while high-profile incidents can deter businesses, leading to job losses. This perception of vulnerability may also make the town less appealing to newcomers, resulting in demographic shifts and affecting local development.	Development in Riverton has not increased the risk of cyberattack.	Increased
Hazardous Materials Incident (Transportation & Fixed Facility)	Climate change elevates the risk of hazardous materials incidents by increasing extreme weather events like heavy rain and wildfires. These events can breach storage tanks and heighten material volatility. Vulnerable infrastructure can lead to more spills or accidents, while climate shifts may also introduce new challenges for managing hazardous substances and public health.	By causing evacuations and temporary declines in density. In the long run, unsafe areas may deter new residents, affecting growth and diversity. In addition, negative perceptions can lower property values and economic prospects, leading families to relocate, which impacts local demographics.	Development in Riverton has not increased the risk of hazardous materials incidents.	Increased
Public Health Epidemic/ Pandemic	By increasing the spread of vector-borne diseases and raising the risk of waterborne illnesses due to flooding or drought. Worsening air quality can also exacerbate respiratory conditions like	By prompting migration for safety and better healthcare. Vulnerable groups may move to areas with improved services, while economic instability can drive people to seek	Development in Riverton has not increased the risk of an epidemic/pandemic.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	asthma, especially in vulnerable populations.	new employment opportunities. In addition, restrictions like quarantine measures can limit movement and social interactions, reshaping the community's demographics and impacting local economies.		
Terrorism	Terroristic activity is sometimes centered around climate change. Climate change impacts terrorism incidents by creating conditions of resource scarcity and social unrest. Increased competition for essential resources, such as water, can fuel tensions, making communities more vulnerable to extremist ideologies. Extreme weather events may disrupt social order and infrastructure, offering terrorist groups opportunities to exploit crises. In addition, climate-driven population displacement can heighten tensions in receiving areas, raising the risk of domestic terrorism. Law enforcement's focus on climate-related challenges can also limit its capacity to address terrorism threats. Ultimately, while climate change may not directly cause terrorism, its effects can create an environment conducive to extremist activities.	Terrorism incidents can alter population patterns by instilling fear and prompting residents to relocate to perceived safer areas, resulting in demographic shifts and potential declines in property values. Some neighborhoods may see an outflow of residents, while others could experience an influx of people seeking refuge from violence. In addition, increased security measures may deter businesses and residents from certain locations, leading to long-term changes in population density and urban development patterns.	Development in Riverton has not increased the risk of a terrorism incident.	Increased

DRAFT

Additional Public Involvement

Public involvement in Riverton, Utah, is crucial for enhancing community resilience to various hazards, including public health epidemics and natural disasters. Community newsletters effectively disseminate vital information, keeping residents informed about ongoing initiatives, upcoming events, and safety protocols. Programs like Firewise and StormReady proactively engage citizens in hazard awareness campaigns, educating them on ways to mitigate fire risks and severe weather risks. Severe Weather Awareness Week raises community consciousness about potential threats, encouraging preparedness and proactive planning. In addition, school programs play a vital role in instilling hazard awareness in younger generations, fostering a culture of safety and resilience from an early age. Through these collaborative efforts, Riverton strengthens its collective response to emergencies and enhances public health and safety outcomes.

Riverton provided several opportunities for public participation in the update of this plan. Besides the City Journal mailer that went out to residents, an announcement of the plan update and link to public outreach survey was posted on social media sites. Figure 1 shows examples of public outreach.

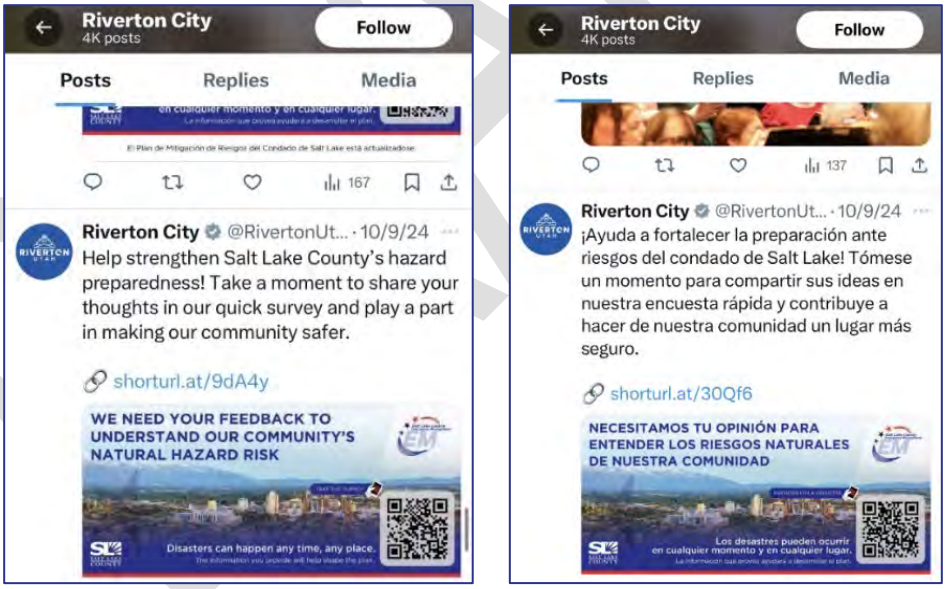


Figure 1: Social Media Posts for the Hazard Mitigation Survey in English (*left*) and Spanish (*right*)

Plan Integration

Incorporating the underlying principles of the Hazard Mitigation Plan and its recommendations into other plans is a highly effective and low-cost way to expand their influence. All plan participants will use existing methods and programs to implement hazard mitigation actions where possible. As previously stated, mitigation is most successful when it is incorporated into the day-to-day functions and priorities of government and public service. This plan builds on the momentum developed through previous and related planning efforts and mitigation programs, and it recommends implementing actions where possible through these other program mechanisms. These existing mechanisms include the following:

- Regularity Capabilities
- Administrative Capabilities
- Fiscal Capabilities

Respective planning stakeholders will conduct implementation and incorporation into existing planning mechanisms and will be done through the routine actions of:

- Monitoring other planning/program agendas
- Attending other planning/program meetings
- Participating in other planning processes; and
- Monitoring community budget meetings for other community program opportunities.

The successful implementation of this plan will require constant and vigilant review of existing plans and programs for coordination and multi-objective opportunities that promote a safe, sustainable community. Regular efforts should be made to monitor the progress of mitigation actions implemented through other planning mechanisms. Where appropriate, priority actions should be incorporated into planning updates. Table 12 lists existing planning mechanisms into which the Hazard Mitigation Plan has been integrated.

Table 13 lists the opportunities for integrating elements of this plan into other plans.

Table 12: Integration of Previous Plans by the City of Riverton

Plan	Description
None	N/A

Table 13: Opportunities for Integration with Future Plans of the City of Riverton

Plan	Description
Comprehensive Emergency Management Plan	City framework for disaster preparedness, response, recovery, and mitigation.
Community Wildfire Protection Plan	Plan to mitigate against wildland fires.
Active Transportation Plan	Address hazards and potential safety barriers in active transportation network.
Impact Fee Facilities Plans: Transportation, Culinary Water, Secondary Water Storm Water.	These plans discuss needs for potential future development and funding of infrastructure via impact fees. They could integrate goals for reducing risk to infrastructure in new development.
Moderate Income Housing Plan	Inform mitigation actions and policies to prevent resident exposure to hazards.
Stormwater Management Plan	Align stormwater management goals and address risks related to flooding and heavy rain in stormwater management.

DRAFT

Capability Assessment

Local mitigation capabilities are existing authorities, policies, programs, and resources that reduce hazard impacts or could help carry out hazard mitigation activities.

Planning and Regulatory Capabilities

Planning and regulatory capabilities are the plans, policies, codes, and ordinances that prevent and reduce the impacts of hazards.

Table 14: Assessment of the Planning Capabilities of the City of Riverton

Plan	Does it address hazards? (Y/N)	How can it be used to implement mitigation actions?	When was the last update? When is the next update?
General Plan	Y	Can inform local initiatives and responsible departments or individuals	2023
Capital Improvement Plan	Y	Can be used to identify funding sources	2018
Climate Change Adaptation Plan	N/A	N/A	N/A
Community Wildfire Protection Plan	Y	Can inform wildfire mitigation actions	2021
Economic Development Plan	Y	Can inform funding sources for mitigation actions	2023
Land Use Plan	Y	Can inform any new programs being developed related to land use or management for mitigation actions	2023
Local Emergency Operations Plan	Y	Can provide information on responsible departments for mitigation actions	2024
Stormwater Management Plan	Y	Can inform flood mitigation strategies	2022
Transportation Plan	Y	Can provide information on any traffic concerns or areas to prioritize	2021
Substantial Damage Plan	N/A	N/A	N/A
Other? (Describe)	Y	Can inform any heavy snow or severe winter weather mitigation actions	Snow Removal Plan

DRAFT

Table 15: Assessment of the Regulations and Ordinances of the City of Riverton

Regulation/Ordinance	Does it effectively reduce hazard impacts?	Is it adequately administered and enforced?	When was the last update? When is the next update?
Building Code	Y – Riverton effectively enforces the 2021 International Building Code, including Appendices C & J	Y	2021
Flood Insurance Rate Maps	Y	Y	2024
Floodplain Ordinance	Y	Y	2022
Subdivision Ordinance	Y	Y	2022
Zoning Ordinance	Y	Y	2022
Natural Hazard-Specific Ordinance (Stormwater, Steep Slope, Wildfire)	Y – Snow removal plan	Y	2023
Acquisition of Land for Open Space and Public Recreation Use	Y	Y	2022
Prohibition of Building in At-Risk Areas	Y	Y	2022
Other? (Describe)			

Administrative and Technical Capabilities

Administrative and technical capabilities include staff and their skills. They also include tools that can help carry out mitigation actions.

Table 16: Assessment of the Administrative Capabilities of the City of Riverton

Administrative Capability	In Place? (Y/N)	Is staffing adequate?	Are staff trained on hazards and mitigation?	Is coordination between agencies and staff effective?
Chief Building Official	Y	Y	Y	y
Civil Engineer	Y	Y	Y	Y
Community Planner	Y	Y	Y	Y
Emergency Manager	Y – Part time	Y	Y	Y
Floodplain Administrator	Y	Y	Y	Y
Geographic Information System (GIS) Coordinator	Y	Y	Y	Y
Planning Commission	Y	Y	Y	Y
Fire Safe Council	N – fire serviced	N/A	N/A	N/A

DRAFT

Administrative Capability	In Place? (Y/N)	Is staffing adequate?	Are staff trained on hazards and mitigation?	Is coordination between agencies and staff effective?
	provided by UFA			
CERT (Community Emergency Response Team)	N	N/A	N/A	N/A
Active VOAD (Voluntary Agencies Active in Disasters)	Y	Y	Y	Y
Planners or engineers with knowledge of land development and land management practices	Y – Full time			
Engineers or professionals trained in building or infrastructure construction practices	Y – Full time			
Planners or engineers with an understanding of natural hazards	Y – Full time			
Other? (Please describe.)				

Table 17: Assessment of the Technical Capabilities of the City of Riverton

Technical Capability	In Place? (Y/N)	How has it been used to assess/mitigate risk in the past?	How can it be used to assess/mitigate risk in the future?
Mitigation Grant Writing	Y	Capital improvement projects, historic preservation,	Can be used to fund mitigation projects
Hazard Data and Information	Y	Used to identify areas of concern in the city	Can be used for grant applications and to support mitigation needs
GIS	Y	Used to identify and map areas of concern	Can be used for mitigation project tracking
Mutual Aid Agreements	Y	Used for assistance on small mitigation projects	Established agreements in place to assist with mitigation projects and tracking
Other? (Please describe.)			

Financial Capabilities

Financial capabilities are the resources to fund mitigation actions. Talking about funding and financial capabilities is important to determine what kinds of projects are feasible, given their cost. Mitigation

actions like outreach programs are lower cost and often use staff time and existing budgets. Other actions, such as earthquake retrofits, could require substantial funding from local, state, and federal partners. Partnerships, including those willing to donate land, supplies, in-kind matches, and cash, can be included.

Table 18: Assessment of the Financial Capabilities of the City of Riverton

Funding Resource	In Place? (Y/N)	Has it been used in the past and for what types of activities?	Could it be used to fund future mitigation actions?	Can it be used as the local cost match for a federal grant?
Capital Improvement Project Funding	Y	Infrastructure management	Y	Y
General Funds	Y	Infrastructure management and improvements	Y	N
Hazard Mitigation Grant Program (HMGP/404)	Y	Has not been used yet	Y	N
Building Resilient Infrastructure & Communities (BRIC)	Y	Has not been used yet	Y	N
Flood Mitigation Assistance (FMA)	Y	Has not been used yet	Y	N
Public Assistance Mitigation (PA Mitigation/406)	Y	Has not been used yet	Y	N
Community Development Block Grant (CDBG)	Y	Has not been used yet	Y	N
Natural Resources Conservation Services (NRCS) Programs	Y	Has not been used yet	Y	N
U.S. Army Corps (USACE) Programs	Y	Has not been used yet	Y	N
Property, Sales, Income, or Special Purpose Taxes	Y	Operational costs, capital improvement projects	Y	Y
Stormwater Utility Fee	Y	Stormwater management	Y	Y
Fees for Water, Sewer, Gas, or Electric Services	Y	Infrastructure management	Y	Y
Impact Fees from New Development and Redevelopment	Y	Fire service, infrastructure management	Y	Y
General Obligation or Special Purpose Bonds	Y	Infrastructure projects	Y	N
Federal-funded Programs (Please describe)	Y	COVID-19 relief funds	Y	N

DRAFT

Funding Resource	In Place? (Y/N)	Has it been used in the past and for what types of activities?	Could it be used to fund future mitigation actions?	Can it be used as the local cost match for a federal grant?
Private Sector or Nonprofit Programs	Y	Police K9 unit equipment	Y	Y
Other?				

Education and Outreach Capabilities

Education and outreach capabilities are programs and methods that could communicate about and encourage risk reduction. These programs may be run by a participant or a community-based partner. Partners, especially those who work with underserved communities, can help identify additional education and outreach capabilities.

Table 19: Assessment of the Education and Outreach Capabilities of the City of Riverton[5]

Education and Outreach Capability	In Place? (Y/N)	Does it currently incorporate hazard mitigation?	Could it be used to support mitigation in the future?
Community Newsletter(s)	Y	Y	Y
Hazard Awareness Campaigns (such as Firewise, Storm Ready, Severe Weather Awareness Week, School Programs)	Y	Y	Y
Public Meetings/Events (Please describe.)	Y	Y	Y
Emergency Management Listserv	Y	Y	Y
Local News	Y – through PIO services	Y	Y
Distributing Hard Copies of Notices (e.g., public libraries, door-to-door outreach)	Y	Y	Y
Insurance Disclosures/ Outreach	N	N/A	Y
Organizations that Represent, Advocate for, or Interact with Underserved and Vulnerable Communities (Please describe.)	Y	Y – Emergency Preparedness committee in place that meets monthly with the Emergency manager.	Y
Social Media (Please describe.)	Yes – quarterly newsletter	Y – messages from our PIO department to the public, on personal Preparation in an	Y

[5] PIO = Public Information Officer.

Education and Outreach Capability	In Place? (Y/N)	Does it currently incorporate hazard mitigation?	Could it be used to support mitigation in the future?
		Emergency. City website	
Other? (Please describe.)			

Opportunities to Expand and/or Improve Capabilities

Actions that can expand and improve existing authorities, plans, policies, and resources for mitigation include budgeting for mitigation actions, passing policies and procedures for mitigation actions, adopting and implementing stricter mitigation regulations, approving mitigation updates, and making additions to existing plans as new needs are recognized. Table 20 lists the opportunities for the city of Riverton.

Table 20: Opportunities to Expand and/or Improve the Capabilities of the City of Riverton

Capability	Opportunity to Expand and/or Improve
Planning and Regulation	Plans can be enhanced by finalizing mapping of the culinary water systems. Understanding locations of water systems can help identify high-risk areas to hazards like flooding. This data can be incorporated into the next hazard mitigation plan and other land use planning mechanisms, as appropriate.
Administrative and Technical	Floodplain management capabilities will have to be expanded, including training for inspectors. The city will also have to look at additional staffing in the city's Emergency Management division. Additional support for floodplain management and emergency management will help enable local staff to support mitigation.
Financial	Pursue **additional grant funding**, including Hazard Mitigation Grant Program (HMGP), Building Resilient Infrastructure & Communities (BRIC), and Community Development Block Grants (CDBG), to finance large-scale mitigation projects. The city could be supported through a state or FEMA-led technical assistance program.
Education and Outreach	The city can apply for federal funding through post-disaster and pre-disaster mitigation grant programs such as the Hazard Mitigation Grant Program (HMGP) and Flood Mitigation Assistance (FMA) grant programs.

Mitigation Strategy

Mitigation strategies provide proactive measures that are designed to minimize the impacts of hazards on the city of Riverton. Table 21 shows mitigation action alternatives, and Table 22 shows the status of previous mitigation activities. Table 23 is the 2025 mitigation action plan for the city of Riverton.

Table 21: Mitigation Action Alternatives for the City of Riverton

Action	Type of Action	Selected for inclusion in the plan?	If not selected, why not?
Develop an evacuation plan for the city for all-hazards.		No	Currently working on this – will be incorporated into plan updates.

DRAFT

Table 22: Status of Prior Mitigation Actions of the City of Riverton[6]

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update
Bury the canal and install piping and lining to open the canal	Flood (Riverine and Urban/Flash Flooding)	Riverton Public Works	Riverton EM	Incomplete
Augment the bridges and canals to increase stormwater capacity	All hazards, primarily	Riverton Public Works		Ongoing with UDOT and Salt Lake County
Increase stormwater culvert and collection area	Flood (Riverine and Urban/Flash Flooding)	Riverton Public Works, Salt Lake County	Riverton EM	Ongoing with UDOT reconfiguration. 13400 south Bangerter intersection
Establish Post-Disaster Action Plan for City Continuity of Operations Plan	All hazards	Riverton EM		Incomplete
Train and Certify City Inspectors to Conduct Post-Disaster Damage Assessment	All hazards	Riverton Public Works and Riverton EM, Public Works Drone operators.		Ongoing: Sent GIS drone operator to FEMA drone class in disaster management
Setup and Operate City Emergency Operations Centers	All hazards	Riverton EM		Incomplete
Update and Enhance the Riverton City's Communications Plans	All hazards	Riverton Communications		Partially complete; ongoing. Purchased a Starlink in July 2024
Complete City Culinary Water System Mapping and Models	Flooding and Drought	Riverton Public Works and Water Resources Engineer		Incomplete
Complete Critical Storm Drain Facilities	Flooding	Riverton Public Works		Incomplete
Train Personnel on emergency plans and SOPs	All hazards	Riverton EM		Ongoing
Implement a GPS Tracking System on City Maintenance Vehicles	All hazards	Riverton EM		Complete: All city vehicles are equipped with GPS tracking
Conduct an inventory and assessment of communications equipment and systems and identify needs	All hazards	Riverton EM		Ongoing

[6] EM = Emergency Management, SOP = Standard Operating Procedure, UDOT = Utah Department of Transportation.

DRAFT

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update
Conduct Training and awareness activities on communication equipment, tools, and systems	All hazards	Riverton EM		Ongoing
Examine current data availability and sharing capabilities, evaluate needs, and identify shortcomings	All hazards	Riverton EM and GIS		Incomplete
Integrate existing hazard monitoring networks in emergency operations centers. Utilize sensors, such as weather stations, stream gages, seismograph stations, road conditions, etc.	All hazards	Riverton EM		Partially complete. Pump houses monitored by computer
Utilize GIS to identify facilities and infrastructure at risk	All hazards	Riverton EM and GIS		Ongoing
Assess critical facilities for hazard exposure, structural weaknesses, power, communications and equipment resources and redundancy, and adequate emergency procedures	All hazards	Riverton Public Works		Incomplete
Implement improvements to address hazards identified in the assessment	All hazards	Riverton EM		Incomplete
Provide education regarding all-natural hazards through live trainings and web-based, print, and broadcast media	All hazards	Riverton EM		Incomplete
Utilize maps and similar products on County EM website and other media to educate the public on areas at risk of hazards	All hazards	Riverton EM and GIS		Incomplete
Coordinate with existing public education programs, such as the American Red Cross, Utah Living with Fire, Be Ready Utah, the National Weather Service, etc.	All hazards	Riverton EM		Incomplete

DRAFT

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update
Emergency Managers will coordinate with local water districts/public utilities to support ongoing conservation efforts	Drought	Riverton EM		Incomplete
Provide information on landscaping alternatives for persons subject to green area requirements	Drought	Riverton EM		Incomplete
Identify structures at risk of earthquake damage	Earthquake	Riverton GIS, Fire, and EM		Incomplete
Determine potential flood impacts and identify areas in need of additional flood control structures	Flooding	Riverton City Engineer and Public Works		Incomplete
Address identified problems through construction of debris basins, flood retention ponds, energy dissipaters or other flood control structures	Flooding	Riverton City Engineer and Public Works		Incomplete
Establish maintenance and repair programs to remove debris, improve resistance and otherwise maintain the effectiveness stormwater and flood control systems	Flooding	Riverton City Engineer and Public Works		Incomplete
Identify and assess structures for deficiencies	Flooding	Riverton City Engineer and Public Works		Incomplete
Modify structures as needed to address deficiencies	Flooding	Riverton City Engineer and Public Works		Incomplete
Assist NWS in making other agencies and departments aware of available resources	Severe Weather	Riverton EM		Incomplete
Assist Forest Service Utah Avalanche Forecast Center and other organizations in promoting avalanche hazard awareness for backcountry users	Severe Weather	Riverton EM		Deleted. No longer relevant

DRAFT

DRAFT

THIS PAGE INTENTIONALLY LEFT BLANK

Table 23: 2025 Mitigation Action Plan for the City of Riverton[7]

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Time-frame	Priority	Comments
1	Bury the canal and install piping and lining to open the canal	Flooding (Riverine and Urban/ Flash Flooding), Heavy Rain	Riverton Public Works	Riverton EM, SLCo Flood Control, SLCo EM, SLCo Public Works	Reduce potential for property damage from overflow or other damage to canal.	High	Riverton General Fund, Riverton Capital Improvement Fund, BRIC grant, HMGP grant	Long-term	High	The Eastside Canal (1300W) and South Jordan Canal (primarily southeast portion by the new development) are prone to flooding. This project would strengthen the structural integrity of the canals. Some canals receive excess surface flows, both protecting in the short term but increasing potential for canal breaching.
2	Augment the bridges and canals to increase stormwater capacity.	Flooding (Riverine and Urban/ Flash Flooding), Heavy Rain	Riverton Public Works	Riverton EM, SLCo EM, SLCo Flood Control, SLCo Public Works	Reduce risk of damage to bridges and ensure access to emergency responders.	High	Riverton General Fund, Riverton Capital Improvement Fund, BRIC grant, HMGP grant	Long-term	High	This project would ensure the bridges can be utilized by first responders during an emergency event and the bridges would not be flooded. Limiting runoff to canals, upsizing some creek bridges, managing creek sediment and debris, and limiting residential encroachment and dumping will have a greater benefit.
3	Increase stormwater culvert and collection area.	Flooding (Urban/Flash Flooding), Heavy Rain	Riverton Public Works	Riverton EM, SLCo Flood Control, SLCo EM, SLCo Public Works	Reduce risk of damage caused by water accumulation.	High	BRIC grant, HMGP grant, Riverton General Fund, Riverton Capital Improvement Fund, HMA, PDM	Long-term	Medium	Unknown
4	Establish Post-Disaster Action Plan for City Continuity of Operations Plan.	Civil Disturbance, Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Lightning, Public Health Epidemic/ Pandemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	Riverton EM	SLCo EM, Riverton Public Works, Riverton PD, UFA, NGO partners, Riverton Parks	Ensure city services continue to function during hazard events.	Medium	HMA, Riverton General Fund	Short-term	High	Each city department has been given the assignment to write SOPs for their day-to-day operations. These procedures are shared across departments, and employees are being cross-trained in these procedures.
5	Train and certify City Inspectors to conduct post-disaster damage assessment.	Civil Disturbance, Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Lightning, Public Health Epidemic/ Pandemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	Riverton Public Works and Riverton EM	Riverton Communications, SLCo EM, UDEM	Minimize time occupants are displaced from homes and other structures.	Medium	Riverton General Fund, HMA	Long-term	High	In the event of an emergency where structural damage has been encountered, the Engineers, Building Inspectors, and Public Works inspectors will be paired to assess the stability and safety of the structure. Two Engineers have been trained in damage assessment. Over the next two years, the city will pursue and train the remainder of the assessment teams.

[7] BRIC = Building Resilient Infrastructure and Communities, EM = Emergency Management, EOC = Emergency Operations Center, FFSL = Division of Forestry, Fire, and State Lands, HMA = Hazard Mitigation Assistance, HMGP = Hazard Mitigation Grant Program, NGO = nongovernmental organization, NWS = National Weather Service, PD = Police Department, PDM = Pre-Disaster Mitigation, SHSP = State Homeland Security Program, SLCo = Salt Lake County, SLCo EM = Salt Lake County Emergency Management, SOP = Standard Operating Procedure, UDEM = Utah Division of Emergency Management, UFA = Unified Fire Authority, VECC = Valley Emergency Communications Center.

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Time-frame	Priority	Comments
6	Set up and operate city emergency operations centers.	Civil Disturbance, Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Lightning, Public Health Epidemic/ Pandemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	Riverton EM	Riverton Public Works, Riverton Communications, Riverton Parks, SLCo EM	Ensure coordinated response in hazard events.	High	HMA, BRIC grant, HMGP grant, SHSP grant, Riverton General Fund	Short-term	High	The city recently built a new public works facility to house the city EOC. The building has training, conference, and meeting rooms to house the various branches of the EOC. The facility has a 1400 AMP generator and multiple outbuildings which can be used for various purposes during an emergency. Over the next 3 years or as budgets dictate, the city will add equipment, supplies, and communications capabilities to the facility. Additional facilities will be identified and equipped in the future.
7	Update and enhance the City of Riverton's communications plans.	Civil Disturbance, Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Lightning, Public Health Epidemic/ Pandemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	Riverton Communications	Riverton EM, Riverton Public Works, VECC, UFA, Riverton PD, SLCo EM, SLCo Public Works, SLCo Flood Control	Maintain communication between city departments and other agencies.	Medium	Riverton General Fund, BRIC grant, HMGP grant	Short-term	High	Riverton hired a full-time media and communications expert. One of the responsibilities of this position is to set up and provide multiple modes of communication for public outreach in the event of an emergency.
8	Complete city culinary water system mapping and models.	Flooding, Heavy Rain, and Drought	Riverton Public Works and Water Resources Engineer	SLCo Public Works, SLCo Flood Control, SLCo EM, Riverton Parks, Riverton EM	Improved understanding of system and ability to identify vulnerabilities.	High	Riverton General Fund, BRIC grant, HMGP grant, capital improvement funds	Long-term	High	In 2014, the city moved the responsibility of all engineering related to the water system to the Public Works Department and hired a Water Resources Engineer and began to update the model and mapping the City Network. The process will identify weaknesses and be used to build redundancy in the system.
9	Complete critical storm drain facilities.	Flooding, Heavy Rain	Riverton Public Works	Riverton EM, SLCo EM, SLCo Public Works, SLCo Flood Control	Reduce risk of flooding following heavy rain or high runoff events.	High	Riverton General Fund, Riverton Capital Improvement Fund, HMGP grant, BRIC grant	Long-term	High	In 2011, the city hired a consultant to study a region prone to flooding and property damage. This study was completed along with other studies conducted by the Engineering Division. From these studies, a list of capital improvement projects and procedures was generated and prioritized. These projects were placed on a 5- to 7-year project list which is being funded by the Stormwater Utility. Approximately $1,500,000 has been spent on updating the city's infrastructure
10	Train personnel on emergency plans and SOPs.	Civil Disturbance, Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Lightning, Public Health Epidemic/ Pandemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	Riverton EM	Riverton Public Works, Riverton Communications, Riverton PD, UFA, SLCo EM	Ensure personnel are able to complete emergency responsibilities.	Low	Riverton General Fund, staff time	Short-term	High	The city of Riverton has multiple emergency plans and SOPs as it relates to dams, severe weather, and flooding. the plans are familiar to only a few City Supervisors. The city will familiarize, train, and cross-train all maintenance and field personal in the emergency operation of these plans.
11	Conduct an inventory and assessment of communications	Civil Disturbance, Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Flooding, Hazardous Materials Incident, Heavy	Riverton EM	Riverton Communications, Riverton PD, UFA, SLCo EM, UCA,	Identify city assets that may be vulnerable and identify solutions.	Low	Riverton General Fund	Short-term	Medium	The city of Riverton continues to improve and maintain its communications capabilities.

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Time-frame	Priority	Comments
	equipment and systems and identify needs.	Rain, High Wind, Lightning, Public Health Epidemic/ Pandemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire		VECC, Riverton Public Works						
12	Conduct training and awareness activities on communications equipment, tools, and systems.	Civil Disturbance, Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Lightning, Public Health Epidemic/ Pandemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	Riverton EM	Riverton Public Works, VECC, UCA, SLCo EM, Riverton PD, Riverton Communications, UFA	Increase awareness of hazard risks and appropriate safety measures.	Low	Riverton General Fund	Short-term		The city of Riverton continues to participate in training and exercises designed to practice using communications tools and equipment.
13	Examine current data availability and sharing capabilities, evaluate needs, and identify shortcomings.	Civil Disturbance, Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Lightning, Public Health Epidemic/ Pandemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	Riverton EM	Riverton Public Works, Riverton GIS, Riverton Communications, SLCo EM, Riverton PD, UFA	Use data to identify city assets and possible vulnerabilities to hazards.	Low	Riverton General Fund	Short-term		The city of Riverton GIS personnel actively participate in several coordinating
14	Integrate existing hazard monitoring networks in emergency operations centers. Use sensors, such as weather stations, stream gages, seismograph stations, and road condition monitors.	Civil Disturbance, Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Lightning, Public Health Epidemic/Pandemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	Riverton EM	NWS, SLCo EM, UFA, Riverton PD, Riverton Public Works, Riverton Communications	Monitor conditions to provide access to information for taking appropriate safety precautions during hazard events.	Low	Riverton General Fund	Short-term	Medium	The city of Riverton continues to educate and implement hazard monitoring networks in its EOC.
15	Use GIS to identify facilities and infrastructure at risk.	Civil Disturbance, Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Lightning, Public Health Epidemic/ Pandemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	Riverton EM and GIS	SLCo EM, Riverton Public Works, Riverton Parks, Riverton PD	Use data to identify city assets and possible vulnerabilities to hazards.	Medium	Riverton General Fund	Short-term	Medium	As part of the city of Riverton public works facility, an EOC component has been added to its infrastructure, efforts to complete other components of the EOC are in progress.
16	Assess critical facilities for hazard exposure, structural weaknesses, power, communications and equipment resources and	Civil Disturbance, Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Lightning,	Riverton Public Works	SLCo Public Works, SLCo EM, UFA, Riverton PD, Riverton Parks	Use data to identify city assets and possible vulnerabilities to hazards to plan	Medium	Riverton General Fund, BRIC grant, HMGP grant	Short-term	Medium	The city of Riverton continues to inspect facilities to identify potential needs.

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Time-frame	Priority	Comments
	redundancy, and adequate emergency procedures.	Public Health Epidemic/ Pandemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire			risk reduction actions.					
17	Implement improvements to address hazards identified in the assessment.	Civil Disturbance, Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Lightning, Public Health Epidemic/ Pandemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	Riverton EM	Riverton Public Works, Riverton Communications, SLCo EM, Riverton PD, Riverton Parks	Reduce risk of damage to facilities and minimize potential for injury to occupants.	High	Riverton General Fund, Capital Improvement Fund	Long-term	High	The city of Riverton is identifying options and opportunities to address issues.
18	Provide education regarding all natural hazards through live trainings and web-based, print, and broadcast media.	Civil Disturbance, Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Lightning, Public Health Epidemic/ Pandemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	Riverton EM	Riverton PD, Riverton Public Works, Riverton Communications, SLCo EM, SLCo Public Works, SLCo Flood Control, NWS, Riverton GIS	Increased local understanding of natural hazards and ways in which residents can reduce their risk.	Low	Riverton General Fund, NWS	Short-term	Medium	The city of Riverton attends and participates in community-based trainings. Personnel can share information from these trainings with the public both in person and through digital outreach methods, such as social media. Additional hazard-specific materials also contain good information to share with the public on how to reduce their own risk, such as early warning signs, cascading impacts, seismic and non-seismic retrofits (earthquake), rain gardens, utility elevation, and flood-resistant building materials (flooding, dam failure, heavy rain), home weatherization (extreme cold, extreme heat, severe winter weather), tree pruning and wind resistant building materials (high wind, tornado, lightning), warning signs and vegetation mitigation measures (landslide/slope failure), at-home testing and radon mitigation measures (radon), and defensible space and home hardening (wildfire).
19	Use maps and similar products on the county EM website and other media to educate the public on areas at risk of hazards.	Civil Disturbance, Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Lightning, Public Health Epidemic/ Pandemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	Riverton EM and GIS	Riverton PD, Riverton Public Works, Riverton Communications, SLCo EM, SLCo Public Works, SLCo Flood Control, NWS	Visual tools help residents understand areas potentially at risk from hazards and identify those they may need to mitigate.	Low	Riverton General Fund	Short-term	Medium	Personnel of the city of Riverton are working to compile and make available hazard maps to help educate the public on potential hazards in the city.
20	Coordinate with existing public education programs, such as the American Red Cross, Utah Living with Fire, Be Ready Utah, and the National Weather Service.	Civil Disturbance, Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Lightning, Public Health Epidemic/ Pandemic, Radon, Severe	Riverton EM	Riverton Public Works, SLCo EM, NGO partners, Riverton PD, UFA, UDEM, FFSL	Increased local understanding of natural hazards and ways in which residents can reduce their risk.	Low	Riverton General Fund, SLCo EM, UFA, NWS	Short-term	High	The city of Riverton educates the community by using programs, such as Be Ready Utah to help educate the community during various events.

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Time-frame	Priority	Comments
		Winter Weather, Terrorism, Tornado, Wildfire								
21	Emergency Managers will coordinate with local water districts/ public utilities to support ongoing conservation efforts	Drought, Extreme Heat	Riverton EM	Riverton Public Works, Riverton Communications, water districts, local utilities, SLCo EM, SLCo Public Works	Broader establishment and implementation of water conservation goals to reduce effects of drought and heat.	Low	Riverton General Fund, water districts	Short-term	Medium	The city of Riverton continues to educate citizens concerning water consumption.
22	Provide information on landscaping alternatives for persons subject to green area requirements	Drought, Extreme Heat	Riverton EM	Riverton Parks, Riverton Public Works, SLCo EM, SLCo Health Department, SLCo Parks and Recreation	Reduce impacts of drought and improve long-term resilience.	Low	Riverton General Fund, SLCo Office of Regional Development	Short-term	Medium	Through social media and monthly newsletters, the city of Riverton educates and offers information to citizens concerning water consumption.
23	Identify structures at risk of earthquake damage and retrofit them as needed to reduce risk.	Earthquake	Riverton EM and GIS	UFA, SLCo EM, UDEM, Riverton Public Works, Riverton PD	Identify and prioritize structures for retrofit to reduce risk of damage and injury.	Medium	Riverton General Fund	Short-term	Medium	The city of Riverton is working with GIS, Fire, and Emergency Management on a risk management plan to evaluate its level of risk from earthquakes.
24	Determine potential flood impacts and identify areas in need of additional flood control structures.	Flooding, Heavy Rain, Dam Failure	Riverton City Engineer and Public Works	SLCo Flood Control, SLCo EM, Riverton GIS, Riverton EM	Identify structures at risk for structural improvements, relocation, or other actions to reduce risk.	Medium	Riverton General Fund	Short-term	Medium	The City Engineer and Public Works Director regularly review the impact of development and the need for flood control infrastructure and make recommendations as needed.
25	Address identified problems through construction of debris basins, flood retention ponds, energy dissipaters, and other flood control structures.	Flooding, Heavy Rain	Riverton City Engineer and Public Works	Riverton EM, SLCo Flood Control, SLCo Public Works, SLCo EM	Reduce risk of damage or injury from flooding.	High	Riverton General Fund, Capital Improvement Fund, BRIC grant, HMGP grant	Long-term	Medium	The City Engineer and Public Works Director oversee the construction of flood control structures.
26	Establish maintenance and repair programs to remove debris, improve resistance and otherwise maintain the effectiveness of stormwater and flood control systems.	Flooding, Heavy Rain	Riverton City Engineer and Public Works	SLCo Flood Control, SLCo EM, SLCo Public Works, water districts, local utilities	Ensure systems function effectively to avoid ponding or other water drainage issues.	High	Riverton General Fund, Capital Improvement Fund	Long-term	High	The Stormwater Division of the Public Works Department continues to maintain and repair all drainage systems in the city.
27	Identify and assess structures for deficiencies.	Flooding, Heavy Rain, High Wind, Heavy Snow, Tornado	Riverton City Engineer and Public Works	Riverton EM, SLCo EM, SLCo Public Works, SLCo Flood Control, SLCo Parks and	Identify and prioritize facilities for hardening to reduce damage and loss of	Medium	Capital Improvement Fund	Long-term	Medium	The city's Engineering Division, in cooperation with the Public Works Department, regularly reviews and inspects city-owned infrastructure and makes recommendations as needed.

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Time-frame	Priority	Comments
				Recreation, Riverton Parks	functionality during hazard events.					
28	Modify structures as needed to address deficiencies	Flooding, Heavy Rain, High Wind, Heavy Snow, Tornado	Riverton City Engineer and Public Works	Riverton Parks, SLCo EM, Riverton EM, SLCo Public Works, SLCo Flood Control, SLCo Parks and Recreation	Hardening facilities can reduce damage and maintain functionality during hazard events.	High	Riverton General Fund, Capital Improvement Fund, BRIC grant, HMGP grant	Long-term	High	The city's Engineering Division, in cooperation with the Public Works Department, repairs deficient structures as needed.
29	Assist NWS in making other agencies and departments aware of available resources	Flooding, Heavy Rain, High Wind, Tornado, Lightning, Heavy Snow, Extreme Heat, Extreme Cold	Riverton Public Works	Riverton EM, SLCo Flood Control, SLCo EM, SLCo Public Works	Increased local understanding of weather-related hazards and ways in which city employees and residents can reduce their risk.	Medium	Riverton General Fund	Short-term	Medium	The city of Riverton supports the NWS's efforts in education and outreach and makes internal departments aware of NWS resources to reduce their risk.

DRAFT

Salt Lake City

Jurisdictional Annex to the
Salt Lake County Hazard Mitigation Plan

Month XXXX | Draft X.X

THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT

Table of Contents

Salt Lake City Annex 1

Planning Process Contact Information 1
Jurisdiction Profile 2
Date of Incorporation 2
Location and Description 2
Population 3
Demographics 3
Brief History 3
Climate 3
Public Services 4
Governing Body 4
Development Trends 5
Jurisdiction-Specific Hazards and Risk 5
Hazard Event History 8
National Flood Insurance Program Summary 11
Jurisdiction-Specific Vulnerabilities and Impacts 14
Jurisdiction-Specific Changes in Vulnerability 36
Additional Public Involvement 46
Plan Integration 47
Capability Assessment 49
Planning and Regulatory Capabilities 49
Administrative and Technical Capabilities 53
Financial Capabilities 55
Education and Outreach Capabilities 57
Opportunities to Expand and/or Improve Capabilities 58
Mitigation Strategy 59
Mitigation Success Story 73

DRAFT

List of Figures

Figure 1: Salt Lake City/BeReadySLC Social Media Post for the Hazard Mitigation Survey (*left*) and Second Post for the Hazard Mitigation Survey (*right*) 46
Figure 2: Salt Lake City Newsletter Announcement of the Public Survey 47

List of Tables

Table 1: Contact Information for Salt Lake City 1
Table 2: Participant List for Salt Lake City 1
Table 3: Calculated Priority Risk Index Values for Salt Lake City 5
Table 4: Criteria for the Calculated Priority Risk Index 6
Table 5: History of Weather Hazard Events in Salt Lake City since 2019 8
Table 6: History of Hazard Events in Salt Lake City 9
Table 7: National Flood Insurance Program Status for Salt Lake City 11
Table 8: National Flood Insurance Policies for White City 11
Table 9: NFIP Floodplain Management Capabilities and Compliance 11
Table 10: NFIP Floodplain Mapping Capabilities and Compliance 13
Table 11: NFIP Flood Insurance and Outreach Information 13
Table 12: Jurisdiction-Specific Vulnerabilities and Impacts in Salt Lake City 14
Table 13: Jurisdiction-Specific Changes in Vulnerability in Salt Lake City 37
Table 14: Integration of Previous Plans by Salt Lake City 48
Table 15: Opportunities for Integration with Future Plans of Salt Lake City 48
Table 16: Assessment of the Planning Capabilities of Salt Lake City 49
Table 17: Assessment of the Regulations and Ordinances of Salt Lake City 50
Table 18: Assessment of the Administrative Capabilities of Salt Lake City 54
Table 19: Assessment of the Technical Capabilities of Salt Lake City 54
Table 20: Assessment of the Financial Capabilities of Salt Lake City 56
Table 21: Assessment of the Education and Outreach Capabilities of Salt Lake City 57
Table 22: Opportunities to Expand and/or Improve the Capabilities of Salt Lake City 58
Table 23: Mitigation Action Alternatives for Salt Lake City 59
Table 24: Status of Prior Mitigation Actions of Salt Lake City 59
Table 25: 2025 Mitigation Action Plan for Salt Lake City 63

DRAFT

Salt Lake City Annex

To participate in this multi-jurisdictional hazard mitigation plan (MJHMP) update for Salt Lake County (SLCo), the governing body of Salt Lake City passed a formal resolution, a copy of which is maintained at the local government offices.

Planning Process Contact Information

Table 1 provides information on the point of contact during the updating of the MJHMP.

Table 1: Contact Information for Salt Lake City

Name	Contact Information
Ty Shepherd	**Phone: 801-577-9008 email: tyler.shepherd@slc.gov**

Salt Lake City has a fully integrated approach to hazard mitigation planning and program implementation. During the 2024 update process, the MJHMP participation roles in Table 2 were recorded. Participation opportunities included invitations to meetings, completing the public survey, reviewing and contributing to forms, and reviewing the plan draft.

Table 2: Participant List for Salt Lake City

Name	Title	Jurisdiction
Kevin Barjenbruch	Warning Coordination Meteorologist	National Weather Service
Gary Carter	Planning Section Chief	Salt Lake City
Ty Shepherd	Division Chief/Emergency Manager	Salt Lake City
Jason Draper	Chief Engineer Floodplain Administrator	Salt Lake City
Matt Wilson	Emergency Management Planning Coordinator	Salt Lake City
Hannah Youell	Emergency Management Public Information Officer/Joint Information Center Coordinator	Salt Lake City
Nick Bleckert	Urban Forestry Operations Manager	Salt Lake City Urban Forestry Public Lands
Mike Guymon	Deputy Chief Engineer	Salt Lake City Public Utilities
Kyle Shields	Parks Operations Manager	Salt Lake City Parks and Public Lands
Tyler Fanarow	Recreation Trails Project Manager	Salt Lake City Parks and Public Lands
Tom Simons	Emergency Management Operations Captain	Salt Lake City
Tess Alexander	Emergency Management Community Preparedness	Salt Lake City
Eric Witt	Emergency Management Training Specialist	Salt Lake City
Audrey Pierce	Emergency Management Critical Infrastructure	Salt Lake City

DRAFT

Name	Title	Jurisdiction
Carmen Bailey	Deputy Director Public Lands	Salt Lake City
Chad Korb	Deputy Director – Information Management Services	Salt Lake City
Debbie Lyons	Director of Sustainability	Salt Lake City
Chris Bell	Deputy Director of Sustainability	Salt Lake City
Steve Wooldridge	Police Department Lieutenant	Salt Lake City
Julie Crookston	Deputy Director Public Services	Salt Lake City
Robert Stafford	Fire Department Assistant Chief	Salt Lake City
Alex DeSmet	Meteorologist	National Weather Service

Jurisdiction Profile

Date of Incorporation

1847

Location and Description

Salt Lake City is in the northeast corner of the Salt Lake Valley, surrounded by the Great Salt Lake to the northwest and the steep Wasatch and Oquirrh mountain ranges on the eastern and southwestern borders, respectively. Its encircling mountains contain several narrow glacial and stream-carved canyons. City Creek, Emigration Canyon, Millcreek Canyon, and Parley's Canyon border the eastern city limits. Salt Lake City covers 110.4 mi^2 and has an average elevation of 4,327 feet above sea level. The lowest point in the city's boundaries is 4,210 feet above sea level, near the Jordan River and the Great Salt Lake, and the highest is Grandview Peak, at 9,410 feet.

Salt Lake City is separated from the Great Salt Lake by extensive marshlands and mudflats. Two to three times a year, the metabolic activities of bacteria in the lake create a phenomenon known as "lake stink," a scent reminiscent of foul poultry eggs, for a few hours. The Jordan River, which is a drainage of Utah Lake, flows through the city and empties into the Great Salt Lake.

The Salt Lake Valley floor is the ancient lakebed of Lake Bonneville, which existed at the end of the last Ice Age. Several Lake Bonneville shorelines appear distinctly on the foothills or benches of nearby mountains.

DRAFT

Population

The estimated population of Salt Lake City in 2024 was 212,570, up from 200,660 in 2020, reflecting a 5.94% increase.[1]

Demographics

The average household income in Salt Lake City is $107,280, and the city has a poverty rate of 14.1%. The median age in Salt Lake City is 32.5 years, with males averaging 32.6 years and females 32.3 years.

Salt Lake City, often abbreviated as SLC, is Utah's capital and most populous city. SLC and Reno, Nevada, are the only two major urban areas in the Great Basin, and SLC is the largest city in the Intermountain West.

Salt Lake City represents 6.75% of Utah's total population and 18% of Salt Lake County's population. The city has a higher population density than the surrounding area, with over 1,689 people per square mile.[2]

Brief History

The city was founded in 1847 by Brigham Young, Isaac Morley, George Washington Bradley, and several other Mormon followers, who extensively irrigated and cultivated the arid valley. Immigration of international members of the Church of Jesus Christ of Latter-Day Saints (or LDS), mining booms, and the construction of the first transcontinental railroad initially brought economic growth, and the city was nicknamed the Crossroads of the West. The Lincoln Highway, completed in 1913, was the first transcontinental highway, and it passes through the city. At present, two major cross-country freeways, I-15 and I-80, intersect in the city. Salt Lake City has developed a strong outdoor recreation tourist industry, based primarily on skiing and hosted the 2002 Winter Olympics. It is the industrial banking center of the United States.

Climate

The climate of the Salt Lake City area is characterized as semi-arid. Under the Köppen climate classification, Salt Lake City has a dry-summer continental climate (DSA), a relatively rare form of the continental climate in which a region experiences dry summers and wet winters. The city has four distinct seasons but the summers and winters are long. Spring is the wettest season, while summer is very dry.

The nearby Great Salt Lake contributes significantly to precipitation in the city. The lake effect can help enhance rain from summer thunderstorms, and it produces lake effect snow approximately 6 to 8 times per year—some of which can be excessive snowfalls. It is estimated that about 10% of the annual precipitation in the city can be attributed to the lake effect.

[1] World Population Review, "Salt Lake City, Utah Population 2024." https://worldpopulationreview.com/us-cities/utah/salt-lake-city.
[2] Ibid.

Salt Lake City features significant variations in temperatures between seasons. During summer, there is an average of 56 days per year with temperatures of at least 90°F (32.2°C), 23 days of at least 95°F (35°C), and five days of 100°F (37.8°C). However, the average daytime humidity in July is only 22%. Winters are cold but rarely frigid. Although there is an average of 127 days that drop to or below freezing and 26 days with high temperatures that fail to rise above freezing, the city averages only 2.3 days at or below 0°F (−17.8°C). The record high temperature is 107°F (42°C), which occurred first on July 26, 1960, and again on July 13, 2002, while the record low is −30°F (−34°C), which occurred on February 9, 1933.

Substantial areas of high pressure often situate themselves over the Great Basin during mid-winter, leading to strong temperature inversions. This causes air stagnation and thick smog in the valley for several days or weeks and can lead to the worst air pollution levels in the U.S., reducing air quality to unhealthful levels.

Public Services

Given the nature of Utah's population concentration along the Wasatch Front, Salt Lake City must support regional planning and maintain relationships with Salt Lake County and the other municipalities in the county. Salt Lake City has participated in area Gap Analysis and Threat Assessments and was funded to develop a Local Energy Assurance Plan. The city has also participated in the Regional Resilience and Assessment Program (RRAP), which looks at critical lifelines and interdependencies and deeply examines valley-wide water systems and critical nodes. Numerous participating agencies in Salt Lake City have also participated in the Urban Area Security Initiative (UASI), a program that uses a Whole Community Approach to help high-threat, high-density urban areas build and sustain the capabilities needed to prevent, protect against, mitigate, respond to, and recover from acts of terrorism. Salt Lake County received UASI funding for this mission in 2008, 2009, 2010, 2014, and 2017. The Urban Area Working Group (UAWG) includes Salt Lake County, with representatives from public safety agencies, volunteer organizations, and the state for regional all-hazards planning, mitigation, response, and recovery. Under Salt Lake City Code, Title 22 et al., Salt Lake City executives are responsible for carrying out plans and policies. The city government must be prepared to participate in the post-disaster hazard mitigation team process and pre-mitigation planning as outlined in the code to effectively protect its citizens.

Governing Body

The city has a seven-member elected council that sets the overall policy direction and determines resource allocation by adopting annual budgets and ordinances. In Salt Lake City, the Mayor and Council are separate but equal branches of government. The Mayor is the chief executive, and the City Council is the legislative body. Council Members serve four-year terms, work for the city part-time, and are paid. Each Council Member represents one of the city's seven geographical Council Districts, which are of similar population size.

DRAFT

Development Trends

Salt Lake City is the capital of Utah and also the most populous city. It lies roughly in the center of the Salt Lake–Ogden–Provo Combined Statistical Area, which is a region of contiguous urban and suburban development along the Wasatch Front. Salt Lake City is central to the regional economy and is experiencing growth and development across several sectors, including real estate, technology, and infrastructure. Construction of new commercial and residential properties has occurred and is expected to continue. Possible development in the downtown area to expand entertainment venues is under consideration. The city is scheduled to host the 2034 Winter Olympics which may prompt additional development in the city.

Jurisdiction-Specific Hazards and Risk

The Calculated Priority Risk Index (CPRI) is a comprehensive assessment tool for evaluating and prioritizing risks in a given context. It considers various factors, such as probability, impact, and urgency, to determine the level of risk associated with events or situations. The results for each hazard, including its risk factor (RF) value, are shown in Table 3. The results are based on the criteria in

Table 4 and the equation that follows it. The CPRI helps organizations and individuals make informed decisions about risk management and mitigation strategies. It provides a systematic approach to identifying and addressing potential issues, allowing for a more efficient allocation of resources and proactive risk prevention. With the CPRI, stakeholders can prioritize their focus on the most critical risks, leading to more effective risk management and, ultimately, better outcomes.

Table 3: Calculated Priority Risk Index Values for Salt Lake City

Type of Hazard Event	Probability of Future Events	Spatial Extent	Severity of Life/ Property Impact	Warning Time	Duration	Response Capacity	Risk Factor Value
Avalanche	4	1	2	4	2	1	2.6
Drought	4	4	2	1	4	1	2.8
Earthquake	3	4	4	4	3	2	3.4
Extreme Heat	4	4	3	1	3	1	3
Extreme Cold	3	4	2	1	3	1	2.4
Flooding	4	3	3	3	3	1	3.1
Landslide/ Slope Failure	2	1	2	4	1	2	2
Radon	4	4	2	1	4	2	2.9
Heavy Rain	4	3	2	3	1	1	2.6
High Wind	4	3	3	3	2	1	3
Lightning	4	2	2	4	1	1	2.6
Severe Winter Weather	4	3	2	2	2	1	2.6

DRAFT

Type of Hazard Event	Probability of Future Events	Spatial Extent	Severity of Life/ Property Impact	Warning Time	Duration	Response Capacity	Risk Factor Value
Tornado	2	2	3	4	1	2	2.4
Wildfire	4	3	3	4	3	1	3.2
Dam Failure	2	2	3	2	2	3	2.4
Civil Disturbance	2	1	2	4	2	2	2.1
Cyberattack	2	3	3	4	3	2	2.7
Hazardous Materials Incident (Transportation & Fixed Facility)	3	1	2	4	1	1	2.2
Public Health Epidemic/ Pandemic	3	4	3	1	4	1	2.8
Terrorism	2	1	3	4	2	1	2.3

Table 4: Criteria for the Calculated Priority Risk Index

Risk Index Factor	Degree of Risk Level		Criteria	Factor Weight for Degree of Risk Level
Probability of Future Events	1	Unlikely	Less than 1 percent probability of occurrence in the next year or a recurrence interval of greater than every 100 years.	30%
	2	Occasional	1 to 10 percent probability of occurrence in the next year or a recurrence interval of 11 to 100 years.	
	3	Likely	11 to 90 percent probability of occurrence in the next year or a recurrence interval of 1 to 10 years.	
	4	Highly Likely	91 to 100 percent probability of occurrence in the next year or a recurrence interval of less than 1 year.	
Spatial Extent	1	Limited	Less than 10% of the planning area could be impacted.	10%
	2	Small	10%–25% of the planning area could be impacted	
	3	Significant	25%–50% of the planning area could be impacted.	
	4	Extensive	50%–100% of the planning area could be impacted.	
	1	Negligible	Less than 5% of the affected area's critical and non-critical facilities and structures are	30%

DRAFT

Risk Index Factor	Degree of Risk Level		Criteria	Factor Weight for Degree of Risk Level
Severity of Life/Property Impact			damaged/destroyed. Only minor property damage and minimal disruption of life. Temporary shutdown of critical facilities.	
	2	Limited	More than 5% and less than 25% percent of property in the affected area is damaged/destroyed. Complete shutdown of critical facilities for more than one day but less than one week.	
	3	Critical	More than 25% and less than 50% of property in the affected area was damaged/destroyed. Complete shutdown of critical facilities for over a week but less than one month.	
	4	Catastrophic	Over 50% of critical and non-critical facilities and infrastructures in the affected area are damaged/destroyed. Complete shutdown of critical facilities for more than one month.	
Warning Time	1	Self-defined	More than 24 hours	10%
	2	Self-defined	12 to 24 hours.	
	3	Self-defined	6 to 12 hours.	
	4	Self-defined	Less than 6 hours.	
Duration	1	Brief	Up to 6 hours.	10%
	2	Intermediate	Up to one day.	
	3	Extended	Up to one week.	
	4	Prolonged	More than one week.	
Response Capacity	1	High	Significant resources and capability to respond to this kind of event; staff are trained, experienced, and ready.	10%
	2	Medium	Some resources and capability to respond to this kind of staff; some staff may be trained, experienced, and ready while others may need additional support.	
	3	Low	Limited resources and capability to respond to this kind of event; additional staff or staff training needed.	
	4	None	No resources and capability to respond this kind of event; additional outside support would be required.	

RISK FACTOR (RF) EQUATION

RF Value = [(Probability x 0.30) + (Spatial Extent x 0.10) + (Severity of Life/Property Impact x 0.30) +

DRAFT

(Warning Time x 0.10) + (Duration x 0.10) + (Response Capacity x 0.10)]

Hazards with an RF value greater than or equal to 2.5 are considered high risk. Those with RF values of 2.0 to 2.4 are considered moderate risk hazards, and those with an RF value less than 2.0 are considered low risk. The highest possible RF value is 4.

Hazard Event History

Examining hazard event histories provides valuable insights to inform decision-making and help prioritize resources for risk prevention and response efforts. Table 5 lists the weather hazard events impacting Salt Lake City since the 2019 plan update, as recorded in the Storm Events Database from the National Centers for Environmental Information. Table 6 lists other hazard events that have impacted Salt Lake City.

Table 5: History of Weather Hazard Events in Salt Lake City since 2019[3]

Location	Date	Event Type	Deaths	Injuries	Property Damage	Crop Damage
Salt Lake City	06/13/2019	Thunderstorm Wind	0	0	$0	$0
Salt Lake City	07/04/2019	Thunderstorm Wind	0	0	$0	$0
Salt Lake City	08/21/2021	Thunderstorm Wind	0	0	$0	$0
Salt Lake City	08/21/2021	Thunderstorm Wind	0	0	$1,500	$0
Salt Lake City	09/02/2021	Hail	0	0	$0	$0
Salt Lake City	06/28/2022	Thunderstorm Wind	0	0	$0	$0
Salt Lake City	07/17/2022	Thunderstorm Wind	0	0	$0	$0
Salt Lake City	08/01/2022	Thunderstorm Wind	0	0	$0	$0
Salt Lake City	04/18/2023	Hail	0	0	$0	$0
Salt Lake City	07/24/2023	Thunderstorm Wind	0	0	$1,000	$0
Salt Lake City	07/24/2023	Thunderstorm Wind	0	0	$500	$0

[3] National Centers for Environmental Information, "Storm Events Database." https://www.ncdc.noaa.gov/stormevents/listevents.jsp?eventType=ALL&beginDate_mm=01&beginDate_dd=01&beginDate_yyyy=2019&endDate_mm=10&endDate_dd=31&endDate_yyyy=2024&county=SALT%2BLAKE%3A35&hailfilter=0.00&tornfilter=0&windfilter=000&sort=DT&submitbutton=Search&statefips=49%2CUTAH.

Location	Date	Event Type	Deaths	Injuries	Property Damage	Crop Damage
Salt Lake City	08/01/2023	Thunderstorm Wind	0	0	$10,000	$0
Salt Lake City	09/30/2023	Thunderstorm Wind	0	0	$0	$0
Salt Lake City	05/28/2024	Thunderstorm Wind	0	0	$0	$0
Salt Lake City	07/13/2024	Thunderstorm Wind	0	0	$50,000	$0
Salt Lake City	08/09/2024	Thunderstorm Wind	0	0	$0	$0

Table 6: History of Hazard Events in Salt Lake City

Type of Hazard Event	FEMA Disaster #	Date(s)	Damage or Impacts	Description
Avalanche		N/A		
Drought		N/A	Drought is a recurring problem in the region	Air quality issues, water restrictions
Earthquake	DR-4548-UT	03/18/2020		5.7 magnitude
Extreme Heat		N/A	Summers of 2020–2024	Reported 9 deaths in Northern Utah, an upward trend in heat exposure and heat-related deaths since 2015. Excessive heat can also affect infrastructure. General impacts include increased risk for heat-related illness and increased power demand for cooling systems.
Extreme Cold		N/A	Winter of 2022 and 2023	2022: 5 people experiencing homelessness died from cold-related exposure in Salt Lake City. Extreme cold can contribute to hypothermia and other cold-related illness/injury. Increased demand for heating systems. Potential for frozen pipes or other service disruptions.
Flooding		N/A		
Landslide/ Slope Failure		N/A		

DRAFT

Type of Hazard Event	FEMA Disaster #	Date(s)	Damage or Impacts	Description
Radon		N/A	Over 25% of homes in Salt Lake are at or above WHO's mitigation threshold.	Unhealthy levels of radon gas have been measured in Salt Lake City homes.
Heavy Rain		N/A		
High Wind	DR-4578-UT	09/08/2020	Winds caused thousands of trees to fall and damaged sidewalks and vehicles and left extensive debris. Nearly 200,000 homes and businesses were without power. One individual was killed.	Hurricane-force winds affected multiple cities along the Wasatch Front.
Lightning		N/A		
Severe Winter Weather		N/A		
Tornado	DR-1285-UT	08/11/1999	One person was killed; 80 injured, and there was $170 million in damage.	F2 tornado damaged downtown Salt Lake City
Wildfire		07/20/2024		Sandhurst Fire burned on Ensign Peak near the State Capitol, prompting evacuation of 40 homes.
Dam Failure		N/A		
Civil Disturbance		05/30/2020	Rioters overturned a police vehicle and set it on fire. Buildings were sprayed with graffiti, and windows were broken.	A peaceful protest in response to the death of George Floyd turned violent. Rioters overturned a police vehicle and set it on fire. Buildings were sprayed with graffiti and windows were broken.
Cyberattack		N/A		
Hazardous Materials Incident (Transporta-tion & Fixed Facility)		N/A		
Public Health Epidemic/ Pandemic	DR-4525-UT	03/2019	COVID-19	Temporary business closures, economic impacts
Terrorism		N/A		

DRAFT

National Flood Insurance Program Summary

Salt Lake City participates in the National Flood Insurance Program (NFIP). Table 7 displays statistics related to the NFIP. Salt Lake City will continue to adopt and enforce floodplain management requirements, including regulating new construction of Special Flood Hazard Areas, making substantial improvement and/or damage determinations, or determining the permits required of owners to bring a substantially improved or damaged structure back into compliance. Salt Lake City participates in the Community Rating System (CRS).

Table 7: National Flood Insurance Program Status for Salt Lake City[4]

Init FHBM Identified	Init FIRM Identified	Current Effective Map Date	Adopted Date	Date Joined NFIP	Tribal
12/27/74	08/01/83	11/19/21	2021	08/01/83	No

Table 8: National Flood Insurance Policies for White City

Community ID	Number of Losses	Total Net Payment	Active Policies	Total Coverage
490105D	177	$407,411.90	187	$74,054,000

The questions in Table 9 were answered to the best of Salt Lake City's ability.

Table 9: NFIP Floodplain Management Capabilities and Compliance

Question	Response
Who is the floodplain manager? Is this their primary or secondary role?	Jason Draper
Does the floodplain manager have adequate training and capacity for their role? If not, what else is needed?	Yes. Ongoing education on the latest FEMA guidelines and floodplain management practices is essential to maintain proficiency.
How does the community enforce its floodplain rules? Does enforcement include monitoring compliance and acting to correct violations?	The city enforces floodplain regulations through permitting processes, inspections, and compliance monitoring. Enforcement includes monitoring compliance and addressing violations through corrective actions.
When was the community's most recent Community Assistance Visit (CAV)?	Unknown
Were any violations noted on the community's most recent CAV?	Unknown
Is there an upcoming CAV? If not, is one needed?	Unknown
When was the most recent floodplain management ordinance adopted?	2016
Does your community participate in the Community Rating System (CRS)? If so,	Participation**:** Yes

[4] FIRM = Flood Insurance Rate Map, FHBM = Flood Hazard Boundary Map

Question	Response
describe the steps the community has taken to achieve the CRS goals.	The city has implemented public outreach programs, higher regulatory standards, and flood data maintenance.
Does the community's floodplain management ordinance include any higher standards? If so, please list.	The ordinance includes freeboard requirements, floodway development restrictions, and cumulative substantial improvement rules.
Who is responsible for permitting?	The city's Building Services and Public Utilities departments issue development permits in flood-prone areas.
How does the community issue development permits in the special flood hazard area?	Applicants must submit detailed plans demonstrating compliance with floodplain regulations, including elevation certificates and floodproofing measures.
Does the community maintain elevation certificates?	Yes, the city maintains elevation certificates for structures in Special Flood Hazard Areas (SFHAs).
Does the community track the number of buildings in the special flood hazard area? If yes, are there any trends?	Monitoring: The city tracks the number of buildings in SFHAs. Trends: Data on trends is not publicly available.
How many repetitive loss (RL) structures does the community have? (List number and type of structure)	The city has identified several RL structures, primarily residential. Information on SRL structures is limited. Some RL properties have been mitigated through elevation or acquisition.
How many severe repetitive loss (SRL) structures does the community have? (List number and type of structure)	The Building Services Department is responsible for these determinations. Assessments are conducted post-event to evaluate damage relative to the structure's market value. Additional training and resources are needed to enhance capacity for these assessments. Information is disseminated through the city's website and community meetings. Several substantially damaged structures have been elevated or retrofitted.
Have any RL/SRL properties been mitigated since the last plan update?	The city plans to update ordinances, enhance public education, and improve data management to maintain NFIP compliance.
Who is responsible for making substantial damage/substantial improvement determinations?	Building Services
How does the substantial damage/substantial improvement process work in your community?	Assessments are conducted post-event to evaluate damage relative to the structure's market value.
Is there sufficient staff and training to make substantial damage/substantial improvement determinations?	Additional training and resources are needed to enhance capacity for these assessments.

DRAFT

Question	Response
How are substantial damage/substantial improvement requirements messaged to the public before and after an event?	Information is disseminated through the city's website and community meetings.
Have any substantially damaged/substantially improved structures been mitigated since the last plan update?	Some buildings with unreinforced masonry have been updated.
How will the community remain in compliance with the NFIP moving forward? (Simply stating "the community will continue to comply with the NFIP" will not meet FEMA's planning requirements)	The city plans to update ordinances, enhance public education, and improve data management to maintain NFIP compliance.

Table 10: NFIP Floodplain Mapping Capabilities and Compliance

Question	Response
How does the community support map change requests? This could be requested during the Risk MAP process or through Letters of Map Amendment or Revision.	The city assists property owners with applications for Letters of Map Amendment (LOMA) and Letters of Map Revision (LOMR).
When did the latest Flood Insurance Rate Map (FIRM) become effective?	2016
When was the latest FIRM adopted?	2016
Is the FIRM and Flood Insurance Study (FIS) report in an accessible location? How would the public get access to their flood map information?	FIRM and FIS reports are available on the city's website and at public libraries.
Does the community use any Risk MAP products? If so, describe.	Yes, the city uses Risk MAP products for planning and outreach.
Does the community collect updated floodplain data or modeling? Is this shared with partners and with FEMA?	The city collects updated data and shares it with FEMA and relevant partners.
Other comments?	None

Table 11: NFIP Flood Insurance and Outreach Information

Question	Response
How does the community educate the public on floodplain management and the availability of flood insurance, in and out of the floodplain?	It encourages communities to actively participate in NFIP (update from 2009)
How does the community engage with insurance agents on flood insurance?	Collaborations include informational sessions and resource sharing.
Does the community (or state) have flood hazard disclosure laws?	Yes, the state requires disclosure of flood hazards during property transactions.
How familiar is the public with their flood insurance options?	Awareness is moderate; ongoing education efforts are in place.

Question	Response
How many properties have flood insurance in the community?	Awareness is moderate; ongoing education efforts are in place.
Are there any areas where flood insurance is lacking?	Some older neighborhoods have lower insurance uptake.
Other comments?	None

Jurisdiction-Specific Vulnerabilities and Impacts

In addition to the 212,570 residents of Salt Lake City who may be vulnerable to hazards, there are a significant number of assets in the city that are at risk. Critical facilities in the city include 14 fire stations, 2 emergency operations centers (EOCs), 5 hospitals, 9 police stations, and 85 schools. As the state capital and largest city in Utah, there are significant cultural and historic sites. Salt Lake City contains 32 county-owned facilities, including senior centers, recreation centers, sports complexes, performing arts venues, and government offices. There are 230 properties and districts listed on the National Register of Historic Places in Salt Lake City, including 4 National Historic Landmarks.

Trax, FrontRunner, UTA bus lines, Amtrak, and Salt Lake City International Airport are critical transportation assets in the city. Major roads include I-15, I-80, I-215, Bangerter Highway, Highway 201, US-89/State Street, Redwood Road, Foothill Blvd., 700 East, and numerous others. Outdoor amenities include the International Peace Gardens, Sugarhouse Park, Liberty Park, City Creek Natural Area, Red Butte Garden, Hogle Zoo, 6 golf courses, and several trailheads. Salt Lake City manages a large watershed that includes City Creek, Parleys, Big Cottonwood, and Little Cottonwood Canyons in the Wasatch Mountains. Large capacity venues, such as the Salt Palace Convention Center, the Delta Center arena, the LDS Conference Center, Utah State Fairpark, Rice Eccles Stadium, and the Huntsman Center arena, may face unique challenges during hazard events.

Table 12 provides information on the vulnerable assets in Salt Lake City, including its critical facilities, highlighting the city's vulnerability to identified hazards. It also describes the potential impacts on the community arising from those vulnerabilities. Impacts are the consequences or effects of each hazard on the assets. By understanding the risks associated with these assets, local authorities can develop proactive strategies to mitigate vulnerabilities and ensure the safety and functionality of these important assets during hazard events. These data are invaluable for decision-making and prioritizing resources for emergency response and preparedness efforts, ultimately contributing to more effective risk management and greater resilience in the community.

Table 12: Jurisdiction-Specific Vulnerabilities and Impacts in Salt Lake City

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
Avalanche	People	*Vulnerability:* • Recreational enthusiasts: Skiers, snowboarders, and snowshoers who venture into backcountry areas are at higher risk because

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		they may not be familiar with avalanche terrain or conditions. Their activities often take them into areas prone to avalanches. • Inexperienced individuals: People without adequate training or knowledge about snow safety and avalanche risk are particularly vulnerable. The lack of awareness about signs of instability in the snowpack or how to respond in an avalanche situation can increase risk. • Tourists and non-locals: Visitors who are unfamiliar with the local geography and snow conditions might not recognize potential hazards. They might not know the terrain features that can influence avalanche risk. • Professionals in high-risk areas: Workers such as mountain guides and construction crews operating in mountainous regions may be at risk, especially during avalanche control work or if they are required to traverse unstable areas as part of their job. • Groups without proper gear: Those without appropriate safety equipment (such as avalanche beacons, probes, and shovels) are at greater risk because they may not be able to respond effectively to an avalanche event. • Individuals ignoring warnings: People who do not heed avalanche warnings or neglect to check avalanche forecasts before going into the backcountry may place themselves in harm's way. *Impacts:* Avalanches pose a direct threat to outdoor enthusiasts, which can lead to injuries or fatalities.
	Structures	*Vulnerability:* • Residential buildings: Homes in or near avalanche-prone areas are at risk. • Industrial facilities: Warehouses and manufacturing plants in high-risk zones may be threatened by sliding snow and ice, which can cause significant property damage. • Parking lots and garages: Open areas can be particularly susceptible, as snow can slide off slopes and collect in these spaces, leading to vehicle damage. *Impacts:* Property damage can occur to structures in avalanche paths and along transportation routes. Roofs may not be designed to withstand the weight of accumulated snow, which increases the likelihood of structural failure.
	Economic Assets	*Vulnerability:* Businesses throughout the city are vulnerable to direct and indirect losses from avalanche. Residential properties, commercial buildings, tourism-related businesses, agricultural businesses, and travel- and transportation-related assets are at risk. *Impacts:* The local economy may suffer, especially businesses reliant on winter tourism along with increased insurance costs. • Roads and highways: Critical transportation routes may be blocked or destroyed by avalanches, disrupting trade and travel. • Railways: Similar to roads, railway tracks can be buried or damaged, which affects goods transport and passenger services. • Bridges: Avalanche debris can damage bridge structures, leading to costly repairs and safety risks.

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		• Residential properties: Homes in avalanche-prone areas may suffer damage or total loss, leading to significant financial impacts on their owners. • Commercial buildings: Businesses in vulnerable areas might face closures or property damage, resulting in lost revenue and increased insurance costs. • Hotels and lodges: Properties that attract tourists might be at risk, which affects occupancy rates and local economies. • Crops and livestock: Avalanches can destroy farmland and harm livestock, leading to economic losses for farmers and disruptions in the local food supply. • Recreational facilities: Recreational sites can suffer damage, which affects tourism and local economies.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Wildlife habitat, forests and vegetation, water resources, historic sites, cultural sites, archaeological sites, and recreation areas are at risk. *Impacts:* • Wildlife habitat: The mountainous areas surrounding Salt Lake City are home to diverse wildlife, including species that rely on specific habitats. Avalanches can destroy nesting areas and food sources. • Forests and vegetation: Mountain forests, including pine and aspen trees, can be damaged or destroyed by avalanches, which impacts local ecosystems and alters water runoff patterns. • Water sources: Streams and rivers originating from the mountains may become blocked or altered by avalanche debris, which affects water quality and availability. • Historic sites and structures: Some historical landmarks or sites in vulnerable mountainous areas could be at risk of avalanches. These might include old mining structures or historic cabins. • Cultural trails: Various trails with historical significance, used for recreation or as routes for indigenous peoples, may be impacted, making them unsafe or inaccessible. Cultural institutions: Museums and historical sites in elevated areas may face risks from avalanches. • Archaeological sites: Sites tied to Native American history or early settler activity may be susceptible to avalanche damage, potentially resulting in the loss of valuable artifacts and information about the region's past. • Recreational areas: Popular recreational sites can face risks from avalanches, which affect community activities and local tourism.
	Critical Facilities and Infrastructure	*Vulnerability:* I-80, I-215, and major roads, power substations and distribution lines, water treatment facilities and infrastructure, and emergency response capacity are all vulnerable to avalanches. *Impacts:* • Transportation: Major highways like I-80 and I-215 can be obstructed by avalanches, impacting travel and transit systems. Avalanches can heavily affect transportation infrastructure,

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		leading to blockages and the potential for damage to vehicles and road surfaces. • Utilities: Power lines, substations, and water supply infrastructure may be damaged by avalanche debris, disrupting essential services. These events can bring down power lines, causing outages and costly remediation efforts. Structures that support critical infrastructure, such as communication towers, can be compromised during avalanche events, affecting service delivery. • Water supply systems: Damage to water treatment plants or pipelines can disrupt access to clean water. • Emergency services: Fire stations and hospitals near mountainous areas are at risk of inaccessibility during avalanche events, hindering emergency responses.
	Community Activities	*Vulnerability:* Outdoor recreation is a significant community asset that can be severely disrupted by avalanches. Skiing, snowboarding, hiking, snowshoeing, winter sports competitions, and snowmobiling are vulnerable to both potential risks for participants and the possible cancellation of activities, leading to associated losses. *Impacts:* • Skiing and snowboarding: The nearby ski resorts attract a large number of visitors each winter. Areas with steep slopes and fresh snowfall can pose significant avalanche risks. • Hiking and snowshoeing: Many residents and tourists participate in winter hiking and snowshoeing in the Wasatch Mountains. Trails that traverse avalanche-prone zones can expose hikers to dangerous conditions, especially during or after heavy snowfall. • Backcountry recreation: Adventurers seeking untouched snow often venture into backcountry areas. These individuals may not be fully aware of avalanche risks and conditions, which makes them susceptible to accidents. • Mountain climbing: Climbing in steep or snowy areas can be dangerous, particularly if the weather changes suddenly or if climbers are not equipped with the necessary safety gear. • Snowmobiling: Off-trail snowmobiling in mountainous regions can trigger avalanches due to the added weight and disturbance caused by the machines.
Drought	People	*Vulnerability:* A lack of drinking water affects all populations. *Impacts:* Extended drought can lead to restrictions on water use, increased costs for water, and limited drinking water supply. Drought can contribute to poor air and water quality.
	Structures	*Vulnerability:* Structures are vulnerable to drought because a lack of water for landscaping poses challenges. *Impacts:* Lack of water can impact future development, especially regarding landscaping needs.
	Economic Assets	*Vulnerability:* Outdoor recreation businesses and agriculture are vulnerable to drought, particularly due to a lack of snow. *Impacts:* Low snowpack can cause a decline in winter tourism and potentially significant economic losses to ski and other outdoor recreation businesses. Drought directly affects farms and irrigation

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		systems, as an insufficient water supply can hinder crop production and livestock health.
	Natural, Historic, and Cultural Resources	*Vulnerability:* The decline of the Great Salt Lake affects bird and other wildlife habitats. *Impacts:* A dry lakebed impacts public health, causes economic loss related to the lake, and affects migratory birds.
	Critical Facilities and Infrastructure	*Vulnerability:* The city water supply, fire service, transportation networks, healthcare facilities, energy sector, wastewater treatment are all vulnerable to drought. *Impacts:* • Water supply systems: The municipal water supply relies heavily on snowmelt and reservoir storage. During prolonged droughts, reduced snowpack can diminish water availability, impacting water treatment plants and distribution systems. • Fire services: Fire stations and emergency services may face challenges in suppressing wildfires, which can be exacerbated by dry conditions. Drought reduces water availability for firefighting efforts. • Transportation infrastructure: Drought can affect road maintenance, particularly in areas where water is used for dust control or where deteriorating soil conditions could affect road stability. • Public health facilities: Hospitals and clinics may experience increased strain during droughts due to health complications arising from water scarcity, such as heat-related illnesses and the spread of vector-borne diseases. • Alternative energy facilities: Renewable energy installations, such as hydroelectric dams, may experience reduced water levels, which can impact their efficiency and output. • Wastewater treatment facilities: Drought can affect the efficiency of waste treatment processes, especially if water levels in receiving waters decline, impacting the community's sanitation.
	Community Activities	*Vulnerability:* Tourism and outdoor recreation are vulnerable to drought. *Impacts:* Tourism can be impacted, especially outdoor community events. Reduced water availability for irrigation may affect parks and recreational facilities, leading to degraded landscapes and limited public use.
Earthquake	People	*Vulnerability:* All people who live and work in Salt Lake City are vulnerable to earthquakes. *Impacts:* A strong earthquake disrupts every aspect of life. Residents and those who work in the city are vulnerable to loss of life and injuries. Healthcare capabilities may be overrun, and residents may be displaced from homes, with some requiring public shelter.
	Structures	*Vulnerability:* Residential and all other occupancy types are vulnerable to damage. Mitigation efforts for unreinforced masonry (URM) buildings may not be complete, and these are at higher risk. Assisted living facilities are vulnerable. Liquefaction potential is high

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		for approximately the western two-thirds of the city, which adds additional vulnerability for damage to structures in this area. *Impacts:* Damage to or collapse of buildings is likely.
	Economic Assets	*Vulnerability:* All businesses in Salt Lake City are vulnerable to earthquakes. *Impacts:* Salt Lake City is an economic hub in the Intermountain West. Businesses may experience direct losses through structural damage, or they may be unable to operate due to damage and disruption to transportation and utility networks. Commerce may shut down for an undetermined amount of time, and businesses may close permanently or move out of the area to restart in a safer location. There could be a decline in tourism, and food and supply access may be disrupted.
	Natural, Historic, and Cultural Resources	*Vulnerability:* The Capitol and Temple Square have been retrofitted, but other historic buildings and monuments may still be vulnerable. There are 230 sites on the National Register of Historic Places located in Salt Lake City that are vulnerable to damage from earthquakes. *Impacts:* Many of the historic structures in Salt Lake City may be severely damaged or destroyed by an earthquake due to their age and construction, which lack seismic building standards. Cultural venues may also be damaged.
	Critical Facilities and Infrastructure	*Vulnerability:* All facilities and infrastructure are vulnerable to earthquakes. Refineries, hospitals, police and fire stations, water plants, power plants, roads/transportation, bus and rail transit systems, communication systems, prison, inland port, airport, federal reserve bank, bike lanes, sewer systems, and schools are all vulnerable. *Impacts:* Damage to emergency response facilities and vehicles may delay response and contribute to the vulnerability of residents. All infrastructure systems may also be damaged, and services may be interrupted due to ground shaking. Some facilities or systems may have higher vulnerability due to age and construction standards. Disruption to these systems may inhibit emergency response and place residents at additional risk.
	Community Activities	*Vulnerability:* All community events and activities are vulnerable to earthquakes. *Impacts:* Day-to-day activities may shut down until after recovery efforts. This may affect education, recreation, business, government services, and social activities for an extended period.
Extreme Heat	People	*Vulnerability:* Unsheltered populations and vulnerable groups such as the elderly, young children, those with chronic health problems, and low-income households are at higher risk. People working outdoors in hot weather are also at risk. *Impacts:* Unsheltered and other at-risk populations may experience heat illness such as dehydration, heat exhaustion, and heat stroke.
	Structures	*Vulnerability:* Older homes, cooling centers under strain, and a higher probability of structure fires are factors that increase the vulnerability of structures to extreme heat.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		Impacts: Older homes are less likely to have good insulation and may not have air conditioning or other cooling systems. Prolonged heat exposure can weaken building materials, cause cracks in concrete, warp wood, and deteriorate roofing materials. Older structures within the city may be more at risk. Salt Lake City is vulnerable to urban heat island effects and may not cool off even at night.
	Economic Assets	*Vulnerability:* All businesses are vulnerable to extreme heat. *Impacts:* Businesses face increased energy costs and reduced worker productivity in outdoor projects/work. There is increased demand on climate-controlled products. Some businesses may see less customer traffic during extreme heat.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Parks and open spaces, air quality, and increased wildfire risk are vulnerable to extreme heat. *Impacts:* Air quality may be negatively affected. Extreme heat can dry out vegetation and increase the risk of wildland fires. Parks and open spaces may experience a decline in vegetation health and lose their appeal.
	Critical Facilities and Infrastructure	*Vulnerability:* Power utilities, healthcare facilities, and transportation networks are vulnerable to extreme heat. *Impacts:* There is a strain on utility systems to meet increased power demands. Hospitals and healthcare facilities may experience a surge in heat-related illnesses or injuries. Roadways and rails can buckle or warp due to extreme heat. In Salt Lake City, I-15, I-80, Highway 201, Bangerter Highway, State Street/US 89, Redwood Road, Trax, FrontRunner, airport runways, and numerous other transportation routes are vulnerable to heat damage.
	Community Activities	*Vulnerability:* Outdoor events and tourism are vulnerable to extreme heat. *Impacts:* Decreased tourism. Outdoor events and activities may need to be postponed or canceled due to heat risks. Farmers' markets, outdoor sporting events, and concerts are vulnerable to these cancellations, leading to lost revenue. Parks, hiking trails, and other outdoor facilities may see decreased activity.
Extreme Cold	People	*Vulnerability:* Extreme cold can affect all Salt Lake City residents. The elderly, children, low-income households, and unhoused individuals face a higher risk. *Impacts:* People are vulnerable to hypothermia and frostbite with prolonged exposure to extreme cold. Low-income households may struggle with increased heating costs for homes and buildings. Those with access and functional needs are at greater risk.
	Structures	*Vulnerability:* Older homes, mobile homes, commercial spaces, and unheated structures are vulnerable to extreme cold. *Impacts:* • Older homes: Many older homes may not have adequate insulation or might have outdated heating systems. This makes them less efficient in retaining heat, leading to cold drafts and higher heating costs.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		• Mobile homes: Many mobile homes may not be built with the same insulation standards as permanent structures, making them more vulnerable to cold weather. • Commercial and industrial buildings: Structures used for storage or manufacturing that are not properly insulated can be at risk, especially if they are not occupied regularly and the heating is inconsistent.
	Economic Assets	*Vulnerability:* All businesses in Salt Lake City are vulnerable. *Impacts:* • Agriculture and landscaping: Cold temperatures can damage crops, especially sensitive varieties like fruits and vegetables. Seasonal changes can affect the landscaping industry, which relies on mild temperatures for planting and maintenance. • Construction: Cold weather can halt construction projects or slow progress. Concrete curing rates, material performance, and worker safety are all impacted by low temperatures, leading to delays and increased costs. • Manufacturing: Factories that rely on outdoor processes or shipping might face operational difficulties. Extreme cold can affect machinery performance and the supply chain, leading to potential financial losses. • Retail and hospitality: Businesses in these sectors may suffer from decreased foot traffic during extremely cold weather. Customers are less likely to venture out, impacting sales in shops, restaurants, and hotels. • Transportation and logistics: Cold weather can lead to hazardous road conditions and disruptions in public transport. This can affect the timely delivery of goods and services, impacting overall economic productivity. • Energy supply and utilities: Cold weather increases the demand for heating, which can strain energy resources. Infrastructure like power lines and gas pipelines can be vulnerable to freezing temperatures, leading to potential outages. • Tourism and recreation: Although some winter sports benefit from cold weather, extreme cold can deter tourists, affecting local businesses that rely on seasonal visitors. Ski resorts, for example, may face fewer visitors if temperatures drop severely.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Vegetation, wildlife, water systems, and historical, archaeological, and cultural sites are vulnerable to extreme cold. *Impacts:* • Vegetation: Some plant species, especially non-native or sensitive flora, may struggle to survive extreme cold temperatures. • Wildlife: Certain animal species that are not well adapted to extreme cold could face challenges in finding food and shelter during harsh winters. • Water bodies: Streams and ponds can freeze over, affecting aquatic ecosystems. This can disrupt habitats for fish and other aquatic life, along with impacting local recreational activities.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		• Historic buildings: Older buildings or structures constructed without modern materials may be more susceptible to damage from extreme cold. Issues such as frozen pipes, roof collapses due to heavy snow, and structural damage from temperature fluctuations can occur. • Archeological sites: Sites that lack proper preservation methods may face degradation or damage during extreme frost and thaw cycles, which can alter soil structures and expose artifacts. • Cultural artifacts: Items in museums or community centers, especially those made from organic materials like wood or textiles, can be damaged by extreme cold if not properly climate-controlled. • Outdoor public art: Sculptures and installations might experience damage from freezing temperatures and ice formation, which can compromise their integrity.
	Critical Facilities and Infrastructure	*Vulnerability:* Transportation networks are vulnerable to extreme cold. *Impacts:* Access to essential services could be disrupted.
	Community Activities	*Vulnerability:* Cultural events are vulnerable to extreme cold. *Impacts:* Cultural events and practices may be delayed or canceled. Cold weather can impact community events, festivals, and traditions that rely on outdoor spaces, limiting public engagement and cultural expression.
Flooding	People	*Vulnerability:* Residents near flood hazard zones along the Jordan River, City Creek, Red Butte Creek, Emigration Creek, Parleys Creek, and other waterways are vulnerable. Low-lying areas may also experience localized flooding during heavy rain events. *Impacts:* Flooding can damage homes and displace residents. Individuals without reliable transportation may struggle to evacuate quickly, while low-income families often lack resources for flood-prevention measures. The elderly and those with disabilities may face mobility challenges, increasing their risk during emergencies. Flooding can occur in areas of the city where storm drains cannot keep up with heavy rain events (such as the Ballpark area near 1300 South). Flooding can lead to the spread of disease or other health risks from contaminated water. The unsheltered population along the river is vulnerable to illness and injury.
	Structures	*Vulnerability:* Homes, commercial buildings, businesses, and other structures near flood zones or low-lying areas are vulnerable to flooding. *Impacts:* Residential properties in floodplains and commercial buildings without proper drainage systems or flood-resistant designs face significant risks of damage during heavy rain or snowmelt. Older structures may be more susceptible due to outdated construction standards.
	Economic Assets	*Vulnerability:* Commercial properties, especially retail centers and warehouses near rivers or low-lying areas, are at high risk during heavy rainfall. The Inland Port is at risk.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		Impacts: Businesses in flooded areas can experience significant losses from flood damage to structures or inventory. Residential developments in flood-prone zones can also suffer damage, which can influence property values. Public infrastructure, such as roads and utilities, may experience disruptions, leading to costly repairs, which may affect businesses' ability to operate and contribute to revenue losses.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Streams, parks, and historic structures are vulnerable to flooding. *Impacts:* Natural areas like wetlands and streams are at risk of habitat destruction. Flooding can contribute to an increase in mosquito populations. Cultural resources, such as parks and public spaces, can become unusable, and parks may be damaged beyond repair.
	Critical Facilities and Infrastructure	*Vulnerability:* Sewer and water systems, transportation networks, and the prison facility are vulnerable to flooding. *Impacts:* Sewer and water systems may be overwhelmed. The prison may be impacted. Roadways may be washed out or blocked by debris, which may disrupt emergency services or isolate communities.
	Community Activities	*Vulnerability*: Outdoor events and recreation are vulnerable to flooding. *Impacts:* Events may be postponed until waters recede, or they may be canceled. Flooding can cause damage to parks and gathering areas.
Landslide/ Slope Failure	People	*Vulnerability:* Homes along the northern and eastern sides of the city are built in the foothills and could be damaged or destroyed by landslides. *Impacts:* Loss of homes would temporarily displace residents. In the case of a fast-moving slope failure, it could cause injury or death.
	Structures	*Vulnerability:* Residences and other structures along the benches/slopes on the northern and eastern borders of the city are vulnerable to landslides. *Impacts:* Earth movement can cause extensive damage to structures.
	Economic Assets	*Vulnerability:* Businesses near slopes are vulnerable to landslides. *Impacts:* Businesses may experience a loss of property and disruption to their operations. Businesses not directly on slopes may experience indirect effects if major transportation routes are blocked or damaged.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Vegetation and wildlife, soil and water resources, and historic and cultural sites are vulnerable to landslides. *Impacts:* • Vegetation: Forests and other plant life can be affected as landslides may uproot trees and destabilize habitats. • Wildlife habitats: Landslides may displace or harm species that depend on specific habitats. • Soil and water resources: Landslides can lead to soil erosion, affecting agricultural lands and water quality in streams and rivers.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		• Landmarks and historic sites: Landslides pose a significant threat to historic sites, causing structural damage and risking the loss of unique cultural heritage. They can block access, negatively impacting tourism and local economies and creating safety hazards that may lead to site closures. The financial burden of repairs can compete with other community needs, and alterations to the landscape can diminish a site's historical significance. Sites such as Red Butte Gardens, This is the Place State Park, Hogle Zoo, Memory Grove, the Natural History Museum, and other resources near the foothills may be vulnerable to landslides.
	Critical Facilities and Infrastructure	*Vulnerability:* Transportation routes and refineries are vulnerable to landslides. *Impacts:* Emigration Canyon Road, I-80, I-15, Victory Road/Beck Street, and smaller neighborhood roads could be damaged or blocked. The University of Utah, Huntsman Cancer, and Primary Children's hospitals may be at risk of damage or limited access if roadways are blocked by landslides.
	Community Activities	*Vulnerability:* The city is situated against a backdrop of steep, mountainous terrain composed of sedimentary rocks that can be prone to erosion and instability. Heavy rainfall or rapid snowmelt can saturate the soil, increasing the likelihood of landslides, especially in areas where vegetation has been removed or where construction has altered the natural landscape. Urban development and infrastructure projects often disturb the natural slope stability, leading to increased runoff and weakened soil structures. In addition, seismic activity in the region poses an added threat, as earthquakes can trigger landslides. *Impacts:* Community events and activities may be disrupted by landslides.
Radon	People	*Vulnerability:* A range of 5% to 50% of homes tested in Salt Lake City have dangerous levels of radon gas. According to UtahRadon.org, an average of 40% of homes have dangerous levels. *Impacts:* Radon causes lung cancer. All people can be exposed either at work or home. There is a lack of widespread testing in homes and businesses.
	Structures	*Vulnerability:* Radon can enter buildings, especially those with basements or crawl spaces. Geological formations in the area can contribute to higher radon levels, and older homes often lack modern radon-resistant features. In addition, the climate can create pressure differences that allow radon to infiltrate buildings, while poor ventilation can lead to elevated indoor levels. *Impacts:* The cost of remediation may discourage people from taking mitigation action.
	Economic Assets	*Vulnerability:* Businesses and personal or household budgets are vulnerable to the effects of radon. *Impacts:* The costs of remediation and healthcare for long-term side effects can be significant.
	Natural, Historic, and	*Vulnerability:* Historic and other older structures are vulnerable to radon.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Cultural Resources	*Impacts:* These are vulnerable to radon due to geological factors, outdated construction methods, and environmental conditions. The area's uranium-rich geology produces radon gas, which can seep into older buildings constructed with local materials that lack modern mitigation techniques. Poor ventilation in many historic structures allows radon to accumulate, particularly in tightly sealed environments, during colder months. In addition, the region's topography can trap radon, increasing risks for nearby properties.
	Critical Facilities and Infrastructure	*Vulnerability:* Radon can enter hospitals, police and fire stations, schools, and other city facilities. *Impacts:* Employees and other occupants may be exposed to radon. The region has uranium-rich rocks, especially in the Wasatch Range, which produce radon gas that can seep into buildings through cracks and gaps. Certain soil types have high levels of uranium, contributing to indoor radon accumulation, particularly in poorly ventilated older structures. In addition, Salt Lake City's elevation can affect how radon escapes from the ground, while construction activities might disturb soil and release trapped gas.
	Community Activities	*Vulnerability:* Community activities have limited vulnerability to radon exposure.
Heavy Rain	People	*Vulnerability:* Areas of the city where storm drains cannot keep up with heavy rain events (such as the Ballpark area) and the unsheltered population along the river are vulnerable to heavy rain. *Impacts:* People can be injured by flash flooding following heavy rain. Others may be displaced. Floodwaters can spread disease.
	Structures	*Vulnerability:* Structures in low-lying areas or near flood hazard zones are vulnerable are vulnerable to heavy rain. *Impacts:* Basement flooding is a concern for residential homes. People may not have flood insurance to make repairs.
	Economic Assets	*Vulnerability:* Businesses in low-lying or flood-prone areas are vulnerable to heavy rain. *Impacts:* Local businesses may need to reduce operations or close due to the heavy rain or road closures.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Vegetation in parks and open spaces is vulnerable to heavy rain. *Impacts:* Local vegetation could be inundated, impacting plant growth. Heavy rain can contribute to soil erosion.
	Critical Facilities and Infrastructure	*Vulnerability:* Emergency response services are vulnerable to heavy rain. *Impacts:* Disruption to essential services and potential access issues for police and fire response due to road closures or travel delays.
	Community Activities	*Vulnerability:* Outdoor events and recreation are vulnerable to heavy rain. *Impacts:* Activities may be canceled or postponed due to heavy rain.
High Wind	People	*Vulnerability:* The entire city is vulnerable to high winds. *Impacts:* People can be injured by blowing debris or falling tree limbs.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Structures	*Vulnerability:* Structures throughout the city are vulnerable to high winds. Mobile homes are at higher risk. *Impacts:* High wind can cause structural damage across the board, including damage to landscaping damage and personal property, such as broken windows and roof damage. Homes and businesses can be damaged by fallen trees. Four mobile home parks in western Salt Lake City are at heightened risk due to their inability to withstand high winds.
	Economic Assets	*Vulnerability:* All businesses are vulnerable to high winds. *Impacts:* High winds can damage structures and inventory, or disrupt power and communication infrastructure necessary for businesses to operate. Debris may block roads, and employees may be unable to get to work.
	Natural, Historic, and Cultural Resources	*Vulnerability:* The city's location in a valley, surrounded by mountains, can create funneling effects that intensify wind gusts. Trees, vegetation, and historic and cultural sites are vulnerable to high winds. *Impacts:* High winds can lead to potential damage to trees and vegetation, disrupting ecosystems and altering landscapes. Historic buildings and cultural sites may suffer structural strain, as high winds can accelerate wear and tear on aging materials, such as wood and masonry. In addition, debris carried by strong winds can pose risks to both natural areas and human-made structures, leading to erosion or even the destruction of significant historical artifacts. Salt Lake City has many mature trees that can be uprooted by high winds. These trees can contribute to damage in parks and open spaces, as well as cause structural damage.
	Critical Facilities and Infrastructure	*Vulnerability:* Power, communication, and transportation infrastructure are all vulnerable to high winds. All critical facilities are at risk if these lifelines are disrupted. *Impacts:* Utility infrastructure, such as power lines and communications towers, can be damaged by high winds and are vulnerable to service outages. Power and communication outages can disrupt emergency response and medical care. Falling tree branches and other debris can block access to properties and may block roadways. Power is essential for life-sustaining equipment at assisted living and other medical care facilities.
	Community Activities	*Vulnerability:* The area's geography, located at the foot of the Wasatch Mountains, creates a channeling effect that can exacerbate wind speeds. In addition, many outdoor events and gatherings may be set up in open spaces, making them susceptible to sudden gusts. *Impacts:* Structures commonly used in festivals and public events, such as tents, canopies, and stages, have limited resistance to high winds, leading to safety concerns and potential damage. Furthermore, local foliage, including trees and shrubs, may not provide sufficient windbreaks, resulting in an increased risk of debris being blown around, thus posing hazards to participants.
Lightning	People	*Vulnerability:* Salt Lake City experiences summer thunderstorms, which can produce significant lightning activity. Lightning can occur anywhere in Salt Lake City, and all residents are potentially

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		vulnerable to injury from lightning. The area's geographical features, including the presence of mountains and open plains, can create conditions conducive to lightning strikes. In addition, outdoor recreational activities are popular in this area, and many residents and visitors may spend time in exposed locations, such as parks, hiking trails, or golf courses, during thunderstorms. *Impacts:* A lightning strike can cause serious injury or death to people in close proximity to the strike. People outdoors in open areas may struggle to find shelter quickly, particularly in fast-moving thunderstorms
	Structures	*Vulnerability:* Structures anywhere in Salt Lake City are vulnerable. *Impacts:* Fire is a possibility if structures are struck by lightning. Salt Lake City has many taller buildings that may be more vulnerable to lightning strikes if not properly grounded or equipped with proper lightning protection systems. Electrical surges may disrupt power, internet, and communication systems within homes and businesses.
	Economic Assets	*Vulnerability:* Salt Lake City has many major businesses that are vulnerable to losses from power and communication disruptions caused by lightning. *Impacts:* First, the city's geography and climate create conditions conducive to thunderstorms, particularly during summer. This increases the risk of lightning strikes that can damage infrastructure, such as power lines, communication systems, and buildings. In addition, the concentration of economic activities in urban areas makes them more susceptible to disruption from such natural events. Industries reliant on technology and continuous operations, such as data centers and manufacturing plants, may face significant financial losses from equipment damage or business interruptions.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Parks, cultural sites, and historic sites are vulnerable to lightning. *Impacts:* There is a risk of wildfire from lightning in foothills and City Creek Canyon. Salt Lake City has multiple parks and open spaces with mature trees and monuments that can attract lightning due to their height and thus may be damaged.
	Critical Facilities and Infrastructure	*Vulnerability:* Power and communication infrastructure and emergency response systems are vulnerable. *Impacts:* Power lines and substations are susceptible, and lightning strikes can lead to power outages. Power outages can disrupt essential functions of emergency facilities, hospitals, and schools. Lightning strikes could impact communications within buildings and affect emergency responders.
	Community Activities	*Vulnerability:* Outdoor recreation sites such as Memory Grove, Hogle Zoo, Sugar House Park, Liberty Park, and Red Butte Garden, golf courses such as Bonneville and Glendale, as well as numerous smaller parks, are exposed to lightning *Impacts:* Lightning can lead to the cancellation of community events.
Severe Winter Weather	People	*Vulnerability:* All of Salt Lake City is potentially vulnerable to severe winter weather. The eastern benches often see higher snow accumulations and residents there may have a higher risk.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		Impacts: The unsheltered population is vulnerable to exposure or hypothermia. Individuals may be stranded away from home or in their vehicles. Medical issues from shoveling heavy snow are possible, particularly for the elderly. People may underestimate the potential danger of winter weather warnings. People are at risk of injuries from slips and falls.
	Structures	*Vulnerability:* Older homes and structures throughout Salt Lake City are vulnerable to severe winter weather. *Impacts:* Heavy snow loads on roofs can cause damage. Older homes in Salt Lake City might have weakened roofs or inadequate insulation, making them susceptible to snow loads and ice dams.
	Economic Assets	*Vulnerability:* Businesses throughout Salt Lake City are vulnerable to severe winter weather. *Impacts:* Businesses can experience significant losses from decreased customer traffic and delayed shipments. Transportation and logistics companies, such as the Inland Port, are particularly vulnerable, as snow can hinder vehicle movement, leading to delivery delays. Construction projects may face delays and increased costs.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Ecosystems, wildlife habitats, and historic and cultural sites are vulnerable to severe winter weather. *Impacts:* The area's unique topography, characterized by its mountains and valleys, can lead to intense snowfall and create development patterns that concentrate snow accumulation in certain areas. This accumulation can damage delicate ecosystems, disrupt wildlife habitats, and lead to soil erosion as the snow melts. Historic structures and cultural sites, many of which are older and may not be equipped to handle severe weather, can suffer damage from heavy snow loads that may compromise roofs and other structural elements. In addition, the weight of accumulated snow can cause falling branches and trees, posing risks to both natural landscapes and human-made structures. Salt Lake City has 230 sites on the National Register of Historic Places. Culturally significant artifacts and sites can be affected by harsh winter conditions, as prolonged exposure to moisture and freezing temperatures can lead to deterioration.
	Critical Facilities and Infrastructure	*Vulnerability:* Power infrastructure and transportation networks are vulnerable to severe winter weather. *Impacts:* An increase in traffic accidents can strain emergency services. Additionally, communication issues, loss of power from falling trees and snow loads, increased demand for snow removal, and increased demand on drainage systems during snowmelt are possible. I-15 and I-80, as well as other major routes like State Street, Redwood Road, and Highway 201, may experience delays or closures during winter storms. FrontRunner, Trax, and other transit systems may also be delayed.
	Community Activities	*Vulnerability:* Activities and events throughout the city and region are vulnerable to disruption from severe winter weather. *Impacts:* Significant winter snowfall can create hazardous conditions, disrupt transportation, and lead to cancellations of outdoor events, affecting local businesses and community engagement. Snow can

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		cause power outages, which can complicate indoor gatherings. Many residents may prioritize safety, resulting in lower attendance at events. In addition, infrastructure challenges such as snow removal hinder mobility, making it difficult for community members to participate.
Tornado	People	*Vulnerability:* Tornadoes are uncommon in Utah, but they have occurred in Salt Lake City. The entire city is potentially vulnerable to tornadoes, and all populations are potentially at risk. *Impacts:* People are at risk of injury or death if a tornado occurs. The region's unique geography can foster severe weather, while a lack of public awareness and preparedness leaves residents ill-equipped to respond. Unlike tornado-prone areas, there is no established response culture, leading to delays in seeking shelter. In addition, urban infrastructure poses risks because flying debris can endanger lives. Limited access to timely weather alerts also hinders effective communication, making it essential for residents to stay informed and proactive about safety measures.
	Structures	*Vulnerability:* All structures, particularly older buildings and mobile homes, are vulnerable to tornadoes. *Impacts:* The region's sudden temperature shifts and unique geography can contribute to the formation of tornadoes, while many buildings may not be designed to withstand such extreme weather events. Older constructions, in particular, might lack modern reinforcements and building codes that enhance storm resistance. In addition, large trees and open spaces can increase wind speed and debris hazards, making the impact of tornadoes even more severe for nearby structures. Four mobile home parks in western Salt Lake City are at heightened risk due to their inability to withstand high winds.
	Economic Assets	*Vulnerability:* All businesses are vulnerable to tornadoes. *Impacts:* Several economic assets are vulnerable to tornadoes, including commercial buildings, industrial facilities, and critical infrastructure, such as power lines and transportation networks. These assets are at risk due to their construction materials and designs, which may not be fortified against high winds. In addition, densely populated areas can lead to significant damage and economic disruption if a tornado strikes, impacting local businesses and essential services. The region's relatively low experience with tornadoes may mean that preparation and response measures are not as robust as those in more tornado-prone areas.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Parks, mature trees, historic sites, and cultural resources are vulnerable to tornadoes. *Impacts:* Natural resources, like trees in local parks, may be uprooted or damaged, disrupting local ecosystems. Historic sites, such as the Salt Lake City and County Building and the Utah State Capitol, are at risk due to their age and structural integrity, which may not withstand strong winds. Cultural resources, including festivals and community gatherings held outdoors, could be disrupted, posing risks to public safety. The vulnerability of these resources is primarily due to their physical location and construction if they lack the reinforcement needed to endure severe tornado conditions.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Critical Facilities and Infrastructure	*Vulnerability:* Critical facilities and infrastructure that are vulnerable to tornadoes include hospitals, schools, power plants, and communication centers. *Impacts:* These structures may be compromised due to their large flat roofs that can easily be uplifted by high winds and their proximity to densely populated areas, which increases the risk of damage and casualties. In addition, utility lines and transport networks, such as highways, can become disconnected or obstructed, hindering emergency response efforts.
	Community Activities	*Vulnerability:* Community activities like outdoor concerts, sports games, and festivals are vulnerable to tornadoes due to their large crowds and open locations. *Impacts:* Tornadoes can develop quickly, leaving little time for attendees to find shelter. In addition, local infrastructure, such as schools and parks, may lack adequate tornado shelters or emergency plans.
Wildfire	People	*Vulnerability:* Wildfire risk is moderate to high in the Wasatch foothills along the northern and eastern areas of the city. Open space in the western area of the city toward Great Salt Lake is also vulnerable. *Impacts:* Wildfire can cause injury or death for those unable to reach safety from flames. Residents may be temporarily displaced due to evacuations or displaced long term if homes are destroyed. Residents near the wildland–urban interface (WUI), individuals with physical disabilities or health issues who may struggle to evacuate, and low-income families lacking resources for fire safety measures may be vulnerable. Older adults might have reduced mobility, making them more dependent on others for assistance. People with respiratory conditions may experience negative impacts from poor air quality due to wildfire smoke.
	Structures	*Vulnerability:* All structures near the WUI are vulnerable to wildfires. *Impacts:* Property loss, especially residences made of wood or in heavily vegetated areas, may be vulnerable. Properties near the WUI are at higher risk due to surrounding flammable vegetation. Inadequate defensible space, such as insufficient clearing of dry grass and shrubs, increases susceptibility. Roofs made of combustible materials and buildings that lack fire-resistant features are particularly at risk during wildfire events.
	Economic Assets	*Vulnerability:* All businesses are vulnerable to wildfires, including the cost to government agencies. *Impacts:* Commercial assets, such as retail centers close to forested regions, can suffer damage from flames and smoke, affecting the local economy. Vital infrastructure, such as power lines and water pipelines, can be disrupted, causing further economic repercussions. The cost of firefighting efforts and its impact on government agencies' total budgets can be significant.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Vegetation and wildfire habitats, watershed, recreation sites, and the Hogle Zoo are vulnerable to wildfires. *Impacts:* Natural resources like forests are at risk because dry vegetation and accumulated brush can ignite easily. Vegetation and habitat in the burn scar area may take a long time to recover. These

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		areas may be unusable for recreation, such as hiking, for a long time. Retardant drops can impact the watershed. The increasing frequency of drought and extreme heat, exacerbated by climate change, heightens these vulnerabilities.
	Critical Facilities and Infrastructure	*Vulnerability:* Water treatment plants in the WUI, utilities, communication towers, watershed, and the prison are vulnerable to wildfires. *Impacts:* Water treatment facilities can be damaged by fire, and water quality in the city's watershed can be impacted. Utilities like power lines and gas pipelines also are at risk, as sparks or falling trees can ignite fires.
	Community Activities	*Vulnerability:* Outdoor recreation is vulnerable to wildfires. *Impacts:* Community activities like hiking, camping, and outdoor events are vulnerable to wildfires due to the city's proximity to natural landscapes. High summer temperatures, low humidity, and invasive plants, such as cheatgrass, increase fire risks. Activities involving campfires or barbecuing can spark fires, and urban infrastructure, such as power lines, can ignite surrounding vegetation.
Dam Failure	People	*Vulnerability:* As shown in the Dam Failure inundation area maps, several large areas in Salt Lake City are potentially vulnerable to dam failure. Six high hazard dams and three significant hazard dams are within the city limits, and three more high hazard dams outside the city have the potential to cause damage within the city. Much of the city east of the Jordan River, west of Foothill Boulevard, and south of 600 South is within a potential inundation zone. High hazard dams in the city include the following: Rotary Glen, Salt Lake County Federal Heights (#1a), Salt Lake County Shriners #12, Salt Lake County Chandler Drive #13, Ensign Downs Db, and Salt Lake County Sugarhouse; high hazard dams outside the city are Little Dell, Mountain Dell, and Red Butte. *Impacts:* Residents in low-lying areas downstream, the elderly, children, and those with mobility issues may struggle to evacuate quickly. Communities with limited resources, particularly low-income neighborhoods, often lack adequate support and awareness of dam-related risks. Individuals may be injured if caught in fast-moving water or may be displaced if their homes are damaged by flooding.
	Structures	*Vulnerability:* Structures vulnerable to dam failure include residential neighborhoods, commercial buildings, and other structures in dam inundation boundaries or downslope of dams. *Impacts:* Structures downstream of a dam can suffer extensive damage from flooding following a dam failure. Damage is often worst close to the dam site because of the volume and velocity of water released. Seismic activity in the region also poses a risk, as earthquakes could compromise dam integrity, leading to severe consequences for nearby communities.
	Economic Assets	*Vulnerability:* Businesses in inundation areas are vulnerable to dam failure. *Impacts:* Several economic assets are vulnerable to dam failure, especially those near water bodies. Residential areas may experience devastating flooding, leading to displacement and

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		significant economic loss. Commercial properties can face damage and business interruptions. The vulnerability arises from their geographical location, the potential for rapid water flow during a dam breach, and the interconnectedness of local infrastructure.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Waterways and riparian habitats are vulnerable to dam failure. Historic and cultural sites are also at risk from flooding. *Impacts:* The Jordan River, creeks, and surrounding wetlands could experience significant flooding, disrupting ecosystems and water quality. Historic sites in downtown and nearby heritage landmarks may suffer extensive damage, threatening their cultural significance. The risks arise from the proximity of these resources to dam infrastructure, inadequate flood defenses, and the potential for rapid water release, which could overwhelm protections and lead to serious consequences for the environment and community heritage.
	Critical Facilities and Infrastructure	*Vulnerability:* One emergency operations center (EOC), 4 fire stations, 2 hospitals, and 24 schools are vulnerable to dam failure due to their location within dam inundation boundaries in Salt Lake City. Big Cottonwood and Little Cottonwood Water Treatment Plants are vulnerable to dam failure in those canyons, although they are outside the city boundaries and are operated by Salt Lake City Public Utilities. *Impacts:* Public safety facilities, such as police and fire stations, may become inaccessible during flooding, complicating emergency response efforts. This poses risks to residential and commercial zones and disrupts critical services. Dam failure could damage transportation infrastructure, such as highways and bridges. I-15, I-80, and numerous arterial roads and transit lines in Salt Lake City are vulnerable to flooding or other damage from a dam failure. Urban development in flood-prone areas further increases these vulnerabilities, leading to significant potential harm during an incident.
	Community Activities	*Vulnerability:* Recreation and community events are vulnerable to dam failure. *Impacts:* Community activities vulnerable to dam failure include recreational activities like boating, fishing, and hiking near reservoirs and rivers. Residential areas downstream are at risk of flooding, impacting homeowners and emergency services. The city's water supply and agricultural activities that rely on controlled water release can be disrupted. These vulnerabilities stem from urban development in flood-prone areas, aging infrastructure, and potential climate changes affecting water levels and dam safety.
Civil Disturbance	People	Bodily harm to people.
	Structures	Damage to structures, inability to access structures, government buildings are often the target, fire.
	Economic Assets	Cost of response, business closure, looting of businesses.
	Natural, Historic, and	Cultural resources have become the target of protest.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Cultural Resources	
	Critical Facilities and Infrastructure	The City Public Safety Building has been the target, shutting down dispatch and the Capitol.
	Community Activities	Postponed until disturbance is over.
Cyberattack	People	Inability to access digital information.
	Structures	Threats to buildings that are on a network.
	Economic Assets	Loss of data, hardware, cost of response (ransom).
	Natural, Historic, and Cultural Resources	Misinformation.
	Critical Facilities and Infrastructure	Communications issues, inability to operate water treatment plants and wastewater.
	Community Activities	Community activities like local government services, online event ticketing, and educational institutions are particularly vulnerable to cyberattacks. Outdated software and insufficient cybersecurity measures in government and nonprofit organizations can lead to data breaches and fraud. In addition, remote learning platforms can be targets for phishing attacks due to weak security protocols. Overall, limited resources and increasing reliance on digital systems contribute to these vulnerabilities.
Hazardous Materials Incident (Transporta-tion & Fixed Facility)	People	Health concerns, shelter in place, relocation, sheltering.
	Structures	Contamination, decontamination, destruction of structures.
	Economic Assets	Impact on food supplies.
	Natural, Historic, and Cultural Resources	Impact on watershed and air quality.
	Critical Facilities and Infrastructure	Impact on transportation.
	Community Activities	Cancellation of events.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
Public Health Epidemic/ Pandemic	People	Fear/panic. Several groups are particularly vulnerable during public health epidemics and pandemics. Individuals with pre-existing health conditions, such as asthma or diabetes, and older adults with weakened immune systems face higher risks of severe illness. Low-income individuals and those without health insurance often lack access to healthcare and vaccinations, increasing their vulnerability. In addition, marginalized communities may experience language barriers and distrust in the healthcare system, further hindering their ability to seek assistance. Socioeconomic status, health conditions, and access to care significantly affect these populations during health crises.
	Structures	The blessed tents now on the shelf. Several structures are vulnerable to epidemics and pandemics. Public transportation hubs, such as the TRAX light rail and bus stations, pose high risks due to proximity among individuals. Densely populated areas, such as apartment buildings and low-income housing, often face overcrowding and limited health resources, exacerbating the spread of illness. Healthcare facilities can become overwhelmed during outbreaks if not adequately staffed. Schools and universities also gather many people, facilitating rapid disease transmission.
	Economic Assets	Lack of toilet paper, lack of resources due to fear-purchasing, supply chain interruption. Key economic assets are vulnerable to public health epidemics and pandemics include tourism, hospitality, and retail. These sectors rely heavily on human interaction and can suffer from decreased consumer confidence, leading to lower foot traffic in shops and restaurants. Healthcare facilities, while critical during a crisis, may become overwhelmed, impacting their economic contributions. In addition, local events that draw large crowds are at risk of cancelation or postponement. This reliance on a service-oriented economy can lead to job losses and reduced working hours, amplifying the broader economic impact on the community.
	Natural, Historic, and Cultural Resources	Natural spaces like parks may see reduced access due to health guidelines, impacting community well-being. Historic sites, such as the Salt Lake Temple and local museums, rely on visitor interactions; closures during epidemics can hinder preservation efforts and financial support. Cultural resources such as festivals and community events may be canceled, disrupting social cohesion.
	Critical Facilities and Infrastructure	Increased demand on hospitals, decreased use of mass transit (trains, busses, planes).
	Community Activities	Cancellation of events and social distance. Large gatherings at sporting events, concerts, and festivals are particularly vulnerable to public health epidemics due to crowded conditions, facilitating disease transmission. Other at-risk areas include community centers hosting group classes and public transportation, which can become crowded during peak hours. Food

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		festivals and farmers' markets also pose risks, as they involve shared food handling.
Terrorism	People	Fear, loss of life, mis/disinformation, targeting of specific populations/phobias, not just a foreign issue. Minority religious or ethnic communities often face higher risks of prejudice. Individuals involved in social justice movements or expressing controversial political views also can be targeted. In addition, large public gatherings create opportunities for potential attacks, increasing attendees' vulnerability. Overall, visibility, beliefs, and social engagement contribute to the risks faced by these groups.
	Structures	Could be the target of terrorism. Several structures are vulnerable to terrorism due to their symbolic significance and high accessibility. The Utah State Capitol and the Conference Center of the Church of Jesus Christ of Latter-day Saints are prime targets, representing governance and faith and often hosting large gatherings. In addition, transportation hubs such as Salt Lake City International Airport have high foot traffic, increasing the potential for significant casualties. This combination of visibility, public access, and the potential for mass impact contributes to their vulnerability.
	Economic Assets	Commerce shut down.
	Natural, Historic, and Cultural Resources	Could be the target. Key sites, such as the Salt Lake Temple and the Utah State Capitol, are significant due to their architectural and cultural importance, making them potential targets, especially given their visibility and accessibility to large crowds. Natural resources like the Great Salt Lake carry risks, as attacks could disrupt local ecology and community life. Events such as the Sundance Film Festival attract significant audiences, presenting opportunities for disruption.
	Critical Facilities and Infrastructure	It could be the target, which would impact the entire population. Critical facilities vulnerable to terrorism include government buildings, transportation hubs like the airport and TRAX light rail, and large public venues such as the Salt Palace Convention Center. Their high profile and accessibility make them attractive targets. In addition, utility infrastructures, such as water treatment plants and power grids, are at risk, as disruptions can have widespread impacts.
	Community Activities	Cancellation of events. Large public gatherings, such as festivals, parades, and sporting events, attract crowds and media attention. Places of worship and cultural events may be targets due to their ideological significance. Their vulnerability stems from their open nature, high emotional impact, and often limited security measures. Public transit hubs and tourist attractions also are at risk due to concentrated crowds and unpredictable movement, making effective monitoring challenging.

DRAFT

Jurisdiction-Specific Changes in Vulnerability

Hazard events can impact communities, infrastructures, and ecosystems. The severity of these impacts can be influenced by climate change, population patterns, and land use developments. Understanding these factors is crucial for Salt Lake City to develop a resilient community and minimize the impacts of hazards. Table 13 displays the unique changes within the community and the related effects on each identified hazard affecting Salt Lake City.

DRAFT

Table 13: Jurisdiction-Specific Changes in Vulnerability in Salt Lake City

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
Avalanche	Higher temperatures can lead to more rain, destabilizing snowpack and increasing the risk of wet avalanches. In addition, changes in snowfall can cause denser snow layering on slopes, making them more prone to sliding.	Avalanches can influence population patterns by deterring people from moving to or remaining in high-risk areas, leading to decreased density in these locations. The threat of avalanches prompts many to seek safer environments in urban or lower-risk regions. In addition, when avalanches occur, they can disrupt infrastructure, causing residents to relocate.	Areas at high risk may face restrictions on new construction and require costly safety measures, which can deter development and shift growth to safer locations. Increased awareness of avalanche hazards may lead local governments to implement stricter zoning laws, affecting recreational and tourism opportunities in mountainous regions.	Decreased
Drought	Climate change affects drought incidents by altering precipitation patterns and increasing temperatures. Warmer weather can lead to longer dry periods and more severe droughts, while changes in rainfall can reduce snowpack in nearby mountains, crucial for summer water supply. Higher temperatures also increase evaporation rates, further straining local water resources.	Drought can significantly influence population patterns by impacting economic opportunities and the quality of life. Water scarcity often leads to reduced agricultural productivity, prompting residents to migrate to areas with more stable job prospects. Increased water costs can make living less affordable, driving some residents away. Conversely, efforts to address drought, such as sustainable development or improved water management, may attract newcomers, resulting in changes in the community's demographic composition over time.	Drought can significantly impact land use and development by reducing water availability, leading to shifts in agricultural practices. Farmers may switch to drought-resistant crops or repurpose land for more profitable ventures, prompting urban development as people seek water-secure areas. This increased demand may drive local governments to adjust zoning laws and promote sustainable practices in new projects. As a result, prolonged drought conditions can reshape the area's landscape and influence future development trends.	Increased
Earthquake	Rising temperatures can lead to glacial melting, which affects pressure on tectonic plates and	Earthquakes can significantly alter population patterns by prompting residents to leave for	Earthquakes can alter land use and development by leading to changes in zoning and building	Stayed the same

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	may trigger seismic activity through isostatic rebound. In addition, increased rainfall and flooding can erode soils, weakening structural integrity and heightening vulnerability during earthquakes. Although the direct links between climate change and earthquakes are still under investigation, environmental effects may impact the region's seismic risk.	safer areas after a seismic event. This migration can lead to changes in population density and attract new residents and businesses during the rebuilding process. The perception of the area as a safe place to live may shift, impacting long-term demographics, as some residents return to rebuild while others relocate permanently.	codes. After an earthquake, damaged areas might be rezoned for different uses, and development may accelerate in certain neighborhoods.	
Extreme Heat	Climate change significantly impacts extreme heat by increasing the frequency and intensity of heat waves. Rising global temperatures lead to longer and hotter summers, affecting residents and local infrastructure while heightening health risks, especially for vulnerable populations. Urban heat islands from reduced vegetation and extensive pavement further amplify these effects.	By causing residents to relocate due to damaged homes or safety concerns. Some may move to areas perceived as safer or seek better job opportunities elsewhere. The economic impact and infrastructure damage can also make certain neighborhoods less desirable, leading to shifts in demographics and the socioeconomic landscape as new residents with different backgrounds move in.	Rising temperatures may lead urban planners to adopt heat mitigation strategies, such as increasing green spaces and using reflective materials. Zoning regulations might shift to promote mixed-use developments that enhance walkability and reduce vehicle reliance during peak heat. As concerns about heat-related health risks grow, there may be greater demand for improvements like shaded sidewalks and cooling centers, influencing future development toward resilience and sustainability.	Increased
Extreme Cold	By increasing the intensity of winter storms. Higher atmospheric temperatures allow for more moisture, resulting in heavier snowfall and potentially lower temperatures during these events. In addition, fluctuations in weather patterns may disrupt	By driving some residents to relocate to warmer areas. Harsh winters can hinder economic activities and deter new residents and businesses, influencing housing demand and the attractiveness of certain neighborhoods. This may	Extreme cold can impact land use and development by shifting priorities toward indoor facilities like shopping centers and community spaces, as outdoor activities are curtailed. Developers may focus on energy-efficient designs to cope with	Increased

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	seasonal cycles, leading to unpredictable periods of extreme cold mixed with warmer spells.	disproportionately affect lower-income families, leading to changes in demographics and socioeconomic stratification in the community.	harsh winter conditions, which can lead to increased construction costs and adjusted project timelines.	
Flooding	Higher temperatures increase the frequency and intensity of extreme weather events and alter precipitation patterns. They lead to more intense rainstorms and accelerated snowmelt from nearby mountains, raising water levels in rivers and streams. This combination raises the risk of flooding, especially in areas with inadequate drainage and urban development in flood-prone zones, heightening the potential for damage to homes and infrastructure.	Flooding can significantly alter population patterns by displacing residents from affected areas, leading them to seek shelter elsewhere. This may cause a population decline where flooding occurs, as individuals might hesitate to return due to ongoing risks or property damage. As neighborhoods become less desirable, people may migrate to safer areas, changing demographic trends and putting pressure on housing in those regions. Over time, these shifts can influence urban planning and development, as local governments address flooding risks and changing population needs.	By making some areas unsuitable for construction due to flood risks, planners may prioritize higher ground and impose stricter zoning laws, such as requiring elevated structures. This results in a more resilient urban landscape but may also limit growth and raise property values in safer areas.	Decreased
Landslide/ Slope Failure	Climate change increases the risk of landslides through heavier rainfall and temperature fluctuations. Intense rain saturates soil, destabilizing slopes, while freeze–thaw cycles weaken the ground. Changes in vegetation can also reduce stability, leading to a higher potential for landslides.	Landslides and slope failures can impact population patterns by making some areas unsafe, leading to displacement and lower property values. This prompts residents to move to safer regions, thereby increasing density in more stable areas. Concerns about future landslides may also deter newcomers from	Landslides and slope failures can impact land use and development by rendering certain areas unsafe for construction. This often results in stricter zoning laws, pushing developers to focus on more stable regions. Consequently, property values may decline in affected areas, and infrastructure investments shift to increase	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
		high-risk zones, shaping long-term demographic trends.	safety, ultimately guiding growth toward safer locations.	
Radon	Climate change can affect radon levels by altering soil temperatures and moisture conditions. Higher temperatures may increase radon emissions from the ground, while heavy rainfall can change groundwater and soil saturation, impacting radon migration into buildings.	Radon exposure can influence population patterns as increased health awareness may drive families to move away from areas with high radon levels. This shift could particularly affect vulnerable groups, changing demographics and demand in the housing market. Homes with lower radon levels may become more sought after, and public health campaigns can encourage community action, making previously undesirable areas more attractive once mitigation measures are implemented.	Radon can impact land use and development by necessitating site assessments and mitigation, which can increase costs. Developers might prioritize areas with lower radon risks and adopt designs that reduce gas infiltration. This awareness may prompt stricter building codes and zoning regulations, influencing where new projects are located and shaping community planning.	Decreased
Heavy Rain	Climate change increases the frequency and intensity of heavy rain, as higher temperatures allow the atmosphere to hold more moisture. This leads to stronger storms, flash flooding, and overwhelmed drainage systems.	Heavy rain can shift population patterns by pushing residents out of flood-prone areas and attracting them to safer neighborhoods. Frequent flooding may lead to evacuations and economic disruptions, prompting relocations. Over time, ongoing heavy rains can affect housing demand and community stability, altering the town's population distribution.	Need for adequate stormwater systems in new areas. Heavy rain can impact land use and development by altering zoning regulations to address flood risks. Previously safe areas might be deemed unsuitable for development, pushing growth to higher ground. There may also be a shift toward green infrastructure and improved drainage systems, ultimately transforming the urban landscape to enhance flood resilience.	Increased
High Wind	Climate change affects high winds by altering atmospheric patterns and increasing extreme weather events. Rising	High winds can alter population patterns by making certain areas less desirable. Frequent damage may drive residents to safer	Buildings need to meet building code standards to withstand expected wind events.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	temperatures may lead to more substantial, unpredictable winds and more frequent thunderstorms, posing risks to infrastructure and air quality.	neighborhoods, deter newcomers, and slow growth in affected regions.	High winds can affect land use and development by necessitating stronger building codes and wind-resistant designs, which may raise construction costs. Areas prone to wind damage might see decreased property values, leading to reduced investment. In addition, high winds can cause erosion and harm vegetation, prompting town planners to prioritize open spaces and green infrastructure, ultimately altering development strategies.	
Lightning	Climate change increases temperatures and alters precipitation, leading to more intense thunderstorms and frequent lightning strikes. Urbanization can enhance this effect, posing risks to public safety and infrastructure.	Lightning can influence population patterns by causing property damage and wildfires, leading some residents to relocate. Areas with higher lightning activity may deter new residents, while safer locations could increase migration as people seek protection from severe weather.	Lightning can impact land use and development by increasing risks that require careful planning. Higher insurance costs may deter developers, while infrastructure must include safety measures, such as lightning rods. As climate change causes more intense storms, urban planners may adapt zoning and building codes to enhance resilience, thereby influencing the town's growth.	Increased
Severe Winter Weather	Climate change impacts heavy snow and blizzards by altering precipitation patterns. Higher temperatures can lead to more rain than snow, affecting snowpack levels—additionally, increased storm intensity results in heavier, more unpredictable snowfall.	Increased population equals an increased number of people needing to get to work and quicker snow removal. Heavy snow or blizzards can impact population patterns by influencing where people live and work. Transportation disruptions may lead residents to seek housing closer to jobs, increasing	Need to maintain the capacity to plow current and future town roads. Heavy snow and blizzards can influence land use and development by necessitating infrastructure improvements, such as enhanced snow removal and drainage. Planners may prioritize areas more affected by snow for	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
		density in some areas while depopulating others. Families might also avoid regions with frequent heavy snowfall, shifting demand to milder areas. Over time, these trends can alter community demographics and economic activity, prompting adjustments in town planning and resource allocation.	development, while frequent blizzards could deter growth in certain neighborhoods, pushing developers to seek safer locations. Over time, these changes can alter population density and reshape the urban landscape.	
Tornado	Climate change may increase the frequency and intensity of tornadoes. Higher temperatures lead to more moisture in the air, creating conditions for severe thunderstorms. Changes in wind patterns and precipitation can also heighten tornado risks, resulting in more destructive storms and greater threats to infrastructure and communities.	Tornadoes can influence population patterns by prompting residents to move to safer areas after damage occurs. This can decrease density in affected neighborhoods while increasing the demand for housing in safer regions. New residents may also move in for recovery opportunities, altering demographics. Over time, repeated tornado threats might push long-term residents to areas with better disaster preparedness, reshaping the town's population distribution.	Tornadoes can significantly alter land use and development by leading to stricter construction codes and zoning laws for resilience. Communities may invest in tornado shelters, relocate critical facilities away from high-risk areas, and create open spaces for emergency response, all while promoting economic development through sustainable practices.	Increased
Wildfire	By raising temperatures and creating drier conditions, prolonged droughts lead to more dry vegetation, which serves as fuel for fires. Erratic seasons extend the growing period, while more lightning strikes can ignite wildfires. These factors heighten the	Displaced individuals often seek safer areas, shifting demographics, while declining property values might deter newcomers. Conversely, some may be drawn to rebuilding efforts, impacting long-term growth and community dynamics.	Recovery efforts often focus on resilient infrastructure and green spaces, leading to stricter building codes and encouraging development in safer areas. As wildfires increase with climate change, adapting land use is vital for community resilience.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	threat to ecosystems and community safety.			
Dam Failure	Climate change raises the risk of dam failure by causing heavier rainfall and rapid snowmelt. These changes can overwhelm dams and compromise their integrity, highlighting the need for urgent safety assessments and upgrades to protect communities downstream.	Dam failure tornadoes can impact population patterns by displacing residents and altering demographics. Evacuations can lead to an influx in safer areas, while destruction may deter new residents and contribute to population decline. Fear of future disasters may also prompt remaining individuals to relocate, changing the community's composition and affecting population density and economic activity.	Dam failure can reshape land use and development by making areas prone to flooding unsuitable for growth. This may lead planners to focus on safer regions and implement stricter zoning laws to enhance resilience. The emphasis on sustainable practices and flood mitigation can ultimately transform the urban landscape, prioritizing disaster preparedness in future developments.	Increased
Civil Disturbance	Climate change can increase civil disturbances by intensifying environmental stresses and social tensions. Rising temperatures may lead to droughts, wildfires, and poor air quality, particularly affecting vulnerable communities. Resource scarcity, especially water, can spark conflicts and protests. In addition, an influx of migrants from harder-hit areas may strain local resources, further escalating tensions. This cycle of unrest is driven by the impacts of climate change on the environment and community dynamics.	By encouraging residents to move for safety, leading to outflows and new arrivals. These events can reveal social issues, impacting community dynamics, employment, and property values, ultimately reshaping demographics, and social cohesion.	By shifting community priorities toward safety and stability. Developers may hesitate to invest in troubled areas, leading to a focus on public spaces and community centers. Residents might also push for zoning changes favoring low-density housing and community-oriented efforts, prompting a reevaluation of land use strategies.	Increased
Cyberattack	Possible attack on the industry, which is seen as producing	Cyberattacks can change population patterns by eroding	Cyberattacks can impact land use and development by undermining	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	large amounts of greenhouse gases and burning fossil fuels. Climate change can heighten cyberattack risk by increasing vulnerabilities during extreme weather. Disruptions like power outages offer cybercriminals opportunities, but focusing on emergency responses can weaken cybersecurity measures. As organizations adopt new technologies to cope with climate impacts, they may unintentionally introduce additional vulnerabilities.	trust in essential services. Compromised systems may cause residents to leave due to safety concerns, while high-profile incidents can deter businesses, leading to job losses. This perception of vulnerability may also make the town less appealing to newcomers, resulting in demographic shifts and affecting local development.	confidence in public infrastructure. If essential systems are compromised, investors may be discouraged, slowing economic activity. Local governments might also redirect funds to increase cybersecurity rather than new infrastructure, altering development timelines and urban planning priorities. This can significantly reshape the town's growth and land use.	
Hazardous Materials Incident (Transportation & Fixed Facility)	Climate change elevates the risk of hazardous materials incidents by increasing extreme weather events like heavy rain and wildfires. These events can breach storage tanks and heighten material volatility. Vulnerable infrastructure can lead to more spills or accidents, while climate shifts may also introduce new challenges for managing hazardous substances and public health.	By causing evacuations and temporary declines in density. In the long run, unsafe areas may deter new residents, affecting growth and diversity. In addition, negative perceptions can lower property values and economic prospects, leading families to relocate, which impacts local demographics.	Contaminated areas may be designated as hazardous sites, limiting their residential or commercial use and decreasing property values. This can drive developers to seek safer locations, altering growth patterns. Over time, such incidents may lead to new zoning regulations focused on public safety and environmental protection.	Increased
Public Health Epidemic/ Pandemic	By increasing the spread of vector-borne diseases and raising the risk of waterborne illnesses due to flooding or drought. Worsening air quality can also exacerbate respiratory conditions like asthma,	By prompting migration for safety and better healthcare. Vulnerable groups may move to areas with improved services, while economic instability can drive people to seek new employment opportunities. In addition, restrictions like quarantine	By increasing the demand for healthcare facilities like hospitals and clinics. Communities may prioritize green spaces for well-being, leading to adjustments in zoning regulations and potentially fostering higher-density housing	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	especially in vulnerable populations.	measures can limit movement and social interactions, reshaping the community's demographics and impacting local economies.	near essential services for better access during health crises.	
Terrorism	Terroristic activity is sometimes centered around climate change. Climate change impacts terrorism incidents by creating conditions of resource scarcity and social unrest. Increased competition for essential resources, such as water, can fuel tensions, making communities more vulnerable to extremist ideologies. Extreme weather events may disrupt social order and infrastructure, offering terrorist groups opportunities to exploit crises. In addition, climate-driven population displacement can heighten tensions in receiving areas, raising the risk of domestic terrorism. Law enforcement's focus on climate-related challenges can also limit its capacity to address terrorism threats. Ultimately, while climate change may not directly cause terrorism, its effects can create an environment conducive to extremist activities.	Terrorism incidents can alter population patterns by instilling fear and prompting residents to relocate to perceived safer areas, resulting in demographic shifts and potential declines in property values. Some neighborhoods may see an outflow of residents, while others could experience an influx of people seeking refuge from violence. In addition, increased security measures may deter businesses and residents from certain locations, leading to long-term changes in population density and urban development patterns.	Terrorism incidents can lead to significant changes in land use and development by shifting perceptions of safety. Following an attack, areas deemed high risk may see a decline in investment as businesses and residents seek safer locations. This could prompt urban planners to focus on enhancing security features in public and commercial spaces, potentially revising zoning regulations to create buffer zones around critical infrastructure. In addition, fear of future attacks may drive suburbanization, creating more security-conscious communities.	Increased

DRAFT

Additional Public Involvement

Public involvement in Salt Lake City is fostered through various avenues that engage the community and enhance hazard awareness. Community newsletters provide essential information on safety protocols, updates on local events, and resources for residents. Hazard awareness campaigns regularly educate the public about risks and preparedness strategies. In addition, the city invites residents to participate in public meetings and events, ensuring that diverse perspectives are heard and incorporated into planning efforts. Organizations representing underserved and vulnerable populations play a crucial role in advocating for equitable access to resources and information. Furthermore, social media platforms serve as a dynamic tool for circulating notifications and fostering dialogue, allowing residents to stay informed and connected with critical community safety initiatives. The city provided several opportunities for public participation. Figure 1 and Figure 2 display examples of public outreach.

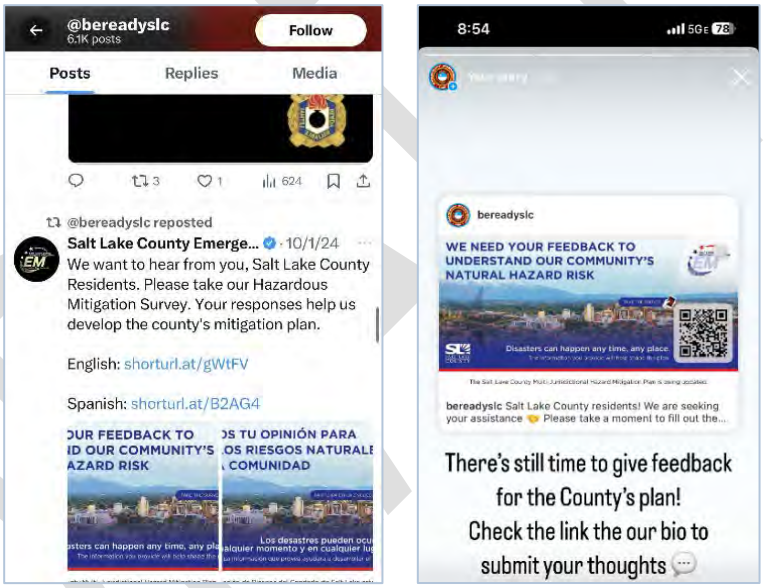


Figure 1: Salt Lake City/BeReadySLC Social Media Post for the Hazard Mitigation Survey (*left*) and Second Post for the Hazard Mitigation Survey (*right*)

Figure 2: Salt Lake City Newsletter Announcement of the Public Survey

Plan Integration

Incorporating the underlying principles of the Hazard Mitigation Plan and its recommendations into other plans is a highly effective and low-cost way to expand their influence. All plan participants will use existing methods and programs to implement hazard mitigation actions where possible. As previously stated, mitigation is most successful when it is incorporated into the day-to-day functions and priorities of government and public service. This plan builds on the momentum developed through previous and related planning efforts and mitigation programs, and it recommends implementing actions where possible through these other program mechanisms. These existing mechanisms include the following:

- Regularity Capabilities
- Administrative Capabilities
- Fiscal Capabilities

Respective planning stakeholders will conduct implementation and incorporation into existing planning mechanisms and will be done through the routine actions of:

- Monitoring other planning/program agendas
- Attending other planning/program meetings
- Participating in other planning processes; and
- Monitoring community budget meetings for other community program opportunities.

DRAFT

The successful implementation of this plan will require constant and vigilant review of existing plans and programs for coordination and multi-objective opportunities that promote a safe, sustainable community. Regular efforts should be made to monitor the progress of mitigation actions implemented through other planning mechanisms. Where appropriate, priority actions should be incorporated into planning updates. Table 14 lists existing planning mechanisms in which the Hazard Mitigation Plan has been integrated.

Table 15 lists the opportunities for integrating elements of this plan into other plans. Some areas of the city have neighborhood-specific plans, including Sugarhouse, City Creek, and Capitol Hill, and they might benefit from including mitigation information from this plan.

Table 14: Integration of Previous Plans by Salt Lake City

Plan	Description
Comprehensive Emergency Management Plan	Framework for the city's disaster response
2025–2029 Consolidated Plan	Roadmap for how the city will allocate fundings for grant programs

Table 15: Opportunities for Integration with Future Plans of Salt Lake City

Plan	Description
General Plan	Overview of the city's long-term goals and initiatives
Open Space Plan	Goals and initiatives to protect public green spaces
Community Preservation Plan	Overview of citywide community preservation efforts
Strategic Plan	Guiding document for how leaders envision the city over the next few years
Urban Forest Action Plan	Strategies related to forest and open space preservation/management
Major Streets Plan	Projects and other infrastructure improvements
Pedestrian and Bicycle Plan	Addressing transportation initiatives
Transit Plan	Transit-oriented goals
Transportation Plan	Planned improvement projects and overall transportation goals for the city
Housing SLC: 2023–2027	Housing goals
Community Wildfire Protection Plan	Describes vulnerabilities and potential actions to reduce wildfire risk.
Stormwater Management Plan	Overview of stormwater management practices
Water Shortage Contingency Plan	Framework for responding to reduced water
Water Conservation Plan	Provides information on the current and future water supply along with water conservation goals
Street Lightning Master Plan	Review of lightning concerns and priorities
Thriving in Place Plan	Addresses the causes, extent, and impacts of displacement in the city

Plan	Description
Salt Lake City Fire Strategic Plan	Strategies and goals that guide the fire department over time
Public Safety Plan	Addresses public safety concerns and provides recommendations
Public Lands Master Plan	Overview of public land initiatives and goals
Cemetery Master Plan	Guides preservation, access, and financial goals
Parks and Recreation Master Plan	Includes information about the park system and needs
Foothills System Master Plan	Provides information on environmental regulation and overall trail system goals
Integrated Pest Management Plan	Management of invasive species and other noxious weeds in the city
Climate and Air Quality Plan	Addresses sustainability initiatives
Impact Fee Facilities Plan	Identify capital improvement projects and funding

Capability Assessment

Local mitigation capabilities are existing authorities, policies, programs, and resources that reduce hazard impacts or could help carry out hazard mitigation activities.

Planning and Regulatory Capabilities

Local mitigation capabilities are existing authorities, policies, programs, and resources that reduce hazard impacts or could help carry out hazard mitigation activities.

Table 16: Assessment of the Planning Capabilities of Salt Lake City

Plan	Does it address hazards? (Y/N)	How can it be used to implement mitigation actions?	When was the last update? When is the next update?
General Plan	Y	Can guide mitigation actions and identify responsible departments or agencies	Yearly
Capital Improvement Plan	Y	Can provide information on funding sources	Multi-year
Climate Change Adaptation Plan	Y	Can guide mitigation actions to be sustainable and actionable over time	Ongoing
Community Wildfire Protection Plan	Y	Community education and outreach, collaboration with local partners (Forest Service, Bureau of Land Management), and direct action through fuel reduction projects and evacuation route signage	Ongoing

DRAFT

Plan	Does it address hazards? (Y/N)	How can it be used to implement mitigation actions?	When was the last update? When is the next update?
Economic Development Plan	Y	Can provide information on funding sources	Yearly
Land Use Plan	Y	Can guide mitigation actions related to open space and development	Yearly
Local Emergency Operations Plan	Y	Provides a framework for response and recovery, which could inform mitigation actions	Yearly
Stormwater Management Plan	Y	Can inform flood or heavy rain mitigation actions	Biyearly
Transportation Plan	Y	Identifies transit problems and areas of concern to guide mitigation actions	Yearly
Substantial Damage Plan	Y	Can provide information on responsible departments or agencies	Yearly
Other? (Describe)			

Table 17: Assessment of the Regulations and Ordinances of Salt Lake City

Regulation/ Ordinance	Does it effectively reduce hazard impacts?	Is it adequately administered and enforced?	When was the last update? When is the next update?
Building Code	Y; Salt Lake City has codes adopted by the state with amendments including the following: • The International Building Code, as promulgated by Title 15A of the Utah State Code (currently IBC 2021) • The International Residential Code, as promulgated by Title 15A of the Utah State Code • The International Fire Code • International Existing Building Code • International Energy Conservation Code • International Fuel Gas Code • National Electrical Code	Y	8/22, Updated Yearly

Regulation/ Ordinance	Does it effectively reduce hazard impacts?	Is it adequately administered and enforced?	When was the last update? When is the next update?
	• The International Mechanical Code • The International Plumbing Code • The International Swimming Pool and Spa Code • Rule R156-56 of the Utah Administrative Code • ICC/MBI 1205-2021 Standard for Off-Site Construction: Inspection and Regulatory Compliance, or its successor • 1997 Uniform Code for the Abatement of Dangerous Buildings. (Ord. 91-24, 2024: Prior code § 5-1-2)		
Flood Insurance Rate Maps (FIRMs)	Y	Y	Last Updated: FIRMs are provided by FEMA. The most recent updates were released in 2016. Next Update: FEMA periodically reviews and updates FIRMs. FEMA determines the schedule for the next update, and it has not been specified.
Floodplain Ordinance	Y	Y	Last Updated**:** Chapter 18.68 of the Salt Lake City Code, which outlines regulations for floodplain hazard protection, was last amended in 2016. Next Update: There are no publicly announced plans for immediate updates. However, the city periodically reviews ordinances to ensure compliance with federal and state regulations.
Subdivision Ordinance	Y	Y	Last Updated: Title 20 of the Salt Lake City Code encompasses the city's subdivision regulations. The most recent amendments were made in 2018.

DRAFT

Regulation/ Ordinance	Does it effectively reduce hazard impacts?	Is it adequately administered and enforced?	When was the last update? When is the next update?
			Next Update: Updates are conducted as needed to address emerging development trends and legal requirements. No specific timeline for the next revision has been announced.
Zoning Ordinance	Y	Y	Last Updated: Title 21A of the Salt Lake City Code contains the zoning ordinances. The city is currently proposing to update its zoning ordinance and zoning map by consolidating up to 27 existing commercial, form-based, and mixed-use zoning districts into six new mixed-use districts. This effort seeks to streamline zoning regulations, clarify language, and integrate missing design standards. Next Update: The proposed zoning consolidation is under review, and public engagement opportunities are available. The timeline for adoption will depend on the review process and public feedback.
Natural Hazard-Specific Ordinance (Stormwater, Steep Slope, Wildfire)	Y	Y	Stormwater management: The Stormwater Control Ordinance, detailed in Division III, Chapter 17.75 of the city code, addresses stormwater discharge and design requirements. **Municode Library** Steep slopes: Regulations concerning development on steep slopes are included in the Foothills and Canyons Overlay Zone (FCOZ), Chapter 19.72 of the Salt Lake County Code. **Municode Library** Wildfire mitigation: The city has established a Citizen Wildfire Mitigation Permit Program, allowing residents to engage in wildfire hazard

DRAFT

Regulation/ Ordinance	Does it effectively reduce hazard impacts?	Is it adequately administered and enforced?	When was the last update? When is the next update?
			reduction activities on adjacent public lands.
Acquisition of Land for Open Space and Public Recreation Use	Y	Y	Last Updated: Salt Lake City actively acquires land for open space and recreational purposes, guided by the Open Space Lands Program. The purpose of the Open Space District is to preserve and enhance public and private open spaces, as stated in Section 21A.32.100 of the city code. **CodeLibrary** Next Update: The city continually assesses opportunities for land acquisition to expand open spaces and recreational areas. Related ordinances are updated as new projects and funding become available.
Prohibition of Building in At-Risk Areas	Y	Y	Last Updated: The city enforces restrictions on development in areas prone to natural hazards, such as floodplains and steep slopes, through specific ordinances and overlay zones. For example, the FCOZ includes provisions to limit disturbance in sensitive areas. **Municode Library** Next Update: Revisions to these regulations are made to address evolving environmental conditions and incorporate best practices in hazard mitigation.
Other? (Describe)	Upsizing sewer lines, retrofit projects for unreinforced masonry buildings		

Administrative and Technical Capabilities

Administrative and technical capabilities include staff and their skills. They also include tools that can help carry out mitigation actions.

DRAFT

Table 18: Assessment of the Administrative Capabilities of Salt Lake City

Administrative Capability	In Place? (Y/N)	Is staffing adequate?	Are staff trained on hazards and mitigation?	Is coordination between agencies and staff effective?
Chief Building Official	Y	Y	Y	Y
Civil Engineer	Y	Y	Y	Y
Community Planner	Y	Y	Y	Y
Emergency Manager	Y	Y	Y – Ongoing progress	Y
Floodplain Administrator	Y	Y	Y	Y
Geographic Information System (GIS) Coordinator	Y	Y	Y	Y
Planning Commission	Y	Y	Y	Y
Fire Safe Council	Y	Y	Y	Y
CERT (Community Emergency Response Team)	Y	N – working toward that goal	Y – In a response component	Y
Active VOAD (Voluntary Agencies Active in Disasters)	Y	Y	Y – Some groups are	Y
Other? (Please describe.)				

Table 19: Assessment of the Technical Capabilities of Salt Lake City

Technical Capability	In Place? (Y/N)	Has it been used to assess/mitigate risk in the past?	How can it be used to assess/mitigate risk in the future?
Mitigation Grant Writing	Y	Housing stability resources for those experiencing homelessness or crisis	Mitigation grant writing is a powerful tool for assessing and mitigating risks by securing funding for targeted projects that enhance community resilience. It facilitates comprehensive risk assessments, supports infrastructure hardening, funds natural hazard defenses, and enables investments in monitoring and early warning systems. Grants also promote public education, sustainable development, and policy improvements, fostering long-term resilience. By addressing emerging challenges like climate adaptation and sustainable growth, communities can proactively reduce vulnerabilities and strengthen preparedness. In addition, the grant process encourages data collection and performance tracking, ensuring

DRAFT

Technical Capability	In Place? (Y/N)	Has it been used to assess/mitigate risk in the past?	How can it be used to assess/mitigate risk in the future?
			that continuous improvement and effective risk management for the future.
Hazard Data and Information	Y	Used to identify areas of concern or priority areas for mitigation projects	Hazard data and information are essential for assessing and mitigating future risks by providing a foundation for informed decision-making. This capability enables communities to identify vulnerabilities, prioritize resources, and model potential hazard scenarios. It supports proactive measures like updating building codes, refining zoning regulations, and planning infrastructure improvements. Access to accurate, real-time data enhances early warning systems, emergency response, and public education efforts. By continuously collecting and analyzing hazard information, communities can adapt to evolving risks, improve resilience, and effectively reduce the impact of future disasters.
GIS	Y	Map overlays with information from flood plains to individual URM units across the city.	Map overlays with information from flood plains to individual Unreinforced Masonry (URM) units across the city.
Mutual Aid Agreements	Y	Agreements in place when an incident occurs, like the Sandhurst Fire	Y
Other? (Please describe.)			

Financial Capabilities

Financial capabilities are the resources to fund mitigation actions. Talking about funding and financial capabilities is important to determine what kinds of projects are feasible, given their cost. Mitigation actions like outreach programs are lower cost and often use staff time and existing budgets. Other actions, such as earthquake retrofits, could require substantial funding from local, state, and federal partners. Partnerships, including those willing to donate land, supplies, in-kind matches, and cash, can be included.

DRAFT

Table 20: Assessment of the Financial Capabilities of Salt Lake City

Funding Resource	In Place? (Y/N)	Has it been used in the past and for what types of activities?	Could it be used to fund future mitigation actions?	Can it be used as the local cost match for a federal grant?
Capital Improvement Project Funding	Y	Infrastructure improvements	Y	Y
General Funds	Y	Operational costs, infrastructure improvements, pay increases for public safety professionals	Y	Y
Hazard Mitigation Grant Program (HMGP/404)	Y	Has not been used yet	Y	N
Building Resilient Infrastructure & Communities (BRIC)	Y	Retrofit the water treatment plant	Y	N
Flood Mitigation Assistance (FMA)	Y	Has not been used yet	Y	N
Public Assistance Mitigation (PA Mitigation/406)	Y	Has not been used yet	Y	N
Community Development Block Grant (CDBG)	Y	Local business improvements	Y	Y
Natural Resources Conservation Services (NRCS) Programs	Y	Has not been used yet	Y	N
U.S. Army Corps (USACE) Programs	Y	Has not been used yet	Y	N
Property, Sales, Income, or Special Purpose Taxes	Y	Infrastructure improvements	Y	Y
Stormwater Utility Fee	Y	Infrastructure management	Y	Y
Fees for Water, Sewer, Gas, or Electric Services	Y	Infrastructure management	Y	Y
Impact Fees from New Development and Redevelopment	Y	Transportation projects, infrastructure improvements	Y	Y
General Obligation or Special Purpose Bonds	Y	Parks and land management	Y	Y
Federal-funded Programs (Please describe)	Y	Affordable housing resources, infrastructure improvements, resource center	Y	N

DRAFT

Funding Resource	In Place? (Y/N)	Has it been used in the past and for what types of activities?	Could it be used to fund future mitigation actions?	Can it be used as the local cost match for a federal grant?
		staffing, family support services,		
Private Sector or Nonprofit Programs	Y	Shelter operations, trails maintenance	Y	N
Other?				

Education and Outreach Capabilities

Education and outreach capabilities are programs and methods that could communicate about and encourage risk reduction. A participant or a community-based partner may run these programs. Partners, especially those who work with underserved communities, can help identify additional education and outreach capabilities.

Table 21: Assessment of the Education and Outreach Capabilities of Salt Lake City

Education and Outreach Capability	In Place? (Y/N)	Does it currently incorporate hazard mitigation?	Could it be used to support mitigation in the future?
Community Newsletter(s)	Y	Y	Y
Hazard Awareness Campaigns (such as Firewise, Storm Ready, Severe Weather Awareness Week, School Programs)	Y	Y	Y
Public Meetings/Events (Please describe.)	Y – Public education outreach campaigns are carried out at multiple large public gatherings yearly.	Y	Y
Emergency Management Listserv	Y	Y	Y
Local News	Y	Y	Y
Distributing Hard Copies of Notices (e.g., public libraries, door-to-door outreach)	Y – Ready-Set-Go	Y	Y
Insurance Disclosures/ Outreach	Y	Y	Y
Organizations that Represent, Advocate for, or Interact with Underserved and Vulnerable Communities (Please describe.)	Y	Y	Y
Social Media (Please describe.)	Y – @BeReadySLC	Y	Y
Other? (Please describe.)			

Opportunities to Expand and/or Improve Capabilities

Actions that can expand and improve existing authorities, plans, policies, and resources for mitigation include budgeting for mitigation actions, passing policies and procedures for mitigation actions, adopting and implementing stricter mitigation regulations, approving mitigation updates, and making additions to existing plans as new needs are recognized. Table 22 lists the opportunities for Salt Lake City.

Table 22: Opportunities to Expand and/or Improve the Capabilities of Salt Lake City

Capability	Opportunity to Expand and/or Improve
Planning and Regulation	The community aims to develop a new Community Wildfire Protection Plan (CWPP) to replace the outdated version. In addition, it seeks to reassess the zoning and planned uses for River Street due to its history of repeated flooding and associated asset losses.
Administrative and Technical	**Current Capacity:** • The **Building Official** is overwhelmed and lacks adequate support staff. • The **Floodplain Manager** would benefit from additional training in floodplain management, including determinations of substantial damage. • The community's **GIS system** relies on outdated data, limiting its utility in planning and hazard analysis. **Opportunities for Improvement:** • **Staffing Needs:** Hire additional staff to support the Building Official, with cross-training in floodplain management to increase capacity. • **Training:** Implement specialized training programs for best practices in floodplain management, hazard mitigation, and zoning. • **GIS Modernization:** Update GIS data to include recent floodplain maps, wildfire risk assessments, and infrastructure inventories to inform decision-making. • **Zoning Review:** Partner with planning experts to revise zoning regulations for River Street and similar areas prone to flooding.
Financial	**Current Capacity:** • Local nonprofits have expressed interest in collaborating on mitigation initiatives and providing volunteer support. **Opportunities for Improvement:** • **Grant Utilization:** Hire grant-writing staff to help the Emergency Manager apply for BRIC and similar programs, leveraging federal funds for mitigation. • **Nonprofit Partnerships:** Engage local nonprofits to provide volunteer labor or in-kind contributions to meet local grant cost-match requirements. • **Local Funding Mechanisms:** Consider establishing special purpose taxes or stormwater utility fees to generate dedicated funding for hazard mitigation projects. • **Private Sector Collaboration:** Partner with local businesses to co-fund projects that enhance resilience in economic development zones like River Street.
Education and Outreach	Education and outreach to vulnerable populations can be expanded. We are working on translating our messages into languages common among our native Spanish speakers and recently arrived populations.

DRAFT

Mitigation Strategy

Mitigation strategies provide proactive measures that are designed to minimize the impacts of hazards on Salt Lake City. Table 23 shows mitigation action alternatives, and Table 24 shows the status of previous mitigation activities. Table 25 is the 2025 mitigation action plan for Salt Lake City.

Table 23: Mitigation Action Alternatives for Salt Lake City

Action	Type of Action	Selected for inclusion in the plan?	If not selected, why not?
Review wildland evacuation zones and make changes if needed. Create additional zones within the city's boundary to respond to all-hazards.		Yes	
Complete fuels mitigation in the wildland–urban interface areas.		Yes	

In reviewing the previous mitigation actions, SLC Public Lands reviewers indicated that fuel mitigation is an ongoing process in the wildland–urban interface (WUI) area. They have documented the actions that have been taken for these locations. However, they indicated that even if fuels have been mitigated in these areas once, that would not be enough to consider the project complete, so such mitigation should be included in the next plan cycle.

Table 24: Status of Prior Mitigation Actions of Salt Lake City[5]

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update
Seismic retrofitting of URM buildings (public, residential, multi-family, and business).	Earthquake	SLC EM	SLC Building Services, SLC FD, UDEM, SLCo EM	Ongoing project.
Conduct 1200 West sewer trunk rehabilitation.	Earthquake, Extreme Cold, Extreme Heat, Flooding (Urban/Flash Flooding), Severe Thunderstorm, Severe Winter Weather	SLCDPU	SLC Engineering, water districts, SLCo Flood Control	Completed.
Conduct the 2300 E-Wilmington Ave–	Flooding (Urban/Flash	SLCDPU	SLC Engineering, water districts,	Ongoing – Planning phase to start

[5] FFSL = Division of Forestry, Fire, and State Lands, NFPA = National Fire Protection Association, SCADA = Supervisory Control and Data Acquisition, SLC = Salt Lake City, SLCDPU = Salt Lake City Department of Public Utilities, SLC EM = Salt Lake City Emergency Management, SLC FD = Salt Lake City Fire Department, SLCo = Salt Lake County, SLCo EM = Salt Lake County Emergency Management, SLC PD = Salt Lake City Police Department, UDEM = Utah Division of Emergency Management, UFA = Unified Fire Authority, URM = unreinforced masonry, USFS = United States Forest Service, WUI = Wildland-Urban Interface.

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update
Yuma St upsizing project.	Flooding), Severe Thunderstorm		SLCo Flood Control	construction in 2026.
Conduct 2100 South capacity upgrades.	Flooding (Urban/Flash Flooding), Severe Thunderstorm	SLCDPU	SLC Engineering, water districts, SLCo Flood Control	Completed.
Conduct critical facility sewer rehab and reliability project.	Earthquake, Extreme Cold, Extreme Heat, Flooding (Urban/Flash Flooding), Severe Thunderstorm, Severe Winter Weather	SLCDPU	SLC Engineering, water districts, SLCo Flood Control	Completed.
Conduct South Temple capacity upgrades.	Flooding (Urban/Flash Flooding), Severe Thunderstorm	SLCDPU	SLC Engineering, water districts, SLCo Flood Control	Ongoing – Starting construction in January 2025.
Upgrade the SLCDPU Admin & Operations Center.	All hazards	SLCDPU	SLC Engineering, SLC Building, SLC EM, SLCo EM, SLC Public Services, SLC PD	Ongoing – In planning phase but 10 years from start of construction.
Conduct SCADA communications and security improvements.	All hazards	SLCDPU	SLC Engineering, SLC FD, SLC PD, SLC EM	Incomplete
Procure and stage items needed for the back-up emergency response equipment staging.	All hazards	SLCDPU	SLC EM, SLC FD, SLC PD, SLCo EM, SLCo Public Works, SLCo Flood Control, water districts	Ongoing – Secured and filled sandbags during 2023 spring runoff. Ongoing as more equipment is expected to be needed.
Mitigate fuels along the east side of East Capitol Blvd to create defensible space.	Wildland Fire	SLC FD	SLC Parks, SLCo EM, UFA, FFSL, SLC EM	Ongoing – Area between Ottinger Hall and Memorial House cleared out in 2022 and trimmed up by Parks Department and volunteers late 2023.
Mitigate fuels along the north side of Northmont Way to create defensible space.	Wildland Fire	SLC FD	SLC Urban Forestry, SLCo EM, UFA, FFSL, SLC EM	Complete – Mitigated 06/10/2024.

DRAFT

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update
Mitigate fuels in home ignition zones on East Tomahawk Dr., Chandler Dr, and Kristianna Circle.	Wildland Fire	SLC FD	UFA, SLCo EM, FFSL, SLC EM	Ongoing – Private residence.
Mow annual rye 25 ft. on either side of the Bonneville Shoreline Trail east of the University of Utah.	Wildland Fire	SLC FD	UFA, University of Utah, FFSL, SLCo EM, SLC EM	Ongoing – University of Utah property.
Mow annual rye and mitigate around the shed north of Rotary Glen on This is the State Park.	Wildland Fire	SLC FD	SLC EM, SLCo EM, UFA, FFSL	Ongoing with Utah State Parks.
Mitigate fuels for ingress/egress along Red Butte Canyon access road.	Wildland Fire	SLC FD	SLC EM, SLCo EM, UFA, FFSL, SLCDPU	Ongoing with SLCDPU.
Mitigate fuels at the mouth of Emigration Canyon under the high-rise buildings.	Wildland Fire	SLC FD	SLC EM, SLCo EM, UFA, FFSL	Incomplete.
Mitigate fuels along the east side of Devonshire Road.	Wildland Fire	SLC FD	SLC Urban Forestry, SLC EM, SLCo EM, UFA, FFSL	Complete: Mitigated 06/10/2024.
Mitigate fuels for defensible space around the City Creek water treatment plant.	Wildland Fire	SLC FD	SLC EM, SLCo EM, UFA, FFSL, SLCDPU	Ongoing with SLCDPU. Area currently under construction for plant upgrades.
Mitigate fuels for ingress/egress along City Creek Canyon access road up to the water treatment plant.	Wildland Fire	SLC FD	SLC EM, SLCo EM, UFA, FFSL	Not completed.
Mitigate fuels and develop maintenance plan for FS lands in Red Butte Canyon outside RNA.	Wildland Fire	SLC FD	SLC EM, SLCo EM, UFA, FFSL	Ongoing with USFS.
Conduct Firewise native seeding for the following open space properties: Popperton, Chandler, and Morris Meadows.	Wildland Fire	SLC FD	SLC EM, SLCo EM, UFA, FFSL	Not completed.

DRAFT

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update
Work on passing a local ordinance to allow homeowners to obtain a permit to conduct mitigation efforts on City property abutting their residential property.	Wildland Fire	SLC FD	SLC EM, SLCo EM, UFA, FFSL, SLC Planning, SLC Urban Forestry	Not completed.
Work with the State Department of Natural Resources to establish NFPA Firewise communities in WUI areas (which carry independent mitigation requirements).	Wildland Fire	SLC FD and FFSL	SLC EM, SLCo EM, UFA	Ongoing – Greater Avenues Community Council is a Firewise community.
Work with homeowners to help them identify risks, such as deteriorating power poles and work with them in finding solutions.	Wildland Fire	SLC EM	SLC FD, SLCo EM, UFA, FFSL	Ongoing – defensible space assessment portal is active and SLC FD is assisting residents with assessments. Multiple completed.
Acquire commercial grade chipper and dump trailer.	All hazards	SLC EM and SLC FD	SLCo EM, UFA, FFSL	Ongoing – SLC Urban Forestry conducts chipper days with the community. UFA completes mitigation projects in Emigration Canyon.

DRAFT

Table 25: 2025 Mitigation Action Plan for Salt Lake City[6]

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Time-frame	Priority	Comments
1	Seismic retrofitting of unreinforced masonry (URM) buildings (public, residential, multi-family, and business).	Earthquake	SLC EM	SLC Building, SLC Planning, SLC FD, SLCo EM	Reduction in the number of injuries and deaths after an earthquake	High	BRIC grant, HMGP grant, SLC general funds, capital improvement funds, Fix the Bricks grant	Long-term	High	The scope includes promoting, enticing, or facilitating the retrofit or rehabilitation of URM buildings that are highly susceptible to severe damage or collapse and/or otherwise threaten the public during ground shake and extreme forces.
2	Conduct the 2300 E-Wilmington Ave.–Yuma St. upsizing project.	Flooding (Urban/Flash Flooding), Severe Thunderstorm	SLCDPU	SLCo Flood Control, SLCo Public Works, SLC Engineering, SLCo EM	High (public health, loss avoidance, flooding protection)	High	SLC general funds, capital improvement funds, BRIC grant, HGMP grant, CDBG grant	Long-term	High	Scope includes the upsizing of the 2300 E-Wilmington Ave-Yuma St. sewer mains for capacity.
3	Upgrade the capacity of 2100 South sewer main.	Flooding (Urban/Flash Flooding), Severe Thunderstorm	SLCDPU	SLCo Flood Control, SLCo Public Works, SLC Engineering, SLCo EM	High (public health, loss avoidance, flooding protection)	High	SLC general funds, capital improvement funds, BRIC grant, HGMP grant, CDBG grant	Long-term	High	Scope includes the upsizing of the 2100 S sewer main for capacity.
4	Conduct South Temple sewer main capacity upgrades.	Flooding (Urban/Flash Flooding), Severe Thunderstorm	SLCDPU	SLCo Flood Control, SLCo Public Works, SLC Engineering, SLCo EM	High (public health, loss avoidance, flooding protection	High	HMGP grant, BRIC grant, capital improvement funds, SLC general funds	Long-term	High	Scope includes the upsizing of the south temple sewer main for capacity.
5	Upgrade the SLCDPU Administrations & Operations Center.	Avalanche, Civil Disturbance, Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide/Slope Failure, Lightning, Public Health Epidemic/Pandemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	SLC EM	SLC Engineering, SLC Building, SLCo EM, SLC Public Services, SLC PD	High (ensure functionality of emergency response and support)	High	SLC general funds, capital improvement funds, SHSP grant	Long-term	High	Scope includes replacing the SLCDPU Administration and Operations Facility and constructing an integrated Dispatch/SCADA/Emergency Response Center.
6	Improve Supervisory Control Data Acquisition (SCADA) communications and security.	Avalanche, Civil Disturbance, Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide/Slope Failure, Lightning, Public Health Epidemic/Pandemic,	SLCDPU	SLC Engineering, SLC Building, SLC EM, SLCo EM, SLC Public Services, SLC PD, SIAC	High (operational emergency response and response prioritization.)	Medium	SHSP grant, capital improvement funds, SLC general funds	Short-term	High	The scope includes planning and building SCADA infrastructure to promote web-based alarms, monitoring capabilities, and communications. Work to include SCADA communications planning, cybersecurity assessment, and security recommendations. Planning recommendations would consist of

[6] BRIC = Building Resilient Infrastructure and Communities, CDBG = Community Development Block Grant, CWDG = Community Wildfire Defense Grant, CWPP = Community Wildfire Protection Plan, FFSL = Division of Forestry, Fire, and State Lands, FMA = Flood Mitigation Assistance, HDPE = High-density polyethylene, HHPD = High Hazard Potential Dam, HMGP = Hazard Mitigation Grant Program, IT = Information Technology, MSD = Municipal Services District, NWS = National Weather Service, SCADA = Supervisory Control and Data Acquisition, SHSP = State Homeland Security Program, SIAC = Statewide Information and Analysis Center, SLC = Salt Lake City, SLCDPU = Salt Lake City Department of Public Utilities, SLC EM = Salt Lake City Emergency Management, SLC FD = Salt Lake City Fire Department, SLCo = Salt Lake County, SLCo EM = Salt Lake County Emergency Management, SLC PD = Salt Lake City Police Department, UDEM = Utah Division of Emergency Management, UDNR = Utah Department of Natural Resources, UFA = Unified Fire Authority, UGRC = Utah Geospatial Resource Center, UGS = Utah Geological Survey, URM = unreinforced masonry, USFS = United States Forest Service, WUI = Wildland-Urban Interface, WUIPPM = Wildland Urban Interface Prevention, Preparedness, and Mitigation Fund.

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Time-frame	Priority	Comments
		Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire								updates of the utility emergency response plan with recommendations for equipment staging locations, facilities, and response planning.
7	Procure and stage items needed for back-up emergency response.	Avalanche, Civil Disturbance, Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide/Slope Failure, Lightning, Public Health Epidemic/Pandemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	SLCDPU	SLC EM, SLC FD, SLC PD, SLCo EM, SLCo Public Works, SLCo Flood Control, water districts	Medium (emergency response time, reduction of infrastructure downtime)	Medium	Capital improvement funds, SLC general funds, SHSP grant, BRIC grant, HMGP grant	Medium term	Low	The scope includes the purchase and staging of portable generators, portable pumps, bypass piping, and HDPE fusing equipment to support collections, distributions, and emergency response in the treatment facility. Work would include the construction of planned staging and operations support facilities throughout the City and County.
8	Mitigate fuels along the east side of East Capitol Blvd to create defensible space.	Wildfire	SLC FD	SLC Parks, SLCo EM, UFA, FFSL, SLC EM	Reduction in damage, injury, and death from wildland fire	Low	CWDG grant, WUIPPM fund, BRIC grant, HMGP grant, SLC general funds	Short-term	Low	
9	Mitigate fuels along the north side of Northmont Way to create defensible space.	Wildfire	SLC FD	Unknown	Reduction in damage, injury, and death from wildland fire	Low	CWDG grant, WUIPPM fund, BRIC grant, HMGP grant, SLC general funds	Short-term	Low	
10	Mitigate fuels in home ignition zones on East Tomahawk Dr., Chandler Dr, and Kristianna Circle.	Wildfire	SLC FD	UFA, SLCo EM, FFSL, SLC EM	Reduction in damage, injury, and death from wildland fire	Low	SLC general funds, capital improvement funds, WUIPPM funds, CWDG grant, BRIC grant, HMGP grant	Short-term	Low	
11	Mow annual rye 25 ft. on either side of the Bonneville Shoreline Trail east of the University of Utah.	Wildfire	SLC FD	UFA, SLCo EM, FFSL, SLC EM	Reduction in damage, injury, and death from wildland fire	Low	SLC general funds, capital improvement funds, WUIPPM funds, CWDG grant, BRIC grant, HMGP grant	Short-term	Low	
12	Mow annual rye and mitigate around the shed north of Rotary Glen. This is a state park.	Wildfire	SLC FD	UFA, SLCo EM, FFSL, SLC EM	Reduction in damage, injury, and death from wildland fire	Low	SLC general funds, capital improvement funds, WUIPPM funds, CWDG grant, BRIC grant, HMGP grant	Short-term	Low	
13	Mitigate fuels for ingress/egress along the Red Butte Canyon access road.	Wildfire	SLC FD	UFA, SLCo EM, FFSL, SLC EM	Reduction in damage, injury, and death from wildland fire	Low	SLC general funds, capital improvement funds, WUIPPM funds, CWDG grant, BRIC grant, HMGP grant own	Short-term	Low	

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Time-frame	Priority	Comments
14	Mitigate fuels at the mouth of Emigration Canyon under the high-rise buildings.	Wildfire	SLC FD	UFA, SLCo EM, FFSL, SLC EM	Reduction in damage, injury, and death from wildland fire	Low	SLC general funds, capital improvement funds, WUIPPM funds, CWDG grant, BRIC grant, HMGP grant	Short-term	Low	
15	Mitigate fuels for defensible space around the City Creek water treatment plant.	Wildfire	SLC FD	UFA, SLCo EM, FFSL, SLC EM	Reduction in damage, injury, and death from wildland fire	Low	SLC general funds, capital improvement funds, WUIPPM funds, CWDG grant, BRIC grant, HMGP grant	Short-term	Low	
16	Mitigate fuels for ingress/egress along the City Creek Canyon access road up to the water treatment plant.	Wildfire	SLC FD	UFA, SLCo EM, FFSL, SLC EM	Reduction in damage, injury, and death from wildland fire	Low	SLC general funds, capital improvement funds, WUIPPM funds, CWDG grant, BRIC grant, HMGP grant	Short-term	Low	
17	Mitigate fuels and develop a maintenance plan for USFS lands in Red Butte Canyon.	Wildfire	SLC FD	UFA, SLCo EM, FFSL, SLC EM	Reduction in damage, injury, and death from wildland fire	Low	SLC general funds, capital improvement funds, WUIPPM funds, CWDG grant, BRIC grant, HMGP grant	Short-term	Low	
18	Conduct Firewise native seeding for the following open space properties: Popperton, Chandler, and Morris Meadows.	Wildfire	SLC FD	UFA, SLCo EM, FFSL, SLC EM	Reduction in damage, injury, and death from wildland fire	Low	SLC general funds, capital improvement funds, WUIPPM funds, CWDG grant, BRIC grant, HMGP grant	Short-term	Low	
19	Work on passing a local ordinance to allow homeowners to obtain a permit to conduct mitigation efforts on city property abutting their residential property.	Wildfire	SLC FD	SLC EM, SLCo EM, UFA, FFSL, SLC Planning, SLC Urban Forestry	Reduction in damage, injury, and death from wildland fire	Low	SLC general funds, capital improvement funds, WUIPPM funds, CWDG grant, BRIC grant, HMGP grant	Short-term	Low	
20	Work with UDNR to establish NFPA Firewise communities in WUI areas (which carry independent mitigation requirements).	Wildfire	SLC FD	UFA, SLCo EM, FFSL, SLC EM	Reduction in damage, injury, and death from wildland fire	Low	SLC general funds, capital improvement funds, WUIPPM funds, CWDG grant, BRIC grant, HMGP grant	Short-term	Low	
21	Work with homeowners to identify risks, such as deteriorating power poles, and find solutions.	Wildfire, High Winds	SLC FD	SLC EM, SLCo EM, UFA, FFSL	Reduction in damage, injury, and death from wildland fire	Medium	SLC general funds, capital improvement funds	Short-term	Medium	
22	Acquire commercial-grade chipper and dump trailer.	Wildfire, High Wind, Heavy Rain, Severe Winter Weather	SLC EM	SLCo EM, UFA, FFSL, SLC FD	Additional equipment will aid in achieving	Low	WUIPPM fund, CWDG grant, BRIC	Short-term	Low	

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Time-frame	Priority	Comments
					multiple mitigation efforts throughout the county and aid in meeting CWPP obligations.		grant, HMGP grant, SLC general funds			
23	Conduct training and awareness activities on communications equipment, tools, and systems.	Avalanche, Civil Disturbance, Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide/Slope Failure, Lightning, Public Health Epidemic/Pandemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	SLC EM	SLC Communications, SLCo EM, SLC FD, SLC PD, SLC Parks, SLCDPU, FFLS, local jurisdictions, UDEM, SIAC	Ongoing training to support collaboration and understanding of hazards impacting SLC.	Low	SLC general funds	Short-term	Medium	This must be done regularly for staffing purposes.
24	Examine current data availability and sharing capabilities, evaluate needs, and identify shortcomings.	Avalanche, Civil Disturbance, Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide/Slope Failure, Lightning, Public Health Epidemic/Pandemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	SLC GIS	SLC EM, SLC FD, SLC PD, SLCo EM, SIAC, UGRC, UDEM, local jurisdictions, water districts, SLCDPU, SLC IT	Opportunity to forge better relationships between departments, increased understanding of needs	Low	SLC general funds, UDEM, SLCo EM	Short-term	Medium	The GIS working group is trying to address these issues by forming a Common Operating Picture (COP).
25	Update and expand data on hazards, critical facilities, and critical infrastructure according to assessed needs.	Avalanche, Civil Disturbance, Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide/Slope Failure, Lightning, Public Health Epidemic/Pandemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	SLC GIS	SLC EM, SLC FD, SLC PD, SLCo EM, SIAC, UGRC, UDEM, local jurisdictions, water districts, SLCDPU	Increased understanding of at-risk areas, better knowledge of critical facility risk	Low	SLC general funds	Short-term	High	New data is added to the GIS layers in conjunction with our other projects.
26	Use GIS to identify facilities and infrastructure at risk.	Avalanche, Civil Disturbance, Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide/Slope Failure, Lightning, Public Health Epidemic/Pandemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	SLC GIS	SLC EM, SLC Planning, SLC PD, SLCDPU, SLCo EM, UDEM	Increased investment in GIS to identify risk and hazards, increased coordination across departments	Low	SLC general funds	Short-term	High	GIS data estimates which buildings will fail and how much debris they will create. Data on URMs was used to create maps, planning tools, and educational material.
27	Assess critical facilities for hazard exposure, structural weaknesses regarding power, communications, equipment resource redundancy, and adequate emergency procedures.	Avalanche, Civil Disturbance, Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide/Slope Failure, Lightning, Public Health Epidemic/Pandemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	SLCDPU	SLC EM, SLC Communications, SLC FD, SLC Planning, SLCo EM, UDEM	Better understanding of local hazards and identified deficiencies	Low	SLC general funds, SHSP grant, BRIC grant, HMGP grant	Short-term	High	Gathered data while participating in various programs, such as the (LEAP) and the Regional Resiliency Assessment Program (RRAP), to use in planning/ response. Plan to implement the use of an internet Protocol (IP) gateway.

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Time-frame	Priority	Comments
28	Implement improvements to address hazards.	Avalanche, Civil Disturbance, Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide/Slope Failure, Lightning, Public Health Epidemic/Pandemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	SLCDPU	SLC EM, SLC FD, SLC PD, SLC Communications, SLCo EM, UDEM	Improved local capabilities to handle different incidents, increased understanding of resources across departments	Low–High (project dependent)	SLC general funds, SHSP grant, BRIC grant, HMGP grant	Short-term	High	Having mobile command center capabilities. Keep 96-hour supplies and equipment in various key locations for rapid access after an event.
29	Compile an inventory of mutual aid agreements and MOUs and identify deficiencies.	Avalanche, Civil Disturbance, Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide/Slope Failure, Lightning, Public Health Epidemic/Pandemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	SLC EM	SLC FD, SLC PD, SLCo EM, SLCDPU, SLC Planning	Established agreements in place in the event of a natural disaster or other large incident that overwhelms local resources	Low	SLC general funds, SLCo EM, UDEM	Short-term	Medium	Putting them in places that can be readily accessed, like the Web-based Emergency Operations Center (WebEOC) library.
30	Continue to provide education regarding all natural hazards through live training and web-based, print, and broadcast media.	Avalanche, Civil Disturbance, Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide/Slope Failure, Lightning, Public Health Epidemic/Pandemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	SLC EM	SLC PD, SLC FD, NWS, UFA, SLCo EM, FFSL, SLC Communications, SLCDPU	Increased local understanding of hazards, improved relationship with residents. Education needs to be provided at least annually to encourage resident engagement. • Avalanche: Share information from Utah Avalanche Center on avalanche conditions and safety tips for those recreating in backcountry • Extreme Cold: Discuss insulation techniques, safe heating practices, and preparing vehicles for winter conditions. • Landslide/Slope Failure: Inform residents on recognizing warning signs and stabilizing slopes with vegetation.	Low	SLC general funds, BRIC grant, NWS, HMGP grant	Short-term	Medium	Added a community preparedness coordinator to staff, and we use several forms of outreach (fairs, workshops, web pages, social media, etc.)

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Time-frame	Priority	Comments
					• Radon: Explain testing procedures and mitigation strategies for radon gas in homes. • Lightning: Share safety tips for indoor and outdoor lightning protection. • Severe Winter Weather, High Wind, Tornado: Educate residents on identifying safe shelter locations and home weatherization.					
31	Incorporate information about the cascading effects of hazards in education programs.	Avalanche, Civil Disturbance, Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide/Slope Failure, Lightning, Public Health Epidemic/Pandemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	SLC EM	SLC FD, SLC PD, UFA, SLCo EM, NWS, FFSL, UDEM, water districts, school districts, NGO partners, SLC Communications, SLCDPU	Increased understanding of local hazards and how they will be mitigated or addressed in operations	Low	SLC general funds	Short-term	Medium	Increasing Hazard awareness through our Fix the Bricks program and URM maps. Promote community participation in programs like SAFE Neighborhoods.
32	Develop education programs to target specific groups, including homeowners, developers, schools, and people with special needs.	Avalanche, Civil Disturbance, Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide/Slope Failure, Lightning, Public Health Epidemic/Pandemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	SLC EM	SLC FD, SLC PD, SLCo EM, UDEM, FFSL, UFA, water districts, school districts, NGO partners, SIAC, SLC Communications, SLCDPU	Improved understanding of those with access and functional needs, and identified capabilities outlined. This may include identifying NGOs or other community-based organizations with which the city can partner with to reach populations with unique needs. Education materials may be updated to suit access and functional needs or the needs of specific groups.	Low	SLC general funds, SLCo EM, UDEM	Short-term	Medium	Via Fix the Bricks and other community programs.
33	Continue to establish and enforce appropriate	Avalanche, Civil Disturbance, Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat,	SLC Planning and Zoning	SLC PD, SLC FD, SLC Parks, SLCo Parks and	Improved public safety, improved	Low	SLC general funds	Short-term	High	Adopted current international building code.

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Time-frame	Priority	Comments
	planning, zoning, and building code ordinances.	Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide/Slope Failure, Lightning, Public Health Epidemic/Pandemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire		Recreation, SLCo EM, UFA, SLCo Flood Control, MSD, SLCo Public Works, SLCDPU	coordination between departments					
34	Complete seismic rehabilitation/retrofitting projects of public buildings at risk.	Earthquake	SLCDPU	SLC Building, SLC Planning and Zoning, SLCDPU, SLC PD, SLC EM, SLC FD, SLC Communications, SLCo EM, UFA, MSD	Improved public safety	High	SLC general funds, capital improvement funds, HMGP grant, BRIC grant	Medium-term	High	
35	Maintain the Hazardous Weather Operations Plan according to StormReady requirements.	Severe Weather, Heavy Rain/Flash Flooding, Wildfire, High Winds	SLC EM	SLCo Public Works, SLCo EM, SLC FD, SLC PD, SLCDPU, SLC Communications	Improved coordination between departments and agencies, increased understanding of local hazards	Low	SLC general funds	Short-term	Medium	
36	Assess existing water flow capabilities, both public and private, and address deficiencies.	Wildfire	SLCDPU	SLC EM, SLC PD, SLC FD, SLC Communications, SLC Parks, SLC Urban Forestry, SLC Planning	Improved infrastructure, reduced maintenance costs	Low	SLC general funds	Short-term	Medium	
37	Continually review the CWPP and make updates as needed.	Wildfire	SLC FD	SLC EM, SLCo EM, UFA, FFSL, UDEM, SLCDPU	Regularly updated document for wildfire management and mitigation, improved coordination between local, state, and federal agencies	Low	SLC general funds, CWDG grant, WUIPPM fund	Short-term	High	
38	Identify structures at risk of earthquake damage through Hazus data and building inspections.	Earthquake	SLCDPU	SLC EM, SLCo EM, UFA, MSD, SLCo Public Works, SLC Communications, SLC PD, SLC FD	Increased understanding of local risks and areas of concern for prioritization	Low	SLC general funds, BRIC grant, HMGP grant	Short-term	High	
39	Provide educational materials to URM home and business owners, mainly marketing Fix the Bricks Program to educate home and business owners about masonry reinforcement.	Earthquake	SLC EM	SLC FD, SLC PD, SLC Parks, SLCo EM, UFA, UDEM, SLCDPU	Improved communication between public and private stakeholders	Low	SLC general funds, Fix the Bricks grant	Short-term	Medium	Fix the Bricks was added to our community outreach materials and publications.

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Time-frame	Priority	Comments
40	Encourage active participation in the NFIP.	Flooding	SLC EM	SLC FD, SLC PD, SLCDPU, SLC Parks, SLC Urban Forestry, SLC Communications, UDEM	Improved coordination between departments	Low	SLC general funds	Short-term	Medium	
41	Determine potential flood impacts and identify areas in need of additional flood control structures.	Flooding, Dam Failure	SLCDPU	SLC EM, SLC FD, SLC PD, SLC Parks, SLC Urban Forestry, UDEM, SLCo Flood Control, water districts	Updated maps and information for personnel to reference in emergency plans. Additional mitigation projects and data needed for grant applications.	Low	SLC general funds, BRIC grant, HMGP grant, capital improvement funds	Short-term	Medium	
42	Address identified problems through construction of debris basins, flood retention ponds, energy dissipaters, and other flood control structures.	Flooding, Dam Failure	SLCDPU	SLC EM, SLC FD, SLC PD, SLCo Flood Control, SLCo EM, UDEM, water districts	Updated infrastructure, reduced repair costs and impacts from hazard events	Low	SLC general funds, capital improvement funds, BRIC grant, HMGP grant	Medium-term	Medium	
43	Provide maintenance, repairs, and improvements to drainage structures, stormwater systems, and flood-control structures.	Flooding	SLCDPU	SLC EM, SLC FD, SLC PD, SLCo EM, SLCo Flood Control, water districts, UDEM	Updated infrastructure, regular maintenance schedule	Low	SLC general funds, capital improvement funds, BRIC grant, HMGP grant	Short-term	High	Unknown
44	Work with experts and communities to develop or update evacuation plans.	Wildfire	SLC EM	UFA, SLCo EM, FFSL, SLCDPU, SLC Communications, SLCo Public Works, SLC FD	Updated information for public safety personnel to reference; real-time information for residents with evacuation zones	Low	SLC general funds, SLCo EM	Short-term	High	Incomplete. SLCo EM to develop evacuation zones and a formal plan.
45	Develop a protocol for working with state and federal agencies in reducing the impact of post-fire debris flow hazard.	Wildfire	SLC FD	SLC PD, SLCo EM, UFA, FFSL, UDEM, water districts, SLCDPU, SLC Communications, SLC EM	Improved coordination between different agencies, increased understanding of risks	Low	SLC general funds, UDEM, FFSL, UFA, SLCo EM	Short-term	Medium	
46	Coordinate with the Utah Geological Survey and other agencies to understand current slope failure threats/potential.	Wildfire, Landslide/Slope Failure, Flooding	SLC EM	SLCDPU, SLC GIS, SLC Communications, SLCo EM, UDEM, FFSL, UFA, UGS	Improved coordination between different agencies	Low	SLC general funds	Short-term	Medium	

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Time-frame	Priority	Comments
47	Continue to implement water-saving devices and practices in public facilities.	Drought, Wildfire, Extreme Heat	SLCDPU	SLC EM, SLC FD, SLC Communications, SLC Planning, SLC Parks, SLC Urban Forestry, SLCo Parks and Recreation	Extends the use of the SLC's water resources	Low	SLC general funds, capital improvement funds, CDBG grant	Short-term	High	SLC policy that public facilities meet Leadership in Energy and Environment Design (LEED) silver standards at a minimum.
48	Repair, maintain, and improve water distribution infrastructure to prevent loss from leakage, breaks, etc.	Drought, Heavy Rain/Flooding, Earthquake, Extreme Heat, Extreme Cold	SLCDPU	SLC EM, SLC FD, SLCo Public Works, SLCo EM	Gives SLC better control over their stormwater system, improving functioning during floods.	Low	SLC general funds, capital improvement funds	Short-term	High	
49	Coordinate public safety water use, such as hydrant testing.	Drought, Extreme Heat, Wildfire, Extreme Cold	SLC FD	SLC EM	Infrastructure improvements, regular checks to ensure resources are available	Low	SLC general funds, capital improvement funds, impact fees	Short-term	High	
50	Provide information on landscaping alternatives for persons subject to green area requirements.	Drought, Heavy Rain/Flooding, Extreme Heat	Salt Lake City Emergency Management	Unknown	Improved coordination between different departments and agencies	Low	SLC general funds, CDBG grant	Short-term	High	
51	Work with county and state agencies to conduct risk studies or engineering assessments to identify the needs for improving dam safety condition rating.	Dam Failure	SLCo EM	Dam Owners, Salt Lake County Public Works Flood Control Engineering, Utah Division of Water Rights Dam Safety Section, Salt Lake City Public Utilities, Local Governments	Reduce potential losses from failure of HHPDs.	Medium	Salt Lake County General Fund, HHPD Grant, HMGP Grant	Medium	Medium	HHPDs with potential impacts on Salt Lake City and a safety condition rating of fair: SLCO Chandler Drive #13, SLCO Shriners #12, SLCO Federal Heights #1a, and SLCO Rotary Glen Park. HHPDs with potential impacts on SLC and a safety condition rating of poor: Mountain Dell.
52	Partner with county and state agencies, as well as neighboring jurisdictions, to rehabilitate or complete other safety projects for high hazard dams based on dam safety reports or risk studies.	Dam Failure	SLCo EM	Dam Owners, Salt Lake County Public Works Flood Control Engineering, Utah Division of Water Rights Dam Safety Section, Salt Lake City Public Utilities, Local Governments	Reduce potential losses from failure of HHPDs.	High	Salt Lake County General Fund, HHPD Grant, HMGP Grant	Long term	High	See above

DRAFT

THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT

Mitigation Success Story

Salt Lake City Department of Public Utilities (SLCDPU) is rehabilitating the Emigration Creek stormwater culvert beneath 1700 South. The culvert and stormwater infrastructure had fallen into disrepair, and a 2023 flooding event exacerbated poor conditions and expedited the project timeline. Unnecessary erosion was occurring along the banks of Emigration Creek and could lead to stormwater contamination. The project goals included the following:

- Slip-lining the existing 60” diameter culvert with a durable-material pipe to extend longevity
- Extending the existing culvert approximately 50 feet downstream and realigning it with the centerline of Emigration Creek to better direct flows away from embankments
- Adding an outlet erosion control structure to dissipate creek flow energy and mitigate the risk of further embankment erosion
- Revegetating and grading existing embankment landscaping
- Using trenchless technology to rehabilitate the existing pipe to minimize the impact on the natural environment

Construction began in October 2024 and was scheduled for completion in the spring of 2025.

DRAFT

DRAFT

THIS PAGE INTENTIONALLY LEFT BLANK

Salt Lake Community College

Jurisdictional Annex to the
Salt Lake County Hazard Mitigation Plan

Month XXXX | Draft X.X

THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT

Table of Contents

Salt Lake Community College Annex 1

Planning Process Contact Information 1
Jurisdiction Profile 1
Date of Founding 1
Location and Description 1
Population and Demographics 2
Brief History 2
Climate 3
Public Services 3
Governing Body 3
Development Trends 3
Jurisdiction-Specific Hazards and Risk 4
Hazard Event History 7
National Flood Insurance Program Summary 9
Jurisdiction-Specific Vulnerabilities and Impacts 9
Jurisdiction-Specific Changes in Vulnerability 29
Additional Public Involvement 38
Plan Integration 38
Capability Assessment 39
Planning and Regulatory Capabilities 39
Administrative and Technical Capabilities 41
Financial Capabilities 42
Education and Outreach Capabilities 43
Opportunities to Expand and/or Improve Capabilities 44
Mitigation Strategy 45

DRAFT

List of Figures

Figure 1: Locations of Salt Lake Community College Campuses 2

List of Tables

Table 1: Contact Information for the Salt Lake Community College 1
Table 2: Participant List for the Salt Lake Community College 1
Table 3: Calculated Priority Risk Index Values for Salt Lake Community College 4
Table 4: Criteria for the Calculated Priority Risk Index 5
Table 5: Characteristics and Hazard Considerations at Salt Lake Community College Campuses 7
Table 6: History of Hazard Events in Salt Lake Community College by Campus 8
Table 7: History of Hazard Events in Salt Lake County 9
Table 8: Jurisdiction-Specific Vulnerabilities and Impacts of Salt Lake Community College 9
Table 9: Jurisdiction-Specific Changes in Vulnerability for Salt Lake Community College 30
Table 10: Integration of Previous Plans by Salt Lake Community College 38
Table 11: Opportunities for Integration with Future Plans for Salt Lake Community College 39
Table 12: Assessment of the Planning Capabilities of Salt Lake Community College 39
Table 13: Assessment of the Regulations and Ordinances of Salt Lake Community College 40
Table 14: Assessment of the Administrative Capabilities of Salt Lake Community College 41
Table 15: Assessment of the Technical Capabilities of Salt Lake Community College 42
Table 16: Assessment of the Financial Capabilities of Salt Lake Community College 42
Table 17: Assessment of the Education and Outreach Capabilities of Salt Lake Community College 43
Table 18: Opportunities to Expand and/or Improve the Capabilities of Salt Lake Community College 44
Table 19: Status of Prior Mitigation Actions of Salt Lake Community College 45
Table 20: 2025 Mitigation Action Plan for Salt Lake Community College 47

DRAFT

Salt Lake Community College Annex

To participate in this multi-jurisdictional hazard mitigation plan (MJHMP) update for Salt Lake County (SLCo), the executive cabinet of the Salt Lake Community College (SLCC) promulgated this plan, a copy of which is maintained at the college administrative offices.

Planning Process Contact Information

Table 1 provides information on the point of contact during the updating of the MJHMP.

Table 1: Contact Information for the Salt Lake Community College

Name	Contact Information
John Flynt	**Phone**: 801-957-4963 **email:** john.flynt@slcc.edu

The SLCC has a fully integrated approach to hazard mitigation planning and program implementation. During the 2024 update process, the MJHMP participation roles in Table 2 were recorded.

Table 2: Participant List for the Salt Lake Community College

Name	Title	Jurisdiction
John Flynt	Emergency Manager	Salt Lake Community College

Jurisdiction Profile

Date of Founding

1948

Location and Description

Salt Lake Community College is Utah's largest college, with the most diverse student body. The institution serves over 50,000 students across nine campuses and offers online classes. The locations are indicated with red tabs in Figure 1.

DRAFT

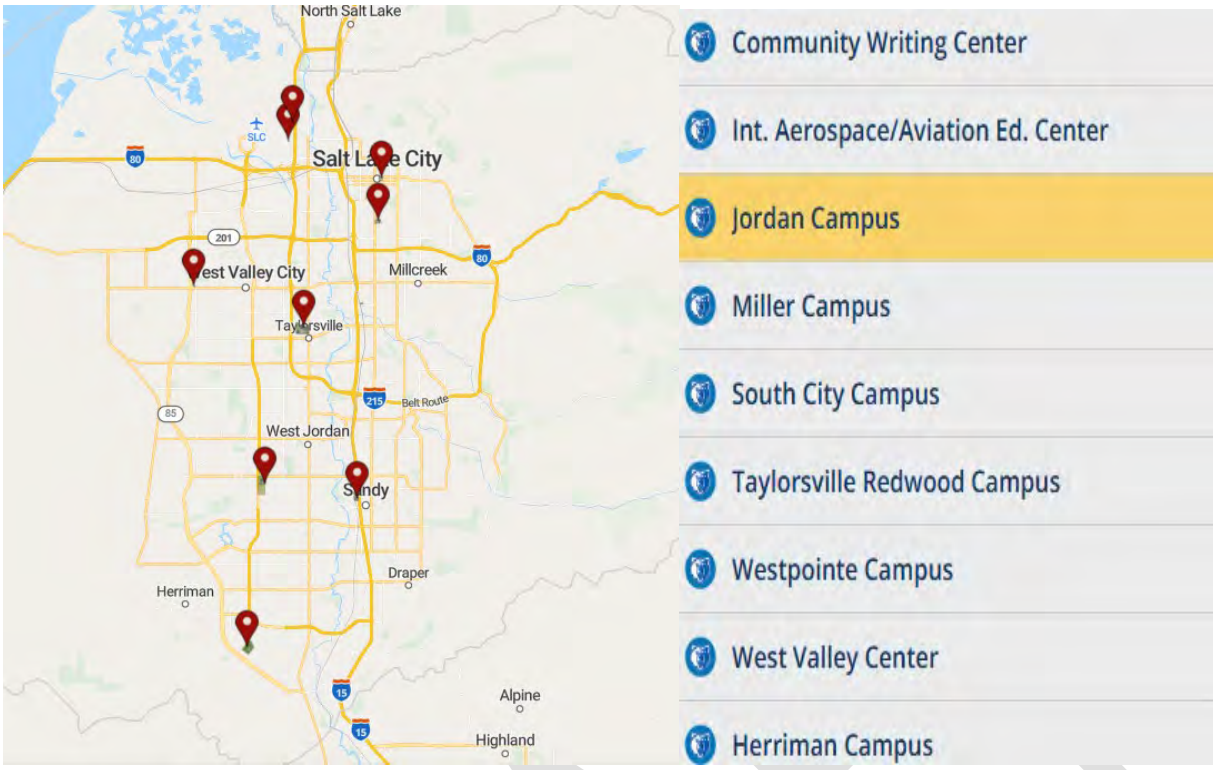


Figure 1: Locations of Salt Lake Community College Campuses[1]

Population and Demographics

SLCC has 50,000 students, including 6,854 full-time students, 29,924 part-time students, and 2,000 technical college students across all campuses.[2] The student population is diverse, with 47% of students being first-generation, 24% identifying as Latino, and 33% identifying as students of color.[3]

Brief History

SLCC has a rich history that dates to its founding in 1948. Established initially as the Salt Lake Area Vocational School, it aimed to provide vocational training to meet the needs of the local workforce. By 1967, the institution had evolved from a vocational school to a community college and opening its doors to a wider array of academic programs to serve both recent high school graduates and adult learners.

In 1978, the name was officially changed to Salt Lake Community College, reflecting its broader mission. Over the decades, SLCC has expanded significantly in terms of programs and facilities to accommodate the growing population of students in SLCo and beyond. The college now offers a variety of associate degrees, certificates, and transfer programs, with multiple campuses and centers throughout the area.

[1] Salt Lake Community College, "Campus Locations." https://map.concept3d.com/?id=726#!ct/11618?s/.
[2] Ibid.
[3] Ibid.

SLCC has also been recognized for its commitment to access and affordability, serving as an important educational resource in the community. Through its various initiatives and partnerships, it continues to adapt to the evolving educational landscape, helping students achieve their academic and career goals.[4]

Climate

SLCo, where SLCC is located, experiences a semi-arid climate characterized by hot, dry summers and cold, snowy winters. The region typically has four seasons, with average summer temperatures reaching the 80s to 90s°F (27–37°C). In comparison, winter temperatures can drop to the 20s to 30s°F (-6 to 4°C). Precipitation is relatively low, with most of it occurring during the spring and early summer months. Snowfall is common in winter, contributing to the area's overall water supply. The surrounding mountains can influence weather patterns, leading to occasional heavy snowfall in the winter months. The climate impacts various aspects of campus life, including potential outdoor activities and commuting conditions.

Public Services

SLCC offers many public services to support student success and enhance the college experience. These include academic advising, where students receive guidance on course selection and degree planning, and financial aid resources to help manage educational costs. Tutoring centers provide additional academic support, while career services help students prepare for the workforce through job placement and internship opportunities. Health and wellness services ensure that students have access to mental and physical health resources, and disability services help create an inclusive environment for all students. In addition, the college libraries offer valuable resources for research and study, and various student organizations foster engagement and leadership.

Governing Body

SLCC's governing body is its Board of Trustees, which is responsible for overseeing the college's administration, setting policies, and ensuring that the institution fulfills its mission to provide quality education and services to students. In addition, SLCC is part of the Utah System of Higher Education, which offers further governance and support at the state level.

Development Trends

A new campus opened in the city of Herriman in 2023. At this shared campus, students have an opportunity to earn an associate degree from SLCC and continue their studies to earn a bachelor's degree from the University of Utah.

Various development trends reflect the institution's commitment to enhancing the learning experience and fostering community engagement. One notable trend is the increasing incorporation of technology into classrooms, propelled by the rapid advancement in digital tools and online learning platforms. In addition, sustainability is strongly emphasized, as seen in the construction of green buildings and the integration of

[4] Utah History Encyclopedia, "Salt Lake Community College." https://www.uen.org/utah_history_encyclopedia/s/SALT_LAKE_COMMUNITY_COLLEGE.shtml.

eco-friendly practices across campuses. Furthermore, SLCC has been actively expanding its outreach programs to serve diverse populations better, ensuring that educational opportunities are accessible to all. These initiatives aim to improve student success rates and adapt to the evolving needs of the community in an ever-changing educational landscape.

Jurisdiction-Specific Hazards and Risk

The Calculated Priority Risk Index (CPRI) is a comprehensive assessment tool for evaluating and prioritizing risks in a given context. It considers various factors, such as probability, impact, and urgency, to determine the level of risk associated with events or situations. The results for each hazard, including its risk factor (RF) value, are shown in Table 3. The results are based on the criteria in Table 4 and the equation that follows it. The CPRI helps organizations and individuals make informed decisions about risk management and mitigation strategies. It provides a systematic approach to identifying and addressing potential issues, allowing for a more efficient allocation of resources and proactive risk prevention. With the CPRI, stakeholders can prioritize their focus on the most critical risks, leading to more effective risk management and, ultimately, better outcomes.

Table 3: Calculated Priority Risk Index Values for Salt Lake Community College

Type of Hazard Event	Probability of Future Events	Spatial Extent	Severity of Life/ Property Impact	Warning Time	Duration	Response Capacity	Risk Factor Value
Avalanche	0	0	0	0	0	0	0
Drought	3	4	2	1	4	2	2.6
Earthquake	3	4	4	4	4	3	3.6
Extreme Heat	3	4	3	1	4	2	2.9
Extreme Cold	2	4	2	1	3	1	2.1
Flooding	3	3	3	3	3	1	2.8
Landslide/ Slope Failure	2	1	2	4	1	2	2
Radon	4	4	2	1	4	2	2.9
Heavy Rain	4	3	2	3	1	1	2.6
High Wind	3	3	2	3	1	2	2.4
Lightning	4	2	2	4	1	1	2.6
Severe Winter Weather	4	3	2	2	2	1	2.6
Tornado	2	2	3	4	1	2	2.4
Wildfire	3	2	2	4	3	1	2.5
Dam Failure	2	2	3	2	2	3	2.4
Civil Disturbance	3	2	3	4	2	2	2.8
Cyberattack	2	3	3	4	3	2	2.7

DRAFT

Type of Hazard Event	Probability of Future Events	Spatial Extent	Severity of Life/ Property Impact	Warning Time	Duration	Response Capacity	Risk Factor Value
Hazardous Materials Incident (Transportation & Fixed Facility)	3	1	2	4	1	1	2.2
Public Health Epidemic/ Pandemic	3	4	3	1	4	1	2.8
Terrorism	2	1	3	4	2	1	2.3

Table 4: Criteria for the Calculated Priority Risk Index

Risk Index Factor	Degree of Risk Level		Criteria	Factor Weight for Degree of Risk Level
Probability of Future Events	1	Unlikely	Less than 1 percent probability of occurrence in the next year or a recurrence interval of greater than every 100 years.	30%
	2	Occasional	1 to 10 percent probability of occurrence in the next year or a recurrence interval of 11 to 100 years.	
	3	Likely	11 to 90 percent probability of occurrence in the next year or a recurrence interval of 1 to 10 years.	
	4	Highly Likely	91 to 100 percent probability of occurrence in the next year or a recurrence interval of less than 1 year.	
Spatial Extent	1	Limited	Less than 10% of the planning area could be impacted.	10%
	2	Small	10%–25% of the planning area could be impacted	
	3	Significant	25%–50% of the planning area could be impacted.	
	4	Extensive	50%–100% of the planning area could be impacted.	
Severity of Life/Property Impact	1	Negligible	Less than 5% of the affected area's critical and non-critical facilities and structures are damaged/destroyed. Only minor property damage and minimal disruption of life. Temporary shutdown of critical facilities.	30%
	2	Limited	More than 5% and less than 25% percent of property in the affected area is damaged/destroyed. Complete shutdown of critical facilities for more than one day but less than one week.	

DRAFT

Risk Index Factor	Degree of Risk Level		Criteria	Factor Weight for Degree of Risk Level
	3	Critical	More than 25% and less than 50% of property in the affected area was damaged/destroyed. Complete shutdown of critical facilities for over a week but less than one month.	
	4	Catastrophic	Over 50% of critical and non-critical facilities and infrastructures in the affected area are damaged/destroyed. Complete shutdown of critical facilities for more than one month.	
Warning Time	1	Self-defined	More than 24 hours	10%
	2	Self-defined	12 to 24 hours.	
	3	Self-defined	6 to 12 hours.	
	4	Self-defined	Less than 6 hours.	
Duration	1	Brief	Up to 6 hours.	10%
	2	Intermediate	Up to one day.	
	3	Extended	Up to one week.	
	4	Prolonged	More than one week.	
Response Capacity	1	High	Significant resources and capability to respond to this kind of event; staff are trained, experienced, and ready.	10%
	2	Medium	Some resources and capability to respond to this kind of staff; some staff may be trained, experienced, and ready while others may need additional support.	
	3	Low	Limited resources and capability to respond to this kind of event; additional staff or staff training needed.	
	4	None	No resources and capability to respond this kind of event; additional outside support would be required.	

RISK FACTOR (RF) EQUATION

RF Value = [(Probability x 0.30) + (Spatial Extent x 0.10) + (Severity of Life/Property Impact x 0.30) + (Warning Time x 0.10) + (Duration x 0.10) + (Response Capacity x 0.10)]

Hazards with an RF value greater than or equal to 2.5 are considered high risk. Those with RF values of 2.0 to 2.4 are considered moderate risk hazards, and those with an RF value less than 2.0 are considered low risk. The highest possible RF value is 4.

DRAFT

Because SLCC has facilities at nine locations around the county, there is some variability in the level of risk from different hazards at each location. Weather hazards such as extreme heat, extreme cold, heavy rain, high wind, lightning, tornado, and severe winter weather are considered equally likely to affect any location. Drought risk is also likely to be similar at all campuses. None is in a Special Flood Hazard Area. Table 5 lists details of the specific campuses.

Table 5: Characteristics and Hazard Considerations at Salt Lake Community College Campuses

Campus	Estimated Maximum Headcount	Estimated Building Value	Unique Hazard Considerations
Airport	81	N/A	Proximity to interstate and airport may increase risk of hazardous materials incidents.
Herriman	N/A	N/A	Proximity to potential wildfire area.
Jordan	777	$50,511,000	Proximity to dam inundation boundary. Proximity to Bangerter Highway may increase risk of hazardous materials transportation incidents.
Miller	166	$58,298,000	Proximity to Interstate and rail traffic may increase risk of hazardous materials incidents.
South City	811	$115,247,000	In potential dam inundation area.
Taylorsville/ Redwood	2,449	$240,897,000	Moderate liquefaction potential, proximity to earthquake faults may increase risk.
West Valley	83	N/A	Proximity to earthquake faults may increase risk.
Westpointe	130	$50,000,000	Proximity to interstate and airport may increase risk of hazardous materials incidents.
Writing Center	N/A	N/A	Proximity to earthquake faults may increase risk.

Hazard Event History

Examining hazard event histories provides valuable insights to inform decision-making and help prioritize resources for risk prevention and response efforts. SLCC has faced several natural hazard events that have impacted its campuses over the years. Notably, on March 18, 2020, a magnitude 5.7 earthquake struck near Salt Lake City, causing minor structural damage and disruptions on the campus. This seismic activity served as a reminder of the region's vulnerability to such events. Table 6 lists the hazard events impacting SLCC since the 2019 plan update, by location and data, as recorded in the Storm Events Database from the National Centers for Environmental Information. It is noteworthy that no hazard events were found for the Sandy, West Jordan, or West Valley campuses.

DRAFT

Table 6: History of Hazard Events in Salt Lake Community College by Campus[5]

Location	Date	Event Type	Deaths	Injuries	Property Damage	Crop Damage
Herriman	05/16/2021	Hail	0	0	$0	$0
Herriman	07/22/2021	Thunderstorm wind	0	0	$0	$0
Herriman	07/03/2023	Thunderstorm wind	0	0	$1,000	$0
Herriman	08/02/2023	Thunderstorm wind	0	0	$0	$0
Herriman	08/02/2023	Thunderstorm wind	0	0	$5,000	$0
Herriman	08/02/2023	Hail	0	0	$0	$0
Herriman	07/13/2024	Thunderstorm wind	0	0	$0	$0
Salt Lake City	06/13/2019	Thunderstorm Wind	0	0	$0	$0
Salt Lake City	07/04/2019	Thunderstorm Wind	0	0	$0	$0
Salt Lake City	08/21/2021	Thunderstorm Wind	0	0	$0	$0
Salt Lake City	08/21/2021	Thunderstorm Wind	0	0	$1,500	$0
Salt Lake City	09/02/2021	Hail	0	0	$0	$0
Salt Lake City	06/28/2022	Thunderstorm Wind	0	0	$0	$0
Salt Lake City	07/17/2022	Thunderstorm Wind	0	0	$0	$0
Salt Lake City	08/01/2022	Thunderstorm Wind	0	0	$0	$0
Salt Lake City	04/18/2023	Hail	0	0	$0	$0
Salt Lake City	07/24/2023	Thunderstorm Wind	0	0	$1,000	$0
Salt Lake City	07/24/2023	Thunderstorm Wind	0	0	$500	$0
Salt Lake City	08/01/2023	Thunderstorm Wind	0	0	$10,000	$0
Salt Lake City	09/30/2023	Thunderstorm Wind	0	0	$0	$0
Salt Lake City	05/28/2024	Thunderstorm Wind	0	0	$0	$0
Salt Lake City	07/13/2024	Thunderstorm Wind	0	0	$50,000	$0
Salt Lake City	08/09/2024	Thunderstorm Wind	0	0	$0	$0
Taylorsville	11/14/2020	Thunderstorm Wind	0	0	$0	$0
Taylorsville	06/03/2023	Funnel Cloud	0	0	$0	$0
Taylorsville	07/03/2023	Thunderstorm wind	0	0	$1,000	$0
Taylorsville	09/30/2023	Thunderstorm Wind	0	0	$0	$0

Since the previous plan, several hazard events have occurred in SLCo, and they are listed in Table 7.

[5] National Centers for Environmental Information, "Storm Events Database." https://www.ncdc.noaa.gov/stormevents/listevents.jsp?eventType=ALL&beginDate_mm=01&beginDate_dd=01&beginDate_yyyy=2019&endDate_mm=09&endDate_dd=30&endDate_yyyy=2024&county=SALT%2BLAKE%3A35&hailfilter=0.00&tornfilter=0&windfilter=000&sort=DT&submitbutton=Search&statefips=49%2CUTAH

Table 7: History of Hazard Events in Salt Lake County[6]

Declaration Date	Event Type	Disaster Number	Deaths	Injuries	Property Damage	Crop Damage
08/14/2021	Fire (Parleys Canyon Fire)	5408	N/A	N/A		N/A
01/12/2021	Severe storm – (straight-line winds)	4578	N/A	N/A	N/A	N/A
07/09/2020	Magna Earthquake	4548	N/A	N/A	N/A	N/A
04/04/2020	Biological (COVID-19)	4525	N/A	N/A	N/A	N/A
03/13/2020	Biological (COVID-19)	3478	N/A	N/A	N/A	N/A

National Flood Insurance Program Summary

SLCC and its campuses do not participate in the National Flood Insurance Program.

Jurisdiction-Specific Vulnerabilities and Impacts

Table 8 provides information on the vulnerable assets in SLCC, including its critical facilities, highlighting the college's vulnerability to identified hazards. It also describes the potential impacts on the community arising from those vulnerabilities. By understanding the risks associated with these assets, local authorities can develop proactive strategies to mitigate vulnerabilities and ensure the safety and functionality of these important assets during hazard events. These data are invaluable for decision-making and prioritizing resources for emergency response and preparedness efforts, ultimately contributing to more effective risk management and greater resilience in the community.

Table 8: Jurisdiction-Specific Vulnerabilities and Impacts of Salt Lake Community College

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
Avalanche	People	*Vulnerability:* Students and faculty at campuses are not directly vulnerable to avalanches. *Impacts:* Students and faculty may be affected by avalanches away from campus. Those engaged in outdoor activities, such as skiing and hiking, are most vulnerable to avalanches. Inexperienced individuals, especially newcomers unfamiliar with the local terrain, face higher risks. Commuters during winter storms may also encounter hazardous conditions, increasing their vulnerability. This combination of inexperience and severe winter weather may contribute to the risks faced by these individuals.

[6] FEMA, "Disaster Declarations for States and Counties." https://www.fema.gov/data-visualization/disaster-declarations-states-and-counties.

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Structures	*Vulnerability:* No Salt Lake Community College (SLCC) structures are vulnerable to avalanches.
	Economic Assets	*Vulnerability:* SLCC's economic assets are not directly vulnerable to avalanches. *Impacts:* SLCC may be indirectly affected by economic disruptions caused by avalanches. Community economic assets like buildings, roads, and outdoor facilities are vulnerable to avalanches. Damage to infrastructure can lead to costly repairs. Transportation access for students and staff may be affected. Emergency response resources may be strained. Local businesses relying on student populations may face decreased activity due to these events.
	Natural, Historic, and Cultural Resources	*Vulnerability:* There is no direct vulnerability to SLCC's natural, historic, and cultural resources from avalanches. *Impacts:* There may be indirect impacts on the community.
	Critical Facilities and Infrastructure	*Vulnerability:* Utility and transportation networks are vulnerable to avalanches. *Impacts:* Avalanches could cause damage to transportation or utility/power networks, potentially disrupting functions at SLCC campuses.
	Campus Activities	*Vulnerability:* Student activities, particularly off-campus, are vulnerable to avalanches. *Impacts:* Off-campus activities that are vulnerable to avalanches include hiking clubs and winter sports events. Participants face risks when venturing into avalanche-prone areas, especially during heavy snowfall. The unpredictability of avalanches and limited safety awareness among community members increase this vulnerability, particularly for events held in high-risk zones or adverse weather.
Drought	People	*Vulnerability:* All students and staff are vulnerable to drought, which can lead to lack of drinking/culinary water and poor air quality. *Impacts:* Droughts can reduce water supplies and water is a critical resource for everyday use, including drinking, cooking, and cleaning. Water may be unavailable, its usage may be restricted, or its costs may increase. Faculty involved in environmental research may face setbacks in their projects. This vulnerability stems from reliance on water availability and rising expenses during droughts.
	Structures	*Vulnerability:* SLCC buildings and landscaping are vulnerable to drought. *Impacts:* Due to their need for water, structures like sports fields and gardens are vulnerable to drought. Older buildings may waste water because of inefficient plumbing, and traditional landscaping can lead to excessive consumption. Adopting sustainable water management strategies is essential to addressing these issues. Soil may contract due to decreased soil moisture, which could damage structural foundations or building walls.
	Economic Assets	*Vulnerability:* Economic assets are vulnerable to increased costs associated with drought. *Impacts:* Maintaining campus landscaping has become costlier and more challenging. Prolonged dry conditions can decrease enrollment,

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		impacting local businesses that serve students. Economic assets like agricultural programs are vulnerable to droughts due to their reliance on water for irrigation. The connection between these assets and environmental conditions highlights the need for sustainable practices and water conservation efforts. Funding for sustainability initiatives may be redirected to address immediate water concerns, hindering long-term projects.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Landscaping is vulnerable to drought, and other relevance to SLCC is minimal. *Impacts:* Landscaping and green spaces rely on consistent watering, making them prone to deterioration during dry periods. Historic structures may weaken due to fluctuating moisture levels, while cultural events focused on environmental stewardship could be disrupted. This vulnerability stems from limited water availability and the rising frequency of droughts, threatening the sustainability of these important assets.
	Critical Facilities and Infrastructure	*Vulnerability:* Water supply systems are vulnerable to drought. *Impacts:* Drought could affect water supply and delivery systems throughout the region. This may limit the availability of water to SLCC for irrigation and other purposes. Irrigation can strain water resources, impacting food safety and laboratory operations if shortages occur. This vulnerability arises from increasing water demand and competition for limited local supplies during drought.
	Campus Activities	*Vulnerability:* Activities at SLCC campuses, such as agricultural programs, landscaping, and recreational sports, are vulnerable to drought. *Impacts:* Agricultural programs need consistent water for crops, while landscaping relies on irrigation, both of which are strained in dry conditions. Recreational sports face participation challenges and facility issues during droughts, putting these activities at risk due to their dependence on limited water resources.
Earthquake	People	*Vulnerability:* All students and staff are vulnerable to earthquakes. *Impacts:* Injuries from falling objects or building collapse are possible. Classes may be canceled. Students may be displaced from homes following an earthquake and unable to attend class. Groups vulnerable to earthquakes include students unfamiliar with the campus and emergency procedures, individuals with disabilities facing evacuation challenges, and faculty managing large crowds. Transient populations, such as international students, may lack awareness of local seismic risks.
	Structures	*Vulnerability:* All SLCC buildings and facilities are vulnerable to damage and disruptions caused by earthquakes. The South City campus has been identified as needing seismic updates due to the historic nature of its buildings. *Impacts:* There is a potential for SLCC buildings to collapse or sustain damage during an earthquake. Such events would disrupt classes, likely causing them to be canceled. Older buildings lacking modern seismic reinforcements are particularly vulnerable to earthquakes. Structures like large lecture halls and gyms, which may have weak foundations or unbraced walls, are at a heightened risk of damage.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		High occupancy in these areas increases the potential for injury during seismic events, highlighting the need for retrofitting structures and improving safety measures.
	Economic Assets	*Vulnerability:* Agency budgets are vulnerable due to the high costs associated with repairing buildings and replacing instructional material. *Impacts:* SLCC campuses face earthquake vulnerability regarding key economic assets, such as classrooms, labs, and libraries. Damage to these structures can lead to costly repairs and the loss of educational resources. In addition, technology infrastructure may be disrupted, impacting student learning. Perceptions of safety could deter enrollment, ultimately affecting the college's financial stability.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Landscaping, art, and library collections are vulnerable to seismic events. *Impacts:* Mature trees and landscaping can be damaged during an earthquake. In addition, unsecured cultural resources, such as library collections and art installations, face risks during seismic events, compounded by the age of buildings and insufficient retrofitting for safety.
	Critical Facilities and Infrastructure	*Vulnerability:* Utility systems such as water, power, communication, as well as transportation systems, are vulnerable to earthquakes. *Impacts:* Compromised essential systems, such as electrical and plumbing systems, can limit the ability of campus facilities to remain operational following an earthquake. Damage to major roads and transit systems, such as Trax, will likely make travel to and from campus difficult.
	Campus Activities	*Vulnerability:* Education and community activities at SLCC are vulnerable to earthquakes. *Impacts:* Daily classes may be canceled. Large lectures, events, and other campus activities at SLCC are vulnerable to earthquakes due to high attendance in confined spaces, which complicates evacuations. The risk of structural damage and falling objects can lead to injuries. Many individuals may lack preparedness and awareness, thus increasing their vulnerability during earthquakes.
Extreme Heat	People	*Vulnerability:* Students and staff are vulnerable to the effects of extreme heat, which can affect the entire region. Individuals with underlying health issues, such as respiratory or cardiovascular conditions, are vulnerable to additional health complications. *Impacts:* Extreme heat can lead to heat-related illnesses such as heat exhaustion, heat stroke, and dehydration. Those who lack adequate air conditioning, shade, and hydration are particularly at risk. Attendees at outdoor events are also at risk. Groups vulnerable to extreme heat include students in older homes without air conditioning. International students may struggle with coping strategies, while outdoor workers and students without shade or hydration face higher risks. These factors underscore the need for better support during heat waves.
	Structures	*Vulnerability:* SLCC heating, ventilation, and air conditioning (HVAC) and power systems are vulnerable to the effects of extreme heat.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		Impacts: Structures at SLCC are vulnerable to extreme heat, especially those with large glass windows and poor insulation, which can create uncomfortable temperatures. Older buildings lacking modern climate control and those without shade in open areas absorb excess heat. Dark roofing materials also contribute to heat retention, posing health risks to students and staff during heat waves. Increased heat can strain cooling systems and may lead to outages.
	Economic Assets	*Vulnerability:* Economic assets are vulnerable to increased costs associated with extreme heat. *Impacts:* Extreme heat poses risks to economic assets at SLCC campuses. Buildings with cooling systems face higher energy costs, while outdoor facilities, such as sports fields, may become unusable. In addition, extreme heat can deter potential students from attending, impacting enrollment and local economies. Faculty and staff may experience decreased productivity and absenteeism due to heat-related health issues. These challenges underscore the need for strategic planning to safeguard campus assets.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Air and water quality may be reduced due to extreme heat. *Impacts:* Landscaping and trees may become stress-damaged, while historic structures can deteriorate without modern climate control. Extreme heat can contribute to an increase in evaporation rates, reducing water availability for agriculture, recreation, and culinary use. It can also exacerbate the effects of drought and increase wildfire risk. Additionally, extreme heat can increase ozone levels, which can impact respiratory health.
	Critical Facilities and Infrastructure	*Vulnerability:* Power and transportation systems are vulnerable to extreme heat. *Impacts:* Extreme heat can increase demand for power resources and has contributed to widespread power outages. Heat can cause roads to buckle and may cause road closures for emergency repairs, which may disrupt transportation to and from schools. Extreme heat can also raise the risk of wildfires as vegetation dries out, allowing fires to ignite and spread more rapidly. Furthermore, extreme heat can exacerbate drought conditions. The increased demand on healthcare services may strain resources.
	Campus Activities	*Vulnerability:* Sports, recreation, and outdoor activities at SLCC are vulnerable to extreme heat. *Impacts:* During outdoor sports, games, and events, exposure to high temperatures increases the risk of heat-related illnesses, especially at midday. Some events may be canceled, limiting student engagement. Classes in non-air-conditioned spaces also contribute to vulnerability. Proper planning is essential to ensure participant safety during extreme heat.
Extreme Cold	People	*Vulnerability:* Students and staff are vulnerable to extreme cold, which can affect all campuses. Vulnerable groups include those who rely on public transportation, individuals with pre-existing health conditions such as respiratory issues, and those with inadequate shelter. *Impacts:* Students and staff could be exposed to cold-related health impacts, particularly if structures have inadequate heating systems or

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		power is disrupted. International students from warmer climates may struggle to adapt to harsh winters. These factors increase the vulnerability of these populations on campus during severe cold weather.
	Structures	*Vulnerability:* Increased demands on HVAC equipment and older buildings at SLCC are vulnerable to extreme cold due to poor insulation, single-pane windows, and outdated heating systems. *Impacts:* Extreme cold can lead to higher energy costs and discomfort for occupants. Possible delays or cancellation of classes may occur. Extreme cold could freeze water pipes, which can burst and cause water damage. Buildings with inadequate weatherproofing allow cold air to enter, while facilities providing services like childcare and health services face increased risks that can affect students and staff during harsh weather.
	Economic Assets	*Vulnerability:* Economic assets are vulnerable to increased costs due to extreme cold. *Impacts:* Increased heat costs and possible emergency repairs to HVAC systems are costly and impact program budgets. Campuses might close temporarily if they are unable to heat buildings. Heating systems, plumbing, and roofing are at risk, as are laboratory and classroom equipment in buildings without proper insulation. Freeze–thaw cycles can damage outdoor structures and landscaping, affecting campus appearance. In addition, class disruptions and reduced attendance during severe weather impact funding and enrollment, emphasizing the need for protective measures.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Landscaping is vulnerable to extreme cold and frost. *Impacts:* Frost can damage trees and vegetation, harming local ecosystems. Historic buildings may deteriorate from freeze–thaw cycles due to inadequate insulation, while cultural resources, such as art installations and outdoor spaces, can become inaccessible in harsh winter conditions. These issues arise from outdated infrastructure and the need for ongoing maintenance to protect these valuable resources.
	Critical Facilities and Infrastructure	*Vulnerability:* Water, power, and transportation systems are vulnerable to disruptions caused by extreme cold. *Impacts:* Classes may not be able to stay in session if power, communication, or heating system outages occur, or due to water damage from burst pipes. Transportation may be disrupted due to icy conditions, affecting commutes and emergency services.
	Campus Activities	*Vulnerability:* Campus events are vulnerable to extreme cold conditions. *Impacts:* Outdoor sports and social events are vulnerable to extreme cold. Harsh temperatures can deter participation and create safety hazards for commuting students. In addition, outdoor facilities may become unusable, limiting student engagement during winter weather.
Flooding and Heavy Rain	People	*Vulnerability:* Students and staff in flood-prone areas are vulnerable. Vulnerable populations include students in low-lying housing, those with disabilities, and individuals without reliable transportation. *Impacts:* Heavy rain or rapid snowmelt can lead to flooding, particularly if drainage systems are overwhelmed. This could affect

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		campus accessibility, disrupt classes, damage facilities, and risk the safety of students and staff. Residents near the campus may be at risk during floods, while those with mobility issues may find evacuation challenging. In addition, reliance on public transit can hinder escape during emergencies, increasing the risk to these groups.
	Structures	*Vulnerability:* Buildings, equipment, and infrastructure in low-lying locations near waterways are at increased risk of flooding. No SLCC facilities were identified within Flood Insurance Rate Map flood zones, but these facilities may be affected by localized flooding following heavy rain. *Impacts:* Buildings and other structures can be damaged by floodwaters. Valuable resources in classrooms and labs could be damaged, while access to transportation could be disrupted, leading to financial losses. The college's dependence on state funding and tuition makes it sensitive to such disruptions, underscoring the need for adequate flood prevention measures.
	Economic Assets	*Vulnerability:* The costs of flood damage to SLCC assets are a concern. *Impacts:* Water damage to structures or open spaces could require costly repairs. Electrical and HVAC systems could be damaged, leading to repair costs. IT equipment and data centers might sustain costly water damage. Flooding may disrupt classes and affect student enrollment, impacting the college's financial stability.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Floodwaters can damage campus open spaces, landscaping, and fields. *Impacts:* Landscaping may be damaged, and areas of school grounds may become inaccessible. Cultural resources, including art and archives, are also at risk of water damage. Inadequate drainage systems and aging infrastructure might not effectively handle severe weather.
	Critical Facilities and Infrastructure	*Vulnerability:* Community lifelines, such as power, communication, and transportation systems, could be disrupted. *Impacts:* Essential utilities in lower areas may be impacted, disrupting campus operations. Power outages, broken water mains, and sewage system failures could make schools unsafe for operation. Flooded roads and bridges can block bus routes, making it challenging for students and staff to commute.
	Campus Activities	*Vulnerability:* Education routines and campus events are vulnerable to flooding. *Impacts:* Outdoor events like sports practices and concerts are particularly vulnerable to flooding. Facilities, dining areas, and libraries located in low-lying areas may be at risk. Flooding can disrupt classes and pose safety hazards, especially for students commuting during bad weather. Combining these factors heightens the risk of significant disruptions from flooding events.
Landslide/ Slope Failure	People	*Vulnerability:* There is minimal vulnerability for SLCC students and staff. *Impacts:* No campuses were identified in high landslide susceptibility areas. Students, staff, and visitors may be vulnerable to the impacts of

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		landslides in other community areas. Students and staff may be displaced from their homes or may face transportation difficulties if landslides occur elsewhere in the community.
	Structures	*Vulnerability:* There is minimal potential for landslides to affect SLCC structures.
	Economic Assets	*Vulnerability:* There is minimal potential for landslides to affect SLCC economic assets.
	Natural, Historic, and Cultural Resources	*Vulnerability:* SLCC assets have minimal vulnerability to landslides.
	Critical Facilities and Infrastructure	*Vulnerability:* Transportation networks and utility systems are vulnerable to landslides. *Impacts:* Landslides elsewhere in the community could affect utility systems, such as power, water, or communication, which could disrupt campus functions. Students and staff may be unable to travel to or from campus if roads or transit systems are damaged.
	Campus Activities	*Vulnerability:* There is minimal risk to SLCC campuses from landslides.
Radon	People	*Vulnerability:* All students and staff are vulnerable to radon exposure. High radon levels have been detected in homes throughout the county and may be present in college structures. Impacts. Long-term radon exposure is the second leading cause of lung cancer. Certain groups at SLCC campuses are especially vulnerable to radon exposure, particularly students and staff who spend long hours in basements or ground-level classrooms where radon can accumulate. Individuals with pre-existing health conditions, such as respiratory issues, are at increased risk. In addition, those unaware of radon risks, such as new students and faculty, may unknowingly expose themselves to this hazardous gas. Promoting education and awareness is essential for reducing these vulnerabilities.
	Structures	*Vulnerability:* All structures may contain radon. *Impacts:* Radon is primarily a health risk, but the condition of structures can contribute to the accumulation of radon gas. Basements and older buildings are vulnerable to the accumulation of radon. Basements can allow radon gas from the soil to seep in, while buildings with foundation cracks and poor ventilation can trap the gas indoors. Ground-floor classrooms and offices may be at risk if they are located in areas with high radon production.
	Economic Assets	*Vulnerability:* Indirect costs related to radon exposure are a concern. *Impacts:* Radon exposure threatens SLCC's economic assets by increasing remediation costs and potentially deterring students and staff, which can reduce enrollment and revenue. Health issues arising from radon can lead to absenteeism and higher healthcare expenses, further straining the college's financial resources and stability.
	Natural, Historic, and	N/A – Radon is primarily a health risk.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Cultural Resources	
	Critical Facilities and Infrastructure	N/A – Radon is primarily a health risk.
	Campus Activities	N/A – Radon is primarily a health risk and not expected to disrupt activities.
High Wind	People	*Vulnerability:* All students and staff are vulnerable to high winds, which can occur over a large area and may affect multiple campuses. The Herriman campus is particularly vulnerable to high winds. *Impacts:* Students or staff could be injured by blowing debris or falling tree limbs. Classes may be canceled. Similarly, those with mobility challenges—such as individuals using wheelchairs or those who might have difficulty navigating uneven surfaces—can find it particularly difficult to seek shelter or respond to sudden gusts. In addition, maintenance staff and outdoor workers may be exposed to the elements without adequate protection, heightening their risk during severe weather conditions. Understanding these vulnerabilities is crucial for developing effective safety strategies on campus during high wind events.
	Structures	*Vulnerability:* All campus facilities are vulnerable to high winds, with the Herriman campus facing a higher risk. *Impacts:* High winds can damage roofs, fencing, and break windows. The Herriman campus had an entrance vestibule that needed replacing due to the impacts of high wind. Buildings with large, flat roofs and/or exposed façades, such as gymnasiums and auditoriums, tend to catch wind more quickly, leading to increased pressure and potential structural failure. In addition, older buildings might not meet current wind resistance standards, making them more susceptible to damage during severe weather events. The arrangement of trees and landscaping can also impact wind flow, potentially directing turbulent winds toward specific structures and further increasing risk. Understanding these vulnerabilities is crucial for ensuring the safety and integrity of the college's infrastructure during high wind scenarios.
	Economic Assets	*Vulnerability:* Economic assets are vulnerable to costs associated with high wind damage. *Impacts:* Physical damage to structures and contents can have significant budget impacts. Outdoor facilities, such as picnic areas, sports equipment, and temporary structures, like tents, are at risk due to their lightweight construction and exposure to the elements. Mature trees and landscaping elements can be damaged by strong gusts, leading to potential property damage and increased maintenance costs. Signage that is not firmly anchored or designed to withstand severe weather can be dislodged or destroyed, creating safety hazards and requiring costly replacement.
	Natural, Historic, and Cultural Resources	Vulnerabilities: Mature trees and landscaping are vulnerable to high winds. *Impacts:* High winds can uproot plants and cause substantial damage to the campus environment. Additionally, cultural resources, such as

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		outdoor art installations, can be compromised, leading to physical loss and cultural degradation.
	Critical Facilities and Infrastructure	*Vulnerability:* Utility systems and transportation networks are vulnerable to high winds. *Impacts:* Damaged power lines and communication equipment may interrupt emergency communications and both in-person and online learning. School buses may be delayed due to fallen debris or road closures. Transportation disruptions can make it difficult for students or staff to travel to class. Classes may be canceled or moved online, impacting the academic calendar.
	Campus Activities	*Vulnerability:* Activities, such as outdoor concerts, sporting events, and fairs, are vulnerable to high winds. *Impacts:* Outdoor events may be delayed or canceled. These events often feature large tents, stages, and equipment that strong gusts can easily affect. The expansive fields and courtyards on campus expose participants to unpredictable wind patterns that can create hazardous conditions. In addition, loose items, such as banners, stands, and personal belongings, can become projectiles in high winds, further jeopardizing the safety of students and staff.
Lightning	People	*Vulnerability:* Lightning can occur anywhere in the region, so all students and staff are vulnerable. *Impacts:* Students or staff can be injured or killed by lightning, particularly during outdoor events. Students engaging in outdoor activities, such as participating in sports or attending events on the lawn, are at greater risk due to their exposure to open areas. Maintenance and facilities staff working outdoors during inclement weather may face increased vulnerability. Other risk factors include a lack of knowledge about severe weather safety and the tendency to underestimate the dangers of lightning.
	Structures	*Vulnerability:* All SLCC facilities are vulnerable to lightning damage. Impacts. Lightning strikes can cause fires, structural damage, or power surges that damage electrical systems. Buildings, such as the administration and gymnasium facilities, are prime targets as they naturally occupy a higher position on the landscape, making them more susceptible to electrical discharge during storms. In addition, structures with metal components, such as steel framing or roofing, conduct electricity more efficiently, increasing the risk of damage during lightning events. Furthermore, geographic features surrounding the campuses, including open areas and limited tree cover, may provide little natural protection against lightning.
	Economic Assets	*Vulnerability:* Structures, computers, and electronic equipment are vulnerable to lightning. *Impacts:* Several economic assets are particularly vulnerable to lightning strikes due to their structural and electrical characteristics. Key assets include outdoor recreational facilities, such as sports fields and amphitheaters, which may lack sufficient grounding systems. In addition, buildings with extensive metal frameworks or those housing sensitive electronic equipment, such as computer labs and libraries, are at risk because lightning can induce powerful surges that can damage electronic circuits and disrupt operations. Vulnerability is

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		exacerbated when these assets are situated in open areas or near tall structures that attract lightning.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Natural resources, such as mature trees and expansive green spaces, are vulnerable to lightning. *Impacts:* Trees can be severely damaged when struck, leading to the loss of biodiversity and altering campus ecosystems. Historic structures, particularly those with tall steeples or conductive metals, may suffer damage from direct hits, resulting in costly repairs and a loss of historical integrity. Cultural resources, including art installations and outdoor sculptures, are at risk, as a lightning strike's extreme heat and energy can damage them. Factors contributing to this vulnerability include the topography of the campuses, which may increase lightning strike frequency in certain areas, and the presence of aging infrastructure, which may lack modern lightning protection systems.
	Critical Facilities and Infrastructure	*Vulnerability:* Power and communication systems are vulnerable to lightning. *Impacts:* Power and communication outages can affect operations for campuses. Such outages may lead campuses to close temporarily.
	Campus Activities	*Vulnerability:* Campus activities are vulnerable to lightning. *Impacts:* Activities, such as outdoor sports, open-air events, and students congregating in unprotected areas like fields or parking lots, are at risk during thunderstorms. The vulnerability lies in the lack of immediate shelter and the tendency for individuals to ignore storm warnings or underestimate the severity of approaching storms. Athletic events, where large groups gather, can attract lightning due to their open settings and the potential for players to remain on the field, even as weather conditions deteriorate. Events may be delayed or canceled.
Severe Winter Weather	People	*Vulnerability:* All students and staff are vulnerable to severe winter weather, which occurs over large areas and could affect all campuses. *Impacts:* Travel to and from campuses may be disrupted. Students who rely on public transportation may face significant difficulties, as delays or cancellations can hinder their ability to reach campus or home safely. Pedestrians are at risk to injury from slips or falls. In addition, individuals with disabilities might have trouble navigating slick or obstructed pathways, making it crucial for the college to maintain accessible routes. Faculty and staff with longer commutes can also be at risk, especially if they are unaware of worsening weather conditions. Furthermore, those experiencing financial hardships may lack the resources to protect themselves from severe winter weather, such as winter gear or reliable vehicles.
	Structures	*Vulnerability:* Minimal damage is expected to SLCC from severe winter weather. *Impacts:* Flat-roofed buildings are prone to snow accumulation and, in rare cases, may risk roof collapse if not cleared. Roof design, material quality, and the age of a building are key factors in how well a structure can withstand heavy snowfall.
	Economic Assets	*Vulnerability:* Economic assets are vulnerable to increased costs associated with severe winter weather.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		Impacts: There is an increased need for facilities/maintenance staff to clear parking lots and sidewalks. Buildings and walkways can suffer from snow accumulation and ice, leading to potential damage and costly repairs. Additionally, there may be increased heating or power costs.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Landscaping and outdoor equipment are vulnerable to severe winter weather. *Impacts:* Among the natural resources, mature trees, particularly those not adapted to heavy snow loads, can suffer from branch breakage or toppling under the weight of accumulated snow. This affects the trees themselves and the habitats and ecosystems they support. In addition, cultural resources, such as public art installations and outdoor classrooms, can be at risk; heavy snow can obscure visibility and limit public access, undermining their educational and aesthetic value.
	Critical Facilities and Infrastructure	*Vulnerability:* Utility networks and roads are vulnerable to damage or outages caused by severe winter weather. *Impacts:* Power lines and communications systems may be disrupted by heavy accumulation of snow or ice, leading to outages. Snow covered roads may inhibit access to campus. Classes may be delayed or canceled.
	Campus Activities	*Vulnerability:* Campus functions and activities are vulnerable to disruptions from severe winter weather. *Impacts:* Activities, such as sports practices, outdoor club meetings, and commencement ceremonies, are at risk due to icy conditions and reduced visibility, which can create unsafe environments for participants and attendees. In addition, logistical operations, such as transportation services for students and staff, may be severely disrupted, leading to challenges in maintaining schedules and ensuring safety. Facilities that are not adequately winterized, such as tents or open-air venues, can also be affected by accumulating snow, raising concerns about structural integrity and accessibility.
Tornado	People	*Vulnerability:* Students and staff are vulnerable to tornadoes, which are rare but could occur anywhere in the county and affect any campus. *Impacts:* Flying debris or collapsed structures could lead to injuries or fatalities. Students engaged in outdoor activities and those unfamiliar with emergency procedures on campus may be at risk. Individuals with mobility challenges could find it difficult to reach safe shelters quickly during a tornado warning. Faculty and staff occupied with their responsibilities may overlook emergency alerts or fail to act promptly. New students or visitors unaware of the campus layout might struggle to navigate to safe areas. As tornadoes can develop rapidly, a lack of preparedness and understanding of available resources adds to the vulnerability of these groups during severe weather events.
	Structures	*Vulnerability:* All SLCC facilities are vulnerable to tornadoes. *Impacts:* Tornadoes can damage or destroy campus buildings. Roofs can be torn off, windows shattered, and buildings leveled. Buildings with large, open spaces—such as gyms and auditoriums—are particularly vulnerable, as their expansive roofs can easily collapse under the pressure of tornado winds. Similarly, older structures that

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		may lack modern engineering standards are at greater risk due to potential weaknesses in their designs or materials.
	Economic Assets	*Vulnerability:* College structures and equipment are vulnerable to costs associated with tornado damage. *Impacts:* Rebuilding or repairing damaged property and equipment can be costly and may affect college budgets. Buildings, especially older structures that might not be built to modern safety standards, are particularly vulnerable, as intense winds and debris can compromise their integrity. Equipment and technology assets, such as computer labs and specialized learning tools, may be damaged or rendered inoperable during a tornado event. In addition, landscaping and outdoor facilities, such as sports fields and recreational areas, can sustain severe damage, impacting student activities and community engagement.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Mature trees and landscaped areas are vulnerable to tornadoes. *Impacts:* Trees and landscaping may experience extensive damage during tornadoes. In addition, cultural resources, including art installations and monuments, can be destroyed or displaced during tornadoes, adversely affecting the community's cultural heritage.
	Critical Facilities and Infrastructure	*Vulnerability:* Utility networks and transportation access are vulnerable to outages and disruptions caused by tornadoes. *Impacts:* Damage to electrical grids, water systems, and communication systems can occur, leading to utility outages. Campuses may close due to these outages. Debris can block roads and hinder transportation to and from school.
	Campus Activities	*Vulnerability:* Outdoor activities, such as sporting events or concerts, are vulnerable to disruptions caused by tornadoes. *Impacts:* Attendees at campus events may be exposed to the elements and at risk during a tornado. Furthermore, indoor activities in large, open spaces, such as lectures in auditoriums or gymnasiums, can present dangers if proper safety protocols are not in place. Outdoor recreation areas, such as sports fields, may be damaged or littered with debris, making them unsafe or temporarily unusable. Events and activities held at the college may be delayed or canceled.
Wildfire	People	*Vulnerability:* The risk to students and staff from wildfires is moderate. *Impacts:* Campuses are unlikely to be directly impacted by wildfire; however, students and staff may be affected by wildfires elsewhere in the region. Students living on campus or in nearby residential areas may not have easy access to transportation in an emergency. Faculty and staff, especially those with impaired mobility, could face challenges evacuating quickly. Low-income community members might lack the resources to prepare their homes or have limited access to information about wildfires and safety protocols. Those with limited English proficiency may struggle to receive critical alerts during wildfire events, increasing their vulnerability. Smoke and poor air quality from wildfires can affect the whole region. Smoke can cause respiratory issues, particularly for those with pre-existing conditions like asthma.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Structures	*Vulnerability:* No college facilities were identified in high wildfire risk areas. *Impacts:* Students or staff with homes near the wildland-urban interface (WUI) area may be affected, and class attendance may be disrupted.
	Economic Assets	*Vulnerability:* SLCC has minimal vulnerability to direct economic impacts from wildfires. *Impacts:* There may be some indirect impacts from the community. Local businesses may be closed, and government resources might be strained. Economic losses might impact class participation or enrollment.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Watershed and air quality are at risk from wildfires. *Impacts:* Smoke pollution can linger for weeks, affecting air quality. Burned landscapes can threaten the contamination of water sources, impacting both natural and cultural resources.
	Critical Facilities and Infrastructure	*Vulnerability:* Utility systems and emergency response capabilities are vulnerable to disruption by wildfires. *Impacts:* Wildfires can cause power outages and disrupt essential services. Classes may be canceled if power, water, or communication systems are disrupted. Evacuations or road closures could impact transportation to and from campuses. Resources devoted to fire response may strain other emergency response capabilities in the community.
	Campus Activities	*Vulnerability:* Campus activities are vulnerable to disruption from wildfires and poor air quality. *Impacts:* Activities, such as outdoor sports practices and large lawn gatherings, may be postponed or canceled due to poor air quality. Maintenance work involving equipment like lawnmowers can generate sparks or heat that may ignite dry vegetation. Such activities should be done with caution in hot, windy conditions.
Dam Failure	People	*Vulnerability:* Students and staff may be vulnerable to injury or other effects resulting from dam failure at the Jordan campus and South City campus. *Impacts:* Two SLCC campuses are within dam failure inundation boundaries. Dam failures can occur suddenly, and those downstream may have little warning. Swift-moving water can cause injury to individuals who do not reach safe areas. Environmental contamination from floodwaters might pose health risks, Students, faculty, and staff with limited mobility, new or inexperienced individuals on campus, and those with specific medical needs may be at risk.
	Structures	*Vulnerability:* Buildings that located in dam inundation areas, including Jordan and South City campuses, are vulnerable to damage from dam failure. *Impacts:* Significant structural and content/equipment losses can result from a dam failure. Older structures may lack modern engineering advancements that enhance flood resilience, making them more susceptible to structural damage during a dam failure.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Economic Assets	*Vulnerability:* Economic losses may result from damage to facilities and educational materials. *Impacts:* The buildings that house classrooms and administrative offices can sustain severe damage from flooding, leading to costly repairs and prolonged downtime. Furthermore, educational resources, including laboratories and libraries, may be damaged or rendered unusable, jeopardizing the academic experience of students and staff.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Outdoor areas at SLCC are vulnerable to damage from dam failure. *Impacts:* Landscaping and outdoor gathering spots may be damaged or destroyed.
	Critical Facilities and Infrastructure	*Vulnerability:* Utility networks and transportation networks are vulnerable to damage from dam failure. *Impacts:* Power, communication, and transportation systems could be damaged by dam failure. College functionality could be disrupted by power outages, communication network outages, or damage to transportation networks. Classes may be delayed or canceled due to outages. Transportation to or from campuses could be difficult for students and staff.
	Campus Activities	*Vulnerability:* Classes, campus events, and recreational activities are vulnerable to disruption from dam failure. *Impacts:* Outdoor events, sports practices, and recreational gatherings can be particularly vulnerable to dam failures. The proximity of specific campuses to dams and water bodies increases the risk of flooding in the event of a breach.
Civil Disturbance	People	College campuses are common locations for activist activities. Sometimes tensions escalate, and participants at rallies or protests can become more aggressive, leading to civil disturbance. Participants are typically the most vulnerable, but staff, students, and pedestrians on campuses could be harmed. Students from marginalized backgrounds, including those from racial or ethnic minorities, low-income families, or individuals with differing political beliefs, may face heightened risks during times of unrest. Their vulnerability can stem from a lack of resources or support systems, fear of retaliation, or potential misinterpretation of their actions during heightened emotions surrounding protests or rallies. Moreover, individuals who may already be experiencing mental health challenges can find themselves in particularly precarious situations, as civil disturbances can amplify feelings of anxiety and isolation.
	Structures	Large gathering areas, open plazas, and aging infrastructure, such as older lecture halls, are often focal points for student activities and events, making them susceptible to overcrowding and tension during protests or civil unrest. Open spaces can amplify noise and chaos, while older buildings may lack adequate security features like surveillance cameras or controlled access points, further increasing vulnerability. In addition, the proximity of these structures to key administrative offices or outdoor areas can create opportunities for disruption and challenge the ability of campus security to manage large crowds effectively.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Economic Assets	Physical infrastructure, such as buildings and equipment, may suffer damage during protests or violent outbursts. In addition, financial assets like tuition revenue can be affected if civil unrest leads to campus closures, disrupting classes and discouraging student enrollment. The presence of students and faculty makes the campus environment particularly susceptible to disturbances, as heightened emotions can escalate quickly in densely populated areas. Finally, institutional reputation is an intangible yet critical asset that can be severely impacted by civil disturbances, influencing future enrollment and community support.
	Natural, Historic, and Cultural Resources	Natural resources, such as gardens, parks, and landscaped areas can be damaged or depleted during unrest, as protesters may disregard property boundaries, leading to soil erosion or loss of flora. Historical buildings and monuments on campus, cherished for their architectural significance and local heritage, face threats from vandalism or destruction, especially in emotionally charged environments. In addition, cultural resources, including art installations and community gathering spaces, may be compromised when crowds become unruly, as these expressions of identity and shared values are often targeted during conflict. The vulnerability of these resources stems not only from their visibility but also from the heightened emotions and tensions that can arise during civil disturbances, creating an environment where respect for these assets may be diminished.
	Critical Facilities and Infrastructure	Administrative buildings, lecture halls, student centers, and recreational facilities are particularly vulnerable to civil disturbances. These areas often attract many individuals, making them prime targets for protests and other forms of civil unrest. The lack of adequate security measures and open-access policies intended to foster community engagement can exacerbate vulnerabilities. High traffic during peak hours can also hinder emergency response efforts, complicating evacuation or containment strategies.
	Campus Activities	Large-scale rallies, protests, and significant social events often attract passionate individuals rallying around specific causes, which can escalate tensions when opposing views are present. In addition, activities involving controversial speakers or politically charged topics tend to incite strong reactions from various groups, heightening the risk of unrest. Factors, such as insufficient security measures, lack of communication among organizers regarding expectations, and the potential for misinformation, can further exacerbate these vulnerabilities.
Cyberattack	People	Students, often new to managing their online security, may lack awareness of phishing schemes or not use strong passwords, making them easy targets. Furthermore, faculty and staff who handle sensitive information may inadvertently expose themselves through unsecured networks or by falling for social engineering tactics. In addition, international students who face language barriers could struggle to identify suspicious online activities or scams, increasing their risk.
	Structures	Vulnerabilities to administrative systems, student information databases, and online learning platforms arise from several factors, such as outdated software, insufficient encryption protocols, and lax access controls that enable unauthorized users to exploit weaknesses

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		in the system. In addition, increasing reliance on remote access tools and unsecured networks can create further entry points for cybercriminals. With a growing number of devices connected to the college's network, the potential for breaches expands, highlighting the need for enhanced cybersecurity measures to safeguard sensitive information and maintain the integrity of academic operations.
	Economic Assets	Sensitive student and employee data, financial records, and research materials are prime targets for malicious actors, as they can lead to identity theft, financial fraud, or ransomware attacks. In addition, the increasing use of online learning platforms and digital communications tools has created multiple entry points for cyber threats. The lack of comprehensive cybersecurity training for staff and students further exacerbates this vulnerability.
	Natural, Historic, and Cultural Resources	Malicious actors seeking to disrupt educational initiatives could target sensitive data on the college's sustainable practices, environmental studies, and conservation projects. In addition, historical archives, digital records of artifacts, and cultural programming resources also might face risks, as breaches could compromise the integrity of these resources and the trust of the community. Factors, such as outdated security protocols, limited cybersecurity training among staff, and the lack of comprehensive disaster recovery plans, contribute to the vulnerability. In addition, cultural organizations managing events may face threats if their systems lack security. Limited resources for smaller organizations further increase this vulnerability.
	Critical Facilities and Infrastructure	Administrative systems, student information databases, and online learning platforms are susceptible due to several factors: the increasing reliance on digital systems for academic operations, software that may lack the latest security updates, and the diverse range of users—from students to faculty—who access these systems, often with varying levels of cybersecurity awareness. In addition, interconnected networks that facilitate communication and resource sharing can create multiple entry points for potential attackers, further exacerbating risk.
	Campus Activities	Activities that involve online registration for events, accessing student information systems, and using campus Wi-Fi networks are prime targets for cybercriminals. Relying on digital platforms for communication and transactions creates opportunities for phishing schemes and data breaches. In addition, the open nature of public Wi-Fi can expose users to eavesdropping and man-in-the-middle attacks, especially when students and staff access sensitive information without adequate cybersecurity measures. The combination of a tech-savvy population and varying levels of cyber awareness among users exacerbates these vulnerabilities.
Hazardous Materials Incident (Transporta-tion & Fixed Facility)	People	Students and staff are vulnerable to hazardous materials incidents at fixed sites or from transportation spills in the vicinity of campuses. There are also small amounts of chemical materials stored on some campuses related to automotive and other classes. Students living on campus might have limited awareness of safety protocols and may lack immediate access to emergency resources. In addition, employees who handle or work near hazardous materials, such as laboratory staff and maintenance workers, may be at greater risk due

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		to prolonged exposure and potential safety lapses. Those with disabilities or medical conditions may face additional challenges during an incident, such as mobility issues that impede evacuation. Moreover, individuals new to the college, including first-year students and staff, may be less familiar with emergency procedures, thus increasing their vulnerability to hazardous situations.
	Structures	Laboratories, for example, are often equipped with various chemicals and materials that, if improperly stored or accidentally mixed, can lead to significant hazards. Maintenance and storage buildings that house cleaning supplies and mechanical fluids are at risk, especially if they lack proper containment measures. Furthermore, older buildings that are not designed with modern safety standards may be more prone to leaks or structural failures. The presence of high-traffic areas near these structures also increases the likelihood of accidental exposure or spills.
	Economic Assets	Physical infrastructure, such as buildings and laboratories, technological equipment for instruction and research, and valuable supplies or materials stored on-site may be vulnerable. This stems from their potential exposure to hazardous chemicals, which can cause structural damage or contamination, rendering them unusable. Furthermore, the presence of students and faculty increases the risk of human exposure to hazardous substances, leading to liability issues and potential loss of income. The interconnectedness of these assets also means that a single incident can have cascading effects, impacting financial stability and resource availability for the college.
	Natural, Historic, and Cultural Resources	Natural resources, such as nearby waterways, which provide habitat for local wildlife, are at risk of contamination from spills or leaks. Historically significant buildings and sites, integral to the community's identity, could suffer damage or degradation, particularly in the event of an emergency response that involves the use of chemicals. In addition, cultural resources, including artifacts and collections housed in campus facilities, may be exposed to harmful substances, compromising their integrity and heritage. The vulnerability of these resources is exacerbated by their location in densely populated areas, where the potential for hazardous incidents is heightened.
	Critical Facilities and Infrastructure	Laboratories, maintenance buildings, and storage facilities for chemicals and equipment may be vulnerable if they are close to areas with high traffic, are near a range of chemicals that might not be adequately contained, and have aging infrastructure that does not comply with the latest safety standards. In addition, the movement of students and personnel in these areas increases the risk of exposure during an incident.
	Campus Activities	Science labs that handle chemicals and biological samples pose significant risks due to the potential for spills or accidental exposure. Maintenance and facilities operations, which often involve cleaning agents and maintenance fluids, can lead to hazardous situations if proper protocols are not strictly followed. Art and photography studios, where solvents and paints are commonly used, also present vulnerabilities, particularly in poorly ventilated areas. The nature of these activities, combined with the presence of students and staff who

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		might not be fully trained in handling hazardous materials, increases the likelihood of incidents occurring.
Public Health Epidemic/ Pandemic	People	Students with pre-existing health conditions, such as asthma or autoimmune diseases, may face heightened risks during outbreaks due to their compromised immune systems. In addition, low-income students often lack access to healthcare resources, making it difficult for them to receive timely vaccinations or treatment. International students can be susceptible due to language barriers and unfamiliarity with local healthcare systems. Lastly, those living in crowded housing or communal settings have a higher risk of rapid disease transmission.
	Structures	Densely populated lecture halls and classrooms can facilitate the rapid spread of pathogens, especially during peak hours for such activity., Communal spaces, such as cafeterias and lounges, pose similar risks, as they involve the sharing of air and surfaces by large groups of people. Furthermore, facilities that lack proper ventilation or are not equipped with advanced filtration systems can exacerbate the transmission of airborne diseases. High-traffic areas, including hallways and entrances, can be hotspots for the spread of viruses, especially if hygiene protocols, such as frequent cleaning and hand sanitation, are not strictly adhered to.
	Economic Assets	One of the most vulnerable assets is the student population, which can experience decreased enrollment due to health concerns or remote learning shifts. In addition, on-campus businesses and services, such as bookstores, dining facilities, and recreational centers, face diminished customer traffic during health crises, adversely impacting revenue. Moreover, the financial stability of SLCC itself can be threatened through reduced state funding and tuition revenues, as public health priorities may redirect resources away from educational institutions. Lastly, infrastructure investments, especially those accommodating large gatherings or in-person events, are at risk due to health regulations and social distancing mandates.
	Natural, Historic, and Cultural Resources	Natural resources, such as the local flora and fauna, can be affected by changes in human activity and pollution during outbreaks, potentially leading to biodiversity loss. Historic resources, including buildings and monuments, may suffer neglect and deterioration when public health measures restrict access and maintenance. In addition, cultural resources, such as community events and educational programs, are at risk of discontinuation or significant alteration, which may lead to a loss of shared identity and communal bonds.
	Critical Facilities and Infrastructure	Key facilities, such as student housing, health services, and dining areas present significant challenges due to high population density and close interactions among individuals. Classrooms and laboratories, where large groups gather for instruction, can facilitate the rapid spread of infectious diseases. These vulnerabilities are exacerbated by the mobility of students, staff, and faculty exposed to various environments. Furthermore, inadequate supply chains for essential medical resources and sanitation products can hinder rapid response efforts, further compromising the safety and well-being of the college community during public health crises.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Campus Activities	Large gatherings, such as orientation events, athletic competitions, and academic seminars, pose significant risks, as they involve many participants in confined spaces, facilitating the spread of infectious diseases. In addition, routine activities like dining in campus cafeterias, using study lounges, and participating in club meetings, can contribute to transmission, especially if social distancing measures and hygiene protocols are not strictly followed. The interconnectedness of the campus community further amplifies this vulnerability, as students, faculty, and staff frequently transition between different environments, increasing the likelihood of contagion across various settings.
Terrorism	People	Students who belong to minority communities or those who are visibly different in terms of race, religion, or sexual orientation can often be targets due to their perceived differences. In addition, international students might face heightened vulnerability as they navigate a new cultural environment and might not fully understand the subtleties of local social dynamics. Furthermore, individuals who are at risk of social isolation or who struggle with mental health issues may be more susceptible to radicalization or manipulation by extremist groups.
	Structures	Buildings which accommodate large crowds and are often situated in open areas, such as lecture halls and gyms, present easier targets for potential attacks. Facades with large windows can be compromised more quickly, exposing occupants to greater risk. Limited security measures, such as inadequate surveillance systems and a lack of controlled access points, also can contribute to their vulnerability.
	Economic Assets	Educational buildings—high-traffic areas filled with students and staff—present enticing targets for those aiming to disrupt academic pursuits and instill fear. Infrastructure, including dormitories, bookstores, and laboratories, can be compromised due to inadequate security measures or a lack of surveillance systems, making them susceptible to attacks.
	Natural, Historic, and Cultural Resources	SLCC campuses host a variety of natural, historic, and cultural resources that are vulnerable to terrorism. These assets include beautiful green spaces, unique architectural structures, and art collections that reflect the community's diverse history and culture. The vulnerability of these resources stems from their accessibility and visibility; open campuses allow easy entry for individuals with malicious intent. In addition, high foot traffic in communal areas makes them attractive targets for acts of violence or vandalism. Although valued for their heritage, historic buildings may lack modern security measures, making them particularly susceptible. Furthermore, cultural artifacts and events, often celebrated and showcased, can serve as symbols of identity, attracting attention from those seeking to disrupt societal harmony.
	Critical Facilities and Infrastructure	Key areas include student centers, administrative buildings, and large auditoriums, where mass gatherings occur, making them attractive targets. In addition, the open campus layout, with multiple access points and limited security during certain hours, increases vulnerability. The reliance on public transportation for student commuting further heightens risk, as it can be a conduit for potential threats.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		Furthermore, the presence of diverse social groups and activities may inadvertently create tensions that malicious actors could exploit.
	Campus Activities	Events, such as large gatherings, sporting events, or concerts often attract significant attention, creating opportunities for malicious actors to exploit crowded environments. The lack of stringent security measures at many events can further increase vulnerabilities, as attendees may be less aware of their surroundings in high-energy atmospheres. In addition, the diverse student and visitor populations and expansive public spaces can complicate monitoring efforts and make it challenging to identify potential threats before they escalate.

Jurisdiction-Specific Changes in Vulnerability

Hazard events can impact communities, infrastructures, and ecosystems. The severity of these impacts can be influenced by climate change, population patterns, and land use developments. Understanding these factors is crucial for SLCC to develop a resilient community and minimize the impacts of hazards. Table 9 displays the unique changes within SLCC and the related effects on each identified hazard affecting SLCC.

DRAFT

Table 9: Jurisdiction-Specific Changes in Vulnerability for Salt Lake Community College

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
Avalanche	Higher temperatures can lead to more rain, destabilizing snowpack and increasing the risk of wet avalanches. In addition, changes in snowfall can lead to denser snow layering on slopes, making them more prone to sliding.	Avalanches can impact Salt Lake Community College (SLCC) enrollment by causing road closures and safety concerns, which may lead students to stay home or defer their studies. Significant damage to campus facilities could lead to a longer-term decrease in enrollment. Conversely, there could be increased interest in programs related to emergency management and outdoor safety as a community response to avalanche risks.	Development on SLCC campuses has not increased the risk of avalanches.	Increased
Drought	Climate change affects drought incidents by altering precipitation patterns and raising temperatures. Warmer weather can lead to longer dry periods and more severe droughts, while changes in rainfall can reduce snowpack in nearby mountains, crucial for summer water supply. Higher temperatures also increase evaporation rates, further straining local water resources.	Droughts can impact SLCC enrollment by driving families to relocate, which may reduce the local student population. Economic challenges can make tuition less affordable, but some may seek retraining in sustainability programs, potentially increasing enrollment in those areas.	The new campus SLCC campus in Herriman, developed in 2023, adds new water demand on the local water system, increasing the risk of drought.	Increased
Earthquake	Rising temperatures can lead to glacial melting, which affects pressure on tectonic plates and may trigger seismic activity through isostatic rebound. In addition, increased rainfall and	Changes in SLCC enrollment because of earthquakes can be notable. A major quake may disrupt campus facilities, leading to temporary closures and decreased enrollment as students	The new 2023 campus in Herriman adds more SLCC buildings that are exposed to earthquake damage, but these new facilities were also built to current building codes, mitigating some of the risk.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	flooding can erode soils, weakening structural integrity and heightening earthquake vulnerability. Although the direct links between climate change and earthquakes are still under investigation, the environmental effects may impact the region's seismic risk.	defer or relocate. Conversely, enrollment might increase as individuals seek education to rebuild their lives and careers after a disaster.		
Extreme Heat	Climate change significantly impacts extreme heat by increasing the frequency and intensity of heat waves. Rising global temperatures lead to longer and hotter summers, affecting residents and local infrastructure while heightening health risks, especially for vulnerable populations. Urban heat islands, resulting from reduced vegetation and extensive pavement, amplify these effects.	Extreme heat can impact SLCC enrollment by discouraging students from attending classes because of discomfort or health concerns. These conditions may deter prospective students from enrolling. In addition, extreme heat can affect community events and outreach, influencing the college's engagement with the local population and potentially causing fluctuations in enrollment figures.	The new Herriman campus adds more pavement and buildings, which can trap heat and raise temperatures during extreme heat events.	Increased
Extreme Cold	By increasing the intensity of winter storms. Warmer atmospheric temperatures allow for more moisture, resulting in heavier snowfall and potentially lower temperatures during these events. In addition, fluctuations in weather patterns may disrupt seasonal cycles, leading to unpredictable periods of extreme cold mixed with warmer spells.	Extreme cold weather can negatively affect SLCC enrollment. Harsh winter conditions may lead to transportation issues, health challenges, and increased absenteeism, temporarily decreasing class attendance. This can discourage new students from enrolling and shift demographic trends.	New facilities on the Herriman campus will increase energy usage during extreme cold events, potentially adding stress to the local energy system.	Increased
Flooding	Higher temperatures increase the frequency and intensity of	Flooding can lead to campus closures and class disruptions at	The new Herriman campus does not appreciably increase the risk of	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	extreme weather events and alter precipitation patterns. They can lead to more intense rainstorms and accelerated snowmelt from nearby mountains, raising water levels in rivers and streams. This combination raises the risk of flooding, especially in areas with inadequate drainage and urban development in flood-prone zones, heightening the potential for damage to homes and infrastructure.	SLCC, which may discourage enrollment and cause current students to withdraw if their housing is affected.	flooding. However, new impervious surfaces may slightly increase the risk of pluvial flooding.	
Landslide/ Slope Failure	Climate change increases the risk of landslides through heavier rainfall and temperature fluctuations. Intense rain saturates soil, destabilizing slopes, while freeze–thaw cycles weaken the ground. Changes in vegetation can also reduce stability, leading to a higher potential for landslides.	Landslides can impact SLCC enrollment by disrupting transportation and accessibility. Road closures may lead to temporary reductions in attendance, as safety concerns may prompt students to defer or seek education elsewhere.	Development on SLCC campuses has not increased the risk of landslides.	Increased
Radon	Climate change can affect radon levels by altering soil temperatures and moisture conditions. Higher temperatures may increase radon emissions from the ground, while heavy rainfall can change groundwater and soil saturation, impacting radon migration into buildings.	Rising awareness of radon exposure may deter prospective students from attending SLCC because of health concerns. This could also affect retention rates among current students, influencing overall enrollment trends, as health and safety become priorities for families.	Development on SLCC campuses has not increased the risk of radon exposure.	Increased or stayed the same.
Heavy Rain	Climate change increases the frequency and intensity of heavy rain, as higher temperatures	Heavy rain can impact SLCC's enrollment by deterring students from attending classes because	New impervious surfaces on the Herriman campus may slightly increase the risk of pluvial flooding.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	allow the atmosphere to hold more moisture. This leads to stronger storms, flash flooding, and overwhelmed drainage systems.	of flooding and unsafe conditions. This may lead to a temporary decline in enrollment, as some students opt for online courses or defer their studies. In addition, adverse weather can affect campus access and infrastructure, further influencing student participation.		
High Wind	Climate change affects high winds by altering atmospheric patterns and increasing extreme weather events. Rising temperatures may lead to more substantial, unpredictable winds and more frequent thunderstorms, posing risks to infrastructure and air quality.	High winds can lead to canceled classes, temporarily reducing attendance. Unsafe conditions may deter new students from enrolling, potentially impacting long-term enrollment patterns.	The new multistory building on the Herriman campus increases the risk of damage from high winds.	Increased
Lightning	Climate change increases temperatures and alters precipitation, leading to more intense thunderstorms and frequent lightning strikes. Urbanization can enhance this effect, posing risks to public safety and infrastructure.	Lightning can impact enrollment by causing campus disruptions during storms, leading to temporary closures and affecting attendance. Safety concerns may deter students from commuting, influencing their decision to enroll.	The new multistory building on the Herriman campus slightly increases the risk of damage from lightning strikes.	Increased
Severe Winter Weather	Climate change impacts heavy snow and blizzards by altering precipitation patterns. Higher temperatures can lead to more rain than snow, affecting snowpack levels. In addition, increased storm intensity results in heavier, more unpredictable snowfall.	Heavy snowfall or blizzards can lower SLCC attendance as safety concerns keep students and faculty home. This may also delay enrollments.	The SLCC Herriman campus moderately increases the risk of severe winter weather damaging facilities and infrastructure. SLCC has increased responsibility to protect the new buildings and students from heavy snow and ice.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
Tornado	Climate change may increase the frequency and intensity of tornadoes. Higher temperatures lead to more moisture in the air, creating conditions for severe thunderstorms. Wind patterns and precipitation changes can also heighten tornado risks, resulting in more destructive storms and greater threats to infrastructure and communities.	Tornadoes can reduce SLCC enrollment because of student displacement and class disruptions. However, strong support during recovery may attract new students seeking stability. The overall impact depends on the severity of the tornado and the community's response.	The risk of tornadoes is very low in Herriman, the location of SLCC's new development since the previous plan. The new campus does not increase risk.	Same
Wildfire	By raising temperatures and creating drier conditions, climate change contributes to prolonged droughts, leading to more dry vegetation, which serves as fuel for fires. Erratic seasons extend the growing period, while more lightning strikes can ignite wildfires. These factors heighten the threat to ecosystems and community safety.	Wildfires can affect enrollment at SLCC by causing potential students to postpone their education because of safety concerns. Conversely, SLCC may see an influx of students from impacted areas seeking support, altering the demographic composition.	The new Herriman SLCC campus puts new facilities and infrastructure in an area with high risk of wildfire. This increases risk for SLCC.	Increased
Dam Failure	Climate change raises the risk of dam failure by causing heavier rainfall and rapid snowmelt. These changes can overwhelm dams and compromise their integrity, highlighting the need for safety assessments and upgrades to protect communities downstream.	Dam failure near SLCC could reduce enrollment because of safety evacuations and commuting challenges for affected residents. Conversely, the aftermath may boost interest in disaster management and recovery programs, attracting new students.	Development on SLCC campuses has not increased the risk of dam failure.	Increased
Civil Disturbance	Climate change can increase the likelihood of civil disturbances by intensifying environmental stresses and social tensions. Rising temperatures may lead to	Civil disturbances can lead to declining enrollment because of safety concerns among students and potential applicants. Fear of violence and disruptions may	Development on the Herriman SLCC campus has slightly raised the risk of damage due to civil disturbances. The new facilities	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	droughts, wildfires, and poor air quality, particularly affecting vulnerable communities. The scarcity of resources, especially water, can spark conflicts and protests. In addition, an influx of migrants from harder-hit areas may strain local resources, further escalating tensions. The impacts of climate change on the environment and community dynamics drive this cycle of unrest.	cause current students to miss classes and prospective students to seek other options. This can lead to temporary reductions in enrollment and demographic shifts, as individuals affected seek alternative educational opportunities.	could be targeted and need to be protected during a disturbance.	
Cyberattack	Climate change can heighten cyberattack risk by increasing vulnerabilities during extreme weather. Disruptions like power outages offer cybercriminals opportunities, as focusing on emergency responses can weaken cybersecurity measures. Organizations adopting new technologies to cope with climate impacts may unintentionally introduce additional vulnerabilities.	A cyberattack on SLCC could decrease enrollment as potential students may doubt the security of their personal information. Disruptions in services might deter current students from continuing their studies, and temporary closures could harm the institution's reputation, further impacting enrollment and retention rates.	Development on SLCC campuses has not increased the risk of cyberattacks.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
Hazardous Materials Incident (Transportation & Fixed Facility)	Climate change elevates the risk of hazardous materials incidents by increasing extreme weather events like heavy rain and wildfires. These events can breach storage tanks and heighten material volatility. Vulnerable infrastructure can lead to more spills or accidents, while climate shifts may introduce new challenges for managing hazardous substances and public health.	Hazardous materials incidents at SLCC can lead to decreased enrollment because of safety concerns. Temporary closures and disrupted classes may prompt current students to withdraw, while prospective students might choose safer institutions.	Development on SLCC campuses has not increased the risk of a hazardous materials incident.	Increased
Public Health Epidemic/ Pandemic	Worsening air quality can also exacerbate respiratory conditions like asthma, especially in vulnerable populations, by increasing the spread of vector-borne diseases and raising the risk of waterborne illnesses because of flooding or drought.	Public health crises, like the COVID-19 pandemic, have notably affected SLCC enrollment. There may be declines as prospective students delay education because of health concerns, while some existing students might drop out or take leaves of absence. Conversely, there could be an increase in enrollment in healthcare-related programs in response to public health needs, resulting in a fluctuating enrollment landscape.	Development on SLCC campuses has not increased the risk of a pandemic/epidemic.	Increased
Terrorism	Terroristic activity is sometimes centered around climate change. Climate change impacts terrorism incidents by creating resource scarcity and social unrest. Increased competition for essential resources, such as water, can fuel tensions, making	Terrorism could lead to a decline in enrollment at SLCC because of safety concerns. Potential students might defer their education or choose other institutions perceived as safer. Following any incident, increased	Development on SLCC campuses has not increased the risk of terrorism.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	communities more vulnerable to extremist ideologies. Extreme weather events may disrupt social order and infrastructure, offering terrorist groups opportunities to exploit crises. In addition, climate-driven population displacement can heighten tensions in receiving areas, raising the risk of domestic terrorism. Law enforcement's focus on climate-related challenges can also limit its capacity to address terrorism threats. Ultimately, while climate change may not directly cause terrorism, its effects can create an environment conducive to extremist activities.	security measures may lead to a temporary drop in enrollment.		

DRAFT

Additional Public Involvement

SLCC engages students in various public involvement activities related to hazard awareness and emergency preparedness. These initiatives include workshops educating students on disaster response and safety protocols, interactive training sessions to develop practical skills, and collaborative events involving community leaders and organizations discussing hazard mitigation strategies. In addition, SLCC provides resources such as informational pamphlets and access to online materials, ensuring students are well-informed about potential hazards and best practices for personal and community safety. Through these efforts, the college fosters a sense of responsibility and preparedness in its student body, empowering them to act effectively in times of crisis.

Plan Integration

Incorporating the underlying principles of the Hazard Mitigation Plan and its recommendations into other plans is a highly effective and low-cost way to expand their influence. All plan participants will use existing methods and programs to implement hazard mitigation actions where possible. As previously stated, mitigation is most successful when it is incorporated into the day-to-day functions and priorities of government and public service. This plan builds on the momentum developed through previous and related planning efforts and mitigation programs, and it recommends implementing actions where possible through these other program mechanisms. These existing mechanisms include the following:

- Regularity Capabilities
- Administrative Capabilities
- Fiscal Capabilities

Respective planning stakeholders will conduct implementation and incorporation into existing planning mechanisms and will be done through the routine actions of:

- Monitoring other planning/program agendas
- Attending other planning/program meetings
- Participating in other planning processes; and
- Monitoring community budget meetings for other community program opportunities.

The successful implementation of this plan will require constant and vigilant review of existing plans and programs for coordination and multi-objective opportunities that promote a safe, sustainable community. Regular efforts should be made to monitor the progress of mitigation actions implemented through other planning mechanisms. Where appropriate, priority actions should be incorporated into planning updates.

Table 10: Integration of Previous Plans by Salt Lake Community College

Plan	Description
None	N/A

DRAFT

Table 11: Opportunities for Integration with Future Plans for Salt Lake Community College

Plan	Description
SLCC Sustainability Plan	Identifies strategies for improving sustainability on campuses through recommendations on water usage, transportation, waste and recycling, future facilities development, energy usage, and sustainable purchasing.
SLCC 2025 Master Plan and Campus Master Plans	Addresses sustainability, infrastructure improvements, student safety, future development.
SLCC Business Continuity Plan	Ensures each department can minimize disruptions caused by various hazards. It identifies areas for training and education regarding hazards.
County and municipal plans	The community college works closely with the emergency managers of each jurisdiction via the monthly county emergency managers' meetings. Because the community college does not have the same long-term planning mechanisms and direct responsibility for management of community lifelines, the college will seek opportunities to collaborate in county and municipal long-term planning initiatives where hazard mitigation planning actions may be integrated.

Capability Assessment

Local mitigation capabilities are existing authorities, policies, programs, and resources that reduce hazard impacts or could help carry out hazard mitigation activities. However, the Community College does not have responsibility for implementing ordinances.

Planning and Regulatory Capabilities

Planning and regulatory capabilities are the plans, policies, codes, and ordinances that prevent and reduce the impacts of hazards.

Table 12: Assessment of the Planning Capabilities of Salt Lake Community College

Plan	Does it address hazards? (Y/N)	How can it be used to implement mitigation actions?	When was the last update? When is the next update?
General Plan	Y – Strategic Plan	N/A	N/A
Capital Improvement Plan	N	N/A	N/A
Climate Change Adaptation Plan	Y – Sustainability Plan	Can be used to inform responsible parties for mitigation actions	2023
Community Wildfire Protection Plan	Y – For cities with campuses	Can inform wildfire mitigation actions	2022
Economic Development Plan	N	N/A	N/A

DRAFT

Plan	Does it address hazards? (Y/N)	How can it be used to implement mitigation actions?	When was the last update? When is the next update?
Land Use Plan	Y	Can be used to inform mitigation actions	2017
Local Emergency Operations Plan	Y – CEMP	Can be used to inform mitigation actions as far as organizational charts and duties	2022
Stormwater Management Plan	Y	Can be used to inform flooding mitigation actions	2022
Transportation Plan	Y	Can be used to inform mitigation actions and identify funding sources	2024
Substantial Damage Plan	N/A	N/A	N/A
Other? (Describe)	Y – Business Continuity Plan (BCP)	Can be used to inform responsible parties	Ongoing, BCPs are created by each department.

Table 13: Assessment of the Regulations and Ordinances of Salt Lake Community College

Regulation/Ordinance	Does it effectively reduce hazard impacts?	Is it adequately administered and enforced?	When was the last update? When is the next update?
Building Code	N	N/A	N/A
Flood Insurance Rate Maps	N/A		
Floodplain Ordinance	N	N/A	N/A
Subdivision Ordinance	N	N/A	N/A
Zoning Ordinance	N	N/A	N/A
Public Health and Safety Program	Y	Y	Reviewed annually
Natural Hazard-Specific Ordinance (Stormwater, Steep Slope, Wildfire)	Y	Y	Reviewed annually
Acquisition of Land for Open Space and Public Recreation Use	N/A	N/A	N/A
Prohibition of Building in At-Risk Areas	N/A	N/A	N/A
Other? (Describe)			

Most of these regulations exist at the town or city level. The college is regulated by the local ordinances for the jurisdiction where each of its campuses are located. The college does include guidance for development in the plans in Table 12.

Administrative and Technical Capabilities

Administrative and technical capabilities include staff and their skills. They also include tools that can help carry out mitigation actions.

Table 14: Assessment of the Administrative Capabilities of Salt Lake Community College

Administrative Capability	In Place? (Y/N)	Is staffing adequate?	Are staff trained on hazards and mitigation?	Is coordination between agencies and staff effective?
Chief Building Official	Y	Y	Y	Y
Civil Engineer	Y	Y	Y	Y
Community Planner	Y	Y	Y	Y
Emergency Manager	Y	Y	Y	Y
Floodplain Administrator	N/A – See municipal capabilities	N/A	N/A	N/A
Geographic Information System (GIS) Coordinator	Y – Full time	Y	Y	Y
Planning Commission	N/A	N/A	N/A	N/A
Fire Safe Council	N/A – See municipal capabilities	N/A	N/A	N/A
CERT (Community Emergency Response Team)	N/A – See municipal capabilities	N/A	N/A	N/A
Active VOAD (Voluntary Agencies Active in Disasters)	Y	Y	Y	Y
Planners or engineers with knowledge of land development and land management practices	Y – Full time: Planning and Design	Y	Y	Y
Engineers or professionals trained in building or infrastructure construction practices	Y – Full time: Facilities Services	Y	Y	Y
Planners or engineers with an understanding of natural hazards	Y	Y	Y	Y
Surveyors	Y	Y	Y	Y
Other? (Please describe.)				

DRAFT

Table 15: Assessment of the Technical Capabilities of Salt Lake Community College

Technical Capability	In Place? (Y/N)	How has it been used to assess/mitigate risk in the past?	How can it be used to assess/mitigate risk in the future?
Mitigation Grant Writing	Y – Office of Sponsored Projects	Identification of known risks	Grant funds can be used to mitigate risks
Hazard Data and Information	Y	Used for any construction or maintenance projects to ensure safety standards	Can inform strategies to reduce risk
GIS	Y – Natural Sciences Department	Mapping of at-risk areas	Identification of at-risk areas
Mutual Aid Agreements	Y	Assistance on projects related to hazard mitigation	Established agreements to assist in completing mitigation actions
Other? (Please describe.)			

Financial Capabilities

Financial capabilities are the resources to fund mitigation actions. Talking about funding and financial capabilities is important to determine what kinds of projects are feasible, given their cost. Mitigation actions like outreach programs are lower cost and often use staff time and existing budgets. Other actions, such as earthquake retrofits, could require substantial funding from local, state, and federal partners. Partnerships, including those willing to donate land, supplies, in-kind matches, and cash, can be included.

Table 16: Assessment of the Financial Capabilities of Salt Lake Community College[7]

Funding Resource	In Place? (Y/N)	Has it been used in the past and for what types of activities?	Could it be used to fund future mitigation actions?	Can it be used as the local cost match for a federal grant?
Capital Improvement Project Funding	Y	Seismic study, building maintenance	Y	Y
General Funds			Y	
Hazard Mitigation Grant Program (HMGP/404)	Y – with SLCo EM		Y	N
Building Resilient Infrastructure & Communities (BRIC)	Y – with SLCo EM		Y	N
Flood Mitigation Assistance (FMA)	Y – with SLCo EM		Y	N

[7] SLCo EM = Salt Lake County Emergency Management.

Funding Resource	In Place? (Y/N)	Has it been used in the past and for what types of activities?	Could it be used to fund future mitigation actions?	Can it be used as the local cost match for a federal grant?
Public Assistance Mitigation (PA Mitigation/406)	Y – with SLCo EM		Y	N
Community Development Block Grant (CDBG)	Y – with SLCo EM		Y	N
Natural Resources Conservation Services (NRCS) Programs	N		Y	N
U.S. Army Corps (USACE) Programs	N		Y	N
Property, Sales, Income, or Special Purpose Taxes	N		Y	Y
Stormwater Utility Fee	N/A		Y	Y
Fees for Water, Sewer, Gas, or Electric Services	N		Y	Y
Impact Fees from New Development and Redevelopment	N		Y	Y
General Obligation or Special Purpose Bonds	N		Y	Y
Federal-funded Programs (Please describe)	Y – with SLCo EM		Y	N
Private Sector or Nonprofit Programs	Y		Y	Y
Other?				

Education and Outreach Capabilities

Education and outreach capabilities are programs and methods that could communicate about and encourage risk reduction.

Table 17: Assessment of the Education and Outreach Capabilities of Salt Lake Community College

Education and Outreach Capability	In Place? (Y/N)	Does it currently incorporate hazard mitigation?	Could it be used to support mitigation in the future?
Community Newsletter(s)	Y	Y	Y
Hazard Awareness Campaigns (such as Firewise, Storm Ready, Severe Weather Awareness Week, School Programs)	Y	Y	Y
Public Meetings/Events (Please describe.)	Y	Y	Y

DRAFT

Education and Outreach Capability	In Place? (Y/N)	Does it currently incorporate hazard mitigation?	Could it be used to support mitigation in the future?
Emergency Management Listserv	Y	Y	Y
Local News	Y	Y	Y
Distributing Hard Copies of Notices (e.g., public libraries, door-to-door outreach)	Y	Y	Y
Insurance Disclosures/Outreach	N	N/A	Y
Organizations that Represent, Advocate for, or Interact with Underserved and Vulnerable Communities (Please describe.)	Y	Y	Y
Social Media (Please describe.)	Y	Y – Facebook, Twitter (X), Instagram	Y
Other? (Please describe.)			

Opportunities to Expand and/or Improve Capabilities

Actions that can expand and improve existing authorities, plans, policies, and resources for mitigation include budgeting for mitigation actions, passing policies and procedures for mitigation actions, adopting and implementing stricter mitigation regulations, approving mitigation updates, and making additions to existing plans as new needs are recognized. Table 18 lists the opportunities for SLCC.

Table 18: Opportunities to Expand and/or Improve the Capabilities of Salt Lake Community College[8]

Capability	Opportunity to Expand and/or Improve
Planning and Regulation	SLCC can expand planning mechanisms such as a Capital Improvement Plan and incorporate hazard mitigation actions. Plan integration increases the likelihood of successful project implementation. SLCC could also benefit from a clear path to integrate with planning mechanisms at the city and county level.
Administrative and Technical	Director and deputy director of emergency management manage emergency planning duties and coordinate within the community college and with county and state EMS. They receive some assistance from college finance staff for EMPG grants but could benefit from additional staff and capabilities. The EM Director is working with facilities staff on topics related to resources and ATC-20 training of staff for logistics and damage assessment. Another opportunity to expand this capability is enhancing communications between campuses. Improved communications between departments will help SLCC leverage all skills and resources available.
Financial	SLCC can apply for grant programs, such as the HMGP (404) as well as other HMA grant programs. These grants, although not previously used, can provide substantial funding for mitigation actions if successfully obtained.

[8] ATC-20 = Postearthquake Safety Evaluation of Buildings, EM = Emergency Management, EMPG = Emergency Management Performance Grants, EMS = Emergency Management Services, HMA = Hazard Mitigation Assistance, HMGP = Hazard Mitigation Grant Program.

Capability	Opportunity to Expand and/or Improve
Education and Outreach	SLCC has the capability to conduct hazard mitigation outreach in-person, through newsletters, news, and awareness campaigns. Adding additional hazard-specific information regarding mitigation can help ensure outreach is informative and specific to the hazards identified in this plan update. The college has been developing the SLCC Mobile App to be a one-stop shop for campus information, including student safety information. This tool could be used to share information regarding hazards.

Mitigation Strategy

Mitigation strategies provide proactive measures that are designed to minimize the impacts of hazards on SLCC. mitigation actions, and Table 20 shows the mitigation actions for 2025.

Table 19 shows the status of previous mitigation actions, and Table 20 shows the mitigation actions for 2025.

Table 19: Status of Prior Mitigation Actions of Salt Lake Community College[9]

Action	Goal/Objective	Hazard(s)	Agency Lead	Time-frame	Status Update
Seismic retrofitting and upgrades of vulnerable buildings and facilities.	Goal 1. Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster.	Earthquake	Facilities Services	Long-term	Ongoing
	Goal 2. Protect and eliminate and/or reduce damage and disruptions to critical facilities, structures, and infrastructure during disasters.				Ongoing
Hand sanitizing stations.	Goal 1. Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster.	Public Health Epidemic/ Pandemic	Emergency Management and Health Safety	Long-term	Ongoing
Stop the Bleed kits.	Goal 1. Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster.	Civil Disturbance Terrorism/ Active Threat	Emergency Management	Long-term	Ongoing
Security hardening assessment and	Goal 1. Protect the lives, health, and safety of the citizens of Salt Lake	Civil Disturbance Terrorism/	Public Safety, Emergency Management	Long-term	Ongoing

[9] The college did not provide updated information, so all previous mitigation actions were brought forward and statuses were marked as ongoing.

Action	Goal/Objective	Hazard(s)	Agency Lead	Time-frame	Status Update
hardening of campus assets.	County before, during, and after a disaster. Goal 2. Protect and eliminate and/or reduce damage and disruptions to critical facilities, structures, and infrastructure during disasters.	Active Threat	, Facilities Services		
Enhance interoperable communications between campuses. Make investments in key communications infrastructure and equipment to ensure redundant and effective communications.	Goal 3. Enhance and protect the communication and warning/notification systems in the County. Goal 6. Advocate, support, and promote the continued coordination and integration of disaster planning efforts throughout the County.	All hazards	Public Safety	Long-term	Ongoing

DRAFT

Table 20: 2025 Mitigation Action Plan for Salt Lake Community College[10]

#	Action	Year Initiated	Goal/Objective	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Time-frame	Priority	Comments
1	Retrofit and upgrade buildings and facilities vulnerable to earthquake damage	2019	Goal 1. Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster. Goal 2. Protect and eliminate and/or reduce damage and disruptions to critical facilities, structures, and infrastructure during disasters.	Earthquake	SLCC Facilities Services	SLCo EM, local jurisdictions	Example: Retrofits will reduce the likelihood of structural damage from earthquakes. This will reduce the cost of repairs, reduce time that facilities/ equipment may be inoperable, and reduce injuries to building occupants.	High	PDM, HMGP, SLCC capital improvement funds	Long-term	High	
2	Deploy hand sanitizing stations.	2019	Goal 1. Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster.	Public Health Epidemic/Pandemic	SLCC Emergency Management	SLCo EM, SLCo Health Department, NGO partners, SLCC Health Safety	Reduced transmission of bacteria or other diseases, increased preventative health measures in public areas on campuses	Low	SLCC general funds	Long-term	Medium	
3	Make Stop the Bleed Kits available.	2019	Goal 1. Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster.	Civil Disturbance, Terrorism/ Active Threat	SLCC Emergency management	SLCo EM, SLCo Health Department, NGO partners	Accessible medical equipment in the event of an incident	Low	SLCC general funds	Long-term	High	
4	Assess and harden campus assets that need additional security.	2019	Goal 1. Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster. Goal 2. Protect and eliminate and/or reduce damage and disruptions to critical facilities, structures, and infrastructure during disasters.	Civil Disturbance, Terrorism/ Active Threat	SLCC Public Safety	Local law enforcement agencies, SLCC Emergency Management, SLCC Facilities Services	Increased campus security, improved coordination between departments	High	SLCC general funds	Long-term	High	
5	Enhance interoperable communications between campuses. Make investments in key communications infrastructure and equipment to ensure redundant and effective communications.	2019	Goal 3. Enhance and protect the communication and warning/notification systems in the County. Goal 6. Advocate, support, and promote the continued coordination and integration of disaster planning efforts throughout the County.	Dam Failure, Drought, Extreme Cold, Extreme Heat, Earthquake, Flood, Heavy Rain, High Wind, Landslide, Lightning, Public Health Epidemic/Pandemic, Radon, Severe Winter Weather, Tornado, Wildfire, Civil Disturbance, Hazardous Materials	SLCC Public Safety	SLCo EM, local law enforcement agencies	Improved communication between departments	Medium	SLCC general funds	Long-term	High	

[10] The college did not provide any new information, so all previous mitigation actions were incorporated into the 2025 plan. HMGP = Hazard Mitigation Grant Program, NGO = nongovernmental organization, PDM = Pre-Disaster Mitigation, SLCC = Salt Lake Community College, SLCo EM = Salt Lake County Emergency Management.

#	Action	Year Initiated	Goal/Objective	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Time-frame	Priority	Comments
6	Develop and implement public education programs on disaster awareness. Use SLCC Mobile App, social media, and integrate with ongoing CPR/first aid trainings.	2025	Goal 1. Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster.	Dam Failure, Drought, Extreme Cold, Extreme Heat, Earthquake, Flood, Heavy Rain, High Wind, Landslide, Lightning, Public Health Epidemic/Pandemic, Radon, Severe Winter Weather, Tornado, Wildfire, Civil Disturbance, Hazardous Materials, Terrorism	SLCC Public Safety	SLCo EM, City EMS, Utah DEM	Improved education and understanding for the public on local hazards and ways in which they can reduce risks to themselves, their homes, and loved ones.	Low	SLCC general funds	Short term	Medium	Information can be shared via social media, in-person, and flyers. Types of relevant mitigation information include the following: for drought, water conservation techniques and drought-resistant landscaping. For extreme temperatures (heat/cold), information can include how to recognize the warning signs of heat-related illnesses and frostbite, as well as shelter locations. Flooding education might involve teaching students and staff about floodplain maps, evacuation routes, and flood insurance. Landslide awareness can focus on recognizing signs of slope instability and safe building practices. Radon education can include information on testing and mitigation methods to ensure safe indoor air quality. Heavy rain mitigation can involve understanding stormwater management and maintaining clear drainage systems. High wind awareness might focus on securing outdoor objects and reinforcing structures. Lightning safety could be promoted through information on safe indoor sheltering and avoiding open areas. Severe winter weather

DRAFT

#	Action	Year Initiated	Goal/Objective	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Time-frame	Priority	Comments
												education can emphasize safe driving and weatherizing homes for snow and ice. Tornado info might involve drills on seeking shelter and understanding warning systems. Wildfire education can focus on creating defensible space around buildings and understanding evacuation procedures. Dam failure awareness can include information on downstream hazards and emergency response plans.

DRAFT

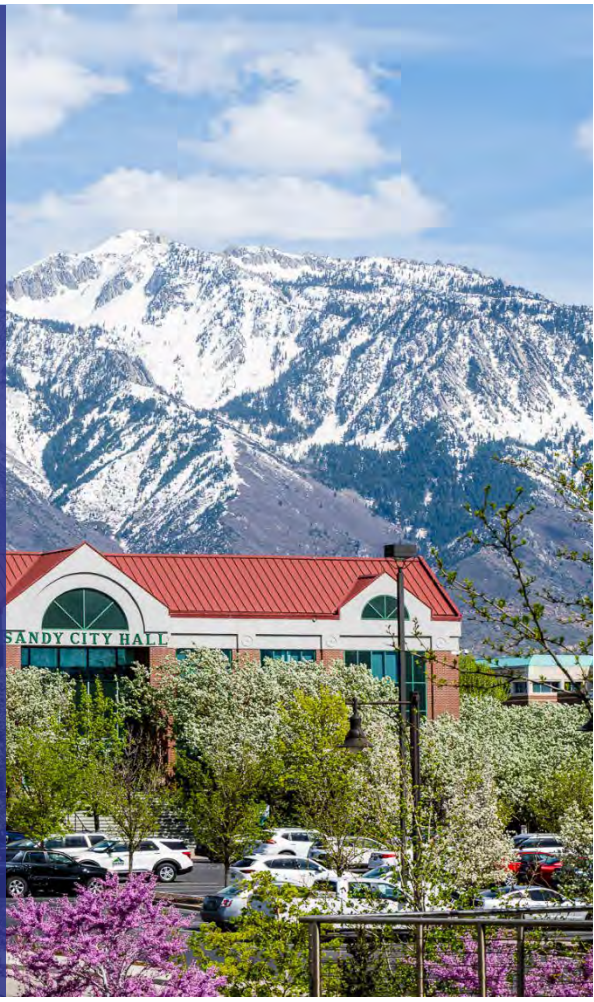
THIS PAGE INTENTIONALLY LEFT BLANLK

DRAFT

Sandy City

Jurisdictional Annex to the
Salt Lake County Hazard Mitigation Plan

Month XXXX | Draft X.X



THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT

Table of Contents

Sandy City Annex 1

Planning Process Contact Information 1
Jurisdiction Profile 1
Date of Incorporation 1
Location and Description 1
Population 2
Demographics 2
Brief History 2
Climate 2
Public Services 2
Governing Body 2
Development Trends 3
Jurisdiction-Specific Hazards and Risk 3
Hazard Event History 6
National Flood Insurance Program Summary 8
Jurisdiction-Specific Vulnerabilities and Impacts 9
Jurisdiction-Specific Changes in Vulnerability 24
Additional Public Involvement 29
Plan Integration 29
Capability Assessment 31
Planning and Regulatory Capabilities 31
Administrative and Technical Capabilities 32
Financial Capabilities 34
Education and Outreach Capabilities 35
Opportunities to Expand and/or Improve Capabilities 36
Mitigation Strategy 37
Mitigation Success Story 40

DRAFT

List of Figures

Figure 1: Social Media Posts for the Hazard Mitigation Plan (*left*) and Draft Plan Review (*right*) 29

List of Tables

Table 1: Contact Information for the Sandy City 1
Table 2: Participant List for the Sandy City 1
Table 3: Calculated Priority Risk Index Values for Sandy City 3
Table 4: Criteria for the Calculated Priority Risk Index 4
Table 5: History of Hazard Events in Sandy City 6
Table 6: National Flood Insurance Program Status for Sandy City 8
Table 7: National Flood Insurance Program Overview for Sandy City 8
Table 8: Jurisdiction-Specific Vulnerabilities and Impacts in Sandy City 9
Table 9: Jurisdiction-Specific Changes in Vulnerability in Sandy City 25
Table 10: Integration of Previous Plans by Sandy City 30
Table 11: Opportunities for Integration with Future Plans of Sandy City 30
Table 12: Assessment of the Planning Capabilities of Sandy City 31
Table 13: Assessment of the Regulations and Ordinances of Sandy City 32
Table 14: Assessment of the Administrative Capabilities of Sandy City 32
Table 15: Assessment of the Technical Capabilities of Sandy City 33
Table 16: Assessment of the Financial Capabilities of Sandy City 34
Table 17: Assessment of the Education and Outreach Capabilities of Sandy City 35
Table 18: Opportunities to Expand and/or Improve the Capabilities of Sandy City 36
Table 19: Mitigation Action Alternatives for Sandy City 37
Table 20: Status of Prior Mitigation Actions of Sandy City 37
Table 21: 2025 Mitigation Action Plan for Sandy City 41

DRAFT

Sandy City Annex

To participate in this multi-jurisdictional hazard mitigation plan (MJHMP) update for Salt Lake County (SLCo), the governing body of Sandy City passed a formal resolution, a copy of which is maintained at the local government offices.

Planning Process Contact Information

Table 1 provides information on the point of contact during the updating of the MJHMP.

Table 1: Contact Information for the Sandy City

Name	Contact Information
Michael Bullock	**Phone:** 801-568-7100; **email**: mbullock@sandy.utah.gov
David Larsen	**Phone:** 801-568-2940; **email**: djlarsen@sandy.utah.gov

Sandy City has a fully integrated approach to hazard mitigation planning and program implementation. During the 2024 update process, the MJHMP participation roles in Table 2 were recorded.

Table 2: Participant List for the Sandy City

Name	Title	Jurisdiction
David Larsen	Emergency Manager	Sandy City Fire Department
Michael Bullock	Deputy Chief	Sandy City Fire Department
Britney Ward	Transportation Engineer	Sandy City
Don Barbee	Storm Water Quality Coordinator	Sandy City Public Utilities
Tyler Shelly	Chief Engineer	Sandy City Public Utilities
Chris Aston	Deputy Chief	Sandy City Fire Department
Tom Ward	Public Utilities Director	Sandy City
Kim Bell	Deputy Mayor	Sandy City

Jurisdiction Profile

Date of Incorporation

1893

Location and Description

Sandy City lies at the base of the Wasatch Mountains, approximately 15 miles south of Salt Lake City. The city is approximately 24.2 square miles in area and is approximately 4,450 feet above sea level.

DRAFT

Sandy City boasts several significant attractions, such as the Shops at South Town shopping mall, the Jordan Commons entertainment and dining complex, and the Mountain America Exposition Center. It is also home to the Rio Tinto Stadium which hosts Real Salt Lake and the Utah Royals Football Club.

Population

The 2022 American Community Survey 5-Year Estimate from the U.S. Census Bureau records the population of Sandy City as 91,934 people.

Demographics

Most of the 91,934 people are between the ages of 35 and 44, with a median age of 39; 46,186 are females (50.2%) and 45,748 are males (49.8%). English is the primary language in 86.3% of homes, with 7.3% Spanish and 6.4% other languages.

Brief History

Sandy City has a rich history that dates back to the 1860s and 1870s, when early settlers began moving into the area due to the availability of land in the southern end of the Salt Lake Valley. The city was officially founded in 1871 and incorporated in 1893. Sandy City was initially a small rural community focused on farming, business, and family life. Over time, it evolved into a rural Utah town while continuing to grow. Today, it is known for its scenic surroundings, outdoor recreational opportunities, and a variety of attractions.

Climate

Sandy City has a humid continental climate (Dsa Köppen classification) characterized by hot, dry summers and cold, snowy winters with significant temperature variations throughout the year. Average high temperatures are approximately 95°F in the summer and approximately 22°F in the winter. Rain each year is approximately 20.1 inches, and snowfall averages 61.2 inches.

Public Services

Sandy City has the “Be Ready Sandy Program” that is the connection between Sandy City and its residents and businesses on issues regarding emergency preparedness. Other services offered by the city include animal services, city recorder services, community development services, community events services, finance & purchasing, fire department services, human resources, justice court, parks and recreation, police services, public utilities services, and public works services.

Governing Body

The governing body of Sandy City is a Mayor–Council form of government with an elected seven-member city council and an elected Mayor. Four members of the council represent the municipal districts, and the other three are elected at-large.

DRAFT

Development Trends

Current development trends are aimed at not increasing the risk to hazards. One trend is that multi-family buildings are being built. Sandy City is Utah's sixth-largest city. Sandy experienced tremendous growth in both land area and population during the past thirty years. The annexation of previously unincorporated land has resulted in growth from 6.6 square miles in 1970 to nearly 23 square miles today. Annexations combined with new construction resulted in population growth from 6,438 to 87,461 in that same time period. Many of the new homes built during the 1970s and the 1980s were bought by young families, which resulted in one of the lowest median ages in the nation. In recent years, the population has aged, as many of the children in young families have grown and left home. This demographic shift has had an effect on the city budget in such areas as declining participation in recreation programs and a reduced rate of growth in both sales tax revenue and state road funds, which are based partially on population.

Commercial growth, however, continues along the I-15 corridor. It continues to fuel a strong economy and tax base and provide job opportunities for residents. The I-15 corridor and Trax light rail line on the west side of the city provide both access to downtown Salt Lake City and the opportunity to be a commercial center for the south end of the valley. To address the growing needs of Sandy City and to accommodate regional growth, a vision for the creation of a city center has been developed, called the Cairns District. The Cairns Master Plan is a culmination of more than six years of planning to reimagine the future of Sandy's downtown area (a printer-friendly version is available). Design guidelines for the area are currently being developed based on the goals and policies outlined in this plan.

Jurisdiction-Specific Hazards and Risk

The Calculated Priority Risk Index (CPRI) is a comprehensive assessment tool for evaluating and prioritizing risks in a given context. It considers various factors, such as probability, impact, and urgency, to determine the level of risk associated with events or situations. The results for each hazard, including its risk factor (RF) value, are shown in Table 3. The results are based on the criteria in Table 4 and the equation that follows it. The CPRI helps organizations and individuals make informed decisions about risk management and mitigation strategies. It provides a systematic approach to identifying and addressing potential issues, allowing for a more efficient allocation of resources and proactive risk prevention. With the CPRI, stakeholders can prioritize their focus on the most critical risks, leading to more effective risk management and, ultimately, better outcomes.

Table 3: Calculated Priority Risk Index Values for Sandy City

Type of Hazard Event	Probability of Future Events	Spatial Extent	Severity of Life/ Property Impact	Warning Time	Duration	Response Capacity	Risk Factor Value
Avalanche	1	1	1	4	1	3	1.5
Drought	4	4	2	1	4	1	2.8
Earthquake	3	4	4	4	4	3	3.6
Extreme Heat	4	4	3	1	3	1	3

DRAFT

Type of Hazard Event	Probability of Future Events	Spatial Extent	Severity of Life/ Property Impact	Warning Time	Duration	Response Capacity	Risk Factor Value
Extreme Cold	3	4	2	1	3	1	2.4
Flooding	3	3	2	1	4	1	2.4
Landslide/ Slope Failure	2	1	2	4	1	2	2
Radon	4	4	2	1	4	2	2.9
Heavy Rain	4	3	2	3	1	1	2.6
High Wind	4	3	3	3	2	1	3
Lightning	4	2	2	4	1	1	2.6
Severe Winter Weather	2	4	3	2	3	1	2.5
Tornado	2	2	3	4	1	2	2.4
Wildfire	4	3	3	4	4	1	3.3
Dam Failure	2	2	3	2	2	3	2.4
Civil Disturbance	2	2	2	4	2	1	2.1
Cyberattack	2	1	4	4	4	2	2.9
Hazardous Materials Incident (Transportation & Fixed Facility)	1	1	2	4	3	2	1.9
Public Health Epidemic/ Pandemic	1	4	4	1	4	1	2.5
Terrorism	2	1	3	4	2	1	2.3

Table 4: Criteria for the Calculated Priority Risk Index

Risk Index Factor	Degree of Risk Level		Criteria	Factor Weight for Degree of Risk Level
Probability of Future Events	1	Unlikely	Less than 1 percent probability of occurrence in the next year or a recurrence interval of greater than every 100 years.	30%
	2	Occasional	1 to 10 percent probability of occurrence in the next year or a recurrence interval of 11 to 100 years.	
	3	Likely	11 to 90 percent probability of occurrence in the next year or a recurrence interval of 1 to 10 years.	

DRAFT

Risk Index Factor	Degree of Risk Level		Criteria	Factor Weight for Degree of Risk Level
	4	Highly Likely	91 to 100 percent probability of occurrence in the next year or a recurrence interval of less than 1 year.	
Spatial Extent	1	Limited	Less than 10% of the planning area could be impacted.	10%
	2	Small	10%–25% of the planning area could be impacted	
	3	Significant	25%–50% of the planning area could be impacted.	
	4	Extensive	50%–100% of the planning area could be impacted.	
Severity of Life/Property Impact	1	Negligible	Less than 5% of the affected area's critical and non-critical facilities and structures are damaged/destroyed. Only minor property damage and minimal disruption of life. Temporary shutdown of critical facilities.	30%
	2	Limited	More than 5% and less than 25% percent of property in the affected area is damaged/destroyed. Complete shutdown of critical facilities for more than one day but less than one week.	
	3	Critical	More than 25% and less than 50% of property in the affected area was damaged/destroyed. Complete shutdown of critical facilities for over a week but less than one month.	
	4	Catastrophic	Over 50% of critical and non-critical facilities and infrastructures in the affected area are damaged/destroyed. Complete shutdown of critical facilities for more than one month.	
Warning Time	1	Self-defined	More than 24 hours	10%
	2	Self-defined	12 to 24 hours.	
	3	Self-defined	6 to 12 hours.	
	4	Self-defined	Less than 6 hours.	
Duration	1	Brief	Up to 6 hours.	10%
	2	Intermediate	Up to one day.	
	3	Extended	Up to one week.	
	4	Prolonged	More than one week.	
Response Capacity	1	High	Significant resources and capability to respond to this kind of event; staff are trained, experienced, and ready.	10%
	2	Medium	Some resources and capability to respond to this kind of staff; some staff may be trained,	

DRAFT

Risk Index Factor	Degree of Risk Level		Criteria	Factor Weight for Degree of Risk Level
			experienced, and ready while others may need additional support.	
	3	Low	Limited resources and capability to respond to this kind of event; additional staff or staff training needed.	
	4	None	No resources and capability to respond this kind of event; additional outside support would be required.	

RISK FACTOR (RF) EQUATION

RF Value = [(Probability x 0.30) + (Spatial Extent x 0.10) + (Severity of Life/Property Impact x 0.30) + (Warning Time x 0.10) + (Duration x 0.10) + (Response Capacity x 0.10)]

Hazards with an RF value greater than or equal to 2.5 are considered high risk. Those with RF values of 2.0 to 2.4 are considered moderate risk hazards, and those with an RF value less than 2.0 are considered low risk. The highest possible RF value is 4.

Hazard Event History

Examining hazard event histories provides valuable insights to inform decision-making and help prioritize resources for risk prevention and response efforts. Table 5 lists the hazard events impacting Sandy City since the 2019 plan update, as recorded in the Storm Events Database from the National Centers for Environmental Information.

Table 5: History of Hazard Events in Sandy City

Type of Hazard Event	FEMA Disaster #	Date(s)	Damage or Impacts	Description
Avalanche		N/A	N/A	Has not occurred but there is risk in the mountains close to unincorporated Salt Lake County
Drought		Summers of 2020–2024	The state has been in a drought period over the last few years.	The statewide drought has impacted tourism and local vegetation. Reduced tourism revenue and reduced vegetation.
Earthquake	DR-4548	05/18/2020	Infrastructure/ building damage	Salt Lake Valley earthquake caused damage across the valley.

DRAFT

Type of Hazard Event	FEMA Disaster #	Date(s)	Damage or Impacts	Description
Extreme Heat		Summers from 2020-present	The statewide drought has contributed to this.	Local temperatures have increased in the summer. Cooling centers have been opened by the county.
Extreme Cold		Code Blue Days in the winter (2020-present)	Some cooler temperatures in the winter contribute to Code Blue days. The county has experienced some.	Shelters expand their capacity on Code Blue days.
Flooding		Spring 2023	Basement flooding, debris in streets	Risk of flooding following record snowpack in winter 2022/2023. Sandbags were available.
Landslide/ Slope Failure		N/A	N/A	N/A
Radon		Ongoing risk	54% of Sandy households are at or above WHO's mitigation threshold.	Increased concern with climate change.
Heavy Rain		Spring 2023	Increased snowpack melting and rain caused some flooding.	Some debris in roads, basement flooding
High Wind	DR-4578	09/07/2020	Some wind damage and power outages	Debris in roads
Lightning		N/A	N/A	N/A
Severe Winter Weather		December 2021/January 2022	Lengthy impacts on roadways that were not major thoroughfares.	Several feet of snow came down in one week. Side roads and cul-de-sacs were not cleared for several days.
Tornado		N/A	N/A	Salt Lake City tornado in 1999 impacted road access.
Wildfire		Multiple over the years	Wildlife, vegetation, minor private property damage	Multiple small wildfires have occurred in the city every year.
Dam Failure		N/A	N/A	There are multiple high and significant hazard dams in the city.
Civil Disturbance		N/A	N/A	N/A
Cyberattack		N/A	N/A	N/A
Hazardous Materials Incident (Transportation & Fixed Facility)		November 2023 and October 2019	Hazmat fire and beer truck crash	Businesses were evacuated, a supply plant was damaged, and additional fire support was needed.

DRAFT

Type of Hazard Event	FEMA Disaster #	Date(s)	Damage or Impacts	Description
				Hazmat team completed cleanup after a semi-truck carrying beer crashed into a church parking lot.
Public Health Epidemic/ Pandemic	DR-4525 for COVID-19	February 2020 and January 2020	Minor impacts on residents and drinking water. COVID-19 relief funds were provided to assist residents and local businesses.	Incident in which too much fluoride was released into the water systems. The Emergency Operations Center was activated. The whole world was impacted by the COVID-19 pandemic, which affected city revenue and public health.
Terrorism		N/A	N/A	N/A

National Flood Insurance Program Summary

Sandy City participates in the National Flood Insurance Program (NFIP). Table 6 displays statistics related to the NFIP. Sandy City does not participate in the Community Rating System (CRS).

Table 6: National Flood Insurance Program Status for Sandy City[1]

Initial FHBM Identified	Initial FIRM Identified	Current Effective Map Date	Adopted Date	Date Joined NFIP	Tribal
07/26/1974	12/18/1985	11/19/2021	2021	12/18/1985	No

Table 7: National Flood Insurance Program Overview for Sandy City

Community ID	Number of Losses	Total Net Payment	Active Policies	Total Coverage
490106	9	$41,053.73	45	$14,722,000

Sandy City has designated the Public Utilities Director as the Floodplain Administrator. Public Utilities helps address local flood issues across the city due to rainstorms, snowmelt, or groundwater. The current Floodplain Overlay Zone Ordinance is dated 2/5/2025. The current effective Flood Insurance Rate Mape (FIRM) is dated 11/19/2021. The city, through the Public Utilities Department, issues Floodplain Development Permits for construction in the Special Flood Hazard Area (SFHA). Substantial damage/substantial improvement determinations are made through the building permit application process. The Floodplain Administrator utilizes the guidance provided in the Federal Emergency Management Agency's (FEMA) Substantial Improvement/Substantial Damage Desk Reference to make determinations. Structures that meet these definitions are required to come into compliance with current codes and standards.

[1] FIRM = Flood Insurance Rate Map, FHBM = Flood Hazard Boundary Map

Jurisdiction-Specific Vulnerabilities and Impacts

Table 8 provides information on the vulnerable assets in Sandy City, including its critical facilities, highlighting the city's vulnerability to identified hazards. It also describes the potential impacts to the community arising from those vulnerabilities. Impacts are the consequences or effects of each hazard on the assets. By understanding the risks associated with these assets, local authorities can develop proactive strategies to mitigate vulnerabilities and ensure the safety and functionality of these important assets during hazard events. These data are invaluable for decision-making and prioritizing resources for emergency response and preparedness efforts, ultimately contributing to more effective risk management and greater resilience in the community.

Vulnerable assets in Sandy: All 91,934 residents can be vulnerable to hazards, including particularly vulnerable populations such as the elderly, children, people with disabilities, and low-income residents. Seven percent of Sandy City's population under age 65 has a disability. Critical facilities include 5 fire stations, 1 police station, 2 hospitals, 31 schools, and 1 EOC. Community centers include Sandy Amphitheater, America First Field, Dimple Dell Regional Park, Dimple Dell Recreation Center, Quail Hollow Park, Lone Peak Park, Hidden Valley Golf Club, and multiple trailheads. Economic centers are near primary roads such as I-15 interchanges, along State Street, and along 9000/9400 South. Sandy Historic District includes over 300 structures located between State Street and 700 East, and between 9000 South and Pioneer Avenue.

Table 8: Jurisdiction-Specific Vulnerabilities and Impacts in Sandy City

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
Avalanche	People	*Vulnerability:* Backcountry enthusiasts are vulnerable to avalanches, with limited risk to residences on the East Bench slopes. *Impacts:* Avalanches can lead to injuries or fatalities. Although an avalanche is unlikely in the city, those who venture into the backcountry may be at risk. Skiers, snowboarders, and snowshoers who venture into backcountry areas are at higher risk because they may not be familiar with avalanche terrain or conditions. Their activities often take them into areas prone to avalanches. Inexperienced individuals: People without adequate training or knowledge about snow safety and avalanche risk are particularly vulnerable. A lack of awareness about signs of instability in the snowpack or how to respond in an avalanche situation can increase risk. Tourists and non-locals: Visitors who are unfamiliar with the local geography and snow conditions might not recognize potential hazards. They might not know the terrain features that can influence avalanche risk. Professionals in high-risk areas: Workers such as mountain guides and construction crews operating in mountainous regions may be at risk, especially during avalanche control work or if they are required to traverse unstable areas as part of their job.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		Groups without proper gear: Those without appropriate safety equipment (like avalanche beacons, probes, and shovels) are at greater risk because they may not be able to respond effectively to an avalanche event. Individuals ignoring warnings: People who do not heed avalanche warnings or neglect to check avalanche forecasts before going into the backcountry may place themselves in harm's way.
	Structures	*Vulnerability:* Homes and businesses on the high East Bench of Sandy and water facilities may be damaged by avalanche. *Impacts:* Their roofs may not be designed to withstand the weight of accumulated snow, increasing the likelihood of structural failure.
	Economic Assets	*Vulnerability:* Winter sports-related business are vulnerable to avalanches. *Impacts:* Shutdown of nearby commercial skiing areas can cause major loss of revenue and taxes to the city. Businesses could suffer structural damage or total loss. Road closures and necessary repairs can be expensive.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Forests, trails, wildlife habitats, and watershed areas are vulnerable. *Impacts:* Avalanche can uproot trees, strip slopes of vegetation, and lead to erosion. There are several popular trailheads and hiking trails along the East Bench that could be damaged or where people could encounter harm from avalanche.
	Critical Facilities and Infrastructure	*Vulnerability:* Power lines, gas lines, water supply, and transportation systems can be damaged. *Impacts:* Utilities can be damaged, and outages could affect other facilities, homes, and businesses. Roads and highways: Avalanches can heavily affect transportation infrastructure, leading to blockages and the potential for damage to vehicles and road surfaces. Little Cottonwood Canyon Road/Highway 210 and Wasatch Boulevard could be blocked by avalanches or may be backed up during road closures for avalanche mitigation in the canyon.
	Community Activities	*Vulnerability:* Recreation opportunities are vulnerable to avalanches. *Impacts:* Winter hiking and activities on the mountain benches could cause loss of life and difficulty locating missing persons. Summer recreation areas can also be damaged by avalanche.
Drought	People	*Vulnerability:* All of Sandy City is vulnerable to drought. *Impacts:* Possible lack of culinary water to all populations. Elderly, young, and homeless individuals are particularly vulnerable and might not be able to obtain water for hydration. Residents may face restrictions or increased costs for water. Air and water quality are also vulnerable.
	Structures	*Vulnerability:* All structures are vulnerable. *Impacts:* Structures may need to switch to water-wise landscaping. There may be increased water and utility costs, especially if drought is coupled with extreme heat. Severe, prolonged drought can contribute to changes in soil conditions that may result in cracks in foundations or walls.

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Economic Assets	*Vulnerability:* Businesses, particularly those that depend heavily on water, are vulnerable. *Impacts:* Increased water costs. Businesses providing water recreation and outdoor landscaping will be unable to continue normal operations.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Vegetation, parks, and open spaces are vulnerable to drought. *Impacts:* Much of Sandy's East Bench is in the wildlife–urban interface (WUI), and homes are at risk. Parks, golf courses, and urban forests may suffer from drought conditions, making the city less green and increasing heat levels. Dimple Dell Regional Park and other outdoor recreation areas, such as parks and golf courses, may experience deterioration in the health of vegetation and their aesthetic appeal during drought. Drought increases wildfire risk, which poses a risk to homes and structures in the WUI areas.
	Critical Facilities and Infrastructure	*Vulnerability:* Water systems are vulnerable to drought. *Impacts:* Water supply systems are susceptible to drought and may struggle to deliver adequate water supply to the community. There may be a lack of water in the drinking water supply and secondary water for irrigation.
	Community Activities	*Vulnerability:* Community events and recreation are vulnerable to drought. *Impacts:* Recreational spaces such as parks, golf courses, pools, and other open spaces may be vulnerable to poor vegetation health and reduced appeal during drought. The city may struggle with maintenance and increased costs for landscaping and pools. Outdoor recreation or community events may be moved to other locations, especially if local vegetation dies off or invasive species arise.
Earthquake	People	*Vulnerability:* All people in the Salt Lake Valley would be affected, especially those with access and functional needs. *Impacts:* Over 90,000 people in Sandy are vulnerable. People may be injured or killed and may be displaced from their homes. Power outages are a concern for those who have medical equipment or are at critical facilities. Disruption to utilities and infrastructure will disrupt daily life for all residents.
	Structures	*Vulnerability:* All structures in the city are vulnerable. *Impacts:* Catastrophic damage to homes and buildings is likely.
	Economic Assets	*Vulnerability:* All businesses are vulnerable to the impacts of an earthquake. *Impacts:* A complete shutdown of economic activities in Sandy and throughout Salt Lake County could occur.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Sandy Historic District and other historic structures are vulnerable to earthquakes. *Impacts:* Older structures are more likely to experience damage from an earthquake due to the lack of seismic building codes when they were built.
	Critical Facilities and Infrastructure	*Vulnerability:* All critical facilities and infrastructure are potentially vulnerable to earthquakes.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		Impacts: Critical structures for supplies of clean water, power, communication, and natural gas, as well as roadways in and out of Salt Lake Valley, will be affected. Damage to I-15, State Street, 9000/9400 South, and Trax trail lines may occur. Hospitals may be affected, particularly Alta View Hospital (AVH), which is located on the East Bench of Sandy City. Fire and police facilities could be damaged, and emergency response could be delayed.
	Community Activities	*Vulnerability:* All community events are vulnerable to disruption by earthquakes. *Impacts:* Community activities will be stopped. There may be an activation of community emergency volunteers and the Community Emergency Response Team. Evacuations may occur, and there may be a need for FEMA resources.
Extreme Heat	People	*Vulnerability:* All residents are vulnerable, with increased risk for the elderly, young, and those experiencing homelessness. *Impacts:* Extreme heat can lead to severe heat-related illnesses such as dehydration, heat exhaustion, and heat stroke, which can be fatal.
	Structures	*Vulnerability:* All structures are vulnerable to damage from extreme heat. *Impacts:* Prolonged heat exposure can weaken building materials, causing cracks in concrete, warping of wood, and deterioration of roofing materials.
	Economic Assets	*Vulnerability:* All businesses are vulnerable to the impacts of extreme heat. *Impacts:* Businesses may face increased energy costs and reduced worker productivity due to heat-related stress.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Vegetation and parks are vulnerable to extreme heat. Impact: Extreme heat can dry out vegetation, increasing wildfire risks that can destroy forests, parks, and historic sites. Outdoor events and supporting activities may need to be postponed or canceled due to heat risks.
	Critical Facilities and Infrastructure	*Vulnerability:* Power infrastructure, transportation, and water systems are vulnerable to extreme heat. *Impacts:* Increased use of air conditioning can overload the power grid. Extreme heat can also cause roads to soften, crack, and buckle, creating transportation hazards. Prolonged extreme heat can also increase water demand while leading water reservoirs to evaporate faster, putting pressure on water systems.
	Community Activities	*Vulnerability:* Summer public events are vulnerable to extreme heat. *Impacts:* Multiple large city events, including July 4th celebrations and the Balloon Festival, could lead to medical emergencies for attendees due to heat exposure.
Extreme Cold	People	*Vulnerability:* All Sandy residents are vulnerable, with some demographics are at higher risk. *Impacts:* Extreme cold can cause illnesses such as hypothermia or frostbite. There is a heightened risk for the elderly, the young, and those experiencing homelessness. Approximately 6.5% of residents

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		are under age 5, and 14.9% are over age 65 in Sandy and are vulnerable. The number of unhoused persons is unknown.
	Structures	*Vulnerability:* All structures are vulnerable to damage from extreme cold. *Impacts:* Water can freeze, expand, and burst pipes. Heavy snow accumulation can also collapse roofs, especially on older/weaker structures. Freeze–thaw cycles can also weaken building foundations and cause cracks in roads, bridges, and sidewalks.
	Economic Assets	*Vulnerability:* Extreme cold can lead to increased heating costs. *Impacts:* Outdoor winter businesses and recreation, such as skiing, could be affected or closed down due to unsafe outdoor temperatures, causing a loss of revenue for industry businesses. There is also a high cost of road salt for city and county road maintenance.
	Natural, Historic, and Cultural Resources	*Vulnerability:* The historic district and wildlife are vulnerable to extreme cold. *Impacts:* Historic homes may be less efficient at maintaining a warm interior and may be at increased risk for broken pipes. Extreme cold can harm local wildlife by reducing food sources.
	Critical Facilities and Infrastructure	*Vulnerability:* Critical facilities, transportation networks, and power systems are vulnerable to extreme cold. *Impacts:* The operations of fire and police stations or hospitals could be disrupted by power failures or water line breaks. Increased demand for electricity and natural gas for heating can overload systems and lead to outages. Transportation can also be disrupted due to secondary hazards, leading to closures, accidents, and delays. Colder temperatures can also freeze water infrastructure, leading to supply disruptions and costly repairs.
	Community Activities	*Vulnerability:* Commuting, roadway safety, and community events are vulnerable to extreme cold. *Impacts:* Extreme cold can cause schools and offices to close or delay their start. Extreme cold can also reduce participation in outdoor sports, events, and activities.
Flooding	People	*Vulnerability:* Population in 1% and 0.2% chance annual flood zones is vulnerable to flooding, including areas near Jordan River, Dry Creek, Little Cottonwood Creek, Rocky Mouth, and Big and Little Willow Creeks. *Impacts:* The population on the East Bench at canyon mouths, along creeks, and homes in the valley where water will accumulate is at risk. People can be injured or killed by fast-moving floodwaters. Residents can be displaced due to evacuations or flood damage to homes.
	Structures	*Vulnerability:* Any structure along natural waterways and in low-level flood planes at the base of the Wasatch Mountains is vulnerable to flooding. *Impacts:* Water can cause significant structural damage.
	Economic Assets	*Vulnerability:* Businesses near waterways are vulnerable to flooding. *Impacts:* Flooding can cause damage to structures, resulting in increased insurance claims.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Natural, Historic, and Cultural Resources	*Vulnerability:* Rivers and creeks are vulnerable to flooding. *Impacts:* During high runoff, severe erosion along creeks can occur.
	Critical Facilities and Infrastructure	*Vulnerability:* No critical facilities were identified in SFHAs. However, water distribution systems at the base on the East Bench and major roadways, such as 2000 East and 1300 East that cross flood areas are vulnerable. *Impacts:* Water treatment facility in Little Cottonwood Canyon could be damaged. Floodwaters could block, damage, or wash out major roads.
	Community Activities	*Vulnerability:* Recreation and community events are vulnerable to flooding. *Impacts:* Areas of hiking and recreation in the flood zones would have to be shut down, and security would need to be enforced due to the danger. Commuting would be difficult because of poor road conditions.
Landslide/ Slope Failure	People	*Vulnerability:* People residing on the East Bench and along the entire Dimple Dell Gully on both the North and South slopes could be affected by landslides. *Impacts:* People could be injured if caught in a fast-moving landslide. If homes are impacted, residents would be displaced.
	Structures	*Vulnerability:* Structures in the same area as described in the People section are vulnerable to landslides. *Impacts:* Many large homes built on the East Slope and on the edges of the gully are at risk of damage from slope failure. Residences or other structures can be damaged or destroyed by a landslide.
	Economic Assets	*Vulnerability:* Businesses in landslide-susceptible areas are vulnerable to impacts. *Impacts:* Large insurance claims may arise due to structure or home damage. If roads are damaged, costly repairs could be required. Disruptions to transportation networks could affect nearby businesses.
	Natural, Historic, and Cultural Resources	*Vulnerability:* The natural landscape and outdoor recreation areas are vulnerable to landslides. *Impacts:* Landslides can cause damage to wildlife refuge areas and established hiking/recreation areas.
	Critical Facilities and Infrastructure	*Vulnerability:* Water treatment/storage areas on the upper East Bench may be affected by landslides. *Impacts:* Landslides could disrupt water delivery to communities.
	Community Activities	*Vulnerability:* Outdoor recreation in affected areas is vulnerable to landslides. *Impacts:* Trailheads and trails could be damaged or become inaccessible for use.
Radon	People	*Vulnerability:* UtahRadon.org reports that 54% of homes in Sandy test with dangers levels of radon, and residents are vulnerable. Test results aggregated by zip code indicate vulnerability may be higher in the northeast area of Sandy.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		Impacts: Radon is the second leading cause of lung cancer after smoking. Certain populations, such as children, the elderly, and those with respiratory conditions, are more vulnerable.
	Structures	*Vulnerability:* Although radon does not directly damage structures, some buildings may be more likely to accumulate radon gas, increasing exposure to occupants. *Impacts:* Radon enters buildings and homes through cracks in foundations, basements, and crawl spaces. Many homes would need proper mitigation to reduce radon levels.
	Economic Assets	*Vulnerability:* Medical businesses and household budgets are vulnerable to the impacts of radon exposure. *Impacts:* Long-term exposure can lead to increased medical expenses for lung cancer treatment and respiratory issues.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Older structures may lack modern radon-resistant designs, making mitigation more difficult and expensive. *Impacts:* Residents in historic homes may have higher exposure to radon, and more homes may require mitigation.
	Critical Facilities and Infrastructure	*Vulnerability:* City facilities are vulnerable to radon accumulation. *Impacts:* Employees and patrons in critical facilities may be vulnerable if radon levels accumulate to high levels. Radon can dissolve into groundwater, potentially affecting well water sources.
	Community Activities	*Vulnerability:* Indoor community events are vulnerable to radon exposure. *Impacts:* Some venues could be avoided, especially in buildings with high radon levels. Mitigation measures may be needed for those who are immunocompromised.
Heavy Rain	People	*Vulnerability:* Residents along waterways on the East Bench and floodplain areas on the west side of the city are vulnerable to heavy rain impacts. *Impacts:* Heavy rain could cause flash flooding along roadways and low-lying areas if drainage systems are overwhelmed. People near drainage systems and waterways may be at risk of injury or drowning during flash flooding. Residents may be displaced if homes are flooded. Flash flooding places those traveling on roadways in danger, particularly if they choose to drive through floodwaters. Vehicles can be carried away in floodwaters, and occupants may be injured or killed.
	Structures	*Vulnerability:* Homes and business along Little Cottonwood Creek, Dry Creek, and Big and Little Willow Creeks are vulnerable to flooding. *Impacts:* Structures may encounter flooding from large amounts of stormwater runoff. Water can cause severe damage to buildings and their contents.
	Economic Assets	*Vulnerability:* Businesses in low-lying areas are vulnerable to flooding. *Impacts:* Flooding or water damage may close businesses, leading to financial losses. Outdoor construction projects may be delayed due to heavy rain.
	Natural, Historic, and	*Vulnerability:* Waterway ecosystems are vulnerable to heavy rain impacts.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Cultural Resources	*Impacts:* Increased soil erosion can harm these ecosystems.
	Critical Facilities and Infrastructure	*Vulnerability:* Roads, emergency response, and stormwater systems are vulnerable to heavy rain impacts. *Impacts:* Roads can become dangerous or unpassable due to standing water, creating a public safety issue. There could be disruption to essential services and potential access issues for police and fire response. Heavy rain could overwhelm drainage systems. Roads could be inundated or washed out. Roads along waterways, particularly on the East Bench, could be affected, including Little Cottonwood Canyon Road and Wasatch Boulevard.
	Community Activities	*Vulnerability:* Trails and community events are vulnerable to heavy rain impacts. *Impacts:* The public might avoid outdoor hiking areas due to flash flood dangers. Commuting during heavy rain is dangerous due to road conditions. Outdoor activities may be canceled or delayed.
High Wind	People	*Vulnerability:* Any resident or visitor in the area is vulnerable. *Impacts:* Public safety is a concern. Blowing debris or falling limbs can cause injury or death. Those with access and functional needs may need assistance with evacuating or obtaining additional resources, especially if the power goes out.
	Structures	*Vulnerability:* High-profile buildings along the I-15 corridor, homes, and businesses are vulnerable to high wind. *Impacts:* High winds can damage houses and commercial buildings. Flying debris can shatter windows. Sheds, fences, and older homes are more vulnerable to wind damage.
	Economic Assets	*Vulnerability:* Businesses in high profile buildings are vulnerable to high wind. *Impacts:* Most of the retail and office space in the city is in and around the high-profile buildings, which are susceptible to damage from high winds. This could cause temporary or moderate shutdowns of activities. It also creates a large draw on insurance claims in the city.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Trees are vulnerable to high wind. *Impacts:* Sandy City has a large number of large trees, creating a hazard of downed trees. This situation can contribute to injuries and structure damage and also requires major debris cleanup resources.
	Critical Facilities and Infrastructure	*Vulnerability:* City Hall and other city facilities, as well as power infrastructure, are vulnerable to high wind. *Impacts:* City Hall sits in the middle of the susceptible areas. Wind damage to power lines and IT network lines can lead to power outages, which can disrupt emergency response and government operations.
	Community Activities	*Vulnerability:* Public events are vulnerable to high wind. *Impacts:* Community events and activities may be postponed or canceled due to high wind conditions.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
Lightning	People	*Vulnerability:* Lightning can occur anywhere in the city. All residents are vulnerable, but those working or engaging in recreational activities outdoors are at increased risk. *Impacts:* Areas where people may be at higher risk of lightning strike include flat or exposed ground such as parks or golf courses. Locations such as hiking trails, Dimple Dell Park, and city parks are also vulnerable. Direct lightning strikes on people can cause severe burns, cardiac arrest, or neurological damage. Strikes hitting trees, metal structures, or ground currents can also injure people.
	Structures	*Vulnerability:* Tall buildings along the I-15 corridor are vulnerable to lightning strikes. *Impacts:* Lightning strikes can ignite house fires. Barns, sheds, and outdoor storage buildings are also vulnerable.
	Economic Assets	*Vulnerability:* All businesses are vulnerable to lightning strikes. *Impacts:* Lightning can disrupt power and telecommunications systems. Business disruptions resulting from lightning strikes can lead to business closures or financial losses.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Lightning increases the risk of wildfire in WUI. *Impacts*: Trees and vegetation could be damaged or destroyed by lightning or fire.
	Critical Facilities and Infrastructure	*Vulnerability:* Power, cell towers, and other internet/communications infrastructure are vulnerable to lightning strikes. *Impacts:* These systems can be damaged by lightning strikes, which can delay emergency services and cause disruptions throughout the community.
	Community Activities	*Vulnerability:* Outdoor recreation is vulnerable to lightning strikes. *Impacts:* Outdoor events may be delayed or canceled, especially if lightning is likely to occur in certain areas.
Severe Winter Weather	People	*Vulnerability:* All Sandy residents are potentially vulnerable to severe winter weather such as heavy snow. East Bench is at a higher elevation and often sees higher snow accumulation, and residents in this area are at higher risk. *Impacts:* Public safety is a concern due to traffic accidents from the heavy snow. People can be injured in car accidents while driving in severe winter weather conditions or may be stuck in vehicles or away from home. People are at risk of injuries from slips and falls due to slick conditions. Older residents or people with disabilities may be particularly vulnerable to injury. People who rely on home health or other home delivery services may be at risk due to travel delays. The unsheltered population is vulnerable to exposure or hypothermia.
	Structures	*Vulnerability:* Severe winter weather could affect structures anywhere in Sandy, but the higher elevations along the East Bench tend to receive higher snow accumulation. *Impacts:* Flat-roofed buildings in older neighborhoods may be damaged by heavy snow loads. Heavy snow loads can cause roofs to collapse, especially for older buildings, barns, or poorly maintained structures. Prolonged freezing temperatures can cause pipes to burst,

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		leading to water damage. Freeze–thaw cycles can crack foundations, driveways, and roads.
	Economic Assets	*Vulnerability:* Businesses throughout Sandy are vulnerable to severe winter weather. *Impacts:* Telecommunications and power infrastructure can be affected, leading to shutdowns of commerce due to travel restrictions. There are high costs for snow removal and salt for city/county operations. Severe winter weather may shut down businesses and schools. The retail and tourism industries may see fewer customers during extreme winter weather. There will also be an increased demand for heating and electricity, raising energy costs for homes and businesses. Severe winter weather can also delay or halt deliveries, affecting grocery stores, fuel, and other essential goods.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Parks and trees are vulnerable to severe winter weather. *Impacts:* Downed trees or broken branches can occur due to heavy snow load, causing damage to parks and trails.
	Critical Facilities and Infrastructure	*Vulnerability:* Roads, power, communication, and emergency response systems are vulnerable to severe winter weather. *Impacts:* Heavy snow creates road and travel dangers. This hinders commuters, reduces the ability of emergency vehicles to respond in the city, and increases call for rates about traffic-related incidents. Roads might be impassable due to snowdrifts or accidents. Major roads such as I-15, State Street, 9000/9400 South, and Wasatch Boulevard, as well as numerous smaller routes may be inaccessible or may experience severe delays. Buses, trains such as Trax, and flights may be delayed or canceled. Emergency services may be delayed due to road conditions. Heavy snow also increases the risk of damage to critical infrastructure, including power and telecommunications equipment. Downed power/telecommunications lines can impair emergency response. Heavy snow can weigh down power lines, causing widespread outages and leaving homes without power.
	Community Activities	*Vulnerability:* Disruptions to daily activities such as commuting, school, and recreation are possible during severe winter weather. *Impacts:* Severe winter weather creates roadway danger for commuting and traveling. These conditions may force schools to close. Outdoor activities such as skiing and snowshoeing may be too hazardous. Recreational facilities and city parks may close. Homeless shelters and warming centers may see increased demand as people seek protection from the extreme cold. Variable conditions contribute to avalanche risk.
Tornado	People	*Vulnerability:* All people in the path of a tornado are vulnerable, particularly those in buildings with large glass windows. *Impacts*: Similar to downslope and other high wind events, residents are at risk of injury or death from flying debris and collapsing buildings, especially those in mobile homes or weak structures. Individuals without access to basements or similar storm shelters are more vulnerable to injury. Older residents and those with limited mobility or other disabilities are also vulnerable. Outdoor workers or others without shelter are at high risk of injury.

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Structures	*Vulnerability:* Glass buildings and small RV/trailer park areas are vulnerable to tornado damage. Sandy City has three mobile/manufactured home communities that are at risk: Sandy Mobile Home Park, Sandee Village Mobile Home Park, Crescentwood Village Manufactured Home Community. *Impacts:* High winds can rip roofs off houses, shatter windows, and collapse walls. Tornadoes can flatten shopping centers, businesses, and restaurants, leading to long-term closures. Mobile homes and other structures that are not firmly anchored are at extreme risk.
	Economic Assets	*Vulnerability:* Businesses in the path of a tornado are vulnerable. *Impacts:* Damage to businesses can lead to closures, layoffs, and financial losses. Industries such as retail, hospitality, and manufacturing may be disrupted for weeks or months.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Trees, parks, and vegetation are vulnerable to tornado damage. *Impacts:* There is potential for wildfires sparked by downed power lines. Tornadoes can uproot trees, destroy parks, and damage local ecosystems.
	Critical Facilities and Infrastructure	*Vulnerability:* Power, communication networks, roads, and critical facilities are vulnerable to tornado damage. *Impacts:* Tornadoes can knock down power lines and damage substations, leaving residents and businesses without power for days or weeks depending on the severity of damage. Highways like I-15 could be blocked by debris. Traffic signals and streetlights may be damaged, as well as schools, public facilities, and communication infrastructure.
	Community Activities	*Vulnerability:* Schools, public facilities, and transportation are vulnerable to disruptions caused by tornadoes. *Impacts:* Evacuation routes and emergency access may be limited along the path of damage. Schools and public facilities may close temporarily for repairs.
Wildfire	People	*Vulnerability:* People residing along the WUI, the East Bench, and Dimple Dell Park are vulnerable to wildfires. *Impacts:* Residents may be evacuated or permanently displaced from homes by wildfire. Wildfire can kill those unable to evacuate quickly.
	Structures	*Vulnerability:* Homes, garages, sheds, and Salt Lake County Park buildings are vulnerable to wildfire damage. *Impacts:* Wildfires can burn entire neighborhoods, especially those within the WUI. Homes without defensible space are more vulnerable.
	Economic Assets	*Vulnerability:* Business operations are vulnerable to disruptions and losses caused by wildfires. *Impacts:* Power and telecommunications poles can be damaged by wildfires. Stores, restaurants, and offices may be forced to shut down due to fire damage, evacuations, or power outages.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Large areas of designated protected wildlife areas in Dimple Dell and the Wasatch Front are vulnerable to wildfires. Drought and extreme heat can increase the risk of wildfires.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		Impacts: Wildfire can burn thousands of acres of forests, grasslands, and habitats, displacing wildlife. The loss of vegetation can lead to erosion, landslides, and long-term environmental damage.
	Critical Facilities and Infrastructure	*Vulnerability:* Many power and telecommunications infrastructures are vulnerable to wildfires, especially along and in WUI areas. Road networks and water supply systems are also vulnerable. *Impacts:* Fire can damage electrical grids, transformers, and transmission lines. Roads may be closed due to flames, smoke, or fallen trees. If the water supply systems are damaged, firefighting efforts become more difficult. Emergency services and hospitals may be overwhelmed.
	Community Activities	*Vulnerability:* Community activities, recreation, work, school. *Impacts:* Possibility of extensive private property loss, power outages, life safety issues in outdoor recreation areas. Community events/activities may be canceled or postponed. Schools may close due to damage. Workplaces may remain closed for days or weeks due to evacuation and/or damage.
Dam Failure	People	*Vulnerability:* Any individuals in or around the base of the Bells Canyon watershed or within the White Pine, Red Pine, Alta Canyon, or Flat Iron Mesa dam inundation boundaries are vulnerable to dam failure. *Impacts:* Those downstream could be injured or displaced due to dam failure.
	Structures	*Vulnerability:* Homes, schools, and water storage facilities are vulnerable to damage or destruction from dam failure. *Impacts:* Large amounts of water from the Bell Canyon reservoir could cause major damage to homes and roadways located directly below.
	Economic Assets	*Vulnerability:* Businesses located in the dam inundation zone are vulnerable to dam failure. *Impacts:* Businesses could be damaged or disrupted due to interruptions in power, communications, or transportation systems. Water storage, telecommunications towers, roads, and/or public buildings such as schools may require costly repairs.
	Natural, Historic, and Cultural Resources	*Vulnerability:* High-volume recreational trails along the dam and below the site of rupture are vulnerable to dam failure. *Impacts:* The Bell Canyon Reservoir holds a substantial amount of water high above the heavily populated East Bench. There is also a large amount of outdoor recreation at the base of the reservoir. The inundation area of this reservoir is not included in the mapped dam failure inundation areas. Large amounts of water could cause significant damage and possible life safety risks to residents in the downslope area of Wasatch Boulevard and Dimple Dell Gully. Trails and trailheads could be damaged or washed out and become unusable.
	Critical Facilities and Infrastructure	*Vulnerability:* One fire station, two schools, major roads, and utilities are vulnerable to dam failure. *Impacts:* One fire station and one school are within the Flat Iron Mesa inundation boundary, and one school in the Alta Canyon inundation area could be damaged by a failure.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		Homes and schools in the flood path have limited immediate evacuation routes. Flooding could damage electrical grids, substations, and transformers, leading to power outages. Gas lines could be damaged, increasing the risk of fires and explosions. Roads could become impassable, and emergency services may struggle to reach people due to these conditions and may become overwhelmed.
	Community Activities	*Vulnerability:* Life safety in schools, homes, and recreation areas. *Impacts:* People could be injured, property damaged, and community activities disrupted or canceled.
Civil Disturbance	People	City employees and business district employees/visitors. If demonstrations escalate, people could suffer injuries from physical altercations, tear gas, and projectiles.
	Structures	Sandy City Hall, local businesses, Hale Center Theater, Mountain America Administration Building, multiple high-rise high-density housing buildings. Sandy City Amphitheater and Mountain America Exposition Center could be targeted for graffiti, broken windows, arson, or other damage.
	Economic Assets	City Hall, Mountain America Credit Union (MACU) Administration, the Amphitheater and AVH are all in critical and busy commuting areas. Mountain America Expo are at risk within Sandy City. Civil unrest can force store closures, reducing revenue. Tourists and shoppers may avoid certain areas affecting local businesses and restaurants. Businesses may struggle with costly repairs.
	Natural, Historic, and Cultural Resources	The Hale Center Theater is in the middle of the high-target area. Demonstrations in parks or streets may result in environmental damage.
	Critical Facilities and Infrastructure	The Emergency Operations Center, City Hall, and Sandy Police Department headquarters are places where people could protest. Protestors may block access to roads delaying emergency response.
	Community Activities	Area of high traffic. America First Field is in the area. Community events and activities may be postponed or canceled
Cyberattack	People	Government and banking buildings. MACU headquarters is near City Hall and is a major target in the city. Cyberattacks could interrupt government work, public safety, and critical infrastructure operation. A data breach could result in cybercriminals stealing personal information, tax documents, and other critical records.
	Structures	IT communication systems, IT storage, Businesses, government buildings, and public spaces could be targeted for graffiti, broken windows, arson, or other damage.
	Economic Assets	All city systems and transactions, EMS/Police data, banking data could be impacted. Cyberattacks can disrupt financial systems, causing delays in payroll and payment processing, licensing and permitting, as well as other essential services and record management.
	Natural, Historic, and	A cyberattack on Sandy City's water supply or power grid could disrupt irrigation systems impacting parks and other natural areas.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Cultural Resources	
	Critical Facilities and Infrastructure	Sandy City's data system at City Hall and at remote locations/ departments around the city that could be impacted by a cyberattack. A cyberattack on Rocky Mountain Power our Enbridge gas could lead to power outages, gas shortages, and water system failures. A breach at Intermountain Healthcare could compromise patient records, delay medical treatment, and disrupt emergency services. Attacks on 911 dispatch systems could day emergency response times.
	Community Activities	Sandy Amphitheater connected to Sandy Network could cause a shutdown. Cyberattacks can disrupt school and education, delay government services, and spread misinformation which can lead to public distrust
Hazardous Materials Incident (Transporta-tion & Fixed Facility)	People	Traffic on I-15, America First Field next to BD Medical, Trax on 9000 S 150 E. Exposure to toxic chemicals, fumes, or radiation can cause burns, respiratory issues, poisoning, and long-term diseases (cancer or organ damage). Immediate health effects that could occur include nausea, dizziness, difficulty breathing, and skin irritation. Residents and businesses near the spill or explosion site may need to evacuate and people may need to temporarily shelter somewhere.
	Structures	BD Medical, Steris, I-15, America First Field, Trax, Mountain America Exposition Center are vulnerable to this hazard. hazardous materials explosion at a gas station, industrial site, or along a transportation route could destroy nearby homes, businesses, and other critical infrastructure.
	Economic Assets	Major shutdown of largest transportation route in Utah. Businesses within hazard zones may be forced to close for weeks or months for cleanup. Road closures due to a spill on I-15 or nearby railways could delay supply chain and daily commute. Government agencies and businesses may face millions of dollars in cleanup expenses and legal claims from affected residents.
	Natural, Historic, and Cultural Resources	BD Medical next to America First Field could create a very large mass casualty event during a sporting event at the stadium. Chemicals could seep into groundwater, rivers, and wetland areas impacting Sandy City's water supply and local ecosystems.
	Critical Facilities and Infrastructure	I-15, Trax could be impacted by a hazardous materials incident. Firefighters, police, and local hospitals could be overwhelmed, delaying response times for other emergencies as well. Powerlines could be damaged causing power outages, if a train derailment or truck accident involved hazardous chemicals transportation roads could be closed.
	Community Activities	Sporting events with large amounts of people could be targets for a planned incident or casualties of an accidental incident. Community events and activities may be postponed or canceled due to air quality concerns or evacuation orders.
Public Health Epidemic/ Pandemic	People	All citizens, but especially the elderly, the young and high-risk populations. Fear of infection could cause panic, distrust, and social unrest. Isolation from quarantines, lockdowns, and social distancing can lead to depression, anxiety, and stress.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Structures	Assisted living and senior living, commercial areas around South Towne Mall. Public buildings, public transportation systems, and shared public spaces may require frequent cleanings and modifications to prevent the spread of disease.
	Economic Assets	High use of EMS, shutdown of commercial districts, shutdown of sporting events. Retail stores, restaurants, and small businesses may suffer from reduced foot traffic, workforce shortages, or mandatory shutdowns. Increased demand for hospital care, medications, and vaccines could become costly.
	Natural, Historic, and Cultural Resources	Parks and natural hiking trails and events may close or limit access to prevent gatherings and disease spread.
	Critical Facilities and Infrastructure	Overload of medical resources including EMS, AVH, and freestanding clinics. Hospitals and urgent care clinics may become overwhelmed, leading to long waiting times and shortages of medical staff. Fewer people may use public transportation systems, if utility workers and emergency service providers get sick, critical services may slow down leading to increased response times.
	Community Activities	Cancelation of all events in the city. Large gatherings like sports games, religious services, and community events may be canceled or restricted. Schools and workplaces may implement virtual classes and remote work.
Terrorism	People	Key targets include America First Field, Mountain America Exposition Center, BD Medical, and Steris. A terrorist attack in a public area (such as a shopping center, school, or public event) could result in mass casualties and injuries.
	Structures	Key targets include America First Field, Mountain America Exposition Center, BD Medical, and Steris. A terrorist attack could damage businesses, schools, government buildings, transportation hubs, and other public facilities.
	Economic Assets	Target areas of commerce and large gatherings. Attacks on business, districts, bans, or commercial centers could result in closures and loss of revenue. Tourism and local businesses may suffer if people avoid public places out of fear. Businesses, schools, and government/public buildings may need to invest in security upgrades increasing operational costs. Property and business owners may have higher insurance premiums and expensive rebuilding costs after an attack.
	Natural, Historic, and Cultural Resources	Mountain America Exposition Center and Hale Center Theater gather large amounts of people in a small area. If an attack targeted churches or monuments, it would be devastating for the community. A biological, chemical, or radiological attack could cause environmental damage.
	Critical Facilities and Infrastructure	Physical attacks on substations, transformers, water treatment facilities, could cause long-term power outages and water shortages. Disruptions in communication systems could delay emergency response efforts. A terrorist attack on a major highway like I-15 or public transit could shut down travel and delay supply chain. Hospitals

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		and ERs can become overwhelmed delaying care for other medical emergencies that do not just stop.
	Community Activities	Any mass gathering event. Schools, shopping centers, and office buildings may close temporarily or indefinitely after an attack. Large community gatherings and events may be postponed or canceled due to safety concerns.

Jurisdiction-Specific Changes in Vulnerability

Hazard events can impact communities, infrastructures, and ecosystems. The severity of these impacts can be influenced by climate change, population patterns, and land use developments. Understanding these factors is crucial for Sandy City to develop a resilient community and minimize the impacts of hazards. Table 9 displays the unique changes within the community and the related effects on each identified hazard affecting Sandy City.

DRAFT

Table 9: Jurisdiction-Specific Changes in Vulnerability in Sandy City

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
Avalanche	Changes in extreme weather have had major impacts on snow levels across the Wasatch Front.	Population growth and a drive to experience the outdoors puts more individuals in the elements and potential path of natural disasters in the wildland–urban interface (WUI).	More and more homes are being built on the eastern border of Sandy, bordering the wilderness areas of the Wasatch Front Mountains, exposing them to avalanche risk.	Increased
Drought	Hotter and longer summers are reducing the buildup of snowpack in the Wasatch Front.	Population growth in Salt Lake Valley on top of drier and longer summers is creating an increased risk of drought.	New commercial developments, particularly in the Cairns development area, increase the water demand in Sandy and increase risk for drought.	Increased
Earthquake	N/A, Climate does not affect earthquake risk.	High-density housing and homes in areas with limited access might require more urban search and rescue efforts.	New high-density housing with limited access and egress on the East Bench near an active fault line increases earthquake risk in Sandy.	Increased
Extreme Heat	Climate change has increased the number of days at or above 100°F over the past few years.	An aging population and a large number of senior living areas could lead to increased life safety risk from sustained extreme heat. An increase in the homeless population also represents an increased risk of life safety from exposure.	Densifying developments, such as the Union Heights Community Development Project Area, can trap heat and increase the risk of extreme heat.	Increased
Extreme Cold	Similar to extreme heat, there have been sustained extreme cold spells in the area.	An aging population and a large number of senior living areas could lead to increased life safety risk from sustained extreme cold. An increase in the homeless population also represents an increased risk of life safety from exposure.	Increased growth of commercial and residential developments in Sandy increases energy demand during extreme cold events, stressing the electrical grid	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
			and increasing the risk of harm.	
Flooding	Larger snowpacks in the winter and fast melting in the spring increase the levels in the reservoir.	Those with access and functional needs are at risk, especially if they need to be evacuated or seek shelter.	More homes have been built in the flood path below the reservoir, increasing the risk of flood damage.	Increased
Landslide/Slope Failure	Fast water runoff can cause instability to ground	Those with access and functional needs are at risk. Fatalities or injuries are a concern.	Homes have been built on slopes throughout the city, putting them at risk of landslides.	Stayed the same
Radon	Air, soil, and water quality concerns	Increased rates of lung cancer are likely if radon levels cannot be reduced.	Development in Sandy has not increased radon risk.	Stayed the same
Heavy Rain	Changing weather has been more extreme over the past few seasons.	Access and functional needs are a concern, especially for evacuations or any type of transport.	Increased impervious surfaces due to development across Midvale could contribute to ponding and other pluvial flooding.	Increased
High Wind	Changing weather has been more extreme over the past few seasons.	High wind can cause injuries and fatalities, which is a concern at schools. EMS response may be delayed if responders are overwhelmed.	Building has continued in high wind areas, and insurance may be dropped for certain areas.	Increased
Lightning	Increased in severe weather	First responders could become overwhelmed, especially if an event is on a hiking trail requiring additional resources.	Widespread development in Sandy puts more structures and people at risk of lightning strikes.	Increased
Severe Winter Weather	The last El Niño weather pattern brought heavy snow to the Salt Lake Valley. Per the National Weather Service, El Niño years bring roughly triple the days of snow. This trend may	The population growth across Salt Lake Valley has increased road traffic in every city. This can put great burdens on systems during heavy snow periods. A rise in the elderly also increases 911 calls,	N/A – Land use is not currently affecting the risk from heavy snow.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	increase the odds of heavy snow and blizzards in the coming years.	especially if supplies and heating are cut off.		
Tornado	Weather is becoming more extreme and unpredictable. This increases the chance of a tornado in the area.	People may move to areas not affected by tornadoes. Tornado safety may become more prominent in schools.	Increased development puts more structures at risk from tornados.	Stayed the same
Wildfire	Weather changes have created hotter and drier summers and falls, extending and increasing the risk of wildfires in the area.	Population growth and a drive to experience the outdoors put more individuals in the elements and potential paths of natural disasters in the WUI.	More and more homes are being built on the border of wilderness areas, exposing them to the dangers of natural disasters in the WUI.	Increased
Dam Failure	Higher amounts of snowpack on the Wasatch Front create high amounts of runoff during the increasingly warm early spring creating higher water levels and runoff into the reservoir.	Busier trail hiking paths create life safety risk increase.	New development has not increased the risk of dam failure.	Increased
Civil Disturbance	Conversations surrounding climate change could cause a civil disturbance or increase the likelihood of them occurring in the city.	Increased social media use has led to an increase in civil disturbances. Bad actors may become inspired by others.	Development in Sandy has not increased the risk of civil disturbance.	Stayed the same
Cyberattack	Bad actors can hack into critical infrastructure systems, impacting public health.	The rise in social media and digital platforms places the city at risk.	Cyberattacks could pose a threat to the physical security of buildings, impacting revenue and public access.	Stayed the same
Hazardous Materials Incident (Transportation & Fixed Facility)	Conversations surrounding climate change could pose a threat if there are bad actors. In addition,	More people live in the area, leading to increased likelihood of traffic accidents with semi-trucks carrying hazardous chemicals.	Development in Sandy has not increased hazardous material risk.	Stayed the same

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	increased fossil fuel use and population changes can impact resource needs. Air, water, and soil quality is a concern.			
Public Health Epidemic/ Pandemic	Air, water, and soil quality issues if it is coupled with drought or extreme heat/cold	Spread from person to person in high-density housing could increase the rate of infection.	Development in Sandy has not increased epidemic/pandemic risk.	Stayed the same
Terrorism	Conversations surrounding climate change could trigger bad actors.	Increased social media use could cause panic. Misinformation is a concern.	Development in Sandy has not increased terrorism risk.	Stayed the same

DRAFT

Additional Public Involvement

Sandy City provided several opportunities for public participation. Figure 1 shows examples of public outreach.

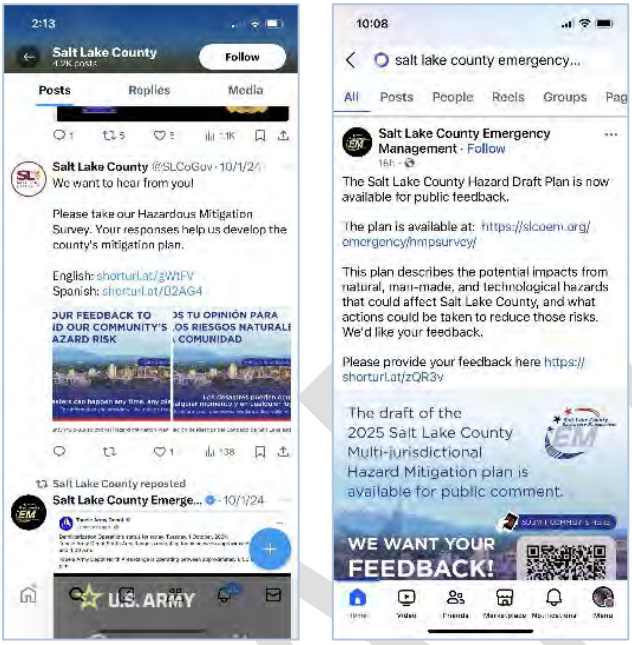


Figure 1: Social Media Posts for the Hazard Mitigation Plan (*left*) and Draft Plan Review (*right*)

Plan Integration

Incorporating the underlying principles of the Hazard Mitigation Plan and its recommendations into other plans is a highly effective and low-cost way to expand their influence. All plan participants will use existing methods and programs to implement hazard mitigation actions where possible. As previously stated, mitigation is most successful when it is incorporated into the day-to-day functions and priorities of government and public service. This plan builds on the momentum developed through previous and related planning efforts and mitigation programs, and it recommends implementing actions where possible through these other program mechanisms. These existing mechanisms include the following:

- Regularity Capabilities
- Administrative Capabilities
- Fiscal Capabilities

Respective planning stakeholders will conduct implementation and incorporation into existing planning mechanisms and will be done through the routine actions of:

- Monitoring other planning/program agendas
- Attending other planning/program meetings

DRAFT

- Participating in other planning processes; and
- Monitoring community budget meetings for other community program opportunities.

The successful implementation of this plan will require constant and vigilant review of existing plans and programs for coordination and multi-objective opportunities that promote a safe, sustainable community. Regular efforts should be made to monitor the progress of mitigation actions implemented through other planning mechanisms. Where appropriate, priority actions should be incorporated into planning updates. Table 11 lists the opportunities for integrating elements of this plan into other plans.

Table 10 lists existing planning mechanisms in which the Hazard Mitigation Plan has been integrated. Table 11 lists the opportunities for integrating elements of this plan into other plans.

Table 10: Integration of Previous Plans by Sandy City

Plan	Description
None	N/A

Table 11: Opportunities for Integration with Future Plans of Sandy City

Plan	Description
Trails and Open Lands Plan	The city recently updated the open lands and trails plan. This included many individuals in the city to ensure that the plan was relevant and updated for our current situation.
Community Wildfire Preparedness Plan (CWPP)	The Fire Department is currently updating the CWPP. This includes hazard assessments and identifying critical wildland–urban interface areas in the city. It also identifies critical exposure areas and evacuation routes in the event of an emergency.
General Plan	City's long-term goals and initiatives
Stormwater Management Plan	Stormwater infrastructure maintenance
Cemetery Master Plan	Recommended improvements and functionality
Active Transportation Plan	Review of any human-powered transportation for the city
Neighborhood Preservation and Maintenance Plan	Protection of health, safety, and welfare of Sandy City residents
Master Transportation Plan	Overview of transportation goals and ways to improve accessibility
Water Conservation Plan	Water-saving measures
Energy Action Plan	Energy goals and initiatives
Area Master Plans	Additional plans for areas with special consideration: Bell Canyon, Cairns, Hidden Valley Park, 90th S Gateway, Historic Sandy, Sandy City Downtown, Sandy Corners, South Towne Promenade Urban Streetscape

DRAFT

Capability Assessment

Local mitigation capabilities are existing authorities, policies, programs, and resources that reduce hazard impacts or could help carry out hazard mitigation activities.

Planning and Regulatory Capabilities

Planning and regulatory capabilities are the plans, policies, codes, and ordinances that prevent and reduce the impacts of hazards.

Table 12: Assessment of the Planning Capabilities of Sandy City

Plan	Does it address hazards? (Y/N)	How can it be used to implement mitigation actions?	When was the last update? When is the next update?
General Plan	Y	This plan identifies funding sources and provides general direction and guidance for the future of the city.	Yearly
Capital Improvement Plan	Y	This plan can identify vulnerable areas, such as buildings that are not up to code or that need renovation for natural disasters. This would help identify target hazards in the city.	Yearly
Climate Change Adaptation Plan	N – Water Conservation Plan	Can implement water-saving measures into drought, extreme heat, or wildfire mitigation actions	Annually
Community Wildfire Protection Plan	Y	This plan is updated every 5 years and reflects current evacuation routes, identifies target hazards, and identifies the department response model.	2019; currently undergoing update
Economic Development Plan	Y	Provide information on funding sources	Annually
Land Use Plan	Y	Incorporate information on land use and development into mitigation actions	Annually
Local Emergency Operations Plan	Y	The city provides Emergency Operations Center (EOC) training throughout the year. This includes activation of the EOC, running full scale exercises, and Incident Command System training. Information can be incorporated into mitigation actions and identify responsible departments	This is a continual process.
Stormwater Management Plan	Y	This plan identifies who is notified when a violation occurs. Can incorporate this information into responsible departments for mitigation actions	This plan is updated yearly

DRAFT

Plan	Does it address hazards? (Y/N)	How can it be used to implement mitigation actions?	When was the last update? When is the next update?
Transportation Plan	Y	Identifies critical infrastructure and planning for evacuation routes during a natural disaster. Also provides a temporary traffic control plan.	Every 10 years – most recently updated in 2019
Substantial Damage Plan	N/A	N/A	N/A
Other? (Describe)			

Table 13: Assessment of the Regulations and Ordinances of Sandy City

Regulation/Ordinance	Does it effectively reduce hazard impacts?	Is it adequately administered and enforced?	When was the last update? When is the next update?
Building Code	Y; Sandy City has adopted IBC 2021 with amendments specifically requiring the use of ignition-resistant materials in the WUI.	Y	Yearly
Flood Insurance Rate Maps	Y	Y	2022
Floodplain Ordinance	Y	Y	2022
Subdivision Ordinance	Y	Y	2022
Zoning Ordinance	Y	Y	As needed
Natural Hazard-Specific Ordinance (Stormwater, Steep Slope, Wildfire)	Y	Y	2022
Acquisition of Land for Open Space and Public Recreation Use	N/A	N/A	N/A
Prohibition of Building in At-Risk Areas	N/A	N/A	N/A
Other? (Describe)			

Administrative and Technical Capabilities

Administrative and technical capabilities include staff and their skills. They also include tools that can help carry out mitigation actions.

Table 14: Assessment of the Administrative Capabilities of Sandy City

Administrative Capability	In Place? (Y/N)	Is staffing adequate?	Are staff trained on hazards and mitigation?	Is coordination between agencies and staff effective?
Chief Building Official	Y	Y	Y	Y

DRAFT

Administrative Capability	In Place? (Y/N)	Is staffing adequate?	Are staff trained on hazards and mitigation?	Is coordination between agencies and staff effective?
Civil Engineer	Y	Y	Y	Y
Community Planner	Y	Y	Y	Y
Emergency Manager	Y	N	Y	Y
Floodplain Administrator	Y	Y	Y	Y
Geographic Information System (GIS) Coordinator	Y	Y	Y	Y
Planning Commission	Y	Y	Y	Y
Fire Safe Council	Y	Y	Y	Y
CERT (Community Emergency Response Team)	Y	Y	Y	Y
Active VOAD (Voluntary Agencies Active in Disasters)	Y	Y	Y	Y
Other? (Please describe.)				

Table 15: Assessment of the Technical Capabilities of Sandy City

Technical Capability	In Place? (Y/N)	How has it been used to assess/mitigate risk in the past?	How can it be used to assess/mitigate risk in the future?
Mitigation Grant Writing	Y	Used to fund infrastructure improvements	Can be used to fund mitigation actions
Hazard Data and Information	Y	Used to identify areas of concern related to flooding and wildfire	Can be used to submit with grant applications or show the need for mitigation actions
GIS	Y	Used to map vulnerable area and identify safety zones/ evacuation routes	Ensure that updates are an ongoing process, keep the public informed and aware of current data that is available.
Mutual Aid Agreements	Y	Aid is provided or received to enhance emergency response capabilities.	Continue to work on these aid agreements, ensure that multi-jurisdictional training is taking place with all stakeholders involved.
Other? (Please describe.)			

DRAFT

Financial Capabilities

Financial capabilities are the resources to fund mitigation actions. Talking about funding and financial capabilities is important to determine what kinds of projects are feasible, given their cost. Mitigation actions like outreach programs are lower cost and often use staff time and existing budgets. Other actions, such as earthquake retrofits, could require substantial funding from local, state, and federal partners. Partnerships, including those willing to donate land, supplies, in-kind matches, and cash, can be included.

Table 16: Assessment of the Financial Capabilities of Sandy City

Funding Resource	In Place? (Y/N)	Has it been used in the past and for what types of activities?	Could it be used to fund future mitigation actions?	Can it be used as the local cost match for a federal grant?
Capital Improvement Project Funding	Y	Used to bring existing and new construction to code	Y	Y
General Funds	Y	Used to fund projects and purchases to enhance emergency response capabilities.	Y	Y
Hazard Mitigation Grant Program (HMGP/404)	Y	Has not been used yet	Y	N
Building Resilient Infrastructure & Communities (BRIC)	Y	Has not been used yet	Y	N
Flood Mitigation Assistance (FMA)	Y	Has not been used yet	Y	N
Public Assistance Mitigation (PA Mitigation/406)	Y	Has not been used yet	Y	N
Community Development Block Grant (CDBG)	Y	Operation costs, infrastructure improvements	Y	N
Natural Resources Conservation Services (NRCS) Programs	Y	Has not been used yet	Y	N
U.S. Army Corps (USACE) Programs	Y	Has not been used yet	Y	N
Property, Sales, Income, or Special Purpose Taxes	Y	Used to fund fire department operations	Y	N

DRAFT

Funding Resource	In Place? (Y/N)	Has it been used in the past and for what types of activities?	Could it be used to fund future mitigation actions?	Can it be used as the local cost match for a federal grant?
Stormwater Utility Fee	Y	The fees are used for operations, maintenance, repair of the stormwater system, and capital improvement projects.	Y	Y
Fees for Water, Sewer, Gas, or Electric Services	Y	Infrastructure improvements	Y	Y
Impact Fees from New Development and Redevelopment	Y	Operation costs	Y	Y
General Obligation or Special Purpose Bonds	Y	Operation costs	Y	Y
Federal-funded Programs (Please describe)	Y	Currently, the fire department applies for federal funding through FEMA for equipment and staffing.	Y	N
Private Sector or Nonprofit Programs	Y	Has not been used yet	Y	Y
Other?				

Education and Outreach Capabilities

Education and outreach capabilities are programs and methods that could communicate about and encourage risk reduction. These programs may be run by a participant or a community-based partner. Partners, especially those who work with underserved communities, can help identify additional education and outreach capabilities.

Table 17: Assessment of the Education and Outreach Capabilities of Sandy City

Education and Outreach Capability	In Place? (Y/N)	Does it currently incorporate hazard mitigation?	Could it be used to support mitigation in the future?
Community Newsletter(s)	Y	Y	Y
Hazard Awareness Campaigns (such as Firewise, Storm Ready, Severe Weather Awareness Week, School Programs)	Y	Y	Y
Public Meetings/Events (Please describe.)	Y	Y	Y
Emergency Management Listserv	Y	Y	Y

DRAFT

Education and Outreach Capability	In Place? (Y/N)	Does it currently incorporate hazard mitigation?	Could it be used to support mitigation in the future?
Local News	Y	Y	Y
Distributing Hard Copies of Notices (e.g., public libraries, door-to-door outreach)	Y	Y	Y
Insurance Disclosures/Outreach	N	N/A	Y
Organizations that represent, advocate for, or interact with underserved and vulnerable communities (Please describe.)	Y	Y	Y
Social media (Please describe.)	Y – Facebook, Instagram, city websites	Y	Y
Other? (Please describe.)	N/A	N/A	N/A

Opportunities to Expand and/or Improve Capabilities

Actions that can expand and improve existing authorities, plans, policies, and resources for mitigation include budgeting for mitigation actions, passing policies and procedures for mitigation actions, adopting and implementing stricter mitigation regulations, approving mitigation updates, and making additions to existing plans as new needs are recognized. Table 18 lists the opportunities for Sandy City.

Table 18: Opportunities to Expand and/or Improve the Capabilities of Sandy City

Capability	Opportunity to Expand and/or Improve
Planning and Regulation	The Fire Department is currently updating the Community Wildfire Protection Plan (CWPP) for the city. This includes identifying and updating the target hazards in the wildland-urban interface (WUI) and identifying evacuation routes and safety zones. The city is expanding its efforts to collaborate with neighboring departments and other stakeholders to ensure that all parties involved have input on the CWPP.
Administrative and Technical	Currently all departments are facing staffing and budget shortages. The workloads continue to increase, and personnel are being stretched thinner and thinner. The city can explore options to expand and cross-train staff. Additional MOUs or partnerships could also be expanded.
Financial	The community has taken advantage of many grant funding opportunities to expand services and hire and retain personnel. However, the city has not yet applied for federal mitigation grants such as the Hazard Mitigation Grant Program (HMGP/404), Flood Mitigation Assistance (FMA), and Public Assistance Mitigation (PA Mitigation/406). Applying for these types of funding sources would expand the city's ability to finance mitigation projects.
Education and Outreach	The city is taking advantage of many social media outlets to ensure that citizens are provided pertinent information. There are also department-specific outreach programs that are designed to target specific information and provide training and outreach opportunities for the public.

DRAFT

Capability	Opportunity to Expand and/or Improve
	The city can expand this capability by identifying opportunities to educate the public on emergency hazards and hazard-specific mitigation measures including green infrastructure. The city continues to seek and develop programs to enhance its efforts to ensure the community is receiving information and education on different city programs and events and it continues to have a large social media presence and provide as much outreach to the community as possible.

Mitigation Strategy

Mitigation strategies provide proactive measures that are designed to minimize the impacts of hazards on Sandy City. Table 19 shows mitigation action alternatives, and Table 20 shows the status of previous mitigation activities. Table 21 is the 2025 mitigation action plan for Sandy City.

Table 19: Mitigation Action Alternatives for Sandy City

Action	Type of Action	Selected for inclusion in the plan?	If not selected, why not?
Create all-hazards evacuation zones for the city	Local plans and regulations	No	Response rather than mitigation

Table 20: Status of Prior Mitigation Actions of Sandy City[2]

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update
Dry Creek improvement project.	Dam Failure, Extreme Heat, Flooding, Severe Weather, Severe Winter Weather	Sandy City Public Utilities	Sandy City, SLCo Flood Control, SLCo EM, SLCo Public Works	Complete.
Provide education and outreach to residents and businesses located on the benches.	Avalanche	Sandy City Public Works and Sandy City Communications	SLCo EM, Sandy City Fire, Sandy City EM, Sandy City PD	Ongoing.
Identify drainage pathways and seek cost/benefit analysis of placing diversion	Dam Failure	Sandy City Public Works	Sandy City Public Utilities, Sandy City Communications, Sandy City EM, SLCo	Ongoing.

[2] EM = Emergency Management, FFSL = Division of Forestry, Fire, and State Lands, IT = Information Technology, NWS = National Weather Service, PD = Police Department, SLCo = Salt Lake County, SLCo EM = Salt Lake County Emergency Management, UDEM = Utah Division of Emergency Management, UDEQ = Utah Department of Environmental Quality, UFA = Unified Fire Authority.

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update
structures or add capacity for drainage.			Flood Control, SLCo EM	
Develop a 5-year Water Conservation Plan.	Drought	Sandy City Public Works	SLCo EM, Sandy City Public Utilities, water districts, Sandy City Fire, Sandy City Communications, SLCo Public Works, Sandy City Parks and Recreation, SLCo Parks and Recreation	Complete.
Offer annual sprinkler maintenance workshops to promote efficient and effective watering of landscapes.	Drought	Sandy City Public Works	Sandy City Communications, Sandy City EM, Sandy City Parks and Recreation, SLCo Parks and Recreation, SLCo EM, Sandy City Public Utilities	Ongoing.
Promote "Water Week" with elementary students to promote best management practices for water conservation.	Drought	Sandy City Public Works	Sandy City EM, Sandy City Fire, Sandy City Parks and Recreation, SLCo EM, SLCo Parks and Recreation, water districts, Sandy City Public Utilities, Sandy City Communications	Ongoing.
Install automatic gas shut off fixtures on any City owned buildings or structures with gas service/meter that do not have one currently.	Earthquake	Sandy City Administrative Services – Facilities Division	Sandy City Public Utilities, Sandy City EM, Sandy City Fire, Sandy City Public Works	Ongoing.
Distribution of earthquake hazard preparedness/response information. Post such information on the City's website	Earthquake	Sandy City EM and IT	Sandy City Fire, Sandy City PD, Sandy City Communications, NWS, SLCo EM	Ongoing.
Maintain community participation in the National Flood Insurance Program.	Flooding	Sandy City Public Works	Sandy City Public Utilities, Sandy City EM, Sandy City Fire, SLCo EM	Ongoing.
Distribution of flood hazard and flood preparedness/response information, such as the "Flooding: What you should Know when Living in Utah" brochure which the city partnered	Flooding	Sandy City EM and IT	Sandy City Fire, NWS, SLCo EM, Sandy City PD, Sandy City Parks and Recreation, Sandy City Economic Development, SLCo	Ongoing.

DRAFT

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update
in developing in 2014, or similar types of information. Post such information on the City's website.			Flood Control, SLCo Public Works, NWS	
Update of the city's Stormwater Master Plan to include specific flood mitigation projects in flood-prone areas of the city.	Flooding	Sandy City Public Works	Sandy City Public Utilities, Sandy City Communications, Sandy City EM, Sandy City EM, water districts, NWS, SLCo Flood Control	Complete.
Perform a comprehensive soil sample of slope areas of the city.	Landslide	Sandy City Community Development	Sandy City Public Utilities, Sandy City Public Works, SLCo Public Works, SLCo Health Department, Sandy City Parks and Recreation, SLCo Parks and Recreation	Not complete.
Development of a Pandemic Response & Recovery Plan.	Pandemic	Sandy City EM and Fire	SLCo Health Department, SLCo EM, local jurisdictions, Sandy City Public Works, Sandy City Public Utilities, Sandy City Parks and Recreation, Sandy City Community Development	Not complete.
Creation of a radon hazard map showing potential areas of the community that may be affected by radon.	Radon	Sandy City EM and IT	SLCo Health Department, SLCo EM, UDEQ, UDEM, Sandy City EM, Sandy City Fire, Sandy City GIS	Not complete.
Distribution of information on radon. Post such information on the city's website.	Radon	Sandy City EM and IT	SLCo Health Department, SLCo EM, UDEQ, UDEM, Sandy City EM, Sandy City Fire, Sandy City GIS	Complete.
Promote public education in the community regarding severe weather. Post such information on the City's website.	Severe Weather	Sandy City EM and IT	SLCo Health Department, SLCo EM, NWS, UDEM, Sandy City EM, Sandy City Fire, Sandy City GIS	Ongoing.
Support of community education programs that raise awareness and provide information to property owners on how	Wildfire	Sandy City EM, Fire, and IT	SLCo Health Department, SLCo EM, NWS, UDEM, Sandy	Ongoing.

DRAFT

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update
to protect their structures from wildfire damage. Post such information on the city's website.			City EM, FFSL, Sandy City GIS	
Maintain a wildland fire response unit.	Wildfire	Sandy City Fire	Sandy City EM, FFSL, UFA, SLCo EM	Complete.
Prohibit the use of fireworks in high-risk areas.	Wildfire	Sandy City Fire	Sandy City EM, FFSL, UFA, SLCo EM	Ongoing.
Training for firefighters in wildland firefighting.	Wildfire	Sandy City Fire	Sandy City EM, FFSL, UFA, SLCo EM	Ongoing.

Mitigation Success Story

Sandy City, in collaboration Bowen Collins & Associates (BC&A), completed the design, environmental permitting, and construction management of 1,200 linear feet of the Dry Creek channel realignment near the Sandy City South Town Mall. This project was undertaken to accommodate future development, provide public open space, mitigate 100-year flood concerns, and connect Monroe Street from 10200 South to 10600 South and I-15. BC&A completed environmental compliance, including an extensive Individual Permit with the US Army Corps of Engineers, Salt Lake County Flood Control permitting, and a State of Utah Stream Alteration permit. The project goals were to enhance riparian habitat, develop a pedestrian trail that connects Dimple Dell to the Jordan River Parkway Trail, provide a pedestrian bridge over Dry Creek, and create a park for leisure and recreational use.

DRAFT

Table 21: 2025 Mitigation Action Plan for Sandy City[3]

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Time-frame	Priority	Comments
1	Continue training and improve coordination between agencies for Public Order Unit.	Civil Disturbance	Sandy City Police	UHP, SLCo EM	Improved coordination with other agencies, reduces public safety risk	Low	City General Fund, department budget, SHSP grant	Short-Term	Low	The city has a Public Order Unit that participates in a state-sponsored mutual aid Public Order Team.
2	Conduct yearly inspections to identify potential maintenance needs.	Dam Failure	Sandy City Public Utilities	Sandy City Public Works, Sandy City EM, SLCo EM, SLCo Public Works, SLCo Flood Control	Stay current on status of dam and provide timely repairs to reduce risk of dam failure and subsequent flood damage.	Low-High	City General Fund	Long-Term	High	Cost is dependent on needed actions.
3	Develop and implement a water conservation plan to assist in monitoring of reservoir storage.	Drought	Sandy City Public Utilities	SLCo Public Works, Sandy City Public Works, Sandy City Parks and Recreation, SLCo Parks and Recreation	Keep water reservoir storage sufficient for needs and reduce risk of drought.	Low	City General Fund, CDBG grant	Long-Term	Medium	
4	Retrofit critical facilities and infrastructure to withstand earthquakes and other geologic hazards.	Earthquake	Sandy City Community Development	SLCo EM, Sandy City Fire, Sandy City EM, Sandy City PD, Sandy City Public Works, Sandy City Public Utilities	Improved safety, ensures buildings are up to code, reduces potential loss.	High	City General Fund, City Capital Projects Fund, HMGP grant, BRIC grant	Long-Term	Medium	
5	Improve communication to the public and stakeholders on available resources during Code Blue activation, including with local MVP shelter residents.	Extreme Cold	Sandy City Police	Sandy City Fire, Sandy City MVP Shelter, NWS, SLCo EM, local jurisdictions	Notify and work with MVP shelter staff to ensure safe living quarters for MVP residents. Reduce risk to population from exposure to cold.	Low	City General Fund, SLCo EM, UDEM, NWS	Long-Term	High	
6	Develop and implement a plan to track green infrastructure projects and improve energy efficiency throughout the city.	Drought, Extreme Heat	Sandy City Public Utilities and Parks and Recreation	SLCo EM, SLCo Parks and Recreation, Sandy City Communications, Sandy City EM, Sandy City Fire, Sandy City IT	Collect and maintain information on green infrastructure projects in Sandy City, improved energy efficiency, improved water and air quality. Improved resilience to drought and extreme heat.	Medium	City General Fund, City Capital Projects fund, HMA funds	Medium	Medium	
7	Monitor areas of potential flooding and identify needs for debris basins, flood retention ponds, energy flow dissipaters and other improvements to reduce damage from floodwaters.	Flooding, Dam Failure, Heavy Rain	Sandy City Public Utilities	Sandy Public Works, Sandy Fire	Identified flood zones, monitoring of water runoff. Preparation of equipment and supplies to minimize flood damage. Reduce risk of injury or property loss from flooding.	High	City General Fund, City Capital Projects fund, HMA, FMA	Long-Term	High	

[3] BRIC = Building Resilient Infrastructure and Communities, CDBG = Community Development Block Grant, CWPP = Community Wildfire Protection Plan, EM = Emergency Management, FBI = Federal Bureau of Investigation, FMA = Flood Mitigation Assistance, HMA = GIS = Geographic Information System, Hazard Mitigation Assistance, HMGP = Hazard Mitigation Grant Program, IT = Information Technology, LEPC = Local Emergency Planning Committee, MVP = Medically Vulnerable People, NWS = National Weather Service, PD = Police Department, PPE = Personal Protective Equipment, SHSP = State Homeland Security Program, SIAC = Statewide Information and Analysis Center, SLCo = Salt Lake County, SLCo EM = Salt Lake County Emergency Management, SOP = Standard Operating Procedure, UDEM = Utah Division of Emergency Management, UDNR = Utah Department of Natural Resources, UDOT = Utah Department of Transportation, UGS = Utah Geological Survey, UHP = Utah Highway Patrol, WUI = Wildland-Urban Interface.

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Time-frame	Priority	Comments
8	Complete/participate in Tier II reporting and documentation.	Hazardous Materials Incident	Sandy City Fire Department	SLCo LEPC, Salt Lake Valley Hazmat Alliance	Better access to known chemical storage in our response areas. Use information to identify potential risks and ways to reduce potential incidents.	Low	Funded by SLCo LEPC	Short Term	Medium	
9	Implement recommendations from debris flow study for which pre-planning is in progress.	Landslide/Slope Failure	Sandy City Public Works	UGS	Reduce potential property loss or personal injury from debris flow.	High	City Capital Projects Fund	Short-Term	High	A debris flow study has been funded through BRIC. Once completed, recommendations for mitigations will be provided.
10	Increased stock of PPE for responding personnel for future events.	Public Health Epidemic/ Pandemic	Sandy City Fire Department	SLCo Health Department	Be prepared for the logistical needs of an epidemic/pandemic. Adequate supplies help reduce risk of illness during pandemic.	Low	Budgeted in Fire Department PPE costs	Long-Term	Medium	
11	Create public awareness campaigns and public education programs on radon risks and increase public support for home testing for radon.	Radon	Sandy City Fire Department/EM	SLCo EM, SLCo Health Department, State of Utah	Decrease radon-caused illness or deaths. Increase engagement and understanding by public of radon risks.	Low	City General Fund	Medium	Medium	
12	Promote public education in the community regarding severe weather through website, print, social media, or in-person training.	Avalanche, Extreme Heat, Extreme Cold, Heavy Rain, High Wind, Lightning, Tornado, Severe Winter Weather	Sandy City Fire Department	SLCo EM, NWS, SLCo Health Department, SLCo EM, NWS, UDEM, Sandy City EM, Sandy City Fire, Sandy City GIS	Education increases residents' understanding of weather-related hazards and ways residents can reduce their risk of injury. Examples of educational content to reduce risk: • Avalanche: Educate on recognizing avalanche-prone areas and safe travel practices in snowy terrains. • Extreme Heat: Offer information on staying cool and hydrated. • Extreme Cold: Discuss home insulation techniques, safe heating practices, preparing vehicles for winter conditions. • Flood/Heavy Rain: Teach flood proofing methods, avoiding areas of high risk, and "Turn Around, Don't Drown." • Lightning: Share safety tips for outdoor lightning protection and guidelines for cancelling events. • Severe Winter Weather, Tornado, High Wind: Educate on locating shelter locations and home weatherization.	Low	City General Fund	Medium	Medium	

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Time-frame	Priority	Comments
13	Develop process for Joint Terrorism Task Force to monitor and analyze potential threats.	Terrorism (including cyberattacks)	Sandy Police	IT, FBI	Collect and analyze information, development of SOPs for intelligence, greater collaboration to reduce terrorism risk.	Low	Department budget	Short-Term	Medium	The city participates in the Joint Terrorism Task Force, sponsored by the FBI. It is also in touch with and participates with the SIAC.
14	Complete yearly wildland mitigation work to reduce fuel loads in WUI areas. CWPP agreement.	Wildfire	Sandy Fire Department	UDNR, State Forestry Lands Division	Reduce impact and potential for wildland fire.	Low	Budgeted for equipment and use of labor hours for in-kind credit, City General Fund, department budget, staff time	Long-Term	High	
15	Provide education and outreach to residents and businesses located on the benches.	Avalanche	Sandy City Public Works and Sandy City Communications	SLCo EM, Sandy City Fire, Sandy City EM, Sandy City PD, Utah Avalanche Center	Reduce risk of injury to residents and damage to structures from avalanche.	Low	City General Fund	Ongoing	Medium	
16	Identify drainage pathways and seek cost/benefit analysis of placing diversion structures or adding capacity for drainage.	Dam Failure	Sandy City Public Works	Sandy City Public Utilities, Sandy City Communications, Sandy City EM, SLCo Flood Control, SLCo EM	Reduce risk of damage or injury from dam failure.	Low	City General Fund	Short-term	Medium	
17	Offer annual sprinkler maintenance workshops to promote efficient and effective watering of landscapes.	Drought	Sandy City Public Works	Sandy City Communications, Sandy City EM, Sandy City Parks and Recreation, SLCo Parks and Recreation, SLCo EM, Sandy City Public Utilities	Improve resilience to drought.	Low	City General Fund	Ongoing	Medium	
18	Promote “Water Week” with elementary students to promote best management practices for water conservation.	Drought	Sandy City Public Works	Sandy City EM, Sandy City Fire, Sandy City Parks and Recreation, SLCo EM, SLCo Parks and Recreation, water districts, Sandy City Public Utilities, Sandy City Communications	Encourage water conservation to improve resilience to drought.	Low	City General Fund	Ongoing	Low	
19	Install automatic gas shut off fixtures on any City owned buildings or structures with gas service/meter that do not have one currently.	Earthquake	Sandy City Administrative Services – Facilities Division	Sandy City Public Utilities, Sandy City EM, Sandy City Fire, Sandy City Public Works	Reduce risk of structural damage from damaged gas fixtures caused by earthquakes.	Medium	City General Fund, Capital Improvement Fund.	Long-term	Medium	
20	Distribute earthquake hazard education information. Post	Earthquake	Sandy City EM and IT	Sandy City Fire, Sandy City PD,	Reduce risk of injury and structural damage from	Low	City General Fund	Short-term	Medium	

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Time-frame	Priority	Comments
	such information on the City's website and update annually.			Sandy City Communications, NWS, SLCo EM	earthquakes by educating residents on actions they can take to retrofit homes, secure furniture, etc.					
21	Maintain community participation in the National Flood Insurance Program.	Flooding	Sandy City Public Works	Sandy City Public Utilities, Sandy City EM, Sandy City Fire, SLCo EM	Reduce risk to flooding	Low	City General Fund	Ongoing	Medium	
22	Distribute flood hazard and flood preparedness/response information, such as the "Flooding: What You Should Know when Living in Utah" brochure, which the city partnered in developing in 2014, or similar types of information. Post such information on the city's website. Update annually.	Flooding	Sandy City EM and IT	Sandy City Fire, NWS, SLCo EM, Sandy City PD, Sandy City Parks and Recreation, Sandy City Economic Development, SLCo Flood Control, SLCo Public Works, NWS	Education can encourage residents to take steps to reduce their personal risk.	Low	City General Fund	Ongoing	Medium	
23	Perform a comprehensive soil sample of slope areas in the city.	Landslide	Sandy City Community Development	Sandy City Public Utilities, Sandy City Public Works, SLCo Public Works, SLCo Health Department, Sandy City Parks and Recreation, SLCo Parks and Recreation	Identify areas that may be more susceptible to landslide and possibly in need of stabilization.	Medium	City General Fund	Long-term	Medium	
24	Develop a Pandemic Response & Recovery Plan.	Pandemic	Sandy City EM and Fire	SLCo Health Department, SLCo EM, local jurisdictions, Sandy City Public Works, Sandy City Public Utilities, Sandy City Parks and Recreation, Sandy City Community Development	Improve resilience to pandemics.	Low	City General Fund, EMPG	Long-term	Medium	
25	Create a radon hazard map showing potential areas of the community that may be affected by radon.	Radon	Sandy City EM and IT	SLCo Health Department, SLCo EM, UDEQ, UDEM, Sandy City EM, Sandy City Fire, Sandy City GIS	Use tools to improve awareness of radon risk and encourage residents to test homes to reduce potential exposure.	Low	City General Fund	Short-term	Medium	

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Time-frame	Priority	Comments
26	Support community education programs that raise awareness and provide information to property owners on how to protect their structures from wildfire damage. Post such information on the city's website.	Wildfire	Sandy City EM, Fire, and IT	SLCo Health Department, SLCo EM, NWS, UDEM, Sandy City EM, FFSL, Sandy City GIS	Education can encourage residents to take steps to reduce their personal risk.	Low	City General Fund	Short-term	Medium	
27	Prohibit the use of fireworks in high-risk areas.	Wildfire	Sandy City Fire	Sandy City EM, FFSL, UFA, SLCo EM	Reduce risk of igniting wildfire.	Low	City General Fund	Ongoing, annually	Medium	
28	Maintain training for firefighters in wildland firefighting.	Wildfire	Sandy City Fire	Sandy City EM, FFSL, UFA, SLCo EM	Improve response to wildfire.	Medium	City General Fund	Ongoing	Medium	

DRAFT

THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT

City of South Jordan

Jurisdictional Annex to the
Salt Lake County Hazard Mitigation Plan

Month XXXX | Draft X.X

THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT

Table of Contents

City of South Jordan Annex 1

Planning Process Contact Information 1
Jurisdiction Profile 1
Date of Incorporation 1
Location and Description 1
Population 2
Demographics 2
Brief History 2
Climate 3
Public Services 4
Governing Body 4
Development Trends 4
Jurisdiction-Specific Hazards and Risk 5
Hazard Event History 8
National Flood Insurance Program Summary 11
Jurisdiction-Specific Vulnerabilities and Impacts 11
Jurisdiction-Specific Changes in Vulnerability 32
Additional Public Involvement 42
Plan Integration 42
Capability Assessment 44
Planning and Regulatory Capabilities 44
Administrative and Technical Capabilities 46
Financial Capabilities 47
Education and Outreach Capabilities 48
Opportunities to Expand and/or Improve Capabilities 49
Mitigation Strategy 49

DRAFT

List of Figures

Figure 1: Average Monthly Rainfall in the City of South Jordan 3
Figure 2: Average Monthly Snowfall in the City of South Jordan 4

List of Tables

Table 1: Contact Information for the City of South Jordan 1
Table 2: Participant List for the City of South Jordan 1
Table 3: Calculated Priority Risk Index Values for the City of South Jordan 5
Table 4: Criteria for the Calculated Priority Risk Index 6
Table 5: History of Hazard Events in Salt Lake County 8
Table 6: History of Hazard Events in the City of South Jordan 8
Table 7: National Flood Insurance Program Status for the City of South Jordan 11
Table 8: National Flood Insurance Policies for the City of South Jordan 11
Table 9: Jurisdiction-Specific Vulnerabilities and Impacts in the City of South Jordan 12
Table 10: Jurisdiction-Specific Changes in Vulnerability in the City of South Jordan 33
Table 11: Integration of Previous Plans by the City of South Jordan 43
Table 12: Opportunities for Integration with Future Plans of the City of South Jordan 43
Table 13: Assessment of the Planning Capabilities of the City of South Jordan 44
Table 14: Assessment of the Regulations and Ordinances of the City of South Jordan 45
Table 15: Assessment of the Administrative Capabilities of the City of South Jordan 46
Table 16: Assessment of the Technical Capabilities of the City of South Jordan 47
Table 17: Assessment of the Financial Capabilities of the City of South Jordan 47
Table 18: Assessment of the Education and Outreach Capabilities of the City of South Jordan 48
Table 19: Opportunities to Expand and/or Improve the Capabilities of the City of South Jordan 49
Table 20: Mitigation Action Alternatives for the City of South Jordan 50
Table 21: Status of Prior Mitigation Actions of the City of South Jordan 51
Table 22: 2025 Mitigation Action Plan for the City of South Jordan 55

DRAFT

City of South Jordan Annex

To participate in this multi-jurisdictional hazard mitigation plan (MJHMP) update for Salt Lake County (SLCo), the governing body of the city of South Jordan passed a formal resolution, a copy of which is maintained at the local government offices.

Planning Process Contact Information

Table 1 provides information on the point of contact during the updating of the MJHMP.

Table 1: Contact Information for the City of South Jordan

Name	Contact Information
Aaron Sainsbury	**Phone**: 801-330-2902 **email:** Asainsbury@sjc.utah.gov

The city of South Jordan has a fully integrated approach to hazard mitigation planning and program implementation. During the 2024 update process, the MJHMP participation roles in Table 2 were recorded.

Table 2: Participant List for the City of South Jordan

Name	Title	Jurisdiction
Aaron Sainsbury	Emergency Manager	South Jordan
Chris Dawson	Fire Chief	South Jordan
Matt Jarmon	GIS Specialist	South Jordan
Brad Klavano	City Engineer	South Jordan
Raymond Garrison	Public Works Director	South Jordan
Jason Rasmussen	Assistant City Manager	South Jordan

Jurisdiction Profile

Date of Incorporation

The area was first settled in 1859 and officially incorporated in 1935.

Location and Description

South Jordan occupies 25.8 square miles in the southwestern portion of Salt Lake County. This includes approximately 3.5 square miles recently annexed from Kennecott. The city is located between the cities of West Jordan to the north, Sandy to the East, Draper to the southeast, Riverton to the south, Herriman to the southwest. The Oquirrh Mountains lie to the west. Significant geographic features include the Jordan

River near the city's eastern boundary, which flows from south to north through the city. The elevation of South Jordan ranges from approximately 4,300 feet near the Jordan River and rises gently to about 5,200 feet at the city's western boundary on the slopes of the Oquirrh Mountains. The entire area was once covered by Lake Bonneville, so the area is relatively flat and the soils are primarily old lakebed sediments. One notable exception is an old sandbar that creates a bluff-like topography just west of the Bangerter Highway. The city of South Jordan is centrally located between Provo and Ogden in the Wasatch Front Region. It extends westward from I-15 to State Road U-111, between 9400 South and 11800 South. It is easily accessible by road, within minutes of the Salt Lake International Airport, and is intersected by a rail line. Freeway ramps off I-15 are located at 10600 South and 11400 South. The valley's light rail system (TRAX) has two stations in the western portion of the city. The commuter rail line connecting Ogden and Provo also has a station in South Jordan.

Population

The 2022 American Community Survey 5-Year Estimate from the U.S. Census Bureau records the population of the city of South Jordan in 2024 as 86,719, up from 77,954 in 2020, reflecting an 11.24% increase.[1]

Demographics

The city of South Jordan is a growing community characterized by its relatively high median household income of approximately $119,822, which indicates a prosperous population. The city has a poverty rate of about 2.6%, suggesting that most residents enjoy a stable economic situation. In addition, the demographic profile reflects a youthful population, with a median age of around 35 years for males and 34 years for females. This combination of economic stability and a younger demographic points to a vibrant community that is likely to continue growing and evolving in the coming years.[2]

Brief History

The city of South Jordan was settled in 1859 by Alexander and Catherine Lince Beckstead. Like many of the first settlers in the Salt Lake Valley, their first home was a cave dug out of the riverbank. These first homes were "a good-sized room" (14 ft. sq.), with large sun-dried adobe bricks on the front wall. Large logs covered with plants, willows, mud, and dirt formed the roof.

DRAFT

[1] World Population Review, "South Jordan, Utah Population 2024." https://worldpopulationreview.com/us-cities/utah/south-jordan
[2] Ibid.

Climate

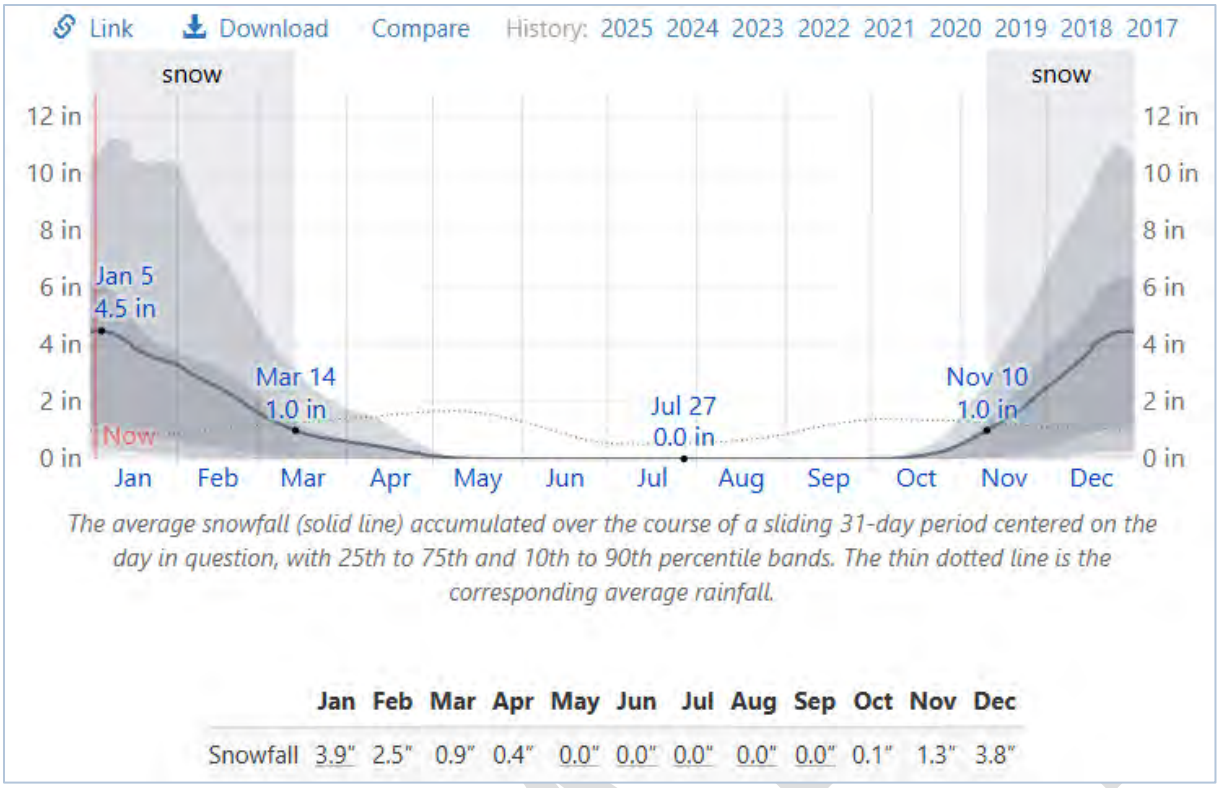
The hottest month in the city of South Jordan is July, with an average high temperature of around 91°F, while the coldest month is January, with an average low temperature of 23°F. On average, South Jordan receives 13 inches of rain and 13 inches of snow yearly, as seen in Figure 1 and Figure 2.[3]

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Rainfall	0.9"	1.0"	1.3"	1.5"	1.6"	0.9"	0.5"	0.7"	1.2"	1.4"	1.2"	1.0"

Figure 1: Average Monthly Rainfall in the City of South Jordan[4]

[3] Weather Spark, "Climate and Average Weather Year Round in South Jordan." https://weatherspark.com/y/2710/Average-Weather-in-South-Jordan-Utah-United-States-Year-Round#Sections-Precipitation

[4] Ibid.



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Snowfall	3.9"	2.5"	0.9"	0.4"	0.0"	0.0"	0.0"	0.0"	0.0"	0.1"	1.3"	3.8"

Figure 2: Average Monthly Snowfall in the City of South Jordan [5]

Public Services

Though residential development in the Salt Lake Valley has mushroomed, the city of South Jordan is committed to preserving its natural beauty. Along the banks of the Jordan River, the city of South Jordan is cooperating with other government, nonprofit, and private groups to set aside a significant area for the South Jordan Riverway Wildlife Enhancement project.

Governing Body

The city of South Jordan is led by a Mayor and a five-member City Council. It also has a City Manager. The Mayor and Council Members have four-year terms, with staggered elections (the Mayor and two members in one election; the other three members in the other). The mayor and council set city policy, and the City Manager is responsible for the day-to-day operations.

Development Trends

Since 1960, the city's population has doubled or nearly doubled every 10 years. The city is experiencing tremendous population and commercial growth, which are projected to continue. The city of South Jordan has evolved from a community known for its agricultural land use to one that is primarily residential. Nearly two-thirds of the city's total acreage is residential or is planned to be. The agricultural feel still

[5] Ibid.

exists through larger parcels that continue to be farmed and areas of exceptionally low-density residential. The city of South Jordan has experienced significant growth across various sectors since the previous hazard mitigation plan. The surge in residential development is evident with the construction of single-family homes and townhomes. Complementing this residential boom, commercial growth has flourished, increasing retail, dining, and office space, especially in the evolving South Jordan Town Center. The city has committed to infrastructure improvements to support this expanding population, focusing on road expansions, enhanced public transit, and upgraded utilities. In addition, the city prioritizes parks and recreational spaces, resulting in new parks and trail systems that enhance community well-being.

Jurisdiction-Specific Hazards and Risk

The Calculated Priority Risk Index (CPRI) is a comprehensive assessment tool for evaluating and prioritizing risks in a given context. It considers various factors, such as probability, impact, and urgency, to determine the level of risk associated with events or situations. The results for each hazard, including its risk factor (RF) value, are shown in Table 3. The results are based on the criteria in Table 4 and the equation that follows it. The CPRI helps organizations and individuals make informed decisions about risk management and mitigation strategies. It provides a systematic approach to identifying and addressing potential issues, allowing for a more efficient allocation of resources and proactive risk prevention. With the CPRI, stakeholders can prioritize their focus on the most critical risks, leading to more effective risk management and, ultimately, better outcomes.

Table 3: Calculated Priority Risk Index Values for the City of South Jordan

Type of Hazard Event	Probability of Future Events	Spatial Extent	Severity of Life/ Property Impact	Warning Time	Duration	Response Capacity	Risk Factor Value
Avalanche	1	1	1	1	1	2	1.1
Drought	2	1	1	1	1	1	1.3
Earthquake	2	4	4	4	4	2	3.2
Extreme Heat	2	2	1	1	1	1	1.4
Extreme Cold	2	2	1	1	1	1	1.4
Flooding	1	2	1	1	1	1	1.1
Landslide/ Slope Failure	1	1	1	1	1	2	1.1
Radon	2	1	1	1	1	2	1.4
Heavy Rain	2	2	1	2	1	1	1.5
High Wind	2	2	1	2	1	1	1.5
Lightning	2	2	1	2	1	1	1.5
Severe Winter Weather	2	2	1	1	1	1	1.4
Tornado	1	1	1	1	1	2	1.1
Wildfire	2	2	1	2	1	2	1.6

Type of Hazard Event	Probability of Future Events	Spatial Extent	Severity of Life/ Property Impact	Warning Time	Duration	Response Capacity	Risk Factor Value
Dam Failure	1	2	1	1	1	1	1.1
Civil Disturbance	1	2	1	2	1	2	1.3
Cyberattack	2	2	1	2	1	2	1.6
Hazardous Materials Incident (Transportation & Fixed Facility)	2	2	1	2	1	1	1.5
Public Health Epidemic/ Pandemic	2	2	1	1	1	1	1.4
Terrorism	1	1	1	2	1	1	1.1

Table 4: Criteria for the Calculated Priority Risk Index

Risk Index Factor	Degree of Risk Level		Criteria	Factor Weight for Degree of Risk Level
Probability of Future Events	1	Unlikely	Less than 1 percent probability of occurrence in the next year or a recurrence interval of greater than every 100 years.	30%
	2	Occasional	1 to 10 percent probability of occurrence in the next year or a recurrence interval of 11 to 100 years.	
	3	Likely	11 to 90 percent probability of occurrence in the next year or a recurrence interval of 1 to 10 years.	
	4	Highly Likely	91 to 100 percent probability of occurrence in the next year or a recurrence interval of less than 1 year.	
Spatial Extent	1	Limited	Less than 10% of the planning area could be impacted.	10%
	2	Small	10%–25% of the planning area could be impacted	
	3	Significant	25%–50% of the planning area could be impacted.	
	4	Extensive	50%–100% of the planning area could be impacted.	
Severity of Life/Property Impact	1	Negligible	Less than 5% of the affected area's critical and non-critical facilities and structures are damaged/ destroyed. Only minor property damage and minimal disruption of life. Temporary shutdown of critical facilities.	30%

Risk Index Factor	Degree of Risk Level		Criteria	Factor Weight for Degree of Risk Level
	2	Limited	More than 5% and less than 25% percent of property in the affected area is damaged/ destroyed. Complete shutdown of critical facilities for more than one day but less than one week.	
	3	Critical	More than 25% and less than 50% of property in the affected area was damaged/destroyed. Complete shutdown of critical facilities for over a week but less than one month.	
	4	Catastrophic	Over 50% of critical and non-critical facilities and infrastructures in the affected area are damaged/ destroyed. Complete shutdown of critical facilities for more than one month.	
Warning Time	1	Self-defined	More than 24 hours	10%
	2	Self-defined	12 to 24 hours.	
	3	Self-defined	6 to 12 hours.	
	4	Self-defined	Less than 6 hours.	
Duration	1	Brief	Up to 6 hours.	10%
	2	Intermediate	Up to one day.	
	3	Extended	Up to one week.	
	4	Prolonged	More than one week.	
Response Capacity	1	High	Significant resources and capability to respond to this kind of event; staff are trained, experienced, and ready.	10%
	2	Medium	Some resources and capability to respond to this kind of staff; some staff may be trained, experienced, and ready while others may need additional support.	
	3	Low	Limited resources and capability to respond to this kind of event; additional staff or staff training needed.	
	4	None	No resources and capability to respond this kind of event; additional outside support would be required.	

RISK FACTOR (RF) EQUATION

RF Value = [(Probability x 0.30) + (Spatial Extent x 0.10) + (Severity of Life/Property Impact x 0.30) + (Warning Time x 0.10) + (Duration x 0.10) + (Response Capacity x 0.10)]

DRAFT

Hazards with an RF value greater than or equal to 2.5 are considered high risk. Those with RF values of 2.0 to 2.4 are considered moderate risk hazards, and those with an RF value less than 2.0 are considered low risk. The highest possible RF value is 4.

Hazard Event History

Examining hazard event histories provides valuable insights to inform decision-making and help prioritize resources for risk prevention and response efforts. According to the National Centers for Environmental Information, no natural hazard events occurred explicitly in South Jordan between 2019 and 2024.[6] However, since the previous plan update, several changes have occurred for all of Salt Lake County, and they are listed in Table 5.[7] Events in the City of South Jordan are listed in Table 6.

Table 5: History of Hazard Events in Salt Lake County

Date	Event Type	Disaster Number	Deaths	Injuries	Property Damage	Crop Damage
08/14/2021	Fire (Parleys Canyon Fire)	5408	N/A	N/A	N/A	N/A
01/12/2021	Severe storm (straight-line winds)	4578	N/A	N/A	N/A	N/A
07/09/2020	Earthquake	4548	N/A	N/A	N/A	N/A
04/04/2020	Biological (COVID-19)	4525	N/A	N/A	N/A	N/A
03/13/2020	Biological (COVID-19)	3478	N/A	N/A	N/A	N/A

Table 6: History of Hazard Events in the City of South Jordan

Type of Hazard Event	FEMA Disaster #	Date(s)	Damage or Impacts	Description
Avalanche		N/A		
Drought		Multiple		Statewide drought conditions
Earthquake		2020	Residents felt shaking and may have been affected by power outages.	A 5.7 magnitude earthquake struck near the city of Magna on March 18, 2020. Sandy, along with the rest of the Salt Lake Valley, experienced strong shaking. Some areas of the county experienced

[6] Center for Environmental Information, "Storm Events Database." https://www.ncdc.noaa.gov/stormevents/listevents.jsp?eventType=ALL&beginDate_mm=01&beginDate_dd=01&beginDate_yyyy=2019&endDate_mm=12&endDate_dd=30&endDate_yyyy=2024&county=SALT%2BLAKE%3A35&hailfilter=0.00&tornfilter=0&windfilter=000&sort=DT&submitbutton=Search&statefips=49%2CUTAH.

[7] FEMA, "Disaster Declarations for States and Counties." https://www.fema.gov/data-visualization/disaster-declarations-states-and-counties.

Type of Hazard Event	FEMA Disaster #	Date(s)	Damage or Impacts	Description
				minor property damage and temporary power outages.
Extreme Heat			Extreme heat can cause heat-related illness, contribute to road damage, and increase power demands.	
Extreme Cold			2022: 5 people experiencing homelessness died from cold-related exposure in Salt Lake City, but this threat could impact nearby jurisdictions such as South Jordan.	
Flooding		Sept. 14-16, 2013	Flooding at an apartment complex near 6000 West and 11600 South, displaced the residents of more than 18 units.	Heavy rain triggered flooding in Herriman, South Jordan, and West Jordan.
		June 6, 2015		Severe weather and flooding in the south end of the valley, primarily South Jordan, Riverton, and Herriman.
		Aug. 18, 2021	Streams and ponds were above peak flow level and flood rim level.	Heavy rain caused flooding of Midas Creek and 1300 West
Landslide/ Slope Failure				
Radon			Up to 50% of homes, tested in Riverton have elevated radon levels.	Radon exists in the city.
Heavy Rain		See Flooding		
High Wind		September 8, 2020	Large trees and debris caused significant damage to vehicles and homes and had a major impact on traffic and powerlines. This resulted in a state declaration of emergency for Salt Lake County.	The city of South Jordan provided assistance for debris collection caused by windstorm.
		March 2, 2024	Required clean-up/removal.	Extreme high winds caused an inundation of tumbleweeds west of the city, including Daybreak.

DRAFT

Type of Hazard Event	FEMA Disaster #	Date(s)	Damage or Impacts	Description
Lightning				
Severe Winter Weather		1/24/2013	Hundreds of accidents along the Wasatch Front including three cars colliding with Utah Highway Patrol Vehicles. Hundreds of hospital visits for ice-related injuries (primarily falls) and one reported death.	A rare freezing rain event impacted the Wasatch front.
Tornado				
Wildfire		April 2020	12 Acres in Anderson Wetland burned; mitigation and restoration project followed	12 Acres of wetland east of the Jordan River between 10800 South and 11200 South burned. The fire was started by resident burning weeds along fence line.
		May 2012		Cotton from cottonwood tree burned along Glenmoore golf course. Started by a resident lighting large cotton ball
Dam Failure				
Civil Disturbance		05/29/2020	A Salt Lake City (SLC) police cruiser was overturned and set ablaze. A South Jordan vehicle was damaged. Some officers were injured.	George Floyd protest in SLC turned violent, with riots and civil unrest. South Jordan PD responded with riot gear to assist.
Cyberattack				
Hazardous Materials Incident (Transportation & Fixed Facility)		1. 09/02/2021 2. July 2020 3. October 2021 4. June 2021	1. Local HazMat Event. No significant damage or injury 2. Explosive material, Triacetone Triperoxide (TATp) was discovered at a local residence. 3. Incident involving explosive material. 4. Demolished and burned-out basement.	1. Hydrochloric acid spill in generator enclosure. 2. Residential neighborhood evacuated; mitigated the hazard and later demolished the residential structure.

DRAFT

Type of Hazard Event	FEMA Disaster #	Date(s)	Damage or Impacts	Description
Public Health Epidemic/ Pandemic	DR-4525-UT			COVID-19 pandemic. Business closures, economic losses, school disruptions.
Terrorism				

National Flood Insurance Program Summary

The city of South Jordan participates in the National Flood Insurance Program (NFIP). Table 7 displays statistics related to the NFIP. The city of South Jordan participates in the Community Rating System (CRS).

Table 7: National Flood Insurance Program Status for the City of South Jordan[8]

Init FHBM Identified	Init FIRM Identified	Current Effective Map Date	Adopted Date	Date Joined NFIP	Tribal
7/26/74	9/12/78	9/25/09	2009	12/18/85	No

Table 8: National Flood Insurance Policies for the City of South Jordan

Community ID	Number of Losses	Total Net Payment	Active Policies	Total Coverage
490106	9	$41,053.73	45	$14,722,000

The city of South Jordan has designated the engineering director, city engineer, or designee as the Floodplain Administrator. The city's Flood Hazard Management ordinance was adopted on 8/18/2009. The current effective FIRM is dated 9/25/2009. The city requires development permits in the special flood hazard area. The Building Department issues permits, with the Floodplain Administrator being responsible for reviewing the permits to ensure alignment with the current floodplain code. A substantial damage determination would be made by the Floodplain Administrator through the permitting process. Structures that are damaged or improved more than 50% of the market value before the damage occurred would be considered substantially damaged/substantially improved.

Jurisdiction-Specific Vulnerabilities and Impacts

Table 9 provides information on the vulnerable assets in the city of South Jordan, including its critical facilities, highlighting the city's vulnerability to identified hazards. It also describes the potential impacts to the community arising from those vulnerabilities. Impacts are the consequences or effects of each hazard on the assets. By understanding the risks associated with these assets, local authorities can develop proactive strategies to mitigate vulnerabilities and ensure the safety and functionality of these important

[8] FIRM = Flood Insurance Rate Map, FHBM = Flood Hazard Boundary Map

assets during hazard events. These data are invaluable for decision-making and prioritizing resources for emergency response and preparedness efforts, ultimately contributing to more effective risk management and greater resilience in the community.

Vulnerable assets in South Jordan include 86,719 residents, 3 fire stations, 1 EOC, 1 police station, and 19 schools. Major transportation routes include I-15 along the east border, 10600 South, 11400 South, Redwood Road, Bangerter Highway, and Mountain View Corridor. Key recreational facilities include South Jordan Recreation Center, South Jordan City Park, East River Front and West River Front Parks, Jordan River Parkway, Mulligans Golf, Glenmore Golf, Bingham Creek Regional Park and many other neighborhood parks. The future Salt Lake Bees' Ballpark will be in South Jordan. Bingham Creek, Midas Creek, the Jordan River, canals, and Oquirrh Lake are important water resources.

Table 9: Jurisdiction-Specific Vulnerabilities and Impacts in the City of South Jordan

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
Avalanche	People	*Vulnerability:* Avalanche risk is primarily limited to mountains. South Jordan is located in the valley and does not have terrain or snow accumulations that pose a risk within the city. Individuals vulnerable to avalanches primarily include outdoor enthusiasts like skiers and hikers who may lack proper avalanche knowledge and safety precautions or do not monitor avalanche forecasts.
	Structures	No structures in South Jordan are considered to be at risk from avalanches.
	Economic Assets	Economic risk in South Jordan from avalanche is minimal. Avalanche in neighboring jurisdictions that rely on tourism-related businesses such as ski-resorts may have indirect effects.
	Natural, Historic, and Cultural Resources	Risk to natural, historic, and cultural resources from avalanches is minimal in South Jordan.
	Critical Facilities and Infrastructure	No critical facilities in South Jordan are vulnerable to avalanches. South Jordan residents may experience indirect disruptions if transportation routes near the canyons are closed or damaged by an avalanche.
	Community Activities	Avalanche is unlikely to directly affect activities within South Jordan. Residents may venture into backcountry areas in other cities or unincorporated parts of the county. Activities like skiing, snowboarding, and snowmobiling are vulnerable to avalanches due to heavy snowfall and participants' lack of safety knowledge. Variable temperatures affect snow stability. Backcountry hiking and community events in winter sports areas also increase the risk.
Drought	People	*Vulnerability:* All residents in South Jordan are vulnerable to drought. *Impacts:* Drought can limit water supply for drinking, cooking, cleaning and other household uses. Drought can lead to decreased water quantity and quality and increased incidence of illness and/or disease. Drought also affects air quality.
	Structures	*Vulnerability:* All structures could be affected by drought. This includes lack of water for future development and landscaping.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		Impacts: Drought can restrict growth and future development. Foundations can crack due to drying and contracting soil, leading to potential issues like uneven floors, misaligned doors and windows, and damage to sewer pipes.
	Economic Assets	*Vulnerability:* Businesses and household budgets are vulnerable to the effects of drought. *Impacts:* Prolonged drought may lead to water restrictions or increased costs for culinary water and irrigation water for landscaping. Reduced precipitation limits water availability and crop yields.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Parks, golf courses, and urban forests are vulnerable to drought conditions. *Impacts:* Drought can weaken trees, making them more susceptible to pests and disease. Reduced water availability for irrigation may affect parks and recreational facilities, leading to degraded landscapes and limited public use.
	Critical Facilities and Infrastructure	*Vulnerability:* Water supply systems, agriculture, and emergency services are susceptible to drought. *Impacts:* Fire stations and emergency services may face challenges in suppressing wildfires, which can be exacerbated by dry conditions. Drought reduces water availability for firefighting efforts. Public health facilities face water quality challenges that affect drinking water and sanitation. Hospitals and clinics may experience increased strain during droughts due to health complications arising from water scarcity, a decline in water quality and sanitation, and heat-related illnesses and the spread of vector-borne diseases.
	Community Activities	*Vulnerability:* Parks, recreation spaces, and open spaces are vulnerable to drought. *Impacts:* Recreational spaces struggle with maintenance, and households may encounter restrictions and costs for landscaping and pools. Jordan River Parkway and River Front Park, South Jordan City Park, Oquirrh Lake, Mulligans Golf, and other outdoor recreation areas such as parks and golf courses may experience deterioration in the health of vegetation and aesthetic appeal during drought. This may lead to decreased attendance at outdoor events.
Earthquake	People	*Vulnerability:* All of South Jordan's 86,719 residents are vulnerable to earthquakes. *Impacts:* People may be injured or killed by falling objects or collapsed structures. Others may be displaced from their homes. Those living in older buildings not up to seismic standards, families with young children, the elderly, and individuals with disabilities who may struggle to evacuate are vulnerable. Residents near fault lines and those in densely populated areas are also at higher risk. In addition, individuals lacking resources for disaster preparedness, such as emergency supplies and evacuation information, may find it difficult to respond effectively during an earthquake, thus increasing their vulnerability.
	Structures	*Vulnerability:* All structures in South Jordan are vulnerable to earthquakes.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		Impacts: Damage to homes and businesses is likely. There is an area of high liquefaction potential near the eastern border of the city, near the Jordan River, which adds to vulnerability of structures in that area. Older buildings not built according to modern seismic codes, unreinforced masonry, and homes with inadequate foundations may be vulnerable. Many lack the retrofitting needed to withstand earthquakes, and those built on unstable soil or near fault lines are at higher risk. Large commercial buildings without flexible designs can sustain severe damage. Overall, outdated construction practices and poor site selection contribute to their vulnerability.
	Economic Assets	*Vulnerability:* All businesses in South Jordan are vulnerable to earthquakes. *Impacts:* Commerce may shut down for a period of time, and some businesses may close permanently. The local economy, reliant on retail and services, could face significant disruptions during seismic events. In addition, certain soil types can amplify ground shaking, increasing the risk of damage to these assets. Many businesses located between the Jordan River and I-15 are in areas of moderate to high liquefaction potential and may have a higher vulnerability to damage.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Older structures are vulnerable to earthquakes. *Impacts:* Natural resources like geological formations and local ecosystems can be disrupted, leading to habitat loss. Historic structures and landmarks often lack modern seismic retrofitting, making them susceptible to damage. Cultural resources, including community centers, may also be at risk due to their architectural styles or inadequate building codes, compromising their integrity and the heritage they represent.
	Critical Facilities and Infrastructure	*Vulnerability:* All critical facilities and infrastructure systems are vulnerable to earthquakes. *Impacts:* Schools, healthcare clinics, and emergency services buildings are all vulnerable to earthquakes, particularly those that are older and constructed to lower standards. Bridges and overpasses that lack modern engineering safeguards are also at risk. In addition, water supply systems, communication systems, and power distribution are susceptible to disruption from ground shaking. Widespread outages of these community lifelines are likely. The absence of retrofitting in older structures increases these vulnerabilities. Major transportation routes that could be damaged include I-15, Redwood Road, Bangerter Highway, Mountain View Corridor, 11400 South, and South Jordan Parkway, as well as numerous other local roads. Impassable roads disrupt the delivery of goods and materials and inhibit emergency response.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Community Activities	*Vulnerability:* Community events are vulnerable to disruption from earthquakes. *Impacts:* Many day-to-day activities will be canceled following a strong earthquake. Recovery efforts may disrupt education, recreation, business, government services, and social activities for an extended period. Public gatherings, school events, and large festivals are vulnerable to earthquakes due to the area's geological conditions and urban infrastructure. Vulnerability stems from factors such as buildings' age and structural integrity, inadequate emergency preparedness, and high population density, which can lead to increased risks and casualties during an earthquake.
Extreme Heat	People	*Vulnerability:* All South Jordan residents are vulnerable to extreme heat. Some individuals may have more severe risk, such as people over 65, children, outdoor workers, and the homeless. *Impacts:* Extreme heat can lead to heat-related illness such as dehydration, heat exhaustion and heat stroke. Vulnerable populations during extreme heat include adults over 65, individuals with pre-existing health conditions, and young children, as they struggle to regulate body temperature. Socioeconomically disadvantaged individuals may lack access to cooling resources, while outdoor workers are at higher risk of heat-related illnesses due to physical labor without adequate hydration and rest. Extreme heat can hinder students' learning.
	Structures	*Vulnerability:* Extreme heat can be detrimental to homes, businesses, industries, and city-owned buildings. *Impacts:* Residential buildings with inadequate insulation and ventilation and commercial buildings lacking reflective roofing and proper shading may be vulnerable. Materials like metal and glass can amplify heat retention, while areas with limited green space typically experience higher temperatures.
	Economic Assets	*Vulnerability:* Businesses are vulnerable to the effects of extreme heat. *Impacts:* Construction or other outdoor occupations may lose productivity during extreme heat. Businesses may struggle to absorb the increased energy costs for air conditioning. Agricultural operations can have reduced yields and higher water demand due to heat stress. The outdoor recreation industry may see decreased participation during heat waves, affecting local businesses that rely on visitors. In addition, the energy infrastructure could face strain from increased cooling demands, leading to outages.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Parks and recreation areas are vulnerable to extreme heat. *Impacts:* Local plant species and wildlife habitats can suffer from extreme heat conditions, leading to reduced biodiversity. Historic buildings may degrade due to high temperatures, causing materials to deteriorate and paint to peel. In addition, parks and recreational areas may experience overuse as residents seek relief from the heat, which can lead to degradation.
	Critical Facilities and Infrastructure	*Vulnerability:* Health clinics, city facilities, and transportation are vulnerable to extreme heat.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		Impacts: Healthcare facilities may experience increased demand because of heat-related medical issues, while schools can suffer from the strain on cooling resources. Residents may depend on city facilities as cooling stations. Transportation systems are at risk of damage, such as buckling roads and warped train tracks. Power grids may be strained by higher demands for electricity for cooling, leading to potential outages. Power outages could disrupt services at all other critical facilities, including fire and police stations.
	Community Activities	*Vulnerability:* Public events are vulnerable to extreme heat. *Impacts:* Activities like outdoor sports, fairs, and agricultural practices are vulnerable to extreme heat. These events can pose risks, particularly for participants such as youth athletes and elderly residents who may suffer from heat-related illnesses. In addition, high temperatures can stress crops. Extreme heat may affect the turnout at or ability of staff to work the city's local events such as Summerfest.
Extreme Cold	People	*Vulnerability:* All of South Jordan's 86,719 residents are potentially vulnerable to extreme cold. *Impacts:* Extreme cold can lead to severe health impacts, including frostbite and hypothermia. Increased heating costs for homes and buildings are expected. The elderly face increased risks due to health issues and mobility challenges, while children may be susceptible if they lack proper winter clothing. Approximately 6.7% of residents are under age 5 and 13.1% over age 65. Individuals experiencing homelessness or financial hardship often lack access to heated shelters and resources for protection against the cold. It is unknown how many people may be unhoused in South Jordan. Those with pre-existing health conditions may experience worsening symptoms at low temperatures.
	Structures	*Vulnerability:* Residential homes, commercial buildings, and unheated spaces like sheds may be vulnerable. *Impacts:* Homes with poor insulation or inadequately sealed windows and doors are prone to significant heat loss. Older homes and mobile homes may be more vulnerable. Older buildings lacking modern energy efficiency standards may also suffer from freezing pipes and structural damage. Commercial and industrial buildings used for storage or manufacturing that are not properly insulated can be at risk, especially if they are not occupied regularly and the heating is inconsistent.
	Economic Assets	*Vulnerability:* All businesses in the area are vulnerable to extreme cold. *Impacts:* Increased heating costs for all businesses. Agriculture, infrastructure, and energy-related businesses may be at risk. Agricultural operations, such as greenhouses and livestock farms, may experience crop and livestock losses. Icy roads can disrupt transportation networks, affecting logistics and supply chains and the delivery of materials. Power lines risk outages from ice accumulation, which could disrupt operations for all local businesses. Energy-intensive facilities may face higher operational costs due to increased heating needs. Retail and hospitality businesses may have reduced traffic. Cold weather can halt construction or manufacturing projects.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Natural, Historic, and Cultural Resources	*Vulnerability:* Trees, vegetation, and parks are vulnerable to extreme cold. *Impacts:* Due to prolonged cold, local vegetation and wildlife habitats may suffer from plant stress and reduced food availability. This could affect areas along the Jordan River and undeveloped areas in the western part of the city. Historic structures, especially those not built for severe weather, can deteriorate from below-freezing temperatures and ice. Culturally significant sites, including monuments and public art, may also be damaged, while infrastructure such as water pipes and roadways may be compromised during extreme cold events, leading to service disruptions and safety hazards.
	Critical Facilities and Infrastructure	*Vulnerability:* Critical facilities, transportation networks, and power systems are vulnerable. *Impacts:* Operations of fire and police stations or hospitals could be disrupted by power failures or water line breaks. Transportation issues may occur on primary routes such as I-15, Bangerter Highway, Mountain View Corridor, and other roads. Access to essential services could be disrupted. Water treatment plants can face frozen pipes and equipment failures. Icy conditions may increase accident risks on transportation infrastructure, and power generation facilities may struggle to meet heating demands. Residential and commercial buildings lacking proper insulation are also at risk of heating system failures, endangering occupants.
	Community Activities	*Vulnerability:* Public events are vulnerable to extreme cold. *Impacts:* Schools and offices may delay opening or remain closed. Extreme cold can reduce participation in outdoor sports/events and other activities. It can also cause schools and offices to close or delay their start. Youth sports, festivals, and outdoor markets are vulnerable to extreme cold. Harsh temperatures can deter participation and reduce community engagement. At-risk groups, such as the elderly and young children, face health risks like frostbite and hypothermia, further limiting outdoor involvement. In addition, poorly insulated buildings or inadequate heating in community centers can make gatherings uncomfortable.
Flooding (and Heavy Rain)	People	*Vulnerability:* Residents near the Jordan River and other Special Flood Hazard Zones are particularly vulnerable to flooding. *Impacts:* Flooding primarily affects residents in low-lying areas near rivers and streams, especially during heavy rainfall or snowmelt. Individuals without reliable transportation may struggle to evacuate quickly, while low-income families often lack resources for flood-prevention measures. The elderly and those with disabilities may face mobility challenges, increasing their risk during emergencies. Overall, factors such as geographic location, economic status, and physical ability contribute to the community's varying levels of vulnerability to flooding.
	Structures	*Vulnerability:* Structures vulnerable to flooding primarily include those in low-lying areas or near the Jordan River and creeks. *Impacts:* Residential properties in flood plains and commercial buildings without proper drainage systems or flood-resistant designs face significant risks during heavy rain or snowmelt. Older structures

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		may be more susceptible due to outdated construction standards. Overall, a combination of location and construction features contributes to their vulnerability to flooding.
	Economic Assets	*Vulnerability:* Commercial properties and residential developments are vulnerable to flooding. *Impacts:* Businesses, especially retail centers and warehouses near rivers or low-lying areas, are at high risk during heavy rainfall. Structures and inventory can be damaged by flooding, causing lost revenue. Residential developments in flood-prone zones also can suffer damage, impacting property values. Public infrastructure, such as roads and utilities, may experience disruptions, leading to costly repairs. Agricultural land can be affected by excess water, reducing crop yields.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Jordan River, parks, and open spaces are vulnerable to flooding. *Impacts:* Natural areas like wetlands and streams are at risk of habitat destruction, while historic sites and landmarks may sustain structural damage. Cultural resources, such as parks and public spaces, can become unusable, affecting community events. Factors contributing to their vulnerability include inadequate flood management, urban development that alters water flow, and the increasing frequency of extreme weather events due to climate change.
	Critical Facilities and Infrastructure	*Vulnerability:* No critical facilities were identified within SFHAs, but transportation and utility networks are vulnerable to flooding. *Impacts:* Flooding can disrupt emergency services, require schools to evacuate, block transportation routes, and isolate communities. In addition, inadequate drainage systems and urban development encroaching on floodplains increase these risks.
	Community Activities	*Vulnerability:* Public events and recreational activities are vulnerable to flooding. *Impacts:* Due to the area's geography and infrastructure, outdoor events, sports, and farmers' markets are vulnerable to flooding. Parks and open spaces can quickly become inundated during heavy rainfall or rapid snowmelt. Residential neighborhoods near rivers, roads, and bridges are at risk of flash floods, which can disrupt transportation and emergency services.
Landslide/ Slope Failure	People	*Vulnerability:* Landslides are primarily a risk near steep or unstable slopes. The topography in South Jordan is relatively flat, and landslide risk to people and structures is minimal. *Impacts:* Residents who commute to neighboring cities could potentially be affected if transportation routes closer to the mountains are blocked by landslides. Small, localized slope failures may occur in areas with human-made slopes, such as along freeway overpasses and underpasses or other developments, or due to erosion along stream banks. The landslide susceptibility map in Volume 1 shows some areas of risk along the Jordan River.
	Structures	*Vulnerability:* Risk to structures in South Jordan is minimal due to relatively few steep slopes within the city.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		Impacts: Heavy rainfall, ground shaking from an earthquake, or loose soil may contribute to small, localized slope failures near the Jordan River. Homes, commercial buildings, roads, and bridges on or near these slopes may be vulnerable. In addition, inadequate construction practices and a lack of erosion control measures can increase the risk of slope failures, particularly for properties not designed with their environmental context in mind.
	Economic Assets	*Vulnerability:* Economic vulnerability from landslides in South Jordan is low due to the relatively low risk of landslide occurrence. *Impacts:* Infrastructure like roads and bridges, and utility services like water and power lines, may be vulnerable to damage or disruption from slope failure, which could contribute to economic losses for nearby businesses. These assets are at risk due to heavy rainfall, earthquake-induced landslides, and development practices that may destabilize slopes.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Landslides pose a low risk in South Jordan. *Impacts:* Natural resources along creeks and the Jordan River could see minor disruptions to vegetation and wildlife habitat if slopes along the banks fail. No risks to historic and cultural resources from landslides were identified.
	Critical Facilities and Infrastructure	*Vulnerability:* Roadways and essential services like water supply and power lines may be at risk, but likelihood in South Jordan is low. *Impacts:* Heavy rain, earthquake, or destabilization of slopes during development may contribute to small slope failures that may lead to disruptions in infrastructure in the immediate vicinity. South Jordan Parkway and 11400 South could be affected if a landslide occurred near the Jordan River corridor.
	Community Activities	Landslides pose a minimal risk to community activities in South Jordan.
Radon	People	*Vulnerability:* Sixty-two percent of homes tested in South Jordan have dangerous levels of radon. *Impacts:* Occupants in homes with elevated radon levels are at higher risk of lung cancer. Homeowners in older buildings in areas with high radon potential are most at risk. Families with young children or elderly members are especially at risk due to their increased sensitivity to health impacts.
	Structures	*Vulnerability:* Structures with concrete slabs or basements are particularly vulnerable to radon exposure, as radon can seep in from the soil. *Impacts:* Although radon does not directly impact structures, the condition of structures contributes to radon levels that pose a risk to occupants. Homes in areas with high uranium content are at greater risk, especially older houses with inadequate ventilation. Cracks in floors and walls can allow radon to enter.
	Economic Assets	*Vulnerability:* Home values are vulnerable to radon exposure. *Impacts:* Residential properties, commercial buildings, and rental units are vulnerable to radon. Structures built on radon-prone soil and older buildings lacking modern building standards face higher risks. Residential and commercial properties in South Salt Lake may

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		experience lower market value and increased maintenance costs due to radon remediation needs. The presence of radon can lead to health issues, decrease property values, and complicate real estate transactions.
	Natural, Historic, and Cultural Resources	*Vulnerability:* There is minimal risk to these resources from radon. *Impacts:* Natural resources, such as underground water sources and soil, can accumulate radon, particularly in areas with granite or uranium deposits. Historic structures made from stone or concrete with high uranium content may trap radon indoors, exposing occupants to health risks. Cultural resources, such as museums built with similar materials, also face threats from radon, potentially endangering both the preservation of artifacts and the health of visitors and staff.
	Critical Facilities and Infrastructure	*Vulnerability:* Public buildings are vulnerable to radon exposure. *Impacts:* City facilities can accumulate radon, possibly at similar levels to homes and other structures, and employees or other occupants could be vulnerable. Schools in high-radon areas pose risks for children if they do not have proper ventilation. Healthcare facilities are also at risk, affecting both patients and staff. Inadequate construction practices and a lack of awareness about radon risks often heighten vulnerability.
	Community Activities	*Vulnerability:* Limited vulnerability to public events *Impacts:* Radon is a long-term exposure risk and hasn't typically affected day-to-day activities.
High Wind	People	*Vulnerability:* All residents of South Jordan are potentially vulnerable to high wind, which can affect the entire city. *Impacts:* Wind can cause injury or death from blowing debris or falling tree limbs. The elderly may face mobility challenges that hinder their ability to seek shelter, while children might not fully grasp the dangers of severe weather. Individuals with disabilities or health issues may struggle to react quickly or seek shelter. Those living in mobile homes or poorly constructed houses are at greater risk of damage and are more vulnerable to injury. People who work outdoors may be exposed during sudden wind events. Unhoused populations are particularly vulnerable.
	Structures	*Vulnerability:* Structures throughout South Jordan are potentially at risk to damage from high wind. *Impacts:* Damage to personal property or businesses such as broken windows and roof damage are likely. Single-story homes, commercial buildings, and agricultural facilities like barns may be at risk. Residential homes with large flat roofs or lightweight materials may struggle to withstand strong winds, while commercial buildings with extensive glass can suffer from breakage and structural damage. Structures can also be damaged by trees uprooted by high wind. Carports, sheds, fences, and accessory structures are easily damaged by high winds and can contribute to blowing debris. Agricultural structures often lack proper reinforcement, making them prone to collapse. The vulnerability of these buildings is heightened in open areas with no landscaping or natural windbreaks, which can help dissipate wind energy.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Economic Assets	*Vulnerability:* Commercial buildings, such as retail stores, are vulnerable to high wind. *Impacts:* Businesses might have large signs and awnings that can be damaged, leading to business interruptions. Residential properties, particularly older homes, can suffer roof and window damage, contributing to economic slowdown in the community. Debris can block roads, and people may be unable to get to work, while cleanup can be costly. Agricultural assets such as greenhouses and livestock facilities face risks from wind destruction. Infrastructure, including power lines and roads, can be compromised, resulting in outages and disruptions. The vulnerability of these assets is largely due to construction quality, location, and the presence of loose materials that can become projectiles.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Trees and parks are vulnerable to high wind. *Impacts:* Natural resources like mature trees and agricultural lands are vulnerable to high winds, which can cause uprooting and wind erosion. Historic structures also may be at risk if their materials are not resilient, potentially leading to damage or collapse. Cultural resources, such as outdoor art installations and community spaces, can be disrupted or damaged by strong winds. These vulnerabilities are primarily due to the structural integrity of the resources and their exposure to the elements.
	Critical Facilities and Infrastructure	*Vulnerability:* Critical facilities in South Jordan, including police or fire stations, schools, and healthcare facilities are vulnerable to damage from high wind. *Impacts:* Residential buildings, especially those with older construction methods, and commercial structures lacking proper design for severe weather may be vulnerable. Utility infrastructure, such as power lines and communications towers, also is at risk, potentially leading to outages. Bridges and overpasses may be compromised, and falling branches from nearby trees can pose hazards to property and access routes.
	Community Activities	*Vulnerability:* Public events, sports, and recreation, such as Summerfest, are vulnerable to high wind. *Impacts:* Outdoor events like festivals and sporting activities may involve injury from falling debris and damaged structures. Farmers' markets and open-air concerts can also face challenges, with tents being uprooted. In addition, recreational activities in parks—such as picnics and playground use—become unsafe during high winds. The vulnerability of these activities stems from their outdoor settings, where structures and unattached items can easily be compromised, leading to safety risks and disruptions. Decreased attendance at outdoor events may affect Jordan River Parkway and River Front Park, South Jordan City Park, Oquirrh Lake, Mulligans Golf, and other outdoor recreation areas.
Lightning	People	*Vulnerability:* South Jordan experiences storms that can produce significant lightning activity. Lightning can occur anywhere in South Jordan, and all residents are potentially vulnerable to injury from lightning.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		Impacts: Athletes participating in outdoor sports, golfers, and other outdoor enthusiasts are at risk due to their exposure in open areas and may struggle to find shelter quickly. In addition, young children and the elderly are more vulnerable, as they may not be aware of the dangers of lightning or may be slower to seek protection. Those lacking access to warning systems or education on lightning safety are at further risk during severe weather.
	Structures	*Vulnerability:* All structures are vulnerable to lightning. *Impacts:* Fire or electrical damage is a possibility if structures are struck by lightning. Due to their height and exposure, tall buildings, communications towers, and open-frame agricultural barns are particularly vulnerable to lightning strikes. Those with metallic components or inadequate grounding systems face increased risk because metal conducts electricity. In addition, residential homes near tall trees may be at risk if the trees are struck by lightning and energy is transferred to the structure.
	Economic Assets	*Vulnerability:* Businesses in South Jordan are vulnerable to losses from power and communication disruptions caused by lightning. *Impacts:* Local businesses may experience lost revenue if there is a prolonged power outage due to a lightning event. Tall structures like communications towers and power lines are at high risk, as are agricultural buildings, such as barns and silos, which can suffer damage to stored crops and livestock. Commercial buildings with metal roofing or equipment may face electrical surges, disrupting operations. In addition, outdoor recreational areas that attract crowds are at risk during thunderstorms, posing dangers to infrastructure and public safety.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Parks and trees are vulnerable to lightning. *Impacts:* Mature trees in parks can attract lightning due to their height, while historic buildings made of wood or flammable materials are at risk of igniting. Cultural resources, such as monuments and outdoor sculptures, can also be damaged by lightning. The risk increases in areas with frequent thunderstorms and dry conditions.
	Critical Facilities and Infrastructure	*Vulnerability:* Communications towers and power distribution systems are vulnerable. Facilities such as emergency response facilities, schools, and healthcare facilities may also be at risk if they do not have proper lightning protection systems. *Impacts:* Communications towers attract lightning due to their height and metal structure. Power lines and substations are also susceptible, potentially causing power outages. Emergency services could be disrupted during power outages.
	Community Activities	*Vulnerability:* Sports practices, concerts, picnics, and festivals are particularly vulnerable to lightning strikes. *Impacts:* Community events may be delayed or canceled, which could affect Jordan River Parkway, River Front Park, South Jordan City Park, Oquirrh Lake, Mulligans Golf, and other outdoor recreation areas. Participants in these events often find themselves in open areas without adequate shelter and may be unprepared for sudden weather changes, leading to dangerous situations. Water-related

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		activities, such as boating and fishing, also increase risk due to water's conductivity.
Severe Winter Weather	People	*Vulnerability:* All South Jordan residents are potentially vulnerable to severe winter weather. The elderly, young, disabled, and unhoused populations are particularly vulnerable. *Impacts:* Snowy and icy conditions can lead to injuries from slips and falls. Older residents may experience cardiac problems from shoveling heavy snow. Elderly individuals may also struggle with mobility and health issues, while young children lack the awareness needed to navigate severe weather safely. People with disabilities often depend on assistance that might not be available during storms. In addition, those without reliable transportation can become stranded. Low-income families in inadequate housing may lack resources for heating and snow removal. Unsheltered people and outdoor workers are vulnerable to exposure and hypothermia.
	Structures	*Vulnerability:* Heavy snow load can cause damage to homes with weak roofs. *Impacts:* Older homes in South Jordan might have weakened roofs or inadequate insulation, making them susceptible to snow load and ice dams. Flat-roofed buildings are prone to snow accumulation, risking roof collapse if not cleared. Commercial buildings with large open spaces may face risks if their roofs do not meet snow load requirements. Temporary structures, like tents, are especially vulnerable, as they are not designed to handle heavy snow. Roof design, material quality, and the age of the building are key factors in determining how well a structure can withstand heavy snowfall.
	Economic Assets	*Vulnerability:* Businesses in South Jordan can experience losses from decreased customer traffic. *Impacts:* Snow can hinder vehicle movement and cause delivery delays. Retail businesses can experience significant losses from decreased customer traffic and delayed shipments. Construction projects may face delays and increased costs. Transportation and logistics companies are particularly vulnerable, as snow can hinder vehicle movement, leading to delivery delays. In addition, public services may struggle to maintain continuity during severe weather events.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Trees and parks are vulnerable to severe winter weather. *Impacts:* Local vegetation can be impacted by heavy snow or a blizzard. Trees and branches can break under heavy snow. Cultural resources, including public art and community spaces, face access issues.
	Critical Facilities and Infrastructure	*Vulnerability:* All critical facilities in South Jordan are vulnerable to severe winter weather including transportation, utilities, and communication. *Impacts:* Transportation networks like roads and bridges can become impassable, hindering emergency responses. Slick conditions may increase vehicle collisions, which further disrupt traffic flow. I-15, South Jordan Parkway, 11400 South, Bangerter Highway, Mountain View Corridor, and numerous local roads are likely to be affected by heavy snow and other severe winter weather. Trax and other transit systems

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		may be delayed. There may be an increased demand for response and medical care if there are many traffic accidents. Utilities such as power and water supply systems are at risk of disruptions from downed lines. Power outages can disrupt government operations, healthcare facilities, and emergency response. Communications infrastructure can be damaged, impeding signals. Roofs on public buildings, including schools and hospitals, may collapse from the weight of excessive snow. These vulnerabilities stem from reliance on systems that may not be equipped to handle extreme winter weather.
	Community Activities	*Vulnerability:* Public events are vulnerable to severe winter weather. *Impacts:* Outdoor events, public transportation, and community gatherings may be at risk. Severe weather can lead to low attendance, travel delays, and access issues for essential services, such as emergency response and healthcare. Severe winter weather may force schools to close. In addition, warming centers may see increased demand during extreme cold and severe winter weather conditions.
Tornado	People	*Vulnerability:* Tornadoes are rare in South Jordan but could potentially occur anywhere in the city. If a tornado were to occur, all residents would be vulnerable. *Impacts:* Serious injury can result from blowing debris, uprooted trees, and structural collapse. Individuals living in mobile homes face higher risks, as these structures can be easily damaged. Those with limited mobility, such as the elderly and people with disabilities, may struggle to reach safety quickly. Families with young children might have difficulty ensuring everyone's safety during a warning. In addition, residents unfamiliar with tornado preparedness or without timely weather alerts are at greater risk. Those in lower socioeconomic conditions often live in areas less equipped for disaster response.
	Structures	*Vulnerability:* All homes and businesses in South Jordan could sustain heavy damage from a tornado. *Impacts:* Tornadoes can cause extensive damage, including roofs torn from homes, broken windows, and walls that are damaged or compromised. Single-story homes and those with flat roofs often lack the support needed to withstand high winds. Mobile homes are particularly at risk due to their light weight and insecure foundations. Older commercial buildings that do not meet modern codes may also be weak, and large-span structures, such as warehouses, can have roofs easily lifted by tornado winds. Overall, inadequate materials, poor design, and age increase the risk of damage from tornadoes.
	Economic Assets	*Vulnerability:* Businesses throughout South Jordan could sustain damage and have operations interrupted. *Impacts:* Tornadoes can damage retail businesses, hotels, restaurants, and industrial sites and cause operational downtime or closures. Damage to power or communication systems can cause temporary business closures, which may lead to lost wages or layoffs, lost revenue, and interruption of supply chains. Roads could be blocked by debris, disrupting transportation access to businesses. Larger commercial spaces may be at risk due to their size and

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		materials. Roads and bridges can be compromised, disrupting transportation and service access.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Parks and open spaces are vulnerable to tornadoes. *Impacts:* South Jordan's parks and open spaces could be severely damaged by tornadoes. Natural resources like forests and wetlands can be severely damaged, disrupting ecosystems. Historic structures may suffer damage because their age and construction methods might make them less able to withstand high winds. Cultural resources, including monuments and parks that are vital to community heritage, also may be at risk.
	Critical Facilities and Infrastructure	*Vulnerability:* Fire and police stations, city facilities, healthcare clinics, and utility systems are vulnerable to tornadoes. Any above-ground facilities in the path of the tornado could be affected. *Impacts:* Public safety buildings, schools, or other civic facilities may need emergency inspections or repairs. Utilities like water treatment plants, communication facilities, and power stations are also at risk, as damage to these facilities can disrupt essential services. In addition, any structures not built to modern codes might lack the reinforcements necessary to endure severe weather, increasing vulnerability for the facilities and surrounding communities. Major transportation routes, such as I-15, Bangerter Highway, Mountain View Corridor, and other arterial roads, may be blocked by debris.
	Community Activities	*Vulnerability:* Public events are vulnerable to tornadoes. *Impacts:* Outdoor festivals, sports events, and markets are vulnerable to tornadoes due to their open spaces and limited options for shelter. Temporary structures, such as tents, can be easily damaged by high winds, and patrons may be unable to find shelter. Events may be postponed or canceled, reducing opportunities for social engagement and community support. Schools and recreational facilities with large glass windows or weak roofs also face significant risks.
Wildfire	People	*Vulnerability:* Wildfire risk in South Jordan is highest in the western part of the city, where development is less dense and homes are closer to the foothills of the Oquirrh Mountains. Open spaces, such as near the Jordan River, also have wildfire risk. *Impacts:* Residents may be temporarily evacuated due to wildfires in the vicinity or homes may be permanently lost to fire. Residents near the wildland–urban interface (WUI), individuals with physical disabilities or health issues who may struggle to evacuate, and low-income families lacking resources for fire safety measures may be vulnerable. Older adults might have reduced mobility, making them more dependent on others for assistance. All residents in South Jordan are vulnerable to the effects of poor air quality from a wildfire anywhere in the vicinity. Individuals with underlying respiratory or cardiac conditions may be particularly vulnerable to wildfire smoke.
	Structures	*Vulnerability:* Residential homes and other structures in higher wildfire potential areas near foothills or the Jordan River, especially those made of wood or other flammable materials, may be vulnerable. *Impacts:* Properties near the WUI are at higher risk due to surrounding flammable vegetation. Inadequate defensible space, such as insufficient clearing of dry grass and shrubs, increases susceptibility.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		Roofs made of combustible materials and buildings that lack fire-resistant features are particularly at risk during wildfire events.
	Economic Assets	*Vulnerability:* Risk to economic assets is relatively low in South Jordan due to small areas exposed to wildfire. *Impacts:* Commercial assets, such as retail centers close to undeveloped regions, can suffer damage from flames and smoke, affecting the local economy. Vital infrastructure, such as power lines and water pipelines, can be disrupted, causing further economic repercussions. These vulnerabilities are heightened by dry conditions and high winds, which can facilitate the spread of fires.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Air quality and natural habitats are vulnerable. *Impacts:* Natural resources like forests and grasslands are at risk because dry vegetation and accumulated brush can easily ignite. Historic sites made of wood and cultural landmarks can also be affected, particularly when located near wildland areas. The increasing frequency of drought and extreme heat, exacerbated by climate change, heightens these vulnerabilities. In addition, urban development encroaching on wildland areas increases the risk.
	Critical Facilities and Infrastructure	*Vulnerability:* No critical facilities in South Jordan are at direct risk of wildfire, but utility systems may be vulnerable. *Impacts:* Utilities like power lines and gas pipelines may be at risk, as sparks or falling trees can ignite fires. If the water supply systems are damaged, firefighting efforts could become more difficult. Emergency services may be overwhelmed if assisting neighboring jurisdictions.
	Community Activities	*Vulnerability:* Outdoor public events and recreational activities are susceptible to disruption due to wildfire conditions. *Impacts:* Recreational activities and outdoor events like festivals and sports, especially during hot, windy conditions, may be at risk and may be cancelled due to wildfire smoke. Recreational activities along the Jordan River also pose risks from open flames or sparks. High summer temperatures, low humidity, and invasive plants, such as cheatgrass, increase fire risks. In addition, landscaping with dry grasses and shrubs increases susceptibility during fire season, putting local infrastructure, such as schools and neighborhoods, at risk.
Dam Failure	People	*Vulnerability:* South Jordan residents are vulnerable to dam failure of Kennecott Mine Bingham Creek Dam and Oquirrh Lake Dam. Vulnerable areas are along Bingham Creek and in areas downslope of the Daybreak Community. The Jordan River area is vulnerable to dam failure from the Jordan Valley Water Reservoirs. *Impacts:* Dam failure can cause swift moving floodwaters downstream that can cause injury. Individuals living near dams, particularly in low-lying areas, are most vulnerable to dam failure and potential flooding. Damage to homes may lead to residents being displaced. Families with young children, the elderly, and low-income residents may struggle to evacuate quickly, while individuals with disabilities may face significant barriers during emergencies.
	Structures	*Vulnerability:* Structures in the areas mentioned above are at risk of flooding from dam failure. Residential homes downstream or in low-lying areas, bridges, and roadways near rivers may be vulnerable.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		Impacts: Outdated dam infrastructure, insufficient spillway capacity, and a lack of warning systems can worsen the vulnerability to dam failure and threaten lives and property.
	Economic Assets	*Vulnerability:* Businesses are vulnerable to disruption from dam failure. *Impacts:* Roads, bridges, and utilities could suffer catastrophic damage, disrupting transport and services. Residential and commercial properties downstream face significant flood risks, leading to property damage and economic loss. Agricultural assets, including farmland and livestock, can be severely affected, especially if irrigation systems are compromised. In addition, businesses that rely on water, such as manufacturing plants, may experience operational disruptions. The proximity of these assets to failure zones and their dependence on a stable water supply highlight their vulnerability in the event of a dam failure.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Parks are vulnerable to dam failure. *Impacts:* Natural resources like local waterways and wetlands could suffer habitat loss, while historically significant sites, including old irrigation systems, are at risk of flooding and deterioration. Cultural resources, such as community centers and parks, may also face damage, affecting local gatherings. Welby Park, Glenmore Golf Course, and the Jordan River Parkway and Riverfront Park are vulnerable.
	Critical Facilities and Infrastructure	*Vulnerability:* Water and transportation networks are vulnerable. No critical facilities are located within dam inundation areas in South Jordan. *Impacts:* South Jordan is served by the Jordan Valley Water Conservancy District (JFWCD) and the water supply to the city could be affected by a failure of the JFWCD reservoir. Mountain View Corridor, Bangerter Highway, and 11400 South could be damaged or blocked due to dam failure. Emergency response could be affected by road closures.
	Community Activities	*Vulnerability:* Public events and recreation are vulnerable to dam failure. *Impacts:* Recreational pursuits downstream may be at risk. These activities are vulnerable to sudden flooding from a dam breach. Activities or events at Welby Park, Glenmore Golf Course, and the Jordan River Parkway and Riverfront Park may also be vulnerable.
Civil Disturbance	People	Low-income individuals may lack the resources for safety, while the elderly or disabled may struggle to navigate emergencies. Young people, particularly teenagers, may be drawn into unrest, influenced by social dynamics. In addition, marginalized individuals may feel targeted or compelled to participate. A lack of community cohesion and trust in authorities can further heighten tensions.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Structures	Government buildings, commercial properties, and infrastructure, such as bridges and transportation hubs may be vulnerable. Government buildings may be targeted for their symbolic authority, while retail stores can attract crowds during protests. Residential neighborhoods also can be affected, especially in areas with heightened tensions. The vulnerability of these structures stems from their visibility and importance to the community, combined with factors such as location and ongoing social issues.
	Economic Assets	Retail establishments, especially shopping centers, are at risk as they often become focal points for protests. Transportation systems can be disrupted by blockades, hindering access to services. Financial institutions may face vandalism or theft, while critical service providers, such as hospitals, could experience strain during unrest. Several economic assets are vulnerable to civil disturbances, primarily due to their visibility and reliance on foot traffic.
	Natural, Historic, and Cultural Resources	Parks and open spaces may suffer from vandalism or destruction during uncontrolled events. Historic sites can become targets, as they symbolize authority or cultural significance. Cultural resources such as community centers and places of worship may also be affected, as they play a vital role in community identity. Their vulnerability lies in the potential for damage during protests.
	Critical Facilities and Infrastructure	Governmental buildings, schools, and healthcare facilities may be at risk, since they often symbolize authority and serve as community hubs, making them targets during unrest. Utility infrastructure, such as water and power facilities, is also at risk of disruption. Its visibility and essential services contribute to its vulnerability during civil disturbances.
	Community Activities	Public demonstrations, parades, and local government meetings are particularly vulnerable to civil disturbances. These events often attract large crowds and can become tense, especially around contentious social or political issues. Factors such as the local demographic, economic conditions, and recent events can heighten these vulnerabilities, making it easier for conflicts to arise during passionate public gatherings.
Cyberattack	People	Older adults often lack familiarity with technology and online security, making them easy targets for phishing scams. Individuals engaging in online banking or shopping without strong security measures also face heightened risks. Families with children may be less vigilant about internet safety, allowing cybercriminals to exploit personal information. In addition, small business owners without robust cybersecurity practices are prime targets for attacks that can disrupt operations.
	Structures	Critical infrastructure, such as power plants, water treatment facilities, and transportation systems, often lack robust cybersecurity measures. Commercial businesses, especially financial institutions and healthcare providers, are also at risk due to weaker data protection and employee training. Educational institutions may be vulnerable because of limited funding for cybersecurity and outdated software. Obsolete technology and insufficient training enhance the susceptibility of these structures to cyber threats.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Economic Assets	Financial institutions, such as banks and credit unions, are at risk of data theft and service disruption. Small and medium-sized businesses often lack robust cybersecurity measures, making them attractive targets. In addition, local government agencies and critical infrastructure, such as water treatment facilities, might have outdated security protocols, posing threats to public safety. The rise of remote work further exacerbates vulnerabilities, as employees accessing networks from home can unintentionally expose systems to risks. Overall, the combination of outdated technology and insufficient cybersecurity practices increases the vulnerability of an area's economic assets.
	Natural, Historic, and Cultural Resources	Natural resources like water management systems and wildlife databases can be compromised, disrupting ecosystems. Historic sites and museums that digitize collections are at risk of losing valuable artifacts and data. In addition, cultural organizations managing events may face threats if their systems lack adequate security. The limited resources of smaller organizations further increase this vulnerability
	Critical Facilities and Infrastructure	Energy and utility services, such as electricity and water systems, which often rely on outdated technology, may be vulnerable. Transportation infrastructure, such as traffic management and public transit, is also at risk due to networked systems. Healthcare facilities that use electronic records and connected medical devices face vulnerabilities that can compromise patient safety.
	Community Activities	Online registration for events, local government services, and educational programs that rely on digital tools may be targeted due to inadequate security measures, outdated software, and insufficient staff training.
Hazardous Materials Incident (Transporta-tion & Fixed Facility)	People	Individuals with pre-existing health conditions, such as respiratory issues, and the elderly are at higher risk due to their compromised health. Children are also more susceptible. Those living near industrial areas or transport routes for hazardous materials face increased exposure risk, while low-income families may lack resources and information to effectively prepare for incidents.
	Structures	Industrial facilities, such as manufacturing plants and warehouses, often store hazardous chemicals which may leak. Residential buildings, schools, and hospitals are also at risk, particularly if located along transportation routes for hazardous materials. Older buildings may lack modern safety features, increasing their vulnerability.
	Economic Assets	Industrial facilities, transportation infrastructure, and nearby commercial properties may be affected. Industrial facilities handling chemicals are at risk of spills or leaks, while roads and railways used for transporting hazardous materials can lead to accidents and contamination. In addition, nearby commercial and residential areas face potential health risks and economic losses.
	Natural, Historic, and Cultural Resources	Waterways and habitats are vulnerable to hazardous materials incidents, which can disrupt ecosystems. Historic sites and structures may suffer damage from toxic exposure, leading to degradation over time. In addition, cultural landmarks risk losing their significance due to contamination events. The proximity of these resources to industrial areas or transport routes exacerbates their risk.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Critical Facilities and Infrastructure	Chemical manufacturing plants, waste treatment facilities, and transportation networks, such as highways and railroads may be at risk. Their vulnerability stems from factors such as proximity to residential areas, aging infrastructure, and inadequate safety measures. Natural hazards, such as flooding and earthquakes, can further increase risks by damaging containment systems.
	Community Activities	Local markets, school events, and outdoor gatherings are vulnerable to hazardous materials incidents if they are near industrial zones and transport corridors. This risk is heightened by inadequate emergency preparedness, lack of public awareness, and the potential for spills during transport. Large crowds at events can complicate evacuation efforts, increasing the risks for participants and nearby residents.
Public Health Epidemic/ Pandemic	People	Individuals with pre-existing health conditions like asthma and heart disease and adults over 65 may be vulnerable. Low-income families may struggle to access healthcare and vaccinations, increasing their risk. Marginalized communities with limited access to information and those living in high-density conditions also are at greater risk due to the rapid spread of diseases and the challenges in implementing preventive measures.
	Structures	Several structures are vulnerable to public health epidemics or pandemics, particularly due to their ability to facilitate the spread of disease. High-density residential areas, such as apartment complexes, are at risk, as close living quarters can lead to faster transmission. Public gathering spaces, such as schools and community centers, also pose significant threats because large groups are in confined spaces. Healthcare facilities can become hotspots for infections if infection control measures are insufficient. In addition, workplaces with high foot traffic, such as retail stores, contribute to vulnerability.
	Economic Assets	Small businesses in retail, hospitality, and food service are particularly vulnerable to public health epidemics or pandemics. These sectors face risks from fluctuating consumer demand and potential operational restrictions. The tourism industry is also affected, as travelers may avoid high-risk areas. Healthcare facilities can become overwhelmed, straining resources and impacting operations. In addition, local supply chains may experience disruptions, leading to shortages and inflation. Overall, the direct effects of illness, along with prolonged shutdowns and consumer hesitance, leave these economic assets exposed to significant downturns.
	Natural, Historic, and Cultural Resources	Natural resources like wildlife and ecosystems can be disrupted by increased human activity, raising the risk of zoonotic diseases. Historic sites may deteriorate due to reduced visitor access and funding, while cultural resources, such as community events, face cancelations, impacting social connections.
	Critical Facilities and Infrastructure	Public health epidemic or pandemic incidents can affect healthcare facilities, nursing homes, public transportation systems, schools, and food supply chains. Hospitals and clinics may become overwhelmed with patients, while vulnerable populations in nursing homes are at higher risk. Public transportation can facilitate the spread of disease, and schools gather large groups, thereby increasing transmission potential. These facilities often lack adequate resources, including

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		medical supplies and testing capabilities, making them more susceptible to the impacts of a health crisis.
	Community Activities	Large gatherings like festivals and sporting events can facilitate the rapid spread of diseases due to close contact. Public transportation is also at risk, as it serves many people in confined spaces. Schools and childcare facilities are particularly susceptible, given that children can easily transmit infections. In addition, food-related events, such as farmers' markets, can pose risks if hygiene practices are not followed. The interconnectedness of community members and varying adherence to health guidelines further exacerbate these vulnerabilities.
Terrorism	People	Young children and newcomers may lack awareness of potential threats, while the elderly and individuals with disabilities may struggle to respond quickly in emergencies. Marginalized communities often face bias, making them more susceptible to targeting. In addition, those with lower socioeconomic status may lack access to security measures and emergency preparedness resources.
	Structures	Government buildings, transportation hubs, commercial centers, and public spaces are particularly vulnerable to terrorism incidents. Government buildings are symbolic targets, while transportation hubs and commercial centers are attractive due to their potential for high casualties and crowd presence. Public spaces are also at risk due to their open nature and lack of security. Their vulnerability is heightened by inadequate security measures, high occupancy rates, and their locations in densely populated areas, which can amplify the impact of incidents.
	Economic Assets	Infrastructure, commercial establishments, and community facilities may be vulnerable. Critical infrastructure, such as transportation networks and power grids, could disrupt the economy if targeted. Commercial establishments, especially those with high foot traffic, and community facilities like schools and hospitals are also at risk, as they can provoke widespread concern and disruption. Their accessibility and interconnectivity increase vulnerability, meaning that damage to one asset can have a broader economic impact and hinder recovery efforts.
	Natural, Historic, and Cultural Resources	Natural resources like water supplies and parks could be targeted for their significance to the community. Historic sites and cultural resources, such as museums or community centers, are also at risk due to their accessibility and importance to local identity. Their vulnerability is often heightened by inadequate security measures.
	Critical Facilities and Infrastructure	Public transportation systems, healthcare facilities, schools, and utility services like water and power plants may be affected. Their vulnerability arises from high accessibility and the potential impact of an attack, as crowded transportation and public spaces can lead to mass casualties and panic. Attacking utility services could disrupt the town's essential functions, creating chaos.
	Community Activities	Festivals, parades, and sporting events are particularly vulnerable to terrorism incidents. These events attract large crowds, making it easier for perpetrators to inflict harm and instill fear. In addition, community centers and places of worship serve as social hubs, increasing their

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		risk. Factors such as limited security measures and open access to public spaces, contribute to this vulnerability.

Jurisdiction-Specific Changes in Vulnerability

Hazard events can impact communities, infrastructures, and ecosystems. The severity of these impacts can be influenced by climate change, population patterns, and land use developments. Understanding changes in these factors is crucial for the city of South Jordan as it works to develop a resilient community and minimize the impacts of hazards. Table 10 displays the unique changes within the community and the related effects on each identified hazard affecting the city of South Jordan.

DRAFT

Table 10: Jurisdiction-Specific Changes in Vulnerability in the City of South Jordan

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
Avalanche	Higher temperatures can lead to more rain, destabilizing snowpack and increasing the risk of wet avalanches. In addition, changes in snowfall can cause denser snow layering on slopes, making them more prone to sliding.	Avalanches can influence population patterns by deterring people from moving to or remaining in high-risk areas, leading to decreased density in these locations. The threat of avalanches prompts many to seek safer environments in urban or lower-risk regions. In addition, when avalanches occur, they can disrupt infrastructure, causing residents to relocate.	Developments like the Bacchus Highway Center that are on the far western border of South Jordan, close to the slopes of Bingham Canyon Mine, are at a slight risk for avalanche.	Decreased
Drought	Climate change affects drought incidents by altering precipitation patterns and increasing temperatures. Warmer weather can lead to longer dry periods and more severe droughts, while changes in rainfall can reduce snowpack in nearby mountains, crucial for summer water supply. Higher temperatures also increase evaporation rates, further straining local water resources.	Drought can significantly influence population patterns by impacting economic opportunities and the quality of life. Water scarcity often leads to reduced agricultural productivity, prompting residents to migrate to areas with more stable job prospects. Increased water costs can make living less affordable, driving some residents away. Conversely, efforts to address drought, such as sustainable development or improved water management, may attract newcomers, resulting in changes in the community's demographic composition over time.	Increasing population and development will continue to put a strain on South Jordan's water sources and increase drought risk.	Increased
Earthquake	Rising temperatures can lead to glacial melting, which affects pressure on tectonic plates and may trigger seismic activity	Earthquakes can significantly alter population patterns by prompting residents to leave for safer areas after a seismic event.	New developments like Daybreak and South Jordan Towne Center expose new structures to ground shaking	Stayed the same

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	through isostatic rebound. In addition, increased rainfall and flooding can erode soils, weakening structural integrity and heightening vulnerability during earthquakes. Although the direct links between climate change and earthquakes are still under investigation, environmental effects may impact the region's seismic risk.	This migration can lead to changes in population density and attract new residents and businesses during the rebuilding process. The perception of the area as a safe place to live may shift, impacting long-term demographics, as some residents return to rebuild while others relocate permanently.	from nearby faults. These structures are built according to modern building code standards, thus mitigating some of the risk from earthquakes.	
Extreme Heat	Climate change significantly impacts extreme heat by increasing the frequency and intensity of heat waves. Rising global temperatures lead to longer and hotter summers, affecting residents and local infrastructure while heightening health risks, especially for vulnerable populations. Urban heat islands resulting from reduced vegetation and extensive pavement further amplify these effects.	Extreme heat can cause residents to relocate due to damaged homes or safety concerns. Some may move to areas perceived as safer or seek better job opportunities elsewhere. The economic impact and infrastructure damage can also make certain neighborhoods less desirable, leading to shifts in demographics and the socioeconomic landscape as new residents with different backgrounds move in.	Increased development and density can raise temperatures in South Jordan during extreme heat events.	Increased
Extreme Cold	Climate change can increase the intensity of winter storms. Higher atmospheric temperatures allow for more moisture, resulting in heavier snowfall and potentially lower temperatures during these events. In addition, fluctuations in weather patterns may disrupt seasonal cycles, leading to unpredictable periods of	Extreme cold can drive some residents to relocate to warmer areas. Harsh winters can hinder economic activities and deter new residents and businesses, influencing housing demand and the attractiveness of certain neighborhoods. This may disproportionately affect lower-income families, leading to changes in demographics and	Increased growth of commercial and residential developments in South Jordan increases energy demand during extreme cold events, stressing the electrical grid and increasing the risk of extreme cold events.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	extreme cold mixed with warmer spells.	socioeconomic stratification in the community.		
Flooding	Higher temperatures increase the frequency and intensity of extreme weather events and alter precipitation patterns. They lead to more intense rainstorms and accelerated snowmelt from nearby mountains, raising water levels in rivers and streams. This combination raises the risk of flooding, especially in areas with inadequate drainage and urban development in flood-prone zones, heightening the potential for damage to homes and infrastructure.	Flooding can significantly alter population patterns by displacing residents from affected areas, leading them to seek shelter elsewhere. This may cause a population decline where flooding occurs, as individuals might hesitate to return due to ongoing risks or property damage. As neighborhoods become less desirable, people may migrate to safer areas, changing demographic trends and putting pressure on housing in those regions. Over time, these shifts can influence urban planning and development, as local governments address flooding risks and changing population needs.	No developments in South Jordan have been placed in the special flood hazard area. Increased impervious surfaces due to development across South Jordan could contribute to ponding and other pluvial flooding.	Decreased
Landslide/ Slope Failure	Climate change increases the risk of landslides through heavier rainfall and temperature fluctuations. Intense rain saturates soil, destabilizing slopes, while freeze–thaw cycles weaken the ground. Changes in vegetation can also reduce stability, leading to a higher potential for landslides.	Landslides and slope failures can impact population patterns by making some areas unsafe, leading to displacement and lower property values. This prompts residents to move to safer regions, thereby increasing density in more stable areas. Concerns about future landslides may also deter newcomers from high-risk zones, shaping long-term demographic trends.	Developments like the Bacchus Highway Center in western South Jordan near the Bingham Canyon Mine are susceptible to landslides.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
Radon	Climate change can affect radon levels by altering soil temperatures and moisture conditions. Higher temperatures may increase radon emissions from the ground, while heavy rainfall can change groundwater and soil saturation, impacting radon migration into buildings.	Radon exposure can influence population patterns as increased health awareness may drive families to move away from areas with high radon levels. This shift could particularly affect vulnerable groups, changing demographics and demand in the housing market. Homes with lower radon levels may become more sought after, and public health campaigns can encourage community action, making previously undesirable areas more attractive once mitigation measures are implemented.	The development in South Jordan has not increased radon risk.	Stayed the same
Heavy Rain	Climate change increases the frequency and intensity of heavy rain, as higher temperatures allow the atmosphere to hold more moisture. This leads to stronger storms, flash flooding, and overwhelmed drainage systems.	Heavy rain can shift population patterns by pushing residents out of flood-prone areas and attracting them to safer neighborhoods. Frequent flooding may lead to evacuations and economic disruptions, prompting relocations. Over time, ongoing heavy rains can affect housing demand and community stability, altering the town's population distribution.	Increased impervious surfaces due to development across South Jordan could contribute to ponding and other pluvial flooding.	Increased
High Wind	Climate change affects high winds by altering atmospheric patterns and increasing extreme weather events. Rising temperatures may lead to more substantial, unpredictable winds and more frequent	High winds can alter population patterns by making certain areas less desirable. Frequent damage may drive residents to safer neighborhoods, deter newcomers, and slow growth in affected regions.	New development across South Jordan, especially in multistory buildings, brings additional risk for damage from high winds.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	thunderstorms, posing risks to infrastructure and air quality.			
Lightning	Climate change increases temperatures and alters precipitation, leading to more intense thunderstorms and frequent lightning strikes. Urbanization can enhance this effect, posing risks to public safety and infrastructure.	Lightning can influence population patterns by causing property damage and wildfires, leading some residents to relocate. Areas with higher lightning activity may deter new residents, while safer locations could increase migration as people seek protection from severe weather.	New, large-scale development exposes more structures to lightning strikes, slightly increasing risk for South Jordan.	Increased
Severe Winter Weather	Climate change impacts heavy snow and blizzards by altering precipitation patterns. Higher temperatures can lead to more rain than snow, affecting snowpack levels—additionally, increased storm intensity results in heavier and more unpredictable snowfall.	An increased population means an increased number of people needing to get to work and quicker snow removal. Heavy snow or blizzards can impact population patterns by influencing where people live and work. Transportation disruptions may lead residents to seek housing closer to jobs, increasing density in some areas while depopulating others. Families might also avoid regions with frequent heavy snowfall, shifting demand to milder areas. Over time, these trends can alter community demographics and economic activity, prompting adjustments in town planning and resource allocation.	With large development increases in South Jordan, the risk of damage and increased responsibility from severe winter storms has gone up. With new subdivisions, the city is responsible for plowing, rescues, and evacuations during heavy snow events.	Increased
Tornado	Climate change may increase the frequency and intensity of tornadoes. Higher temperatures lead to more moisture in the air,	Tornadoes can influence population patterns by prompting residents to move to safer areas after damage occurs. This can	New, large-scale development exposes more structures to tornadoes, slightly increasing risk for South Jordan.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	creating conditions for severe thunderstorms. Changes in wind patterns and precipitation can also heighten tornado risks, resulting in more destructive storms and greater threats to infrastructure and communities.	decrease density in affected neighborhoods while increasing the demand for housing in safer regions. New residents may also move in for recovery opportunities, altering demographics. Over time, repeated tornado threats might push long-term residents to areas with better disaster preparedness, reshaping the town's population distribution.		
Wildfire	By raising temperatures and creating drier conditions, prolonged droughts lead to more dry vegetation, which serves as fuel for fires. Erratic seasons extend the growing period, while more lightning strikes can ignite wildfires. These factors heighten the threat to ecosystems and community safety.	Displaced individuals often seek safer areas, shifting demographic trends, while declining property values might deter newcomers. Conversely, some may be drawn to rebuilding efforts, impacting long-term growth and community dynamics.	Development, especially in the western side of South Jordan, is close to high-risk wildfire areas. These neighborhoods, like the Bacchus Highway Center, are at heightened risk of wildfire damage.	Increased
Dam Failure	Climate change raises the risk of dam failure by causing heavier rainfall and rapid snowmelt. These changes can overwhelm dams and compromise their integrity, highlighting the need for urgent safety assessments and upgrades to protect communities downstream.	Dam failure can impact population patterns by displacing residents and altering demographics. Evacuations can lead to an influx of people in safer areas, while destruction may deter new residents and contribute to population decline. Fear of future disasters may also prompt remaining individuals to relocate, changing the community's composition and	Development in South Jordan has not increased dam failure risk.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
		affecting population density and economic activity.		
Civil Disturbance	Climate change can increase civil disturbances by intensifying environmental stresses and social tensions. Rising temperatures may lead to droughts, wildfires, and poor air quality, particularly affecting vulnerable communities. Resource scarcity, especially water, can spark conflicts and protests. In addition, an influx of migrants from harder-hit areas may strain local resources, further escalating tensions. This cycle of unrest is driven by the impacts of climate change on the environment and community dynamics.	By encouraging residents to move for safety, leading to outflows and new arrivals. These events can reveal social issues, impacting community dynamics, employment, and property values, ultimately reshaping demographics and social cohesion.	Development in South Jordan has not increased civil disturbance risk.	Increased
Cyberattack	Possible attack on the industry, which is seen as producing large amounts of greenhouse gases and burning fossil fuels. Climate change can heighten cyberattack risk by increasing vulnerabilities during extreme weather. Disruptions like power outages offer cybercriminals opportunities, because focusing on emergency responses can weaken cybersecurity measures. As organizations adopt new technologies to cope with climate impacts, they may	Cyberattacks can change population patterns by eroding trust in essential services. Compromised systems may cause residents to leave due to safety concerns, while high-profile incidents can deter businesses, leading to job losses. This perception of vulnerability may also make the town less appealing to newcomers, resulting in demographic shifts and affecting local development.	Development in South Jordan has not increased cyberattack risk.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	unintentionally introduce additional vulnerabilities.			
Hazardous Materials Incident (Transportation & Fixed Facility)	Climate change elevates the risk of hazardous materials incidents by increasing extreme weather events like heavy rain and wildfires. These events can breach storage tanks and heighten material volatility. Vulnerable infrastructure can lead to more spills or accidents, while climate shifts may also introduce new challenges for managing hazardous substances and public health.	Hazardous materials incidents can cause evacuations and temporary declines in density. In the long run, unsafe areas may deter new residents, affecting growth and diversity. In addition, negative perceptions can lower property values and economic prospects, leading families to relocate, which impacts local demographics.	Development in South Jordan has not increased hazardous material risk.	Increased
Public Health Epidemic/ Pandemic	By increasing the spread of vector-borne diseases and raising the risk of waterborne illnesses due to flooding or drought. Worsening air quality can also exacerbate respiratory conditions like asthma, especially in vulnerable populations.	By prompting migration for safety and better healthcare. Vulnerable groups may move to areas with improved services, while economic instability can drive people to seek new employment opportunities. In addition, restrictions like quarantine measures can limit movement and social interactions, reshaping the community's demographics and impacting local economies.	Development in South Jordan has not increased epidemic/pandemic risk.	Increased
Terrorism	Terroristic activity is sometimes centered around climate change. Climate change impacts terrorism incidents by creating conditions of resource scarcity and social unrest. Increased competition for essential resources, such as water, can	Terrorism incidents can alter population patterns by instilling fear and prompting residents to relocate to perceived safer areas, resulting in demographic shifts and potential declines in property values. Some neighborhoods may see an outflow of residents, while others could experience an	Development in South Jordan has not increased terrorism risk.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	fuel tensions, making communities more vulnerable to extremist ideologies. Extreme weather events may disrupt social order and infrastructure, offering terrorist groups opportunities to exploit crises. In addition, climate-driven population displacement can heighten tensions in receiving areas, raising the risk of domestic terrorism. The focus of law enforcement on climate-related challenges can also limit its capacity to address terrorism threats. Ultimately, while climate change may not directly cause terrorism, its effects can create an environment conducive to extremist activities.	influx of people seeking refuge from violence. In addition, increased security measures may deter businesses and residents from certain locations, leading to long-term changes in population density and urban development patterns.		

DRAFT

Additional Public Involvement

Public involvement in the city of South Jordan reflects a strong commitment to community engagement and safety awareness, particularly regarding hazards like extreme weather. The city actively disseminates information through various channels to keep residents informed and prepared. One key initiative is the distribution of community newsletters, which provide updates on local events, safety tips, and information about upcoming hazard awareness campaigns. These newsletters are essential for educating the public about potential hazards and the steps they can take to mitigate risks.

The city of South Jordan also organizes school programs that teach students about emergency preparedness and hazard awareness. These programs foster a safety culture from a young age, ensuring that future generations can handle extreme weather events and other emergencies. Severe Weather Week is another vital aspect of public involvement. This annual event typically includes workshops, demonstrations, and informational sessions highlighting the importance of preparedness. It engages the community in discussions about extreme cold and other weather-related hazards, encouraging proactive measures.

Public meetings and events are regularly held to facilitate direct engagement between city officials and residents. These forums allow community members to voice their concerns, ask questions, and discuss local safety initiatives. The availability of hard copy notices ensures that information reaches all residents, including those who might not have internet access. The city also collaborates with various organizations that advocate for and represent underserved and vulnerable communities. These partnerships ensure that safety information is effectively communicated to all residents, particularly those facing additional challenges during extreme weather events.

Social media are critical in the city of South Jordan's public involvement strategy. The city uses platforms like Facebook and X to share real-time updates, safety information, and alerts about severe weather. This instant communication channel lets residents stay informed and engaged with their community. The city of South Jordan's public involvement initiatives demonstrate a comprehensive approach to community safety and education. The city effectively promotes awareness and preparedness for extreme cold and other hazards by leveraging multiple communication channels and fostering partnerships.

Plan Integration

Incorporating the underlying principles of the Hazard Mitigation Plan and its recommendations into other plans is a highly effective and low-cost way to expand their influence. All plan participants will use existing methods and programs to implement hazard mitigation actions where possible. As previously stated, mitigation is most successful when it is incorporated into the day-to-day functions and priorities of government and public service. This plan builds on the momentum developed through previous and related planning efforts and mitigation programs, and it recommends implementing actions where possible through these other program mechanisms. These existing mechanisms include the following:

DRAFT

- Regularity Capabilities
- Administrative Capabilities
- Fiscal Capabilities

Respective planning stakeholders will conduct implementation and incorporation into existing planning mechanisms and will be done through the routine actions of:

- Monitoring other planning/program agendas
- Attending other planning/program meetings
- Participating in other planning processes; and
- Monitoring community budget meetings for other community program opportunities.

The successful implementation of this plan will require constant and vigilant review of existing plans and programs for coordination and multi-objective opportunities that promote a safe, sustainable community. Regular efforts should be made to monitor the progress of mitigation actions implemented through other planning mechanisms. Where appropriate, priority actions should be incorporated into planning updates. Table 11 lists existing planning mechanisms in which the Hazard Mitigation Plan has been integrated. Table 12 lists the opportunities for integrating elements of this plan into other plans. Aligning the hazard mitigation with these plans can create a more sustainable, resilient, and adaptive urban environment that reduces risk, protects citizens, and ensures that growth happens in a way that minimizes exposure to hazards.

Table 11: Integration of Previous Plans by the City of South Jordan

Plan	Description
Development standards and specifications via municipal code	Many of the required mitigation strategies and efforts have been adopted in the development approval process.

Table 12: Opportunities for Integration with Future Plans of the City of South Jordan

Plan	Description
Community Wildfire Protection Plan	Identifies risks to the community from wildfire and potential actions to reduce risk.
Comprehensive Emergency Management Plan	Establishes the city framework for mitigation, preparedness, response, and recovery.
City Master Plan	Integrating a hazard mitigation plan (HMP) with a city master plan creates an opportunity to enhance resilience to natural and human-caused disasters while aligning long-term development goals with risk reduction strategies.
General Plan	Align city goals with risk reduction strategies.
Storm Drain Mater Plan	Align storm water goals with risk reduction strategies.
Water Shortage Master Plan	Align water storage goals with risk reduction strategies.
Economic Strategic Plan	Align economic development with risk reduction strategies.

Plan	Description
Transportation Master Plan	Align transportation development with risk reduction strategies
Open Space Master Plan	Align planning for open space with risk reduction strategies

Capability Assessment

Local mitigation capabilities are existing authorities, policies, programs, and resources that reduce hazard impacts or could help carry out hazard mitigation activities.

Planning and Regulatory Capabilities

Planning and regulatory capabilities are the plans, policies, codes, and ordinances that prevent and reduce the impacts of hazards.

Table 13: Assessment of the Planning Capabilities of the City of South Jordan

Plan	Does it address hazards? (Y/N)	How can it be used to implement mitigation actions?	When was the last update? When is the next update?
General Plan	Y	All plans, codes, ordinances, standards, and specifications have been written and developed to provide mitigation action at all levels. This includes underground utility requirements, bridge/culvert design, detention/retention facilities, hydrodynamic separators installed, and seismic standards on buildings.	Annual
Capital Improvement Plan	Y	See above	Annual
Climate Change Adaptation Plan	No		N/A
Community Wildfire Protection Plan	Y	See above	Annual Update
Economic Development Plan	Y	See above	Annual update
Land Use Plan	Y	See above	Annual update
Local Emergency Operations Plan	Y	See above	Annual update
Stormwater Management Plan	Y	See above	Annual update
Transportation Plan	Y	See above	Annual update
Substantial Damage Plan	Unknown		N/A
Other? (Describe)			

DRAFT

Table 14: Assessment of the Regulations and Ordinances of the City of South Jordan[9]

Regulation/Ordinance	Does it effectively reduce hazard impacts?	Is it adequately administered and enforced?	When was the last update? When is the next update?
Building Code	Yes; South Jordan effectively enforces the following codes: • 2021 International Residential Code (IRC), including Appendix E and Q • 2021 International Swimming Pool and Spa Code (ISPSC) • Residential provisions of the 2021 International Energy Conservation Code • 2020 National Electrical Code (NEC) • 2021 International Building Code (IBC), including Appendix J • 2021 International Plumbing Code (IPC) • 2021 International Mechanical Code (IMC) • 2021 International Fuel Gas Code (IFGC) • Commercial provisions of the 2021 International Energy Conservation Code • 2021 International Existing Building Code (subject to HUD and IRC Appendix E) • ICC/ANSI A117.1-2009 • Applicable Utah State Amendments (see Laws and Rules)	Yes	As needed
Flood Insurance Rate Maps	Yes	Yes	FIRM map release, LOMA acceptance, LOMR acceptance
Floodplain Ordinance	Yes	Yes	As needed
Subdivision Ordinance	Yes	Yes	As needed
Zoning Ordinance	Yes	Yes	As needed
Natural Hazard-Specific Ordinance (Stormwater, Steep Slope, Wildfire)	Yes	Yes	As needed

[9] FIRM = Flood Insurance Rate Map, LOMA = Letter of Map Amendment, LOMR = Letter of Map Revision.

DRAFT

Regulation/Ordinance	Does it effectively reduce hazard impacts?	Is it adequately administered and enforced?	When was the last update? When is the next update?
Acquisition of Land for Open Space and Public Recreation Use	Yes	Yes	As needed
Prohibition of Building in At-Risk Areas	Unknown		N/A
Other? (Describe)			

Administrative and Technical Capabilities

Administrative and technical capabilities include staff and their skills. They also include tools that can help carry out mitigation actions.

Table 15: Assessment of the Administrative Capabilities of the City of South Jordan

Administrative Capability	In Place? (Y/N)	Is staffing adequate?	Are staff trained on hazards and mitigation?	Is coordination between agencies and staff effective?
Chief Building Official	Y	Y	Y	Y
Civil Engineer	Y	Y	Y	Y
Community Planner	Y	Y	Y	Y
Emergency Manager	Y	Y	Y	Y
Floodplain Administrator	Y	Y	Y	Y
Geographic Information System (GIS) Coordinator	Y	Y	Y	Y
Planning Commission	Y	Y	Y	Y
Fire Safe Council	Y	Y	Y	Y
CERT (Community Emergency Response Team)	No	Y	Y	Y
Active VOAD (Voluntary Agencies Active in Disasters)	Y	Y	Y	Y
Other? (Please describe.)				

DRAFT

Table 16: Assessment of the Technical Capabilities of the City of South Jordan

Technical Capability	In Place? (Y/N)	How has it been used to assess/mitigate risk in the past?	How can it be used to assess/mitigate risk in the future?
Mitigation Grant Writing	Y	Allowed for mitigation action and improvement	Continue program and funding
Hazard Data and Information	Y	Allowed for mitigation action and improvement.	Continue program and funding.
GIS	Y	Allowed for mitigation action and improvement.	Continue program and funding.
Mutual Aid Agreements	Y	Allowed for mitigation action and improvement.	Continue program and funding.
Other? (Please describe.)			

Financial Capabilities

Financial capabilities are the resources to fund mitigation actions. Talking about funding and financial capabilities is important to determine what kinds of projects are feasible, given their cost. Mitigation actions like outreach programs are lower cost and often use staff time and existing budgets. Other actions, such as earthquake retrofits, could require substantial funding from local, state, and federal partners. Partnerships, including those willing to donate land, supplies, in-kind matches, and cash, can be included.

Table 17: Assessment of the Financial Capabilities of the City of South Jordan

Funding Resource	In Place? (Y/N)	Has it been used in the past and for what types of activities?	Could it be used to fund future mitigation actions?	Can it be used as the local cost match for a federal grant?
Capital Improvement Project Funding	Y	Y	Y	Y
General Funds	Y	Y	Y	Y
Hazard Mitigation Grant Program (HMGP/404)	Y	N	Y	Y
Building Resilient Infrastructure & Communities (BRIC)	Y	N	Y	Y
Flood Mitigation Assistance (FMA)	Y	N	Y	Y
Public Assistance Mitigation (PA Mitigation/406)	Y	Y	Y	Y
Community Development Block Grant (CDBG)	Y	Y	Y	Y

Funding Resource	In Place? (Y/N)	Has it been used in the past and for what types of activities?	Could it be used to fund future mitigation actions?	Can it be used as the local cost match for a federal grant?
Natural Resources Conservation Services (NRCS) Programs	Y	Y	Y	Y
U.S. Army Corps (USACE) Programs	Y	Y	Y	Y
Property, Sales, Income, or Special Purpose Taxes	Y	Y	Y	Y
Stormwater Utility Fee	Y	Y	Y	Y
Fees for Water, Sewer, Gas, or Electric Services	Y	Y	Y	Y
Impact Fees from New Development and Redevelopment	Y	Y	Y	Y
General Obligation or Special Purpose Bonds	Y	Y	Y	Y
Federal-funded Programs (Please describe)	Y	Y	Y	Y
Private Sector or Nonprofit Programs	Y	Y	Y	Y
Other?				

Education and Outreach Capabilities

Education and outreach capabilities are programs and methods that could communicate about and encourage risk reduction. These programs may be run by a participant or a community-based partner. Partners, especially those who work with underserved communities, can help identify additional education and outreach capabilities.

Table 18: Assessment of the Education and Outreach Capabilities of the City of South Jordan

Education and Outreach Capability	In Place? (Y/N)	Does it currently incorporate hazard mitigation?	Could it be used to support mitigation in the future?
Community Newsletter(s)	Y	Y	Y
Hazard Awareness Campaigns (such as Firewise, Storm Ready, Severe Weather Awareness Week, School Programs)	Y	Y	Y
Public Meetings/Events (Please describe.)	Y	Y	Y
Emergency Management Listserv	Y	Y	Y
Local News	Y	Y	Y

DRAFT

Education and Outreach Capability	In Place? (Y/N)	Does it currently incorporate hazard mitigation?	Could it be used to support mitigation in the future?
Distributing Hard Copies of Notices (e.g., public libraries, door-to-door outreach)	Y	Y	Y
Insurance Disclosures/Outreach	Y	Y	Y
Organizations that Represent, Advocate for, or Interact with Underserved and Vulnerable Communities (Please describe.)	Y	Y	Y
Social Media (Please describe.)	Y	Y	Y
Other? (Please describe.)			

Opportunities to Expand and/or Improve Capabilities

Actions that can expand and improve existing authorities, plans, policies, and resources for mitigation include budgeting for mitigation actions, passing policies and procedures for mitigation actions, adopting and implementing stricter mitigation regulations, approving mitigation updates, and making additions to existing plans as new needs are recognized. Table 19 lists the opportunities for the city of South Jordan.

Table 19: Opportunities to Expand and/or Improve the Capabilities of the City of South Jordan

Capability	Opportunity to Expand and/or Improve
Planning and Regulation	The city can develop a new five-year Water Conservation Plan to address drought and update the city's Stormwater Master Plan to address flooding through the identification of specific mitigation projects.
Administrative and Technical	The city can expand partnerships for mitigation implementation, particularly with local water districts.
Financial	Pursuing new hazard mitigation funding, such as pre-disaster grants like the Flood Mitigation Assistance (FMA) grant program, can help expand current mitigation funding capabilities.
Education and Outreach	Additional targeted outreach, including efforts directed at vulnerable populations like people with disabilities and backcountry users at risk of avalanches, can help expand current education and outreach capabilities.

Mitigation Strategy

Mitigation strategies provide proactive measures that are designed to minimize the impacts of hazards on the city of South Jordan. Table 20 shows mitigation action alternatives, and Table 21 is the 2025 mitigation action plan for the city of South Jordan.

Table 20: Mitigation Action Alternatives for the City of South Jordan

Action	Type of Action	Selected for inclusion in the plan?	If not selected, why not?
Underground Powerlines	Local plans and regulations	Yes	
Seismic Valves on Gas Meter	Structure and infrastructure projects	Yes	
Hydrodynamic Separator on Storm Water	Structure and infrastructure projects	Yes	
Retention and Detention capability	Structure and infrastructure projects	Yes	
Water System Fire Flow capacity increase	Structure and infrastructure projects	Yes	

DRAFT

Table 21: Status of Prior Mitigation Actions of the City of South Jordan[10]

Action	Year Initiated	Hazard(s)	Agency Lead	Benefits	Cost	Funding Source(s)	Priority	Timeframe	Comments	Status Update
Establish notification capabilities and procedures for emergency personnel	2009	All hazards	South Jordan	High	Medium	Local, state and federal grants	High	Ongoing	South Jordan continues to work on notification tools and procedures to be in harmony with changing technology and equipment	Ongoing
Establish a coordinating group to address long-term communication needs and implementation strategies	2009	All hazards	South Jordan	Medium	Low	Local	Low	Ongoing	No formal coordinating group exists yet, but South Jordan engages in discussions with other jurisdictions and the county regarding this issue	Ongoing
Implement improvements to address hazards identified in assessment	2009	All hazards	South Jordan	High	High	HMA, federal, and state	High	Ongoing	South Jordan is identifying options and opportunities to address issues identified during the risk assessments in 2013 and 2019	Ongoing
Provide education regarding all natural hazards through live trainings and web-based, print, and broadcast media	2009	All hazards	South Jordan	High	Low	Local funds	High	Ongoing	South Jordan Emergency Management continues to provide several public education classes for groups to discuss the hazards in the community and what residents can do to be prepared	Ongoing
Develop education programs to target specific groups including homeowners, developers, schools and people with special needs	2009	All hazards	South Jordan	High	Low	Local funds	High	Ongoing	South Jordan's education programs are customizable for all kinds of groups and available to all members of the community	Ongoing
Coordinate with existing public education programs, such as the American Red Cross, Utah Living with Fire, be Ready Utah, the National Weather Service, etc.	2009	All hazards	South Jordan	High	Low	Local funds	High	Ongoing	South Jordan has worked with Be Ready Utah and other programs to make presentations in South Jordan and will continue to invite them to events and other activities in the community	Ongoing
Coordinate with water districts to plan for, develop and/or expand secondary water	2009	Drought	South Jordan	Medium	High	County and state funds	Medium	Ongoing	South Jordan continues to encourage the development of secondary water, where feasible. Several areas have been added to the secondary water system in the last 5 years.	Ongoing
Encourage Communities to actively participate in NFIP	2009	Flooding	South Jordan	High	Low	Local	High	Ongoing	South Jordan actively participates in the NFIP	Ongoing
Determine potential flood impacts and identify areas in need of additional flood control structures	2009	Flooding	South Jordan	High	High	Federal, county, and state funds	High	Ongoing	The City Engineer and Public Works Director regularly review the impact of development and the need for flood control infrastructure and make recommendations as needed	Ongoing
Address identified problems through construction of debris basins, flood retention ponds, energy dissipaters or other flood control structures	2009	Flooding	South Jordan	High	High	Federal, county, and state funds	High	Ongoing	The City Engineer and Public Works Director oversee the construction of flood control structures Example: Significant construction efforts were completed on Midas Creek including upsizing culverts, channel stabilization, etc.	Ongoing
Establish maintenance and repair programs to remove debris, improve resistance and otherwise maintain effectiveness of stormwater and flood control systems	2009	Flooding	South Jordan	High	High	Federal, county, and state funds	High	Ongoing	The Stormwater Division of the Public Works Department continues to maintain and repair all drainage systems in the city	Ongoing
Modify structures as needed to address deficiencies	2009	Flooding	South Jordan	High	High	Federal, county, and state funds	High	Ongoing	The City Engineering Division in cooperation with the Public Works Department make repairs as needed to deficient structures	Ongoing

[10] HMA = Hazard Mitigation Assistance,

Action	Year Initiated	Hazard(s)	Agency Lead	Benefits	Cost	Funding Source(s)	Priority	Timeframe	Comments	Status Update
Assist NWS in making other agencies and departments aware of available resources	2009	Severe Weather	South Jordan	Medium	Low	Local	Low	Ongoing	South Jordan supports the NWS efforts for education and outreach and makes internal departments aware of NWS resources	Ongoing
Assist Forest Service Utah Avalanche Forecast Center and other organizations in promoting avalanche hazard awareness for backcountry users	2009	Severe Weather	South Jordan	Medium	Low	Local	Medium	Ongoing	South Jordan supports the efforts for education and outreach	Ongoing
Maintain community participation in the National Flood Insurance Program. **Flooding risks exist in the community from a variety of sources, including; riverine flooding, infrastructure failures (canal breech, dam failure, water main rupture), and groundwater sources. Areas near the Jordan River are in a mostly undeveloped state.**	2014	Flooding	Development Services	High	Low <$5,000	General Fund	High	Ongoing	Participation in the National Flood Insurance requires the city to maintain and enforce a flood damage prevention ordinance and other regulatory authorities to minimize the effects of flooding on structures in the community. Enforcement of the ordinance will reduce the number of structures at risk of damage from flooding	Ongoing
Distribution of flood hazard and flood preparedness/ response information, such as the "Flooding: What you should Know when Living in Utah" brochure which the city partnered in developing in 2014, or similar types of information. Post such information on the city's website.	2014	Flooding	Administrative Services – Emergency Management, Information Technology	Medium	Low <$5,000	General Fund	Medium	Ongoing	Dissemination of information raises public awareness, resulting in a more knowledgeable community that is prepared for potential threats. It also helps build community support for other hazard mitigation efforts, such as strong building codes and enforcement of existing codes, such as the flood damage prevention ordinance.	Ongoing
Update of the city's Stormwater Master Plan to include specific flood mitigation projects in flood-prone areas of the city.	2014	Flooding	Public Works, Development Services	Medium	High – $50,000–$100,000	General Fund, Enterprise Funds	Medium	Ongoing	Once updated, the Stormwater Master Plan will identify specific infrastructure needs that will help reduce the potential for flooding. The plan will be used to determine priority-based needs throughout the city. Funding for specific projects may come from various sources and will appear as part of the capital improvement plan.	Ongoing
Install automatic gas shut off fixtures on any City-owned buildings or structures with gas service/meter that do not have one currently. **Train staff to check the meter immediately following an earthquake event and shut off service if necessary**	2014	Earthquake	Administrative Services – Facilities Division	Medium	Medium – $50,000–$100,000	General Fund, grants	Medium	Ongoing	Automatic shut off valves will stop the flow of gas after a significant event if there is damage to the system. This could save the structure from potential fire or a hazardous materials incident.	Ongoing
Distribution of earthquake hazard preparedness/response information. Post such information on City's website	2014	Earthquake	Administrative Services – Emergency Management, Information Technology	Medium	Low <$5,000	General Fund	Medium	Ongoing	Dissemination of information raises public awareness, resulting in a more knowledgeable community that is prepared for potential threats. It also helps build community support for other hazard mitigation efforts, such as strong building codes and enforcement of existing codes, such as the flood damage prevention ordinance.	Ongoing
Support of community education programs that raise awareness and provide information to property owners on how to protect their structures from wildfire damage. Post such information on the city's website.	2014	Wildland Fire	Administrative Services – Emergency Management, Fire Department, Information Technology	Medium	Low < $5,000	General Fund, grants	Medium	Ongoing	Raised awareness of people who may determine to live in areas that are at risk of wildland fire.	Ongoing

DRAFT

Action	Year Initiated	Hazard(s)	Agency Lead	Benefits	Cost	Funding Source(s)	Priority	Timeframe	Comments	Status Update
Maintain a wildland fire response unit.	2014	Wildland Fire	Fire Department	High	High – $100,000	General Fund, grants	High	Ongoing	Provides the city with an initial response unit and the ability to support neighboring jurisdictions with their response efforts.	Ongoing
Prohibit the use of fireworks in high-risk areas.	2014	Wildland Fire	Fire Department	Low	Minimal	General Fund, grants	Low	Ongoing	Fireworks restrictions in high-risk areas help reduce the potential for ignition sources and the need for additional response units.	Ongoing
Training for firefighters in wildland firefighting.	2014	Wildland Fire	Fire Department	High	Medium – $50,000	General Fund, grants	High	Ongoing	Continue providing training to firefighters in wildland fire so there are better able to assist if needed.	Ongoing
Maintain automatic/mutual aid agreements and assist neighboring jurisdictions as requested.	2014	Wildland Fire	Fire Department	Medium	Low – Minimal	General Fund, grants	Medium	Ongoing	Having automatic and mutual aid agreements will help the community be more prepared with access to resources when needed. It will also make it easier to assist neighboring jurisdictions if requested	Ongoing
Rebate program to promote water conservation	2014	Drought	Public Works	Low	Low	Local	Low	Ongoing	The city offers rebates to persons who upgrade their existing infrastructure with new devices that use less water. This includes fixing leaking toilets and upgrading to low flow, installing smart irrigation systems, planting drought tolerant plants, etc. The results of these efforts should reduce the consumption of water by users in the community.	Ongoing
Development of a 5-year Water Conservation Plan	2014	Drought	Public Works	Medium	Low	Local	Low	Ongoing	Unknown	Ongoing
Offer Annual Sprinkler Maintenance Workshops to promote efficient and effective watering of landscapes.	2014	Drought	Public Works	Low	Low	Local	Low	Ongoing	Public education on maintaining and operating a sprinkler system will help conserve water by avoiding waste from leaks and/or ineffective systems and practices.	Ongoing
Promoting "Water Week" with elementary students to promote best management practices for water conservation.	2014	Drought	Public Works	Medium	Low	Local	Medium	Ongoing	Teaching elementary students about water conservation will help promote best management practices in residents' homes and share information about how individuals can make a difference in conserving water.	Ongoing
Provide real-time water use data to customers	2014	Drought	Public Works	Medium	Medium	Local	Medium	Ongoing	Water users can monitor their use of water resources in real time to help them make decisions about their water use practices.	Ongoing
Development of a Pandemic Response & Recovery Plan	2014	Pandemic	Administrative Services – Emergency management, Fire Department – EMS	Low	Medium	General Fund, grants	Low	Ongoing	Having a response and recovery plan will help the city to be more prepared, identify potential protocols for response and implement strategies that prioritize public safety and help reduce the economic impacts on the city from the potential effects of a pandemic crisis.	Ongoing
Engage in the process to become a "Storm Ready Community" with the National Weather Service.	2014	Severe Weather	Administrative Services – Emergency Management, Public Works	Medium	Medium $25,000-$50,000	General Fund, grants	Medium	Ongoing	Participation in the "Storm Ready Community" will help raise awareness of the dangers of severe weather and provide tools to the community to aid in preparing for and responding to severe weather events.	Ongoing

DRAFT

Action	Year Initiated	Hazard(s)	Agency Lead	Benefits	Cost	Funding Source(s)	Priority	Timeframe	Comments	Status Update
Promote public education in the community regarding severe weather. Post such information on the city's website.	2014	Severe Weather	Administrative Services – Emergency Management, Information Technology	Medium	Low < $5,000	General Fund, grants	Medium	Ongoing	Dissemination of information raises public awareness, resulting in a more knowledgeable community that is prepared for potential threats. It also helps build community support for other hazard mitigation efforts, such as strong building codes and enforcement of existing codes.	Ongoing
Support of community education programs that raise awareness and provide information to property owners on the dangers and risks of avalanches. Post such information on the city's website, including links to the Utah Avalanche Center.	2014	Avalanche	Administrative Services – Emergency Management, Information Technology	Medium	Low < $5,000	General Fund, grants	Medium	Ongoing	Raised awareness of people who may desire to participate in activities that are at risk of avalanche.	Ongoing
Creation of a radon hazard map showing potential areas of the community that may be affected by radon.	2014	Radon	Administrative Services – Emergency Management, Information Technology, Development Services	High	Low < $5,000	General Fund	High	Ongoing	A map showing the extent of the hazard will be useful in helping residents determine if they should consider testing for radon and/or engaging in their own efforts to mitigate radon in their structures. The map will also help raise awareness of the issue in the community.	Ongoing
Distribution of information on Radon. Post such information on the city's website.	2014	Radon	Administrative Services – Emergency Management, Information Technology	High	Low < $5,000	General Fund	Medium	Ongoing	Dissemination of information raises public awareness, resulting in a more knowledgeable community that is prepared for potential threats. It also helps build community support for other hazard mitigation efforts, such as strong building codes and enforcement of existing codes, such as the flood damage prevention ordinance.	Ongoing
Development of a Communications Response Team and Emergency Communications Plan	2014	All hazards	Administrative Services, Police Department, Fire Department, Public Works	Medium	Medium >$50,000	General Fund, grants	Medium	Ongoing	A communication response team will help ensure that the city can develop and maintain a viable communication system that will enable the city to have communications capabilities after a significant event occurs.	Ongoing
Adoption and Enforcement of Building Codes	2014	All hazards	Development Services	Medium	Medium	General Fund, grants	Medium	Ongoing	Adopting and enforcing appropriate building codes will ensure that new construction projects will benefit from new technologies, construction design, and lessons learned from previous disasters.	Ongoing
Bury powerlines and upgrade key utilities in the older community sections to ensure greater resilience to severe weather.	2019	Severe Weather	Public Works	Medium	High	Local and private funds, HMA grants	Medium	Long-term	Unknown	Ongoing

DRAFT

Table 22: 2025 Mitigation Action Plan for the City of South Jordan[11]

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
1	Establish notification capabilities and procedures for emergency personnel	Avalanche, Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Flooding, Heavy Rain, High Wind, Landslide/Slope Failure, Lightning, Public Health Epidemic/Pandemic, Radon, Severe Winter Weather, Tornado, Wildfire, Civil Disturbance, Hazardous Materials, Terrorism	South Jordan Emergency Management	South Jordan Fire, SLCo EM, other local jurisdictions	Improved information sharing and coordination between local agencies/jurisdictions.	Medium	Local General Fund, staff time	Ongoing	High	
2	Establish a coordinating group to address long-term communication needs and implementation strategies	Avalanche, Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Flooding, Heavy Rain, High Wind, Landslide/Slope Failure, Lightning, Public Health Epidemic/Pandemic, Radon, Severe Winter Weather, Tornado, Wildfire, Civil Disturbance, Hazardous Materials, Terrorism	South Jordan Emergency Management	South Jordan IT, Administrative Services, SLCo EM, local jurisdictions	Identifying and establishing working groups for long-term communication provides value in knowing resources and opportunities that exist.	Low	Local General Fund, staff time	Ongoing	Low	
3	Implement improvements to address hazards identified in the assessment including but not limited to a thorough evaluation of structural vulnerabilities, environmental risks, and emergency preparedness gaps to develop targeted mitigation strategies.	Avalanche, Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Flooding, Heavy Rain, High Wind, Landslide/Slope Failure, Lightning, Public Health Epidemic/Pandemic, Radon, Severe Winter Weather, Tornado, Wildfire, Civil Disturbance, Hazardous Materials, Terrorism	South Jordan Emergency Management	SLCo EM, local jurisdictions	Increase understanding of community assets at risk from hazards and the potential for mitigation opportunities. Reduce damage to critical infrastructure, residences, and businesses, and prevent personal injuries.	High	HMA, BRIC, PDM, HMGP, federal, and state	Ongoing	High	
4	Provide education regarding all natural hazards through live trainings and web-based, print, and broadcast media	Avalanche, Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Flooding, Heavy Rain, High Wind, Landslide/Slope Failure, Lightning, Public Health Epidemic/Pandemic, Radon, Severe Winter Weather, Tornado, Wildfire, Civil Disturbance, Hazardous Materials, Terrorism	South Jordan Emergency Management,	South Jordan Fire, SLCo EM, local jurisdictions, State of Utah	Reduce or prevent personal injuries by informing groups of appropriate actions for local hazards.	Low	Local General Fund, staff time	Ongoing	High	
5	Develop education programs to target specific groups, including homeowners, developers, schools, and people with special needs	Avalanche, Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Flooding, Heavy Rain, High Wind, Landslide/Slope Failure, Lightning, Public Health Epidemic/Pandemic, Radon, Severe Winter Weather, Tornado, Wildfire, Civil Disturbance, Hazardous Materials, Terrorism	South Jordan Fire,	South Jordan Emergency Management, Public Works, Administrative Services, SLCo EM, local surrounding jurisdictions	Reduce or prevent personal injuries by informing groups of appropriate actions for local hazards.	Low	Local General Fund, staff time	Ongoing	High	

[11] BRIC = Building Resilient Infrastructure and Communities, EM = Emergency Management, FMA = Flood Mitigation Assistance, HMA = Hazard Mitigation Assistance, HMGP = Hazard Mitigation Grant Program, NWS = National Weather Service, PDM = Pre-Disaster Mitigation, SLCo EM = Salt Lake County Emergency Management, UAC = Utah Avalanche Center, UDOT = Utah Department of Transportation, UFA = Unified Fire Authority, USFS = United States Forest Service, VOAD = Voluntary Agencies Active in Disasters.

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
6	Coordinate with existing public education programs, such as the American Red Cross, Utah Living with Fire, Be Ready Utah, and the NWS	Avalanche, Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Flooding, Heavy Rain, High Wind, Landslide/Slope Failure, Lightning, Public Health Epidemic/Pandemic, Radon, Severe Winter Weather, Tornado, Wildfire, Civil Disturbance, Hazardous Materials, Terrorism	South Jordan Emergency Management	SLCo EM, local VOAD, NWS, State of Utah	Relationship building and public education and outreach with VOAD and other EM partners during blue sky days provides for resources and knowledge needed during a disaster.	Low	Local General Fund, staff time	Ongoing	Medium	
7	Coordinate with water districts to plan for, develop, and/or expand secondary water	Drought	South Jordan Engineering	South Jordan Public Works, SLCo EM, water districts, State of Utah, local jurisdictions	Improved water conservation helps prevent water shortages.	High	Local General Fund, staff time, County and State funds	Ongoing	High	
8	Encourage communities to actively participate in NFIP	Flooding	South Jordan Engineering	South Jordan Emergency Management, SLCo EM, State of Utah, local jurisdictions, water districts	Preparedness campaigns and public education and outreach foster community resilience, readiness, and program opportunity.	Low	Local General Fund, staff time	Ongoing	High	
9	Determine potential flood impacts and identify areas in need of additional flood control structures	Flooding, Dam Failure	South Jordan Engineering	SLCo EM, local jurisdictions, State of Utah	Identifying events and problem areas provides a great opportunity for mitigation measures.	High	Federal, County, and State Funds, FMA, PDM, HMGP	Ongoing	High	
10	Address identified problems through construction of debris basins, flood retention ponds, energy dissipaters, or other flood control structures	Flooding, Dam Failure	South Jordan Engineering	SLCo EM, local jurisdictions, State of Utah	Reduce potential damage caused by flooding.	High	Federal, County, and State Funds, FMA, BRIC, PDM, HMGP	Ongoing	High	
11	Establish maintenance and repair programs to remove debris, improve resistance, and otherwise maintain effectiveness of stormwater and flood control systems	Flooding	South Jordan Public Works	SLCo EM, local jurisdictions, UDOT	Preventative maintenance of infrastructure allows for design functionality.	High	Federal, County, and State Funds, FMA, PDM, HMGP	Ongoing		
12	Modify structures as needed to address deficiencies	Flooding	South Jordan Engineering	South Jordan Public Works, SLCo EM, State of Utah	Structure modification ensures mitigation efforts.	High	Federal, County, and State Funds, BRIC, FMA	Ongoing		
13	Assist NWS in making other agencies and departments aware of available resources	Heavy Rain, High Wind, Lightning, Tornado, Severe Winter Weather, Flooding	South Jordan Emergency Management	SLCo EM, NWS, local jurisdictions	Sharing capabilities provides resource opportunities.	Low	Local General Fund	Ongoing		
14	Bury powerlines and upgrade key utilities in the older sections of the community to ensure	Heavy Rain, High Wind, Lightning, Tornado, Severe Winter Weather, Flooding	South Jordan Engineering and Development	SLCo EM, NWS, UDOT, State of Utah, Private Utility Companies: Rocky	Underground power and utilities help protect from many hazardous elements.	High	Local General Fund, Local Capital Improvement Fund, private	Long-term	Medium	

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
	greater resilience to severe weather			Mountain Power, Enbridge Gas			funds, HMA grants			
15	Assist the USFS, the Utah Avalanche Forecast Center, and other organizations in promoting avalanche hazard awareness for backcountry users	Heavy Rain, High Wind, Lightning, Tornado, Severe Winter Weather, Flooding	South Jordan Emergency Management	SLCo EM, USFS, UAC, local jurisdictions	Community awareness will benefit people in recreational activities and provide knowledge of the dangers that exist.	Low	Local General Fund, staff time	Ongoing	Medium	
16	Maintain community participation in the NFIP.	Flooding	South Jordan Public Works,	South Jordan Engineering, SLCo EM, SLCo Public Works, local jurisdictions, State of Utah	Ensuring good status in the NFIP allows for citizen participation.	Low	Local General Fund	Ongoing	High	Flooding risks exist in the community from various sources, including riverine flooding, infrastructure failures (canal breech, dam failure, water main rupture), and groundwater sources. Areas near the Jordan River are in a mostly undeveloped state.
17	Distribute flood hazard and flood preparedness/ response information, such as the “Flooding: What You Should Know When Living in Utah” brochure, which the city partnered in developing in 2014, or similar types of information. Post such information on the city’s website.	Flooding	South Jordan Administrative Services	Emergency Management, South Jordan Fire, SLCo EM, State of Utah, local jurisdictions	Public education and outreach is beneficial because it keeps people informed.	Low	Local General Fund	Ongoing	Medium	
18	Update the city’s Stormwater Master Plan to include specific flood mitigation projects in flood-prone areas of the city	Flooding	South Jordan Public Works	South Jordan Engineering, SLCo EM, SLCo Public Works	Updates to the City Stormwater Master Plan provide mitigation projects and strategies for a changing and growing system.	High ($50–100K)	Local Funds (General fund and Enterprise Fund). FMA, HMGP, PDM	Ongoing	Medium	
19	Install automatic gas shutoff fixtures on any city-owned buildings or structures with gas service/meter that do not have one. Train staff to check the meter immediately after an earthquake event and shut off service if necessary.	Earthquake	South Jordan Admin Services – Facilities	SLCo EM, local jurisdictions	Installing and understanding the use of seismic valves helps to reduce the potential for cascading events.	Medium ($50–100K)	Local General Fund, Staff Time, Grants	Ongoing	Medium	
20	Distribute earthquake hazard preparedness/ response information. Post	Earthquake	South Jordan Administrative Services	South Jordan Emergency	Providing literature and information helps to sustain a resilient community.	Low	Local General Fund	Ongoing	Medium	

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
	such information on the city's website			Management, South Jordan IT, SLCo EM						
21	Support community education programs that raise awareness and provide information to property owners on how to protect their structures from wildfire damage. Post such information on the city's website.	Wildfire	South Jordan Fire Department	SLCo EM, UFA	Providing literature and information helps to sustain a resilient community.	High – $100K	Local General Fund, Grants, Community Wildfire Assistance Grant, Fire Prevention and Safety Grant	Ongoing	High	
22	Maintain a wildland fire response unit	Wildfire	South Jordan Fire Department	SLCo EM, UFA	Maintaining a wildfire response unit and the training requirements mandated promotes capability readiness.	High – $100K	Local General Fund, Community Wildfire Assistance Grant, Fire Prevention and Safety Grant	Ongoing	High	
23	Prohibit the use of fireworks in high-risk areas	Wildfire	South Jordan Fire Department	SLCo EM, UFA	Annual firework restriction efforts, including resolution, maps, and ordinances, help to reduce human-caused fire hazards.	Minimal	Local General Fund, Community Wildfire Assistance Grant, Fire Prevention and Safety Grant	Ongoing	Low	
24	Train firefighters in wildland firefighting	Wildfire	South Jordan Fire Department	SLCo EM, UFA	Training and exercising promote capability readiness.	Medium – $50K	Local General Fund, Community Wildfire Assistance Grant, Fire Prevention and Safety Grant	Ongoing	High	
25	Maintain automatic/mutual aid agreements and assist neighboring jurisdictions as requested	Wildfire	South Jordan Fire Department	SLCo EM, UFA	MOUs and Mutual Aid Agreements ensure that all agencies provide assistance as operationally aligned.	Low	Local General Fund, staff time	Ongoing	Medium	
26	Develop a rebate program to promote water conservation	Drought	South Jordan Fire Department	SLCo EM, UFA	Drought conditions and growing communities provide for an opportunity to promote conservation and program rebates.	Low	Local General Fund	Ongoing	Low	
27	Develop a 5-year Water Conservation Plan	Drought	South Jordan Public Works	SLCo EM, water districts	Drought conditions and growing communities provide for an opportunity to promote conservation.	Low	Local General Fund	Ongoing	Low	

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
28	Offer annual sprinkler maintenance workshops to promote efficient and effective watering of landscapes	Drought	South Jordan Public Works	SLCo EM, water districts	A sprinkler maintenance workshop during a drought ensures efficient water use by optimizing irrigation systems, reducing waste, and promoting sustainable water conservation practices.	Low	Local General Fund	Ongoing	Low	
29	Promote “Water Week” with elementary school students to promote best management practices for water conservation	Drought	South Jordan Public Works	SLCo EM, water districts, Jordan School District	Water Week helps educate students on water conservation, fostering lifelong habits to protect this vital resource.	Low	Local General Fund	Ongoing	Medium	
30	Provide real-time water use data to customers	Drought	South Jordan Public Works	SLCo EM, water districts	Providing real-time water use data helps individuals and communities identify waste, make informed conservation decisions, and respond quickly to leaks or inefficiencies.	Medium	Local General Fund	Ongoing	Medium	
31	Develop a Pandemic Response & Recovery Plan	Public Health Epidemic/Pandemic	South Jordan Administrative Services –	South Jordan Emergency Management, South Jordan Fire/EMS, SLCo EM, SLCo Health Department	Developing a pandemic response and recovery plan ensures preparedness, minimizes disruptions, and enables a swift, coordinated effort to protect public health and economic stability.	Medium	Local General Fund, EMPG	Ongoing	Low	
32	Engage in the process to become a “StormReady Community” with the NWS	Heavy Rain, High Wind, Lightning, Tornado, Severe Winter Weather, Flooding	South Jordan Administrative Services	South Jordan Emergency Management, South Jordan Public Works, SLCo EM, NWS	Engaging in the process of becoming a StormReady community enhances emergency preparedness, improves public safety, and reduces the risks associated with severe weather events.	Medium – $25–50K	Local General Fund,	Ongoing	Medium	
33	Promote public education in the community regarding severe weather. Post such information on the city’s website.	Heavy Rain, High Wind, Lightning, Tornado, Severe Winter Weather, Flooding	South Jordan Administrative Services	South Jordan Emergency Management, IT, SLCo EM, NWS	Promoting public education in community resilience strengthens preparedness, empowers individuals to take proactive measures, and reduces the impact of severe weather events on lives and property.	Low	Local General Fund	Ongoing	Medium	
34	Support community education programs that raise awareness and provide information on the dangers and risks of avalanches. Post such information on the city’s website, including links to the Utah Avalanche Center.	Avalanche	South Jordan Administrative Services	South Jordan Emergency Management, SLCo EM, NWS, U.S. Forest Service, UDOT	Supporting community education programs on avalanche risks helps residents make informed safety decisions, implement protective measures, and reduce loss of life.	Low – under $5K	Local General Fund	Ongoing	Medium	

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
35	Create a radon hazard map showing areas of the community that may be affected by radon.	Radon	South Jordan Administrative Services	South Jordan Emergency Management, South Jordan Fire, SLCo EM, State of Utah	Creating a radon hazard map helps identify high-risk areas, allowing residents and officials to take preventive measures to reduce exposure and protect public health.	Low – under $5K	Local General Fund	Ongoing	High	
36	Distribute information on radon. Post such information on the city's website.	Radon	South Jordan Administrative Services	South Jordan Emergency Management, IT, SLCo EM, State of Utah	Radon awareness allows residents and officials to take preventive measures to reduce exposure and protect public health.	Low – under $5K	Local General Fund	Ongoing	Medium	
37	Develop a Communications Response Team and an Emergency Communications Plan	Avalanche, Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Flooding, Heavy Rain, High Wind, Landslide/Slope Failure, Lightning, Public Health Epidemic/Pandemic, Radon, Severe Winter Weather, Tornado, Wildfire, Civil Disturbance, Hazardous Materials, Terrorism	South Jordan Administrative Services	South Jordan Police, South Jordan Fire, South Jordan Public Works, SLCo EM, State of Utah	The development of a Communications Response Team and an Emergency Communications Plan ensures clear, coordinated, and timely information sharing during crises, enhancing public safety and emergency response effectiveness.	Medium – greater than $50K	Local General Fund, grants	Ongoing	Medium	
38	Adopt and enforce building codes	Avalanche, Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Flooding, Heavy Rain, High Wind, Landslide/Slope Failure, Lightning, Public Health Epidemic/Pandemic, Radon, Severe Winter Weather, Tornado, Wildfire, Civil Disturbance, Hazardous Materials, Terrorism	South Jordan Engineering and Building		Adopting and enforcing building codes enhances safety, increases resilience to natural disasters, and ensures the longevity and structural integrity of buildings in the community.	Medium	Local General Fund, grants	Ongoing	Medium	
39	Coordinate with dam owners and neighboring jurisdictions to conduct risk studies of engineering assessments to identify planning needs, or implement potential rehabilitation or repair projects for high hazard potential dams.	Dam Failure	South Jordan EM	SLCo EM, Salt Lake County Public Works Flood Control Engineering, Utah Division of Water Rights Dam Safety Section, Salt Lake City Public Utilities, Local Governments	Reduce potential losses from failure of HHPDs by identifying specific needs for Kennecott Bingham Creek or Oquirrh Mountain Dams.	Medium	Salt Lake County General Fund, HHPD Grant, HMGP Grant	Medium	Medium	

City of South Salt Lake

Jurisdictional Annex to the
Salt Lake County Hazard Mitigation Plan

Month XXXX | Draft X.X

THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT

Table of Contents

City of South Salt Lake Annex 1

Planning Process Contact Information 1
Contact List 1
Existing Plans and Resources 3
Jurisdiction Profile 3
Date of Incorporation 3
Location and Description 4
Population 4
Demographics 4
Brief History 4
Climate 4
Public Services 5
Governing Body 5
Development Trends 5
Jurisdiction-Specific Hazards and Risk 5
Hazard Event History 8
National Flood Insurance Program Summary 10
Jurisdiction-Specific Vulnerabilities and Impacts 11
Hazards Not Profiled 27
Jurisdiction-Specific Changes in Vulnerability 27
Additional Public Involvement 32
Plan Integration 32
Capability Assessment 34
Planning and Regulatory Capabilities 34
Administrative and Technical Capabilities 35
Financial Capabilities 37
Education and Outreach Capabilities 37
Opportunities to Expand and/or Improve Capabilities 38
Mitigation Strategy 39
Mitigation Action Prioritization 51

DRAFT

List of Figures

Figure 1: Social Media Post for the Hazard Mitigation Survey 32

List of Tables

Table 1: Contact Information for the City of South Salt Lake 1
Table 2: Participant List for the City of South Salt Lake 1
Table 3: Contact and Stakeholder List for the City of South Salt Lake 2
Table 4: Existing Plans and Resources for the City of South Salt Lake 3
Table 5: Calculated Priority Risk Index Values for the City of South Salt Lake 6
Table 6: Criteria for the Calculated Priority Risk Index 6
Table 7: History of Hazard Events in the City of South Salt Lake 8
Table 8: National Flood Insurance Program Status for the City of South Salt Lake 11
Table 9: Jurisdiction-Specific Vulnerabilities and Impacts the City of South Salt Lake 11
Table 10: Jurisdiction-Specific Changes in Vulnerability in the City of South Salt Lake 27
Table 11: Integration of Previous Plans by the City of South Salt Lake 33
Table 12: Opportunities for Integration with Future Plans of the City of South Salt Lake 33
Table 13: Assessment of the Planning Capabilities of the City of South Salt Lake 34
Table 14: Assessment of the Regulations and Ordinances of the City of South Salt Lake 35
Table 15: Assessment of the Administrative Capabilities of the City of South Salt Lake 35
Table 16: Assessment of the Technical Capabilities of the City of South Salt Lake 36
Table 17: Assessment of the Financial Capabilities of the City of South Salt Lake 37
Table 18: Assessment of the Education and Outreach Capabilities of the City of South Salt Lake 38
Table 19: Opportunities to Expand and/or Improve the Capabilities of the City of South Salt Lake 39
Table 20: Mitigation Action Alternatives for the City of South Salt Lake 39
Table 21: Status of Prior Mitigation Actions of the City of South Salt Lake 42
Table 22: 2025 Mitigation Action Plan for the City of South Salt Lake 47
Table 23: Mitigation Action Prioritization – STAPLEE 51

DRAFT

City of South Salt Lake Annex

To participate in this multi-jurisdictional hazard mitigation plan (MJHMP) update for Salt Lake County (SLCo), the governing body of the City of South Salt Lake passed a formal resolution, a copy of which is maintained at the local government offices.

Planning Process Contact Information

Table 1 provides information on the point of contact during the updating of the MJHMP.

Table 1: Contact Information for the City of South Salt Lake

Name	Contact Information
Yasmin Abbyad	**Phone:** 385-395-2563; e**mail:** Yabbyad@sslc.gov

The City of South Salt Lake has a fully integrated approach to hazard mitigation planning and program implementation. During the 2024 update process, the MJHMP participation roles in Table 2 were recorded.

Table 2: Participant List for the City of South Salt Lake

Name	Title	Jurisdiction/Agency
Craig Giles	Public Works Director	City of South Salt Lake
Christopher Merket	Director of Engineering	City of South Salt Lake
Jonathan Weidenhamer	Community & Economic Development Director	City of South Salt Lake
Sharen Hauri	Director of Neighborhoods	City of South Salt Lake
Terry Addison	Fire Chief	City of South Salt Lake
Yasmin Abbyad	Emergency Management Coordinator	City of South Salt Lake
Steve Niedenhauser	Facilities Manager	City of South Salt Lake
Kelli Meranda	Promise South Salt Lake Director	City of South Salt Lake

Contact List

Table 3 lists plan contacts and stakeholders for the City of South Salt Lake update.

DRAFT

Table 3: Contact and Stakeholder List for the City of South Salt Lake

Name	Title	Jurisdiction/ Agency	Email	Phone	Stake-holder Type[1]	Should they receive meeting invites?	Should they complete a survey?	Should they review the draft plan?
Tereza Bagdasarova	President, Board of Directors	South Salt Lake Chamber of Commerce	tbagdasarova@sslc.gov	801-483-6033	4	Y	N	Y
Jeff King	Emergency Manager	Jordan Valley Water Conservancy District	JeffK@jvwcd.org	801-565-4300	4	Y	N	Y
Zach Stevens	Lines Superintendent	Mt. Olympus Improvement District	Zack@mtoid.org	801-513-1399	4	Y	N	Y
Isaac Talbot	Emergency Manager	Central Valley Water Reclamation Facility	talboti@cvwrf.org	801-973-9100 ext. 151	4	Y	N	Y
Shazelle Terry	General Manager	Jordan Valley Water Conservancy District	Shazellet@jvwcd.org	801-565-4300	4	Y	N	Y
Tom Holstrom	Assistant Manager	Central Valley Water Reclamation Facility	holstromt@cvwrf.org	801-243-7710	4	Y	N	Y

[1] 1 – Local and regional agencies involved in hazard mitigation activities; 2 – Agencies that have the authority to regulate development; 3 – Neighboring communities; 4 – Representatives of businesses, academia, and other private organizations; 5 – Representatives of nonprofit organizations, including community-based organizations, that work directly with and/or provide support to underserved communities and socially vulnerable populations.

DRAFT

Existing Plans and Resources

Table 4 lists the plans and resources available to the city.

Table 4: Existing Plans and Resources for the City of South Salt Lake

Plan, Study, Report, or Technical Information	Is it available online?	If online, add the link here.	Is it on SharePoint? Or where can we access it?	Comments
South Salt Lake (SSL) General Plan	Yes	https://sslc.gov/DocumentCenter/View/247/General-Plan-2040-PDF?bidId	https://sslc.gov/DocumentCenter/View/247/General-Plan-2040-PDF	Updated 2021.
SSL Parks Master Plan	Yes	https://sslc.gov/DocumentCenter/View/802/SSL-2015-Parks-Master-Plan-PDF		Created in 2015.
SSL Economic Development Strategic Plan	No			
Moderate Income Housing Plan and Needs Assessment	Yes	https://sslc.gov/DocumentCenter/View/1996/2023-SSL-Housing-Needs-Assessment?bidId		
Municipal Code	Yes	https://library.municode.com/ut/south_salt_lake/codes/code_of_ordinances		
SLCo Parks and Recreation Facilities Master Plan	Yes	https://sslc.gov/DocumentCenter/View/1941/Salt-Lake-County-2015-Parks-and-Recreation-Facilities-Master-Plan-PDF		2015
Comprehensive Emergency Management Plan	Yes		On SharePoint: (click link)	

Jurisdiction Profile

Date of Incorporation

September 29, 1938

DRAFT

Location and Description

The City of South Salt Lake is located south of Salt Lake City and is bordered by West Valley City, Salt Lake City, Millcreek, and Murray. The City of South Salt Lake has a mixture of residential, commercial, and industrial areas with recent growth in urban development and revitalization. The City of South Salt Lake maintains a suburban atmosphere with access to major transportation routes, such as I-15 and I-80. The city features a range of parks, shopping centers, and community services that attract local businesses and families.

Population

The 2022 American Community Survey 5-Year Estimate from the U.S. Census Bureau records the population of the city of South Salt Lake as 26,122.

Demographics

Most of the 26,122 people are between the ages of 25 and 29, with a median age of 31.3; 13,518 are males (51.7%) and 12,604 are females (48.3%). English is the primary language in 67.5% of homes,, with 22.2% Spanish, 6.6% other Indo-European languages, 2.5% Asian and Pacific Islander languages, and 1.2% other languages.

Brief History

Latter-Day Saints (LDS) pioneers originally settled South Salt Lake in 1847, but it took nearly a century before the area was incorporated. Inspired by New York City, Jesse Fox Jr began to develop the area in 1890. Originally named Central Park, the area eventually merged with Millcreek and Southgate. Vidas Avenue and Beryl Avenue are tributes to Mr. Fox, bearing the names of his two daughters. The Granite School District was formed in 1904, and Granite High School opened in 1906.

The area of South Salt Lake eventually became the LDS Central Park Ward in 1925, reflecting its growing population and business activity. This eventually led to South Salt Lake's incorporation. In 1936, Salt Lake City attempted to annex the area because of its development and proximity, but the proposal failed mainly due to South Salt Lake's lack of a sewer system. Recognizing the urgent need for a sewer system, residents opted to create a township with its own infrastructure. The Town of Central Park was incorporated from this need but it disincorporated the following year. In 1938, community members voted to incorporate the Town of South Salt Lake, changing its name from Central Park.

Climate

The City of South Salt Lake has a semi-arid climate (BSk Köppen classification), which is common for much of the region. This is characterized by hot, dry summers and snowy winters. Summer temperatures range from 80°F to the lower 90s°F with winter temperatures ranging from the 30s°F and 40s°F. Annual rainfall is approximately 20.9 inches, with snowfall between 30 and 40 inches.

DRAFT

Public Services

The Utah Transit Authority (UTA) light rail system has three stations in the City of South Salt Lake as it passes along 200 West. The Blue, Red, and Green lines all enter the city from the north through Central Pointe station. The Green Line funnels west toward West Valley City, while the Blue and Red lines funnel south, stopping at Millcreek station before exiting the city near Meadowbrook station. Besides the light rail system, UTA operates many local bus routes throughout the City of South Salt Lake.

Governing Body

The city of South Salt Lake is governed by a council-mayor form of government, which includes the Mayor and a seven-member city council. The Mayor is not part of the council but is a separate branch of the government. The city also has several boards and commissions that serve as advisory bodies to the Mayor and the city council, including the Civilian Review Board, Planning Commission, and the Redevelopment Agency.

Development Trends

The city is a major business provider in the county, with over 2,000 businesses that bring approximately 40,000 workers to the city each day. Business areas account for approximately two-thirds of the land use in the area of jurisdiction. The municipality is the crossroads for the region's transportation network. The major interstates of I-15 and I-80 intersect within the municipal boundaries. The city's residents are among the highest users of public transportation, thanks to major bus routes, three light rail stations, and three new stops as part of the South Salt Lake/Salt Lake City streetcar. The city is also the center for government, utility, and education. The State of Utah, Salt Lake County, Utah Transit Authority, and Granite School District have offices and key facilities in South Salt Lake which encompasses approximately 21% of the land in South Salt Lake. Due to the city's proximity to Salt Lake City and vast transit networks, the city has seen a substantial increase in homebuilding. Because the city is essentially "built out," there is very little land for new development, and what remains is expensive. For this reason, most development in the city is more of urban nature with small-lot single-family detached homes, townhomes, and multi-family development.

Jurisdiction-Specific Hazards and Risk

The Calculated Priority Risk Index (CPRI) is a comprehensive assessment tool for evaluating and prioritizing risks in a given context. It considers various factors, such as probability, impact, and urgency, to determine the level of risk associated with events or situations. The results for each hazard, including its risk factor (RF) value, are shown in Table 5. The results are based on the criteria in Table 6 and the equation that follows it. The CPRI helps organizations and individuals make informed decisions about risk management and mitigation strategies. It provides a systematic approach to identifying and addressing potential issues, allowing for a more efficient allocation of resources and proactive risk prevention. With the CPRI, stakeholders can prioritize their focus on the most critical risks, leading to more effective risk management and, ultimately, better outcomes.

DRAFT

Table 5: Calculated Priority Risk Index Values for the City of South Salt Lake

Type of Hazard Event	Probability of Future Events	Spatial Extent	Severity of Life/ Property Impact	Warning Time	Duration	Response Capacity	Risk Factor Value
Avalanche	1	1	1	1	1	1	1
Drought	3	4	2	1	4	2	2.6
Earthquake	3	4	4	4	4	3	3.6
Extreme Heat	3	4	3	1	4	2	2.9
Extreme Cold	2	4	2	1	3	1	2.1
Flooding	3	2	2	3	3	3	2.6
Landslide/Slope Failure	1	1	1	1	1	1	1
Radon	2	3	1	1	4	4	2.1
Heavy Rain	3	3	2	3	1	1	2.3
High Wind	2	3	2	1	1	2	1.9
Lightning	3	1	1	1	1	3	1.8
Severe Winter Weather	3	4	2	1	3	2	2.5
Tornado	1	1	3	4	1	1	1.9
Wildfire	2	2	2	2	2	2	2
Dam Failure	2	3	3	4	2	2	2.6
Civil Disturbance	3	1	2	3	4	1	2.4
Cyberattack	3	3	2	4	4	3	2.9
Hazardous Materials Incident (Transportation & Fixed Facility)	4	2	2	4	4	3	3.1
Public Health Epidemic/ Pandemic	2	4	3	1	4	2	2.6
Terrorism	1	3	4	4	3	4	2.9

Table 6: Criteria for the Calculated Priority Risk Index

Risk Index Factor	Degree of Risk Level		Criteria	Factor Weight for Degree of Risk Level
Probability of Future Events	1	Unlikely	Less than 1 percent probability of occurrence in the next year or a recurrence interval of greater than every 100 years.	30%

DRAFT

Risk Index Factor	Degree of Risk Level		Criteria	Factor Weight for Degree of Risk Level
	2	Occasional	1 to 10 percent probability of occurrence in the next year or a recurrence interval of 11 to 100 years.	
	3	Likely	11 to 90 percent probability of occurrence in the next year or a recurrence interval of 1 to 10 years.	
	4	Highly Likely	91 to 100 percent probability of occurrence in the next year or a recurrence interval of less than 1 year.	
Spatial Extent	1	Limited	Less than 10% of the planning area could be impacted.	10%
	2	Small	10%–25% of the planning area could be impacted	
	3	Significant	25%–50% of the planning area could be impacted.	
	4	Extensive	50%–100% of the planning area could be impacted.	
Severity of Life/Property Impact	1	Negligible	Less than 5% of the affected area's critical and non-critical facilities and structures are damaged/ destroyed. Only minor property damage and minimal disruption of life. Temporary shutdown of critical facilities.	30%
	2	Limited	More than 5% and less than 25% percent of property in the affected area is damaged/ destroyed. Complete shutdown of critical facilities for more than one day but less than one week.	
	3	Critical	More than 25% and less than 50% of property in the affected area was damaged/destroyed. Complete shutdown of critical facilities for over a week but less than one month.	
	4	Catastrophic	Over 50% of critical and non-critical facilities and infrastructures in the affected area are damaged/ destroyed. Complete shutdown of critical facilities for more than one month.	
Warning Time	1	Self-defined	More than 24 hours	10%
	2	Self-defined	12 to 24 hours.	
	3	Self-defined	6 to 12 hours.	
	4	Self-defined	Less than 6 hours.	
Duration	1	Brief	Up to 6 hours.	10%
	2	Intermediate	Up to one day.	
	3	Extended	Up to one week.	
	4	Prolonged	More than one week.	
Response Capacity	1	High	Significant resources and capability to respond to this kind of event; staff are trained, experienced, and ready.	10%

DRAFT

Risk Index Factor	Degree of Risk Level		Criteria	Factor Weight for Degree of Risk Level
	2	Medium	Some resources and capability to respond to this kind of staff; some staff may be trained, experienced, and ready while others may need additional support.	
	3	Low	Limited resources and capability to respond to this kind of event; additional staff or staff training needed.	
	4	None	No resources and capability to respond this kind of event; additional outside support would be required.	

RISK FACTOR (RF) EQUATION

RF Value = [(Probability x 0.30) + (Spatial Extent x 0.10) + (Severity of Life/Property Impact x 0.30) + (Warning Time x 0.10) + (Duration x 0.10) + (Response Capacity x 0.10)]

Hazards with an RF value greater than or equal to 2.5 are considered high risk. Those with RF values of 2.0 to 2.4 are considered moderate risk hazards, and those with an RF value less than 2.0 are considered low risk. The highest possible RF value is 4.

Hazard Event History

Examining hazard event histories provides valuable insights to inform decision-making and help prioritize resources for risk prevention and response efforts. Table 7 lists the hazard events impacting the city of South Salt Lake since the 2019 plan update, as recorded in the Storm Events Database from the National Centers for Environmental Information.

Table 7: History of Hazard Events in the City of South Salt Lake

Type of Hazard Event	FEMA Disaster #	Date(s)	Damage or Impacts	Description
Avalanche	N/A	N/A	N/A	Avalanches do not affect SSL.
Drought	N/A	Aug.–Sep. 2024	Drought has not had severe damage or impacts on SSL.	SSL has experienced D0 (abnormally dry) drought conditions during the late Summer of 2024 based on the U.S. Drought Monitor Scale.
Earthquake	2020-02	March 18, 2020	There was no severe damage caused to city building infrastructure. Issues from sewer	A 5.7M earthquake hit Magna Utah, approximately 12.2 miles away from SSL.

DRAFT

Type of Hazard Event	FEMA Disaster #	Date(s)	Damage or Impacts	Description
			laterals were identified by some homeowners.	
Extreme Heat	N/A	Summers, 2020–2024	Extreme heat has damaged infrastructure and people's health.	Extreme heat events have contributed to heat-related illnesses in SSL. Cooling centers were activated and open to the public.
Extreme Cold	N/A	Winter 2023	Extreme cold affects vulnerable groups like the unsheltered.	Extreme cold events happen most winters in SSL. Additional steps with the local PD help get those who are unsheltered to sheltering areas for the night.
Flooding	NA	Aug. 18, 2021	6–8 commercial properties and 12–15 private homes had minor impacts from localized flash flooding.	SSL and the city of Millcreek had approximately 0.8" of rain in about 1 hour that caused the Mill Creek to rise. The culvert at approximately 675 E. 3300 South was inundated, and water flowed down 3300 South, west toward 400 East, and then north back to the creek. This impacted many homes and businesses. The city closed all impacted roads until the event was over.
Landslide/ Slope Failure	NA	Spring 2022	No damage occurred – there was fear of impacts on life and property damage during this time.	After a very heavy snow year, the snow water equivalent in most drainage basins flowing into the Jordan River were 150%–200% of normal. As temperatures began to rise, there was fear of mass flooding along Mill Creek, the Jordan River, and Spring Creek as the snow began to melt. Due to a steady temperature increase, flooding did not occur.
Radon	N/A	N/A	N/A	Radon affects approximately 47% of households in the Salt Lake valley. Around 30% of homes,, in SSL zip codes are over 4 picocuries.
Heavy Rain	N/A	N/A	There have been heavy rains, but no major damage has resulted in the last five years.	
High Wind	N/A	Sep. 7–8, 2020	The city had serious property damage, including downed trees and power lines, damage to homes and	The state of Utah, including SSL, experienced a severe windstorm with wind speeds exceeding 100 mph in some places.

DRAFT

Type of Hazard Event	FEMA Disaster #	Date(s)	Damage or Impacts	Description
			vehicles, destroyed sidewalks, road closures, loss of power, and many other items of property damaged or destroyed.	
Lightning	N/A		There has been some lightning, but no major damage has resulted in the last 5 years.	
Severe Winter Weather	N/A	N/A	There have been heavy snow/blizzard events but no major damage has been associated in the last 5 years.	N/A
Tornado	N/A	N/A	N/A	N/A
Wildfire	N/A	N/A	N/A	N/A
Dam Failure	N/A	N/A	N/A	N/A
Civil Disturbance	N/A	N/A	There have been minor civil disturbances, but no major damage has resulted in the last 5 years.	N/A
Cyberattack	N/A	N/A	N/A	N/A
Hazardous Materials Incident (Transporta-tion & Fixed Facility)	N/A	N/A	N/A	N/A
Public Health Epidemic/ Pandemic	N/A	March 15, 2020–Present	There was unknown damage to community members and major economic losses.	SARS-CoV-2 is a strain of coronavirus that causes COVID-19. SARS-CoV-2 was responsible for the pandemic that killed millions and had many medical repercussions that are still being studied. There is no specific data on SSL residents who were affected medically or otherwise.
Terrorism	N/A	N/A	N/A	N/A

National Flood Insurance Program Summary

The City of South Salt Lake participates in the National Flood Insurance Program (NFIP). Table 8 displays statistics related to the NFIP. The city of South Salt Lake does not participate in the Community Rating System (CRS).

DRAFT

Table 8: National Flood Insurance Program Status for the City of South Salt Lake[2]

Initial FHBM Identified	Initial FIRM Identified	Current Effective Map Date	Adopted Date	Date Joined NFIP	Tribal
09/19/1975	12/18/1985	08/02/2012	2012	12/18/1885	No

The city has designated the South Salt Lake City Engineer as the Floodplain Administrator. The current Flood Damage Prevention Ordinance is dated 1/8/2020. The current effective FIRM is from 8/2/2012. The Building Permits Division is responsible for issuing development permits, including in the SFHA. The Building Permits Division coordinates with the Engineering Division, which helps oversee projects. Every permit also requires an inspection. Substantial damage/substantial improvements are identified through the permitting and inspection process. These structures are required to come into compliance with applicable codes.

Jurisdiction-Specific Vulnerabilities and Impacts

Table 9 provides information on the vulnerable assets in the city of South Salt Lake, including its critical facilities, highlighting the city's vulnerability to identified hazards. It also describes the potential impacts to the community arising from those vulnerabilities. Impacts are the consequences or effects of each hazard on the assets. By understanding the risks associated with these assets, local authorities can develop proactive strategies to mitigate vulnerabilities and ensure the safety and functionality of these important assets during hazard events. These data are invaluable for decision-making and prioritizing resources for emergency response and preparedness efforts, ultimately contributing to more effective risk management and greater resilience in the community.

Vulnerable assets in South Salt Lake include 26,122 residents, 17 schools, 3 fire stations, and 3 police stations. No hospitals are located in South Salt Lake but there may be smaller health clinics. Primary transportation routes include I-15, I-80, State Street, Highway 201, 3300 South, 2100 South, FrontRunner, Trax, and Union Pacific Railroad/Roper Train Yard that traverse South Salt Lake. City parks and the Central Golf Course (Golf the Round) and Jordan River Parkway are among the outdoor assets in the community.

Table 9: Jurisdiction-Specific Vulnerabilities and Impacts the City of South Salt Lake

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
Avalanche	People	N/A – avalanches do not affect South Salt Lake (SSL).
Drought	People	*Vulnerability:* All South Salt Lake residents are vulnerable to drought. Certain vulnerable groups may experience more severe effects, including the elderly, low-income households, families with children, and homeless populations.

[2] FIRM = Flood Insurance Rate Map, FHBM = Flood Hazard Boundary Map

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		Impacts: Drought causes water scarcity for household use. It can lead to decreased water quantity and quality and may increase the risk of illness and/or disease. Drought also affects air quality. Vulnerable Populations: • Elderly individuals are more susceptible to heat and potential limitations on water availability, especially during droughts. • Low-income households may struggle with the costs of water conservation measures, such as drought-resistant landscaping, water-efficient appliance upgrades, or paying higher water bills during shortages. • Families with children are particularly affected in neighborhoods lacking access to well-maintained parks or water-based recreational areas. • Homeless populations lack access to clean water, cooling centers, or consistent water supplies for hygiene and drinking. Health Impacts: • There is an increased risk of heat-related illnesses and dehydration due to drought conditions. • Air quality deteriorates as a result of dust and wildfires, which can be worsened by prolonged dry conditions. Action Considered – Partnerships and Collaboration: • Strengthen partnerships with the Jordan Valley Water Conservation District and the Central Valley Water Reclamation Facility to support water conservation programs, provide rebates for efficient water use, and expand community engagement on sustainability initiatives.
	Structures	*Vulnerability:* Residential and commercial properties, as well as public facilities, are vulnerable to drought. *Impacts:* A lack of water can impede future development and landscaping. Residential Properties: • Homes with traditional landscaping and conventional irrigation systems will experience higher water demand. • Older homes with outdated plumbing systems may face more significant challenges in conserving water, which can lead to higher costs and inefficiencies. Commercial Buildings: • Water-reliant businesses, such as laundromats, restaurants, and car washes, may face higher costs or operational limitations due to water scarcity. Public Facilities: • Parks, public pools, and other recreational areas that rely on water may face closures or restricted operations due to reduced well water availability. Agricultural Land: • If agricultural properties are present, they may experience crop losses or reduced yields, impacting the local economy and food supply.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		Action considered – Upgrading Infrastructure: • Invest in smart irrigation systems, leak-detection technology, and infrastructure improvements for both residential and public buildings to increase water efficiency and reduce waste from the well system.
	Economic Assets	*Vulnerability:* Water-intensive businesses and government services are vulnerable to drought conditions. *Impacts:* Water restrictions can lead to economic losses for some businesses. Businesses: • Companies, such as landscaping services, nurseries, and vehicle washing services, could face severe economic strain due to water restrictions from well system limitations. Tourism: • Drought conditions may affect the appeal of local outdoor attractions, thereby reducing tourism and the revenue it generates for local businesses. Utilities and Municipal Services: • Increased demand on the well water supply system may strain municipal budgets and resources as efforts to maintain consistent service levels grow more challenging.
	Natural, Historic, and Cultural Resources	*Vulnerability:* City green spaces and parks are vulnerable to drought conditions. *Impacts:* Drought conditions can lead to the deterioration of natural resources, historic sites, and cultural resources. Natural Resources: • Parks, the Jordan River, and other green spaces dependent on the water table may see a reduction in flora and fauna, impacting biodiversity. • Wetlands, if present, could experience substantial degradation, thus harming wildlife habitats. Historic Sites: • Drought-related damage, such as cracking and deterioration from heat, could threaten historic landmarks and buildings if water becomes limited for essential maintenance. Cultural Resources: • Cultural events that rely on public spaces like parks may be affected by drought conditions, which could limit available venues or resources.
	Critical Facilities and Infrastructure	*Vulnerability:* Water supply systems and emergency response services are vulnerable to drought conditions. *Impacts:* Drought can significantly affect the functionality and efficiency of critical infrastructure. Water Supply: • The well system providing culinary water may come under strain, leading to rationing, use restrictions, or infrastructure challenges.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		• Public irrigation systems, especially for parks and city lands, may become vulnerable as well levels drop, limiting functionality. Stormwater Management Systems: • Extended droughts can lead to soil compaction, which increases the risk of flooding during heavy rains, posing threats to the stormwater management infrastructure. Emergency Services: • Increased fire risks from dry conditions will place additional pressure on fire departments and emergency response teams. • Hospitals and clinics may see a rise in heat-related illness and dehydration cases, impacting the healthcare system.
	Community Activities	*Vulnerability:* Recreation areas and activities are vulnerable to drought conditions. *Impacts:* Drought conditions can significantly impact the usability and enjoyment of community recreational areas. • Sports fields, Golf the Round, and parks may become less usable because water restrictions limit the ability to maintain landscaping. • Outdoor festivals and public gatherings may be canceled or experience decreased attendance due to drought-related fire risks or lack of viable green spaces. Gardening and Landscaping: • Local residents and businesses may transition to xeriscaping or other water-efficient landscaping designs to conserve water. Action Considered – Public Events and Water Use Campaigns: • Community outreach programs will increasingly focus on water conservation to raise awareness about drought-resistant practices and encourage changing behaviors around water use. Community Education and Outreach: • Launch targeted educational campaigns to inform residents and businesses about water-saving practices, available rebates, and the benefits of drought-resistant landscaping.
Earthquake	People	*Vulnerability:* All South Salt Lake residents are vulnerable to earthquakes. Some populations may face unique challenges. SSL has a large daytime population due to commuters. *Impacts:* People may be injured or killed by falling objects or collapsed structures. Many day-to-day activities such as school and work may be disrupted. Some people may be displaced from their homes. • Elderly individuals may be more susceptible to injury during an earthquake and in the immediate aftermath because of limited resources available. • Low-income households may be unable to rebuild their homes if they are damaged. In addition, these individuals is less likely to have earthquake insurance or the ability to retrofit their homes. • Families with children may be separated during and in the aftermath of an earthquake if infrastructure, such as roads and communication lines, is down or damaged. • Unsheltered populations may not have the resources to prepare for a catastrophic disaster, such as a major earthquake.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		Health Impacts*:* • Health impacts may be severe, with many individuals injured if infrastructures such as roads or bridges are unusable. Individuals may be impacted by hazmat spills, and there will likely be limited sheltering options.
	Structures	*Vulnerability:* All structures in South Salt Lake are vulnerable, including homes and businesses. • Older structures and unreinforced masonry homes that were built before 1975 and have not been retrofitted are likely to sustain severe damage. • There is a moderate to high potential for liquefaction in all of SSL that could affect building structures, including residential and commercial properties, as well as city and county owned property. • SSL is adjacent to both the West Valley Zone, including Taylorville's Fault, and the East Bench Fault in the Wasatch Fault Zone. *Impacts:* Shaking from a moderate to strong earthquake can damage walls, chimneys, and foundations. Damage may be extensive, and buildings may become unusable. Businesses may be forced to close, and residents may be displaced.
	Economic Assets	*Vulnerability:* Businesses and commerce are vulnerable to disruption from earthquakes. *Impacts:* The flow of commerce and goods may be severely affected if the Roper Train Yard and/or the intersection of I-15 & I-80 are severely damaged. Many businesses may be slow to reopen in the immediate aftermath of an earthquake. Commerce could be severely interrupted. Businesses will likely lose revenue and workers could be severely impacted by wage loss. Economic loss could be felt across the region. The sales tax base would be impacted by business losses.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Historic structures are highly susceptible to earthquake damage *Impacts:* Historic Scott's School and the South Salt Lake Community Center would likely be severely damaged.
	Critical Facilities and Infrastructure	*Vulnerability:* All city infrastructure—including roads, pipes, water, communications, city buildings, police stations, fire stations, and major highways—may be severely affected. *Impacts:* Fire and police stations, healthcare facilities, schools, and other government buildings may be damaged by earthquakes, and their service may be disrupted. Water supply networks, wastewater systems, power distribution networks, and communication systems are also vulnerable to damage from earthquakes and may be inoperable. Critical facilities and government services may not be able to operate until these systems are restored. Several major transportation routes in South Salt Lake could be damaged. I-15, I-80, rail lines in Roper Train Yard, Trax, FrontRunner, and numerous local roads could be damaged and impassable. Emergency response and delivery of goods and materials may be inhibited, delaying recovery.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Community Activities	*Vulnerability:* Day-to-day activities, work, education, and community events may be canceled following an earthquake. *Impacts:* Response and recovery efforts may disrupt activities following an earthquake. A stronger magnitude earthquake will likely result in longer disruptions and cancellations. If an earthquake occurred during events such as the 4th of July Parade and Celebration, Craftoberfest, Mural Fest, or Celebrate SSL, it would lead to major losses and difficulties with evacuation.
Extreme Heat	People	*Vulnerability:* All residents are vulnerable to extreme heat. Socially vulnerable populations, like seniors, individuals with disabilities, lower-income individuals, and those who are unsheltered, can be severely affected by extreme heat. In addition, those who work primarily outdoors or who do not have air conditioning may be greatly affected. *Impacts:* Individuals without access to shade, air conditioning, and water are vulnerable to heat-related illnesses such as heat exhaustion, heat stroke, and dehydration. Vulnerable populations, such as the elderly and young children, may have difficulty regulating their body temperature and may suffer heat-related illness, requiring medical care. Low-income households may not be able to cool their homes.
	Structures	*Vulnerability:* Extreme heat can be detrimental to homes, businesses, industry, and city-owned buildings. *Impacts:* Extreme heat can strain building materials, increase energy consumption, reduce air quality, and create fire hazards. Materials like metal and glass can amplify heat retention, while areas with limited green space typically experience higher temperatures. South Salt Lake may experience urban heat island effects, which exacerbate extreme heat conditions.
	Economic Assets	*Vulnerability:* Businesses are vulnerable to economic losses due to extreme heat. *Impacts:* Investment in the local economy could decrease, especially if local businesses cannot absorb the high energy demands and costs for proper ventilation and air conditioning. Construction or other outdoor occupations may reduce productivity during extreme heat. Additionally, people may not want to go outside or travel if the temperatures are very high, leading to losses in the tourism and recreation industries.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Parks and recreational activities are vulnerable to extreme heat. *Impacts:* Extreme heat will affect leisure activities such as Golf in the Round, and play for children at all city parks including Fitts, Bickley, and Harmony Parks.
	Critical Facilities and Infrastructure	*Vulnerability:* City facilities and transportation systems may be affected by extreme heat. *Impacts:* Extreme heat would have an effect on the city's infrastructure and its ability to respond to some incidents like large fires. Residents may depend on city facilities as cooling stations. Proper ventilation and cooling would pose an issue.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		Roads can buckle due to extreme heat, which may cause significant transportation disruptions on I-15, I-80, or other major roads through South Salt Lake. Rail lines could also be damaged.
	Community Activities	*Vulnerability:* Community events are vulnerable to extreme heat. *Impacts:* Extreme heat may reduce attendance or affect staff availability for local events, such as the 4th of July Parade, Mural Fest, Craftoberfest, and Celebrate SSL.
Extreme Cold	People	*Vulnerability:* All South Salt Lake residents can be exposed to extreme cold. Socially vulnerable populations, such as seniors, individuals with disabilities, lower-income individuals, and those who are unsheltered, can be severely affected by extreme cold. *Impacts:* Below-freezing temperatures occur annually in SSL. They impact the elderly, low-income, and transient populations the most. Individuals exposed to extreme cold can experience life-threatening health effects, including hypothermia and frostbite. Residents may struggle with increased heating costs.
	Structures	*Vulnerability:* Homes, businesses, and water systems are vulnerable to extreme cold. *Impacts:* Pipes and heating systems in buildings or residential properties can be adversely affected by extreme cold. There is the potential for burst pipes, water damage, or power failure.
	Economic Assets	*Vulnerability:* Business disruptions are susceptible to disruptions due to extreme cold. *Impacts:* Businesses may face increased heating costs, and economic assets could suffer if heating is limited or in short supply, which could affect the local energy supply. Extreme cold can cause power disruptions if pipes freeze, potentially preventing locals from visiting businesses.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Local vegetation and wildlife are affected by extreme cold. *Impacts:* Wildlife may change migration patterns, and vegetation may die off due to harsh conditions.
	Critical Facilities and Infrastructure	*Vulnerability:* Critical facilities, including homeless shelters and transportation systems, are vulnerable to extreme cold. *Impacts:* Facilities are at risk of water failure or damage if pipes freeze or if heating is not adequate. Extreme cold, coupled with heavy snow or high winds, can disrupt essential services like police and fire departments. The homeless shelter in South Salt Lake may experience increased demand and exceed capacity, necessitating additional resources, particularly during Code Blue alerts. Extreme cold combined with rain or snow can create icy road conditions, leading to transportation delays.
	Community Activities	*Vulnerability:* Community activities, recreation, and events are vulnerable to extreme cold. *Impacts:* Attendance at community events would be affected if adequate heating cannot be guaranteed. Additionally, transportation to

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		and from community activities would be impacted if public transportation is unable to operate in very low temperatures.
Flooding	People	*Vulnerability:* Residents in flood zones, unsheltered populations, and workers are vulnerable to flooding. A significant proportion of South Salt Lake near Millcreek is in a Special Flood Hazard Area, either a 1% or 0.2% annual chance flood zone. *Impacts:* Residences near Millcreek and Jordan River could be flooded, displacing residents. Those who are displaced or impacted by floodwaters might require rescue operations.
	Structures	*Vulnerability:* Residences and commercial facilities near the creek and/or river may be affected by floodwaters. The area is primarily residential east of State Street and commercial on the west side, so homeowners and renters would be impacted the most. *Impacts:* Flooding can cause extensive damage to structures. The levee along Jordan River is owned and operated by Salt Lake County. Roper Train Yard and the I-80/I-15 intersection could be disrupted by a major flood.
	Economic Assets	*Vulnerability:* Businesses, rail lines, and commerce are vulnerable to flooding. *Impacts:* Roper Train Yard and the Union Pacific Railroad may be affected, with issues such as submerged rail lines disrupting the transportation of goods. Inventory could be damaged.
	Natural, Historic, and Cultural Resources	Vulnerabilities: Tracy Aviary, Scott School, and Fitts Park are vulnerable to flooding. *Impacts:* Cultural sites could be affected by floodwaters and sustain considerable damage.
	Critical Facilities and Infrastructure	Vulnerabilities: Water systems, transportation systems, critical facilities, and emergency response facilities are vulnerable to flooding. *Impacts:* South Salt Lake Public Works and Mount Olympus Sewer District could see a large volume of inflow into their sewer system that could cause significant backups. The pump stations near the Jordan River may be impacted and become fully surcharged. South Salt Lake Public Works has a water well and storage tank located next to the creek that could be impacted by power outages and/or contaminated by floodwaters. First responders may need to rescue people.
	Community Activities	Vulnerabilities: Community events and parks are vulnerable to flooding. *Impacts:* Events may be canceled, and recreation areas closed. Mill Creek, which flows through the South Salt Lake Fitts Park, has multiple events during the year that could be impacted by floodwaters. Jordan River Park Trail could also be impacted.
Landslide/ Slope Failure	People	N/A – landslides do not affect SSL.
Radon	People	*Vulnerability:* All South Salt Lake residents are vulnerable to radon exposure. Results of home radon tests in South Salt Lake show that between 25% and 50% of homes have dangerous levels of radon.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		Residents in older homes or those situated over radon-prone soils are at higher risk. *Impacts:* Long-term radon exposure is the second-leading cause of lung cancer. Children and those smokers are at increased risk of lung cancer in homes where radon is present or has not been tested for.
	Structures	*Vulnerability:* Structures have minimal vulnerability to radon, as it is primarily a health risk. *Impacts:* Although radon doesn't directly impact structures, the condition of structures contributes to radon levels that pose a risk to occupants. Buildings with basements or slab-on-grade foundations are at a higher risk of radon infiltration, especially those with cracks in flooring or foundation walls. Older homes without updated ventilation systems are particularly susceptible in this part of the Salt Lake Valley, where naturally occurring uranium in the underlying geology increases radon presence. Residential and commercial properties are at risk, especially if there is not adequate ventilation or there are cracks in the building foundation for radon to seep through.
	Economic Assets	*Vulnerability:* Real estate and home values are vulnerable to radon issues. *Impacts:* Residential and commercial properties in South Salt Lake may experience lower market value and increased maintenance costs due to radon remediation needs. Real estate transactions can be delayed or disrupted when radon is detected, and rental units may require costly mitigation to meet tenant safety expectations. Radon could affect the city's reputation if mitigation work and public education are not prioritized. The public may choose to recreate or invest in other areas if there are high radon levels in the city.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Historic buildings are vulnerable to radon exposure. *Impacts:* Historical buildings that have not been regularly maintained or inspected are at higher risk.
	Critical Facilities and Infrastructure	*Vulnerability:* Public buildings are vulnerable to radon exposure. *Impacts:* Critical facilities pose an increased health risk if the building foundation has leaks, potentially exposing employees to radon. Schools, daycares, and community centers in South Salt Lake should consider regular testing to protect young children and staff.
	Community Activities	*Vulnerability:* Community activities have limited vulnerability to radon exposure, given that radon primarily poses a long-term health risk rather than an immediate threat to activities. *Impacts:* Radon is a long-term exposure risk and hasn't typically affected day-to-day activities. With increased awareness, indoor community activities may be canceled or have low attendance if the building has high radon levels.
Heavy Rain	People	*Vulnerability:* All of the South Salt Lake population is vulnerable to heavy rain. People near creeks are at higher risk. *Impacts:* Heavy rain can cause flash flooding in low-lying areas and may contribute to flooding in Mill Creek and along the Jordan River. Homeowners living along waterways might be displaced by flooding.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Structures	*Vulnerability:* Homes and businesses are vulnerable to heavy rain. Heavy rain events have overwhelmed select areas of the city including Mill Creek at the 700 East culvert. *Impacts:* Homes and businesses along the Mill Creek and the Jordan River might flood.
	Economic Assets	*Vulnerability:* Businesses and inventory are vulnerable to heavy rain. Impact: Businesses situated along waterways or in flooding zones might be flooded and lose inventory or revenue from closures.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Vegetation is vulnerable to heavy rain. *Impacts:* Local vegetation would be affected by significant rain levels, causing soil erosion and crop loss.
	Critical Facilities and Infrastructure	*Vulnerability:* Stormwater systems and drainage structures are vulnerable to heavy rain. *Impacts:* During heavy rains, the culvert at 700 East and 3300 South can overflow, flooding nearby homes and residential buildings.
	Community Activities	*Vulnerability:* Community events, fairs, and markets are vulnerable to heavy rain. *Impacts:* Community activities in Harmony Park may be disrupted by heavy rain.
High Wind	People	*Vulnerability:* The entire population in South Salt Lake is vulnerable to high wind. Wind events occur over a large area and can impact the whole city as well as neighboring jurisdictions. *Impacts:* Those who are unsheltered or who work primarily outdoors may be severely injured by sudden gusts of wind or by unsecured objects caught in the wind. Drivers may be affected by sudden gusts of wind and become unable to control the vehicle's direction, especially on I-80 and I-15. Debris on roads would also impact driving.
	Structures	*Vulnerability:* All structures in South Salt Lake are vulnerable to high wind. *Impacts:* High winds may down trees, damage roofs, and break windows. Debris can cause road closures and affect emergency vehicle access. Sidewalks, fences, sheds, homes, vehicles, and many other items of property could be damaged.
	Economic Assets	*Vulnerability:* Businesses may experience disruption due to high wind. *Impacts:* Windstorms may affect highway and train travel to and within SSL.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Trees and parks are vulnerable to high wind. *Impacts:* High winds may cause damage or destruction to city park trees and add increased stress to playground equipment.
	Critical Facilities and Infrastructure	*Vulnerability:* Utility systems and transportation are vulnerable to high wind. *Impacts:* Damaged tree limbs can block roads and interfere with power lines. Windstorms can cause severe damage to power lines, destroy sidewalks, cause road closures, damage city communications towers

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		and buildings, and disrupt power. The widespread loss of power can take days to restore.
	Community Activities	*Vulnerability:* Public events are vulnerable to high wind. *Impacts:* There may be severe disruptions and potential injuries caused by high wind events at any of the city's public events, such as the 4th of July Parade, Mural Fest, Craftoberfest, and Celebrate SSL. These events could overwhelm essential services like police and fire.
Lightning	People	*Vulnerability:* Lightning can occur anywhere in South Salt Lake, and all populations are vulnerable. People engaging in outdoor recreation are at increased risk, and unhoused populations are particularly at risk. *Impacts:* SSL has many recreational parks, and those recreating outdoors may be subject to lightning storms. Lightning can cause severe injury or death. The homeless population may not be able to obtain shelter quickly.
	Structures	*Vulnerability:* All structures are vulnerable to lightning. *Impacts:* Lightning can ignite fires or cause electrical damage. Storms can cause power outages, which affect essential services like police and fire response.
	Economic Assets	*Vulnerability:* Businesses are vulnerable to disruption from lightning. *Impacts:* Local businesses may suffer if there is a prolonged power outage or lightning event. There are cascading events if lightning is coupled with heavy rain or high winds.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Historic trees and homes are vulnerable to lightning strikes. *Impacts:* Mature trees and historic buildings may be damaged by lightning strikes, which could potentially cause fires.
	Critical Facilities and Infrastructure	*Vulnerability:* Power networks, emergency response, and healthcare facilities are vulnerable to disruptions from lightning. *Impacts:* Power networks may be impacted by lightning and critical facilities could be disrupted if they lack power. Essential services could be disrupted if there are road closures or debris on the road caused by lightning. Additionally, it may be difficult to help patients if there are downed power lines or power disruptions.
	Community Activities	*Vulnerability:* Public events are vulnerable to the effects of lightning. *Impacts:* Outdoor events may be affected by lightning, especially during the summer months. Sheltering a large number of people could pose an issue.
Severe Winter Weather	People	*Vulnerability:* Severe winter weather can affect the entire city. All South Salt Lake residents are vulnerable. Elderly, young, disabled, and unhoused populations are particularly vulnerable. *Impacts:* Heavy snow, blizzards, and snow squalls happen frequently in the winter months. Snowy or icy conditions can lead to injuries from slips and falls. Unhoused populations may experience hypothermia. Elderly individuals may struggle with mobility and experience cardiac problems from shoveling heavy snow. People with disabilities may depend on assistance that might be delayed or unavailable during storms. Those without reliable transportation could become stranded.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		People driving on snowy roads can be injured in car accidents due to slick conditions.
	Structures	*Vulnerability:* Homes and businesses have limited vulnerability to severe winter weather. *Impacts:* Homes and other structures could be affected by heavy snow or blizzards, especially roofs.
	Economic Assets	*Vulnerability:* Businesses may experience disruptions due to severe winter weather. *Impacts:* The flow of commerce may be disrupted if the highways, such as I-80 or I-15, and the Roper Train Yard are disrupted by heavy snow or blizzards. Employers may be temporarily affected when roads are unsafe for travel.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Vegetation, wildlife, and historic buildings are vulnerable to the effects of severe winter weather. *Impacts:* Historical structures may be at risk, depending on their building material or roof age, if the snow exceeds a certain amount. Roofs could collapse from the heavy load or affect power. Local vegetation might be impacted by heavy snow or blizzards. Wildlife migration patterns could be disrupted by consistent heavy snow and blizzard conditions.
	Critical Facilities and Infrastructure	*Vulnerability:* Power systems and transportation are vulnerable to severe winter weather. *Impacts:* Power may be interrupted in heavy snow or blizzard conditions, disrupting government operations, healthcare facilities, and emergency response. There may be an increased demand for response and medical care if there are many traffic accidents. Transportation may be temporarily disrupted in heavy snow, blizzard, icing, and snow squall conditions. I-15, I-80, State Street, 3300 South, and other routes could be closed or experience significant delays. Rail and transit lines may also be delayed.
	Community Activities	*Vulnerability:* Public events are vulnerable to severe winter weather. *Impacts:* If transportation is affected, there could be temporary disruptions to daily activities. Commutes to work or entertainment in SSL may be disrupted.
Tornado	People	*Vulnerability:* The entire South Salt Lake population could be affected by a tornado. Tornadoes are rare but could potentially occur anywhere in the city. *Impacts:* Residents are vulnerable to serious injury from blowing debris, uprooted trees, or falling limbs, and structural collapse. Individuals living in mobile homes face higher risks, as these structures can be easily damaged. Those with limited mobility, such as the elderly and people with disabilities, may struggle to reach safety quickly.
	Structures	*Vulnerability:* Any structure near or on the path of a tornado is vulnerable to damage. This could occur anywhere in South Salt Lake, and all buildings are vulnerable. *Impacts:* Homes and businesses could sustain heavy damage from a tornado, including roofs torn from homes, broken windows, and walls damaged or compromised. Mobile homes and some older homes are

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		particularly at risk due to their light weight and insecure foundations. Large-span structures can have roofs easily lifted by tornado winds, which may affect commercial and other large structures between the train yard and the Jordan River.
	Economic Assets	*Vulnerability:* Businesses are vulnerable to interruption in the event of a tornado. *Impacts:* Any business in the path of the tornado is vulnerable. Tornadoes can damage retail and commercial structures, warehouses, hotels, restaurants, and other businesses. Damage to power or communication systems will cause temporary business closures. Operational downtime and damage to structures and inventory may lead to lost revenue and potentially lost wages or layoffs. Recovery would be challenging if local businesses or homeowners do not have the funds or an insurance policy in place to make repairs or rebuild. Roads and bridges may be blocked, which may disrupt access to businesses or interrupt supply chains.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Parks and open spaces are vulnerable to damage from tornadoes. *Impacts:* Cultural resources, including monuments and parks that are vital to community heritage, also may be at risk. South Salt Lake's parks and open spaces could be severely damaged by tornado.
	Critical Facilities and Infrastructure	*Vulnerability:* Fire and police stations, city facilities, healthcare clinics, and utility systems are vulnerable. Any aboveground facilities in the path of the tornado could be affected. *Impacts:* Public safety buildings, schools, and other civic facilities may need emergency inspections or repairs and may be closed temporarily. Utilities like communication towers or power stations are at risk. Disruption to these services might affect the operation of other critical facilities. If there's debris on the roads or highways, it would create significant delays in emergency response.
	Community Activities	*Vulnerability:* Public events are vulnerable to cancellation due to tornadoes. *Impacts:* Outdoor events such as festivals, fairs, and sporting events may be canceled, reducing opportunities for social engagement. Any community activity taking place during or in the immediate aftermath of a tornado would be affected.
Wildfire	People	*Vulnerability:* There is limited wildfire risk in South Salt Lake, but fire may be possible in undeveloped land near the Jordan River. Air quality could be affected. *Impacts:* The unhoused population and those engaging in recreation along the Jordan River may be vulnerable to harm from wildfires. Although SSL has a low wildfire risk, there is potential for wildfires to move in from surrounding cities like Millcreek and Salt Lake City. The entire valley could experience poor air quality and related health impacts from wildfire in the region. Children, the elderly and those with respiratory health problems are at higher risk for complications from poor air quality.
	Structures	*Vulnerability:* The risk to structures from wildfires in SSL is low.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		Impacts: A few structures near undeveloped areas along the Jordan Willow could potentially be damaged by a wildfire.
	Economic Assets	*Vulnerability:* Outdoor recreation businesses are vulnerable to impacts from wildfires. *Impacts:* Golf courses and local parks would be impacted by a wildfire moving into SSL or poor air quality from fires in neighboring cities. How fast the city recovers would dictate whether people choose to visit local businesses or recreate in SSL again.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Local vegetation and wildlife are vulnerable to impacts from wildfires. *Impacts:* Riparian vegetation and wildlife along Jordan River could be adversely affected by a wildfire.
	Critical Facilities and Infrastructure	*Vulnerability:* Power supply is vulnerable to disruption by wildfires. *Impacts:* Emergency response, healthcare, and other city services could be disrupted by a power outage resulting from a wildfire.
	Community Activities	*Vulnerability:* Public events are vulnerable to cancellation due to wildfires. *Impacts:* Outdoor community activities would be impacted by a wildfire if people cannot find shelter. Outdoor events may be canceled due to wildfire smoke. Other factors, such as high winds and lightning, can increase the severity of a wildfire.
Dam Failure	People	*Vulnerability:* Although SSL does not have any dams within the city, there are a few high and significant hazard dams in neighboring cities. People in potential inundation areas are vulnerable, primarily in the eastern and northern areas of the city (see maps in Volume 1). *Impacts:* Dam failure can cause swift-moving floodwaters that may injure those downstream. Flooding from dam failure would significantly impact the local population in terms of sheltering, road access, and medical assistance. Injuries are likely, and socially vulnerable groups like the elderly, youth, and unsheltered individuals are at greater risk.
	Structures	*Vulnerability:* Structures within dam inundation boundaries could be damaged by flood. *Impacts:* Residences and businesses downstream of dams are likely to experience damage if a dam fails.
	Economic Assets	*Vulnerability:* Business are vulnerable to disruption due to dam failure. *Impacts:* Businesses in potential inundation areas could experience structural damage and inventory loss. Damage to utility systems or roads may disrupt business functions. If an insurance policy is not in place or the funds are not available to make necessary repairs after flooding from a dam failure, it will be difficult for local businesses to recoup lost revenue.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Vegetation, parks, and natural waterways are vulnerable to impacts from dam failure. *Impacts:* Waterways and open spaces like parks may be flooded and experience damage and deterioration. Local vegetation would be impacted, leading to soil erosion.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Critical Facilities and Infrastructure	*Vulnerability:* Two police stations, one fire station, four schools, and five county facilities are within dam failure inundation boundaries in South Salt Lake. Additionally, major transportation routes such as I-80, State Street, 2100 South, Trax/FrontRunner, and utilities are at risk. *Impacts:* Critical infrastructure would be compromised. Emergency response facilities and community assets could be damaged and services unavailable following a dam failure. Power substations could be damaged, leading to power outages. Water supply could be disrupted if reservoir dams fail. Roads could be damaged or blocked, disrupting access to communities and contributing to emergency response delays. Additionally, a medical surge could occur if there are numerous injuries or fatalities.
	Community Activities	*Vulnerability:* Public events are vulnerable to disruption due to dam failure. *Impacts:* Outdoor community activities would be impacted if people do not feel safe or if the area is still in the process of rebuilding.
Civil Disturbance	People	Business owners (looting) and those attending community events or large gatherings could be affected.
	Structures	Local businesses along State Street, Main Street, or near the jail may be affected by civil disturbance. In addition, the SSL City Hall, Justice Court, and police and fire stations may be affected.
	Economic Assets	There may be damage to parks, city-owned property, vehicles, or new development.
	Natural, Historic, and Cultural Resources	The SSL Community Center, Granite Library, Tracy Aviary, and/or churches in the area may see damage or destruction to property.
	Critical Facilities and Infrastructure	Drinking water, clinics, the jail, the Roper Train Yard, power, and schools may be affected by a civil disturbance event.
	Community Activities	The 4th of July, Celebrate SSL, Mural Fest, Spooky City Hall, and Craftoberfest may be disrupted by civil disturbances.
Cyberattack	People	The public will have a difficult time accessing municipal services. Services to the public may be slowed. This may impact Fire and Police interaction with the public, Finance, and Communication capabilities.
	Structures	Physical security may be compromised so commercial and residential structures are at risk. If the hacker can get into the system, they could change settings or get into homes.
	Economic Assets	Economic flow of services may be disrupted or delayed from the city to its residence and vice versa.
	Natural, Historic, and Cultural Resources	Physical security could be compromised in historic buildings. Valuable items could be stolen if the hackers can gain access.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Critical Facilities and Infrastructure	Water services may be affected for the entire city during a severe cyberattack. Essential services could be disrupted if emergency calls cannot be routed.
	Community Activities	Planning for community activities, such as the City's 4th of July Parade, Festivals, and Celebrate SSL, may be disrupted during a cyberattack. This would impact city revenue.
Hazardous Materials Incident (Transporta-tion & Fixed Facility)	People	Those most vulnerable to a hazmat spill include those who are immunocompromised, children, the elderly, and unsheltered populations.
	Structures	Depending on the hazardous material, it could compromise the building components and cause structures to be evacuated. It could cause long-term closures of bridges and railways.
	Economic Assets	A hazmat incident at or near Roper Train Yard, I-80, or I-15 causing severe damage would disrupt the flow of goods across the country.
	Natural, Historic, and Cultural Resources	Parks may have to be evacuated in the event of a hazmat incident. Local vegetation would be significantly impacted by hazardous materials, impacting long-term growth and soil quality. Local wildlife may die due to the contaminated vegetation.
	Critical Facilities and Infrastructure	SSL's drinking and/or stormwater may be affected during a hazmat incident. If roads and highways are closed, it could affect emergency response.
	Community Activities	During a community activity, a hazmat event could force an evacuation or a shelter-in-place directive. This would severely disrupt the 4th of July Parade, City Festivals and/or Celebrate SSL.
Public Health Epidemic/ Pandemic	People	As seen with the 2020 COVID-19 pandemic, the individuals most vulnerable include those who are immunocompromised, frontline workers, the elderly, children, and those who are pregnant.
	Structures	Commercial and residential properties would be impacted by a pandemic or epidemic, especially if social distancing is necessary or stores need to limit the amount of people in them.
	Economic Assets	Roper Train Yard and interstate travel of goods may be disrupted. In addition, the closure of schools may affect these assets.
	Natural, Historic, and Cultural Resources	There may be an increased population visiting the Fitts and Harmony Parks.
	Critical Facilities and Infrastructure	The Resource Centers that shelter those unhoused may be affected. Medical surge is a concern if people are sick and need to be transported to a hospital.
	Community Activities	Community activities would be disrupted, such as the 4th of July Parade, the City Festivals, and Celebrate SSL.
Terrorism	People	SSL is one of the most diverse cities in Utah. Those from an international origin may be at an increased risk of a terrorist attack.
	Structures	SSL city facilities, homes, and businesses surrounding the train yard and the highways may be affected during a terrorism threat.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Economic Assets	SSL city facilities may not operate at full capacity for a short period, and the flow of goods by train or highway may be severely disrupted.
	Natural, Historic, and Cultural Resources	Visits to cultural or historic areas in SSL may be reduced if people do not feel safe.
	Critical Facilities and Infrastructure	SSL water services may be severely impacted during and after a terrorist event. Medical surge is possible if there's a high number of fatalities or injuries.
	Community Activities	4th of July, Celebrate SSL, Mural Fest, and Craftoberfest, may be the target or may be disrupted and cause severe damage during or after a terrorist event.

Hazards Not Profiled

Avalanche and landslide/slope failure have been omitted from further discussion of hazard impacts and from mitigation actions. As shown in the hazard description in Volume 1, avalanche and landslide risk is primarily in the Wasatch and Oquirrh Mountains in Salt Lake County. South Salt Lake has mostly flat terrain and minimal risk of impacts from these hazards. No previous occurrences of avalanche or landslide have impacted South Salt Lake.

Problems soils were identified in the mitigation action table of South Salt Lake's 2019 Hazard Mitigation Plan annex; however, no hazard profile details were included in the annex regarding the vulnerability of the city to problem soils, and no reports of damage from previous occurrences were found. Because this hazard was not profiled in the county plan or neighboring jurisdictions, and risk is low, the city opted not to complete a hazard profile for problem soils.

Jurisdiction-Specific Changes in Vulnerability

Hazard events can impact communities, infrastructures, and ecosystems. The severity of these impacts can be influenced by climate change, population patterns, and land use developments. Understanding these factors is crucial for the city of South Salt Lake to develop a resilient community and minimize the impacts of hazards. Table 10 displays the changes within the community and the related effects on each identified hazard affecting the city of South Salt Lake.

Table 10: Jurisdiction-Specific Changes in Vulnerability in the City of South Salt Lake

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
Avalanche	N/A	N/A	N/A	N/A
Drought	Climate change creates an increased chance of drought,	The increased population affects water access,	The city could consider additional	Increased

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	especially if there is decreased snowpack and rain to get us through the summer.	potentially leading to water rationing and/or higher crime rates to get water.	regulations to limit water irrigation for residential and/or commercial use.	
Earthquake	Climate can impact soil and water quality, causing soil erosion and changes in wildlife patterns. Local vegetation would be impacted by an earthquake. Drought conditions can contribute to an earthquake.	The increased population makes it more challenging for SSL to recover from an earthquake. If people do not have insurance policies or the funds in place to rebuild, this significantly impacts the local economy.	Earthquakes are widespread and will affect every area. People may choose to move out of SSL if earthquake risk is high or recovery efforts take a long time.	Increased
Extreme Heat	There are more high heat days and warnings for periods where temperatures do not cool overnight. Incidence and duration of heat waves have increased. Wildlife migration patterns may change to adapt to the extreme heat.	An increased population will add to the possibility of a heat island effect. Outdoor recreation would be impacted by extreme heat, with people avoiding the middle of the day when it is very warm. Outdoor workers would need shade or more frequent breaks.	Extreme heat could affect watering, which would impact residential properties as well as commercial properties like golf courses.	Increased
Extreme Cold	Extreme cold would impact local vegetation and wildlife, which impacts the local ecosystem as far as wildlife migration patterns and growth.	Extreme cold impacts tourism in SSL. Revenue loss is a concern if people choose not to visit local businesses or go outside their homes due to the weather conditions.	Properties like golf courses may be repurposed to adapt to the cold weather conditions.	Increased
Flooding	Climate change is making storms more intense and severe. Over the last five years, there have been several minor	The population increase, especially for vulnerable groups, is a concern for rescue and	Some areas along the Jordan River are in a floodplain. Commercial or residential	Same

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	and close-call events. Increased flooding impacts water and soil quality. Soil erosion and ecosystem disruption are concerns.	recovery efforts. Emergency response efforts may be impacted.	properties may need to be rezoned or relocated if they are repetitive loss properties.	
Landslide/Slope Failure	N/A	N/A	N/A	N/A
Radon	Warmer temperatures can impact radon levels, allowing it to seep into foundation cracks or soil. Permafrost thaw releases contaminants into the atmosphere, affecting soil, water, and air quality.	Increase of population – Radon dependent upon area and dwelling. If people aren't aware of their radon levels or do not have the funds to mitigate radon, it places their long-term health in jeopardy.	Land use may change if there are high radon levels in certain areas. Residents may move outside SSL.	Same
Heavy Rain	Storms have become more severe in recent years. When they are frequent, soil becomes saturated and the water has nowhere to go. This can contribute to soil and water quality issues.	Changes in population have not affected heavy rain events. However, heavy rain events can impact emergency response and create medical surges if there are a significant number of traffic accidents.	No large changes in land use or development. The city has identified storm drain issues. Heavy rain can lead to flooding, which impacts the local economy.	Same
High Wind	Stronger storms have brought more down slope wind events and other sudden high winds.	The daytime population is at risk, especially during the evening commute, if there are road closures or debris. Emergency vehicle access is a concern.	N/A – areas of growth not impacted more than others by high wind.	Same
Lightning	More extreme weather may increase the occurrence of lightning.	More people recreating outdoors means an increased chance	Lightning can impact local vegetation, which impacts land development.	Same

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
		of someone being hit by lightning.	Downed trees from lightning can impact recovery efforts or place outdoor areas like golf courses at greater risk.	
Severe Winter Weather	The last few winters have had larger, more extreme storms and widespread transportation impacts. This impacts local wildlife and vegetation as far as soil and water quality.	With an increased population, it may add increased risk to roads and outdoor spaces.	Frequent heavy snow and blizzards may cause people to relocate to other areas of the valley. Local businesses may lose revenue if people choose not to visit or cannot access them due to the conditions.	Same
Tornado	Thunderstorm frequency can increase the likelihood of tornadoes. There are impacts on local vegetation and wildlife as far as water, air, and soil quality.	The increased population places the daytime population as well as socially vulnerable groups at greater risk. The evening and morning work commutes would be affected by a tornado as far as traffic accidents, emergency response, and debris in roads.	Land use could change if residents choose to live in different areas of the county due to tornado frequency and risk.	Same
Wildfire	Soil erosion, drought conditions, and high winds impact the likelihood of a wildfire moving into SSL. The golf courses are a concern.	The daytime population is a concern as far as emergency response efforts, especially if people want to get away from the wildfire and clog up roads/ highways.	Residents and local businesses may move out of SSL if they cannot financially recover from a wildfire.	Same
Dam Failure	Permafrost thaw and increased precipitation could	The daytime population would	Residents and local businesses could move out of	Same

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	lead to more dam failures. Additionally, snowpack levels and melt rates can impact the likelihood of a dam failure, which would significantly impact SSL.	be impacted as far as transportation.	dam inundation areas, impacting the local economy.	
Civil Disturbance	Conversations about climate change can incite hostility, which would impact emergency response efforts.	The daytime population in SSL would be significantly impacted as far as transportation to and from SSL.	Multiple county buildings including the jail and Men's Resource Center could impact a civil disturbance incident.	Increased
Cyberattack	N/A – Climate change will not affect the likelihood of a cyberattack.	A cyberattack could impact the city's reputation, causing people to look elsewhere for basic services.	May delay economic development with inability to process permitting.	Increased
Hazardous Materials Incident (Transporta-tion & Fixed Facility)	Climate change can have an impact on hazmat incidents. It may contribute to extreme weather events that can damage storage facilities. Temperature is a consideration for storage of some materials.	Although the population has increased, the risk to the population has not increased. The daytime population is at risk as far as potential road closures or emergency response efforts.	A hazmat incident could have long-term impacts on water and soil quality, affecting local vegetation.	Same
Public Health Epidemic/ Pandemic	Climate change may play a factor in the spread of an epidemic or pandemic.	N/A – SSL's population is not changing drastically. However, the daytime population may be impacted if there are social distancing measures in place or a restriction on the number of people in buildings. This would impact the local economy	If more people are working remotely, this can impact property values. People may buy in other areas, affecting the revenue of local businesses.	Same

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
		if people are not getting lunch in the city, not recreating outside, or choosing to work remotely.		
Terrorism	Climate change does not increase SSL's risk of being targeted for a terrorist event. However, discussions surrounding climate change can lead to civil disturbances or terrorism events.	A larger, more diverse population may make SSL more of a target for terrorist activity.	If an area in SSL is deemed unsafe, people may not recreate in the area or purchase property.	Same

Additional Public Involvement

The city of South Salt Lake provided several opportunities for public participation. Figure 1 is an example of public outreach.

Figure 1: Social Media Post for the Hazard Mitigation Survey

Plan Integration

Incorporating the underlying principles of the Hazard Mitigation Plan and its recommendations into other plans is a highly effective and low-cost way to expand their influence. All plan participants will use existing

methods and programs to implement hazard mitigation actions where possible. As previously stated, mitigation is most successful when it is incorporated into the day-to-day functions and priorities of government and public service. This plan builds on the momentum developed through previous and related planning efforts and mitigation programs, and it recommends implementing actions where possible through these other program mechanisms. These existing mechanisms include the following:

- Regularity Capabilities
- Administrative Capabilities
- Fiscal Capabilities

Respective planning stakeholders will conduct implementation and incorporation into existing planning mechanisms and will be done through the routine actions of:

- Monitoring other planning/program agendas;
- Attending other planning/program meetings;
- Participating in other planning processes; and
- Monitoring community budget meetings for other community program opportunities.

The successful implementation of this plan will require constant and vigilant review of existing plans and programs for coordination and multi-objective opportunities that promote a safe, sustainable community. Regular efforts should be made to monitor the progress of mitigation actions implemented through other planning mechanisms. Where appropriate, priority actions should be incorporated into planning updates. Table 11 lists existing planning mechanisms in which the Hazard Mitigation Plan has been integrated. Table 12 lists the opportunities for integrating elements of this plan into other plans.

Table 11: Integration of Previous Plans by the City of South Salt Lake

Plan	Description
General Plan	Incorporation of known vulnerabilities

Table 12: Opportunities for Integration with Future Plans of the City of South Salt Lake

Plan	Description
Strategic Mobility Plan	Travel needs to, through, and from the city
Moderate Income Housing Plan	Inform mitigation actions and policies to prevent resident exposure to hazards
Parks, Open Space, Trail, and Community Centers Master Plan	Inform mitigation actions for recreation areas
Urban Forestry Plan	Incorporation of mitigation actions to reduce hazard risks
Pandemic-Specific Continuity of Operations Plan	Incorporation of mitigation actions to reduce hazard risks when there's a power failure, communication issue, pandemic, etc.
Comprehensive Emergency Management Plan	Guides the city's actions before, during, and after a disaster

Capability Assessment

Local mitigation capabilities are existing authorities, policies, programs, and resources that reduce hazard impacts or could help carry out hazard mitigation activities.

Planning and Regulatory Capabilities

Planning and regulatory capabilities are the plans, policies, codes, and ordinances that prevent and reduce the impacts of hazards.

Table 13: Assessment of the Planning Capabilities of the City of South Salt Lake

Plan	Does it address hazards? (Y/N)	How can it be used to implement mitigation actions?	When was the last update? When is the next update?
General Plan	Y	Incorporate goals and implementation strategies into mitigation actions	August 17, 2021
Capital Improvement Plan	Y	By allocating funding and resources for projects that reduce risk and enhance resilience to hazards.	Completion of plan is scheduled for 2026–2027
Climate Change Adaptation Plan	N	N/A	N/A
Community Wildfire Protection Plan (CWPP)	N – minimal wildfire risk so a CWPP has not been created	Inform the public about general wildfire risk and ensure coordination between surrounding jurisdictions/agencies	N/A
Economic Development Plan	Y – section in General Plan	Identify funding sources and responsible departments/parties for mitigation actions	August 17, 2021
Land Use Plan	Y – Parks Open Space, Trails, and Community	Incorporate	2015
Comprehensive Emergency Management Plan	Y	Incorporate disaster response efforts into mitigation actions	February 2024
Stormwater Management Plan	Y	Incorporate flooding response efforts into mitigation actions	2024
Transportation Plan	Y	Incorporate known issues and transportation improvement efforts into mitigation actions	2020
Substantial Damage Plan	N	N/A	N/A

DRAFT

Plan	Does it address hazards? (Y/N)	How can it be used to implement mitigation actions?	When was the last update? When is the next update?
Other? (Describe)	Pandemic Continuity of Operations	Incorporate staffing needs into mitigation actions to improve response efforts	March 30, 2020

Table 14: Assessment of the Regulations and Ordinances of the City of South Salt Lake

Regulation/Ordinance	Does it effectively reduce hazard impacts?	Is it adequately administered and enforced?	When was the last update? When is the next update?
Building Code	Y; South Salt Lake has adopted the state's building codes, including the International Building Code (IBC 2021) as amended.	Y	2021
Flood Insurance Rate Maps	Y	Y	2023
Floodplain Ordinance	Y	Y	2020
Subdivision Ordinance	Y	Y	2023
Zoning Ordinance	Y	Y	2023
Natural Hazard-Specific Ordinance (Stormwater, Steep Slope, Wildfire)	Y	Y	2023
Acquisition of Land for Open Space and Public Recreation Use	Y	Y	2021
Prohibition of Building in At-Risk Areas	Y	Y	2023
Other? (Describe)			

Administrative and Technical Capabilities

Administrative and technical capabilities include staff and their skills. They also include tools that can help carry out mitigation actions.

Table 15: Assessment of the Administrative Capabilities of the City of South Salt Lake

Administrative Capability	In Place? (Y/N)	Is staffing adequate?	Are staff trained on hazards and mitigation?	Is coordination between agencies and staff effective?
Chief Building Official	Yes	Yes	Yes	Yes
Civil Engineer	Yes	Yes	Yes	Yes
Community Planner	Yes	Yes	Yes	Yes

DRAFT

Administrative Capability	In Place? (Y/N)	Is staffing adequate?	Are staff trained on hazards and mitigation?	Is coordination between agencies and staff effective?
Emergency Manager	Yes	Yes	Yes	Yes
Floodplain Administrator	Yes	Yes	Yes	Yes
Geographic Information System (GIS) Coordinator	Yes	Yes	Yes	Yes
Planning Commission	Yes	Yes	Yes	Yes
Fire Safe Council	No	N/A	N/A	N/A
CERT (Community Emergency Response Team)	Yes	Yes	Yes	Yes
Active VOAD (Voluntary Agencies Active in Disasters)	Yes	Yes	Yes	Yes
Other? (Please describe.)				

Table 16: Assessment of the Technical Capabilities of the City of South Salt Lake[3]

Technical Capability	In Place? (Y/N)	How has it been used to assess/mitigate risk in the past?	How can it be used to assess/mitigate risk in the future?
Mitigation Grant Writing	Yes, coordination with SLCo EM	Has not been used	Grant funding can be used to reduce risk of local hazards.
Hazard Data and Information	Y	Identified areas with a lot of emergency calls to prioritize resources.	Improve response times and reduce risk to hazards.
GIS	Y	Identified areas that are at risk of flooding as well as transportation challenges	Prioritize areas based on mitigation actions to reduce hazard risk
Mutual Aid Agreements	Yes	Coordination between agencies	Improve response times and procedures between agencies/surrounding jurisdictions, especially if there are power failures or road closures for an extended period.
Other? (Please describe.)			

[3] SLCo EM = Salt Lake County Emergency Management.

DRAFT

Financial Capabilities

Financial capabilities are the resources to fund mitigation actions. Talking about funding and financial capabilities is important to determine what kinds of projects are feasible, given their cost. Mitigation actions like outreach programs are lower cost and often use staff time and existing budgets. Other actions, such as earthquake retrofits, could require substantial funding from local, state, and federal partners. Partnerships, including those willing to donate land, supplies, in-kind matches, and cash, can be included.

Table 17: Assessment of the Financial Capabilities of the City of South Salt Lake

Funding Resource	In Place? (Y/N)	Has it been used in the past and for what types of activities?	Could it be used to fund future mitigation actions?	Can it be used as the local cost match for a federal grant?
Capital Improvements Project Funding	Yes	Yes, it has been used all throughout the city for all types of projects	Yes	Yes
Community Development Block Grant	Yes	The last 2 years it has been for rebuilding the community center, and this year it'll be used for affordable housing.	Yes	No
Stormwater Utility Fee	Yes	Operation of the storm water system	Yes	Yes
Impact fees for new development	Yes	Yes, fees for water, sewer and parks have been used for new construction on businesses. Impact fee for sewer are being used to build a new pump station and fund a new well.	Yes, for select projects	Yes, for select projects
State funding programs	Yes	Yes, used in wastewater for upgrade to Central Valley Sewer District	Yes	Yes

Education and Outreach Capabilities

Education and outreach capabilities are programs and methods that could communicate about and encourage risk reduction. These programs may be run by a participant or a community-based partner. Partners, especially those who work with underserved communities, can help identify additional education and outreach capabilities.

DRAFT

Table 18: Assessment of the Education and Outreach Capabilities of the City of South Salt Lake[4]

Education and Outreach Capability	In Place? (Y/N)	Does it currently incorporate hazard mitigation?	Could it be used to support mitigation in the future?
Community Newsletter(s)	Y	Y	Y
Hazard Awareness Campaigns (such as Firewise, Storm Ready, Severe Weather Awareness Week, School Programs)	Y	Y	Y
Public Meetings/Events (Please describe.)	Y	Y	Y
Emergency Management Listserv	Y	Y	Y
Local News	Y	Y	Y
Distributing Hard Copies of Notices (e.g., public libraries, door-to-door outreach)	Y	N	Y
Insurance Disclosures/Outreach	Y	N	Y
Organizations that Represent, Advocate for, or Interact with Underserved and Vulnerable Communities (Please describe.)	Y	Y	Y
Social Media (Please describe.)	Yes	Y The city runs monthly campaigns, some involving mitigation actions individuals can take in their daily lives	Y
Other? (Please describe.)	Websites, Community events, CERT trainings, disaster response training with elected officials.	Y	Y

Opportunities to Expand and/or Improve Capabilities

Actions that can expand and improve existing authorities, plans, policies, and resources for mitigation include budgeting for mitigation actions, passing policies and procedures for mitigation actions, adopting and implementing stricter mitigation regulations, approving mitigation updates, and making additions to existing plans as new needs are recognized. Table 19 lists the opportunities for the city of South Salt Lake.

[4] CERT = Community Emergency Response Team.

Table 19: Opportunities to Expand and/or Improve the Capabilities of the City of South Salt Lake

Capability	Opportunity to Expand and/or Improve
Planning and Regulation	The city could develop a new plan for managing trees. This would help reduce risks from hazards like drought, extreme heat, and wildfire.
Administrative and Technical	Additional training for city inspectors on how to conduct damage assessments would help with mitigation efforts such as enforcing floodplain management regulations. Additionally, staff could be trained in mitigation grant writing.
Financial	The city has not been awarded Hazard Mitigation Assistance grants yet. Applying for federal mitigation grants such as the Hazard Mitigation Grant Program (HMGP) and Flood Mitigation Assistance (HMA) can help expand funding capabilities.
Education and Outreach	Develop education programs and/or campaigns to target specific groups, including homeowners, business owners, schools, and those with access and functional needs. Develop and continue educational programs to protect against extreme heat and flood dangers for youth.

Mitigation Strategy

Mitigation strategies provide proactive measures that are designed to minimize the impacts of hazards on the city of South Salt Lake. Table 20 shows mitigation action alternatives, and Table 21 shows the status of previous mitigation activities. Table 22 is the 2025 mitigation action plan for the city of South Salt Lake.

Table 20: Mitigation Action Alternatives for the City of South Salt Lake

Action	Type of Action	Selected for inclusion in the plan?	If not selected, why not?
Provide public education regarding radon, lightning, drought, floods, earthquakes, extreme cold/heat and heavy rain events through live trainings and web-based, print, and broadcast media.	Education and Awareness Programs	Yes	
Conduct an inventory and assessment of communications equipment and systems and identify needs.	Structure and Infrastructure Projects	Yes	
Conduct training and awareness activities on communication equipment, tools, and systems.	Structure and Infrastructure Projects	Yes	
Provide information on landscaping alternatives for persons subject to green area requirements.	Natural Systems Protection	Yes	
Forestry Plan – identify appropriate trees for climate zone.	Natural Systems Protection	Yes	
Identify city-owned structures at risk of earthquake damage.	Structure and Infrastructure Projects	Yes	

Action	Type of Action	Selected for inclusion in the plan?	If not selected, why not?
Pursue and implement needed mutual aid agreements for goods and services before or during an incident.	Local Plans and Regulations	Yes	
Train and certify City Inspectors to conduct pre/post-disaster damage assessments.	Local Plans and Regulations	Yes	
Adopt a soil cell retention specification in the downtown area.	Local Plans and Regulations	Yes	
Establish agreements to share communications equipment between agencies involved in emergency operations.	Local Plans and Regulations	Yes	
Establish notification capabilities and procedures for emergency personnel.	Local Plans and Regulations	Yes	
Assess the following critical facilities for structural weaknesses: SSL City Hall, police station, fire stations, Public Works building, SSL Community Center, and well sites.	Structure and Infrastructure Projects	Yes	
Identify structural deficiencies at Historic Scott School.	Structure and Infrastructure Projects	Yes	
Update parking lot to improve water retention at SSL Police Department and Historic Scott School.	Structure and Infrastructure Projects	Yes	
Inventory the trees.	Natural Systems Protection	Yes	
Use GIS to identify city-owned facilities and infrastructure at risk of flooding.	Natural Systems Protection	Yes	
Confirm accuracy of FEMA and Salt Lake County flood plain maps.	Structure and Infrastructure Projects	Yes	
Develop education programs and/or campaigns to target specific groups including homeowners, business owners, schools, and those with access and functional needs.	Education and Awareness Programs	Yes	
Develop and continue educational programs to protect against extreme heat and flood dangers to youth.	Education and Awareness Programs	Yes	
Redevelop SSL's Public Works campus.	Structure and Infrastructure Projects	Yes	
Capital Improvement Plan.	Local Plans and Regulations	Yes	

Action	Type of Action	Selected for inclusion in the plan?	If not selected, why not?
Increase storm drain capacity at 700 W.	Structure and Infrastructure Projects	Yes	
Increase storm drain capacity at 300 W.	Structure and Infrastructure Projects	Yes	
Install storm drain facility in southeast SSL.	Natural Systems Protection	Yes	
Install storm drains that flow into underground stormwater storage.	Natural Systems Protection	Yes	

DRAFT

Table 21: Status of Prior Mitigation Actions of the City of South Salt Lake[5]

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update
Conduct an inventory and assessment of communications equipment and systems and identify needs.	All hazards	SSL EM	SSL PD, SSL FD, SLCo EM, SSL PW	Ongoing – There are upgrades being made to all city Public Safety radios and SSL's staff emergency communications system. SSL will continue to improve its communications.
Conduct training and awareness activities on communication equipment, tools, and systems.	All hazards	SSL EM	SLCo EM, SSL PD, SSL FD, SSL PW	Ongoing – Training and awareness activities on communications are ongoing. SSL participates in training and exercises involving our HAM radio team, updating the CEMP, including communication notifications, and upgrading public safety radios.
Establish agreements to share communications equipment between agencies involved in emergency operations.	All hazards	SSL EM	SSL Communications, SSL PD, SSL FD, SLCo EM, SSL PW	Ongoing/Completed – Interlocal agreements between SSL FD and SSL PD to ensure that communications equipment can be shared between agencies.
Establish notification capabilities and procedures for emergency personnel.	All hazards	SSL EM	SSL Communications, SSL FD, SSL PD, SLCo EM	Ongoing – SSL is updating its CEMP, which includes establishing notification capabilities and procedures for emergency personnel.
Evaluate vulnerability of critical communications systems.	All hazards	SSL PW and SSL Communications	SSL EM, VECC, SSL PD, SSL FD, SLCo EM, SSL PW	Ongoing – SSL evaluates areas of vulnerability and develops solutions, such as moving one of our repeaters to City Hall to help with HAM radio communications.

[5] CEMP = Comprehensive Emergency Management Plan, MOU = memorandum of understanding, PIO = Public Information Officer, SSL = South Salt Lake, SSL FD = South Salt Lake Fire Department, SSL PD = South Salt Lake Police Department, SSL PW = South Salt Lake Public Works, UFA = Unified Fire Authority, VECC = Salt Lake Valley Emergency Communications Center.

DRAFT

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update
Establish a coordinating group to address long-term communication needs and implementation strategies.	All hazards	SSL EM	Communications, SSL PD, SSL FD, SLCo EM, SSL PW, VECC	Ongoing – Multiple groups (PIO, Policy Group) have been identified to help with implementing strategies. SSL will continue working with the county and internally to address long-term communications needs.
Acquire, upgrade, and/or integrate communications equipment and systems as determined by coordinating group.	All hazards	SSL Communications	SSL EM, SSL FD, SSL PD, SLCo EM, VECC, SSL PW	Ongoing – SSL has purchased new radios for its Public Safety Teams and has purchased new equipment and systems (such as Catapult EMS) to maintain operability.
Utilize GIS to identify facilities and infrastructure at risk.	All hazards	SSL GIS	SSL EM, SSL PD, SSL PW, SSL FD, SLCo EM	Ongoing – A capital facilities campaign will help address facilities and infrastructure at risk using GIS.
Assess critical facilities for hazard exposure, structural weaknesses, power, communications and equipment resources and redundancy, and adequate emergency procedures.	All hazards	SSL PW	SSL EM, SSL GIS, and SSL FD	Ongoing/Completed – A general understanding of building facilities has been updated. A new Public Works building will be constructed in 2026 to address structural weaknesses.
Pursue and implement needed mutual aid agreements.	All hazards	SSL EM	SLCo EM, SLCo PW, local jurisdictions EM, local jurisdictions PW, UFA, local jurisdictions FD, local jurisdictions PD	Ongoing – SSL has multiple interlocal agreements with nearby cities and MOUs for city inspectors conducting damage assessments.

DRAFT

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update
Provide education regarding all natural hazards through live trainings, as well as web-based, print, and broadcast media.	All hazards	SSL EM	SLCo EM, SSL FD, SSL PW, SSL PD, SSL Communications	Ongoing/Completed – SSL EM has provided educational training regarding flooding and earthquakes and will continue to provide educational materials, training, and resources to staff and the public to prepare for natural disasters.
Develop education programs to target groups including homeowners, developers, schools, and people with special needs.	All hazards	SSL EM	Promise SSL, SSL Communications, SSL FD, SSL PD, SLCo EM, SSL PW	Ongoing – Targeted education programs have been developed for specific groups, including homeowners and school aged children.
Provide information on landscaping alternatives for persons subject to green area requirements.	Drought	SSL EM	SSL PW	Ongoing/Completed – A new ordinance is complete and will be updated further. The city is retrofitting water-wasting landscapes.
Identify structures at risk of earthquake damage.	Earthquake	SSL PW	SSL EM, SSL GIS, SLCo EM, and SSL FD	Ongoing – Through the Capital Facilities Plan, select buildings/ infrastructure have been identified and will continue to be identified.
Determine potential flood impacts and identify areas in need of additional flood control structures.	Flood	SSL City Engineer and SSL PW	SSL EM, SSL FD, SLCo EM	Ongoing – SSL has continued development throughout the city and identified potential flood impacts on any new development. Areas in need of additional flood control structures have been identified.

DRAFT

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update
Address identified problems through construction of debris basins, flood retention ponds, emergency dissipaters or other flood control structures.	Flood	SSL City Engineer and SSL PW	SSL EM, SLCo EM	Ongoing – SSL City Engineering and Public Works have identified several areas in the most recently annexed parts of the city that need stormwater facilities.
Establish maintenance and repair programs to remove debris, improve resistance, and otherwise maintain effectiveness of stormwater and flood control systems.	Flood	SSL PW	SSL EM	Completed/Ongoing – SSL Public works established maintenance and repair programs that are continuously updated.
Identify and assess structures for deficiencies.	Flood	SSL City Engineer and SSL PW	SSL EM, SSL FD	Completed/Ongoing – Deficiencies have been identified, and they have either been addressed or are in the process of being addressed.
Modify structures as needed to address deficiencies.	Flood	SSL City Engineer and SSL PW	SSL EM, SSL FD	Ongoing/Completed – Structures have been and will continue to be modified as needed to address deficiencies.
Train and Certify City Inspectors to Conduct Pre/Post-Disaster Damage Assessments.	Earthquake	SSL Community Development Department	SSL EM, SSL FD, SSL PD, SSL PW, SLCo EM	Ongoing/Completed – All SSL city Building Inspectors are trained and certified to conduct pre/post disaster damage assessments for both residential and commercial structures.
Conduct a Seismic Vulnerability Assessment of City-owned critical facilities.	Earthquake	SSL Facilities	SSL EM, SSL FD, SLCo EM	Ongoing – Capital Facilities Plan will outline a seismic vulnerability assessment of city-owned critical facilities.

DRAFT

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update
Conduct a Geotechnical Study.	Problem Soils	SSL Engineering	SSL PW, SSLs Facilities	Ongoing/Completed – No longer profiled. Most new city buildings had a geotechnical study completed before construction.

DRAFT

Table 22: 2025 Mitigation Action Plan for the City of South Salt Lake[6]

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Time-frame	Priority	Comments
1	Provide public education regarding radon, lightning, drought, flooding, earthquakes, extreme cold/heat, and heavy rain events through live training and web-based, print, and broadcast media.	Radon, Lightning, Drought, Flooding, Earthquakes, Extreme Cold, Extreme Heat, and Heavy Rain	SSL EM	SSL PIO, SSL FD, SSL PW, SSL PD, Promise SSL, SLCo EM	Provides educational benefits to underserved populations	Low	SSL general fund	Long term	High	Update the public on hazard information and mitigation measures, including available grant funding and hazard-specific opportunities. For example, provide information on radon mitigation systems (radon), lightning rods and surge protectors (lightning), water conservation (drought), rain gardens, utility elevations, flood mapping, dam inundation areas, (flooding, heavy rain), home weatherization, including the installation of proper insulation (extreme cold, extreme heat).
2	Conduct an inventory and assessment of communications equipment and systems and identify needs.	Earthquake, Flood, Wind, Tornado	SSL EM	SSL FD, SSL PD, SSL PW	Enhances interoperability	Low	SSL general fund	Short term	High	
3	Conduct training and awareness activities on communications equipment, tools, and systems.	Earthquake, Flooding, High Wind, Tornado	SSL EM	SSL FD, SSL PD, SSL PW, SLCo EM	Enhances interoperability	Low	SSL general fund	Short term	High	
4	Provide information on landscaping alternatives for persons subject to green area requirements.	Drought, Extreme Heat, Wildfire	SSL Neighborhoods	SSL Urban Forestry, SSL Water Division, SSL FD, SLCo EM	Protects city culinary supply & preserves urban forest	Low	Jordan Valley Water Conservancy District, SSL Water Division, SSL FD, SLCo EM, UDWR	Short term	High	
5	Forestry Plan – identify and plant appropriate trees for the climate zone, focusing west of State Street.	Earthquake, Drought, Wildfire, Extreme Heat	SSL Neighborhoods	FFSL, SLCo EM, SSL PW, SSL EM	Maintains city operations and protecting assets	Low	Community Forestry Partnership grant, SSL general fund, SSL PW	Short term	High	
6	Identify city-owned structures at risk of earthquake damage.	Earthquake	SSL Facilities	SSL Community Development, SSL FD, SSL EM, SLCo EM	Protects lives and property	Medium	SSL general fund, HMGP grant	Medium	Medium	
7	Pursue and implement mutual aid agreements for goods and services before or during an incident.	Earthquake, Flood, Windstorm, Tornado, Extreme Cold	SSL EM	SSL FD, SSL Legal Department, SSL PD, SLCo EM, UDEM, local	Reduces delay of services or displacement	Low	SSL general fund	Short term	Medium	There are multiple organizations with which SSL would like to pursue mutual aid agreements. These agreements will take time to develop.

[6] EMPG = Emergency Management Performance Grant, FFSL = Division of Forestry, Fire, and State Lands, FMA = Flood Mitigation Assistance, HMGP = Hazard Mitigation Grant Program, SLCo EM = Salt Lake County Emergency Management, SLCo PW = Salt Lake County Public Works, SSL = South Salt Lake, SSL EM = South Salt Lake Emergency Management, SSL FD = South Salt Lake Fire Department, SSL IT = South Salt Lake Information Technology, SSL PD = South Salt Lake Police Department, SSL PIO = South Salt Lake Public Information Officer, SSL PW = South Salt Lake Public Works, UDEM = Utah Division of Emergency Management, UDWR = Utah Division of Water Resources.

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Time-frame	Priority	Comments
				jurisdictions EM, SLCo PW						
8	Train and certify city inspectors to conduct pre/post-disaster damage assessment.	Earthquakes, Floods, Tornado, Wind damage	Community Development	SSL FD, SSL EM, SLCo EM	Ensures a more efficient response to an incident	Low	SSL general fund, HMGP grant	Short term	High	
9	Adopt a soil cell retention specification in the downtown area.	Drought, Extreme Heat, Flooding, Heavy Rain, Severe Winter Weather	SSL Engineering	SSL Community Development	Enhances quality of life, reduces risk of climate change, and has environmental benefits	Medium	HMGP grant, FMA grant, EMPG grant	Short term	Medium	This plan will be developed in the next year. However, the project itself will take time to implement.
10	Establish agreements to share communications equipment between agencies involved in emergency operations.	Civil Disturbance, Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Flooding, Hazardous Materials, Heavy Rain, High Wind, Lightning, Public Health Epidemic/ Pandemic, Radon, Severe Winter Weather, Terrorism, Tornado	SSL EM	SSL PW, SSL PIO, SSL FD, SSL PD, SSL IT, SSL Engineering, SLCo EM, local jurisdictions EM, SLCo PW	Reduces delay of services or displacement	Low	SSL general fund	Short term	High	
11	Establish notification capabilities and procedures for emergency personnel.	Civil Disturbance, Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Flooding, Hazardous Materials, Heavy Rain, High Wind, Lightning, Public Health Epidemic/ Pandemic, Radon, Severe Winter Weather, Terrorism, Tornado	SSL EM	SSL FD, SSL PD, SSL PW, SSL PIO, SSL Engineering, SLCo EM	Reduces delay of service	Low	SSL general fund, SLCo EM, EMPG grant	Short term	High	
12	Assess the following critical facilities for structural weaknesses: SSL City Hall, the police station, fire stations, Public Works building, SSL Community Center and well sites.	Earthquake, High Wind, Tornado	SSL Engineering, SSL Facilities	SSL PW, SSL Community Development, SSL PD, SSL FD	Identifies risk associated with critical facilities that provide essential services for city residents and formulates a plan to update identified weaknesses	Medium	HMGP grant, SSL general fund	Long term	Medium	This project will take time to develop. The city has some information on the building history of these facilities which will be used to help determine which buildings are prioritized in this project.
13	Identify structural deficiencies at Historic Scott School.	Earthquake	SSL Engineering, SSL Facilities	SSL Community Development	Identifies risk associated with Historic Scott School that provide services for city youth and the city's art program and formulates a plan to update identified weaknesses	Medium	SSL general fund, HMGP grant	Short	High	
14	Update parking lot to improve water retention at SSL PD and Historic Scott School.	Drought	SSL Facilities	SSL Community Development, SSL Engineering, SSL PW	Reduces risk of climate change and contains environmental benefits	Medium	SSL general fund	Medium	Low	
15	Inventory city trees and prepare management plan.	Drought, Extreme Heat, Wildfire	SSL Parks/ Neighborhoods	SSL PW	Reduces risk of climate change and contains environmental benefits	Medium	SSL general fund, Community Forestry Partnership grant	Medium	High	

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Time-frame	Priority	Comments
16	Use GIS to identify city-owned facilities and infrastructure at risk of flooding.	Flooding	SSL GIS	SSL EM, SSL PW, SSL Facilities, SSL Engineering, SLCo EM	Reduces possibility of displacement	Low	SSL general fund	Medium term	Low	The city uses older maps and FEMA flood plain maps to help identify these areas. The city ultimately wants to take a closer look at these areas in conjunction with the location of city-owned facilities.
17	Confirm accuracy of FEMA and SLCo floodplain maps.	Flooding, Heavy Rain	SSL Engineering	SSL GIS, SLCo Flood Control Engineering, SLCo EM	Reduces delay of services	Low	SSL general fund, SLCo Flood Control Engineering	Medium	Medium	
18	Develop educational programs and/or campaigns to target specific groups, including homeowners, business owners, schools, and those with access and functional needs.	Civil Disturbance, Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Flooding, Hazardous Materials, Heavy Rain, High Wind, Lightning, Public Health Epidemic/ Pandemic, Radon, Severe Winter Weather, Terrorism, Tornado	SSL EM	Promise SSL, SSL PIO, SSL PW, SLCo EM	Benefits underserved populations and enhances quality of life	Low	SSL general fund, HMGP grant	Long term	High	
19	Develop and continue educational programs to protect against extreme heat and flood dangers to youth.	Extreme Heat, Flooding, Drought, Dam Failure, Heavy Rain, Extreme Heat, Severe Winter Weather	SSL EM	SSL PIO, Promise SSL, SLCo EM, SSL PW, SSL PD, SSL FD	Benefits underserved populations and enhances quality of life	Low	SSL general fund, HMGP grant	Long Term	High	Educational programs are continually updated and shared. As this is somewhat of an ongoing project, it is deemed “long term.”
20	Redevelop SSL’s Public Works Campus.	Earthquake	SSL PW	Layton Construction, Method Design	Reduces delay of services	High	SSL general fund	Short	High	
21	Develop a Capital Improvement Plan.	Earthquake, Flooding, Extreme Cold, Extreme Heat, Heavy Rain, Severe Winter Weather, High Wind, Lightning, Public Health Epidemic/Pandemic, Hazardous Materials, Dam Failure	SSL PW	SSL Engineering	Identifies system deficiencies on critical infrastructure	Medium	SSL general fund	Medium	High	
22	Increase storm drain capacity at 700 W.	Flooding, Heavy Rain, Severe Winter Weather, Dam Failure	SSL Engineering	SSL PW		High	Wasatch Front Regional Council’s Surface Transportation Program and local SSL match	Short	High	Reduce flooding risk in the northeast part of the community.
23	Increase storm drain capacity at 300 W.	Flooding, Heavy Rain, Severe Winter Weather, Dam Failure	SSL Engineering	SSL PW		High	Wasatch Front Regional Council’s Surface Transportation Program and local SSL match	Long	Medium	Reduce flooding risk in the northeast part of the community.

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Time-frame	Priority	Comments
24	Install storm drain facility in southeast SSL.	Flooding, Drought, Heavy Rain, Severe Winter Weather, Extreme Heat	SSL Engineering	SSL PW	Installation of storm drain reduces the likelihood of flooding while retaining groundwater to prevent drought	High	Community Development Block grant, SSL general fund	Long	Medium	
25	Install storm drains that flow into underground stormwater storage.	Flooding, Drought, Heavy Rain, Severe Winter Weather, Dam Failure, Extreme Heat	SSL Engineering	SSL PW	Installation of storm drain reduces the likelihood of flooding while retaining groundwater to prevent drought	Medium	SSL general fund	Short	High	
26	Work with county and state agencies to conduct risk studies or engineering assessments to identify the needs for improving dam safety condition rating.	Dam Failure	SLCo EM	Dam Owners, Salt Lake County Public Works Flood Control Engineering, Utah Division of Water Rights Dam Safety Section, Salt Lake City Public Utilities, Local Governments	Reduce potential losses from the failure of HHPDs.	Medium	Salt Lake County General Fund, HHPD Grant, HMGP Grant	Medium	Medium	High hazard potential dams with potential impacts on South Salt Lake City and a safety condition rating of fair: SLCO Rotary Glen Park and SLCO Scott Avenue. HHPDs with potential impacts on SLC and a safety condition rating of poor: Mountain Dell.
27	Partner with county and state agencies, as well as neighboring jurisdictions, to rehabilitate or complete other safety projects for high hazard dams based on dam safety reports or risk studies.	Dam Failure	SLCo EM	Dam Owners, Salt Lake County Public Works Flood Control Engineering, Utah Division of Water Rights Dam Safety Section, Salt Lake City Public Utilities, Local Governments	Reduce potential losses from the failure of HHPDs.	High	Salt Lake County General Fund, HHPD Grant, HMGP Grant	Long term	High	See above.

DRAFT

Mitigation Action Prioritization

The mitigation actions were evaluated based on the STAPLEE criteria.

Table 23: Mitigation Action Prioritization – STAPLEE

Action #	Social	Technical	Administrative	Political	Legal	Economic	Environmental	Priority
1		3	4	4	4	4	4	High
2	N/A	3	3	N/A	N/A	3	n/a	High
3	N/A	3	3	N/A	N/A	3	n/a	High
4	3	2	2	2	4	4	4	High
5	3	4	3	2	4	4	4	High
6	3	3	2	3	4	4	3	Medium
7	3	4	3	3	4	4	n/a	Medium
8	4	3	3	3	4	2	n/a	High
9	4	4	3	3	4	3	4	High
10	3	2	3	4	4	3	n/a	Medium
11	4	3	3	4	4	3	n/a	High
12	4	2	2	4	4	2	2	High
13	3	2	2	4	4	2	2	High
14	2	2	3	2	4	3	3	Low
15	4	4	3	4	4	3	4	High
16	3	2	3	4	4	3	n/a	Low
17	3	2	3	3	4	2	n/a	Medium
18	4	4	4	4	4	4	3	High
19	4	4	4	4	4	4	n/a	High
20	3	4	4	4	4	3	3	High
21	3	4	3	4	4	3	3	High
22	2	4	4	3	4	4	3	High
23	2	4	4	3	4	3	3	Medium
24	2	3	4	4	4	3	3	Medium
25	3	3	2	3	4	3	3	High

DRAFT

DRAFT

THIS PAGE INTENTIONALLY LEFT BLANK

City of Taylorsville

Jurisdictional Annex to the
Salt Lake County Hazard Mitigation Plan

Month XXXX | Draft X.X

THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT

Table of Contents

City of Taylorsville Annex 1

Planning Process Contact Information 1
Jurisdiction Profile 1
Date of Incorporation 1
Location and Description 1
Population 2
Demographics 2
Brief History 2
Climate 2
Public Services 2
Governing Body 3
Development Trends 3
Jurisdiction-Specific Hazards and Risk 3
Hazard Event History 6
National Flood Insurance Program Summary 6
Jurisdiction-Specific Vulnerabilities and Impacts 7
Hazards Not Profiled 25
Jurisdiction-Specific Changes in Vulnerability 25
Additional Public Involvement 34
Plan Integration 35
Capability Assessment 36
Planning and Regulatory Capabilities 36
Administrative and Technical Capabilities 38
Financial Capabilities 39
Education and Outreach Capabilities 40
Opportunities to Expand and/or Improve Capabilities 40
Mitigation Strategy 41

DRAFT

List of Figures

Figure 1: Public Survey Flyer Posted in City Hall Lobby 34
Figure 2: Social Media Posts for the Hazard Mitigation Survey (*left*) and Draft Plan Review (*right*) 34

List of Tables

Table 1: Contact Information for the City of Taylorsville 1
Table 2: Participant List for the City of Taylorsville 1
Table 3: Calculated Priority Risk Index Values for the City of Taylorsville 3
Table 4: Criteria for the Calculated Priority Risk Index 4
Table 5: National Flood Insurance Program Status for the City of Taylorsville 6
Table 6: National Flood Insurance Overview for the City of Taylorsville 7
Table 7: Jurisdiction-Specific Vulnerabilities and Impacts in the City of Taylorsville 7
Table 8: Jurisdiction-Specific Changes in Vulnerability in the City of Taylorsville 26
Table 9: Previous Plan Integration by the City of Taylorsville 35
Table 10: Opportunities for Integration with Future Plans of the City of Taylorsville 35
Table 11: Assessment of the Planning Capabilities of the City of Taylorsville 36
Table 12: Assessment of the Regulations and Ordinances of the City of Taylorsville 37
Table 13: Assessment of the Administrative Capabilities of the City of Taylorsville 38
Table 14: Assessment of the Technical Capabilities of the City of Taylorsville 38
Table 15: Assessment of the Financial Capabilities of the City of Taylorsville 39
Table 16: Assessment of the Education and Outreach Capabilities of the City of Taylorsville 40
Table 17: Opportunities to Expand and/or Improve the Capabilities of the City of Taylorsville 41
Table 18: Mitigation Action Alternatives for the City of Taylorsville 41
Table 19: Status of Prior Mitigation Actions of the City of Taylorsville 41
Table 20: 2025 Mitigation Action Plan for the City of Taylorsville 45

DRAFT

City of Taylorsville Annex

To participate in this multi-jurisdictional hazard mitigation plan (MJHMP) update for Salt Lake County (SLCo), the governing body of the city of Taylorsville passed a formal resolution, a copy of which is maintained at the local government offices.

Planning Process Contact Information

Table 1 provides information on the point of contact during the updating of the MJHMP.

Table 1: Contact Information for the City of Taylorsville

Name	Contact Information
Jay Ziolkowski	**Phone**: 801-824-3670 **email:** jayz@taylorsvilleut.gov

The city of Taylorsville has a fully integrated approach to hazard mitigation planning and program implementation. During the 2024 update process, the MJHMP participation roles in Table 2 were recorded.

Table 2: Participant List for the City of Taylorsville

Name	Title	Jurisdiction
Jay Ziolkowski	Emergency Manager	City of Taylorsville
Ben White	City Engineer	City of Taylorsville
Mark McGrath	Long-Range Planner	City of Taylorsville
John Taylor	City Administrator	City of Taylorsville

Jurisdiction Profile

Date of Incorporation

July 1, 1996

Location and Description

The city of Taylorsville is in the center of the Salt Lake Valley, lying just west of the Jordan River and covering 10.8 square miles. The city is encircled by neighboring jurisdictions including the cities of Kearns, Murray, West Jordan, and West Valley. In the near distance, the city is propped between the Wasatch and Oquirrh Mountain ranges. Much of the land is dedicated to developed residential and commercial use.

DRAFT

Population

The 2022 American Community Survey 5-Year Estimate from the U.S. Census Bureau records the population of the city of Taylorsville as 57,819 people.

Demographics

The median age is 34.4. Among residents, 26.6% speak a language other than English at home, 12.9% are older than 65, and 9.1% live below the poverty level. In Taylorsville, 11.8% of individuals have a disability.[1]

Brief History

The city is named after the prominent Utah figure, John Taylor, who resided there in the 1880s. However, the first settlers arrived in Taylorsville in 1848 and used the close access to the Jordan River to water their crops. The area slowly grew through the 19th century with names of Taylorsville, Bennion, and Kearns. Much of the area was purchased by the federal government for a military training facility during WWII, which brought with it much of the infrastructure including water and sewage. In the 1980s, many businesses began to develop in the area of Taylorsville bringing with them larger numbers of residents. Because of the increase in population, residents became concerned about the high growth rates affecting aspects such as public safety. In 1995, residents in Taylorsville, Bennion, and Kearns voted with a 70% majority to incorporate, a process completed in 1996 during the state of Utah's centennial celebrations, making Taylorsville "Utah's Centennial City."

Climate

The city of Taylorsville has an average annual temperature of 53.1°F and receives 14.7 inches of precipitation.

Public Services

Taylorsville launched the Taylorsville City Police Department in 2021 following a transition period after ending their contract with the Unified Police Department. Taylorsville is served by Unified Fire Authority for fire and EMS services. The city is served by Taylorsville-Bennion Improvement District, Granger Hunger Improvement District, Kearns Improvement District, Dominion Energy and Rocky Mountain power. The city offers many emergency preparedness programs, including a Community Emergency Response Team, amateur radio emergency communications, and CPR classes.

DRAFT

[1] U.S. Census Bureau. "Taylorsville City, Utah." https://data.census.gov/profile/Taylorsville_city,_Utah?g=160XX00US4975360

Governing Body

The city of Taylorsville's governing body consists of a mayor and five elected council members. It also has a Youth City Council.

Development Trends

Recently, a temple of the Church of Jesus Christ of Latter-Day Saints was built in the city. Although most of the city's land has already been developed and/or dedicated to a specific purpose, the community has continued to grow. Over the past quarter-century, the population has grown at a steady rate, albeit much slower than many western cities in the county. Taylorsville is proud to have the head offices of Salt Lake Community College at its Taylorsville Redwood Campus where thousands of students receive their secondary education in many trade and traditional fields. Businesses like American Express, Sorenson Research Park, the Utah Department of Transportation, and Nelson Laboratories are found in the city and provide employment opportunities to many Taylorsville residents and others in the neighboring communities. To that end, the city has rolled out a "20/20 Vision" for the year 2020 and beyond. That vision focuses on new business and economic growth taking place across the city, as well as development opportunities and projects on the horizon. It includes efforts to bring new business and housing to the city and plans for prime development locations, transportation and land use.

Jurisdiction-Specific Hazards and Risk

The Calculated Priority Risk Index (CPRI) is a comprehensive assessment tool for evaluating and prioritizing risks in each context. It considers various factors, such as probability, impact, and urgency, to determine the level of risk associated with events or situations. The results for each hazard, including its risk factor (RF) value, are shown in Table 3. The results are based on the criteria in

Table 4 and the equation that follows it. The CPRI helps organizations and individuals make informed decisions about risk management and mitigation strategies. It provides a systematic approach to identifying and addressing potential issues, allowing for a more efficient allocation of resources and proactive risk prevention. With the CPRI, stakeholders can prioritize their focus on the most critical risks, leading to more effective risk management and, ultimately, better outcomes.

Table 3: Calculated Priority Risk Index Values for the City of Taylorsville

Type of Hazard Event	Probability of Future Events	Spatial Extent	Severity of Life/ Property Impact	Warning Time	Duration	Response Capacity	Risk Factor Value
Avalanche	4	1	2	4	2	1	2.6
Drought	4	4	2	1	4	1	2.8
Earthquake	3	4	4	4	3	2	3.4
Extreme Heat	4	4	3	1	3	1	3
Extreme Cold	3	4	2	1	3	1	2.4

Type of Hazard Event	Probability of Future Events	Spatial Extent	Severity of Life/ Property Impact	Warning Time	Duration	Response Capacity	Risk Factor Value
Flooding	4	3	3	3	3	1	3.1
Landslide/ Slope Failure	2	1	2	4	1	2	2
Radon	4	4	2	1	4	2	2.9
Heavy Rain	4	3	2	3	1	1	2.6
High Wind	4	3	3	3	2	1	3
Lightning	4	2	2	4	1	1	2.6
Severe Winter Weather	4	3	2	2	2	1	2.6
Tornado	2	2	3	4	1	2	2.4
Wildfire	4	3	3	4	3	1	3.2
Dam Failure	2	2	3	2	2	3	2.4
Civil Disturbance	2	1	2	4	2	2	2.1
Cyberattack	2	3	3	4	3	2	2.7
Hazardous Materials Incident (Transporta-tion & Fixed Facility)	3	1	2	4	1	1	2.2
Public Health Epidemic/ Pandemic	3	4	3	1	4	1	2.8
Terrorism	2	1	3	4	2	1	2.3

Table 4: Criteria for the Calculated Priority Risk Index

Risk Index Factor	Degree of Risk Level		Criteria	Factor Weight for Degree of Risk Level
Probability of Future Events	1	Unlikely	Less than 1 percent probability of occurrence in the next year or a recurrence interval of greater than every 100 years.	30%
	2	Occasional	1 to 10 percent probability of occurrence in the next year or a recurrence interval of 11 to 100 years.	
	3	Likely	11 to 90 percent probability of occurrence in the next year or a recurrence interval of 1 to 10 years.	

DRAFT

Risk Index Factor	Degree of Risk Level		Criteria	Factor Weight for Degree of Risk Level
	4	Highly Likely	91 to 100 percent probability of occurrence in the next year or a recurrence interval of less than 1 year.	
Spatial Extent	1	Limited	Less than 10% of the planning area could be impacted.	10%
	2	Small	10%–25% of the planning area could be impacted	
	3	Significant	25%–50% of the planning area could be impacted.	
	4	Extensive	50%–100% of the planning area could be impacted.	
Severity of Life/Property Impact	1	Negligible	Less than 5% of the affected area's critical and non-critical facilities and structures are damaged/ destroyed. Only minor property damage and minimal disruption of life. Temporary shutdown of critical facilities.	30%
	2	Limited	More than 5% and less than 25% percent of property in the affected area is damaged/ destroyed. Complete shutdown of critical facilities for more than one day but less than one week.	
	3	Critical	More than 25% and less than 50% of property in the affected area was damaged/destroyed. Complete shutdown of critical facilities for over a week but less than one month.	
	4	Catastrophic	Over 50% of critical and non-critical facilities and infrastructures in the affected area are damaged/ destroyed. Complete shutdown of critical facilities for more than one month.	
Warning Time	1	Self-defined	More than 24 hours	10%
	2	Self-defined	12 to 24 hours.	
	3	Self-defined	6 to 12 hours.	
	4	Self-defined	Less than 6 hours.	
Duration	1	Brief	Up to 6 hours.	10%
	2	Intermediate	Up to one day.	
	3	Extended	Up to one week.	
	4	Prolonged	More than one week.	
Response Capacity	1	High	Significant resources and capability to respond to this kind of event; staff are trained, experienced, and ready.	10%
	2	Medium	Some resources and capability to respond to this kind of staff; some staff may be trained, experienced, and ready while others may need additional support.	

DRAFT

Risk Index Factor	Degree of Risk Level		Criteria	Factor Weight for Degree of Risk Level
	3	Low	Limited resources and capability to respond to this kind of event; additional staff or staff training needed.	
	4	None	No resources and capability to respond to this kind of event; additional outside support would be required.	

RISK FACTOR (RF) EQUATION

RF Value = [(Probability x 0.30) + (Spatial Extent x 0.10) + (Severity of Life/Property Impact x 0.30) + (Warning Time x 0.10) + (Duration x 0.10) + (Response Capacity x 0.10)]

Hazards with an RF value greater than or equal to 2.5 are considered high risk. Those with RF values of 2.0 to 2.4 are considered moderate risk hazards, and those with an RF value less than 2.0 are considered low risk. The highest possible RF value is 4.

Hazard Event History

Examining hazard event histories provides valuable insights to inform decision-making and help prioritize resources for risk prevention and response efforts. No hazard events have been recorded for the city of Taylorsville since the 2019 plan update, with the exception of the Covid-19 Pandemic in 2020.

National Flood Insurance Program Summary

The city of Taylorsville participates in the National Flood Insurance Program (NFIP). Table 5 displays statistics related to the NFIP. The city of Taylorsville does not participate in the Community Rating System (CRS).

Table 5: National Flood Insurance Program Status for the City of Taylorsville[2]

Initial FHBM Identified	Initial FIRM Identified	Current Effective Map Date	Adopted Date	Date Joined NFIP	Tribal
–	09/21/2001	09/25/2009	2009	10/09/1998	No

[2] FIRM = Flood Insurance Rate Map, FHBM = Flood Hazard Boundary Map

Table 6: National Flood Insurance Overview for the City of Taylorsville

Community ID	Number of Losses	Total Net Payment	Active Policies	Total Coverage
4901248	2	$4,112.10	35	$17,917,000

The city of Taylorsville has designated the City Engineer or designee as the Floodplain Administrator. The current Flood Damage Prevention Regulations were adopted on 1/6/2021. The current effective FIRM is from 9/25/2009. The Building Department oversees permitting, with support from other departments including Engineering. Substantially damaged/substantially improved structures are identified through the permitting process.

Jurisdiction-Specific Vulnerabilities and Impacts

Table 7 provides information on the vulnerable assets in the city of Taylorsville, including its critical facilities, highlighting the city's vulnerability to identified hazards. It also describes the potential impacts to the community arising from those vulnerabilities. Impacts are the consequences or effects of each hazard on the assets. By understanding the risks associated with these assets, local authorities can develop proactive strategies to mitigate vulnerabilities and ensure the safety and functionality of these important assets during hazard events. These data sets are invaluable for decision-making and prioritizing resources for emergency response and preparedness efforts, ultimately contributing to more effective risk management and greater resilience in the community.

Vulnerable assets in Taylorsville include 15 schools, such as the SLCC Redwood Road campus; 2 police stations; 2 fire stations; and 1 emergency operations center (EOC). Major transportation routes include the I-215 West Belt, Bangerter Highway, 5400 South, 4700 South, 3900 S/4100 South, Redwood Road, and 2700 W. Recreation assets in the community include Vista Park/Vista Sports Complex, Millrace Park Fore Lakes Golf Course, Meadowbrook Golf Course, the Jordan River and Jordan River Parkway trail, Southridge Park, and Swenson Valley Regional Park.

Table 7: Jurisdiction-Specific Vulnerabilities and Impacts in the City of Taylorsville

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
Avalanche	People	*Vulnerability:* Very low risk. Avalanche risk is primarily limited to mountains with steep terrain and higher snow accumulation. Taylorsville is located in the valley and does not have terrain or snow accumulations that pose a risk within the city. Individuals vulnerable to avalanches primarily include outdoors enthusiasts like skiers and hikers who may lack proper avalanche knowledge and safety precautions or do not monitor avalanche forecasts.
	Structures	No structures in Taylorsville are in avalanche-prone areas.
	Economic Assets	*Vulnerability:* Minimal economic risk in Taylorsville. *Impacts:* Avalanche in nearby cities that rely on tourism-related businesses, such as ski resorts and outdoor recreation facilities, may cause disruptions, leading to financial losses.

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Natural, Historic, and Cultural Resources	No natural, historic, or cultural resources are in avalanche-prone areas.
	Critical Facilities and Infrastructure	*Vulnerability:* No critical facilities in Taylorsville are vulnerable to avalanches. *Impacts:* Taylorsville residents may experience indirect disruptions if transportation routes near the canyons are closed or damaged by an avalanche.
	Community Activities	*Vulnerability:* Avalanche is unlikely to directly affect activities within Taylorsville. *Impacts:* Activities like skiing, snowboarding, and snowmobiling are vulnerable to avalanches due to heavy snowfall and participants' lack of safety knowledge. Residents may avoid recreation in backcountry areas in other cities or unincorporated county areas due to avalanche conditions.
Drought	People	*Vulnerability:*. All residents are vulnerable due to limited drinking water or water for landscape irrigation. *Impacts:* Drought can limit water supply for drinking, cooking, cleaning and other household use. Drought can lead to decreased water quantity and quality and increased incidence of illness and/or disease. Drought also affects air quality.
	Structures	*Vulnerability:* The growth of structures is restricted by the lack of water for future development and landscaping. *Impacts:* Drought can cause soils to contract which may cause cracks in foundations or walls. Foundations can crack due to drying and contracting soil, leading to potential issues like uneven floors, misaligned doors and windows, and damage to sewer pipes.
	Economic Assets	*Vulnerability:* Businesses face losses as a result of drought conditions. *Impacts:* Prolonged drought may lead to water restrictions or increased costs for culinary water and irrigation water for landscaping.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Trees and parks are vulnerable to drought conditions. *Impacts:* Drought can stress the health of trees and other vegetation.
	Critical Facilities and Infrastructure	*Vulnerability:* Water supply systems, agriculture, and emergency services are susceptible to drought. *Impacts:* Reduced precipitation impacts water availability and crop yields. Fire departments may struggle with wildfire management due to limited resources. Public health facilities face water quality challenges that affect drinking water and sanitation. Health clinics may experience increased strain during droughts due to health complications arising from water scarcity, a decline in water quality and sanitation, as well as heat-related illnesses and the spread of vector-borne diseases.
	Community Activities	*Vulnerability:* Recreation and public events are affected by drought. *Impacts:* Recreational spaces struggle with maintenance, and households may encounter restrictions and costs for landscaping and pools. Parks and golf courses may experience deterioration in the

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		health of vegetation and their aesthetic appeal during drought. Decreased attendance at outdoor events.
Earthquake	People	*Vulnerability:* All Taylorsville residents are vulnerable. Taylorsville can experience earthquakes from the West Valley Fault, which intersects the city, or the Wasatch Fault. *Impacts:* People may be injured or killed by falling objects or collapsed structures. Others may be displaced from their homes. Those living in older buildings not up to seismic standards, families with young children, the elderly, and individuals with disabilities who may struggle to evacuate are vulnerable. Residents near fault lines and those in densely populated areas are also at higher risk. In addition, individuals lacking resources for disaster preparedness, such as emergency supplies and evacuation information, may find it difficult to respond effectively during an earthquake, thus increasing their vulnerability.
	Structures	*Vulnerability:* All structures are vulnerable, including homes, businesses, and government facilities. *Impacts:* Damage to homes and businesses is likely. Taylorsville has moderate to high liquefaction potential in the northeast half of the city which adds to vulnerability of structures in that area. Older buildings not built according to modern seismic codes, unreinforced masonry, and homes with inadequate foundations may be vulnerable. Many lack the retrofitting needed to withstand earthquakes, and those built on unstable soil or near fault lines are at higher risk. Large commercial buildings without flexible designs can sustain severe damage. Overall, outdated construction practices and poor site selection contribute to this vulnerability.
	Economic Assets	*Vulnerability:* Commerce *Impacts:* Commerce may shut down temporarily and some businesses may close permanently. The local economy, reliant on retail and services, could face significant disruptions during seismic events. In addition, certain soil types can amplify ground shaking, increasing the risk of damage to these assets. Many businesses located on Redwood Road, such as between I-215 and 5400 South are in areas of moderate to high liquefaction potential and may have higher vulnerability to damage.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Historic structures and landmarks often lack modern seismic retrofitting, making them susceptible to damage. Cultural resources, including community centers, may also be at risk due to their architectural styles and inadequate building codes, compromising their integrity and the heritage they represent.
	Critical Facilities and Infrastructure	*Vulnerability:* Schools, health clinics, and emergency services buildings are vulnerable to earthquakes, particularly those that are older with lower construction standards. Transportation/major roads, water supply systems, communication systems, and power distribution are vulnerable. *Impacts:* Widespread outages of these community lifelines are likely. Disruptions to power, water, and communication can delay response and recovery efforts. Transportation routes including major roads, bridges and overpasses may be damaged. Impassable roads disrupt the delivery of goods and materials and inhibit emergency response.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		The absence of retrofitting in older structures increases these vulnerabilities.
	Community Activities	*Vulnerability:* Public gatherings, school events, and large festivals are vulnerable to earthquakes. *Impacts:* Many day-to-day activities may be canceled following a strong earthquake. Recovery efforts may disrupt education, recreation, business, government services, and social activities for an extended period. Canceled public events and social activities affect community engagement.
Extreme Heat	People	*Vulnerability:* Extreme heat can affect the whole city. All Taylorsville residents are vulnerable. *Impacts:* Extreme heat can lead to heat-related illness such as dehydration, heat exhaustion, and heat stroke. Certain individuals are more vulnerable to the effects of extreme heat, including adults over 65, individuals with pre-existing health conditions, and young children, as they struggle to regulate body temperature. Socioeconomically disadvantaged individuals may lack access to cooling resources, while outdoor workers are at higher risk of heat-related illnesses due to physical labor without adequate hydration and rest.
	Structures	*Vulnerability:* Extreme heat can be detrimental to homes, businesses, industry, and city-owned buildings. *Impacts:* Residential buildings with inadequate insulation and ventilation and commercial buildings lacking reflective roofing and proper shading may be vulnerable. Materials like metal and glass can amplify heat retention, while areas with limited green space typically experience higher temperatures.
	Economic Assets	*Vulnerability:* Businesses are vulnerable to losses due to extreme heat. *Impacts:* Construction or other outdoor occupations may lose productivity during extreme heat. Businesses may struggle to absorb the increased energy costs for air conditioning. Agricultural operations can have reduced yields and higher water demand due to heat stress. The outdoor recreation industry may see decreased participation during heat waves, affecting local businesses that rely on visitors. In addition, the energy infrastructure could face strain from increased cooling demands, leading to outages.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Parks and recreation areas are vulnerable to the effects of extreme heat. *Impacts:* Local plant species and wildlife habitats can suffer from drought conditions, leading to reduced biodiversity. Historic buildings may degrade due to high temperatures, causing materials to deteriorate and paint to peel. In addition, parks and recreational areas may see a decline in appeal if vegetation is stressed by heat.
	Critical Facilities and Infrastructure	*Vulnerability:* Health clinics, city facilities, and transportation systems are vulnerable to damage from extreme heat. *Impacts:* Healthcare facilities may experience increased demand due to heat-related medical issues. Residents may depend on city facilities as cooling stations. Transportation systems are at risk of damage, such as buckling roads which could cause significant disruptions on I-

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		215 or other major roads. Power grids may be strained by higher demands for electricity for cooling, leading to potential outages. Power outages could disrupt services at all other critical facilities, including fire and police stations.
	Community Activities	*Vulnerability:* Public events are vulnerable to extreme heat. *Impacts:* Activities like outdoor sports, fairs, and agricultural practices are vulnerable to extreme heat. These events can pose health risks, particularly for participants such as youth athletes and elderly residents who may suffer from heat-related illnesses. Extreme heat may affect the turnout or ability of staff to work at the city's local events such as Taylorsville Dayzz.
Extreme Cold	People	*Vulnerability:* Extreme cold can occur everywhere in the city, making all Taylorsville residents vulnerable. *Impacts:* Extreme cold can lead to severe health impacts, including frostbite and hypothermia. The elderly face increased risks due to health issues and mobility challenges, while children may be susceptible if they lack proper winter clothing. Individuals experiencing homelessness or financial hardship often lack access to heated shelters and resources for protection against the cold. Those with pre-existing health conditions may experience worsened symptoms at low temperatures. Low-income residents may struggle with increased heating costs for homes.
	Structures	*Vulnerability:* Residential homes and commercial buildings are vulnerable to extreme cold. *Impacts:* Homes with poor insulation or inadequately sealed windows and doors are prone to significant heat loss. Older buildings lacking modern energy efficiency standards may also suffer from freezing pipes and structural damage. Commercial and industrial buildings used for storage or manufacturing that are not properly insulated can be at risk, especially if they are not occupied regularly and the heating is inconsistent.
	Economic Assets	*Vulnerability:* All businesses are vulnerable to extreme cold *Impacts:* Increased heating costs affect all businesses. Agricultural operations, such as greenhouses and livestock farms, may experience crop and livestock losses, impacting revenue. Icy roads can disrupt transportation networks, affecting logistics and supply chains. Power lines are at risk of outages from ice accumulation, impacting operations for all local businesses. Energy-intensive facilities may face higher operational costs due to increased heating needs. Retail and hospitality businesses may have reduced traffic. Cold weather can halt construction or manufacturing projects.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Trees, vegetation, and parks are vulnerable to extreme cold. *Impacts:* Due to prolonged cold, local vegetation and wildlife habitats may suffer from plant stress and reduced food availability. Culturally significant sites, including monuments and public art, may also be damaged.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Critical Facilities and Infrastructure	*Vulnerability:* Critical facilities, transportation networks, and power systems are vulnerable to extreme cold. *Impacts:* Water treatment plants can face frozen pipes and equipment failures. Icy conditions may increase accident risks on transportation infrastructure. Accidents or delays can occur on primary routes such as I-215, Bangerter Highway, and Redwood Road. Power generation facilities may struggle to meet heating demands. Ice accumulation during extreme cold may damage power lines and lead to outages. Operations of fire and police stations or healthcare clinics could be disrupted by power failures or water line breaks. Access to essential services could be disrupted. Residential and commercial buildings lacking proper insulation are also at risk of heating system failures, endangering occupants.
	Community Activities	*Vulnerability:* Public events are vulnerable to extreme cold. *Impacts:* Schools and offices may delay opening or remain closed. Youth sports, festivals, and outdoor markets are vulnerable to extreme cold. Harsh temperatures can deter participation, impacting community engagement. At-risk groups, such as the elderly and young children, face health risks like frostbite and hypothermia, further limiting outdoor involvement.
Flooding (and Heavy Rain)	People	*Vulnerability:* Residents near the Jordan River are in Special Flood Hazard Zones. *Impacts:* Flooding primarily affects residents near the Jordan River but can also occur in other low-lying areas, especially during heavy rainfall or snowmelt. Individuals without reliable transportation may struggle to evacuate quickly, while low-income families often lack resources for flood-prevention measures. The elderly and those with disabilities may face mobility challenges, increasing their risk during emergencies. Overall, factors such as geographic location, economic status, and physical ability contribute to the community's varying levels of vulnerability to flooding.
	Structures	*Vulnerability:* Structures vulnerable to flooding primarily include those in low-lying areas or near the Jordan River, primarily residences. *Impacts:* Residential properties in flood plains and commercial buildings without proper drainage systems or flood-resistant designs face significant risks during heavy rain or snowmelt. Older structures may be more susceptible due to outdated construction standards. Overall, a combination of location and construction features contributes to their vulnerability to flooding.
	Economic Assets	*Vulnerability:* Businesses near flood-prone areas are vulnerable to flooding. *Impacts:* Commercial properties, especially retail centers and warehouses near rivers or low-lying areas, are at high risk during heavy rainfall. Structures and inventory can be damaged by flooding, causing lost revenue. Residential developments in flood-prone zones also can suffer damage, impacting property values. Public infrastructure, such as roads and utilities, may experience disruptions, leading to costly repairs. Agricultural land can be affected by excess water, reducing crop yields.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Natural, Historic, and Cultural Resources	*Vulnerability:* The Jordan River open space and parks are vulnerable to flooding *Impacts:* Natural areas like wetlands, rivers, and streams are at risk of habitat destruction. Cultural resources, such as parks and public spaces, can become unusable, affecting community events. Factors contributing to their vulnerability include inadequate flood management, urban development that alters water flow, and the increasing frequency of extreme weather events due to climate change.
	Critical Facilities and Infrastructure	*Vulnerability:* No critical facilities were identified within SFHAs. However, transportation and utility networks are vulnerable to flooding. *Impacts:* Flooding could affect major transportation routes, including major roads that cross the Jordan River such as 4100 South, 4500 South, and 5400 South. Damaged or blocked roads can disrupt emergency response, and isolate communities. In addition, inadequate drainage systems and urban development encroaching on floodplains increase these risks.
	Community Activities	*Vulnerability:* Public events and recreation activities are vulnerable to flooding *Impacts:* Due to the area's geography and infrastructure, outdoor events, sports, and farmers' markets are vulnerable to flooding. Parks and open spaces can quickly become inundated during heavy rainfall or rapid snowmelt. Residential neighborhoods near rivers, roads, and bridges are at risk of flash floods, which can disrupt transportation and emergency services.
Landslide/ Slope Failure	People	*Vulnerability:* There is minimal risk of landslides to Taylorsville residents. *Impacts:* Landslides are primarily a risk near steep or unstable slopes. The topography in Taylorsville is relatively flat, and landslide risk to people and structures is minimal. Residents who commute to neighboring cities could potentially be affected if transportation routes closer to the mountains are blocked by landslides. Small localized slope failure may occur in areas with human-made slopes such as along freeway over and underpasses or other development, or due to erosion along stream banks. The landslide susceptibility map in Volume 1 shows some small areas of risk along the Jordan River. Residents on steep slopes or near unstable geological formations are most vulnerable to landslides and slope failures. Their risk is heightened by inadequate drainage systems, loose soil conditions due to heavy rainfall or rapid snowmelt, and older structures not designed for such events. A lack of awareness about the signs of impending landslides, along with limited resources for hazard monitoring and emergency preparedness, further increases their susceptibility.
	Structures	*Vulnerability:* There is minimal risk to structures in Taylorsville from landslides. *Impacts:* There are relatively few steep slopes within the city. Heavy rainfall, ground shaking from an earthquake, or loose soil may contribute to small, localized slope failures near the Jordan River.
	Economic Assets	There is minimal economic risk in Taylorsville from landslides.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Natural, Historic, and Cultural Resources	There is minimal vulnerability of natural, historic, and cultural resources in Taylorsville from landslides.
	Critical Facilities and Infrastructure	*Vulnerability:* There is minimal risk to critical facilities and infrastructure in Taylorsville from landslides. *Impacts:* Heavy rain, earthquakes, or destabilization of slopes during development may contribute to slope failures. Although unlikely to happen in Taylorsville, landslides in neighboring jurisdictions may have indirect impacts. Roadways, and essential services like water supply and power lines may be at risk.
	Community Activities	There is minimal risk to community activities in Taylorsville from landslides.
Radon	People	*Vulnerability:* Forty-one percent of homes tested in Taylorsville have showed dangerous levels of radon. *Impacts:* Residents in homes with high levels of radon have high risk of lung cancer. Homeowners in older buildings in areas with high radon potential are most at risk. Families with young children or elderly members are especially at risk due to their increased sensitivity to health impacts.
	Structures	*Vulnerability:* Radon poses minimal impacts to structures; it is primarily a health risk. *Impacts:* Although radon doesn't directly impact structures, the condition of structures contributes to radon levels that pose a risk to occupants. Structures with concrete slabs or basements are particularly vulnerable to radon exposure, as radon can seep in from the soil. Homes in areas with high uranium content are at greater risk, especially in older houses with inadequate ventilation. Cracks in floors and walls can allow radon to enter.
	Economic Assets	*Vulnerability:* Home values are vulnerable to radon exposure. *Impacts:* Residential and commercial properties in South Salt Lake may experience lower market value and increased maintenance costs due to radon remediation needs. Radon presence can lead to health issues, decrease property values, and complicate real estate transactions, impacting homeowners and investors alike.
	Natural, Historic, and Cultural Resources	There is minimal vulnerability to these resources in Taylorsville.
	Critical Facilities and Infrastructure	*Vulnerability:* Public buildings are vulnerable to radon exposure. *Impacts:* Schools in high-radon areas pose risks for children if they do not have proper ventilation. Healthcare facilities also are at risk, affecting both patients and staff. Other city buildings such as fire and police stations may have leaks in foundations that may expose employees to radon.
	Community Activities	*Vulnerability:* There is limited vulnerability to public events from radon exposure.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		Impacts: Radon is a long-term exposure risk and hasn't typically affected day-to-day activities.
High Wind	People	*Vulnerability:* The entire population in Taylorsville is vulnerable to high wind. Wind events occur over a large area and can impact the whole city as well as neighboring jurisdictions. *Impacts:* High wind can cause injuries if people are struck by blowing debris or falling tree limbs. The elderly may face mobility challenges that hinder their ability to seek shelter, while children might not fully grasp the dangers of severe weather. Individuals with disabilities or health issues may struggle to react quickly. Those living in mobile homes or poorly constructed houses are at greater risk of damage, as are people who work outdoors and may be exposed during sudden wind events.
	Structures	*Vulnerability:* All structures in Taylorsville are vulnerable to high wind, including two mobile home parks. *Impacts:* High winds may down trees, damage roofs, and break windows. Structures can also be damaged by trees uprooted by high wind. Carports, sheds, fences, and accessory structures are easily damaged by high winds and can contribute to blowing debris. Taylorsville has two large mobile home parks that are at high risk due to their inability to withstand strong high winds. Single-story homes, commercial buildings, and agricultural facilities like barns may be at risk. Residential homes with large flat roofs or lightweight materials may struggle to withstand strong winds, while commercial buildings with extensive glass can suffer from breakage and structural damage. Agricultural structures often lack proper reinforcement, making them prone to collapse. The vulnerability of these buildings is heightened in open areas with no landscaping or natural windbreaks, which can help diffuse wind energy.
	Economic Assets	*Vulnerability:* Businesses are vulnerable to disruption from high winds. *Impacts:* Commercial buildings, such as retail stores, might have large signage and awnings that can be damaged, leading to business interruptions. Businesses may not be able to conduct normal operations if power is out or roads are blocked by debris. Agricultural assets such as greenhouses and livestock facilities face risks from wind destruction, impacting crops and animals. The vulnerability of these assets is largely due to construction quality, location, and the presence of loose materials that can become projectiles.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Trees, open spaces, and parks are vulnerable to high winds *Impacts:* Natural resources like mature trees and agricultural lands are vulnerable to high winds, which can cause uprooting and wind erosion. Historic structures also may be at risk if their materials are not resilient, potentially leading to damage or collapse. Cultural resources, such as outdoor art installations and community spaces, can be disrupted or damaged by strong winds.
	Critical Facilities and Infrastructure	*Vulnerability:* Power distribution systems, communication, and transportation infrastructure are vulnerable to high winds. *Impacts:* Utility infrastructure, such as power lines and communications towers, is at risk, potentially leading to outages.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		Bridges and overpasses may be compromised, and falling branches from nearby trees can block access routes. This vulnerability stems from design limitations and the materials used.
	Community Activities	*Vulnerability:* Public events, sports, recreation, and Taylorsville Dayzz are vulnerable to high winds. *Impacts:* Outdoor events like festivals and sporting activities may result in injuries to patrons from falling debris and damaged structures. Farmers' markets and open-air concerts also can face challenges, with tents being uprooted. In addition, recreational activities in parks—such as picnics and playground use—become unsafe during high winds. The vulnerability of these activities stems from their outdoor settings, where structures and unattached items can easily be compromised, leading to safety risks and disruptions. Events may be delayed or canceled.
Lightning	People	*Vulnerability:* Lightning can occur anywhere in South Salt Lake, and all populations are vulnerable. People engaged in outdoor recreation are at increased risk. Unhoused populations are also at risk. *Impacts:* Lightning can cause severe injury or death. Outdoor enthusiasts like athletes and golfers are at risk due to their exposure in open areas during thunderstorms. Athletes participating in outdoor sports may also struggle to find shelter quickly. In addition, young children and the elderly are more vulnerable, as they may not be aware of the dangers of lightning or may be slower to seek protection. Those lacking access to warning systems or education on lightning safety are at further risk during severe weather.
	Structures	*Vulnerability:* All structures are vulnerable to lightning. *Impacts:* Lightning can ignite fires or cause electrical damage from power surges. Due to their height and exposure, tall buildings, communications towers, and open-frame agricultural barns are particularly vulnerable to lightning strikes. Those with metallic components or inadequate grounding systems face increased risk because metal conducts electricity. In addition, residential homes near tall trees may be at risk if the trees are struck and energy is transferred to the structure.
	Economic Assets	*Vulnerability:* Businesses are vulnerable to disruption from lightning events. *Impacts:* Local businesses may suffer if there is a prolonged power outage or lightning event. Cascading impacts may occur if lightning is coupled with heavy rain or high winds. Commercial buildings with metal roofing or equipment may face electrical surges, disrupting operations.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Mature trees and parks are vulnerable to lightning strikes. *Impacts:* Trees can attract lightning due to their height. Cultural resources, such as monuments and outdoor sculptures, also can be damaged by lightning. Outdoor equipment at parks may be damaged. The risk increases in areas with frequent thunderstorms and dry conditions.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Critical Facilities and Infrastructure	*Vulnerability:* Power networks, communication networks, emergency response, and healthcare facilities are vulnerable to lightning strikes. Impacts. Communications towers, schools, hospitals, and power lines may be at risk. Communications towers attract lightning due to their height and metal structure. Power networks may be impacted by lightning and critical facilities could be disrupted if they lack power. Essential services could be disrupted if there are road closures or debris on the road from the lightning. Additionally, it may be difficult to help patients if there are downed power lines or power disruptions.
	Community Activities	*Vulnerability:* Public events are vulnerable to lightning strikes. *Impacts:* Outdoor recreational areas that attract crowds are at risk during thunderstorms, posing dangers to infrastructure and public safety. Events may be delayed or canceled. Sports practices, concerts, picnics, and festivals are particularly vulnerable to lightning strikes. Participants in these events often find themselves in open areas without adequate shelter and may be unprepared for sudden weather changes, leading to dangerous situations.
Severe Winter Weather	People	*Vulnerability:* Severe winter weather can affect the entire city. All Taylorsville residents are vulnerable. The elderly, young, disabled, and unhoused populations are particularly vulnerable. *Impacts:* Heavy snow, blizzards, and snow squalls happen frequently in the winter months. Snowy or icy conditions can lead to injuries from slips and falls. Unhoused populations may experience hypothermia. Elderly individuals may struggle with mobility. They may also experience cardiac problems from shoveling heavy snow. People with disabilities may depend on assistance that can be delayed or unavailable during storms. Those without reliable transportation could become stranded. People driving on snowy roads can be injured in car accidents in slick conditions.
	Structures	*Vulnerability:* There is moderate vulnerability to homes and businesses from severe winter weather. *Impacts:* Homes and other structures could be affected by heavy snow/blizzard, especially roofs. Flat-roofed buildings are prone to snow accumulation, risking roof collapse if not cleared. Older homes might have weakened roofs or inadequate insulation, making them susceptible to snow loads and ice dams. Commercial buildings with large open spaces may face risks if their roofs do not meet snow load requirements.
	Economic Assets	*Vulnerability:* Businesses are vulnerable to disruptions from severe winter weather. *Impacts:* Retail businesses can experience significant losses from decreased customer traffic and delayed shipments. Construction projects may face delays and increased costs. Transportation and logistics companies are particularly impacted, as snow can hinder vehicle movement, leading to delivery delays. In addition, public services may struggle to maintain continuity during severe weather events.
	Natural, Historic, and	*Vulnerability:* Trees and parks are vulnerable to severe winter weather.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Cultural Resources	*Impacts:* Local vegetation can be impacted by heavy snow or a blizzard. Trees and branches can break under heavy snow.
	Critical Facilities and Infrastructure	*Vulnerability:* Power systems and transportation networks are vulnerable to severe winter weather. *Impacts:* Power may be interrupted in heavy snow or blizzard conditions. Power outages can disrupt government operations, healthcare facilities, and emergency response. Communications infrastructure can be damaged, impeding signals. Transportation networks like roads and bridges can become delayed or impassable in heavy snow, blizzard, or snow squall conditions, hindering emergency responses. There may be an increased demand for response and medical care if there are a lot of traffic accidents. These vulnerabilities stem from reliance on systems that may not be equipped to handle extreme winter weather.
	Community Activities	*Vulnerability:* Public events are vulnerable to severe winter weather. *Impacts:* Outdoor community gatherings may be at risk. Severe weather can lead to low attendance. If transportation is affected, there could be temporary disruptions to daily activities.
Tornado	People	*Vulnerability:* Any member of the Taylorsville population could be affected by a tornado. Residents in mobile home parks are particularly vulnerable. Tornadoes are rare but could potentially occur anywhere in the city. *Impacts:* Residents are vulnerable to serious injury from blowing debris, uprooted trees or falling limbs, and structural collapse. Individuals living in mobile homes face higher risks, as these structures can be easily damaged. Those with limited mobility, such as the elderly and people with disabilities, may struggle to reach safety quickly. Families with young children might have difficulty ensuring everyone's safety during a warning. In addition, residents unfamiliar with tornado preparedness or without timely weather alerts are at greater risk. Those in lower socioeconomic conditions often live in areas less equipped for disaster response.
	Structures	*Vulnerability:* Any structure near or on the path of a tornado is vulnerable, and this could occur anywhere in Taylorsville; all buildings are vulnerable. Mobile homes are particularly vulnerable. *Impacts:* Homes and businesses could sustain heavy damage from a tornado, including roofs torn from homes, broken windows, and walls damaged or compromised. Mobile homes are particularly at risk due to their lightweight and insecure foundations. Older commercial buildings that do not meet modern codes also may be weak, and large-span structures such as warehouses can have roofs easily lifted by tornado winds.
	Economic Assets	*Vulnerability:* Businesses are vulnerable to interruption from a tornado. *Impacts:* Any business in the path of the tornado is vulnerable. Tornadoes can damage retail and commercial structures, warehouses, hotels, restaurants and other businesses. Damage to power or communication systems can cause temporary business closures. Operational downtime and damage to structures and inventory may lead to lost revenue and potentially lost wages or layoffs. Roads and

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		bridges may be blocked, which may disrupt access to businesses or interrupt supply chains.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Parks and open spaces are vulnerable to tornado damage. *Impacts:* Cultural resources, including monuments and parks that are vital to community heritage, may be at risk. Taylorsville's parks and open spaces could be severely damaged by a tornado.
	Critical Facilities and Infrastructure	*Vulnerability:* Fire and police stations, city facilities, healthcare clinics, and utility systems are vulnerable to a tornado event. Any above-ground facility in the path of a tornado could be affected. *Impacts:* Public safety buildings, schools or other civic facilities may need emergency inspections or repairs and may be closed temporarily. Utilities like communication towers or power stations are at risk. Disrupting these services might affect operation of other critical facilities. Debris or other damage to roads can delay emergency response.
	Community Activities	*Vulnerability:* Public events are vulnerable to a tornado event. *Impacts:* Outdoor festivals, sports events, and markets are vulnerable to tornadoes due to their open spaces and limited options to provide shelter. Events may be delayed or canceled, reducing opportunities for social engagement. Temporary structures, such as tents, can be easily damaged by high winds. Recreational facilities with large glass windows or weak roofs also face significant risks.
Wildfire	People	*Vulnerability:* There is limited wildfire risk in Taylorsville, but fire may be possible in undeveloped land near Jordan River, impacting air quality. *Impacts:* The entire valley could experience poor air quality and related health impacts from a wildfire in the region. Children, the elderly, and those with respiratory health problems are at higher risk for complications from poor air quality.
	Structures	*Vulnerability:* The risk to structures from wildfire in Taylorsville is low. *Impacts:* A few structures near undeveloped areas along the Jordan River could potentially be damaged by a wildfire.
	Economic Assets	*Vulnerability:* Businesses, particularly those involved in outdoor recreation, may face interruption due to wildfires. *Impacts:* Golf courses and local parks would be impacted by a wildfire or poor air quality.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Local vegetation and wildlife are vulnerable to impacts from wildfire. *Impacts:* Riparian vegetation and wildlife along the Jordan River could be affected.
	Critical Facilities and Infrastructure	*Vulnerability:* Power could be disrupted by a wildfire. *Impacts:* No critical facilities were identified in areas at risk of wildfire. Fires elsewhere in the county could potentially cause utility disruptions or outages. Emergency response, healthcare, and other city services could be disrupted by a power outage.
	Community Activities	*Vulnerability:* Public events are vulnerable to disruptions from wildfires.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		Impacts: Recreational activities and outdoor events like festivals and sports, especially during hot, windy conditions may experience increased risk. Outdoor events may be canceled due to wildfire smoke. In addition, landscaping with dry grasses and shrubs increases susceptibility during fire season, putting local infrastructure, such as schools and neighborhoods, at risk.
Dam Failure	People	*Vulnerability*: Very little area in Taylorsville has been identified within a dam failure inundation boundary. Inundation areas from the east side of the valley end near the Jordan River at the city's eastern border. Two significant hazard dams just south of Taylorsville may pose a risk, but inundation areas have not been mapped. Individuals living near dams, particularly in low-lying areas, are most vulnerable to dam failure and potential flooding. *Impacts*: Residents may be displaced if homes are damaged. Families with young children, the elderly, and low-income residents may struggle to evacuate quickly, while individuals with disabilities may face significant barriers during emergencies.
	Structures	*Vulnerability*: Residential homes in low-lying areas, bridges, and roadways near rivers may be vulnerable. Vulnerabilities arise from outdated dam infrastructure, insufficient spillway capacity, and a lack of warning systems, which can worsen the impact of dam failure and threaten lives and property. *Impacts:* Homes and businesses downstream face damage from rapid flooding.
	Economic Assets	*Vulnerability:* No businesses within Taylorsville are in mapped dam failure inundation boundaries, but businesses may experience indirect losses. *Impacts:* Roads, bridges, and utilities could suffer catastrophic damage from dam failure, disrupting transport and services. These outages could interrupt businesses' day-to-day activities and may result in losses.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Waterways, habitats, and historical and cultural sites are vulnerable to dam failure. *Impacts:* Natural resources like local waterways and wetlands could suffer habitat loss, while historically significant sites, including old irrigation systems, risk flooding and deterioration. Cultural resources, such as community centers and parks, also may face damage, affecting local gatherings.
	Critical Facilities and Infrastructure	*Vulnerability:* Although no critical facilities in Taylorsville were identified within dam failure inundation boundaries, the city may be affected by damage to infrastructure outside of Taylorsville. *Impacts:* Water treatment plants, power infrastructure, and hospitals may be vulnerable. Water treatment plants rely on a consistent water supply, and dam failure can disrupt operations and compromise public health. Power substations or distribution lines could be damaged and disrupt service to the city. Hospitals face safety risks and evacuation challenges. Transportation infrastructure, such as roads and bridges, may be compromised, hampering emergency response.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Community Activities	*Vulnerability:* Recreational activities and community events are vulnerable to the impacts of dam failure. *Impacts:* Recreational pursuits like fishing, boating, and swimming in reservoirs and events in parks located downstream may be at risk. These activities are vulnerable to sudden flooding from a dam breach. Recreation areas may be closed and events canceled.
Civil Disturbance	People	Low-income individuals may lack the resources for safety, while the elderly or disabled may struggle to navigate emergencies. Young people, particularly teenagers, may be drawn into unrest, influenced by social dynamics. In addition, marginalized individuals may feel targeted or compelled to participate. A lack of community cohesion and trust in authorities can further heighten tensions.
	Structures	Government buildings, commercial properties, and infrastructure, such as bridges and transportation hubs may be vulnerable. Government buildings may be targeted for their symbolic authority, while retail stores can attract crowds during protests. Residential neighborhoods also can be affected, especially in areas with heightened tensions. The vulnerability of these structures stems from their visibility and importance to the community, combined with factors such as location and ongoing social issues.
	Economic Assets	Retail establishments, especially shopping centers, are at risk as they often become focal points for protests. Transportation systems can be disrupted by blockades, hindering access to services. Financial institutions may face vandalism or theft, while critical service providers, such as hospitals, could experience strain during unrest. Several economic assets are vulnerable to civil disturbances, primarily due to their visibility and reliance on foot traffic.
	Natural, Historic, and Cultural Resources	Parks and open spaces may suffer from vandalism or destruction during uncontrolled events. Historic sites can become targets, as they symbolize authority or cultural significance. Cultural resources such as community centers and places of worship, also may be affected, as they play a vital role in community identity. Their vulnerability lies in the potential for damage during protests.
	Critical Facilities and Infrastructure	Governmental buildings, schools, and healthcare facilities may be at risk, since they often symbolize authority and serve as community hubs, making them targets during unrest. Utility infrastructure, such as water and power facilities, is also at risk of disruption. Its visibility and essential services contribute to its vulnerability during civil disturbances.
	Community Activities	Public demonstrations, parades, and local government meetings are particularly vulnerable to civil disturbances. These events often attract large crowds and can become tense, especially around contentious social or political issues. Factors such as the local demographic, economic conditions, and recent events can heighten these vulnerabilities, making it easier for conflicts to arise during passionate public gatherings.
Cyberattack	People	Older adults often lack familiarity with technology and online security, making them easy targets for phishing scams. Individuals engaging in online banking or shopping without strong security measures also face heightened risks. Families with children may be less vigilant about

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		internet safety, allowing cybercriminals to exploit personal information. In addition, small business owners without robust cybersecurity practices are prime targets for attacks that can disrupt operations.
	Structures	Critical infrastructure, such as power plants, water treatment facilities, and transportation systems, often lack robust cybersecurity measures. Commercial businesses, especially financial institutions and healthcare providers, also are at risk due to weaker data protection and employee training. Educational institutions may be vulnerable because of limited funding for cybersecurity and outdated software. Obsolete technology and insufficient training enhance the susceptibility of these structures to cyber threats.
	Economic Assets	Financial institutions, such as banks and credit unions, are at risk of data theft and service disruption. Small and medium-sized businesses often lack robust cybersecurity measures, making them attractive targets. In addition, local government agencies and critical infrastructure, such as water treatment facilities, might have outdated security protocols, posing threats to public safety. The rise of remote work further exacerbates vulnerabilities, as employees accessing networks from home can unintentionally expose systems to risks. Overall, the combination of outdated technology and insufficient cybersecurity practices increases the vulnerability of an area's economic assets.
	Natural, Historic, and Cultural Resources	Natural resources like water management systems and wildlife databases can be compromised, disrupting ecosystems. Historic sites and museums that digitize collections are at risk of losing valuable artifacts and data. In addition, cultural organizations managing events may face threats if their systems lack adequate security. The limited resources of smaller organizations further increase this vulnerability
	Critical Facilities and Infrastructure	Energy and utility services, such as electricity and water systems, which often rely on outdated technology, may be vulnerable. Transportation infrastructure, such as traffic management and public transit, is also at risk due to networked systems. Healthcare facilities that use electronic records and connected medical devices face vulnerabilities that can compromise patient safety.
	Community Activities	Online registration for events, local government services, and educational programs that rely on digital tools may be targeted due to inadequate security measures, outdated software, and insufficient staff training.
Hazardous Materials Incident (Transporta-tion & Fixed Facility)	People	Individuals with pre-existing health conditions, such as respiratory issues, and the elderly are at higher risk due to their compromised health. Children also are more susceptible. Those living near industrial areas or transport routes for hazardous materials face increased exposure risk, while low-income families may lack resources and information to effectively prepare for incidents.
	Structures	Industrial facilities, such as manufacturing plants and warehouses, often store hazardous chemicals which may leak. Residential buildings, schools, and hospitals also are at risk, particularly if located along transportation routes for hazardous materials. Older buildings may lack modern safety features, increasing their vulnerability.

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Economic Assets	Industrial facilities, transportation infrastructure, and nearby commercial properties may be affected. Industrial facilities handling chemicals are at risk of spills or leaks, while roads and railways used for transporting hazardous materials can lead to accidents and contamination. In addition, nearby commercial and residential areas face potential health risks and economic losses.
	Natural, Historic, and Cultural Resources	Waterways and habitats are vulnerable to hazardous materials incidents, which can disrupt ecosystems. Historic sites and structures may suffer damage from toxic exposure, leading to degradation over time. In addition, cultural landmarks risk losing their significance due to contamination events. The proximity of these resources to industrial areas or transport routes exacerbates their risk.
	Critical Facilities and Infrastructure	Chemical manufacturing plants, waste treatment facilities, and transportation networks, such as highways and railroads may be at risk. Their vulnerability stems from factors such as proximity to residential areas, aging infrastructure, and inadequate safety measures. Natural hazards, such as flooding and earthquakes, can further increase risks by damaging containment systems.
	Community Activities	Local markets, school events, and outdoor gatherings are vulnerable to hazardous materials incidents if they are near industrial zones and transport corridors. This risk is heightened by inadequate emergency preparedness, lack of public awareness, and the potential for spills during transport. Large crowds at events can complicate evacuation efforts, increasing the risks for participants and nearby residents.
Public Health Epidemic/ Pandemic	People	Individuals with pre-existing health conditions like asthma and heart disease and adults over 65 may be vulnerable. Low-income families may struggle to access healthcare and vaccinations, increasing their risk. Marginalized communities with limited access to information and those living in high-density conditions also are at greater risk due to the rapid spread of diseases and the challenges in implementing preventive measures.
	Structures	Several structures are vulnerable to public health epidemics or pandemics, particularly due to their ability to facilitate the spread of disease. High-density residential areas, such as apartment complexes, are at risk, as close living quarters can lead to faster transmission. Public gathering spaces, such as schools and community centers, also pose significant threats because large groups are in confined spaces. Healthcare facilities can become hotspots for infections if infection control measures are insufficient. In addition, workplaces with high foot traffic, such as retail stores, contribute to vulnerability.
	Economic Assets	Small businesses in retail, hospitality, and food service are particularly vulnerable to public health epidemics or pandemics. These sectors face risks from fluctuating consumer demand and potential operational restrictions. The tourism industry also is affected, as travelers may avoid high-risk areas. Healthcare facilities can become overwhelmed, straining resources and impacting operations. In addition, local supply chains may experience disruptions, leading to shortages and inflation. Overall, the direct effects of illness, along with prolonged shutdowns and consumer hesitance, leave these economic assets exposed to significant downturns.

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Natural, Historic, and Cultural Resources	Natural resources like wildlife and ecosystems can be disrupted by increased human activity, raising the risk of zoonotic diseases. Historic sites may deteriorate due to reduced visitor access and funding, while cultural resources, such as community events, face cancelations, impacting social connections.
	Critical Facilities and Infrastructure	Public health epidemic or pandemic incidents can affect healthcare facilities, nursing homes, public transportation systems, schools, and food supply chains. Hospitals and clinics may become overwhelmed with patients, while vulnerable populations in nursing homes are at higher risk. Public transportation can facilitate the spread of disease, and schools gather large groups, thereby increasing transmission potential. These facilities often lack adequate resources, including medical supplies and testing capabilities, making them more susceptible to the impacts of a health crisis.
	Community Activities	Large gatherings like festivals and sporting events can facilitate the rapid spread of diseases due to close contact. Public transportation also is at risk, as it serves many people in confined spaces. Schools and childcare facilities are particularly susceptible, given that children can easily transmit infections. In addition, food-related events, such as farmers' markets, can pose risks if hygiene practices are not followed. The interconnectedness of community members and varying adherence to health guidelines further exacerbate these vulnerabilities.
Terrorism	People	Young children and newcomers may lack awareness of potential threats, while the elderly and individuals with disabilities may struggle to respond quickly in emergencies. Marginalized communities often face bias, making them more susceptible to targeting. In addition, those with lower socioeconomic status may lack access to security measures and emergency preparedness resources.
	Structures	Government buildings, transportation hubs, commercial centers, and public spaces are particularly vulnerable to terrorism incidents. Government buildings are symbolic targets, while transportation hubs and commercial centers are attractive due to their potential for high casualties and crowd presence. Public spaces also are at risk due to their open nature and lack of security. Their vulnerability is heightened by inadequate security measures, high occupancy rates, and their locations in densely populated areas, which can amplify the impact of incidents.
	Economic Assets	Infrastructure, commercial establishments, and community facilities may be vulnerable. Critical infrastructure, such as transportation networks and power grids, could disrupt the economy if targeted. Commercial establishments, especially those with high foot traffic, and community facilities like schools and hospitals also are at risk as they can provoke widespread concern and disruption. Their accessibility and interconnectivity increase vulnerability, meaning that damage to one asset can have a broader economic impact and hinder recovery efforts.
	Natural, Historic, and	Natural resources like water supplies and parks could be targeted for their significance to the community. Historic sites and cultural resources, such as museums or community centers, also are at risk

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Cultural Resources	due to their accessibility and importance to local identity. Their vulnerability is often heightened by inadequate security measures.
	Critical Facilities and Infrastructure	Public transportation systems, healthcare facilities, schools, and utility services like water and power plants may be affected. Their vulnerability arises from high accessibility and the potential impact of an attack, as crowded transportation and public spaces can lead to mass casualties and panic. Attacking utility services could disrupt the town's essential functions, creating chaos.
	Community Activities	Festivals, parades, and sporting events are particularly vulnerable to terrorism incidents. These events attract large crowds, making it easier for perpetrators to inflict harm and instill fear. In addition, community centers and places of worship serve as social hubs, increasing their risk. Factors such as limited security measures and open access to public spaces contribute to this vulnerability.

Hazards Not Profiled

Avalanche and Landslide/Slope Failure have been omitted from further discussion of hazard impacts and from mitigation actions. As shown in the hazard description in Volume 1, avalanche and landslide risk is primarily in the Wasatch and Oquirrh Mountains in Salt Lake County. Taylorsville has mostly flat terrain and minimal risk of impacts from these hazards. No previous occurrences of avalanche or landslide have impacted Taylorsville.

Jurisdiction-Specific Changes in Vulnerability

Hazard events can impact communities, infrastructures, and ecosystems. The severity of these impacts can be influenced by climate change, population patterns, and land use developments. Understanding these factors is crucial for the city of Taylorsville as it works to develop a resilient community and minimize the impacts of hazards. Table 8 displays the unique changes within the community and the related effects on each identified hazard affecting the city of Taylorsville.

DRAFT

Table 8: Jurisdiction-Specific Changes in Vulnerability in the City of Taylorsville

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
Avalanche	N/A	N/A	N/A	N/A
Drought	Climate change affects drought incidents by altering precipitation patterns and increasing temperatures. Warmer weather can lead to longer dry periods and more severe droughts, while changes in rainfall can reduce snowpack in nearby mountains, which is crucial for summer water supply. Higher temperatures also increase evaporation rates, further straining local water resources.	Drought can significantly influence population patterns by impacting economic opportunities and quality of life. Water scarcity often leads to reduced agricultural productivity, prompting residents to migrate to areas with more stable job prospects. Increased water costs can make living less affordable, driving some residents away. Conversely, efforts to address drought, such as sustainable development or improved water management, may attract newcomers, resulting in changes in the community's demographic composition over time.	Increased commercial development in Taylorsville increases water demand in the city and heightens the risk of drought.	Increased
Earthquake	Rising temperatures can lead to glacial melting, which affects pressure on tectonic plates and may trigger seismic activity through isostatic rebound. In addition, increased rainfall and flooding can erode soil, weakening structural integrity and heightening vulnerability during earthquakes. Although the direct links between climate change and earthquakes are still under investigation, environmental effects may impact the region's seismic risk.	Earthquakes can significantly alter population patterns by prompting residents to leave for safer areas after a seismic event. This migration can lead to changes in population density and attract new residents and businesses during the rebuilding process. The perception of the area as a safe place to live may shift, impacting long-term demographics, as some residents return to rebuild while others relocate permanently.	Increased development, residential, commercial, and infrastructure, are at risk of damage from earthquakes and liquefaction. An active fault is located in Taylorsville that puts development at extra risk.	Stayed the same
Extreme Heat	Climate change significantly impacts extreme heat by increasing the frequency and	Extreme heat may cause residents to relocate due to damaged homes or safety concerns. Some may move to areas	Developments like Volta and South Redwood that add density also increase	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	intensity of heat waves. Rising global temperatures lead to longer and hotter summers, affecting residents and local infrastructure while heightening health risks, especially for vulnerable populations. Urban heat islands resulting from reduced vegetation and extensive pavement further amplify these effects.	perceived as safer or seek better job opportunities elsewhere. The economic impact and infrastructure damage can also make certain neighborhoods less desirable, leading to shifts in demographics and the socioeconomic landscape as new residents with different backgrounds move in.	surface temperatures and the risk of extreme heat.	
Extreme Cold	Climate change may increase the intensity of winter storms. Higher atmospheric temperatures allow for more moisture, resulting in heavier snowfall and potentially lower temperatures during these events. In addition, fluctuations in weather patterns may disrupt seasonal cycles, leading to unpredictable periods of extreme cold mixed with warmer spells.	Extreme cold may drive some residents to relocate to warmer areas. Harsh winters can hinder economic activities and deter new residents and businesses, influencing housing demand and the attractiveness of certain neighborhoods. This may disproportionately affect lower-income families, leading to changes in demographics and socioeconomic stratification in the community.	Increased growth of commercial and residential developments in Taylorsville increases energy demand during extreme cold events, stressing the electrical grid and increasing the risk associated with extreme cold.	Increased
Flooding	Higher temperatures increase the frequency and intensity of extreme weather events and alter precipitation patterns. They lead to more intense rainstorms and accelerated snowmelt from nearby mountains, raising water levels in rivers and streams. This combination raises the risk of flooding, especially in areas with inadequate drainage and urban development in flood-prone zones, heightening the potential	Flooding can significantly alter population patterns by displacing residents from affected areas, leading them to seek shelter elsewhere. This may cause a population decline in areas where flooding occurs, as individuals might hesitate to return due to ongoing risks or property damage. As neighborhoods become less desirable, people may migrate to safer areas, changing demographic trends and putting pressure on housing in those regions. Over time, these shifts can influence urban planning and development,	No developments in Taylorsville have been constructed in the special flood hazard area. Increased impervious surfaces due to development across Taylorsville could contribute to ponding and other pluvial flooding.	Stayed the same

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	for damage to homes and infrastructure.	as local governments address flooding risks and changing population needs.		
Landslide/ Slope Failure	N/A	N/A	N/A	N/A
Radon	Climate change can affect radon levels by altering soil temperatures and moisture conditions. Higher temperatures may increase radon emissions from the ground, while heavy rainfall can change groundwater and soil saturation, impacting radon migration into buildings.	Radon exposure can influence population patterns as increased health awareness may drive families to move away from areas with high radon levels. This shift could particularly affect vulnerable groups, changing demographics and demand in the housing market. Homes with lower radon levels may become more sought after, and public health campaigns can encourage community action, making previously undesirable areas more attractive once mitigation measures are implemented.	Development in Taylorsville has not increased radon risk.	Stayed the same
Heavy Rain	Climate change increases the frequency and intensity of heavy rain, as higher temperatures allow the atmosphere to hold more moisture. This leads to stronger storms, flash flooding, and overwhelmed drainage systems.	Heavy rain can shift population patterns by pushing residents out of flood-prone areas and attracting them to safer neighborhoods. Frequent flooding may lead to evacuations and economic disruptions, prompting relocations. Over time, ongoing heavy rains can affect housing demand and community stability, altering the town's population distribution.	Increased impervious surfaces due to development across Taylorsville could contribute to ponding and other pluvial flooding.	Increased
High Wind	Climate change affects high winds by altering atmospheric patterns and increasing extreme weather events. Rising temperatures may lead to more substantial, unpredictable winds and more frequent	High winds can alter population patterns by making certain areas less desirable. Frequent damage may drive residents to safer neighborhoods, deter newcomers, and slow growth in affected regions.	New development, especially subdivisions with few wind breaks, increases the risk of wind damage.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	thunderstorms, posing risks to infrastructure and air quality.			
Lightning	Climate change increases temperatures and alters precipitation, leading to more intense thunderstorms and frequent lightning strikes. Urbanization can enhance this effect, posing risks to public safety and infrastructure.	Lightning can influence population patterns by causing property damage and wildfires, leading some residents to relocate. Areas with higher lightning activity may deter new residents, while safer locations might see increased migration as people seek protection from severe weather.	New multistory buildings, like in the Volta development, are more exposed to damage from lightning strikes.	Increased
Severe Winter Weather	Climate change impacts heavy snow and blizzards by altering precipitation patterns. Higher temperatures can lead to more rain than snow, affecting snowpack levels—additionally, increased storm intensity results in heavier, more unpredictable snowfall.	Increased population means an increased number of people needing to get to work and requiring quicker snow removal. Heavy snow or blizzards can impact population patterns by influencing where people live and work. Transportation disruptions may lead residents to seek housing closer to jobs, increasing density in some areas while depopulating others. Families might also avoid regions with frequent heavy snowfall, shifting demand to milder areas. Over time, these trends can alter community demographics and economic activity, prompting adjustments in town planning and resource allocation.	As development increases in Taylorsville, the risk of damage and increased responsibility due to severe winter storms has risen. With new subdivisions the city is responsible for plowing, rescues, and evacuations during heavy snow events.	Increased
Tornado	Climate change may increase the frequency and intensity of tornadoes. Higher temperatures lead to more moisture in the air, creating conditions for severe thunderstorms. Changes in wind patterns and precipitation can also heighten tornado risks, resulting in more destructive	Tornadoes can influence population patterns by prompting residents to move to safer areas after damage occurs. This can decrease density in affected neighborhoods while increasing the demand for housing in safer regions. New residents may also move in for recovery opportunities, altering demographics. Over time, repeated tornado threats might push long-term residents to areas with better	Tornadoes are rare in Taylorsville, but increased development has put more structures in place that could be damaged by tornadoes.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	storms and greater threats to infrastructure and communities.	disaster preparedness, reshaping the town's population distribution.		
Wildfire	By raising temperatures and creating drier conditions, prolonged droughts lead to more dry vegetation, which serves as fuel for fires. Erratic seasons extend the growing period, while more lightning strikes can ignite wildfires. These factors heighten the threat to ecosystems and community safety.	Displaced individuals often seek safer areas, shifting demographics, while declining property values might deter newcomers. Conversely, some may be drawn to rebuilding efforts, impacting long-term growth and community dynamics.	New development in Taylorsville has not changed the risk of wildfire.	Increased
Dam Failure	Climate change raises the risk of dam failure by causing heavier rainfall and rapid snowmelt. These changes can overwhelm dams and compromise their integrity, highlighting the need for urgent safety assessments and upgrades to protect communities downstream.	Dam failure can impact population patterns by displacing residents and altering demographics. Evacuations can lead to an influx into safer areas, while destruction may deter new residents and contribute to population decline. Fear of future disasters may also prompt remaining individuals to relocate, changing the community's composition and affecting population density and economic activity.	New development in Taylorsville has not changed the risk of dam failure.	Increased
Civil Disturbance	Climate change can increase civil disturbances by intensifying environmental stresses and social tensions. Rising temperatures may lead to droughts, wildfires, and poor air quality, particularly affecting vulnerable communities. Resource scarcity, especially water, can spark conflicts and protests. In addition, an influx of migrants from harder-hit areas may strain local resources,	Civil disturbances may encourage residents to move for safety, leading to outflows and new arrivals. These events can reveal social issues, impacting community dynamics, employment, and property values, ultimately reshaping demographics and social cohesion.	New development in Taylorsville has not changed the risk of civil disturbance.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	further escalating tensions. This cycle of unrest is driven by the impacts of climate change on the environment and community dynamics.			
Cyberattack	Cyberattacks are possible on the industry, which is seen as producing large amounts of greenhouse gases and burning fossil fuels. Climate change can heighten cyberattack risk by increasing vulnerabilities during extreme weather. Disruptions like power outages offer cybercriminals opportunities, as focusing on emergency responses can weaken cybersecurity measures. As organizations adopt new technologies to cope with climate impacts, they may unintentionally introduce additional vulnerabilities.	Cyberattacks can change population patterns by eroding trust in essential services. Compromised systems may cause residents to leave due to safety concerns, while high-profile incidents can deter businesses, leading to job losses. This perception of vulnerability may also make the town less appealing to newcomers, resulting in demographic shifts and affecting local development.	New development in Taylorsville has not changed the risk of cyberattack.	Increased
Hazardous Materials Incident (Transporta-tion & Fixed Facility)	Climate change elevates the risk of hazardous materials incidents by increasing extreme weather events like heavy rain and wildfires. These events can breach storage tanks and heighten material volatility. Vulnerable infrastructure can lead to more spills or accidents, while climate shifts may also introduce new challenges for managing	Hazardous materials incidents may cause evacuations and temporary declines in density. In the long run, unsafe areas may deter new residents, affecting growth and diversity. Negative perceptions can lower property values and economic prospects, leading families to relocate, impacting local demographics.	New development in Taylorsville has not changed the risk associated with hazardous materials.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	hazardous substances and public health.			
Public Health Epidemic/ Pandemic	Climate change impacts public health by increasing the spread of vector-borne diseases and raising the risk of waterborne illnesses due to flooding or drought. Worsening air quality can also exacerbate respiratory conditions like asthma, especially in vulnerable populations.	Epidemics or pandemics may prompt migration for safety and better healthcare. Vulnerable groups may move to areas with improved services, while economic instability can drive people to seek new employment opportunities. Restrictions, like quarantine measures, can limit movement and social interactions, reshaping the community's demographics and impacting local economies.	New development in Taylorsville has not changed the risk of a pandemic/ epidemic.	Increased
Terrorism	Terrorist activity is sometimes centered around climate change. Climate change impacts terrorism incidents by creating conditions of resource scarcity and social unrest. Increased competition for essential resources, such as water, can fuel tensions, making communities more vulnerable to extremist ideologies. Extreme weather events may disrupt social order and infrastructure, offering terrorist groups opportunities to exploit crises. In addition, climate-driven population displacement can heighten tensions in receiving areas, raising the risk of domestic terrorism. Law enforcement's focus on climate-related challenges can also limit its capacity to address terrorism threats. Ultimately, while climate	Terrorism incidents can alter population patterns by instilling fear and prompting residents to relocate to perceived safer areas, resulting in demographic shifts and potential declines in property values. Some neighborhoods may see an outflow of residents, while others could experience an influx of people seeking refuge from violence. In addition, increased security measures may deter businesses and residents from certain locations, leading to long-term changes in population density and urban development patterns.	New development in Taylorsville has not changed the risk of terrorism.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	change may not directly cause terrorism, its effects can create an environment conducive to extremist activities.			

DRAFT

Additional Public Involvement

The city of Taylorsville provided several opportunities for public participation. Figure 1 and Figure 2 are examples of public outreach. An announcement about the mitigation plan update with a link to the public survey was also included in the City Journal mailer sent to residents in October.

Figure 1: Public Survey Flyer Posted in City Hall Lobby

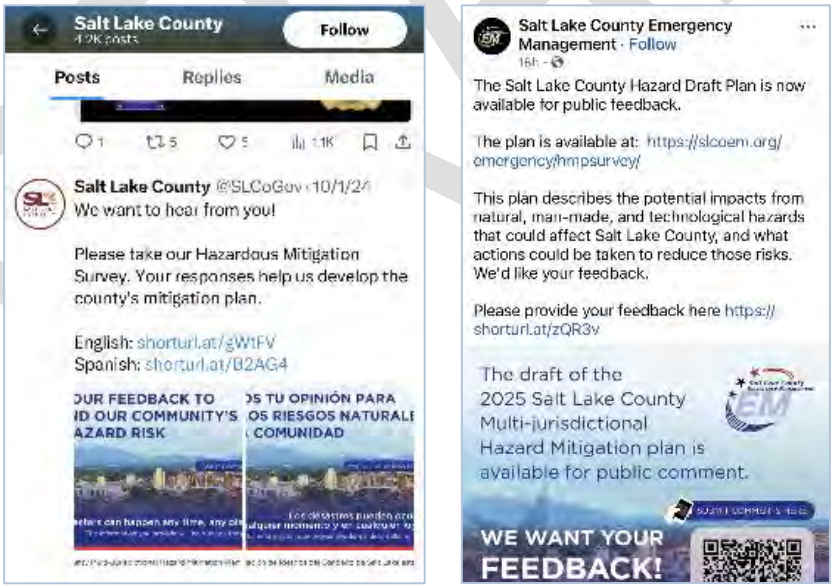


Figure 2: Social Media Posts for the Hazard Mitigation Survey (*left*) and Draft Plan Review (*right*)

Plan Integration

Incorporating the underlying principles of the Hazard Mitigation Plan and its recommendations into other plans is a highly effective and low-cost way to expand their influence. All plan participants will use existing methods and programs to implement hazard mitigation actions where possible. As previously stated, mitigation is most successful when it is incorporated into the day-to-day functions and priorities of government and public service. This plan builds on the momentum developed through previous and related planning efforts and mitigation programs, and it recommends implementing actions where possible through these other program mechanisms. These existing mechanisms include the following:

- Regularity Capabilities
- Administrative Capabilities
- Fiscal Capabilities

Respective planning stakeholders will conduct implementation and incorporation into existing planning mechanisms and will be done through the routine actions of:

- Monitoring other planning/program agendas
- Attending other planning/program meetings
- Participating in other planning processes; and
- Monitoring community budget meetings for other community program opportunities.

The successful implementation of this plan will require constant and vigilant review of existing plans and programs for coordination and multi-objective opportunities that promote a safe, sustainable community. Regular efforts should be made to monitor the progress of mitigation actions implemented through other planning mechanisms. Where appropriate, priority actions should be incorporated into planning updates. Table 9 lists existing planning mechanisms in which the Hazard Mitigation Plan has been integrated.

Table 10 lists the opportunities for integrating elements of this plan into other plans

Table 9: Previous Plan Integration by the City of Taylorsville

Plan	Description
Development standards in municipal code	Incorporation of known vulnerabilities.

Table 10: Opportunities for Integration with Future Plans of the City of Taylorsville

Plan	Description
Comprehensive Emergency Management Plan (CEMP)	Framework for preparedness, response, recovery, and mitigation of hazards.
General Plan	Could update with current risk information and mitigation actions. Addresses known vulnerabilities.

DRAFT

Plan	Description
Mid-Valley Active Transportation Plan	Cottonwood Heights, Holladay, Midvale, Millcreek, Murray, and Taylorsville are working together to establish better active transportation options across the region.
Taylorsville Economic Development Plan	Incorporation of mitigation actions to reduce hazard risks to businesses.
Area Development Plans	Bus Rapid Transit (BRT) Area Plans, Center Point, West Point, and other site specific plans can incorporate actions to reduce hazard risk.
Moderate Income Housing Plan	Inform mitigation actions and policies to prevent resident exposure to hazards
Stormwater Management Plan	Incorporate actions relating to flood control and natural resources.

Capability Assessment

Local mitigation capabilities are existing authorities, policies, programs, and resources that reduce hazard impacts or could help carry out hazard mitigation activities.

Planning and Regulatory Capabilities

Planning and regulatory capabilities are the plans, policies, codes, and ordinances that prevent and reduce the impacts of hazards.

Table 11: Assessment of the Planning Capabilities of the City of Taylorsville

Plan	Does it address hazards? (Y/N)	How can it be used to implement mitigation actions?	When was the last update? When is the next update?
General Plan	Y	Incorporate goals and implementation strategies into mitigation actions	2006
Capital Improvement Plan	Y – in General Plan	By allocating funding and resources for projects that reduce risk and enhance resilience to hazards.	2006
Climate Change Adaptation Plan	Unknown	Unknown	Unknown
Community Wildfire Protection Plan	Y	Inform the public about general wildfire risk and ensure coordination between surrounding jurisdictions/agencies	Unknown
Economic Development Plan	Y – in General Plan	Identify funding sources and responsible departments/parties for mitigation actions	2006

DRAFT

Plan	Does it address hazards? (Y/N)	How can it be used to implement mitigation actions?	When was the last update? When is the next update?
Land Use Plan	Y – in General Plan	Incorporate mitigation actions	2006
Local Emergency Operations Plan	Y	Incorporate disaster response efforts into mitigation actions	Unknown
Stormwater Management Plan	Y	Addresses flood control	2019
Transportation Plan	Y – in General Plan	Incorporate mitigation actions	2006
Substantial Damage Plan	Unknown	Unknown	Unknown
Other? (Describe)			

Table 12: Assessment of the Regulations and Ordinances of the City of Taylorsville

Regulation/Ordinance	Does it effectively reduce hazard impacts?	Is it adequately administered and enforced?	When was the last update? When is the next update?
Building Code	Y; Taylorsville has adopted the 2021 IBC, 2021 IRC, 2021 IPC, 2021 IMC, 2021 IFGC, 2021 IECC, and 2020 NEC.[3]	Y	2021
Flood Insurance Rate Maps	Y	Y	2009
Floodplain Ordinance	Y	Y	2021
Subdivision Ordinance	Y	Y	2012
Zoning Ordinance	Y	Y	2012
Natural Hazard-Specific Ordinance (Stormwater, Steep Slope, Wildfire)	Y – Sensitive Overlay Zone identifies hazard areas	Y	2012
Acquisition of Land for Open Space and Public Recreation Use	Unknown	Unknown	Unknown
Prohibition of Building in At-Risk Areas	Y	Y	Unknown
Other? (Describe)			

[3] IBC: International Building Code, IRC: International Residential Code, IPC: International Plumbing Code, IMC: International Mechanical Code, IFGC: International Fuel Gas Code, IECC: International Energy Conservation Code, NEC: National Electrical Code

Administrative and Technical Capabilities

Administrative and technical capabilities include staff and their skills. They also include tools that can help carry out mitigation actions.

Table 13: Assessment of the Administrative Capabilities of the City of Taylorsville

Administrative Capability	In Place? (Y/N)	Is staffing adequate?	Are staff trained on hazards and mitigation?	Is coordination between agencies and staff effective?
Chief Building Official	Y	Y	Unknown	Y
Civil Engineer	Y	Y	Unknown	Y
Community Planner	Y	Y	Unknown	Y
Emergency Manager	Y	Y	Y	Y
Floodplain Administrator	Y	Y	Unknown	Y
Geographic Information System (GIS) Coordinator	Y	Y	Unknown	Y
Planning Commission	Y	Unknown	Unknown	Unknown
Fire Safe Council	Unknown	Unknown	Unknown	Unknown
CERT (Community Emergency Response Team)	Y	Y	Y	Y
Active VOAD (Voluntary Agencies Active in Disasters)	Y	Y	Y	Y
Other? (Please describe.)				

Table 14: Assessment of the Technical Capabilities of the City of Taylorsville

Technical Capability	In Place? (Y/N)	How has it been used to assess/mitigate risk in the past?	How can it be used to assess/mitigate risk in the future?
Mitigation Grant Writing	Unknown	Unknown	Grant funding can be used to reduce risk to local hazards.
Hazard Data and Information	Y	Unknown	Improve response times and reduce risk to hazards.
GIS	Y	Identify areas at risk to various hazards	Prioritize areas based on mitigation actions to reduce hazard risk
Mutual Aid Agreements	Y	Improved response through coordination between agencies	Improve response times and procedures between agencies/ surrounding jurisdictions, especially if there are power failures or road closures for an extended period.

DRAFT

Technical Capability	In Place? (Y/N)	How has it been used to assess/mitigate risk in the past?	How can it be used to assess/mitigate risk in the future?
Other? (Please describe.)			

Financial Capabilities

Financial capabilities are the resources to fund mitigation actions. Talking about funding and financial capabilities is important to determine what kinds of projects are feasible, given their cost. Mitigation actions like outreach programs are lower cost and often use staff time and existing budgets. Other actions, such as earthquake retrofits, could require substantial funding from local, state, and federal partners. Partnerships, including those willing to donate land, supplies, in-kind matches, and cash, can be included.

Table 15: Assessment of the Financial Capabilities of the City of Taylorsville[4]

Funding Resource	In Place? (Y/N)	Has it been used in the past and for what types of activities?	Could it be used to fund future mitigation actions?	Can it be used as the local cost match for a federal grant?
Capital Improvements Project Funding	Yes	Yes, it has been used throughout the city for all types of projects	Yes	Yes
General Funds	Yes	Y, used to fund emergency management programs and response capabilities	Y	Y
Community Development Block Grant	Yes	Housing rehabilitation, Senior Center and public facilities improvements.	Yes	No
Property, Sales, Income, or Special Purpose Taxes	Y	Used to fund fire and police operations	Y	N
Stormwater Utility Fee	Yes	Operation of the storm water system	Yes	Yes
Impact fees for new development	Unknown	Unknown	Unknown	Unknown
Federal-funded programs (Please describe)	Y	Fire department applies for federal funding through FEMA for equipment and staffing.	Y, BRIC, FMA, other grants could be used	N

[4] BRIC = Building Resilient Infrastructure and Communities, FMA = Flood Mitigation Assistance.

Education and Outreach Capabilities

Education and outreach capabilities are programs and methods that could communicate about and encourage risk reduction. These programs may be run by a participant or a community-based partner. Partners, especially those who work with underserved communities, can help identify additional education and outreach capabilities.

Table 16: Assessment of the Education and Outreach Capabilities of the City of Taylorsville[5]

Education and Outreach Capability	In Place? (Y/N)	Does it currently incorporate hazard mitigation?	Could it be used to support mitigation in the future?
Community Newsletter(s)	Y	Y – CERT training info, waterwise landscaping, hazard awareness/ preparedness	Y
Hazard Awareness Campaigns (such as Firewise, Storm Ready, Severe Weather Awareness Week, School Programs)	Y	Y	Y
Public Meetings/Events (Please describe.)	Y	Y	Y
Emergency Management Listserv	Unknown	Unknown	Y
Local News	Y	Y	Y
Distributing Hard Copies of Notices (e.g., public libraries, door-to-door outreach)	Unknown	Unknown	Y
Insurance Disclosures/Outreach	Unknown	Unknown	Y
Organizations that Represent, Advocate for, or Interact with Underserved and Vulnerable Communities (Please describe.)	Unknown	Unknown	Y
Social Media (Please describe.)	Y	Y	Y
Other? (Please describe.)			

Opportunities to Expand and/or Improve Capabilities

Actions that can expand and improve existing authorities, plans, policies, and resources for mitigation include budgeting for mitigation actions, passing policies and procedures for mitigation actions, adopting and implementing stricter mitigation regulations, approving mitigation updates, and making additions to existing plans as new needs are recognized. Table 17 lists the opportunities for the city of Taylorsville.

[5] CERT = Community Emergency Response Team.

Table 17: Opportunities to Expand and/or Improve the Capabilities of the City of Taylorsville

Capability	Opportunity to Expand and/or Improve
Planning and Regulation	Planning capabilities could be enhanced by aligning older plans, such as the General Plan, with more recent hazard data, areas of concern, and mitigation recommendations as outlined in this hazard mitigation plan.
Administrative and Technical	Multiple positions could benefit from additional training on hazard mitigation and mitigation grant writing. Additionally, partnerships with community-based organizations and other federal, state, and local government entities can be expanded to help support mitigation at a local level.
Financial	The city has not been awarded Hazard Mitigation Assistance (HMA) grants yet. Applying for grant programs such as the Hazard Mitigation Grant Program (HMGP) and Flood Mitigation Assistance (FMA) can expand this capability.
Education and Outreach	The city can expand current capabilities by developing hazard-specific public outreach campaigns and coordination with groups such as the Community Emergency Response Team (CERT) to promote mitigation at a grassroots level.

Mitigation Strategy

Mitigation strategies provide proactive measures that are designed to minimize the impacts of hazards on the city of Taylorsville. Table 18 shows mitigation action alternatives, and

Table 19 shows the status of previous mitigation activities. Table 20 is the 2025 mitigation action plan for the city of Taylorsville.

Table 18: Mitigation Action Alternatives for the City of Taylorsville

Action	Type of Action	Selected for inclusion in the plan?	If not selected, why not?
Stormwater Management	Local Plans and Regulations	Yes	
Building Codes	Local Plans and Regulations	Yes	
Infrastructure (Bridges)	Structure and Infrastructure Projects	Yes	
Education	Education and Awareness Programs	Yes	

Table 19: Status of Prior Mitigation Actions of the City of Taylorsville[6]

Action	Hazard(s)	Agency Lead	Support Agency	Status Update
Fix and repair drainage by increasing drainage	Flood (Riverine and	Taylorsville EM		On-going. Some areas are complete, such as some

[6] ECC = Emergency Communications Center, EOP = Emergency Operations Plan, SLVECC = Salt Lake Valley Emergency Communications Center, UFA = Unified Fire Authority.

Action	Hazard(s)	Agency Lead	Support Agency	Status Update
area and expanding inlets and outlets	Urban/Flash Flooding)			upgrades to drainage containment areas, plus retrofit to the Little Cottonwood Creek confluence (backflow).
Conduct a Hazardous Material Flow Study	Hazardous Materials Release	Taylorsville EM		Incomplete. To be requested as part of a transportation study for major state roads in the city.
Establish agreements to share communications equipment between agencies involved in emergency operations	All hazards	Taylorsville EM		On-going. Partnerships between Law Enforcement, the state, and SLVECC.
Establish notification capabilities and procedures for emergency personnel	All hazards	Taylorsville EM		On-going. Recent update to the city EOP.
Establish a coordinating group to address long-term communication needs and implementation strategies	All hazards	Taylorsville EM		On-going. There is no formal committee designated as such in the city administration. However, as part of the Police Department Strategic Plan, communications equipment and updates are perpetually addressed. Taylorsville EM continues to coordinate with the local Amateur Radio Club (monthly meetings held at City Hall).
Acquire, upgrade, and/or integrate communications equipment and systems as determined by coordinating group	All hazards	Taylorsville EM		Ongoing, as part of the Police Department Strategic Plan. With respect to City Hall, incomplete. Plans and funding for additional equipment for the Council Chamber (to serve as the city ECC) are forthcoming.
Implement improvements to address identified in assessment	All hazards	Taylorsville EM		Incomplete.
Identify structures at risk to earthquake damage	Earthquake	City Engineering Division		Incomplete. City engineer and inspector to work with UFA on any potential, pre-identifying structures.
Determine potential flood impacts and identify areas in need of	Flood	City Engineering Division		On-going. Continued efforts to identify and provide upgrades to existing bridges along the Jordan River and canals.

DRAFT

Action	Hazard(s)	Agency Lead	Support Agency	Status Update
additional flood control structures				
Address identified problems through construction of debris basins, flood retention ponds, energy dissipaters or other flood control structures	Flood	City Engineering Division		On-going. Skyview basin.
Establish maintenance and repair programs to remove debris, improve resistance and otherwise maintain effectiveness of storm water and flood control systems	Flood	Taylorsville–Bennion Improvement District		Ongoing. Plan in place for perpetual maintenance and upgrades to existing storm drains and a contract to remove debris during peak seasons and storms. The city does have a Storm Water Master Plan.
Identify and assess structures for deficiencies	Flood	City Engineering Division		Incomplete. More research is needed and pending.
Modify structures as needed to address deficiencies	Flood	City Engineering Division		Incomplete (see above).
Continue to Enforce Building Codes, Development Codes and Zoning Ordinance	Earthquake, Flood and Severe Weather	City of Taylorsville Building Division, City of Taylorsville Community Development Department		On-going. Permitting processes, inspections, etc.
Continue to Execute Training and Exercise Program	Earthquake, Pandemic, Flood and Severe Weather	Taylorsville EM		Incomplete. Personal preparedness taught to city employees over the past two years, but exercises.
Educate Residents and Businesses through Public Information and Events	All hazards	Public Information Officer, Emergency Manager		Open-ended. Safety fairs, City Council meetings, the Public Safety Committee, Storm Water Coalition, social media outreach, website, etc.

DRAFT

THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT

Table 20: 2025 Mitigation Action Plan for the City of Taylorsville[7]

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
1	Develop and implement public education programs on disaster awareness and mitigation.	Civil Disturbance, Drought, Earthquake, Extreme Heat, Flooding, Hazardous Materials Incident, Public Health Epidemic, Radon, Severe Winter Weather, Terrorism, Wildfire	Taylorsville Emergency Management	SLCo EM, UFA, Sheriff's Office, SLCo Public Works	Increased understanding of local resources, improved relationships with the public and stakeholders. Outlined plans/SOPs for programs.	Low	SLCo EM, local jurisdictions, Local General Fund, staff time	Short term	Medium	Share information on mitigation measures for each hazard such as: avalanche warning signs and safety tips (avalanche), water conservation and xeriscape landscaping (drought), home seismic and non-seismic retrofitting (earthquake), home weatherization (extreme cold), utility elevation, flood mapping, mitigation grant programs, and flood insurance (flooding, heavy rain, dam failure), early warning signs and vegetation mitigation measures (landslide/slope failure), surge protectors, tree trimming, and wind-rated building materials (lightning, high wind, tornado), defensible space and home hardening (wildfire).
2	Integrate WebEOC, Crisis Track, GIS, and other technological enhancements throughout the county.	Civil Disturbance, Drought, Earthquake, Extreme Heat, Flooding, Hazardous Materials Incident, Public Health Epidemic, Radon, Severe Winter Weather, Terrorism, Wildfire	SLCo EM	Taylorsville Emergency Management, UFA, SLCo Public Works, SLCo Health Department	Common operating platform for stakeholders, increased situational awareness, improved response time.	Medium	SLCo EM, UFA, local jurisdictions	Long term	Medium	Taylorsville already has this software; there is a need to improve training and documentation.
3	Enhance and continue to promote the implementation of the Community Emergency Response Team (CERT).	Civil Disturbance, Drought, Earthquake, Extreme Heat, Flooding, Hazardous Materials Incident, Public Health Epidemic, Radon, Severe Winter Weather, Terrorism, Wildfire	Taylorsville Emergency Management	SLCo EM, UFA	Increased awareness of local resources	Medium	SLCo EM, local jurisdictions, Local General Fund, staff time, State of Utah	Short term	Medium	SAFE Hubs (previously S.A.F.E. Neighborhoods) is going through a rebrand, with a new public awareness campaign and information for all partners.
4	Leverage WebEOC and GIS to track the spread of contagious disease.	Public Health Epidemic/Pandemic	SLCo Health Department	Taylorsville Emergency Management, SLCo EM, UFA, MSD, UPD, Sheriff's Office, local jurisdictions	Using GIS and WebEOC software to maintain situational awareness and track illnesses throughout the county.	Low	SLCo EM, grant program, local jurisdictions, SLCo Health Department, State of Utah	Short term	Medium	The county and local jurisdictions already have this software; there is a need to improve training and documentation.
5	Create public awareness campaigns and public	Radon	Taylorsville Emergency Management,	SLCo EM, Aging and Adult services, SLCo	Fewer radon-caused cancer deaths. Increased engagement/	Low	SLCo, local jurisdictions, State of Utah	Short term	Low	

[7] ATF = Bureau of Alcohol, Tobacco, Firearms and Explosives, DHS = Department of Homeland Security, FBI = Federal Bureau of Investigation, MSD = Municipal Services District, SIAC = Statewide Information and Analysis Center, SLCo = Salt Lake County, SLCo EM = Salt Lake County Emergency Management, SOP = Standard Operating Procedure, UDOT = Utah Department of Transportation, UFA = Unified Fire Authority, UPD = Unified Police Department.

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
	education programs on radon risks and provide home testing for radon.			Health Department, local jurisdictions	understanding with the public on what SLCo can do or help with.					
6	Develop a severe winter weather mitigation program to maintain access to primary roadways and evacuation routes.	Severe Winter Weather – Heavy Snow, Blizzard	Taylorsville Public Works	Taylorsville Emergency Management, SLCo EM, local jurisdictions, MSD, UDOT	Emergency services like police, fire, and paramedics can use roads to provide their services.	Low	Local General Fund, MSD, Taylorsville, Millcreek, Holladay, local jurisdictions	Short term	High	A severe winter storm with heavy snowfall requires operators and equipment to clear roads and streets for public and emergency vehicles to use. The primary efforts will be to keep the roads open by clearing snow.
7	Develop a countywide intelligence group/ division to monitor and analyze threats before an incident occurs.	Terrorism (including cyberattacks)	SLCo EM	Taylorsville Emergency Management, SLCo Sheriff's Office, SIAC, DHS, ATF, FBI		$50k	Grants, SLCo, local jurisdictions	Short term	Medium	This would be a core group of stakeholders that meet on a regular basis to share and collaborate on intelligence data.
8	Improve communication to the public and stakeholders on resources available when Code Blue is in effect during severe winter weather.	Heavy snow, Extreme Cold	Taylorsville Emergency Management	SLCo EM, Local jurisdictions, The Office of Homeless and Criminal Justice Reform	Prevents further damage to critical infrastructure, ensures that homeless individuals have warming resources available, reduces pressure on local homeless resource providers with standard protocols to follow during Code Blue.	Low	SLCo EM, SLCo Health Department, State of Utah	Short term	Low	

DRAFT

City of West Jordan

Jurisdictional Annex to the
Salt Lake County Hazard Mitigation Plan

Month XXXX | Draft X.X

THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT

Table of Contents

City of West Jordan Annex 1

Planning Process Contact Information 1
Contact List 2
Existing Plans and Resources 4
Jurisdiction Profile 4
Date of Incorporation 4
Location and Description 5
Population 5
Demographics 5
Brief History 5
Climate 5
Public Services 5
Governing Body 6
Development Trends 6
Jurisdiction-Specific Hazards and Risk 6
Hazard Event History 9
National Flood Insurance Program Summary 11
Jurisdiction-Specific Vulnerabilities and Impacts 12
Hazards Not Profiled 24
Jurisdiction-Specific Changes in Vulnerability 24
Additional Public Involvement 33
Plan Integration 33
Capability Assessment 35
Planning and Regulatory Capabilities 35
Administrative and Technical Capabilities 36
Financial Capabilities 37
Education and Outreach Capabilities 39
Opportunities to Expand and/or Improve Capabilities 40
Mitigation Strategy 40

DRAFT

List of Figures

Figure 1: Damage from a Windstorm, 2020 11
Figure 2: Social Media Posts for the Hazard Mitigation Survey (*left*) and the Draft Plan Review (*right*) ... 33

List of Tables

Table 1: Contact Information for the City of West Jordan 1
Table 2: Participant List for the City of West Jordan 1
Table 3: Contact and Stakeholder List for the City of West Jordan 2
Table 4: Existing Plans and Resources for the City of West Jordan 4
Table 5: Calculated Priority Risk Index Values for the City of West Jordan 6
Table 6: Criteria for the Calculated Priority Risk Index 7
Table 7: History of Hazard Events in the City of West Jordan 9
Table 8: National Flood Insurance Program Status for the City of West Jordan 11
Table 9: National Flood Insurance Overview for the City of West Jordan 11
Table 10: Jurisdiction-Specific Vulnerabilities and Impacts in the City of West Jordan 12
Table 11: Jurisdiction-Specific Changes in Vulnerability in the City of West Jordan 25
Table 12: Integration of Previous Plans by the City of West Jordan 34
Table 13: Opportunities for Integration with Future Plans of the City of West Jordan 34
Table 14: Assessment of the Planning Capabilities of the City of West Jordan 35
Table 15: Assessment of the Regulations and Ordinances of the City of West Jordan 36
Table 16: Assessment of the Administrative Capabilities of the City of West Jordan 37
Table 17: Assessment of the Technical Capabilities of the City of West Jordan 37
Table 18: Assessment of the Financial Capabilities of the City of West Jordan 38
Table 19: Assessment of the Education and Outreach Capabilities of the City of West Jordan 39
Table 20: Opportunities to Expand and/or Improve the Capabilities of the City of West Jordan 40
Table 21: Mitigation Action Alternatives for the City of West Jordan 41
Table 22: Status of Prior Mitigation Actions of the City of West Jordan 41
Table 23: 2025 Mitigation Action Plan for the City of West Jordan 47

DRAFT

City of West Jordan Annex

To participate in this multi-jurisdictional hazard mitigation plan (MJHMP) update for Salt Lake County (SLCo), West Jordan provided a letter of commitment to engage in the planning process. Following completion of the plan, the governing body of the city of West Jordan passed a formal resolution to adopt the plan, a copy of which is maintained at the local government offices.

Planning Process Contact Information

Table 1 provides information on the point of contact during the updating of the MJHMP.

Table 1: Contact Information for the City of West Jordan

Name	Contact Information
Jeffory Mulcahy	Phone: 801-834-8502; email: Jeff.mulcahy@westjordan.utah.gov

The city of West Jordan has a fully integrated approach to hazard mitigation planning and program implementation. During the 2024 update process, the MJHMP participation roles in Table 2 were recorded.

Table 2: Participant List for the City of West Jordan

Name	Title	Jurisdiction
Jeffory Mulcahy	Emergency Manager	City of West Jordan/Fire Department
Doug Rolfe	Building Official	West Jordan Community Development
Larry Gardner	City Planner	West Jordan City
Del Brady	Risk Manager	West Jordan City
Greg Davenport	Public Utilities Director	West Jordan City
Frank Evans	Administrative Services/Finance Controller	West Jordan City
Ashley Dupler	Public Services Events Manager	West Jordan City
Brian Clegg	Public Works Director	West Jordan Public Works
Chris Trevino	Deputy Chief	West Jordan Fire Department
Scott Langford	Director	West Jordan Community Development
Marie Magers	Public Information Officer	West Jordan Public Affairs
Richard Bell	Deputy Chief	West Jordan Police Department
Cory Fralick	Director	West Jordan Public Services
Korban Lee	Chief Administrative Officer	West Jordan Administration
Paul Jerome	Assistant Chief Administrative Officer	West Jordan Administration

DRAFT

Contact List

Table 3 lists plan contacts and stakeholders for the city of West Jordan update.

Table 3: Contact and Stakeholder List for the City of West Jordan

Name	Title	Jurisdiction/ Agency	Email	Phone	Stake-holder Type[1]	Should they receive meeting invites?	Should they complete a survey?	Should they review the draft plan?
Richard Bell	Deputy Chief	West Jordan Police	Richard.Bell@westjordan.utah.gov	801-870-9079	1	N	Y	Y
Chris Trevino	Deputy Chief	West Jordan Fire	chris.trevino@westjordan.utah.gov	385-499-3935	1	N	Y	Y
Brian Clegg	Director	West Jordan Public Works	brian.clegg@westjordan.utah.gov	801-381-4695	1	N	Y	Y
Greg Davenport	Director	West Jordan Public Utilities	greg.davenport@westjordan.utah.gov	801-520-2560	1	N	Y	Y
Cory Fralick	Director	West Jordan Public Services	cory.fralick@westjordan.utah.gov	801-310-9533	1	N	Y	Y
Scott Langford	Director	West Jordan Community Development	scott.langford@westjordan.utah.gov	801-822-4202	2	N	Y	Y
Marie Magers	Public Information Officer	West Jordan Public Affairs	Marie.Magers@westjordan.utah.gov	385-499-3928	1	Y	Y	Y
Korban Lee	Chief Administrative Officer	West Jordan Administration	Korban.Lee@westjordan.utah.gov	385-315-9910	2	N	Y	Y

[1] 1 – Local and regional agencies involved in hazard mitigation activities; 2 – Agencies that have the authority to regulate development; 3 – Neighboring communities; 4 – Representatives of businesses, academia, and other private organizations; 5 – Representatives of nonprofit organizations, including community-based organizations, that work directly with and/or provide support to underserved communities and socially vulnerable populations.

DRAFT

Name	Title	Jurisdiction/ Agency	Email	Phone	Stake-holder Type[1]	Should they receive meeting invites?	Should they complete a survey?	Should they review the draft plan?
Paul Jerome	Assistant Chief Administrative Officer	West Jordan Administration	paul.jerome@westjordan.utah.gov	801-699-6793	2	N	Y	Y
Jeffory Mulcahy	Emergency Manager	West Jordan Emergency Management	Jeff.mulcahy@westjordan.utah.gov	801-834-8502	1	Y	Y	Y

DRAFT

Existing Plans and Resources

Table 4 lists the plans and resources available to the county.

Table 4: Existing Plans and Resources for the City of West Jordan

Plan, Study, Report, or Technical Information	Is it available online?	If online, add the link here.	Is it on SharePoint? Or where can we access it?	Comments
General Plan	Yes	https://codelibrary.amlegal.com/codes/westjordanut/latest/overview		
Parks Master Plan	Yes	https://assets.westjordan.utah.gov/ugd/41b712_d0872116b55b41e7afefe3a11a1baab5.pdf		
Sanitary Sewer Master Plan	Yes	https://assets.westjordan.utah.gov/s8/2019-SSMP-Report-Final.pdf		
Transportation Master Plan	Yes	https://assets.westjordan.utah.gov/ugd/a5f54b_cda4a63d0015489ab7945b4a758a19f1.pdf		
Active Transportation Master Plan	Yes	https://www.westjordan.utah.gov/wp-content/uploads/2022/05/West-Jordan-Active-Transportation-Plan.pdf		
Water Master Plan	Yes	https://westjordangcc-my.sharepoint.com/:b:/g/personal/marie_magers_westjordan_utah_gov/EWCzf3Ou8hhOiI_4uCnRDdoB6VNpRgVTJJcaiCQFNx20gg?e=QKsuea		
Water Conservation Plan	Yes	https://www.westjordan.utah.gov/wp-content/uploads/2025/01/Watern-Conservation-Plan-2024.pdf		
Stormwater Management Plan	Yes	https://www.westjordan.utah.gov/wp-content/uploads/2024/12/2020-through-2025-Stormwater-Management-Program.pdf		
Moderate Income Housing Plan	Yes	https://assets.westjordan.utah.gov/ugd/a31809_3c4f46f8a5a243d9b78b93af854e66b6.pdf		

Jurisdiction Profile

Date of Incorporation

January 10, 1941

DRAFT

Location and Description

Situated along the southwestern end of the Salt Lake Valley, West Jordan lies at an elevation of approximately 4,330 feet and is bordered by the Oquirrh Mountains to the west and the Jordan River to the east. The city of West Jordan is a suburb of Salt Lake City and is one of Utah's fastest growing cities with significant growth since the 1970s. The city is known for its blend of historical and modern attractions with a mix of suburban charm and historical significance.

Population

The 2023 American Community Survey 5-Year Estimate from the U.S. Census Bureau records the population of the city of West Jordan as 114,908 people.[2]

Demographics

Most of the 114,908 people are between the ages of 35 and 44, with a median age of 33.9; 58,165 (50.6%) are females and 56,743 (49.4%) are males. English is the primary language in 80.6% of homes,, with 13.5% Spanish, 2.9% other Indo-European languages, 2% Asian and Pacific Island languages, and 1% other languages.

Brief History

Mormon settlers led by Brigham Young arrived in the Salt Lake Valley in 1847 named the river west of Salt Lake City the Western Jordan after the River Jordan in the Middle East. Later it was simplified to the Jordan River. However, the City of West Jordan retained its name. The city was established around 1849 on the river's western banks, with Archibald Gardner building one of the first sawmills in 1850 and the first leather tannery west of the Mississippi River in 1851. West Jordan's economy was largely based on agriculture, mills, and mining.

Climate

The City of West Jordan has a cold semi-arid climate (Dsa Köppen classification) characterized by a chilly and moderate climate. Average high temperatures are approximately 81°F in the summer and approximately 25.9°F in the winter. Rain each year is approximately 19.6 inches, and snowfall averages 53.2 inches annually.

Public Services

The city offers a multitude of services to its residents. The city has a fire department, police department, animal services, public works, and other development, planning and administrative services. The city is an active participant in the Salt Lake County Local Emergency Planning Committee. This committee

[2] U.S. Census Bureau QuickFacts. Population Estimate July 1, 2023. https://www.census.gov/quickfacts/fact/table/westjordancityutah/PST045224#PST045224.

DRAFT

fulfills the federal requirements for chemical reporting and emergency planning as specified in federal law 42 USC Chapter 116, the Community Right-to-Know Act.

Governing Body

The governing body for the City of West Jordan consists of a Strong Mayor and a seven-member City Council. Members of this governing body are elected by the people.

Development Trends

West Jordan is Utah's third-largest city, with an estimated population in 2023 of almost 115,000 residents.

Jurisdiction-Specific Hazards and Risk

The Calculated Priority Risk Index (CPRI) is a comprehensive assessment tool for evaluating and prioritizing risks in a given context. It considers various factors, such as probability, impact, and urgency, to determine the level of risk associated with events or situations. The results for each hazard, including its risk factor (RF) value, are shown in Table 5. The results are based on the criteria in

Table 6 and the equation that follows it. The CPRI helps organizations and individuals make informed decisions about risk management and mitigation strategies. It provides a systematic approach to identifying and addressing potential issues, allowing for a more efficient allocation of resources and proactive risk prevention. With the CPRI, stakeholders can prioritize their focus on the most critical risks, leading to more effective risk management and, ultimately, better outcomes.

Table 5: Calculated Priority Risk Index Values for the City of West Jordan

Type of Hazard Event	Probability of Future Events	Spatial Extent	Severity of Life/ Property Impact	Warning Time	Duration	Response Capacity	Risk Factor Value
Avalanche	1	1	1	1	1	1	1
Drought	4	4	2	1	4	1	2.8
Earthquake	3	4	4	4	4	2	3.5
Extreme Heat	4	4	3	1	3	1	3
Extreme Cold	3	4	2	1	3	1	2.4
Flooding	3	2	2	3	3	1	2.4
Landslide/Slope Failure	1	1	1	1	1	1	1
Radon	4	4	2	1	4	2	2.9
Heavy Rain	4	3	2	3	1	1	2.6
High Wind	4	3	3	3	2	1	3
Lightning	4	2	2	4	1	1	2.6

DRAFT

Type of Hazard Event	Probability of Future Events	Spatial Extent	Severity of Life/ Property Impact	Warning Time	Duration	Response Capacity	Risk Factor Value
Severe Winter Weather	4	3	2	2	2	1	2.6
Tornado	2	2	3	4	1	2	2.4
Wildfire	3	2	2	4	3	1	2.5
Dam Failure	2	2	3	2	2	3	2.4
Civil Disturbance	2	1	2	4	2	2	2.1
Cyberattack	2	3	3	4	3	2	2.7
Hazardous Materials Incident (Transportation & Fixed Facility)	3	1	2	4	1	1	2.2
Public Health Epidemic/ Pandemic	3	4	3	1	4	1	2.8
Terrorism	2	1	3	4	2	1	2.3

Table 6: Criteria for the Calculated Priority Risk Index

Risk Index Factor	Degree of Risk Level		Criteria	Factor Weight for Degree of Risk Level
Probability of Future Events	1	Unlikely	Less than 1 percent probability of occurrence in the next year or a recurrence interval of greater than every 100 years.	30%
	2	Occasional	1 to 10 percent probability of occurrence in the next year or a recurrence interval of 11 to 100 years.	
	3	Likely	11 to 90 percent probability of occurrence in the next year or a recurrence interval of 1 to 10 years.	
	4	Highly Likely	91 to 100 percent probability of occurrence in the next year or a recurrence interval of less than 1 year.	
Spatial Extent	1	Limited	Less than 10% of the planning area could be impacted.	10%
	2	Small	10%–25% of the planning area could be impacted	
	3	Significant	25%–50% of the planning area could be impacted.	

DRAFT

Risk Index Factor	Degree of Risk Level		Criteria	Factor Weight for Degree of Risk Level
	4	Extensive	50%–100% of the planning area could be impacted.	
Severity of Life/Property Impact	1	Negligible	Less than 5% of the affected area's critical and non-critical facilities and structures are damaged/destroyed. Only minor property damage and minimal disruption of life. Temporary shutdown of critical facilities.	30%
	2	Limited	More than 5% and less than 25% percent of property in the affected area is damaged/ destroyed. Complete shutdown of critical facilities for more than one day but less than one week.	
	3	Critical	More than 25% and less than 50% of property in the affected area was damaged/destroyed. Complete shutdown of critical facilities for over a week but less than one month.	
	4	Catastrophic	Over 50% of critical and non-critical facilities and infrastructures in the affected area are damaged/destroyed. Complete shutdown of critical facilities for more than one month.	
Warning Time	1	Self-defined	More than 24 hours	10%
	2	Self-defined	12 to 24 hours.	
	3	Self-defined	6 to 12 hours.	
	4	Self-defined	Less than 6 hours.	
Duration	1	Brief	Up to 6 hours.	10%
	2	Intermediate	Up to one day.	
	3	Extended	Up to one week.	
	4	Prolonged	More than one week.	
Response Capacity	1	High	Significant resources and capability to respond to this kind of event; staff are trained, experienced, and ready.	10%
	2	Medium	Some resources and capability to respond to this kind of staff; some staff may be trained, experienced, and ready while others may need additional support.	
	3	Low	Limited resources and capability to respond to this kind of event; additional staff or staff training needed.	
	4	None	No resources and capability to respond this kind of event; additional outside support would be required.	

DRAFT

RISK FACTOR (RF) EQUATION

RF Value = [(Probability x 0.30) + (Spatial Extent x 0.10) + (Severity of Life/Property Impact x 0.30) + (Warning Time x 0.10) + (Duration x 0.10) + (Response Capacity x 0.10)]

Hazards with an RF value greater than or equal to 2.5 are considered high risk. Those with RF values of 2.0 to 2.4 are considered moderate risk hazards, and those with an RF value less than 2.0 are considered low risk. The highest possible RF value is 4.

Hazard Event History

Examining hazard event histories provides valuable insights to inform decision-making and help prioritize resources for risk prevention and response efforts. Table 7 lists the hazard events impacting the city of West Jordan since the 2019 plan update, as recorded in the Storm Events Database from the National Centers for Environmental Information.

Table 7: History of Hazard Events in the City of West Jordan

Type of Hazard Event	FEMA Disaster #	Date(s)	Damage or Impacts	Description
Avalanche		N/A	N/A	N/A
Drought		05/13/2021	Water restrictions	Governor declared state of emergency for drought conditions
Earthquake		03/18/2020	Water tank inlet and outlet lines damaged	5.7 M earthquake with an epicenter in Magna, Utah. Presidential Disaster Declaration. An earthquake damaged the inlet and outlet lines to a Zone 4 water tank. The lines required excavation, removal and replacement.
Extreme Heat		N/A	N/A	N/A
Extreme Cold		N/A	N/A	N/A
Flooding		09/11/2020	Three homes flooded	Canal overflowed, causing flooding in three homes.
Landslide/Slope Failure		N/A	N/A	N/A
Radon		N/A	N/A	N/A
Heavy Rain	N/A	08/12/2022	Five homes with varying interior and exterior damage from stormwater runoff	A private developer built inadequate drainage, allowing water runoff from the construction site onto two neighboring private properties, flooding one resident's basement and washing away another's landscaping. During the same storm, Barney's Creek drainage failed, and stormwater overflowed into a neighborhood, damaging one basement and washing

DRAFT

Type of Hazard Event	FEMA Disaster #	Date(s)	Damage or Impacts	Description
				out landscaping on three other properties.
High Wind		N/A	N/A	N/A
Lightning		N/A	N/A	N/A
Severe Winter Weather		N/A	N/A	N/A
Tornado		N/A	N/A	N/A
Wildfire		N/A	N/A	N/A
Dam Failure		August 2020	Multiple homes damaged	The North Jordan Canal Dam breached, flooding the neighborhood.
Civil Disturbance		N/A	N/A	N/A
Cyberattack	N/A	6/14/23	Complete but temporary disruption of all city services and information systems.	Ransomware was installed on the city's servers. The city rebuilt its systems, recovering most of its data without paying the ransom. The city was in the process of upgrading its cybersecurity and continues to do so on a daily basis.
Hazardous Materials Incident (Transportation & Fixed Facility)		N/A	N/A	N/A
Public Health Epidemic/ Pandemic	COVID	3/12/2020	Restrictions/ lockdowns/ quarantines	City instituted work from home following instructions from the Health Department.
Terrorism		N/A	N/A	N/A

DRAFT

Figure 1: Damage from a Windstorm, 2020

National Flood Insurance Program Summary

The city of West Jordan participates in the Nation Flood Insurance Program (NFIP). Table 8 displays statistics related to the NFIP. The city of West Jordan does not participate in the Community Rating System (CRS).

Table 8: National Flood Insurance Program Status for the City of West Jordan[3]

Initial FHBM Identified	Initial FIRM Identified	Current Effective Map Date	Adopted Date	Date Joined NFIP	Tribal
07/19/1974	09/01/1987	09/25/2009	2009	09/01/1987	No

Table 9: National Flood Insurance Overview for the City of West Jordan

Community ID	Number of Losses	Total Net Payment	Active Policies	Total Coverage
490108	5	$14,082.83	34	$10,466,000

The city of West Jordan has designated the City Engineer as the Floodplain Administrator. The city's current floodplain ordinance, titled the Floodplain Overlay Zone, was adopted on 12/18/2024. The current effective FIRM is dated 9/25/2009. The Building & Safety Division is responsible for checking, permitting, and inspecting all new construction, additions, remodels and alterations, and demolitions. The Engineering Department collaborates with the Building & Safety Division to review and approve development. Substantial damage/substantial improvement determinations are made through the

[3] FIRM = Flood Insurance Rate Map, FHBM = Flood Hazard Boundary Map

DRAFT

permitting process. Once identified, structures are required to come into compliance with current codes, including protections for future flood damage.

Jurisdiction-Specific Vulnerabilities and Impacts

Table 10 provides information on the vulnerable assets in the city of West Jordan, including its critical facilities, highlighting the city's vulnerability to identified hazards. It also describes the potential impacts to the community arising from those vulnerabilities. Impacts are the consequences or effects of each hazard on the assets. By understanding the risks associated with these assets, local authorities can develop proactive strategies to mitigate vulnerabilities and ensure the safety and functionality of these important assets during hazard events. This data is invaluable for decision-making and prioritizing resources for emergency response and preparedness efforts, ultimately contributing to more effective risk management and greater resilience in the community.

Vulnerable assets within West Jordan include the 114,908 residents, 1 hospital, 1 police station, 4 fire stations, 1 EOC, and 35 schools including the SLCC Jordan campus. Major transportation routes include Bangerter Highway, Mountain View Corridor, 7800 South, 9000 South, and Copper Hills Parkway. The South Valley Regional Airport and Trax Line are also important transportation assets. Recreation and outdoor assets include Veterans Memorial Park, Conservation Garden Park, Constitution Park, West Jordan Soccer Complex, and Mountain View Golf Course.

Table 10: Jurisdiction-Specific Vulnerabilities and Impacts in the City of West Jordan

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
Avalanche	People	West Jordan does not have the terrain and snowpack conditions to experience an avalanche.
	Community Activities	N/A—the city is not located in an avalanche path, so there is no immediate impact on West Jordan events.
Drought	People	*Vulnerability:* All residents are vulnerable to drought due to water scarcity. *Impacts:* Residents may be affected by water restrictions. There is a possible lack of culinary water for all populations. The elderly, young, and those experiencing homelessness are particularly vulnerable and might not be able to obtain water for hydration. Residents may face restrictions or increased costs for water. Air and water quality may be vulnerable to drought, and this can impact public health.
	Structures	*Vulnerability:* All buildings are susceptible. *Impacts:* Extreme drought can cause soils to contract, which can damage foundations.
	Economic Assets	*Vulnerability:* Business disruptions, agriculture, and tourism are vulnerable to drought. *Impacts:* If water supply is affected, costs for culinary and irrigation water could increase. Higher costs could impact businesses such as golf courses, or public areas such as city parks. Water scarcity impacts agriculture and may reduce crop yields. Recreational activities may decline, harming tourism.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Natural, Historic, and Cultural Resources	*Vulnerability:* Vegetation and wildlife, parks, Barney's Creek, and Bingham Creek are vulnerable to drought. *Impacts:* Prolonged drought can stress vegetation and wildlife. Parks, creeks, and other green spaces that are dependent on water may see a reduction in flora and fauna, which can impact biodiversity. Undeveloped areas may be more at risk to wildfire.
	Critical Facilities and Infrastructure	*Vulnerability:* Public facilities are vulnerable to drought. *Impacts:* Water supply systems are susceptible to drought and may struggle to deliver adequate water supply to the community. City facilities will also be under water restrictions. Utah has been in prolonged drought for many years. Water restrictions have been put in place by Jordan Valley Water and by the City of West Jordan. Residents have been asked voluntarily to cut down on outdoor watering during this time.
	Community Activities	*Vulnerability:* Public events may be affected by drought conditions. *Impacts:* The largest community event, the Western Stampede, occurs in July. If there is a drought such that the city could not run water, there might be a need to limit Rodeo watering. This could lead to the cancellation of the Rodeo portion of the event because the dirt would be too hard for participants to compete safely.
Earthquake	People	*Vulnerability:* All residents are vulnerable to earthquakes. The impacts of earthquakes can be substantial. In the event of a high-magnitude quake, the state Division of Emergency Management has projected mass casualties and deaths. *Impacts:* Falling objects and collapsed structures will cause injuries. Many day-to-day activities, such as school and work, may be disrupted. People may be displaced from their homes. In addition, psychological effects, such as increased anxiety, can affect the community.
	Structures	*Vulnerability:* Many structures, including residences and businesses, may be damaged or destroyed in an earthquake. *Impacts:* Homes and businesses might sustain significant structural damage, posing safety risks. Shaking from a moderate to strong earthquake can damage walls, chimneys, and foundations. Damage may be extensive, and buildings may become unusable. Businesses may be forced to close, and residents may be displaced. Older structures, especially those built before 1975, likely are not built to withstand earthquakes and are likely to have more severe damage.
	Economic Assets	*Vulnerability:* Businesses are at risk from earthquake impacts. *Impacts:* A high-magnitude earthquake could damage buildings and infrastructure, preventing businesses from operating. Employees might not be able to get to work, and there could be supply-line stoppages. Businesses will likely lose revenue, and workers could be severely impacted by wage loss. Economic loss could be felt across the region. Repairs can lead to high costs, potential declines in property values, and disruptions to local businesses, ultimately impacting job availability and the overall economy.
	Natural, Historic, and	*Vulnerability:* Historic structures are highly susceptible to earthquake damage.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Cultural Resources	*Impacts:* The Historic West Jordan Ward Meetinghouse and other older structures could be destroyed.
	Critical Facilities and Infrastructure	*Vulnerability:* City assets, police and fire stations, and infrastructure are vulnerable to earthquakes. *Impacts:* Immediate damage to infrastructure may disrupt essential services, such as water, electricity, and transportation, complicating recovery efforts. An earthquake may compromise police and fire stations, resulting in little or no response. Hospitals sustaining damage could be non-operational. Water and wastewater systems and pipelines can be damaged. Power and communications systems may be damaged and inoperable, which can hinder response efforts. Transportation will likely be disrupted by road damage. City Hall lies in a liquefaction-susceptible zone, which could make the facility unavailable and disrupt government continuity. This building is also the primary Emergency Operations Center (EOC). The Public Works facility, which houses city vehicles and serves as a backup EOC, could also be affected.
	Community Activities	*Vulnerability:* Public events are at risk during earthquakes. *Impacts:* If an earthquake were to happen during an event, there could be injuries. Community events and recreation activities may be canceled following an earthquake. To mitigate this, there is an earthquake section in the city's event action plan, and there are signs at events stating what to do/where to evacuate to.
Extreme Heat	People	*Vulnerability:* All residents are vulnerable to extreme heat. *Impacts:* Extreme heat can significantly affect public health, increasing the risk of heat-related illnesses, especially among vulnerable individuals. Those without access to shade, air conditioning, and water are vulnerable to heat-related illness, such as heat exhaustion, heat stroke, and dehydration. In addition, extreme temperatures worsen air quality by raising ozone levels, which poses respiratory risks. Residents and businesses could be affected, particularly the homeless community. City employees who work outdoors should take precautions.
	Structures	*Vulnerability:* Homes, businesses, industry, and city-owned buildings are vulnerable to extreme heat. *Impacts:* Extreme heat can impact the ability to provide cool air effectively.
	Economic Assets	*Vulnerability:* Business losses are possible during extreme heat events. *Impacts:* Higher cooling costs for businesses and residents are likely. Outdoor businesses, such as construction and landscaping, could decline in productivity. Retail could be impacted if people avoid outdoor activities during the peak of the heat.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Parks and recreation are vulnerable to extreme heat. *Impacts:* Extreme heat can contribute to worsening drought conditions, which may stress vegetation and wildlife. Both heat and drought can contribute to increased wildfire risk.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Critical Facilities and Infrastructure	*Vulnerability:* Power infrastructure, roads, and rail lines are susceptible to extreme heat. *Impacts:* Extreme heat strains energy resources due to the higher demand for air conditioning, potentially leading to power outages. Heat can cause roads to buckle and crack, and rail lines and bridges might also be damaged, leading to increased maintenance costs and safety concerns.
	Community Activities	*Vulnerability:* Public events, including the Western Stampede rodeo, are at risk during extreme heat. *Impacts:* The largest event occurs in July, so if there is an extreme heat warning, the city would have to consider the needs of participants, staff, and spectators. There may be increased visits to the medical tent, and there might be a need to bring in cooling fans or open the adjacent city-owned arts building as a cooling center for people during the event. Some events may need to be canceled.
Extreme Cold	People	*Vulnerability:* All West Jordan residents are vulnerable to extreme cold. *Impacts:* Below-freezing temperatures occur annually in West Jordan. They impact the elderly, low-income, and transient populations the most. Individuals exposed to extreme cold can experience life-threatening health effects, including hypothermia and frostbite. Residents may struggle with increased costs of heating homes. Salt Lake County has taken the lead in opening warming shelters for those without the capability to heat their homes, among other measures. Those who work outdoors may be affected and should take precautions.
	Structures	*Vulnerability:* Homes and businesses are susceptible to extreme cold. *Impacts:* Extreme cold can lead to frozen pipes, which can burst and cause water damage to homes and businesses.
	Economic Assets	*Vulnerability:* Business disruptions are possible due to extreme cold. *Impacts:* If businesses cannot maintain heating in their buildings, they may have to close and send employees home. In addition, there may be higher heating costs for homes and businesses.
	Natural, Historic, and Cultural Resources	Minimal vulnerability exists in West Jordan.
	Critical Facilities and Infrastructure	*Vulnerability:* Water system, city facilities, and power are susceptible to extreme cold. *Impacts:* Water systems have been affected in the past, as the cold has caused multiple water main breaks. Increased energy demand will increase costs and may overwhelm systems, leading to outages. If cold weather is combined with ice and snow, downed power lines may also disrupt power systems. Facilities are at risk of water failure or damage if pipes freeze or heating is not adequate. Additional city resources may be needed, particularly during Code Blue alerts.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Community Activities	*Vulnerability:* Minimal vulnerability exists as there are no outdoor events during the winter. However, if needed, a number of facilities in the city could be used as warming centers.
Flooding	People	*Vulnerability:* Residents in flood zones are vulnerable to flooding. *Impacts:* Flooding can result in people being displaced from homes. Public health may also be compromised due to waterborne diseases and stress-related issues.
	Structures	*Vulnerability:* Homes and businesses in flood zones are at risk. *Impacts:* Homes and other structures could be damaged or destroyed.
	Economic Assets	*Vulnerability:* Businesses in flood zones are susceptible to flooding impacts. *Impacts:* Flooding in the business community would cause economic loss, increased insurance costs, and declining property values.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Water contamination is a risk during flooding. *Impacts:* Floodwaters can introduce contaminants from streets and industrial areas, which can pollute water sources.
	Critical Facilities and Infrastructure	*Vulnerability:* Power, communication, transportation, and wastewater systems are vulnerable to flooding. *Impacts:* Flooding can damage power infrastructure and communications facilities, and outages can contribute to unsafe conditions. Transportation networks may be damaged, and roads and bridges could be blocked, which could disrupt emergency response. Sewer systems could overflow and lead to contamination.
	Community Activities	*Vulnerability:* Public events are at risk during flooding. *Impacts:* Flooding could cause major issues at the site and for those traveling to/from events. Community events may be canceled for safety reasons when flooding is predicted.
Landslide/ Slope Failure	People	*Vulnerability:* West Jordan is mostly flat, with limited terrain that would contribute to landslides. *Impacts:* The risk is minimal to people, structures, critical facilities, or community activities.
Radon	People	*Vulnerability:* Sixty-two percent of homes tested in West Jordan had dangerous levels of radon (utahradon.org). *Impacts:* Radon exposure is the second leading cause of lung cancer. Higher cancer rates could lead to increased healthcare expenses. Employees or residents in underground structures, basements, tunnels, or older buildings may be exposed to unsafe radon levels. Many residents may not test for radon, making them unaware of dangerous levels.
	Structures	*Vulnerability:* Radon is primarily a public health risk and does not directly impact structures. However, it can enter homes through foundation cracks. *Impacts:* Incorporating radon-resistant construction in new developments is essential for safety.
	Economic Assets	*Vulnerability:* Home values are at risk due to radon exposure.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		Impacts: High radon levels can reduce home values if mitigation is required. People may endure health-related costs due to the public health effects of radon.
	Natural, Historic, and Cultural Resources	There is minimal risk from radon to natural, historic, and cultural resources.
	Critical Facilities and Infrastructure	*Vulnerability:* City facilities and water sources are susceptible to radon accumulation. *Impacts:* Employees and patrons in city facilities may be vulnerable if radon levels accumulate to high levels. Radon can dissolve into groundwater, affecting local drinking water sources.
	Community Activities	Radon is not a threat to West Jordan events, locations, or parks, as it disperses in open spaces.
Heavy Rain	People	*Vulnerability:* Residents along Barney's Creek or Bingham Creek, or low-lying areas, are vulnerable to heavy rain impacts. *Impacts:* Heavy rain could result in flooding, which could impact residents. People near drainage systems and waterways may be at risk of injury or drowning during flash flooding. Residents may be displaced if their homes are flooded.
	Structures	*Vulnerability:* Homes and businesses in low lying areas or near creeks are at risk. *Impacts:* Flooding could cause damage to these structures.
	Economic Assets	*Vulnerability:* Business interruptions are possible due to flooding. *Impacts:* Flooding could result in the loss of revenue for businesses.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Parks, open spaces, and creeks are susceptible to heavy rain impacts. *Impacts:* Heavy rain could cause damage. Increased soil erosion can harm ecosystems. Runoff could affect water quality.
	Critical Facilities and Infrastructure	*Vulnerability:* Emergency response facilities and transportation system are at risk. *Impacts:* During flood events, water is likely to fill natural channels and regional detention ponds. FEMA flood zones will see large amounts of water, but most of these areas have the capacity to handle 100-year (1% chance) events. Localized flooding will be expected where inlets are clogged with debris. Heavy rain could overwhelm drainage systems. Roads could be inundated or washed out. Heavy rain could overwhelm drainage systems. Roads could be inundated or washed out, which could delay emergency response.
	Community Activities	*Vulnerability:* Community events and recreation activities are susceptible to heavy rain. *Impacts:* Outdoor activities could be canceled or postponed. Additionally, several outdoor events within the Western Stampede could be cancelled, as the arena dirt would be unsafe for participants. This decision would come from the contractors specific to that area and from the event's Emergency Response Plan.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
High Wind	People	*Vulnerability:* High wind can affect the entire city, so all residents are vulnerable. *Impacts:* Injuries may be caused by flying debris or falling trees.
	Structures	*Vulnerability:* Homes, businesses, and schools are susceptible to high wind damage. *Impacts:* High winds can cause structural damage to houses, businesses, and other infrastructure. Trees can fall and damage buildings or vehicles. Flying debris can shatter windows. Sheds, fences, and older homes are more vulnerable to wind damage. Public facilities, such as schools, parks, and community centers in West Jordan, could endure wind-related damage.
	Economic Assets	*Vulnerability:* Businesses are at risk during high wind events. *Impacts:* High wind events can lead to power outages and structural damage, forcing businesses to close, leading to losses in revenue. Higher claims for damage can also lead to increased insurance premiums for homeowners and businesses.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Parks are susceptible to high wind damage. *Impacts:* Wind could cause damage to trees and outdoor equipment.
	Critical Facilities and Infrastructure	*Vulnerability:* Critical facilities and infrastructure are at risk during high wind events. *Impacts:* Wind could cause damage to power lines and IT network lines. Power and communications systems could be disrupted, and emergency response could be delayed as a result. Roads may be blocked by debris.
	Community Activities	*Vulnerability:* Outdoor events are vulnerable to high wind impacts. *Impacts:* High wind events can occur during any event season. When tents are used, they must be weighted with cement blocks to eliminate flight hazards. Events may be postponed or canceled.
Lightning	People	*Vulnerability:* Lightning can occur anywhere in West Jordan, and all populations are vulnerable. People engaging in recreation activities outdoors, outdoor workers, and unhoused populations are at increased risk. *Impacts:* Lightning strikes could cause injury or death.
	Structures	*Vulnerability:* All structures are vulnerable to lightning. *Impacts:* Fires are one of the most common and destructive results of a lightning strike. Homes, schools, or commercial buildings can catch fire if lightning hits roofs, chimneys, or power systems. Lightning can damage electric systems.
	Economic Assets	*Vulnerability:* Business disruption is possible due to lightning. *Impacts:* Cancellation or disruption of outdoor events can lead to economic losses.
	Natural, Historic, and Cultural Resources	N/A

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Critical Facilities and Infrastructure	*Vulnerability:* Power infrastructure is susceptible to lightning strikes. *Impacts:* Transformers, substations, or power lines can be knocked out by lightning, affecting hundreds or thousands of residents. Operations of critical facilities could be limited if power is out.
	Community Activities	*Vulnerability:* Public events, including the Rodeo, are vulnerable to lightning. *Impacts:* Outdoor events may be affected by lightning, especially during the summer months. Sheltering a large number of people could be an issue. A lightning plan is part of the Event Action Plan for each event, and the city coordinates with the National Weather Service for spot weather reports. A plan is in place for evacuating due to lightning.
Severe Winter Weather	People	*Vulnerability:* Severe winter weather can affect the entire city. All West Jordan residents are vulnerable. Elderly, young, disabled, and unhoused populations are particularly vulnerable. *Impacts:* Severe winter weather can trap people in their homes or at work. It may require opening warming shelters. Additionally, there is an increased risk of vehicle accidents.
	Structures	*Vulnerability:* Homes and businesses are at risk during severe winter weather. *Impacts:* Heavy snow load can damage roofs or collapse facilities.
	Economic Assets	*Vulnerability:* Businesses are susceptible to disruptions from severe winter weather. *Impacts:* Heavy snow/blizzards discourage people from going out shopping and disrupt supply lines.
	Natural, Historic, and Cultural Resources	N/A
	Critical Facilities and Infrastructure	*Vulnerability:* Emergency response facilities, power infrastructure, and roads are susceptible to severe winter weather impacts. *Impacts:* Power may be interrupted in heavy snow or blizzard conditions. Power outages can disrupt government operations, healthcare facilities, and emergency response. There may be an increased demand for response and medical care if there are a lot of traffic accidents. Transportation may be temporarily disrupted in heavy snow, blizzard, icing, and snow squall conditions.
	Community Activities	*Vulnerability:* There is minimal vulnerability, as there are no outside events during the winter. *Impacts:* Events may be delayed. Should there be extreme cold on the day of a Veterans Day or holiday event, there is a backup plan in place to shift the venue inside. If roads are deemed unsafe by police or the Utah Department of Transportation, the event would be canceled to keep travelers safe.
Tornado	People	*Vulnerability:* Tornadoes are uncommon and have not caused losses in West Jordan. However, a tornado could cause injury or death if one were to occur. *Impacts:* People are vulnerable to serious injury from blowing debris, falling tree limbs, or structural collapse.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Structures	*Vulnerability:* Homes, businesses, and mobile homes are at risk during tornadoes. *Impacts:* Tornadoes could cause structural damage from high winds, flying debris, or falling trees. Roofs can be torn off and windows broken. West Jordan has two mobile home communities which are particularly vulnerable to damage in a tornado due to their light weight and insecure foundations.
	Economic Assets	*Vulnerability:* Businesses are susceptible to tornado impacts. *Impacts:* Damage to businesses or infrastructure could lead to lost revenue.
	Natural, Historic, and Cultural Resources	N/A
	Critical Facilities and Infrastructure	*Vulnerability:* Power and communication systems are susceptible to tornado impacts. *Impacts:* Tornadoes could damage power or communications systems. Disruptions to these services might affect the operation of other critical facilities.
	Community Activities	*Vulnerability:* Public events are at risk during tornadoes. *Impacts:* Tornadoes may disrupt or cause the cancellation of outdoor events such as sports, fairs, and markets. While unlikely, this type of incident can occur during the event season. When tents are used, they must be weighted with cement blocks to eliminate flight hazards. The city is considering adding evacuation sites to the event Emergency Response Plan.
Wildfire	People	*Vulnerability:* All residents could be affected. *Impacts:* Wildfire smoke contains fine particulates that can trigger asthma, bronchitis, and other respiratory issues—especially for children, seniors, and those with existing health conditions.
	Structures	*Vulnerability:* Structures near undeveloped land are at risk. Risk is highest along the western border of the city near the Oquirrh foothills. *Impacts:* Building density is not high in at-risk areas, but homes and other structures could be affected by wildfire. Homes not directly touched by flames may suffer internal damage from smoke and falling ash.
	Economic Assets	*Vulnerability:* Businesses are vulnerable to wildfire impacts. *Impacts:* Wildfires can close major highways or roads leading in and out of West Jordan, delaying the delivery of goods and materials. If major supply routes, like I-15 or I-215, are impacted, businesses will face delays in receiving products and materials, disrupting inventory and production. If local businesses or manufacturers experience damage, West Jordan may lose key suppliers, causing further disruption to the economy as businesses scramble to find alternative sources. Wildfires can damage power lines and substations, leading to outages in West Jordan and possibly disrupting businesses, especially those that rely on electricity for day-to-day operations. Restaurants, grocery stores, and other services may have to shut down due to lack of power. The economic recovery after a wildfire could take months or

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		years, as businesses and homeowners rebuild. During this period, economic activity may be sluggish, and many residents and business owners may struggle to regain financial stability.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Parks and open spaces are susceptible to wildfire impacts. *Impacts:* Wildfire can damage or destroy vegetation in parks and open spaces.
	Critical Facilities and Infrastructure	*Vulnerability:* Power and road infrastructure are at risk during wildfires. *Impacts:* Wildfires can damage power lines, substations, or transformers, causing rolling blackouts or extended outages. Operations of critical facilities would be impacted by power outages. Roads used by emergency services may be closed, hampering response times to medical or law enforcement emergencies.
	Community Activities	*Vulnerability:* There is minimal danger from wildfires, as the city has no wildland–urban interface. *Impacts:* However, if fire were to break out, people would be evacuated similarly to during a lightning storm, and safe points of exit would be announced based on road closures. Outdoor sports, events, or city gatherings (e.g., farmers markets or school games) may be postponed or canceled due to air quality or evacuation needs.
Dam Failure	People	*Vulnerability:* West Jordan could be affected by a failure of the Bingham Canyon Reservoir, located west of the city. Residents in the dam inundation boundary could be affected. *Impacts:* Flooding from a failure of the dam could displace residents and businesses. Possible injury or death could occur if people are caught in downstream flooding from a dam failure. Long-term effects could affect community stability and public health. Four canals run through the city that could have similar impacts.
	Structures	*Vulnerability:* All structures in the dam inundation boundary are at risk. *Impacts:* Damage to buildings, including homes and businesses, could occur.
	Economic Assets	*Vulnerability:* Businesses in the inundation boundary are vulnerable to flooding impacts. Impact: Business closures and shutdowns could occur in the event of flooding. Lost revenue or inventory could result from flooding. Damage to utility systems or roads may disrupt business functions.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Parks located below the dam are at risk in the event of a failure. *Impacts:* Parks may be damaged or inaccessible following a dam failure, while floodwaters may contaminate local waterways and disrupt ecosystems.
	Critical Facilities and Infrastructure	*Vulnerability:* Four schools, one police station, and one hospital are in the potential inundation area, as are major roads. *Impacts:* Six critical facilities are in the potential inundation area and may be damaged or have their functionality disrupted following a dam failure. Fast-moving floodwaters from a dam failure could damage roadways and other transportation networks, including Mountain View Corridor, Bangerter Highway, and Sugar Factory Road. Power

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		infrastructure and communication systems could also be disrupted, which would affect operations of critical facilities.
	Community Activities	*Vulnerability:* Outdoor recreation areas are at risk in the inundation area. *Impacts:* Parks and golf courses in the inundation area may be inaccessible following a dam failure.
Civil Disturbance	People	Possible injuries and deaths
	Structures	Damage to buildings, vehicles, or other assets.
	Economic Assets	Damage to businesses; looting/stealing
	Natural, Historic, and Cultural Resources	While civil disturbances typically target urban areas, they can also spread to nearby parks, natural spaces, or other recreational facilities, potentially causing physical damage or making these areas unsafe for public use
	Critical Facilities and Infrastructure	Possible damage to infrastructure
	Community Activities	This would disrupt an event. For large events where this is more likely to happen, police are on site at all times, monitoring and able to assist.
Cyberattack	People	Panic. Residents may have their personal data compromised, including sensitive information such as social security numbers, addresses, or financial details. This could lead to identity theft or financial fraud.
	Structures	While cyberattacks are less likely to cause direct physical damage to structures, they can disrupt building systems that rely on automated control, such as heating, ventilation, and air conditioning (HVAC), or smart building technologies, leading to inconvenience or higher operating costs.
	Economic Assets	Disruptions to billing, ticketing, and online business. In the prior ransomware attack, the city recovered and did not pay a ransom, but there could be challenges bringing programs/data back online.
	Natural, Historic, and Cultural Resources	Cyberattacks could disrupt local natural resource management systems, including water treatment facilities affecting how these resources are managed
	Critical Facilities and Infrastructure	Damage to cyber systems.
	Community Activities	This would disrupt event ticketing capabilities as evidenced by a cyberattack on the city in 2023 during its largest annual event. Digital tools used for event organization, ticket sales, or communication (e.g., city websites, event apps) could be compromised or taken offline, leading to cancellations or significant delays in public events
Hazardous Materials Incident	People	There are multiple corridors for transporting HazMat, including train rail. An event could cause injury and/or death to residents and the business community. Exposure to hazardous materials such as toxic

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
(Transporta-tion & Fixed Facility)		chemicals, gases, or radioactive substances can cause acute health issues, including respiratory problems, burns, poisoning, or even death, especially if the incident occurs near residential areas or school.
	Structures	A HazMat incident involving explosive materials could cause structural damage.
	Economic Assets	Business closures, highway/rail stoppages, supply line disruptions
	Natural, Historic, and Cultural Resources	Hazardous materials can have a devastating effect on the local environment, poisoning soil, groundwater, and vegetation. If a release occurs near natural areas like parks, rivers, or wetlands, the damage could be long-lasting.
	Critical Facilities and Infrastructure	Transportation networks may be closed, which can disrupt travel and commerce in the area. Depending on the event, roads or other infrastructure may be damaged.
	Community Activities	If this happened during the large event in July with tens of thousands of people on site, it could become a mass casualty incident.
Public Health Epidemic/ Pandemic	People	Injury and death
	Structures	Hospitals, clinics, and other healthcare facilities will face enormous pressure as they try to care for patients. In some cases, medical facilities may need to expand capacity (e.g., setting up field hospitals or temporary care facilities) to handle the overflow of cases.
	Economic Assets	Quarantines, curfews, etc. affect business and contribute to lost revenue.
	Natural, Historic, and Cultural Resources	N/A
	Critical Facilities and Infrastructure	During these incidents, personnel would have to be rotated and separated to prevent the spread of the disease to the workforce. Staffing could be an issue during such an event. Needed repair and maintenance of critical infrastructure could be a problem.
	Community Activities	Depending on the incident, events would be canceled to minimize person-to-person contact to mitigate the threat.
Terrorism	People	Panic, injury, death
	Structures	Possible damage to facilities
	Economic Assets	Would disrupt businesses
	Natural, Historic, and Cultural Resources	Possible damage to facilities

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Critical Facilities and Infrastructure	Possible damage to facilities and infrastructure.
	Community Activities	Although police and contracted security are present during events, these are “soft” targets.

Hazards Not Profiled

Avalanche and Landslide/Slope Failure have been omitted from further discussion of hazard impacts and from mitigation actions. As shown in the hazard description in Volume 1, avalanche and landslide risk is primarily in the Wasatch and Oquirrh Mountains in Salt Lake County. West Jordan has mostly flat terrain and minimal risk of impacts from these hazards. No previous occurrences of avalanche or landslide have impacted West Jordan.

Jurisdiction-Specific Changes in Vulnerability

Hazard events can impact communities, infrastructures, and ecosystems. The severity of these impacts can be influenced by climate change, population patterns, and land use developments. Understanding these factors is crucial for the City of West Jordan to develop a resilient community and minimize the impacts of hazards. Table 11 displays the unique changes within the community and the related effects on each identified hazard affecting the City of West Jordan.

DRAFT

Table 11: Jurisdiction-Specific Changes in Vulnerability in the City of West Jordan

Type of Hazard Event	Future conditions	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
Drought	Changes in climate patterns affect drought incidents by altering precipitation patterns and increasing temperatures. Warmer weather can lead to longer dry periods and more severe droughts, while changes in rainfall can reduce snowpack in nearby mountains, crucial for summer water supply. Higher temperatures also increase evaporation rates, further straining local water resources.	Drought can significantly influence population patterns by impacting economic opportunities and the quality of life. Water scarcity often leads to reduced agricultural productivity, prompting residents to migrate to areas with more stable job prospects. Increased water costs can make living less affordable, driving some residents away. Conversely, efforts to address drought, such as sustainable development or improved water management, may attract newcomers, resulting in changes in the community's demographic composition over time.	There are large amounts of growth in West Jordan, including hundreds of new residential units and commercial spaces. This level of development increases the water demand in West Jordan and the risk of drought.	Increased
Earthquake	Rising temperatures can lead to glacial melting, which affects pressure on tectonic plates and may trigger seismic activity through isostatic rebound. In addition, increased rainfall and flooding can erode soil, weakening structural integrity and heightening vulnerability during earthquakes. Although the direct links between climate change and earthquakes are still under investigation, environmental effects may impact the region's seismic risk.	Earthquakes can significantly alter population patterns by prompting residents to leave for safer areas after a seismic event. This migration can lead to changes in population density and attract new residents and businesses during the rebuilding process. The perception of the area as a safe place to live may shift, impacting long-term demographics, as some residents return to rebuild while others relocate permanently.	All new development in West Jordan is at risk of earthquake damage to some extent. Nearby active faults put all structures at risk. The risk is mitigated to some extent by modern building codes.	Stayed the same
Extreme Heat	Impacts of extreme heat are increasing in frequency and	By causing residents to relocate due to damaged homes or safety	The high amount of development, particularly on the	Increased

DRAFT

Type of Hazard Event	Future conditions	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	intensity of heat waves. Rising global temperatures lead to longer and hotter summers, affecting residents and local infrastructure while heightening health risks, especially for vulnerable populations. Urban heat islands from reduced vegetation and extensive pavement further amplify these effects.	concerns. Some may move to areas perceived as safer or seek better job opportunities elsewhere. The economic impact and infrastructure damage can also make certain neighborhoods less desirable, leading to shifts in demographics and the socioeconomic landscape as new residents with different backgrounds move in.	western edge of West Jordan, increases density and reduces vegetation, both of which can increase temperatures during extreme heat events.	
Extreme Cold	By increasing the intensity of winter storms. Higher atmospheric temperatures allow for more moisture, resulting in heavier snowfall and potentially lower temperatures during these events. In addition, fluctuations in weather patterns may disrupt seasonal cycles, leading to unpredictable periods of extreme cold mixed with warmer spells.	By driving some residents to relocate to warmer areas. Harsh winters can hinder economic activities and deter new residents and businesses, influencing housing demand and the attractiveness of certain neighborhoods. This may disproportionately affect lower-income families, leading to changes in demographics and socioeconomic stratification in the community.	Increased growth of commercial and residential developments in West Jordan increases energy demand during extreme cold events, stressing the electrical grid.	Increased
Flooding	Higher temperatures increase the frequency and intensity of extreme weather events and alter precipitation patterns. They lead to more intense rainstorms and accelerated snowmelt from nearby mountains, raising water levels in rivers and streams. This combination raises the risk of flooding, especially in areas with inadequate drainage and urban development in flood-prone zones, heightening the	Flooding can significantly alter population patterns by displacing residents from affected areas, leading them to seek shelter elsewhere. This may cause a population decline where flooding occurs, as individuals might hesitate to return due to ongoing risks or property damage. As neighborhoods become less desirable, people may migrate to safer areas, changing demographic trends and putting	All developments in West Jordan have been built according to flood ordinances. Increased impervious surfaces due to development across West Jordan could contribute to ponding and other pluvial flooding.	Decreased

DRAFT

Type of Hazard Event	Future conditions	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	potential for damage to homes and infrastructure.	pressure on housing in those regions. Over time, these shifts can influence urban planning and development, as local governments address flooding risks and changing population needs.		
Radon	Climate change can affect radon levels by altering soil temperatures and moisture conditions. Higher temperatures may increase radon emissions from the ground, while heavy rainfall can change groundwater and soil saturation, impacting radon migration into buildings.	Radon exposure can influence population patterns as increased health awareness may drive families to move away from areas with high radon levels. This shift could particularly affect vulnerable groups, changing demographics and demand in the housing market. Homes with lower radon levels may become more sought after, and public health campaigns can encourage community action, making previously undesirable areas more attractive once mitigation measures are implemented.	Development in West Jordan has not increased the radon risk.	Decreased
Heavy Rain	Climate change increases the frequency and intensity of heavy rain, as higher temperatures allow the atmosphere to hold more moisture. This leads to stronger storms, flash flooding, and overwhelming drainage systems.	Heavy rain can shift population patterns by pushing residents out of flood-prone areas and attracting them to safer neighborhoods. Frequent flooding may lead to evacuations and economic disruptions, prompting relocations. Over time, ongoing heavy rains can affect housing demand and community stability, altering the town's population distribution.	Increased impervious surfaces due to development across West Jordan could contribute to ponding and other pluvial flooding.	Increased

DRAFT

Type of Hazard Event	Future conditions	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
High Wind	Climate change affects high winds by altering atmospheric patterns and increasing extreme weather events. Rising temperatures may lead to more substantial, unpredictable winds and more frequent thunderstorms, posing risks to infrastructure and air quality.	High winds can alter population patterns by making certain areas less desirable. Frequent damage may drive residents to safer neighborhoods, deter newcomers, and slow growth in affected regions.	The increased growth in West Jordan has put more structures in the city that could be damaged by high winds. The risk is especially high for multistory buildings in and around downtown West Jordan.	Increased
Lightning	Climate change increases temperatures and alters precipitation, leading to more intense thunderstorms and frequent lightning strikes. Urbanization can enhance this effect, posing risks to public safety and infrastructure.	Lightning can influence population patterns by causing property damage and wildfires, leading some residents to relocate. Areas with higher lightning activity may deter new residents, while safer locations could increase migration as people seek protection from severe weather.	The increased growth in West Jordan has put more structures in the city that could be damaged by lightning strikes.	Increased
Severe Winter Weather	Climate change impacts heavy snow and blizzards by altering precipitation patterns. Higher temperatures can lead to more rain than snow, affecting snowpack levels—additionally, increased storm intensity results in heavier, more unpredictable snowfall.	Increased population equals an increased number of people needing to get to work and quicker snow removal. Heavy snow or blizzards can impact population patterns by influencing where people live and work. Transportation disruptions may lead residents to seek housing closer to jobs, increasing density in some areas while depopulating others. Families might also avoid regions with frequent heavy snowfall, shifting demand to milder areas. Over time, these trends can alter community demographics and economic activity, prompting	With large development increases in West Jordan, the risk of damage and increased responsibility due to severe winter storms has gone up. With new subdivisions, the city is responsible for plowing, rescues, and evacuations from heavy snow events.	Increased

DRAFT

Type of Hazard Event	Future conditions	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
		adjustments in town planning and resource allocation.		
Tornado	Climate change may increase the frequency and intensity of tornadoes. Higher temperatures lead to more moisture in the air, creating conditions for severe thunderstorms. Changes in wind patterns and precipitation can also heighten tornado risks, resulting in more destructive storms and greater threats to infrastructure and communities.	Tornadoes can influence population patterns by prompting residents to move to safer areas after damage occurs. This can decrease density in affected neighborhoods while increasing the demand for housing in safer regions. New residents may also move in for recovery opportunities, altering demographics. Over time, repeated tornado threats might push long-term residents to areas with better disaster preparedness, reshaping the town's population distribution.	The increased growth in West Jordan has put more structures in the city that could be damaged by tornadoes.	Increased
Wildfire	By raising temperatures and creating drier conditions, prolonged droughts lead to more dry vegetation, which serves as fuel for fires. Erratic seasons extend the growing period, while more lightning strikes can ignite wildfires. These factors heighten the threat to ecosystems and community safety.	Displaced individuals often seek safer areas, shifting demographics, while declining property values might deter newcomers. Conversely, some may be drawn to rebuilding efforts, impacting long-term growth and community dynamics.	Development on West Jordan's western edge is adjacent to high wildfire areas in the Oquirrh Mountains. These developments include the West Jordan Industrial Center and Jordan Hills.	Increased
Dam Failure	Climate change raises the risk of dam failure by causing heavier rainfall and rapid snowmelt. These changes can overwhelm dams and compromise their integrity, highlighting the need for urgent	Dam failure tornadoes can impact population patterns by displacing residents and altering demographics. Evacuations can lead to an influx in safer areas, while destruction may deter new residents and contribute to a	Development in West Jordan has not increased the risk of dam failure.	Increased

DRAFT

Type of Hazard Event	Future conditions	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	safety assessments and upgrades to protect communities downstream.	population decline. Fear of future disasters may also prompt remaining individuals to relocate, changing the community's composition and affecting population density and economic activity.		
Civil Disturbance	Climate change can increase civil disturbances by intensifying environmental stresses and social tensions. Rising temperatures may lead to droughts, wildfires, and poor air quality, particularly affecting vulnerable communities. Resource scarcity, especially water, can spark conflicts and protests. In addition, an influx of migrants from harder-hit areas may strain local resources, further escalating tensions. This cycle of unrest is driven by the impacts of climate change on the environment and community dynamics.	By encouraging residents to move for safety, leading to outflows and new arrivals. These events can reveal social issues, impacting community dynamics, employment, and property values, ultimately reshaping demographics, and social cohesion.	Development in West Jordan has not increased the risk of civil disturbance.	Increased

DRAFT

Type of Hazard Event	Future conditions	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
Cyberattack	Possible attack on the industry, which is seen as producing large amounts of greenhouse gases and burning fossil fuels. Climate change can heighten cyberattack risk by increasing vulnerabilities during extreme weather. Disruptions like power outages offer cybercriminals opportunities, but focusing on emergency responses can weaken cybersecurity measures. As organizations adopt new technologies to cope with climate impacts, they may unintentionally introduce additional vulnerabilities.	Cyber-attacks can change population patterns by eroding trust in essential services. Compromised systems may cause residents to leave due to safety concerns, while high-profile incidents can deter businesses, leading to job losses. This perception of vulnerability may also make the town less appealing to newcomers, resulting in demographic shifts and affecting local development.	Development in West Jordan has not increased the risk of cyberattack.	Increased
Hazardous Materials Incident (Transportation & Fixed Facility)	Climate change elevates the risk of hazardous materials incidents by increasing extreme weather events like heavy rain and wildfires. These events can breach storage tanks and heighten material volatility. Vulnerable infrastructure can lead to more spills or accidents, while climate shifts may also introduce new challenges for managing hazardous substances and public health.	By causing evacuations and temporary declines in density. In the long run, unsafe areas may deter new residents, affecting growth and diversity. In addition, negative perceptions can lower property values and economic prospects, leading families to relocate, which impacts local demographics.	Development in West Jordan has not increased the risk of a hazardous materials incident.	Increased
Public Health Epidemic/ Pandemic	By increasing the spread of vector-borne diseases and raising the risk of waterborne illnesses due to flooding or drought. Worsening air quality can also exacerbate respiratory conditions like asthma,	By prompting migration for safety and better healthcare. Vulnerable groups may move to areas with improved services, while economic instability can drive people to seek new employment opportunities. In addition,	Development in West Jordan has not increased the risk of an epidemic/pandemic.	Increased

DRAFT

Type of Hazard Event	Future conditions	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	especially in vulnerable populations.	restrictions like quarantine measures can limit movement and social interactions, reshaping the community's demographics and impacting local economies.		
Terrorism	Terroristic activity is sometimes centered around climate change. Climate change impacts terrorism incidents by creating conditions of resource scarcity and social unrest. Increased competition for essential resources, such as water, can fuel tensions, making communities more vulnerable to extremist ideologies. Extreme weather events may disrupt social order and infrastructure, offering terrorist groups opportunities to exploit crises. In addition, climate-driven population displacement can heighten tensions in receiving areas, raising the risk of domestic terrorism. Law enforcement's focus on climate-related challenges can also limit its capacity to address terrorism threats. Ultimately, while climate change may not directly cause terrorism, its effects can create an environment conducive to extremist activities.	Terrorism incidents can alter population patterns by instilling fear and prompting residents to relocate to perceived safer areas, resulting in demographic shifts and potential declines in property values. Some neighborhoods may see an outflow of residents, while others could experience an influx of people seeking refuge from violence. In addition, increased security measures may deter businesses and residents from certain locations, leading to long-term changes in population density and urban development patterns.	Development in West Jordan has not increased the risk of terrorism.	Increased

DRAFT

Additional Public Involvement

The City of West Jordan provided several opportunities for public participation. An announcement of the plan and link to the public survey was included in the City Journal mailer sent to residents. Figure 1 illustrates examples of public outreach.

Figure 2: Social Media Posts for the Hazard Mitigation Survey (*left*) and the Draft Plan Review (*right*)

Plan Integration

Incorporating the underlying principles of the Hazard Mitigation Plan and its recommendations into other plans is a highly effective and low-cost way to expand their influence. All plan participants will use existing methods and programs to implement hazard mitigation actions where possible. As previously stated, mitigation is most successful when it is incorporated into the day-to-day functions and priorities of government and public service. This plan builds on the momentum developed through previous and related planning efforts and mitigation programs, and it recommends implementing actions where possible through these other program mechanisms. These existing mechanisms include the following:

- Regularity Capabilities
- Administrative Capabilities
- Fiscal Capabilities

Respective planning stakeholders will conduct implementation and incorporation into existing planning mechanisms and will be done through the routine actions of:

- Monitoring other planning/program agendas
- Attending other planning/program meetings

DRAFT

- Participating in other planning processes; and
- Monitoring community budget meetings for other community program opportunities.

The successful implementation of this plan will require constant and vigilant review of existing plans and programs for coordination and multi-objective opportunities that promote a safe, sustainable community. Regular efforts should be made to monitor the progress of mitigation actions implemented through other planning mechanisms. Where appropriate, priority actions should be incorporated into planning updates. Table 12 lists existing planning mechanisms in which the Hazard Mitigation Plan has been integrated.

Table 13 lists the opportunities for integrating elements of this plan into other plans.

Table 12: Integration of Previous Plans by the City of West Jordan

Plan	Description
None	N/A

Table 13: Opportunities for Integration with Future Plans of the City of West Jordan

Plan	Description
Comprehensive Emergency Management Plan	Framework for how the city will prepare for, respond to, recover from, and mitigate hazards. Hazard-specific annexes, including cyberattack, earthquake, public health, wildfire, and active threat/active shooter, are currently under revision and will reference updated information from the mitigation plan.
General Plan	Integrate hazard information in various sections, including land use, environment, economic development, and historic preservation.
Parks Master Plan	Outlines a 10-year vision and priorities for parks, recreation, trails, and open space. Mitigation goals could be integrated with other goals for open spaces.
Moderate Income Housing	Plan to ensure moderate income housing needs for the city could identify hazard impacts to housing availability.
Water Conservation Plan	Describes the city's current water supply and demands and water conservation goals and recommendations.
Sanitary Sewer Master Plan	Plan evaluates the existing system under future wastewater loading to show the need for existing system improvements that are necessary through buildout, as part of an overall Capital Facilities Plan, and the need and location for new facilities to accommodate future growth and development on the west side and interior of the city.
Storm Drainage Master Plan	Activities to manage and regulate stormwater runoff caused by development and to help mitigate flooding and environmental impacts.
Transportation Master Plan	Guides transportation infrastructure investments for the future.
Active Transportation Master Plan	Extension of the Transportation Master Plan to address sidewalk, trail, and bike lane projects.

DRAFT

Plan	Description
Water Master Plan	The water master plan identifies recommended improvements that resolve existing and projected future deficiencies in the water system throughout the city's service area over the next 10 years.

Capability Assessment

Local mitigation capabilities are existing authorities, policies, programs, and resources that reduce hazard impacts or could help carry out hazard mitigation activities.

Planning and Regulatory Capabilities

Planning and regulatory capabilities are the plans, policies, codes, and ordinances that prevent and reduce the impacts of hazards.

Table 14: Assessment of the Planning Capabilities of the City of West Jordan

Plan	Does it address hazards? (Y/N)	How can it be used to implement mitigation actions?	When was the last update? When is the next update?
General Plan	Y	Chapter nine addresses hazard mitigation. All plans, codes, ordinances, standards and specifications have been written and developed to provide mitigation action to all things at all levels. For example, this would include, but not limited to underground utility requirement, bridge/culvert design, detention/retention facilities, hydrodynamic separators installed, seismic standards on buildings, etc.	2023; 2029
Capital Improvement Plan	Y	See above	Jun 2024; Jun 2025
Climate Change Adaptation Plan	No	See above	
Community Wildfire Protection Plan	Y	See above	Aug 2024; Aug 2025
Economic Development Plan	No	See above	
Land Use Plan	Y	See above	Mar 2023; Mar 2028
Local Emergency Operations Plan	Y	See above	2024; 2029

DRAFT

Plan	Does it address hazards? (Y/N)	How can it be used to implement mitigation actions?	When was the last update? When is the next update?
Stormwater Management Plan	Y	See above	Dec 2020; Dec 2025
Transportation Plan	Y	See above	Sep 2024; Sep 2029
Substantial Damage Plan	Unknown	Unknown	Unknown
Other? (Describe)			

Table 15: Assessment of the Regulations and Ordinances of the City of West Jordan

Regulation/Ordinance	Does it effectively reduce hazard impacts?	Is it adequately administered and enforced?	When was the last update? When is the next update?
Building Code	Y – West Jordan automatically adopts the state building codes, which are currently the 2021 International Building Codes as amended.	Y	July 2024
Flood Insurance Rate Maps	Y	Y	As required
Floodplain Ordinance	Y	Y	As required
Subdivision Ordinance	Y	Y	2024/Annually
Zoning Ordinance	Y	Y	2010
Natural Hazard-Specific Ordinance (Stormwater, Steep Slope, Wildfire)	Y	Y	As required
Acquisition of Land for Open Space and Public Recreation Use	Y	Y	As required
Prohibition of Building in At-Risk Areas	Y	Y	2010
Other? (Describe)			

Administrative and Technical Capabilities

Administrative and technical capabilities include staff and their skills. They also include tools that can help carry out mitigation actions.

Table 16: Assessment of the Administrative Capabilities of the City of West Jordan

Administrative Capability	In Place? (Y/N)	Is staffing adequate?	Are staff trained on hazards and mitigation?	Is coordination between agencies and staff effective?
Chief Building Official	Y	Y	Y	Y
Civil Engineer	Y	Unknown	Unknown	Unknown
Community Planner	Y	Y	Y	Y
Emergency Manager	Y	Y	Y	Y
Floodplain Administrator	Y	Unknown	Unknown	Unknown
Geographic Information System (GIS) Coordinator	Y	Y	Unknown	Unknown
Planning Commission	Y	Y	Y	Y
Fire Safe Council	N	Unknown	Unknown	Unknown
CERT (Community Emergency Response Team)	N	Unknown	Unknown	Unknown
Active VOAD (Voluntary Agencies Active in Disasters)	Y	Y	Y	Y
Other? (Please describe.)				

Table 17: Assessment of the Technical Capabilities of the City of West Jordan

Technical Capability	In Place? (Y/N)	How has it been used to assess/mitigate risk in the past?	How can it be used to assess/mitigate risk in the future?
Mitigation Grant Writing	Y	Allowed for mitigation and improvement	Continue program and funding
Hazard Data and Information	Y	Allowed for mitigation and improvement	Continue program and funding
GIS	Y	Allowed for mitigation and improvement	Continue program and funding
Mutual Aid Agreements	Y	Allowed for mitigation and improvement	Continue program and funding
Other? (Please describe.)			

Financial Capabilities

Financial capabilities are the resources to fund mitigation actions. Talking about funding and financial capabilities is important to determine what kinds of projects are feasible, given their cost. Mitigation actions like outreach programs are lower cost and often use staff time and existing budgets. Other

DRAFT

actions, such as earthquake retrofits, could require substantial funding from local, state, and federal partners. Partnerships, including those willing to donate land, supplies, in-kind matches, and cash, can be included.

Table 18: Assessment of the Financial Capabilities of the City of West Jordan

Funding Resource	In Place? (Y/N)	Has it been used in the past and for what types of activities?	Could it be used to fund future mitigation actions?	Can it be used as the local cost match for a federal grant?
Capital Improvement Project Funding	Y	Y	Y	Y
General Funds	Y	Y – Chapter 9 of the West Jordan General Plan addresses hazard mitigation. It is used to protect, preserve, and restore hillsides, ridgelines, and foothills of the Oquirrh Mountains and along the Jordan River. Designs should maximize water conservation, protect and improve air quality, and employ environmentally sound building practices.	Y	Y
Hazard Mitigation Grant Program (HMGP/404)	N			
Building Resilient Infrastructure & Communities (BRIC)	N			
Flood Mitigation Assistance (FMA)	Y	Y	Y	Y
Public Assistance Mitigation (PA Mitigation/406)	Y	Unknown	Unknown	Unknown
Community Development Block Grant (CDBG)	Y	Yes, for nonprofit and infrastructure improvements.	N	N
Natural Resources Conservation Services (NRCS) Programs	Y	Y	Y	Y
U.S. Army Corps (USACE) Programs	Y	Y	Y	Y
Property, Sales, Income, or Special Purpose Taxes	Y	Y	Y	Y
Stormwater Utility Fee	Y	Y	Y	Y

DRAFT

Funding Resource	In Place? (Y/N)	Has it been used in the past and for what types of activities?	Could it be used to fund future mitigation actions?	Can it be used as the local cost match for a federal grant?
Fees for Water, Sewer, Gas, or Electric Services	Y	Y	Y	Y
Impact Fees from New Development and Redevelopment	Y	Yes, specific system improvements.	N	N
General Obligation or Special Purpose Bonds	Y	Y	Y	Y
Federal-funded Programs (Please describe)	Y	Y	Y	Y
Private Sector or Nonprofit Programs	N	Unknown	Unknown	Unknown
Other?				

Education and Outreach Capabilities

Education and outreach capabilities are programs and methods that could communicate about and encourage risk reduction. These programs may be run by a participant or a community-based partner. Partners, especially those who work with underserved communities, can help identify additional education and outreach capabilities.

Table 19: Assessment of the Education and Outreach Capabilities of the City of West Jordan

Education and Outreach Capability	In Place? (Y/N)	Does it currently incorporate hazard mitigation?	Could it be used to support mitigation in the future?
Community Newsletter(s)	Y	N	Y
Hazard Awareness Campaigns (such as Firewise, Storm Ready, Severe Weather Awareness Week, School Programs)	Y	Y	Y
Public Meetings/Events (Please describe.)	Y	Y – Monthly meetings with residents for emergency preparedness	Y
Emergency Management Listserv	N	Never heard of an EM Listserv	Unknown
Local News	Y	Y	Y
Distributing Hard Copies of Notices (e.g., public libraries, door-to-door outreach)	Y	Y	Y

DRAFT

Education and Outreach Capability	In Place? (Y/N)	Does it currently incorporate hazard mitigation?	Could it be used to support mitigation in the future?
Insurance Disclosures/Outreach	Y	Unknown	Y
Organizations that Represent, Advocate for, or Interact with Underserved and Vulnerable Communities (Please describe.)	Y	N	Y
Social Media (Please describe.)	Y	Y – City website, emergency preparedness tab	Y
Other? (Please describe.)			

Opportunities to Expand and/or Improve Capabilities

Actions that can expand and improve existing authorities, plans, policies, and resources for mitigation include budgeting for mitigation actions, passing policies and procedures for mitigation actions, adopting and implementing stricter mitigation regulations, approving mitigation updates, and making additions to existing plans as new needs are recognized. Table 20 lists the opportunities for the city of West Jordan.

Table 20: Opportunities to Expand and/or Improve the Capabilities of the City of West Jordan

Capability	Opportunity to Expand and/or Improve
Planning and Regulation	The city can update the Community Wildfire Protection Plan (CWPP) on a regular basis, including in 2025. Incorporating the latest data will help the city stay ahead of changing conditions.
Administrative and Technical	Current GIS capabilities can be expanded by mapping facilities and infrastructure at risk. These maps can help identify vulnerable areas and be incorporated into future mitigation projects. Additional support with code enforcement, including promoting defensible space, would be beneficial as well.
Financial	The city can explore options for funding pre-disaster mitigation through private and nonprofit sources in addition to federal sources. Additionally, when available, the city can apply for grants like the Hazard Mitigation Grant Program (404) and Public Assistance (PA Mitigation/406). Combining opportunities like Public Assistance and CDBG with hazard mitigation initiatives can help increase community resilience in alignment with other community priorities.
Education and Outreach	The city can explore more hazard-specific outreach campaigns, such as for hazards like radon. Additionally, partnerships can help advance public outreach and engagement. Pursuing opportunities to connect with other organizations, such as community-based organizations, would expand this capability.

Mitigation Strategy

Mitigation strategies provide proactive measures that are designed to minimize the impacts of hazards on the City of West Jordan. Table 21 shows mitigation action alternatives, and Table 22 shows the status of previous mitigation activities. Table 23 is the 2025 mitigation action plan for the city of West Jordan.

DRAFT

Table 21: Mitigation Action Alternatives for the City of West Jordan

Action	Type of Action	Selected for inclusion in the plan?	If not selected, why not?
Continue adding mitigation information to the city website	Education and Awareness Programs	Y	
Determine potential flood impacts and identify areas in need of additional flood control structures	Structure and Infrastructure Projects	Y	
Address identified problems through construction of debris basins, flood retention ponds, energy dissipaters or other flood control structures	Structure and Infrastructure Projects	Y	
Integrate technology systems throughout the City	Education and Awareness Programs	Y	

Table 22: Status of Prior Mitigation Actions of the City of West Jordan[4]

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update
Increase the size and capacity of drainage facilities	Flooding	City of West Jordan	West Jordan Public Works	Ongoing – West Jordan adopted a new storm drain master plan in 2023. Improvements in the plan are in the process of funding, design and construction.
Seismic Retrofitting of the water tanks	Earthquake	City of West Jordan	Community Development	Complete.
Establish notification capabilities and procedures for emergency personnel	All hazards	West Jordan GIS	Fire, Police, Public Affairs	Complete – We utilize the following: Landline phone, Cellular phone, SMS text messaging, email, Microsoft Teams, GoTo City phone system

[4] CEMP = Comprehensive Emergency Management Plan, COOP = Continuity of Operations Plan, IPAWS = Integrated Public Alert and Warning System, NFIP = National Flood Insurance Program, NWS = National Weather Service, THIRA = Threat and Hazard Identification and Risk Assessment, UDEM = Utah Division of Emergency Management

DRAFT

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update
Establish a coordinating group to address long-term communication needs and implementation strategies	All hazards	West Jordan	Emergency Management, Public Affairs	Ongoing – Includes representatives from EM, Police, Fire, IT, Public Affairs, and Public Works Fleet.
Utilize GIS to identify facilities and infrastructure at risk	All hazards	West Jordan	Public Works/ Community Development	Ongoing – Utilizing GIS, and also UDEM's Critical Infrastructure Program.
Assess critical facilities for hazard exposure, structural weaknesses, power, communications and equipment resources and redundancy, and adequate emergency procedures	All hazards	West Jordan	Fire	Ongoing – New Public Works building and remodeling of City Hall have dramatically slowed this process.
Implement improvements to address hazards identified in assessment	All hazards	West Jordan	City of West Jordan – All Departments	Ongoing Once new hazard assessment and THIRA are completed, improvement planning will be implemented on identified hazards.
Provide education regarding all natural hazards through live trainings, as well as web-based, print, and broadcast media	All hazards	West Jordan	City of West Jordan – All Departments	Ongoing – Currently participating in live training for employees and residents. Working with Public Affairs on web-based education material. Rely on county and state for print and broadcast media products.
Develop education programs to target specific groups including homeowners, developers, schools and people with special needs	All hazards	West Jordan	City of West Jordan – All Departments	Ongoing – Preparedness classes are offered monthly to residents. Also, provide an Employee Preparedness Seminar series, as well as presentations for local church groups. Looking for opportunities to provide educational presentations to other demographics/groups in the city.

DRAFT

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update
Coordinate with existing public education programs such as the American Red Cross, Utah Living with Fire, Be Ready Utah, the National Weather Service, etc.	Drought	West Jordan	City of West Jordan – All Departments	Complete
Coordinate with water districts to plan for, develop and/or expand secondary water	Flooding	West Jordan	Public Works Department	Complete – Drought Management Plan adopted by City Council.
Encourage Communities to actively participate in NFIP	Flooding	West Jordan	Public Utilities Department	Ongoing.
Determine potential flood impacts and identify areas in need of additional flood control structures	Flooding	West Jordan	Public Utilities Department	Ongoing – West Jordan adopted a new storm drain master plan in 2023. Improvements listed in the plan are in the process of funding, design and construction.
Address identified problems through construction of debris basins, flood retention ponds, energy dissipaters or other flood control structures	Flooding	West Jordan	Public Utilities Department	Ongoing – West Jordan adopted a new storm drain master plan in 2023. Improvements listed in the plan are in the process of funding, design and construction.
Establish maintenance and repair programs to remove debris, improve resistance and otherwise maintain effectiveness of storm water and flood control systems	Flooding	West Jordan	Public Utilities Department	Complete.
Identify and assess structures for deficiencies	Flooding	West Jordan	Public Utilities Department	Complete.

DRAFT

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update
Modify structures as needed to address deficiencies	Flooding	West Jordan	Public Utilities Department	Ongoing – West Jordan adopted a new storm drain master plan in 2023. Improvements listed in the plan are in the process of funding, design and construction.
Assist NWS in making other agencies and departments aware of available resources	Severe Weather	West Jordan	Public Affairs	Ongoing.
Assist Forest Service, Utah Avalanche Forecast Center, and other organizations in promoting avalanche hazard awareness for backcountry users	Severe Weather	West Jordan		Incomplete
Increase public awareness and compliance with keeping storm drains and ditches free from debris, particularly green waste.	Flood	Public Works Department, Storm Water Manager	Public Utilities Department/ Public Affairs	Complete – Added adopt an inlet program. “We all live downstream” educational program.
Increase emphasis in our code enforcement efforts to create defensible space between undeveloped fields and residential and commercial property.	Wildland Fire	City Attorney, Code Enforcement	City Attorney/ Public Affairs	Ongoing.
Educate residents on the IPAWS system to provide greater warning for individuals living in areas being impacted by severe weather	Severe Weather	West Jordan Emergency Management	Public Affairs	Ongoing.
Emphasis needs to be placed on the development of a citywide continuity of operations plan.	Pandemic	West Jordan Emergency Program Manager, West Jordan Facilities Manager, West Jordan IT Manager	Facilities Manager/IT Manager	Ongoing – COOP initiated and included in the City’s draft CEMP.

DRAFT

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update
Participate in a public awareness campaign to alert homeowners to the presence of radon gas production from the soil.	Radon	West Jordan Emergency Program Manager	Community Outreach Manager	Ongoing – Educational presentation available for resident preparedness.

DRAFT

THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT

Table 23: 2025 Mitigation Action Plan for the City of West Jordan[5]

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Time-frame	Priority	Comments
1	Purchase night vision goggles for SWAT unit.	Terrorism	WeJo Police Department	Local jurisdiction PDs, UPD, state Department of Public Safety/Joint Special Operations Group, Sheriff's Office	Enhanced interdiction and disruption, operational coordination, and screening, search, and detection. Increased officer/community safety during night operations.	Low – approx. $12,000 each	SHSP Grant	Short term	High	
2	Develop and implement public education programs on disaster awareness and mitigation for residents.	Civil Disturbance, Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Lightning, Public Health Epidemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	WeJo EM	WeJo departments, local jurisdictions, SLCo EM, UDEM	Increased understanding of local resources, improved relationships with the public and stakeholders. Outlined plans/SOPs for programs.	Low	WeJo EM budget, WeJo General Fund	Short term	Medium	
3	Integrate WebEOC, Crisis Track, GIS, and other technological enhancements throughout the city.	Civil Disturbance, Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Lightning, Public Health Epidemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	SLCo EM	WeJo departments, Juvare, local jurisdictions	Common operating platform for stakeholders, increased situational awareness, improved response time.	Low	SLCo EM, UFA, WeJo General Fund, staff time	Medium	Medium	Rely on SLCo EM for guidance/direction
4	Enhance and continue to promote the implementation of CERT and SAFE Hubs.	Civil Disturbance, Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Lightning, Public Health Epidemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	WeJo EM	SLCo EM, local jurisdictions	Increased awareness of local resources.	Low	SLCo EM, WeJo General Fund, state of Utah	Short term	Medium	SAFE Hubs (previously S.A.F.E. Neighborhoods) are going through a rebrand currently with a new public awareness campaign and information for all partners.
5	Develop an Enhanced Notification Communication System for the city.	Civil Disturbance, Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Lightning, Public Health Epidemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	WeJo PA	WeJo departments	Early notification of impending disaster to decrease loss of life. Improved relationships with the public and stakeholders. Faster delivery of information with templates/plans ready to go.	High – $1 million	WeJo PA and Customer Service budgets	Short term	Medium	
6	Promote the Firewise Initiative and regularly review/update the CWPPs for at-risk communities.	Wildfire	WeJo Fire	UFA, SLCo Em, local jurisdictions	Increased awareness of plans (for the public and stakeholders), increased eligibility for grants/other funding sources, and regular review of CWPPs.	Low	Community Wildfire Assistance grant, Fire Prevention and Safety grant, WeJo General Fund Fire Dept. budget	Short term	Medium	

[5] CEMP = Comprehensive Emergency Management Plan, COOP = Continuity of Operations Plan, CWPP = Community Wildfire Protection Plan, FMA = Flood Mitigation Assistance, IPAWS = Integrated Public Alert and Warning System, PD = Police Department, SHSP = State Homeland Security Program, SLCo EM = Salt Lake County Emergency Management, SOP = Standard Operating Procedure, UDEM = Utah Division of Emergency Management, UFA = Unified Fire Authority, UPD = Unified Police Department, WeJo = West Jordan, WeJo EM = West Jordan Emergency Management, WeJo PA = West Jordan Public Affairs.

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Time-frame	Priority	Comments
7	Increase the number of ATC-20 Post-Earthquake Building Safety Evaluators.	Earthquake	WeJo EM	UDEM, SLCo EM, local jurisdictions	Increased capability for determining building safety and reoccupation.	Low	WeJo General Fund	Short term	Medium	Depends on the availability of UDEM instructors.
8	Increase the size and capacity of drainage facilities.	Flooding	WeJo Public Utilities	WeJo Public Works, SLCo Public Works	Decreased flood potential from mountain runoff.	High	WeJo General Fund, Capital Projects Fund, FMA	Ongoing	High	West Jordan adopted a new storm drain master plan in 2023. Improvements listed in the plan are in the process of funding, design, and construction.
9	Establish a coordinating group to address long-term communication needs and implementation strategies.	Civil Disturbance, Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Lightning, Public Health Epidemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	West Jordan EM	WeJo PA, WeJo Fire, WeJo Police, WeJo IT, WeJo Public Works	Ensure communication systems remain operational during hazard events to ensure continuity of government, city operations, and other services.	Low	WeJo General Fund	Ongoing	Medium	
10	Use GIS to identify facilities and infrastructure at risk.	Dam Failure, Earthquake, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	WeJo Public Works/GIS	WeJo Community Development, SLCo EM/GIS, DEM/GIS	Identification of critical infrastructure for prioritization.	Medium	WeJo General Fund, staff time	Ongoing	Medium	Utilizing GIS, and also UDEM's Critical Infrastructure Program.
11	Assess critical facilities for hazard exposure; structural weaknesses; power, communications, and equipment resources and redundancy; and adequate emergency procedures.	Civil Disturbance, Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Lightning, Public Health Epidemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	WeJo Community Development	WeJo Fire	Hardened infrastructure, reduced service interruptions, reduced damage, reduced injury.	High	WeJo General Fund	Ongoing	Medium	
12	Implement improvements to address hazards identified in assessment.	Civil Disturbance, Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Lightning, Public Health Epidemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	West Jordan EM	City of West Jordan – All Departments, SLCo EM, Utah DEM	Reduce damage to critical facilities, reduce personal injury, reduce service interruptions.	High	WeJo General Fund, Capital Projects Fund, BRIC, HMGP	Long term	Medium	Once new hazard assessment and THIRA are completed, improvement planning will be implemented on identified hazards.
13	Provide education regarding all natural hazards through live trainings as well as web-based, print, and broadcast media.	Civil Disturbance, Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Lightning, Public Health Epidemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	West Jordan EM	WeJo PA, WeJo Fire, WeJo Police, SLCo EM, Utah DEM, WeJo Public Works	Increased local understanding of natural hazards and ways in which residents can reduce their risk. • Drought: Share water conservation techniques and strategies for drought-resistant landscaping. • Earthquake: Provide instruction or resources on home retrofitting.	Low	WeJo General Fund, staff time	Ongoing	Medium	Currently participating in live training for employees and residents. Working with Public Affairs on web-based education material. Rely on county and state for print and broadcast media products.

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Time-frame	Priority	Comments
					• Extreme Heat: Offer information on staying cool and hydrated. • Extreme Cold: Discuss home insulation techniques, safe heating practices, and preparing vehicles for winter conditions. • Flood/Heavy Rain/Dam Failure: Teach floodproofing methods, avoiding areas of high risk, and "Turn Around, Don't Drown". • Lightning: Share safety tips for outdoor lightning protection. • Severe Winter Weather, Tornado, High Wind: Educate on locating self-shelter locations and home weatherization.					
14	Develop education programs to target specific groups, including homeowners, developers, schools, and people with special needs.	Civil Disturbance, Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Lightning, Public Health Epidemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	West Jordan EM	SLCo EM, WeJo PA	Increased understanding of how to reduce risks for vulnerable populations.	Low	WeJo General Fund	Ongoing	Medium	Preparedness classes are offered monthly to residents. Also, provide an Employee Preparedness Seminar series, as well as presentations for local church groups. Looking for opportunities to provide educational presentations to other demographics/groups in the city.
15	Actively participate in NFIP.	Flooding	WeJo Flood Plain Manager	WeJo Public Utilities, WeJo EM	Reduced risk of injury and property loss from flooding.	Low	WeJo General Fund	Ongoing	Medium	
16	Determine potential flood impacts and identify areas in need of additional flood control structures.	Flooding, Heavy Rain, Dam Failure	WeJo Flood Plain Manager	WeJo Public Utilities/Stormwater Division, WeJo Public Works, SLCo Public Works	Decreased flood potential for mountain runoff, standing water, etc.	Medium	WeJo General Fund, Capital Projects Fund	Ongoing	Medium	West Jordan adopted a new storm drain master plan in 2023. Improvements listed in the plan are in the process of funding, design and construction.
17	Address identified problems through construction of debris basins, flood retention ponds, energy dissipaters or other flood control structures.	Flooding, Heavy Rain, Dam Failure	WeJo Flood Plain Manager	WeJo Public Utilities, WeJo Public Works, West Jordan EM, SLCo EM	Reduced risk of injury and property loss from flooding.	Medium	WeJo General Fund, Capital Projects Fund, FMA, HMA	Ongoing	Medium	West Jordan adopted a new storm drain master plan in 2023. Improvements listed in the plan are in the process of funding, design and construction.
18	Modify structures as needed to address deficiencies.	Flooding, Heavy Rain, Dam Failure	WeJo Flood Plain Manager	WeJo Public Utilities, WeJo Public Works,	Reduced risk of injury and property loss from flooding.	Medium	WeJo General Fund, Capital	Ongoing	Medium	West Jordan adopted a new storm drain master plan in 2023. Improvements listed in the plan

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Time-frame	Priority	Comments
				West Jordan EM, SLCo EM			Projects Fund, FMA, HMA			are in the process of funding, design and construction.
19	Assist NWS in making other agencies and departments aware of available resources.	Drought, Extreme Cold, Extreme Heat, Flooding, Heavy Rain, High Wind, Lightning, Severe Winter Weather	West Jordan EM	WeJo PA, SLCo EM	Reduced risk of injury or property damage by increasing awareness of potential harm or damage from weather events.	Low	WeJo General Fund	Ongoing	Medium	
20	Increase emphasis in code enforcement efforts to create defensible space between undeveloped fields and residential and commercial property.	Wildland Fire	WeJo Code Enforcement	City Attorney, WeJo PA	Reduced potential for loss of structures.	High	WeJo General Fund	Ongoing	Medium	
21	Educate residents on the IPAWS system to provide greater warning for individuals living in areas being impacted by severe weather.	Civil Disturbance, Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Lightning, Public Health Epidemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	WeJo EM	WeJo PA, NWS	Ability to increase emergency notification footprint.	Low	WeJo General Fund	Ongoing	High	SLCo EM is licensed for IPAWS broadcasting, but jurisdictions provide message content.
22	Emphasize the development of a citywide continuity of operations plan.	Civil Disturbance, Dam Failure, Drought, Earthquake, Extreme Cold, Extreme Heat, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Lightning, Public Health Epidemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	WeJo EM	All city departments	Departments have a plan for maintaining operations throughout a disaster.	Low	WeJo General Fund, EMPG	Ongoing	Medium	COOP initiated in the city's draft CEMP.
23	Participate in a public awareness campaign to alert homeowners to the presence of radon gas production from the soil.	Radon	WeJo EM	WeJo Community Outreach Manager, SLCo EM, State of Utah DEQ	Increased public awareness of the adverse effects of radon and how to test to reduce risk of lung cancer.	Medium	WeJo General Fund,	Ongoing	Medium	

DRAFT

West Valley City

Jurisdictional Annex to the
Salt Lake County Hazard Mitigation Plan

Month 2025 | Draft X.X

DRAFT

THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT

Table of Contents

West Valley City Annex 1

Planning Process Contact Information 1
Existing Plans and Resources 1
Jurisdiction Profile 2
Date of Incorporation 2
Location and Description 2
Population 2
Demographics 2
Brief History 3
Climate 3
Public Services 3
Governing Body 3
Development Trends 3
Jurisdiction-Specific Hazards and Risk 4
Hazard Event History 7
National Flood Insurance Program Summary 7
Jurisdiction-Specific Vulnerabilities and Impacts 7
Hazards Not Profiled 25
Jurisdiction-Specific Changes in Vulnerability 25
Additional Public Involvement 34
Plan Integration 34
Capability Assessment 35
Planning and Regulatory Capabilities 35
Administrative and Technical Capabilities 37
Financial Capabilities 38
Education and Outreach Capabilities 39
Opportunities to Expand and/or Improve Capabilities 40
Mitigation Strategy 40

DRAFT

List of Figures

Figure 1: Social Media Post for the Hazard Mitigation Survey 34

List of Tables

Table 1: Contact Information for West Valley City 1
Table 2: Participant List for West Valley City 1
Table 3: Existing Plans and Resources of West Valley City 2
Table 4: Calculated Priority Risk Index Values for West Valley City 4
Table 5: Criteria for the Calculated Priority Risk Index 5
Table 6: National Flood Insurance Program Status for West Valley City 7
Table 7: National Flood Insurance Overview for West Valley City 7
Table 8: Jurisdiction-Specific Vulnerabilities and Impacts in West Valley City 8
Table 9: Jurisdiction-Specific Changes in Vulnerability in West Valley City 26
Table 10: Previous Plan Integration by West Valley City 35
Table 11: Opportunities for Integration with Future Plans of West Valley City 35
Table 12: Assessment of the Planning Capabilities of West Valley City 35
Table 13: Assessment of the Regulations and Ordinances of West Valley City 36
Table 14: Assessment of the Administrative Capabilities of West Valley City 37
Table 15: Assessment of the Technical Capabilities of West Valley City 37
Table 16: Assessment of the Financial Capabilities of West Valley City 38
Table 17: Assessment of the Education and Outreach Capabilities of West Valley City 39
Table 18: Opportunities to Expand and/or Improve the Capabilities of West Valley City 40
Table 19: Mitigation Action Alternatives for West Valley City 41
Table 20: Status of Prior Mitigation Actions of West Valley City 41
Table 21: 2025 Mitigation Action Plan for West Valley City 47

DRAFT

West Valley City Annex

To participate in this multi-jurisdictional hazard mitigation plan (MJHMP) update for Salt Lake County (SLCo), the governing body of West Valley City passed a formal resolution, a copy of which is maintained at the local government offices.

Planning Process Contact Information

Table 1 provides information on the point of contact during the updating of the MJHMP.

Table 1: Contact Information for West Valley City

Name	Contact Information
John Evans	**Phone**: 801.232.0337 **email:** John.evans@wvc-ut.gov

West Valley City has a fully integrated approach to hazard mitigation planning and program implementation. During the 2024 update process, the MJHMP participation roles in Table 2 were recorded

Table 2: Participant List for West Valley City

Name	Title	Jurisdiction
Karen Lang	Mayor	West Valley City
Ifo Pilli	City Manager	West Valley City
John Evans	Fire Chief and Emergency Manager	West Valley City
Eric Bunderson	City Attorney	West Valley City
John Flores	Asst. City Manager	West Valley City
Dan Johnson	Public Works Director	West Valley City
Steve Pastoric	Community Development Director	West Valley City
Jerry Thompson	Chief Building Official	West Valley City
Jaime Milano	EM Support Specialist	West Valley City
Eric Bunderson	Asst. Emergency Manager	West Valley City
Ken Cushing	Information Technology Director	West Valley City

Existing Plans and Resources

Table 3 lists the plans and resources available to the county.

DRAFT

Table 3: Existing Plans and Resources of West Valley City

Plan, Study, Report, or Technical Information	Is it available online?	If online, add the link here.	Is it on SharePoint? Or where can we access it?	Comments
West Valley Master Plan and land use	Yes	www.wvc-ut.gov		
General Plan	Yes	https://www.wvc-ut.gov/DocumentCenter/View/1865/General-Plan-2015-PDF		
Active Transportation Plan	Yes	https://www.wvc-ut.gov/DocumentCenter/View/15758/WVC_Active_Transportation_Final_Report_090220		
Moderate Income Housing Plan	Yes	https://www.wvc-ut.gov/DocumentCenter/View/10882/2016-Moderate-Income-Housing-Plan-PDF		

Jurisdiction Profile

Date of Incorporation

1980

Location and Description

West Valley City is approximately 35.4 square miles and is approximately 4,400 feet above sea level. Situated along the northwest side of the Salt Lake Valley, it is bordered by Salt Lake City to the east, Magna to the west, and Taylorsville and Kearns to the south. The Oquirrh Mountains rise to the west of the city while the Jordan River forms its eastern boundary.

Population

The 2022 American Community Survey 5-Year Estimate from the U.S. Census Bureau records the population of West Valley City's population as 134,466 people.

Demographics

Most of the 134,466 people are between the ages of 25 and 34, with a median age of 33.3; 69,219 are males (51.5%) and 65,247 are females (48.5%). English is the primary language in 57.1% of homes,, with 32.8% Spanish, other Indo-European languages 3.3%, Asian and Pacific Islander languages 4.5%, and 2.3% other languages.

DRAFT

Brief History

The first pioneers, which included Joseph and Susanna Harker, settled “over Jordan” in 1848, followed by others who developed farming communities. Canals in the 19th century brought irrigation and further enabled settlement of the area. By the early 20th century, construction of roads, schools, and churches increased social life, which was centered around the Mormon meetinghouse.

The Granger–Hunter Improvement District was established in 1950 to provide water and sewer services, enabling new subdivisions and sparking a residential boom. This brought rapid growth to the area eventually leading to the Granger–Hunter Community Council in 1964. West Valley City was officially incorporated in 1980 and is now the second largest city in Utah.

Climate

West Valley City experiences a cold semi-arid climate with hot, dry summers and cold, wet winters (Dsa Köppen classification). Summer temperatures can surpass 90°F with winter temperatures ranging from 20°F to 30°F. West Valley City experiences significant precipitation, with snowfall ranging from 40 to 50 inches and rainfall of approximately 16 inches each year.

Public Services

As the second largest city in Utah, West Valley City can provide a wide range of services. The city operates a police department, fire and EMS services, public works, planning & zoning, community development, parks and recreation, and many other government services.

The city offers community members the opportunity to participate on city boards and committees, including Board of Adjustments, Clean and Beautiful Committee, Historical Preservation Commission, License Hearing Board, Planning Commission, Professional Standards Review Board, and Sister City Committee.

Governing Body

The governing body of West Valley City consists of a mayor and a seven-member city council. The city council serves as the city government, performing executive functions of different natures. Members of this governing body are elected by the people.

Development Trends

The population of West Valley City, as with the rest of the Wasatch Front, is expected to grow through 2030 and beyond. Currently, high-rise buildings are being built and there are still large areas of older homes. As development continues, more educational opportunities on remodeling and retrofitting should be presented for residents. Internal growth, potential annexation, and increases in density in some areas will impact the overall population of the city. The average population is expected to become increasingly older.

DRAFT

Rapidly changing demographics and population growth will place different demands on aging housing stock. As West Valley City is approaching build-out in terms of raw land, these changes will raise important questions as to how the city grows, what is built, and where to invest resources and prepare for the future. Economic development has continued to be a priority for West Valley City's leaders. Business parks like Lake Park Corporate Center, West Ridge Commerce Park, Decker Lake Business District, and Metro Business Park include corporate headquarters, regional offices, and world-wide distribution centers for companies like Verizon Wireless, Frito Lay, Backcountry.com, United Parcel Service (UPS), and Discover Card. Economic development activities in the heart of the city include a complete redevelopment of Valley Fair Mall and an all-new transit oriented development, Fairbourne Station.

Jurisdiction-Specific Hazards and Risk

The Calculated Priority Risk Index (CPRI) is a comprehensive assessment tool for evaluating and prioritizing risks in a given context. It considers various factors, such as probability, impact, and urgency, to determine the level of risk associated with events or situations. The results for each hazard, including its risk factor (RF) value, are shown in Table 4. The results are based on the criteria in

Table 5 and the equation that follows it. The CPRI helps organizations and individuals make informed decisions about risk management and mitigation strategies. It provides a systematic approach to identifying and addressing potential issues, allowing for a more efficient allocation of resources and proactive risk prevention. With the CPRI, stakeholders can prioritize their focus on the most critical risks, leading to more effective risk management and, ultimately, better outcomes.

Table 4: Calculated Priority Risk Index Values for West Valley City

Type of Hazard Event	Probability of Future Events	Spatial Extent	Severity of Life/ Property Impact	Warning Time	Duration	Response Capacity	Risk Factor Value
Avalanche	1	1	1	1	1	1	1
Drought	4	4	2	1	4	1	2.8
Earthquake	3	4	4	4	3	2	3.4
Extreme Heat	4	4	3	1	3	1	3
Extreme Cold	4	4	2	1	3	1	2.7
Flooding	4	3	3	3	3	1	3.1
Landslide/Slope Failure	1	1	2	4	1	1	1.6
Radon	4	4	2	1	4	2	2.9
Heavy Rain	4	3	2	3	1	1	2.6
High Wind	4	3	3	3	2	1	3
Lightning	4	2	2	4	1	1	2.6
Severe Winter Weather	4	3	2	2	2	1	2.6
Tornado	2	2	3	4	1	2	2.4

Type of Hazard Event	Probability of Future Events	Spatial Extent	Severity of Life/ Property Impact	Warning Time	Duration	Response Capacity	Risk Factor Value
Wildfire	2	3	3	4	3	1	2.6
Dam Failure	1	1	1	2	2	1	1.2
Civil Disturbance	2	1	2	4	2	2	2.1
Cyberattack	2	3	3	4	3	2	2.7
Hazardous Materials Incident (Transportation & Fixed Facility)	3	1	2	4	1	1	2.2
Public Health Epidemic/ Pandemic	3	4	3	1	4	1	2.8
Terrorism	2	1	3	4	2	1	2.3

Table 5: Criteria for the Calculated Priority Risk Index

Risk Index Factor	Degree of Risk Level		Criteria	Factor Weight for Degree of Risk Level
Probability of Future Events	1	Unlikely	Less than 1 percent probability of occurrence in the next year or a recurrence interval of greater than every 100 years.	30%
	2	Occasional	1 to 10 percent probability of occurrence in the next year or a recurrence interval of 11 to 100 years.	
	3	Likely	11 to 90 percent probability of occurrence in the next year or a recurrence interval of 1 to 10 years.	
	4	Highly Likely	91 to 100 percent probability of occurrence in the next year or a recurrence interval of less than 1 year.	
Spatial Extent	1	Limited	Less than 10% of the planning area could be impacted.	10%
	2	Small	10%–25% of the planning area could be impacted	
	3	Significant	25%–50% of the planning area could be impacted.	
	4	Extensive	50%–100% of the planning area could be impacted.	
	1	Negligible	Less than 5% of the affected area's critical and non-critical facilities and structures are damaged/ destroyed. Only minor property damage and	30%

DRAFT

Risk Index Factor	Degree of Risk Level		Criteria	Factor Weight for Degree of Risk Level
Severity of Life/Property Impact			minimal disruption of life. Temporary shutdown of critical facilities.	
	2	Limited	More than 5% and less than 25% percent of property in the affected area is damaged/ destroyed. Complete shutdown of critical facilities for more than one day but less than one week.	
	3	Critical	More than 25% and less than 50% of property in the affected area is damaged/destroyed. Complete shutdown of critical facilities for over a week but less than one month.	
	4	Catastrophic	Over 50% of critical and non-critical facilities and infrastructures in the affected area are damaged/ destroyed. Complete shutdown of critical facilities for more than one month.	
Warning Time	1	Self-defined	More than 24 hours	10%
	2	Self-defined	12 to 24 hours.	
	3	Self-defined	6 to 12 hours.	
	4	Self-defined	Less than 6 hours.	
Duration	1	Brief	Up to 6 hours.	10%
	2	Intermediate	Up to one day.	
	3	Extended	Up to one week.	
	4	Prolonged	More than one week.	
Response Capacity	1	High	Significant resources and capability to respond to this kind of event; staff are trained, experienced, and ready.	10%
	2	Medium	Some resources and capability to respond to this kind of staff; some staff may be trained, experienced, and ready while others may need additional support.	
	3	Low	Limited resources and capability to respond to this kind of event; additional staff or staff training needed.	
	4	None	No resources and capability to respond to this kind of event; additional outside support would be required.	

RISK FACTOR (RF) EQUATION

RF Value = [(Probability x 0.30) + (Spatial Extent x 0.10) + (Severity of Life/Property Impact x 0.30) + (Warning Time x 0.10) + (Duration x 0.10) + (Response Capacity x 0.10)]

DRAFT

Hazards with an RF value greater than or equal to 2.5 are considered high risk. Those with RF values of 2.0 to 2.4 are considered moderate risk hazards, and those with an RF value less than 2.0 are considered low risk. The highest possible RF value is 4.

Hazard Event History

Examining hazard event histories provides valuable insights to inform decision-making and help prioritize resources for risk prevention and response efforts. Per the Storm Events Database of the National Centers for Environmental Information, no significant hazard events have occurred in the West Valley planning area since the 2019 plan update.

National Flood Insurance Program Summary

West Valley City participates in the National Flood Insurance Program (NFIP). Table 6 and

Table 7 display statistics related to the NFIP. West Valley City does not participate in the Community Rating System (CRS).

Table 6: National Flood Insurance Program Status for West Valley City[1]

Initial FHBM Identified	Initial FIRM Identified	Current Effective Map Date	Adopted Date	Date Joined NFIP	Tribal
11/02/1983	05/01/1986	09/25/2009	2009	05/01/1986	No

Table 7: National Flood Insurance Overview for West Valley City

Community ID	Number of Losses	Total Net Payment	Active Policies	Total Coverage
490245	6	$5,903.28	107	$32,229,000

West Valley City has designated the City Engineer as the Floodplain Administrator. The current Flood Damage Prevention Ordinance was adopted on 10/10/2009. The current effective FIRM is dated 9/25/2009. The Building Inspections Division is responsible for issuing permits. Engineering reviews the plans, permits, and construction sites as a part of this process, including permits for construction in the Special Flood Hazard Area. Substantial damage/substantial improvement determinations are made through the permitting and construction inspection process.

Jurisdiction-Specific Vulnerabilities and Impacts

Table 8 provides information on the vulnerable assets in West Valley City, including its critical facilities, highlighting the city's vulnerability to identified hazards. It also describes the potential impacts on the community arising from those vulnerabilities. Impacts refer to the consequences or effects of each hazard on the assets. By understanding the risks associated with these assets, local authorities can develop

[1] FIRM = Flood Insurance Rate Map, FHBM = Flood Hazard Boundary Map

proactive strategies to mitigate vulnerabilities and ensure the safety and functionality of these important assets during hazard events. This data is invaluable for decision-making and prioritizing resources for emergency response and preparedness efforts, ultimately contributing to more effective risk management and greater resilience within the community.

Vulnerabilities in West Valley City include the population of 134,466, and critical facilities such as 1 emergency operations center (EOC), 6 fire stations, 1 hospital, 2 police stations, 35 schools. Major transportation routes include I-215, Bangerter Highway, Mountain View Corridor, Highway 201, 3500 South, and 4100 South. Recreation assets include West Valley Family Fitness Center, Redwood Recreation Center, Stonebridge Golf Club, Utah Cultural Celebration Center, Hunter Park, and Utah First Credit Union Amphitheater.

Table 8: Jurisdiction-Specific Vulnerabilities and Impacts in West Valley City

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
Avalanche	NA	There is no risk of avalanche in West Valley because the city does not have terrain or snow accumulations that pose a risk.
Drought	People	*Vulnerability:* All West Valley residents are vulnerable to drought due to concerns about water supply and public health. *Impacts:* Drought can limit water supply for drinking, cooking, cleaning, and other household uses. Drought can lead to decreased water quantity and quality, increasing the incidence of illness and/or disease. Drought also affects air quality due to increased dust.
	Structures	*Vulnerability:* Homes, businesses, and public facilities are vulnerable to water scarcity. *Impacts:* A lack of water can impact future development and landscaping. In addition, it can lead to increased costs for water. Water-reliant businesses, such as laundromats, restaurants, and car washes, may face higher costs or operational limitations due to water scarcity. Parks, public pools, and other recreational areas that rely on water may face closures or restricted operations due to reduced well water availability.
	Economic Assets	*Vulnerability:* Businesses may suffer losses due to drought conditions. *Impacts:* Prolonged drought may lead to water restrictions or increased costs for culinary water and irrigation water for landscaping. Drought conditions can affect the appeal of local outdoor attractions, reducing tourism and the revenue it generates for local businesses.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Trees, parks, and the Jordan River are vulnerable to drought. *Impacts:* Drought can affect public health. Drought stresses trees and other vegetation, which may become more susceptible to disease and pests.
	Critical Facilities and Infrastructure	*Vulnerability:* Water supply systems, agriculture, and emergency services are susceptible to drought. *Impacts:* Reduced precipitation impacts water availability and crop yields. Fire departments may struggle with wildfire management due to limited resources. Public health facilities face water quality challenges

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		that affect drinking water and sanitation. Drought increases the risk of wildfire, threatening safety and property
	Community Activities	*Vulnerability:* Recreation and public events are vulnerable to drought. *Impacts:* Recreational spaces may struggle with maintenance, and households may encounter restrictions and costs for landscaping and pools. Parks and golf courses may experience deterioration in the health of vegetation and a decline in aesthetic appeal during drought. There may be decreased attendance at outdoor events.
Earthquake	People	*Vulnerability:* All West Valley residents are vulnerable to earthquakes. *Impacts:* People may be injured or killed by falling objects or collapsed structures. Many day-to-day activities, such as school and work, may be disrupted. Some people may be displaced from their homes. Those living in older buildings not up to seismic standards, families with young children, the elderly, and individuals with disabilities who may struggle to evacuate are vulnerable. Residents near fault lines, such as the West Valley Fault that traverses the city, and those in densely populated areas are also at higher risk. Furthermore, individuals lacking resources for disaster preparedness, such as emergency supplies and evacuation information, may find it difficult to respond effectively during an earthquake, thereby increasing their vulnerability. In addition, psychological effects, such as increased anxiety, can affect the community.
	Structures	*Vulnerability:* All structures in West Valley are vulnerable, including homes and businesses, particularly in high liquefaction zones. *Impacts:* Much of the northern and western areas of West Valley are in a high liquefaction potential zone. Structures in this area are more at risk of damage. Homes and businesses might sustain significant structural damage, posing safety risks. Shaking from a moderate to strong earthquake can damage walls, chimneys, and foundations. Damage may be extensive, and buildings may become unusable. Businesses may be forced to close, and residents may be displaced. Older buildings not built according to modern seismic codes, unreinforced masonry, and homes with inadequate foundations may be vulnerable. Many lack the retrofitting needed to withstand earthquakes, and those built on unstable soil or near fault lines are at higher risk. Large commercial buildings without flexible designs can sustain severe damage. Overall, outdated construction practices and poor site selection contribute to their vulnerability.
	Economic Assets	*Vulnerability:* Business and commerce are vulnerable to earthquakes. *Impacts:* The local economy, reliant on retail and services, could face significant disruptions during seismic events. Businesses will likely lose revenue and workers could be severely impacted by wage loss. Economic loss could be felt across the region. The sales tax base would be impacted by business losses. Repairs can lead to high costs, potential declines in property values, and disruptions to local businesses, ultimately impacting job availability and the overall economy.
	Natural, Historic, and	*Vulnerability:* Historic buildings and the Utah Cultural Celebration Center are vulnerable to earthquakes.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Cultural Resources	*Impacts:* Historic structures and landmarks often lack modern seismic retrofitting, making them susceptible to damage. Cultural resources, including community centers, may also be at risk of damage, compromising their integrity and the heritage they represent.
	Critical Facilities and Infrastructure	*Vulnerability:* All critical facilities and infrastructure are vulnerable to earthquakes. *Impacts:* Fire and police stations, healthcare facilities, schools, and government buildings may be damaged by earthquakes and their services may be disrupted. Water supply networks, wastewater systems, power distribution networks, and communication systems are also vulnerable to damage from earthquakes and may be inoperable. Critical facilities and government services may not be able to operate until these systems are restored. Several major transportation routes in West Valley could be damaged, and numerous local roads could be damaged and impassable. Road closures may delay emergency response and the delivery of goods and materials as well as inhibit recovery.
	Community Activities	*Vulnerability:* Day-to-day activities, work, education, and community events may be canceled following an earthquake. *Impacts:* Response and recovery efforts may disrupt activities following an earthquake. A stronger magnitude earthquake will likely result in more extended disruptions and cancellations.
Extreme Heat	People	*Vulnerability:* All residents are vulnerable to extreme heat. Vulnerable populations may experience more extreme effects. Vulnerable populations during extreme heat include adults over 65, individuals with pre-existing health conditions, and young children, as they struggle to regulate body temperature. Socioeconomically disadvantaged individuals may lack access to cooling resources, while outdoor workers are at higher risk of heat-related illnesses due to physical labor without adequate hydration and rest. *Impacts:* Extreme heat can significantly affect public health, increasing the risk of heat-related illnesses, especially among vulnerable populations. Individuals without access to shade, air conditioning, and water are vulnerable to heat-related illnesses such as heat exhaustion, heat stroke, and dehydration. In addition, extreme temperatures worsen air quality by raising ozone levels, which poses respiratory risks. Extreme heat can hinder students' learning.
	Structures	*Vulnerability:* Extreme heat can be detrimental to homes, businesses, industry, and city-owned buildings. *Impacts:* Residential buildings with inadequate insulation and ventilation, and commercial buildings lacking reflective roofing and proper shading, may be vulnerable. Materials like metal and glass can amplify heat retention, while areas with limited green space typically experience higher temperatures. West Valley can experience urban heat island effects, which keep temperatures warmer even at night.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Economic Assets	*Vulnerability:* Business may suffer losses due to extreme heat. *Impacts:* Agricultural operations can have reduced yields and higher water demand due to heat stress. The outdoor recreation industry may see decreased participation during heat waves, affecting local businesses that rely on visitors. Construction and other outdoor occupations may lose productivity during extreme heat.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Parks and recreation are vulnerable to extreme heat. *Impacts:* Extreme heat can stress vegetation and wildlife in open spaces and parks, causing them to lose their appeal and see reduced use. Local plant species and wildlife habitats can suffer from drought conditions, leading to reduced biodiversity. Extreme heat can also contribute to the risk of wildfire. Historic buildings may degrade due to high temperatures, causing materials to deteriorate and paint to peel.
	Critical Facilities and Infrastructure	*Vulnerability:* City facilities, hospitals, and transportation systems are vulnerable to extreme heat. *Impacts:* Healthcare facilities may experience increased demand due to heat-related medical issues. Schools and other public buildings can suffer from the strain on cooling resources. Some facilities may see increased demand as residents seek out city facilities for relief from the heat. Transportation systems are at risk of damage, such as buckling roads and warped train tracks, which can cause significant disruptions on the many major roads that pass through West Valley. Power grids may be strained by higher demands for electricity for cooling, leading to potential outages.
	Community Activities	*Vulnerability:* Public events and recreational activities are vulnerable to extreme heat. *Impacts:* Activities like outdoor sports, fairs, and markets are vulnerable to extreme heat. These events can pose risks, particularly for participants such as youth athletes and elderly residents who may suffer from heat-related illnesses. Extreme heat may necessitate delays or cancellations of these activities.
Extreme Cold	People	*Vulnerability:* All West Valley residents are vulnerable to extreme cold. Some populations may face higher risk or more severe effects. *Impacts:* Below-freezing temperatures occur annually in West Valley. Individuals exposed to extreme cold can experience life-threatening health effects such as hypothermia and frostbite. The elderly face increased risks due to health issues and mobility challenges, while children may be susceptible if they lack proper winter clothing. Individuals experiencing homelessness or financial hardship often lack access to heated shelters and resources for protection against the cold. Those with pre-existing health conditions may experience worsening symptoms at low temperatures. Low-income residents may struggle with the increased costs of heating their homes.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Structures	*Vulnerability:* Residential homes, commercial buildings, and unheated spaces like sheds may be vulnerable. *Impacts:* Homes with poor insulation or inadequately sealed windows and doors are prone to significant heat loss. Older buildings lacking modern energy efficiency standards may also suffer from freezing pipes and structural damage.
	Economic Assets	*Vulnerability:* Business are vulnerable to disruptions caused by extreme cold. *Impacts:* Businesses face increased heating costs. Agriculture, infrastructure, and energy-related businesses may be at risk. Agricultural operations, such as greenhouses and livestock farms, may experience crop and livestock losses, impacting revenue. Icy roads can disrupt transportation networks, affecting logistics and supply chains, while power lines risk outages from ice accumulation, impacting local businesses. Energy-intensive facilities may face higher operational costs due to increased heating needs.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Open space, parks, vegetation, and wildlife are vulnerable to extreme cold. *Impacts:* Due to prolonged cold, local vegetation and wildlife habitats may suffer from plant stress and reduced food availability. This may affect the Jordan River riparian area. Historic structures, especially those not built for severe weather, can deteriorate from below-freezing temperatures and ice. Culturally significant sites, including monuments and public art, may also be damaged.
	Critical Facilities and Infrastructure	*Vulnerability:* City facilities and transportation systems are vulnerable to extreme cold. *Impacts:* Facilities are at risk of water failure or damage if pipes freeze or heating is not adequate. Water infrastructure can face frozen pipes and equipment failures. Icy conditions may increase accident risks on transportation infrastructure, and power generation facilities may struggle to meet heating demands. City resources may be strained to provide warming centers when Code Blue is in effect.
	Community Activities	*Vulnerability:* Community activities and recreation are vulnerable to extreme cold. *Impacts:* Youth sports, festivals, and outdoor markets are vulnerable to extreme cold. Harsh temperatures can deter participation, impacting community engagement. At-risk groups, such as the elderly and young children, face health risks like frostbite and hypothermia, further limiting outdoor involvement. In addition, poorly insulated buildings or inadequate heating in community centers can make gatherings uncomfortable.
Flooding (and Heavy Rain)	People	*Vulnerability:* Residents in flood zones near the Jordan River and unsheltered populations are vulnerable to flooding *Impacts:* Residents in flood zones are at risk of injury and may also be displaced from their homes. Flooding primarily affects residents in low-lying areas near rivers and streams, especially during heavy rainfall or snowmelt. In West Valley, flood zones are along the Jordan River, Coon Creek, and a few isolated low-lying areas. Public health may also be compromised due to waterborne diseases and stress-related issues. Individuals without reliable transportation may struggle to

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		evacuate quickly, while low-income families often lack resources for flood-prevention measures. The elderly and those with disabilities may face mobility challenges, increasing their risk during emergencies. Overall, factors such as geographic location, economic status, and physical ability contribute to the community's varying levels of vulnerability to flooding.
	Structures	*Vulnerability:* All structures in flood hazard zones are vulnerable to flooding. *Impacts:* Both residential and commercial structures are vulnerable to flooding, primarily those in low-lying areas or near the Jordan River. Flooding can cause costly water damage. Residential properties in floodplains and commercial buildings without proper drainage systems or flood-resistant designs face significant risks during heavy rain or snowmelt. Older structures may be more susceptible due to outdated construction standards.
	Economic Assets	*Vulnerability:* Businesses in flood zones are vulnerable to flooding. *Impacts:* Commercial properties, especially retail centers and warehouses near the Jordan River or low-lying areas, are at high risk during heavy rainfall. Structures and inventory can be damaged by flooding, causing lost revenue. Businesses may also be faced with declining property values or increased insurance costs. Public infrastructure, such as roads and utilities, may experience disruptions, which may further impair business operations.
	Natural, Historic, and Cultural Resources	*Vulnerability:* The Jordan River, open spaces, parks, and the Utah Cultural Celebration Center are vulnerable to flooding. *Impacts:* Natural areas like wetlands and streams are at risk of habitat destruction or damage from erosion. Cultural resources, such as parks and public spaces, can become unusable, affecting community events. The Utah Cultural Celebration Center is within the flood zone and could be damaged. Runoff may contain contaminants that affect water quality in the river.
	Critical Facilities and Infrastructure	*Vulnerability:* Three schools are in flood hazard zones, as are major roads such as Highway 201, 900 West, and 1700 West. *Impacts:* Flooding could affect major transportation routes. Damaged or blocked roads can disrupt emergency response and isolate communities. In addition, inadequate drainage systems and urban development encroaching on floodplains increase these risks.
	Community Activities	*Vulnerability:* Public events and recreation activities are vulnerable to flooding. *Impacts:* Outdoor events, sports, and farmers' markets are vulnerable to flooding. Parks and open spaces can quickly become inundated during heavy rainfall or rapid snowmelt. Events may be postponed or canceled.
Landslide	N/A	There is minimal risk in West Valley. The terrain is mostly flat, which presents little risk of landslides.
Radon	People	*Vulnerability:* Twenty-seven percent of homes tested in West Valley have dangerous levels of radon (utahradon.org). *Impacts:* Residents in homes with high levels of radon are at high risk of lung cancer. Homeowners in older buildings in areas with high

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		radon potential are most at risk. Families with young children or elderly members are especially at risk due to their increased sensitivity to health impacts. Many residents may not test for radon, making them unaware of dangerous levels. Increased awareness and public health initiatives are vital for protection.
	Structures	Vulnerabilities: Radon poses minimal impacts on structures, as it is primarily a health risk. *Impacts:* Although radon doesn't directly impact structures, the condition of structures contributes to radon levels that pose a risk to occupants. Structures with concrete slabs or basements are particularly vulnerable to radon exposure, as radon can seep in from the soil. Homes in areas with high uranium content are at greater risk, especially in older houses with inadequate ventilation. Cracks in floors and walls can allow radon to enter. Incorporating radon-resistant construction in new developments is also essential for safety.
	Economic Assets	*Vulnerability:* Home values are vulnerable to the presence of radon. *Impacts:* The presence of radon can lead to health issues, decrease property values, and complicate real estate transactions, impacting homeowners and investors alike.
	Natural, Historic, and Cultural Resources	There is minimal vulnerability of these resources to radon.
	Critical Facilities and Infrastructure	*Vulnerability:* Public buildings are vulnerable to radon exposure. *Impacts:* Schools in high-radon areas pose risks for children if they do not have proper ventilation. Healthcare facilities also are at risk, affecting both patients and staff. Other city buildings, such as fire and police stations, may have leaks in foundations that may expose employees to radon. Inadequate construction practices and a lack of awareness about radon risks often heighten vulnerability.
	Community Activities	*Vulnerability:* There is limited vulnerability of public events to radon. *Impacts:* Radon is a long-term exposure risk and hasn't typically affected day-to-day activities.
High Wind	People	*Vulnerability:* The entire population of West Valley City is vulnerable to high wind. Wind events occur over a large area and can impact the whole city as well as neighboring jurisdictions. *Impacts:* High wind can cause injuries if people are struck by blowing debris or falling tree limbs. The elderly may face mobility challenges that hinder their ability to seek shelter, while children might not fully grasp the dangers of severe weather. Individuals with disabilities or health issues may struggle to react quickly. Those living in mobile homes or poorly constructed houses are at greater risk of damage, as are people who work outdoors and may be exposed during sudden wind events.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Structures	*Vulnerability:* All structures in West Valley City, including mobile home parks, are vulnerable to high wind. *Impacts:* High winds may down trees, damage roofs, and break windows. Structures can also be damaged by trees uprooted by high wind. Carports, sheds, fences, and accessory structures are easily damaged by high winds and can contribute to blowing debris. West Valley has 10 mobile/manufactured home communities that are at high risk due to their inability to withstand strong high winds and their insecure foundations. Single-story homes, commercial buildings, and agricultural facilities like barns may be at risk. Residential homes with large flat roofs or lightweight materials may struggle to withstand strong winds, while commercial buildings with extensive glass can suffer from breakage and structural damage. Agricultural structures often lack proper reinforcement, making them prone to collapse. The vulnerability of these buildings is heightened in open areas with no landscaping or natural windbreaks, which can help diffuse wind energy.
	Economic Assets	*Vulnerability*: Business operations are vulnerable to disruption from high wind events. *Impacts:* Commercial buildings, such as retail stores, might have large signage and awnings that can be damaged, leading to business interruptions. Businesses may not be able to conduct normal operations if power is out or roads are blocked by debris. Agricultural assets, such as greenhouses and livestock facilities, face risks from wind destruction, impacting crops and animals. Infrastructure, including power lines and roads, can be compromised, resulting in outages and disruptions. The vulnerability of these assets is largely due to construction quality, location, and the presence of loose materials that can become projectiles.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Trees, open spaces, and parks are vulnerable to high winds. *Impacts:* Natural resources, like mature trees and agricultural lands, are vulnerable to high winds, which can cause uprooting and wind erosion. Historic structures also may be at risk if their materials are not resilient, potentially leading to damage or collapse. Cultural resources, such as outdoor art installations and community spaces, can be disrupted or damaged by strong winds. These vulnerabilities are primarily due to the structural integrity of the resources and their exposure to the elements.
	Critical Facilities and Infrastructure	*Vulnerability:* Power distribution systems, communication, and transportation infrastructure are vulnerable to high winds. *Impacts:* Utility infrastructure, such as power lines and communications towers, is at risk, potentially leading to outages. Bridges and overpasses may be compromised, and falling branches from nearby trees can pose hazards to property and access routes. This vulnerability stems from design limitations and the materials used.
	Community Activities	*Vulnerability:* Public events, sports, and recreational activities are vulnerable to high winds. *Impacts:* Outdoor events like festivals and sporting activities may involve injury from falling debris and damaged structures. Farmers'

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		markets and open-air concerts can also face challenges, as vendor tents can be uprooted. Events may be delayed or canceled. In addition, recreational activities in parks—such as picnics and playground use—become unsafe during high winds. The vulnerability of these activities stems from their outdoor settings, where structures and unattached items can easily be compromised, leading to safety risks and disruptions.
Lightning	People	*Vulnerability:* Lightning can occur anywhere in West Valley City, and all populations are vulnerable. People engaging in outdoor recreational activities are at increased risk. Unhoused populations are also at risk. *Impacts:* Lightning can cause severe injury or death. Outdoor enthusiasts, including athletes and golfers, are at risk during thunderstorms due to their exposure in open areas and may struggle to find shelter quickly. In addition, young children and the elderly are more vulnerable, as they may not be aware of the dangers of lightning or may be slower to seek protection. Those lacking access to warning systems or education on lightning safety are at further risk during severe weather.
	Structures	*Vulnerability:* All structures are vulnerable to lightning strikes. *Impacts:* Lightning can ignite fires or cause electrical damage from power surges. Due to their height and exposure, tall buildings, communications towers, and open-frame agricultural barns are particularly vulnerable to lightning strikes. Those with metallic components or inadequate grounding systems face increased risk because metal conducts electricity. In addition, residential homes near tall trees may be at risk if the trees are struck and energy is transferred to the structure.
	Economic Assets	*Vulnerability:* Business operations are vulnerable to disruption from lightning. *Impacts:* Local businesses may suffer if there is a prolonged power outage or lightning event. There are cascading events if lightning is coupled with heavy rain or high winds. Tall structures like communications towers and power lines are at high risk, as are agricultural buildings, such as barns and silos, which can suffer damage to stored crops and livestock. Commercial buildings with metal roofing or equipment may face electrical surges, disrupting operations. In addition, outdoor recreational areas that attract crowds are at risk during thunderstorms, posing dangers to infrastructure and public safety. Tourism and recreation industries experience an economic burden that includes increased insurance claims and repair costs.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Trees and parks are vulnerable to lightning. *Impacts:* Mature trees in parks can attract lightning due to their height. Trees or playground equipment could be damaged. Historic buildings made of wood or flammable materials are at risk of igniting. Cultural resources, such as monuments and outdoor sculptures, can also be damaged by lightning. The risk increases in areas with frequent thunderstorms and dry conditions. Lightning can spark wildfires in nearby areas, threatening property and the environment.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Critical Facilities and Infrastructure	*Vulnerability:* Power networks, communication networks, emergency response, and healthcare facilities are vulnerable to lightning. Communications towers, schools, hospitals, and power lines may be at risk. Communications towers attract lightning due to their height and metal structure. Schools and hospitals, as public gathering places, can be at risk if they do not have proper lightning protection systems. Power lines and substations are also susceptible, potentially causing power outages. Critical facilities may be disrupted if they lack power. Essential services could be disrupted if there are road closures or debris on the road from the lightning. Additionally, it may be difficult to help hospital patients if there are downed power lines or power disruptions.
	Community Activities	*Vulnerability:* Public events are vulnerable to lightning. *Impacts:* Outdoor recreational areas that attract crowds are at risk during thunderstorms, posing dangers to infrastructure and public safety. Events may be delayed or canceled. Sports practices, concerts, picnics, and festivals are particularly vulnerable to lightning strikes. Participants in these events often find themselves in open areas without adequate shelter and may be unprepared for sudden weather changes, leading to dangerous situations. Water-related activities, such as swimming and fishing, also increase risk due to water's conductivity.
Severe Winter Weather	People	*Vulnerability:* Severe winter weather can affect the entire city. All of West Valley City is potentially vulnerable to severe winter weather. *Impacts:* Unsheltered populations are vulnerable to exposure or hypothermia. Heavy snow, blizzards, and snow squalls happen frequently in the winter months. Snowy or icy conditions can lead to injuries from slips and falls. Elderly individuals may struggle with mobility and health issues, while young children lack the awareness needed to navigate severe weather safely. People with disabilities often depend on assistance that might not be available during storms. In addition, those without reliable transportation can become stranded, and low-income families in inadequate housing may lack resources for heating and snow removal.
	Structures	*Vulnerability:* Homes and businesses face some risk from severe winter weather, but significant damage is uncommon. *Impacts:* Flat-roofed buildings are prone to snow accumulation, risking roof collapse if not cleared. Older homes might have weakened roofs or inadequate insulation, making them susceptible to snow load and ice dams. Commercial buildings with large open spaces may face risks if their roofs do not meet snow load requirements. Temporary structures like tents are especially vulnerable, as they are not designed to handle heavy snow. Roof design, material quality, and the age of the building are key factors in how well a structure can withstand heavy snowfall.
	Economic Assets	*Vulnerability:* Business disruptions and increased costs to the city are vulnerabilities during severe winter weather. *Impacts:* Retail businesses can experience significant losses from decreased customer traffic and delayed shipments. Construction projects may face delays and increased costs. Transportation and

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		logistics companies are particularly impacted, as snow can hinder vehicle movement, leading to delivery delays. In addition, public services may struggle to maintain continuity during severe weather events. These conditions can lead to increased costs for businesses and the city for snow removal and have a substantial economic impact.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Parks and open spaces are vulnerable to severe winter weather. *Impacts:* Natural resources like trees can break under heavy snow, which can cause damage in parks. Cultural resources, including public art and community spaces, face access issues during severe winter weather.
	Critical Facilities and Infrastructure	*Vulnerability:* Transportation, power, and communication systems are vulnerable to severe winter weather. *Impacts:* Transportation networks, like roads and bridges, can become impassable, hindering emergency responses. Transit lines may also face delays. Utilities, such as power and water supply systems, are at risk of disruptions from downed lines. Communications infrastructure can be damaged, impeding signals. These vulnerabilities stem from reliance on systems that may not be equipped to handle extreme winter weather.
	Community Activities	*Vulnerability:* Public events are vulnerable to severe winter weather. *Impacts:* Community gatherings may be at risk of delays or cancellations. Severe weather can lead to low attendance, travel delays, and access issues for essential services, such as emergency response and healthcare.
Tornado	People	*Vulnerability:* Any member of the West Valley City population could be affected by a tornado. Tornadoes are rare but could potentially occur anywhere in the city. *Impacts:* Residents are vulnerable to serious injury from blowing debris, uprooted trees or falling limbs, and structural collapse. Individuals living in mobile homes face higher risks, as these structures can be easily damaged. Those with limited mobility, such as the elderly and people with disabilities, may struggle to reach safety quickly. Families with young children might have difficulty ensuring everyone's safety during a warning. In addition, residents unfamiliar with tornado preparedness or without timely weather alerts are at greater risk.
	Structures	*Vulnerability:* Any structure near or on the path of a tornado is vulnerable. This could occur anywhere in West Valley City, and all buildings are vulnerable. Mobile homes face more severe damage. *Impacts:* West Valley has 10 mobile/manufactured home communities that are at high risk due to their inability to withstand strong winds and insecure foundations. Other homes and businesses could sustain heavy damage from a tornado, including roofs torn from homes, broken windows, and walls damaged or compromised. Single-story homes and those with flat roofs often lack the support needed to withstand high winds. Mobile homes are particularly at risk due to their light weight and insecure foundations. Older commercial buildings and large-span structures, such as warehouses, can have

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		roofs easily lifted by tornado winds. Overall, inadequate materials, poor design, and age increase the risk of damage from tornadoes.
	Economic Assets	*Vulnerability:* Businesses throughout the city are vulnerable to tornadoes. *Impacts:* Tornadoes can damage retail and commercial structures, warehouses, hotels, restaurants, and other businesses. Damage to power or communication systems can cause temporary business closures. Operational downtime and damage to structures and inventory may lead to lost revenue and potentially lost wages or layoffs. Roads and bridges can be compromised, disrupting transportation and service access.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Parks and trees are vulnerable to tornadoes. Impacts. West Valley City's parks and open spaces could be severely damaged by tornado. Trees, playground equipment, and other outdoor features could be damaged.
	Critical Facilities and Infrastructure	*Vulnerability:* Fire and police stations, city facilities, hospitals, and utility systems are vulnerable to tornadoes. Any aboveground facilities in the path of the tornado could be affected. *Impacts:* Public safety buildings, schools, or other civic facilities may need emergency inspections or repairs and may be closed temporarily. Hospitals, schools, and emergency response centers are vulnerable to tornadoes due to their structural design and large open spaces that may not withstand high winds. Utilities like water treatment plants and power stations are also at risk, as damage to these facilities can disrupt essential services. In addition, any structures not built to modern codes might lack the reinforcements necessary to endure severe weather, increasing vulnerability for the facilities and surrounding communities.
	Community Activities	*Vulnerability:* Public events are vulnerable to tornadoes. *Impacts:* Outdoor festivals, sports events, and markets are vulnerable to tornadoes due to their open spaces and limited options to provide shelter. Temporary structures, such as tents, can be easily damaged by high winds. Schools and recreational facilities with large glass windows or weak roofs also face significant risks.
Wildfire	People	*Vulnerability:* A small portion of West Valley City is vulnerable to wildfire, primarily in open spaces near the Jordan River, along Highway 201, and in the far western section of the city between U-111 and Mountain View Corridor. Residents near these areas are at risk. *Impacts:* Residents near these areas may need to evacuate if a wildfire occurs. Individuals with physical disabilities or health issues who may struggle to evacuate, and low-income families lacking resources for fire safety measures, may be vulnerable. Older adults might have reduced mobility, making them more dependent on others for assistance. The entire valley could experience poor air quality and related health impacts from a wildfire in the region. Children, the elderly, and those with respiratory health problems are at higher risk for complications from poor air quality.
	Structures	*Vulnerability:* Homes and businesses near moderate wildfire risk zones are vulnerable.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		Impacts: Most properties are not in dense vegetation, but those made of wood or near heavily vegetated areas may be vulnerable. Properties near the Wildland-Urban Interface are at higher risk due to surrounding flammable vegetation. Inadequate defensible space, such as insufficient clearing of dry grass and shrubs, increases susceptibility. Roofs made of combustible materials and buildings that lack fire-resistant features are particularly at risk during wildfire events.
	Economic Assets	*Vulnerability:* Business near open spaces are vulnerable to wildfire. *Impacts:* Properties near wildland areas are at high risk, especially if they lack defensible space and fire-resistant landscaping. Commercial assets, such as retail centers close to grassland or undeveloped regions, can suffer damage from flames and smoke, affecting the local economy. Agricultural lands also are susceptible, as wildfires can destroy crops and livestock, leading to financial losses. Vital infrastructure, such as power lines and water pipelines, can be disrupted, causing further economic repercussions. These vulnerabilities are heightened by dry conditions and high winds, which can facilitate the spread of fires. Outdoor recreation businesses, such as golf courses, could see fewer visits if air quality is poor.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Vegetation, parks, and water quality are vulnerable to wildfires. *Impacts:* Natural resources like forests and grasslands are at risk because dry vegetation and accumulated brush can easily ignite. The increasing frequency of drought and extreme heat, exacerbated by climate change, heightens these vulnerabilities. Riparian vegetation and wildlife along the Jordan River could be affected. Erosion and runoff following a fire may degrade water quality in creeks and rivers.
	Critical Facilities and Infrastructure	*Vulnerability:* Power and emergency services are vulnerable to disruptions from wildfires. *Impacts:* No critical facilities were identified in areas at risk of wildfire. Fires elsewhere in the county could contribute to utility disruptions or outages. There may be increased demands on city facilities and services.
	Community Activities	*Vulnerability:* Public events are vulnerable to wildfires. *Impacts:* Recreational activities and outdoor events, such as festivals and sports, may experience risk, especially during hot, windy conditions. Outdoor events may be canceled due to wildfire smoke. In addition, landscaping with dry grasses and shrubs increases susceptibility during fire season, putting local infrastructure, such as schools and neighborhoods, at risk.
Dam Failure	N/A	No significant or high hazard dams are located in West Valley City, and no inundation boundaries from neighboring cities affect West Valley assets.
Civil Disturbance	People	Low-income individuals may lack the resources for safety, while the elderly or disabled may struggle to navigate emergencies. Young people, particularly teenagers, may be drawn into unrest, influenced by social dynamics. In addition, marginalized individuals may feel targeted or compelled to participate. A lack of community cohesion and trust in authorities can further heighten tensions.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Structures	Government buildings, commercial properties, and infrastructure, such as bridges and transportation hubs may be vulnerable. Government buildings may be targeted for their symbolic authority, while retail stores can attract crowds during protests. Residential neighborhoods also can be affected, especially in areas with heightened tensions. The vulnerability of these structures stems from their visibility and importance to the community, combined with factors such as location and ongoing social issues.
	Economic Assets	Retail establishments, especially shopping centers, are at risk as they often become focal points for protests. Transportation systems can be disrupted by blockades, hindering access to services. Financial institutions may face vandalism or theft, while critical service providers, such as hospitals, could experience strain during unrest. Several economic assets are vulnerable to civil disturbances, primarily due to their visibility and reliance on foot traffic.
	Natural, Historic, and Cultural Resources	Parks and open spaces may suffer from vandalism or destruction during uncontrolled events. Historic sites can become targets, as they symbolize authority or cultural significance. Cultural resources, such as community centers and places of worship, also may be affected, as they play a vital role in community identity. Their vulnerability lies in the potential for damage during protests.
	Critical Facilities and Infrastructure	Governmental buildings, schools, and healthcare facilities may be at risk, since they often symbolize authority and serve as community hubs, making them targets during unrest. Utility infrastructure, such as water and power facilities, is also at risk of disruption. Its visibility and essential services contribute to its vulnerability during civil disturbances.
	Community Activities	Public demonstrations, parades, and local government meetings are particularly vulnerable to civil disturbances. These events often attract large crowds and can become tense, especially around contentious social or political issues. Factors such as the local demographic, economic conditions, and recent events can heighten these vulnerabilities, making it easier for conflicts to arise during passionate public gatherings.
Cyberattack	People	Older adults often lack familiarity with technology and online security, making them easy targets for phishing scams. Individuals engaging in online banking or shopping without strong security measures also face heightened risks. Families with children may be less vigilant about internet safety, allowing cybercriminals to exploit personal information. In addition, small business owners without robust cybersecurity practices are prime targets for attacks that can disrupt operations.
	Structures	Critical infrastructure, such as power plants, water treatment facilities, and transportation systems, often lack robust cybersecurity measures. Commercial businesses, especially financial institutions and healthcare providers, also are at risk due to weaker data protection and employee training. Educational institutions may be vulnerable because of limited funding for cybersecurity and outdated software. Obsolete technology and insufficient training enhance the susceptibility of these structures to cyber threats.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Economic Assets	Financial institutions, such as banks and credit unions, are at risk of data theft and service disruption. Small and medium-sized businesses often lack robust cybersecurity measures, making them attractive targets. In addition, local government agencies and critical infrastructure, such as water treatment facilities, might have outdated security protocols, posing threats to public safety. The rise of remote work further exacerbates vulnerabilities, as employees accessing networks from home can unintentionally expose systems to risks. Overall, the combination of outdated technology and insufficient cybersecurity practices increases the vulnerability of an area's economic assets.
	Natural, Historic, and Cultural Resources	Natural resources like water management systems and wildlife databases can be compromised, disrupting ecosystems. Historic sites and museums that digitize collections are at risk of losing valuable artifacts and data. In addition, cultural organizations managing events may face threats if their systems lack adequate security. The limited resources of smaller organizations further increase this vulnerability
	Critical Facilities and Infrastructure	Energy and utility services, such as electricity and water systems, which often rely on outdated technology, may be vulnerable. Transportation infrastructure, such as traffic management and public transit, is also at risk due to networked systems. Healthcare facilities that use electronic records and connected medical devices face vulnerabilities that can compromise patient safety.
	Community Activities	Online registration for events, local government services, and educational programs that rely on digital tools may be targeted due to inadequate security measures, outdated software, and insufficient staff training.
Hazardous Materials Incident (Transporta-tion & Fixed Facility)	People	Individuals with pre-existing health conditions, such as respiratory issues, and the elderly are at higher risk due to their compromised health. Children also are more susceptible. Those living near industrial areas or transport routes for hazardous materials face increased exposure risk, while low-income families may lack resources and information to effectively prepare for incidents.
	Structures	Industrial facilities, such as manufacturing plants and warehouses, often store hazardous chemicals which may leak. Residential buildings, schools, and hospitals also are at risk, particularly if located along transportation routes for hazardous materials. Older buildings may lack modern safety features, increasing their vulnerability.
	Economic Assets	Industrial facilities, transportation infrastructure, and nearby commercial properties may be affected. Industrial facilities handling chemicals are at risk of spills or leaks, while roads and railways used for transporting hazardous materials can lead to accidents and contamination. In addition, nearby commercial and residential areas face potential health risks and economic losses.
	Natural, Historic, and Cultural Resources	Waterways and habitats are vulnerable to hazardous materials incidents, which can disrupt ecosystems. Historic sites and structures may suffer damage from toxic exposure, leading to degradation over time. In addition, cultural landmarks risk losing their significance due to contamination events. The proximity of these resources to industrial areas or transport routes exacerbates their risk.

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
	Critical Facilities and Infrastructure	Chemical manufacturing plants, waste treatment facilities, and transportation networks, such as highways and railroads may be at risk. Their vulnerability stems from factors such as proximity to residential areas, aging infrastructure, and inadequate safety measures. Natural hazards, such as flooding and earthquakes, can further increase risks by damaging containment systems.
	Community Activities	Local markets, school events, and outdoor gatherings are vulnerable to hazardous materials incidents if they are near industrial zones and transport corridors. This risk is heightened by inadequate emergency preparedness, lack of public awareness, and the potential for spills during transport. Large crowds at events can complicate evacuation efforts, increasing the risks for participants and nearby residents.
Public Health Epidemic/ Pandemic	People	Individuals with pre-existing health conditions like asthma and heart disease and adults over 65 may be vulnerable. Low-income families may struggle to access healthcare and vaccinations, increasing their risk. Marginalized communities with limited access to information and those living in high-density conditions also are at greater risk due to the rapid spread of diseases and the challenges in implementing preventive measures.
	Structures	Several structures are vulnerable to public health epidemics or pandemics, particularly due to their ability to facilitate the spread of disease. High-density residential areas, such as apartment complexes, are at risk, as close living quarters can lead to faster transmission. Public gathering spaces, such as schools and community centers, also pose significant threats because large groups are in confined spaces. Healthcare facilities can become hotspots for infections if infection control measures are insufficient. In addition, workplaces with high foot traffic, such as retail stores, contribute to vulnerability.
	Economic Assets	Small businesses in retail, hospitality, and food service are particularly vulnerable to public health epidemics or pandemics. These sectors face risks from fluctuating consumer demand and potential operational restrictions. The tourism industry also is affected, as travelers may avoid high-risk areas. Healthcare facilities can become overwhelmed, straining resources and impacting operations. In addition, local supply chains may experience disruptions, leading to shortages and inflation. Overall, the direct effects of illness, along with prolonged shutdowns and consumer hesitance, leave these economic assets exposed to significant downturns.
	Natural, Historic, and Cultural Resources	Natural resources like wildlife and ecosystems can be disrupted by increased human activity, raising the risk of zoonotic diseases. Historic sites may deteriorate due to reduced visitor access and funding, while cultural resources, such as community events, face cancelations, impacting social connections.
	Critical Facilities and Infrastructure	Public health epidemic or pandemic incidents can affect healthcare facilities, nursing homes, public transportation systems, schools, and food supply chains. Hospitals and clinics may become overwhelmed with patients, while vulnerable populations in nursing homes are at higher risk. Public transportation can facilitate the spread of disease, and schools gather large groups, thereby increasing transmission potential. These facilities often lack adequate resources, including

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		medical supplies and testing capabilities, making them more susceptible to the impacts of a health crisis.
	Community Activities	Large gatherings like festivals and sporting events can facilitate the rapid spread of diseases due to close contact. Public transportation also is at risk, as it serves many people in confined spaces. Schools and childcare facilities are particularly susceptible, given that children can easily transmit infections. In addition, food-related events, such as farmers' markets, can pose risks if hygiene practices are not followed. The interconnectedness of community members and varying adherence to health guidelines further exacerbate these vulnerabilities.
Terrorism	People	Young children and newcomers may lack awareness of potential threats, while the elderly and individuals with disabilities may struggle to respond quickly in emergencies. Marginalized communities often face bias, making them more susceptible to targeting. In addition, those with lower socioeconomic status may lack access to security measures and emergency preparedness resources.
	Structures	Government buildings, transportation hubs, commercial centers, and public spaces are particularly vulnerable to terrorism incidents. Government buildings are symbolic targets, while transportation hubs and commercial centers are attractive due to their potential for high casualties and crowd presence. Public spaces also are at risk due to their open nature and lack of security. Their vulnerability is heightened by inadequate security measures, high occupancy rates, and their locations in densely populated areas, which can amplify the impact of incidents.
	Economic Assets	Infrastructure, commercial establishments, and community facilities may be vulnerable. Critical infrastructure, such as transportation networks and power grids, could disrupt the economy if targeted. Commercial establishments, especially those with high foot traffic, and community facilities like schools and hospitals also are at risk, as they can provoke widespread concern and disruption. Their accessibility and interconnectivity increase vulnerability, meaning that damage to one asset can have a broader economic impact and hinder recovery efforts.
	Natural, Historic, and Cultural Resources	Natural resources like water supplies and parks could be targeted for their significance to the community. Historic sites and cultural resources, such as museums or community centers, also are at risk due to their accessibility and importance to local identity. Their vulnerability is often heightened by inadequate security measures.
	Critical Facilities and Infrastructure	Public transportation systems, healthcare facilities, schools, and utility services like water and power plants may be affected. Their vulnerability arises from high accessibility and the potential impact of an attack, as crowded transportation and public spaces can lead to mass casualties and panic. Attacking utility services could disrupt the city's essential functions, creating chaos.
	Community Activities	Festivals, parades, and sporting events are particularly vulnerable to terrorism incidents. These events attract large crowds, making it easier for perpetrators to inflict harm and instill fear. In addition, community centers and places of worship serve as social hubs, increasing their

DRAFT

Hazard	Vulnerable Assets	Description of Vulnerability and Impacts
		risk. Factors such as limited security measures and open access to public spaces contribute to this vulnerability.

Hazards Not Profiled

Avalanche, Landslide/Slope Failure, and Dam Failure have been omitted from further discussion of hazard impacts and from mitigation actions. As shown in the hazard description in Volume 1, avalanche and landslide risk is primarily in the Wasatch and Oquirrh Mountains in Salt Lake County. West Valley City has mostly flat terrain and minimal risk of impacts from these hazards. Also, no high hazard dams or dam inundation boundaries are in West Valley City. No previous occurrences of avalanche, landslide, or dam failure have impacted West Valley City.

Jurisdiction-Specific Changes in Vulnerability

Hazard events can impact communities, infrastructures, and ecosystems. The severity of these impacts can be influenced by climate change, population patterns, and land use developments. Understanding these factors is crucial for West Valley City to develop a resilient community and minimize the impacts of hazards. Table 9 displays the unique changes within the community and the related effects on each identified hazard affecting West Valley City.

DRAFT

Table 9: Jurisdiction-Specific Changes in Vulnerability in West Valley City

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
Avalanche	N/A	N/A	N/A	N/A
Drought	Climate change affects drought incidents by altering precipitation patterns and increasing temperatures. Warmer weather can lead to longer dry periods and more severe droughts, while changes in rainfall can reduce snowpack in nearby mountains, crucial for summer water supply. Higher temperatures also increase evaporation rates, further straining local water resources.	Drought can significantly influence population patterns by impacting economic opportunities and the quality of life. Water scarcity often leads to reduced agricultural productivity, prompting residents to migrate to areas with more stable job prospects. Increased water costs can make living less affordable, driving some residents away. Conversely, efforts to address drought, such as sustainable development or improved water management, may attract newcomers, resulting in changes in the community's demographic composition over time.	Increased development of new commercial businesses, including the Valley Fair Mall, increases water demand in the city and increases the risk of drought.	Increased
Earthquake	Rising temperatures can lead to glacial melting, which affects pressure on tectonic plates and may trigger seismic activity through isostatic rebound. In addition, increased rainfall and flooding can erode soils, weakening structural integrity and heightening vulnerability during earthquakes. Although the direct links between climate change and earthquakes are still under investigation, environmental	Earthquakes can significantly alter population patterns by prompting residents to leave for safer areas after a seismic event. This migration can lead to changes in population density and attract new residents and businesses during the rebuilding process. The perception of the area as a safe place to live may shift, impacting long-term demographics, as some residents return to rebuild while others relocate permanently.	New development in West Valley City is exposed to earthquakes from active faults in the city. Although these developments are at risk, they are built to current codes that mitigate most of the risk.	Stayed the same

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	effects may impact the region's seismic risk.			
Extreme Heat	Climate change significantly impacts extreme heat by increasing the frequency and intensity of heat waves. Rising global temperatures lead to longer and hotter summers, affecting residents and local infrastructure while heightening health risks, especially for vulnerable populations. Urban heat islands from reduced vegetation and extensive pavement further amplify these effects.	By causing residents to relocate due to damaged homes or safety concerns. Some may move to areas perceived as safer or seek better job opportunities elsewhere. The economic impact and infrastructure damage can also make certain neighborhoods less desirable, leading to shifts in demographics and the socioeconomic landscape as new residents with different backgrounds move in.	The high amount of development increases population and reduces vegetation, both of which can increase temperatures during extreme heat events.	Increased
Extreme Cold	By increasing the intensity of winter storms. Higher atmospheric temperatures allow for more moisture, resulting in heavier snowfall and potentially lower temperatures during these events. In addition, fluctuations in weather patterns may disrupt seasonal cycles, leading to unpredictable periods of extreme cold mixed with warmer spells.	By driving some residents to relocate to warmer areas. Harsh winters can hinder economic activities and deter new residents and businesses, influencing housing demand and the attractiveness of certain neighborhoods. This may disproportionately affect lower-income families, leading to changes in demographics and socioeconomic stratification in the community.	Increased growth of commercial and residential developments in West Valley City increases energy demand during extreme cold events, stressing the electrical grid.	Increased
Flooding	Higher temperatures increase the frequency and intensity of extreme weather events and alter precipitation patterns. They lead to more intense rainstorms and accelerated snowmelt from nearby mountains, raising water levels in	Flooding can significantly alter population patterns by displacing residents from affected areas, leading them to seek shelter elsewhere. This may cause a population decline where flooding occurs, as individuals might hesitate	No developments in West Valley City have been located in the special flood hazard area. Increased impervious surfaces due to development across Riverton could contribute to	Decreased

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	rivers and streams. This combination raises the risk of flooding, especially in areas with inadequate drainage and urban development in flood-prone zones, heightening the potential for damage to homes and infrastructure.	to return due to ongoing risks or property damage. As neighborhoods become less desirable, people may migrate to safer areas, changing demographic trends and putting pressure on housing in those regions. Over time, these shifts can influence urban planning and development, as local governments address flooding risks and changing population needs.	ponding and other pluvial flooding.	
Landslide/ Slope Failure	N/A	N/A	N/A	N/A
Radon	Climate change can affect radon levels by altering soil temperatures and moisture conditions. Higher temperatures may increase radon emissions from the ground, while heavy rainfall can change groundwater and soil saturation, impacting radon migration into buildings.	Radon exposure can influence population patterns as increased health awareness may drive families to move away from areas with high radon levels. This shift could particularly affect vulnerable groups, changing demographics and demand in the housing market. Homes with lower radon levels may become more sought after, and public health campaigns can encourage community action, making previously undesirable areas more attractive once mitigation measures are implemented.	Development in West Valley City has not led to increased risk of radon.	Same
Heavy Rain	Climate change increases the frequency and intensity of heavy rain, as higher temperatures allow the atmosphere to hold more moisture. This leads to stronger	Heavy rain can shift population patterns by pushing residents out of flood-prone areas and attracting them to safer neighborhoods. Frequent flooding may lead to	Increased impervious surfaces due to development across West Valley City could contribute to ponding and other types of pluvial flooding.	Increased

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	storms, flash flooding, and overwhelmed drainage systems.	evacuations and economic disruptions, prompting relocations. Over time, ongoing heavy rains can affect housing demand and community stability, altering the city's population distribution.		
High Wind	Climate change affects high winds by altering atmospheric patterns and increasing extreme weather events. Rising temperatures may lead to more substantial, unpredictable winds and more frequent thunderstorms, posing risks to infrastructure and air quality.	High winds can alter population patterns by making certain areas less desirable. Frequent damage may drive residents to safer neighborhoods, deter newcomers, and slow growth in affected regions.	Development in West Valley City has not increased the risk of high winds.	Increased
Lightning	Climate change increases temperatures and alters precipitation, leading to more intense thunderstorms and frequent lightning strikes. Urbanization can enhance this effect, posing risks to public safety and infrastructure.	Lightning can influence population patterns by causing property damage and wildfires, leading some residents to relocate. Areas with higher lightning activity may deter new residents, while safer locations could increase migration as people seek protection from severe weather.	Development in West Valley City, especially multistory developments, has slightly increased the risk of lightning strikes.	Increased
Severe Winter Weather	Climate change impacts heavy snow and blizzards by altering precipitation patterns. Higher temperatures can lead to more rain than snow, affecting snowpack levels—additionally, increased storm intensity results in heavier, more unpredictable snowfall.	Increased population equals an increased number of people needing to get to work and quicker snow removal. Heavy snow or blizzards can impact population patterns by influencing where people live and work. Transportation disruptions may lead residents to seek housing closer to jobs, increasing density in some areas while depopulating others.	With large development increases in West Valley City, the risk of damage and increased responsibility for severe winter storms has gone up. With new subdivisions, the city is responsible for plowing, rescues, and evacuations during heavy snow events.	Increased

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
		Families might also avoid regions with frequent heavy snowfall, shifting demand to milder areas. Over time, these trends can alter community demographics and economic activity, prompting adjustments in city planning and resource allocation.		
Tornado	Climate change may increase the frequency and intensity of tornadoes. Higher temperatures lead to more moisture in the air, creating conditions for severe thunderstorms. Changes in wind patterns and precipitation can also heighten tornado risks, resulting in more destructive storms and greater threats to infrastructure and communities.	Tornadoes can influence population patterns by prompting residents to move to safer areas after damage occurs. This can decrease density in affected neighborhoods while increasing the demand for housing in safer regions. New residents may also move in for recovery opportunities, altering demographics. Over time, repeated tornado threats might push long-term residents to areas with better disaster preparedness, reshaping the city's population distribution.	West Valley City is not at high risk for tornadoes, but the increased development slightly raises the risk by building more structures in the city that could be damaged.	Increased
Wildfire	By raising temperatures and creating drier conditions, prolonged droughts lead to more dry vegetation, which serves as fuel for fires. Erratic seasons extend the growing period, while more lightning strikes can ignite wildfires. These factors heighten the threat to ecosystems and community safety.	Displaced individuals often seek safer areas, shifting demographics, while declining property values might deter newcomers. Conversely, some may be drawn to rebuilding efforts, impacting long-term growth and community dynamics.	Developments on the western side of the city, near the Oquirrh Mountains, are adjacent to high-risk wildfire areas and are at higher risk themselves.	Increased
Dam Failure	N/A	N/A	N/A	N/A

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
Civil Disturbance	Climate change can increase civil disturbances by intensifying environmental stresses and social tensions. Rising temperatures may lead to droughts, wildfires, and poor air quality, particularly affecting vulnerable communities. Resource scarcity, especially water, can spark conflicts and protests. In addition, an influx of migrants from harder-hit areas may strain local resources, further escalating tensions. This cycle of unrest is driven by the impacts of climate change on the environment and community dynamics.	By encouraging residents to move for safety, leading to outflows and new arrivals. These events can reveal social issues, impacting community dynamics, employment, and property values, ultimately reshaping demographics, and social cohesion.	Development in West Valley City has not increased the risk of civil disturbance.	Increased
Cyberattack	Possible attack on the industry, which is seen as producing large amounts of greenhouse gases and burning fossil fuels. Climate change can heighten cyberattack risk by increasing vulnerabilities during extreme weather. Disruptions like power outages offer cybercriminals opportunities, but focusing on emergency responses can weaken cybersecurity measures. As organizations adopt new technologies to cope with climate impacts, they may unintentionally introduce additional vulnerabilities.	Cyberattacks can change population patterns by eroding trust in essential services. Compromised systems may cause residents to leave due to safety concerns, while high-profile incidents can deter businesses, leading to job losses. This perception of vulnerability may also make the city less appealing to newcomers, resulting in demographic shifts and affecting local development.	Development in West Valley City has not increased the risk of cyberattack.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
Hazardous Materials Incident (Transportation & Fixed Facility)	Climate change elevates the risk of hazardous materials incidents by increasing extreme weather events like heavy rain and wildfires. These events can breach storage tanks and heighten material volatility. Vulnerable infrastructure can lead to more spills or accidents, while climate shifts may also introduce new challenges for managing hazardous substances and public health.	By causing evacuations and temporary declines in density. In the long run, unsafe areas may deter new residents, affecting growth and diversity. In addition, negative perceptions can lower property values and economic prospects, leading families to relocate, which impacts local demographics.	Development in West Valley City has not increased the risk of a hazardous materials incident.	Increased
Public Health Epidemic/ Pandemic	By increasing the spread of vector-borne diseases and raising the risk of waterborne illnesses due to flooding or drought. Worsening air quality can also exacerbate respiratory conditions like asthma, especially in vulnerable populations.	By prompting migration for safety and better healthcare. Vulnerable groups may move to areas with improved services, while economic instability can drive people to seek new employment opportunities. In addition, restrictions like quarantine measures can limit movement and social interactions, reshaping the community's demographics and impacting local economies.	Development in West Valley City has not increased the risk of an epidemic/pandemic.	Increased
Terrorism	Terroristic activity is sometimes centered around climate change. Climate change impacts terrorism incidents by creating conditions of resource scarcity and social unrest. Increased competition for essential resources, such as water, can fuel tensions, making communities more vulnerable to extremist ideologies. Extreme weather events may disrupt social	Terrorism incidents can alter population patterns by instilling fear and prompting residents to relocate to perceived safer areas, resulting in demographic shifts and potential declines in property values. Some neighborhoods may see an outflow of residents, while others could experience an influx of people seeking refuge from violence. In addition, increased security	Development in West Valley City has not increased the risk of a terrorism incident.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	order and infrastructure, offering terrorist groups opportunities to exploit crises. In addition, climate-driven population displacement can heighten tensions in receiving areas, raising the risk of domestic terrorism. Law enforcement's focus on climate-related challenges can also limit its capacity to address terrorism threats. Ultimately, while climate change may not directly cause terrorism, its effects can create an environment conducive to extremist activities.	measures may deter businesses and residents from certain locations, leading to long-term changes in population density and urban development patterns.		

DRAFT

Additional Public Involvement

West Valley City provided several opportunities for public participation. Figure 1 is an example of public outreach.

Figure 1: Social Media Post for the Hazard Mitigation Survey

Plan Integration

Incorporating the underlying principles of the Hazard Mitigation Plan and its recommendations into other plans is a highly effective and low-cost way to expand their influence. All plan participants will use existing methods and programs to implement hazard mitigation actions where possible. As previously stated, mitigation is most successful when it is incorporated into the day-to-day functions and priorities of government and public service. This plan builds on the momentum developed through previous and related planning efforts and mitigation programs, and it recommends implementing actions where possible through these other program mechanisms. These existing mechanisms include the following:

- Regularity Capabilities
- Administrative Capabilities
- Fiscal Capabilities

Respective planning stakeholders will conduct implementation and incorporation into existing planning mechanisms and will be done through the routine actions of:

- Monitoring other planning/program agendas
- Attending other planning/program meetings
- Participating in other planning processes; and

DRAFT

- Monitoring community budget meetings for other community program opportunities.

The successful implementation of this plan will require constant and vigilant review of existing plans and programs for coordination and multi-objective opportunities that promote a safe, sustainable community. Regular efforts should be made to monitor the progress of mitigation actions implemented through other planning mechanisms. Where appropriate, priority actions should be incorporated into planning updates. Table 10 lists existing planning mechanisms in which the Hazard Mitigation Plan has been integrated. Table 11 lists the opportunities for integrating elements of this plan into other plans

Table 10: Previous Plan Integration by West Valley City

Plan	Description
Community Emergency Management Plan	Updated the new plan to align it with the county and surrounding cities. Part of the plan was for some education and response.
City Codes	Adoption of the latest code series allows for building construction to take into account hazards and mitigation efforts

Table 11: Opportunities for Integration with Future Plans of West Valley City

Plan	Description
Community Wildfire Protection Plan	This plan will have to be updated yearly. It outlines areas of the city which could be impacted by wildfire.
Evacuation Plans	This plan will assist the citizens in evacuations for all types of emergencies. The plan will be in coordination with county efforts.

Capability Assessment

Local mitigation capabilities are existing authorities, policies, programs, and resources that reduce hazard impacts or could help carry out hazard mitigation activities.

Planning and Regulatory Capabilities

Planning and regulatory capabilities are the plans, policies, codes, and ordinances that prevent and reduce the impacts of hazards.

Table 12: Assessment of the Planning Capabilities of West Valley City

Plan	Does it address hazards? (Y/N)	How can it be used to implement mitigation actions?	When was the last update? When is the next update?
General Plan	Y	Zoning for new developments	2025
Capital Improvement Plan	Y	We can provide funding for education and for matches to grants.	Yearly
Climate Change Adaptation Plan	Unknown	Unknown	Unknown

Plan	Does it address hazards? (Y/N)	How can it be used to implement mitigation actions?	When was the last update? When is the next update?
Community Wildfire Protection Plan	Y	We provide mitigation and training to areas in our city which are at risk.	2024
Economic Development Plan	Y	Planning for future of the city	Ongoing
Land Use Plan	Y	This is part of the general plan and is updated at the council's direction.	Ongoing
Local Emergency Operations Plan	Y	Provides the response and education for all hazards identified in the city	Yearly
Stormwater Management Plan	Y	Mitigation with flooding potentials and storm runoffs	Updated again in 2026
Transportation Plan	Y	We are currently looking at evacuation routes and planning	Will update in 2025
Substantial Damage Plan	Unknown	Unknown	Unknown
Other? (Describe)			

Table 13: Assessment of the Regulations and Ordinances of West Valley City

Regulation/Ordinance	Does it effectively reduce hazard impacts?	Is it adequately administered and enforced?	When was the last update? When is the next update?
Building Code	Yes; West Valley City adopted the 2021 International Building Code.	Yes by building and fire	Last code cycle 2023
Flood Insurance Rate Maps	Unknown	Unknown	Unknown
Floodplain Ordinance	Unknown	Unknown	Unknown
Subdivision Ordinance	Yes	Yes to ensure proper zoning and safety of the building	On going and with the general plan
Zoning Ordinance	Yes	Locations of all types of structures	Ongoing
Natural Hazard-Specific Ordinance (Stormwater, Steep Slope, Wildfire)	Yes	Wildfire and Storm water are the largest in this area.	2024
Acquisition of Land for Open Space and Public Recreation Use	Yes	The open space and planning for open space is part of the general plan and zoning	Ongoing

Regulation/Ordinance	Does it effectively reduce hazard impacts?	Is it adequately administered and enforced?	When was the last update? When is the next update?
Prohibition of Building in At-Risk Areas	Yes	The southwest portion of the city has limits on what can be built around the industry in the area	
Other? (Describe)			

Administrative and Technical Capabilities

Administrative and technical capabilities include staff and their skills. They also include tools that can help carry out mitigation actions.

Table 14: Assessment of the Administrative Capabilities of West Valley City

Administrative Capability	In Place? (Y/N)	Is staffing adequate?	Are staff trained on hazards and mitigation?	Is coordination between agencies and staff effective?
Chief Building Official	Y	Yes	Yes	Yes
Civil Engineer	Y	Yes	Yes	Yes
Community Planner	Y	Yes	Yes	Yes
Emergency Manager	Y	No	Yes	Yes
Floodplain Administrator	Y	No	Yes	Yes
Geographic Information System (GIS) Coordinator	Y	Yes	Yes	Yes
Planning Commission	Y	Yes	Yes with current zoning and general plan items	Yes
Fire Safe Council	N	N/A	N/A	N/A
CERT (Community Emergency Response Team)	Y	Yes can always have more	No	Yes
Active VOAD (Voluntary Agencies Active in Disasters)	Y	Unknown	Unknown	Unknown
Other? (Please describe.)				

Table 15: Assessment of the Technical Capabilities of West Valley City

Technical Capability	In Place? (Y/N)	How has it been used to assess/mitigate risk in the past?	How can it be used to assess/mitigate risk in the future?
Mitigation Grant Writing	N	Unknown	Unknown
Hazard Data and Information	Y	With the GIS mapping and zoning	Yes

Technical Capability	In Place? (Y/N)	How has it been used to assess/mitigate risk in the past?	How can it be used to assess/mitigate risk in the future?
GIS	Y	GIS function	Yes
Mutual Aid Agreements	Y	Yes used all the time	Yes
Other? (Please describe.)			

Financial Capabilities

Financial capabilities are the resources to fund mitigation actions. Talking about funding and financial capabilities is important to determine what kinds of projects are feasible, given their cost. Mitigation actions like outreach programs are lower cost and often use staff time and existing budgets. Other actions, such as earthquake retrofits, could require substantial funding from local, state, and federal partners. Partnerships, including those willing to donate land, supplies, in-kind matches, and cash, can be included.

Table 16: Assessment of the Financial Capabilities of West Valley City

Funding Resource	In Place? (Y/N)	Has it been used in the past and for what types of activities?	Could it be used to fund future mitigation actions?	Can it be used as the local cost match for a federal grant?
Capital Improvement Project Funding	Yes	Yes for staffing and for education	Yes	Yes
General Fund	Yes	Staffing and education	Yes	Yes
Hazard Mitigation Grant Program (HMGP/404)	Unknown	Unknown	Unknown	Unknown
Building Resilient Infrastructure & Communities (BRIC)	Unknown	Unknown	Unknown	Unknown
Flood Mitigation Assistance (FMA)	Unknown	Unknown	Unknown	Unknown
Public Assistance Mitigation (PA Mitigation/406)	Unknown	Unknown	Unknown	Unknown
Community Development Block Grant (CDBG)	Yes	Assisting with education	Yes	Yes
Natural Resources Conservation Services (NRCS) Programs	Unknown	Unknown	Unknown	Unknown
U.S. Army Corps (USACE) Programs	Unknown	Unknown	Unknown	Unknown
Property, Sales, Income, or Special Purpose Taxes	Unknown	Unknown	Unknown	Unknown

DRAFT

Funding Resource	In Place? (Y/N)	Has it been used in the past and for what types of activities?	Could it be used to fund future mitigation actions?	Can it be used as the local cost match for a federal grant?
Stormwater Utility Fee	Yes	Updating of the system to safely move water	Yes	Yes
Fees for Water, Sewer, Gas, or Electric Services	Unknown	Unknown	Unknown	Unknown
Impact Fees from New Development and Redevelopment	Yes	Facilities	Yes	Yes
General Obligation or Special Purpose Bonds	Unknown	Unknown	Unknown	Unknown
Federal-funded Programs (Please describe)	Unknown	Unknown	Unknown	Unknown
Private Sector or Nonprofit Programs	Unknown	Unknown	Unknown	Unknown
Other?				

Education and Outreach Capabilities

Education and outreach capabilities are programs and methods that could communicate about and encourage risk reduction. These programs may be run by a participant or a community-based partner. Partners, especially those who work with underserved communities, can help identify additional education and outreach capabilities.

Table 17: Assessment of the Education and Outreach Capabilities of West Valley City

Education and Outreach Capability	In Place? (Y/N)	Does it currently incorporate hazard mitigation?	Could it be used to support mitigation in the future?
Community Newsletter(s)	Y	We provide information in billing	yes
Hazard Awareness Campaigns (such as Firewise, Storm Ready, Severe Weather Awareness Week, School Programs)	Unknown	Unknown	yes
Public Meetings/Events (Please describe.)	Y	Provide education at city events and safety fairs	Yes
Emergency Management Listserv	Unknown	Unknown	Unknown
Local News	Y	Information as needed	Yes
Distributing Hard Copies of Notices (e.g., public libraries, door-to-door outreach)	Y	Information as Needed	Yes

DRAFT

Education and Outreach Capability	In Place? (Y/N)	Does it currently incorporate hazard mitigation?	Could it be used to support mitigation in the future?
Insurance Disclosures/Outreach	Unknown	Unknown	Unknown
Organizations that Represent, Advocate for, or Interact with Underserved and Vulnerable Communities (Please describe.)	Y	My Home Town Program	Yes
Social Media (Please describe.)	Yes	EM items of interest are put on the city website.	Yes
Other? (Please describe.)			

Opportunities to Expand and/or Improve Capabilities

Actions that can expand and improve existing authorities, plans, policies, and resources for mitigation include budgeting for mitigation actions, passing policies and procedures for mitigation actions, adopting and implementing stricter mitigation regulations, approving mitigation updates, and making additions to existing plans as new needs are recognized. Table 18 lists the opportunities for West Valley City.

Table 18: Opportunities to Expand and/or Improve the Capabilities of West Valley City

Capability	Opportunity to Expand and/or Improve
Planning and Regulation	The city just completed the wildfire plan and will update it on a yearly basis. Planning and regulations will constantly be looked at as code changes and changes to general plan and zoning regulations. New updates for the Stormwater Management Plan and Transportation Plan are projected in the next two years. Aligning these plans with hazard mitigation strategies will aid in citywide risk reduction.
Administrative and Technical	Floodplain management will have to be expanded. The city will also have to look at additional staffing in the city's Emergency Management division.
Financial	West Valley City will have to look at applying for the Building Resilience Infrastructure and Communities (BRIC) or replacement pre-disaster mitigation program to assist with mitigation activities in the city.
Education and Outreach	Public education will have to be enhanced to provide the latest and best possible information to the citizens. Information should be provided in multiple languages, such as Spanish. Education is an effective mitigation strategy as funding is limited.

Mitigation Strategy

Mitigation strategies provide proactive measures that are designed to minimize the impacts of hazards on West Valley City. Table 19 shows mitigation action alternatives, and

Table 20: Status of Prior Mitigation Actions of West Valley City

shows the status of previous mitigation activities. Table 21 is the 2025 mitigation action plan for West Valley City.

Table 19: Mitigation Action Alternatives for West Valley City

Action	Type of Action	Selected for inclusion in the plan?	If not selected, why not?
Enhance Public Education for emergency management	Education and Awareness Programs	Yes	
Apply for Building Resilient Infrastructure and Communities grant	Structure and Infrastructure Projects	Yes	
Update Comprehensive Emergency Management Plan	Local Plans and Regulations	Yes	
Provide new public education spots on website in Spanish	Education and Awareness Programs	Yes	
Continue with city plan on wetland mitigation	Natural Systems Protection	Yes	

Table 20: Status of Prior Mitigation Actions of West Valley City[2]

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update
Procure generators and hookups for publicly owned buildings and facilities assisting functional access needs populations.	All hazards	West Valley City EM	Public Works and assisted living facilities	Ongoing. Most buildings are complete; still have some buildings to go.
Conduct a Hazardous Flow Study	All hazards	West Valley City EM	Public Works	Ongoing
Conduct an inventory and assessment of communications equipment and systems and identify needs	All hazards	West Valley City EM		Completed. A communications plan and process for the mobile communications unit and EOC have been established.
Establish agreements to share communications equipment between agencies involved in emergency operations	All hazards	West Valley City EM and Communications		Ongoing. Still need to work on sharing with non-government organizations (NGOs).
Evaluate vulnerability of critical communications systems	All hazards	West Valley City EM and Communications		Completed

[2] CED = Community and Economic Development, EM = Emergency Management, IT = Information Technology, MIS = Management Information Systems (Department), NGO = nongovernmental organization, VECC = Salt Lake Valley Emergency Communications Center

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update
Establish a coordinating group to address long-term communication needs and implementation strategies	All hazards	West Valley City EM and Communications		Ongoing
Compile inventory of mutual aid agreements and memoranda of understanding (MOU) and identify deficiencies	All hazards	West Valley City EM		Ongoing. Still need NGO agreements.
Incorporate information about cascading effects of hazards in education programs	All hazards	West Valley City EM		Ongoing
Develop education programs including homeowners, developers, schools and people with special needs	All hazards	West Valley City EM		Ongoing
Implement water-saving devices and practices in public facilities	Drought	West Valley City EM and Public Works		Incomplete
Assist Cities with NFIP application	Flooding	West Valley City EM		Incomplete
Encourage Communities to actively participate in NFIP	Flooding	West Valley City EM		Ongoing
Identify and assess structures for deficiencies	Flooding	West Valley City EM and Public Works		Complete
Modify structures as needed to address deficiencies	Flooding	West Valley City EM and Public Works		Incomplete
Maintain contact with NWS before re-application in 2010	Severe Weather	West Valley City EM		Complete. We are in contact with the countywide system.
Conduct training and awareness activities on communications equipment, tools, and systems.	All hazards	West Valley City Fire and EM		Ongoing.
Establish notification capabilities and procedures for emergency personnel.	All hazards	West Valley City Fire and EM – Dispatch		Complete. We use Rave and other direct call systems.
Establish redundancy for dispatch centers and other critical communications systems.	All hazards	West Valley City MIS		Ongoing. In progress with the Salt Lake Valley Emergency

DRAFT

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update
				Communications Center (VECC).
Acquire, upgrade, and/or integrate communications equipment and systems as determined by coordinating group.	All hazards	West Valley City Fire/EMS		Ongoing We are still purchasing and mostly complete
Establish a coordinating group to address geographic data issues.	All hazards	West Valley City CED/MIS		Incomplete
Examine current data availability and sharing capabilities, evaluate needs, and identify shortcomings.	All hazards	West Valley City EM	IT, CED	Ongoing
Update and expand data on hazards, critical facilities, and critical infrastructure according to assessed needs.	All hazards	West Valley City Fire and EM		Ongoing. Will update every year.
Provide centralized access to geographic data to emergency planners and responders.	All hazards	West Valley City GIS		Ongoing. In progress with the new system.
Integrate existing hazard monitoring networks in emergency operations centers. Utilize sensors, such as weather stations, stream gauges, seismograph stations, road conditions, etc.	All hazards	West Valley City EM		Incomplete. Will have to work with outside agencies.
Identify and implement additional hazard monitoring capabilities.	All hazards	West Valley City EM	Fire	Ongoing.
Utilize GIS to identify facilities and infrastructure at risk.	All hazards	West Valley City MIS		Ongoing. Will change yearly.
Assess critical facilities for hazard exposure, structural weaknesses, power, communications and equipment resources and redundancy, and adequate emergency procedures.	All hazards	West Valley City EM		Ongoing. Will change yearly.
Pursue and implement needed mutual aid agreements.	All hazards	West Valley City EM		Ongoing. Still need to work on the NGO.

DRAFT

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update
Provide education regarding all natural hazards through live trainings and web-based, print, and broadcast media.	All hazards	West Valley City EM		Ongoing
Utilize maps and similar products on City EM website and other media to educate public on areas at risk of hazards.	All hazards	West Valley City MIS		Ongoing. In progress with an entire program.
Continue to encourage water conservation, using outreach material from all water districts in the county.	Drought	Water Districts		Ongoing. Need to work with water companies; not complete.
Emergency Managers will coordinate with local water districts/public utilities to support ongoing conservation efforts.	Drought	West Valley City Public Works and West Valley City Education	Outside Water Districts	Incomplete.
Identify structures at risk of earthquake damage.	Earthquake	West Valley City EM	GIS	Ongoing. Additional analysis is needed.
Research feasibility of an incentive program for retrofitting privately owned buildings, particularly unreinforced masonry.	Earthquake	West Valley City EM		Incomplete.
Complete seismic rehabilitation/retrofitting projects of public buildings at risk.	Earthquake	West Valley City EM		Ongoing. We have completed three fire stations; still working on other facilities.
Provide educational materials to unreinforced masonry home and business owners.	Earthquake	West Valley City EM		Ongoing. Done yearly.
Determine potential flood impacts and identify areas in need of additional flood control structures.	Flooding	West Valley City Public Works and West Valley City Planning		Complete but carrying forward to consider changes and new developments.
Address identified problems through construction of debris basins, flood retention ponds, energy dissipaters or other flood control structures.	Flooding	West Valley City Public Works		Ongoing

DRAFT

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update
Establish maintenance and repair programs to remove debris, improve resistance and otherwise maintain effectiveness of stormwater and flood control systems.	Flooding	West Valley City Public Works		Ongoing
Maintain Hazardous Weather Operations Plan according to StormReady requirements.	Severe Weather	West Valley City EM		Ongoing
Assist NWS in making other agencies and departments aware of available resources.	Severe Weather	West Valley City EM		Ongoing
Work with the NWS to develop large event venue weather safety and evacuation procedures.	Severe Weather	West Valley City EM		Ongoing. We do this for events, but more work is needed.

DRAFT

THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT

Table 21: 2025 Mitigation Action Plan for West Valley City[3]

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
1	Update equipment for the response.	Civil Disturbance	West Valley City Police	West Valley City EM	Be better prepared for responses to civil disturbances to avoid losses to property and life.	Medium	SHSP grant	Short term	High	
2	Retrofit of structure which are vulnerable	Earthquake	West Valley City EM	SLCo EM, SLCo, UDEM	Lessens the damage to structures.	High	BRIC, PDM, WVC General Fund, Capital Project Fund	Long term		
3	Provide upgrades to detection equipment	Hazardous Materials Incident	West Valley City Fire Department	West Valley City EM	Increases accuracy, safety, and emergency response effectiveness.	Medium	WVC General Fund	Short term	Medium	
4	Provide for evacuation routing and mass notifications to residents	Severe Winter Weather – Heavy Snow, Blizzard	West Valley City EM	SLCo EM	Ensures residents receive timely guidance to safely evacuate and remain informed during severe winter weather, thereby reducing risk and enhancing community preparedness.	Medium	WVC General Fund	Medium	Medium	
5	Update of information technology infrastructure	Terrorism (including cyberattacks)	West Valley City Information Technology Department		Strengthens defenses against cyberattacks, protects critical systems and data, and ensures operational continuity amid terrorism threats.	Medium	WVC General Fund	Medium	High	
6	Procure generators and hookups for publicly owned buildings and facilities assisting functional access needs populations.	Flood, Earthquake, Heavy Rain, High Wind, Lightning, Tornado, Severe Winter Weather	West Valley EM	SLCo EM	Ensures critical facilities and facilities with life-sustaining systems remain operational if hazards interrupt power systems.	Medium	WVC General Fund, Private funds	Medium	Medium	
7	Conduct a Hazardous Flow Study.	Hazardous Materials	West Valley City EM	West Valley City Fire Dept.	Better understand the nature of products traveling through West Valley and vulnerabilities associated with them.	Medium	WVC General Fund	Medium	Medium	
8	Establish agreements to share communications equipment between agencies involved in emergency operations.	Drought, Flood, Earthquake, Extreme Cold, Extreme Heat, Radon, Heavy Rain, High Wind, Severe Winter Weather, Tornado, Wildfire, Human-Caused Hazards	West Valley City EM	SLCo EM, other jurisdictions' fire and police communications staff	Ensures effective resource availability, streamlined coordination, and faster response for a wide range of natural and human-caused hazards.	Low	WVC General Fund	Ongoing	Medium	Working with Salt Lake County

[3] BRIC = Building Resilient Infrastructure and Communities, CED = Community and Economic Development, EM = Emergency Management, EMS = Emergency Medical Services, GIS = Geographic Information Systems, NWS = National Weather Service, MIS = Management Information Systems (Department), MIS = Management Information Systems (Department), PDM = Pre-Disaster Mitigation, SHSP = State Homeland Security Program, SLCo EM = Salt Lake County Emergency Management, UDEM = Utah Division of Emergency Management, UDOT = Utah Department of Transportation, UGS = Utah Geological Survey, USGS = United States Geological Survey, UUSS = University of Utah Seismograph Stations, VECC = Salt Lake Valley Emergency Communications Center, WVC = West Valley City

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
9	Establish a coordinating group to address long-term communications needs and implementation strategies.	Drought, Flood, Earthquake, Extreme Cold, Extreme Heat, Flood, Radon, Heavy Rain, High Wind, Severe Winter Weather, Tornado, Wildfire, Human-Caused hazards.	West Valley City EM	SLCo EM, other local jurisdictions, Communications	Ensures enhanced preparedness across diverse hazards.	Low	WVC General Fund	Ongoing	Medium	Working with city Communications group for this
10	Compile inventory of mutual aid agreements and memoranda of understanding (MOUs) and identify deficiencies.	Drought, Flood, Earthquake, Extreme Cold, Extreme Heat, Flood, Radon, Heavy Rain, High Wind, Severe Winter Weather, Tornado, Wildfire, Human-Caused hazards.	West Valley City EM	SLCo EM, local jurisdictions	Ensures more efficient collaboration during a range of natural and human-caused hazards.	Low	WVC General Fund	Ongoing	Medium	Completed all Fire and EMS. Working with Public Works and Police now.
11	Incorporate information about cascading effects of hazards in education programs.	Drought, Flood, Earthquake, Extreme Cold, Extreme Heat, Flood, Radon, Heavy Rain, High Wind, Severe Winter Weather, Tornado, Wildfire, Human-Caused hazards.	West Valley City EM	SLCo EM	Increases awareness, enhances preparedness, and improves response strategies for interconnected emergencies.	Low	WVC General Fund	Ongoing	Medium	Working with city to have continual education
12	Develop education programs to target specific groups, including homeowners, schools, community-based organizations, and vulnerable populations.	Drought, Flood, Earthquake, Extreme Cold, Extreme Heat, Flood, Radon, Heavy Rain, High Wind, Severe Winter Weather, Tornado, Wildfire, Human-Caused hazards.	West Valley City EM	SLCo EM	Enhances hazard awareness, improves preparedness measures, and fosters greater resilience across diverse communities.	Low	WVC General Fund	Ongoing	Medium	We have completed adult programs and are now working on an elementary school program. Children can learn about hazard mitigation through age-appropriate materials on flood mapping, building wind- and water-resistant homes, retrofitting homes for earthquakes, trimming trees, warning signs, and where to seek shelter.
13	Install new water-saving devices and implement practices in public facilities.	Drought	West Valley City EM	West Valley City Public Works	Reduces water consumption, ensures resource sustainability, and bolsters resilience during drought conditions.	Medium	WVC General Fund	Ongoing	Medium	City facilities are changing over fixtures for conservation in city-owned buildings.
14	Modify structures identified as having deficiencies as needed to address deficiencies.	Flooding, Heavy Rain	West Valley City EM	West Valley Public Works	Reduces flood impact, enhances public safety, and strengthens community resilience.	High	WVC General Fund, Capital Project Funds	Ongoing	Medium	Provide education to citizens in EM programs
15	Conduct training and awareness activities on communications equipment, tools, and systems.	Drought, Flood, Earthquake, Extreme Cold, Extreme Heat, Flood, Radon, Heavy Rain, High Wind, Severe Winter Weather, Tornado, Wildfire, Human-Caused hazards.	West Valley City Fire Department	West Valley City EM	Enhances first responder coordination, improves situational awareness, and strengthens emergency response across diverse hazards.	Minimal	WVC General Fund	Ongoing	High	West Valley City completed monthly tests.
16	Establish redundancy for dispatch centers and other	Drought, Flood, Earthquake, Extreme Cold, Extreme	MIS	SLCo EM, VECC	Ensures uninterrupted emergency coordination,	Medium – $60,000	WVC General Fund	Ongoing	High	West Valley City has this with VECC, as well as its own 800mhz

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
	critical communications systems.	Heat, Flood, Radon, Heavy Rain, High Wind, Severe Winter Weather, Tornado, Wildfire, Human-Caused Hazards			strengthens operation continuity, and enhances response effectiveness.					radio repeater system; It has trained all personnel working in emergency operations
17	Acquire, upgrade, and/or integrate communications equipment and systems as determined by coordinating group	Drought, Flood, Earthquake, Extreme Cold, Extreme Heat, Flood, Radon, Heavy Rain, High Wind, Severe Winter Weather, Tornado, Wildfire, Human-Caused Hazards	West Valley City Fire Department	EMS	Strengthens interagency collaboration and enhances emergency response.	High – $500,000	WVC General Fund, Federal and state grants	Ongoing	High	New radio systems; budget issue upgrading as we can with current budgets
18	Establish a coordinating group to address geographic data issues	Drought, Flood, Earthquake, Extreme Cold, Extreme Heat, Flood, Radon, Heavy Rain, High Wind, Severe Winter Weather, Tornado, Wildfire, Human-Caused Hazards	CED	MIS	Fosters consistent data management, improves hazard mapping, and enhances decision-making for diverse threats.	Minimal	WVC General Fund	Ongoing	Medium	West Valley City GIS is always updating the maps.
19	Examine availability of data and sharing capabilities, evaluate needs, and identify shortcomings	Drought, Flood, Earthquake, Extreme Cold, Extreme Heat, Flood, Radon, Heavy Rain, High Wind, Severe Winter Weather, Tornado, Wildfire, Human-Caused Hazards	West Valley EM	SLCo EM	Ensures better resource coordination, improves hazard response, and strengthens overall resilience.	Low – $10,000	WVC General Fund	Ongoing	Medium	Working on gap analysis
20	Update and expand data on hazards, critical facilities, and critical infrastructure according to assessed needs	Drought, Flood, Earthquake, Extreme Cold, Extreme Heat, Flood, Radon, Heavy Rain, High Wind, Severe Winter Weather, Tornado, Wildfire, Human-Caused Hazards	West Valley City Fire Department	West Valley City EM, SLCo EM	Enhances situational awareness, guides effective planning, and strengthens emergency response efforts.	Low – $10,000	WVC General Fund	Ongoing	Medium	West Valley City is not currently done but has some items in the digital sandbox.
21	Provide centralized access to geographic data to emergency planners and responders	Drought, Flood, Earthquake, Extreme Cold, Extreme Heat, Flood, Radon, Heavy Rain, High Wind, Severe Winter Weather, Tornado, Wildfire, Human-Caused Hazards	GIS	SLCo, UDEM	Enhances situational awareness, enables data-driven decision-making, and expedites effective response across multiple hazards.	Low – Minimal	WVC General Fund	Ongoing	Medium	Working with the West Valley City GIS department.
22	Integrate existing hazard monitoring networks in emergency operations centers. Use sensors, such as weather stations, stream gauges, seismograph stations, and road condition monitors.	Drought, Flood, Earthquake, Extreme Cold, Extreme Heat, Flood, Radon, Heavy Rain, High Wind, Severe Winter Weather, Tornado, Wildfire, Human-Caused Hazards	West Valley City EM	SLCo EM, UUSS, UDOT, NWS, UDEM, USGS, UGS	Enhances real-time situational awareness, enables proactive response, and strengthens community resilience across diverse hazards.	Low – $4,000	WVC General Fund	Ongoing	Medium	West Valley City looking at weather strand
23	Identify and implement additional hazard monitoring capabilities	Drought, Flood, Earthquake, Extreme Cold, Extreme Heat, Flood, Radon, Heavy	West Valley City EM	SLCo EM, UDEM	Enhances real-time awareness, improves decision-making, and	High	WVC General Fund	Ongoing	Medium	Further research needed

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
		Rain, High Wind, Severe Winter Weather, Tornado, Wildfire, Human-Caused Hazards			strengthens mitigation and response for diverse natural and human-caused hazards.					
24	Use GIS to identify facilities and infrastructure at risk	Drought, Flood, Earthquake, Extreme Cold, Extreme Heat, Flood, Radon, Heavy Rain, High Wind, Severe Winter Weather, Tornado, Wildfire, Human-Caused Hazards	MIS	SLCo EM, UDEM	Enhances situational awareness, enables targeted mitigation measures, and increases community resilience.	Low – $5,000	WVC General Fund	Ongoing	High	Continually accessing
25	Assess critical facilities for hazard exposure, structural weaknesses, power, communications and equipment resources and redundancy, and adequate emergency procedures	Drought, Flood, Earthquake, Extreme Cold, Extreme Heat, Flood, Radon, Heavy Rain, High Wind, Severe Winter Weather, Tornado, Wildfire, Human-Caused Hazards	West Valley City EM	West Valley City Public Works, West Valley Community Development	Reduces operational disruptions, enhances resilience, and safeguards public safety.	Medium – $25,000	WVC General Fund	Ongoing	High	Education strategy
26	Pursue and implement needed mutual aid agreements	Drought, Flood, Earthquake, Extreme Cold, Extreme Heat, Flood, Radon, Heavy Rain, High Wind, Severe Winter Weather, Tornado, Wildfire, Human-Caused Hazards	West Valley City EM	West Valley City Fire, West Valley City Police Department	Strengthens interagency collaboration, optimizes resource use, and improves emergency response across diverse hazards	Low – $5,000	WVC General Fund	Ongoing	Medium	West Valley City Fire and Police are done working on other departments. Additional work is needed with NGOs and other partners.
27	Provide education regarding all natural hazards through live trainings and web-based, print, and broadcast media	Drought, Flood, Earthquake, Extreme Cold, Extreme Heat, Flood, Radon, Heavy Rain, High Wind, Severe Winter Weather, Tornado, Wildfire, Human-Caused Hazards	West Valley City EM	SLCo EM	Increases public awareness, promotes resilience, fosters community preparedness, and reduces risk.	Low	WVC General Fund	Ongoing	High	West Valley CERT
28	Use maps and similar products on city EM website and other media to educate public on areas at risk of hazards	Drought, Flood, Earthquake, Extreme Cold, Extreme Heat, Flood, Radon, Heavy Rain, High Wind, Severe Winter Weather, Tornado, Wildfire, Human-Caused Hazards	MIS	SLCo EM	Raises awareness, fosters preparedness, and strengthens community resilience.	Low – $5,000	WVC General Fund	Ongoing	High	
29	Continue to encourage water conservation, using outreach material from all water districts in the county	Drought	Water Districts	West Valley City EM	Promotes responsible use, preserves vital resources, and strengthens resilience against drought.	Low	WVC General Fund	Ongoing	High	
30	Emergency Managers will coordinate with local water districts/public utilities to support ongoing conservation efforts	Drought	West Valley City Public Works	West Valley City Public Relations	Preserves resources, and bolsters drought resilience	Low	WVC General Fund	Ongoing	High	

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Timeframe	Priority	Comments
31	Identify structures at risk of earthquake damage	Earthquake	West Valley City EM	West Valley City Public Works, Community Development, SLCo EM	Reduces potential casualties and losses and strengthens community resilience.	Low – $5,000	WVC General Fund	Ongoing	High	West Valley City Hazus
32	Research feasibility of an incentive program for retrofitting privately owned buildings, particularly unreinforced masonry	Earthquake	West Valley City EM	West Valley City Public Works, Community Development, SLCo EM	Reduces seismic risks and bolsters community resilience	High	WVC General Fund, State and federal grants, HMGP	Ongoing	High	West Valley City Planning Process
33	Complete seismic rehabilitation/retrofitting projects of public buildings at risk	Earthquake	Municipal	West Valley City Community Development, Public Works, SLCo EM, DEM	Reduces earthquake damage, enhances safety, and ensures operational continuity.	High – $17,000,000	WVC General Fund, HMGP, Bonds	Ongoing	High	West Valley City working plan
34	Provide educational materials to residents and businesses with unreinforced masonry	Earthquake	West Valley City EM	SLCo EM, DEM	Raises awareness of seismic vulnerabilities and promotes safety-enhancing retrofitting measures.	Low – $10,000	WVC General Fund	Ongoing	Medium	
35	Review areas of potential flood impacts and identify effects of new development to determine areas in need of additional flood control structures	Flood, Heavy Rain, Dam Failure	West Valley City Public Works	West Valley City Planning	Helps prevent damage, protects public safety, and strengthens community resilience.	Low	Local budget	Ongoing	Medium	Continual process
36	Address identified problems through construction of debris basins, flood retention ponds, energy dissipaters, and other flood control structures.	Flood, Heavy Rain, Dam Failure	West Valley City Public Works	West Valley City EM	Mitigates flooding impacts, reduces property damage, and protects public safety	High – $1,000,000	WVC General Fund, Capital Project Funds	Ongoing	Medium	West Valley City – Continual with all developments and upgrades to stormwater drains near Jordan River
37	Establish maintenance and repair programs to remove debris, improve resistance, and otherwise maintain effectiveness of stormwater and flood control systems.	Flood, Heavy Rain	West Valley City Public Works	West Valley City EM	Ensures continuous debris removal, preserves system effectiveness, and reduces flooding risks.	Medium – $75,000 annually	WVC General Fund, Capital Project Funds	Ongoing	High	West Valley City ongoing maintenance
38	Maintain Hazardous Weather Operations Plan according to StormReady requirements	Heavy Rain, High Wind, Severe Winter Storm, Tornado, Lightning, Flood, Extreme Cold, Extreme Heat	West Valley City EM	NWS, SLCo EM	Ensures timely preparedness, efficient response, and enhanced public safety during severe weather events.	Low	WVC General Fund	Ongoing	Low	Working on StormWise Program
39	Assist NWS in making other agencies and departments aware of available resources	Heavy Rain, High Wind, Severe Winter Storm, Tornado, Lightning, Flood, Extreme Cold, Extreme Heat	West Valley City EM	NWS, SLCo EM	Fosters improved coordination, ensures timely hazard response, and bolsters community safety.	Low	WVC General Fund	Ongoing	Medium	Advise citizens on website
40	Work with NWS to develop large event venue weather safety and evacuation procedures.	Heavy Rain, High Wind, Severe Winter Storm, Tornado, Lightning, Flood, Extreme Cold, Extreme Heat	West Valley City EM	NWS, SLCo EM	Enhances preparedness, protects attendees, and mitigates risk during severe conditions.	Low – $10,000	WVC General Fund	Ongoing	High	West Valley City to develop a plan with event areas

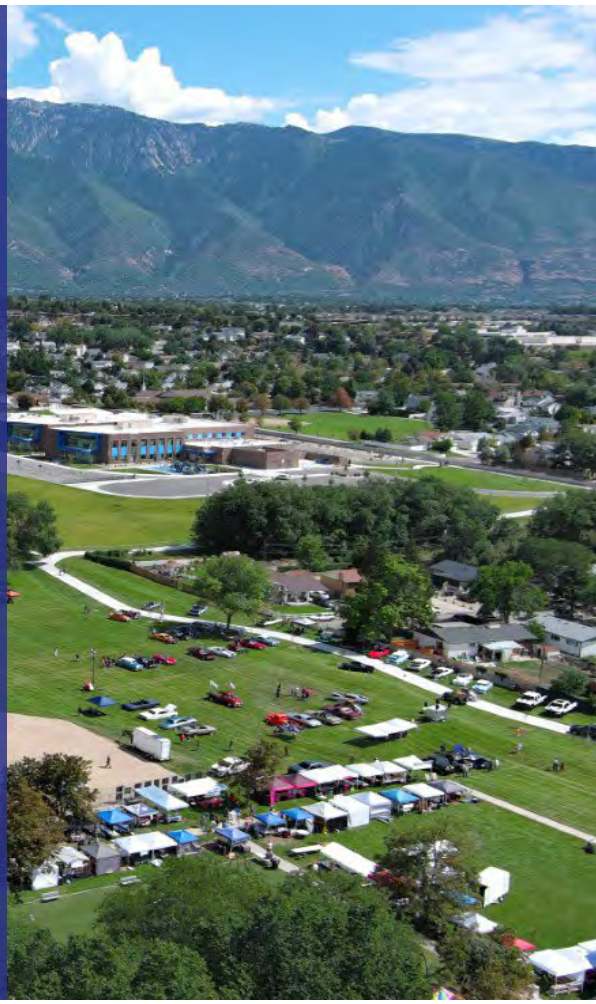
THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT

White City

Jurisdictional Annex to the
Salt Lake County Hazard Mitigation Plan

Month XXXX | Draft X.X



Salt Lake County Emergency Management EM

SL SALT LAKE COUNTY

THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT

Table of Contents

White City Annex 1

Planning Process Contact Information 1
Jurisdiction Profile 1
Date of Incorporation 1
Location and Description 1
Population 1
Demographics 2
Brief History 2
Climate 2
Public Services 2
Governing Body 2
Development Trends 2
Jurisdiction-Specific Hazards and Risk 3
Hazard Event History 5
National Flood Insurance Program Summary 6
Jurisdiction-Specific Vulnerabilities and Impacts 7
Hazards Not Profiled 22
Jurisdiction-Specific Changes in Vulnerability 22
Additional Public Involvement 32
Plan Integration 32
Capability Assessment 33
Planning and Regulatory Capabilities 33
Administrative and Technical Capabilities 35
Financial Capabilities 37
Education and Outreach Capabilities 38
Opportunities to Expand and/or Improve Capabilities 39
Mitigation Strategy 39

DRAFT

List of Figures

Figure 1: Social Media Posts for the Hazard Mitigation Survey (*left*) and Draft Plan Review (*right*) 32

List of Tables

Table 1: Contact Information for White City 1
Table 2: Participant List for White City 1
Table 3: Calculated Priority Risk Index Values for White City 3
Table 4: Criteria for the Calculated Priority Risk Index 4
Table 5: History of Hazard Events in White City 6
Table 6: National Flood Insurance Program Status for White City 7
Table 7: National Flood Insurance Policies for White City 7
Table 8: Jurisdiction-Specific Vulnerabilities and Impacts in White City 7
Table 9: Jurisdiction-Specific Changes in Vulnerability in White City 24
Table 10: Integration of Previous Plans by White City 33
Table 11: Opportunities for Integration with Future Plans of White City 33
Table 12: Assessment of the Planning Capabilities of White City 34
Table 13: Assessment of the Regulations and Ordinances of White City 34
Table 14: Assessment of the Administrative Capabilities of White City 35
Table 15: Assessment of the Technical Capabilities of White City 36
Table 16: Assessment of the Financial Capabilities of White City 37
Table 17: Assessment of the Education and Outreach Capabilities of White City 38
Table 18: Opportunities to Expand or Improve the Capabilities of White City 39
Table 19: Mitigation Action Alternatives for White City 40
Table 20: Status of Prior Mitigation Actions of White City 40
Table 21: 2025 Mitigation Action Plan for White City 41

DRAFT

White City Annex

To participate in this multi-jurisdictional hazard mitigation plan (MJHMP) update for Salt Lake County (SLCo), the governing body of White City passed a formal resolution, a copy of which is maintained at the local government offices.

Planning Process Contact Information

Information on the point of contact during the updating of the MJHMP is shown in Table 1.

Table 1: Contact Information for White City

Name	Contact Information
Brian Buckhout	**Phone**: 925-315-1671 **email:** bbuckhout@unifiedfire.org

White City has a fully integrated approach to hazard mitigation planning and program implementation. During the 2024 update process, the MJHMP participation roles in Table 2 were recorded.

Table 2: Participant List for White City

Name	Title	Jurisdiction
Brian Buckhout	Municipal Planner	Municipal Services District – White City

Jurisdiction Profile

Date of Incorporation

White City became a metro township in January 2017, then converted to a city on May 1, 2024.

Location and Description

White City, located south of Midvale and Cottonwood Heights on the east side of the county, is approximately 0.87 square miles in area and is approximately 4,500 feet above sea level. White City is known for its close-knit community and suburban feel.

Population

The 2022 American Community Survey 5-Year Estimate from the U.S. Census Bureau records White City's population as 5,568 people.

DRAFT

Demographics

Most of the 1,465 people are between the ages of 25 and 34, with a median age of 34.3. Of the 5,568 people in White City 2,794 (50.2%) are males, and 2,774 (49.8%) are females. English is the primary language in 94.6% of homes,, with 3.9% Spanish, and 1.5% other languages.

Brief History

White City was established as a town in 1955 by developers Ken White and Cannon Papanicholas. The first homes were built along Galena Drive in 1957, and the town slowly progressed into a recognized census-designated place. In 2006, White City was granted township, and it became a metro township in 2017. In 2024, the Utah Legislature passed a bill that reclassified White City as a city.

Climate

White City has a humid continental climate (Dfb Köppen classification) characterized by warm summers and cold winters, with consistent precipitation throughout the year. Average highs are approximately 85°F in the summer and approximately 22°F in the winter. Rain each year is approximately 15.4 inches, and snowfall averages 60 inches.

Public Services

White City offers a wide range of public services through the Greater Salt Lake Municipal Services District (MSD). The MSD oversees services including public works, which encompasses the construction and maintenance of roads, snow removal, and street lighting. The MSD also handles planning and zoning, business licensing, inspections, emergency planning, and other municipal services.

Governing Body

White City's governing body—the Mayor and four council members—has the power to create and enforce laws, including the authority to levy taxes.

Development Trends

The city is working on its first-ever General Plan, which will guide future planning and development, encompassing elements such as land use, transportation, moderate-income housing, economic opportunities, infrastructure, and resilience. Over the years, White City has seen significant growth, growing from an unincorporated township in 2006 to an incorporated metro township in 2017, and finally to a city in 2024. There is a strong focus on improving infrastructure to support the growing population, which includes transportation projects and the development of parks and trails.

DRAFT

Jurisdiction-Specific Hazards and Risk

The Calculated Priority Risk Index (CPRI) is a comprehensive assessment tool for evaluating and prioritizing risks in a given context. It considers various factors such as probability, impact, and urgency to determine the level of risk associated with events or situations. The results for each hazard, including its risk factor (RF) value, are shown in Table 3. The results are based on the criteria in

Table 4, and the equation that follows it. The CPRI helps organizations and individuals make informed decisions about risk management and mitigation strategies. It provides a systematic approach to identifying and addressing potential issues, allowing for a more efficient allocation of resources and proactive risk prevention. With the CPRI, stakeholders can prioritize their focus on the most critical risks, leading to more effective risk management and, ultimately, better outcomes.

Table 3: Calculated Priority Risk Index Values for White City

Type of Hazard Event	Probability of Future Events	Spatial Extent	Severity of Life/ Property Impact	Warning Time	Duration	Response Capacity	Risk Factor Value
Avalanche	1	1	1	1	1	1	1.0
Drought	4	4	2	1	4	1	2.8
Earthquake	3	4	4	4	3	2	3.4
Extreme Heat	4	4	3	1	3	1	3
Extreme Cold	3	4	2	1	3	1	2.4
Flooding	4	3	3	3	3	1	3.1
Landslide/ Slope Failure	2	1	2	4	1	2	2
Radon	4	4	2	1	4	2	2.9
Heavy Rain	4	3	2	3	1	1	2.6
High Wind	4	3	3	3	2	1	3
Lightning	4	2	2	4	1	1	2.6
Severe Winter Weather	4	3	2	2	2	1	2.6
Tornado	2	2	3	4	1	2	2.4
Wildfire	4	3	3	4	3	1	3.2
Dam Failure	1	1	1	4	1	1	1.3
Civil Disturbance	2	1	2	4	2	2	2.1
Cyberattack	2	3	3	4	3	2	2.7
Hazardous Materials Incident (Transportation & Fixed Facility)	3	1	2	4	1	1	2.2

DRAFT

Type of Hazard Event	Probability of Future Events	Spatial Extent	Severity of Life/ Property Impact	Warning Time	Duration	Response Capacity	Risk Factor Value
Public Health Epidemic/ Pandemic	3	4	3	1	4	1	2.8
Terrorism	2	1	3	4	2	1	2.3

Table 4: Criteria for the Calculated Priority Risk Index

Risk Index Factor	Degree of Risk Level		Criteria	Factor Weight for Degree of Risk Level
Probability of Future Events	1	Unlikely	Less than 1 percent probability of occurrence in the next year or a recurrence interval of greater than every 100 years.	30%
	2	Occasional	1 to 10 percent probability of occurrence in the next year or a recurrence interval of 11 to 100 years.	
	3	Likely	11 to 90 percent probability of occurrence in the next year or a recurrence interval of 1 to 10 years.	
	4	Highly Likely	91 to 100 percent probability of occurrence in the next year or a recurrence interval of less than 1 year.	
Spatial Extent	1	Limited	Less than 10% of the planning area could be impacted.	10%
	2	Small	10%–25% of the planning area could be impacted	
	3	Significant	25%–50% of the planning area could be impacted.	
	4	Extensive	50%–100% of the planning area could be impacted.	
Severity of Life/Property Impact	1	Negligible	Less than 5% of the affected area's critical and non-critical facilities and structures are damaged/destroyed. Only minor property damage and minimal disruption of life. Temporary shutdown of critical facilities.	30%
	2	Limited	More than 5% but less than 25% percent of property in the affected area is damaged/ destroyed. Complete shutdown of critical facilities for more than one day but less than one week.	
	3	Critical	More than 25% and less than 50% of property in the affected area was damaged/destroyed.	

DRAFT

Risk Index Factor	Degree of Risk Level		Criteria	Factor Weight for Degree of Risk Level
			Complete shutdown of critical facilities for over a week but less than one month.	
	4	Catastrophic	Over 50% of critical and non-critical facilities and infrastructures in the affected area are damaged/destroyed. Complete shutdown of critical facilities for more than one month.	
Warning Time	1	Self-defined	More than 24 hours	10%
	2	Self-defined	12 to 24 hours.	
	3	Self-defined	6 to 12 hours.	
	4	Self-defined	Less than 6 hours.	
Duration	1	Brief	Up to 6 hours.	10%
	2	Intermediate	Up to one day.	
	3	Extended	Up to one week.	
	4	Prolonged	More than one week.	
Response Capacity	1	High	Significant resources and capability to respond to this kind of event; staff are trained, experienced, and ready.	10%
	2	Medium	Some resources and capability to respond to this kind of staff; some staff may be trained, experienced, and ready while others may need additional support.	
	3	Low	Limited resources and capability to respond to this kind of event; additional staff or staff training needed.	
	4	None	No resources and capability to respond this kind of event; additional outside support would be required.	

RISK FACTOR (RF) EQUATION

RF Value = [(Probability x 0.30) + (Spatial Extent x 0.10) + (Severity of Life/Property Impact x 0.30) + (Warning Time x 0.10) + (Duration x 0.10) + (Response Capacity x 0.10)]

Hazards with an RF value greater than or equal to 2.5 are considered high risk. Those with RF values of 2.0–2.4 are considered moderate risk hazards, and those with an RF value less than 2.0 are considered low risk. The highest possible RF value is 4.

Hazard Event History

Examining hazard event histories provides valuable insights to inform decision-making and help prioritize resources for risk prevention and response efforts. The Storm Events Database from the National Centers

DRAFT

for Environmental Information reported that no significant hazard events impacted the White City planning area since the 2019 plan update. Table 5 lists other events that occurred in or near White City.

Table 5: History of Hazard Events in White City

Type of Hazard Event	FEMA Disaster #	Date(s)	Damage or Impacts	Description
Drought			Droughts occur periodically throughout the region. No specific impacts have been documented for White City.	
Earthquake	DR-4548-UT	March 18, 2020	Shaking occurred in White City.	The Wasatch Fault is considered overdue for a major earthquake, with a 57% chance of a 6.0 M or greater earthquake occurring in the next 50 years.
Extreme Heat		Summers of 2020, 2021, 2022, 2023, 2024	9 deaths were reported in Northern Utah, an upward trend in heat exposure and heat-related deaths since 2015.	NA
Flooding		2023	Minor spring flooding	
High Wind	DR-4578-UT	September 7, 2020	Significant windstorm that impacted utilities, residential/ commercial properties, and transportation in parts of the county. Specific impacts in White City were not available.	Salt Lake County and surrounding areas experienced a severe windstorm with winds exceeding 100 mph in some areas.
Severe Winter Weather	N/A	N/A	Winter storms can cause transportation problems.	
Public Health Epidemic/ Pandemic	DR-4525-UT	COVID-19 pandemic	Business closures and economic impacts; temporary school closures	

National Flood Insurance Program Summary

White City participates in the Nation Flood Insurance Program (NFIP). Table 6 displays statistics related to the NFIP. White City does not participate in the Community Rating System.

DRAFT

Table 6: National Flood Insurance Program Status for White City[1]

Initial FHBM Identified	Initial FIRM Identified	Current Effective Map Date	Adopted Date	Date Joined NFIP	Tribal
5/29/20	8/02/12	8/02/12	2012	8/18/20	No

Table 7: National Flood Insurance Policies for White City

Community ID	Number of Losses	Total Net Payment	Active Policies	Total Coverage
490269	0	$0	0	$0

White City has designated the Director of Planning and Development Services as the Floodplain Administrator. The duties of the Floodplain Administrator are supported by the Greater Salt Lake Municipal Services District (MSD). The current Floodplain Hazard Regulations were adopted on 6/2/2023. The current FIRM became effective 8/2/2012. The MSD is responsible for issuing floodplain permits in MSD Member Communities, including White City. The permits include a description of all work, including the type of construction, proposed intent, and location. Substantial damage/substantial improvement structures are identified through the permitting process. Structures that are determined to be substantially damaged or substantially improved are required to come into compliance with current codes. The MSD Building Department provides guidance on how to build in accordance with existing building codes.

Jurisdiction-Specific Vulnerabilities and Impacts

Table 8 provides information on the vulnerable assets in White City, including its critical facilities, highlighting the city's vulnerability to identified hazards. It also describes the potential impacts on the community arising from those vulnerabilities. By understanding the risks associated with these assets, local authorities can develop proactive strategies to mitigate vulnerabilities and ensure the safety and functionality of these important assets during hazard events. These data are invaluable for decision-making and prioritizing resources for emergency response and preparedness efforts, ultimately contributing to more effective risk management and greater resilience in the community.

Vulnerable assets in White City include Alta View Elementary School and Big Bear Park. Primary roads include 10600 South, 700 East, 1300 East, and Sego Lily Drive. Sandy Canal Trail, White City Trail, and trails along Dry Creek are among other community assets. Dimple Dell Regional Park is a county-owned resource that bisects the city along Dry Creek.

Table 8: Jurisdiction-Specific Vulnerabilities and Impacts in White City

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
Avalanche	People	White City is not in an avalanche-prone area.
Drought	People	*Vulnerability:* All White City residents are vulnerable to drought.

[1] FIRM = FHBM = Flood Hazard Boundary Map

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		Impacts: In White City, periods of prolonged drought can lead to water conservation mandates and potential rationing, especially during summer months when demand increases. Reduced water availability can impact public health by decreasing indoor air quality and increasing the spread of airborne dust and pollutants. Vulnerable groups—such as the elderly, young children, and low-income households—may face higher health risks and limited access to cooling or clean water. Outdoor recreation may decline, especially during midday hours when heat and air quality are at their worst.
	Structures	*Vulnerability:* All structures and landscaping are vulnerable to drought. *Impacts:* As soils dry and contract, structural foundations in White City may begin to shift or crack, leading to uneven floors, sticking doors, and plumbing damage. Drought conditions can also raise cooling costs for both homes and businesses as temperatures climb, placing a strain on buildings not designed for extreme heat and low humidity. Limited water supply can slow new development or restrict landscape maintenance.
	Economic Assets	*Vulnerability:* Businesses that rely on climate-controlled environments or outdoor customer activity are vulnerable during drought conditions. *Impacts:* Businesses may struggle with higher operational costs and reduced foot traffic. Residents may face increased energy bills due to prolonged air conditioning use. In addition, fewer people may choose to visit local parks or trails during hot, dry periods, impacting businesses that benefit from recreation and tourism.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Vegetation, parks, and historic sites are vulnerable to drought. *Impacts:* Drought can lead to weakened trees and stressed vegetation, making them more vulnerable to disease and pests. The loss of green cover contributes to soil erosion and degraded air quality. Natural areas and trails in and around White City could become fire-prone, placing historic features, public art, and cultural sites at risk. Water shortages may also hinder efforts to maintain community landmarks and shared green spaces.
	Critical Facilities and Infrastructure	*Vulnerability:* Public services, including firefighting operations and healthcare facilities, are vulnerable during drought conditions. *Impacts:* Public facilities and operations may face challenges due to limited water supply. Fire departments in White City may be hampered in their wildfire response efforts during extended dry spells. Hospitals and public health centers must deal with rising cooling demands and the potential for water quality concerns that could impact sanitation and hygiene.
	Community Activities	*Vulnerability:* Community events and recreation are vulnerable to the impacts of drought. *Impacts:* Community events and programs may need to be altered or canceled during periods of extreme drought. Water restrictions may impact the appearance and usability of public spaces, including sports fields and splash pads. Households may also face limits on irrigation and recreational water use, reducing participation in outdoor activities.
Earthquake	People	*Vulnerability:* All residents are vulnerable to earthquakes.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		Impacts: People can be injured or killed by falling objects or collapsed buildings. Earthquake risk in White City poses a serious concern for residents living in older buildings that were not constructed to current seismic standards. Children, seniors, and people with disabilities may face greater challenges during evacuation or sheltering efforts. In addition, households with limited access to emergency preparedness resources are more likely to suffer severe consequences during and after a seismic event.
	Structures	*Vulnerability:* Many homes and commercial buildings in White City constructed before updated seismic codes may be particularly vulnerable. *Impacts:* Buildings with unreinforced masonry, outdated foundations, or located on unstable ground are more susceptible to collapse or significant damage during an earthquake. Structures that have not been retrofitted, including schools and office complexes, are also at increased risk.
	Economic Assets	*Vulnerability:* All local businesses are vulnerable to earthquakes. *Impacts:* Damage to retail establishments, offices, and public buildings could disrupt White City's local economy. Businesses that suffer structural losses or prolonged closures may face permanent shutdowns if uninsured or underinsured. Key economic contributors such as small shops, service providers, and community centers may struggle to recover. The effects could be more pronounced if the quake occurs during working hours or community events.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Open spaces, parks, and historic buildings are vulnerable to earthquakes. *Impacts:* Natural areas may experience landslides or ground failure during a seismic event, which could damage trails, parks, or water features. Historic buildings in White City are particularly susceptible to structural compromise. Cultural gathering places, including places of worship and local community halls, may face both physical damage and loss of community use if repairs are unaffordable or delayed.
	Critical Facilities and Infrastructure	*Vulnerability:* All critical facilities and infrastructure are vulnerable to earthquakes. *Impacts:* Essential infrastructure may be compromised during a strong earthquake if built before modern design requirements were in place. Utility disruptions to power, water, and telecommunications are likely. Bridges and overpasses in nearby transportation corridors could be rendered impassable, impeding emergency response and evacuations.
	Community Activities	*Vulnerability:* Community events, school functions, and gatherings at civic centers may be at risk during seismic events, especially in densely used public spaces. *Impacts:* Facilities that serve as community anchors could be damaged or temporarily shut down, reducing access to recovery resources. The overall impact on social cohesion and routine services could be significant if damage is widespread.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
Extreme Heat	People	*Vulnerability:* All residents are vulnerable to extreme heat, but some groups may have a higher risk. *Impacts:* Extreme heat can cause dehydration, heat exhaustion, and heat stroke. Vulnerable populations during extreme heat conditions include adults over 65, individuals with pre-existing health conditions, and young children, as they struggle to regulate body temperature. Socioeconomically disadvantaged individuals may lack access to cooling resources, while outdoor workers are at higher risk of heat-related illnesses due to physical labor without adequate hydration and rest. Extreme heat can hinder students' learning.
	Structures	*Vulnerability:* All structures are exposed to extreme heat. *Impacts:* Residential buildings with inadequate insulation and ventilation, as well as commercial buildings lacking reflective roofing and proper shading, may be vulnerable. Materials like metal and glass can amplify heat retention, while areas with limited green space typically experience higher temperatures. Cooling shelters may need to be open in White City to provide basic services for vulnerable groups like the elderly, unsheltered, and young children.
	Economic Assets	*Vulnerability:* Outdoor recreation and related businesses are vulnerable to extreme heat. *Impacts:* Agricultural operations can have reduced yields and higher water demand due to heat stress. The outdoor recreation industry may see decreased participation during heat waves, affecting local businesses that rely on visitors. In addition, the energy infrastructure could face strain from increased cooling demands, leading to outages.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Plants, wildlife, and historic buildings are vulnerable to extreme heat. *Impacts:* Local plant species and wildlife habitats can suffer from drought conditions, leading to reduced biodiversity. Historic buildings may degrade due to high temperatures, which cause materials to deteriorate and paint to peel. In addition, parks and recreational areas may experience overuse and risk their preservation as residents seek relief from the heat.
	Critical Facilities and Infrastructure	*Vulnerability:* Healthcare facilities, public buildings, roads, and the power grid are vulnerable to extreme heat. *Impacts:* Healthcare facilities may experience increased demand due to heat-related medical issues, while schools can suffer from the strain on cooling resources. Transportation systems are at risk of damage, such as buckling roads and warped train tracks. Power grids may be strained by higher demands for electricity for cooling, which can lead to potential outages.
	Community Activities	*Vulnerability:* Activities like outdoor sports, fairs, and agricultural practices are vulnerable to extreme heat. *Impacts:* These events can pose risks, particularly for participants like youth athletes and elderly residents who may suffer from heat-related illnesses. In addition, high temperatures can stress crops, which impacts local farming.
Extreme Cold	People	*Vulnerability:* Residents without adequate shelter or insufficient heating are vulnerable to extreme cold.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		Impacts: Residents of White City can face serious health and safety risks during periods of extreme cold. Older adults may experience complications related to existing health conditions or reduced mobility, which makes it harder to stay warm or access services. Young children are especially vulnerable if they do not have access to warm winter clothing. Individuals experiencing housing insecurity or financial hardship may lack adequate heating, shelter, or resources to stay safe during prolonged cold spells.
	Structures	*Vulnerability:* Older or unmaintained structures are vulnerable to extreme cold. *Impacts:* Homes and commercial buildings throughout White City may suffer from cold-related issues, especially those built before modern insulation standards. Properties with inadequate weather sealing can lose heat rapidly, which puts a strain on heating, ventilation, and air conditioning (HVAC) systems. Prolonged freezing conditions may lead to cracked foundations, frozen pipes, or damage to unheated spaces such as garages or utility sheds. Public infrastructure like sidewalks, roads, and bridges can also deteriorate under heavy freeze-thaw cycles, which increases maintenance needs.
	Economic Assets	*Vulnerability:* All businesses are vulnerable to extreme cold. *Impacts:* Cold weather can have a noticeable economic impact in White City. Businesses reliant on transportation or outdoor labor may be forced to slow operations due to icy roads or hazardous conditions. Additionally, heating costs rise for homes and businesses alike, which can place financial stress on families and small enterprises during peak winter months. Farms and greenhouses in the surrounding region may lose crops or livestock during especially cold periods.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Trees, habitats, and cultural sites are vulnerable to extreme cold. *Impacts:* Local vegetation and wildlife habitats can be disrupted by extreme cold, particularly if water sources freeze or food becomes scarce. Trees may break under the weight of snow and ice, which damages parks or natural spaces. Older buildings and community landmarks not designed for freezing conditions may show signs of deterioration. Cultural assets such as sculptures, murals, or public art may suffer damage from ice buildup or freeze-related cracking.
	Critical Facilities and Infrastructure	*Vulnerability:* Water, power, and roads are vulnerable to extreme cold. *Impacts:* Essential services in White City may be compromised if cold weather leads to system failures. Water infrastructure is particularly at risk of pipe freezing, and energy demand may exceed local capacity, which increases the likelihood of outages. Emergency service buildings must remain operational, but heating system failures or delayed snow removal could hinder response capabilities. Roadway safety is also a concern as snow and ice increase the risk of accidents and delays.
	Community Activities	*Vulnerability:* Outdoor events and community centers are vulnerable to extreme cold. *Impacts:* Outdoor events and programs may be canceled or poorly attended due to frigid temperatures. Travel becomes more difficult, particularly for residents without reliable transportation or snow

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		removal resources. Community centers without efficient heating may struggle to remain open and comfortable for public use, which limits opportunities for social engagement during the colder months.
Flooding (and Heavy Rain)	People	*Vulnerability:* Flooding primarily affects residents in low-lying areas near rivers and streams, such as Dry Creek, especially during heavy rainfall or snowmelt. Dry Creek runs through a corridor of unincorporated county that bisects the city. *Impacts:* Individuals without reliable transportation may struggle to evacuate quickly, while low-income families often lack resources for flood-prevention measures. The elderly and those with disabilities may face mobility challenges, which increases their risk during emergencies. Overall, factors such as geographic location, economic status, and physical ability contribute to the community's varying levels of vulnerability to flooding.
	Structures	*Vulnerability:* Structures vulnerable to flooding primarily include those in low-lying areas or near Dry Creek. *Impacts:* Residential properties in floodplains and commercial buildings without proper drainage systems or flood-resistant designs face significant risks during heavy rain or snowmelt. Older structures may be more susceptible due to outdated construction standards. Overall, a combination of location and construction features contributes to their vulnerability to flooding.
	Economic Assets	*Vulnerability:* Businesses near Dry Creek are vulnerable to flooding. *Impacts:* Commercial properties, especially retail centers and warehouses near rivers or low-lying areas, are at high risk during heavy rainfall. Residential developments in flood-prone zones can also suffer damage, impacting property values. Public infrastructure, such as roads and utilities, may experience disruptions, leading to costly repairs. Agricultural land can be affected by excess water, which reduces crop yields.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Open space corridor along Dry Creek is vulnerable to flooding *Impacts:* Natural areas like wetlands and streams are at risk of habitat destruction, while historic sites and landmarks may sustain structural damage. Cultural resources, such as parks and public spaces, can become unusable, affecting community events. Factors contributing to their vulnerability include inadequate flood management, urban development that alters water flow, and the increasing frequency of extreme weather events due to climate change.
	Critical Facilities and Infrastructure	*Vulnerability:* No critical facilities are located in the flood zone in White City, but transportation and utilities are vulnerable to flooding. *Impacts:* Although facilities in White City are not vulnerable, residents may depend on services in neighboring jurisdictions that could be affected. Hospitals, schools, and transportation networks are vulnerable to flooding due to their proximity to rivers and low-lying areas, which can overflow during heavy rain or snowmelt. Flooding can disrupt emergency services, require schools to evacuate, block transportation routes, and isolate communities. In addition, inadequate drainage systems and urban development encroaching on floodplains increase these risks.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Community Activities	*Vulnerability:* Outdoor events and recreation are vulnerable to flooding. *Impacts:* Due to the area's geography and infrastructure, outdoor events, sports, and farmers' markets are vulnerable to flooding. Parks and open spaces can quickly become inundated during heavy rainfall or rapid snowmelt. Residential neighborhoods near rivers, roads, and bridges are at risk of flash floods, which can disrupt transportation and emergency services.
Landslide/ Slope Failure	People	*Vulnerability:* Residents living near hillsides or areas with known soil instability in White City are most at risk during slope failures, especially following heavy rainfall or rapid snowmelt. Areas along Dry Creek have moderate landslide susceptibility. *Impacts:* Residents may be displaced if landslides damage homes. These risks are intensified by inadequate stormwater management systems and limited public awareness about early warning signs such as ground cracking or shifting. Older adults or those without access to transportation may face evacuation challenges if slope instability occurs quickly.
	Structures	*Vulnerability:* Homes and structures along Dry Creek or other slopes are vulnerable to landslides. *Impacts:* Homes and infrastructure built along sloped areas or near drainage channels may be compromised if the ground shifts. Poorly maintained retaining walls, outdated erosion controls, and shallow foundations increase vulnerability. Properties not built with consideration for soil movement or water runoff patterns are especially at risk.
	Economic Assets	*Vulnerability:* Businesses near slopes along Dry Creek are vulnerable to landslides. *Impacts:* Roads, driveways, and utilities in hilly areas of White City could be damaged by slope instability. Property damage may lead to costly repairs or displace residents. Businesses relying on transportation or utility access may be financially impacted if landslides sever roadways or damage pipelines and cables.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Trail systems and open spaces are vulnerable to landslides and slope failure. *Impacts:* Unstable slopes may affect local trails, parks, and natural features. Landslides can alter drainage patterns, harm native vegetation, and destroy habitat. Historic sites in or near old mining corridors or hillside structures could be undermined or rendered inaccessible if soil erosion is severe.
	Critical Facilities and Infrastructure	*Vulnerability:* Roads and emergency services are vulnerable to disruption from slope failure. *Impacts:* Essential services that traverse or border steep terrain are at risk if slope failure occurs. Limited vegetation due to drought or development increases erosion potential. Emergency services may be delayed or obstructed if road access is cut off due to debris or ground displacement.
	Community Activities	*Vulnerability:* Outdoor recreation is vulnerable to landslides and slope failure.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		Impacts: Recreational trails and residential areas on slopes or near unstable land may be closed or restricted following heavy rain. Public infrastructure improvements must consider slope failure potential during planning and construction phases.
Radon	People	*Vulnerability:* Forty-five percent of homes tested in or near White City had dangerous levels of radon. *Impacts:* Radon can result in higher risk of lung cancer. Due to underlying geology in parts of White City, radon exposure is a concern for residents living in homes with basements or slab-on-grade foundations. Children, seniors, and those with respiratory issues are particularly sensitive to long-term radon exposure. Families unaware of radon risks may go years without testing their homes.
	Structures	*Vulnerability:* Older homes, especially those without updated ventilation or sealed foundations, are more likely to accumulate radon gas. *Impacts:* Cracks in concrete floors or poorly ventilated basements create pathways for gas intrusion from the soil. Homes built in areas with elevated natural uranium content are especially susceptible.
	Economic Assets	*Vulnerability:* Property values are vulnerable to the presence of radon. *Impacts:* Radon presence can affect real estate transactions, reducing property value or requiring costly mitigation. Commercial properties, particularly those with underground workspaces or storage areas, may also be impacted. Unmitigated radon issues can discourage investment or delay building use approvals.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Natural systems and historic buildings are vulnerable to radon accumulation. *Impacts:* Soil and groundwater in areas with uranium-rich rock can accumulate radon. Museums or historic buildings built with local stone or concrete may unknowingly trap radon indoors. Without adequate mitigation, long-term exposure could pose a health risk to occupants and staff.
	Critical Facilities and Infrastructure	*Vulnerability:* Public buildings, schools, and healthcare facilities are vulnerable to radon exposure. *Impacts:* Radon can accumulate in community facilities and expose occupants to radon gas. Schools, daycares, and public buildings with basements or concrete floors should be tested for radon. If found, mitigation systems must be installed to ensure occupant safety. Healthcare facilities are especially sensitive, as patients may be more vulnerable to airborne health risks.
	Community Activities	*Vulnerability:* Risk to events is low; risk is primarily a concern due to long-term exposure to radon. *Impacts:* Indoor events in poorly ventilated basements or lower levels may present health concerns if radon levels are high. Awareness campaigns and regular testing can help reduce community risk.
High Wind	People	*Vulnerability:* High wind can occur over the entire city, and all residents are vulnerable. *Impacts:* Residents, particularly those outdoors during wind events, may be injured by flying debris or falling branches. Vulnerable groups may face challenges in getting indoors quickly during sudden gusts.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Structures	*Vulnerability:* All structures are vulnerable to high wind. *Impacts:* Flat-roofed homes, older buildings, and sheds may sustain damage during strong winds. Roofing, fencing, and lightweight exterior materials are often the first to fail. In areas with minimal tree cover or landscaping, winds can pick up speed and increase structural exposure.
	Economic Assets	*Vulnerability:* Local businesses are vulnerable to high wind damage. *Impacts:* Windstorms may cause costly damage to local businesses, especially those with large signs, glass storefronts, or outdoor equipment. Interruptions in power or transportation can delay deliveries or reduce customer access. Repeated weather-related damage may result in higher insurance premiums for property owners.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Trees, open spaces, and trail systems are vulnerable to high winds. *Impacts:* Strong winds can uproot trees, damage parks, and strip topsoil. Cultural sites and outdoor installations can be damaged or displaced. These impacts may require expensive cleanup or repairs and can alter community character.
	Critical Facilities and Infrastructure	*Vulnerability:* Power and communication towers, as well as roads, are vulnerable to high winds. *Impacts:* High winds can bring down power lines and communication towers, disrupting essential services. Roadways may become blocked by debris, reducing emergency vehicle access. Public infrastructure such as traffic lights or signage may also be damaged.
	Community Activities	*Vulnerability:* Community events and recreation are vulnerable to high winds. *Impacts:* Outdoor events such as farmers' markets, sports games, and neighborhood gatherings may need to be canceled or rescheduled due to wind hazards. Unsecured tents and canopies can become airborne, increasing safety risks.
Lightning	People	*Vulnerability:* Lightning can strike anywhere in White City, and all residents are vulnerable. *Impacts:* Lightning can cause injury or death to those close to a strike. Outdoor recreationists and workers in open areas are most at risk from lightning strikes. Without timely shelter access or weather alerts, individuals caught in parks, trails, or backyards during thunderstorms may be exposed to injury or even fatality.
	Structures	*Vulnerability:* Tall buildings, communication towers, and barns without lightning rods or proper grounding are especially vulnerable to lightning strikes. *Impacts:* Strikes may ignite fires, damage electrical systems, or crack structural materials.
	Economic Assets	*Vulnerability:* All businesses are vulnerable to lightning-related impacts. *Impacts:* Fires and electrical damage caused by lightning can lead to business interruptions and costly repairs. Equipment damage or data loss may affect technology-driven operations.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Natural, Historic, and Cultural Resources	*Vulnerability:* Open space by Dry Creek, vegetation, and cultural sites are vulnerable to lightning strikes. *Impacts:* Lightning can ignite dry brush, damage large trees, or burn historic wood-framed buildings. Cultural landmarks located in open or wooded areas are particularly at risk during storm activity.
	Critical Facilities and Infrastructure	*Vulnerability:* Power distribution and communication systems are vulnerable to lightning-related disruptions. *Impacts:* Power stations, substations, and emergency communication towers are at risk of disruption. Surge-related damage to electrical systems can affect schools, hospitals, and emergency services.
	Community Activities	*Vulnerability:* Outdoor events and recreation are vulnerable to lightning storms. *Impacts:* Outdoor concerts, sports events, and recreation programs may be postponed or canceled during lightning storms. Parks and open spaces may require signs or warning systems to alert visitors.
Severe Winter Weather	People	*Vulnerability:* All residents are vulnerable to severe winter weather. *Impacts:* Extreme cold and heavy snow can trap residents indoors, especially seniors, young children, and individuals without access to snow removal equipment or reliable heating. Those who rely on public transit or walking may struggle to access essential services.
	Structures	*Vulnerability:* All structures, particularly older buildings, are vulnerable to severe winter weather. *Impacts:* Buildings with flat or aging roofs may collapse under heavy snow loads. Poor insulation and outdated HVAC systems increase the risk of frozen pipes and heating failures.
	Economic Assets	*Vulnerability:* All businesses are vulnerable to severe winter weather impacts. *Impacts:* Retail activity can stall during major snow events, especially when roads are unsafe. Service providers, delivery drivers, and contractors may miss appointments or face delays. Energy costs often spike during cold snaps, which strains household and business budgets.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Trees, vegetation, and historic and cultural sites are vulnerable to severe winter weather. *Impacts:* Heavy snow can damage trees, crush underbrush, and disrupt animal habitats. Ice can also harm older buildings and public art installations.
	Critical Facilities and Infrastructure	*Vulnerability:* Power and roads networks are vulnerable to snow and ice. *Impacts:* Utilities and road networks are vulnerable to snow and ice. Emergency services may be delayed due to blocked roads. Power outages from downed lines can affect homes, schools, and shelters.
	Community Activities	*Vulnerability:* Community centers and events are vulnerable to severe winter weather. *Impacts:* Winter weather may cause event cancellations and reduce attendance at community centers, particularly if parking or walkways are inaccessible. Emergency plans must account for vulnerable populations during prolonged storms.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
Tornado	People	*Vulnerability:* Although tornadoes are infrequent in White City, all residents are vulnerable to their impacts. *Impacts:* If a tornado were to occur, residents would be vulnerable to serious injury from blowing debris, uprooted trees, and structural collapse. Mobile home residents and individuals without access to sturdy shelters are at elevated risk. Those with mobility challenges may have difficulty evacuating quickly during warnings.
	Structures	*Vulnerability:* All structures are vulnerable to tornado damage. *Impacts:* Older homes and buildings with weak frames or large glass windows may be significantly damaged by high winds. Large-span roofs—such as those on gyms or warehouses—are particularly susceptible to uplift and collapse.
	Economic Assets	*Vulnerability:* All businesses are vulnerable to tornado impacts. *Impacts:* Tornado damage can shut down local businesses, disrupt public services, and create significant recovery costs. Delays in reopening or accessing insurance support can impact long-term economic stability. Power outages can also affect a business's ability to operate.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Trails, parks, and historic buildings are vulnerable to tornado damage. *Impacts:* Tornadoes can uproot trees and tear through parks, affecting trails and greenways. Historic buildings not retrofitted for wind resistance may be lost entirely.
	Critical Facilities and Infrastructure	*Vulnerability:* Schools, public buildings, and power and road infrastructure are vulnerable to tornado impacts. *Impacts:* Schools, hospitals, and fire stations may suffer functional damage or accessibility issues. Power outages and blocked roads may prevent response crews from reaching affected areas.
	Community Activities	*Vulnerability:* Outdoor events and recreation are vulnerable to tornado disruptions. *Impacts:* Public spaces and recreation centers may close temporarily after a tornado. Outdoor activities require contingency plans, including shelter locations and early warning notifications.
Wildfire	People	*Vulnerability:* Wildfire risk is moderate along the Dimple Dell Park/Dry Creek corridor. *Impacts:* Residents near natural open spaces or the wildland–urban interface are most vulnerable. People with health conditions, older adults, and those without transportation may struggle to evacuate. Smoke inhalation is a concern even outside burn zones.
	Structures	*Vulnerability:* Homes near Dimple Dell/Dry Creek are vulnerable to wildfire damage. *Impacts:* Homes built near vegetation or without fire-resistant materials face heightened risk. Wood fences, dry landscaping, and open eaves increase susceptibility. Ember storms can ignite roofs or attics even if the fire isn't nearby.
	Economic Assets	*Vulnerability:* Businesses near open space parks are vulnerable to wildfire impacts.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		Impacts: Wildfires can disrupt local businesses, damage infrastructure, and reduce property values. Agricultural operations or outdoor-based businesses may lose crops, animals, or inventory. Costs related to suppression, recovery, and lost revenue can be significant.
	Natural, Historic, and Cultural Resources	*Vulnerability:* Parks, trees, habitats, and historic buildings are vulnerable to wildfires. *Impacts:* Parks, forests, and habitat areas can burn quickly during dry, windy conditions. Historic structures built from timber or located in scenic areas may be difficult to protect or restore.
	Critical Facilities and Infrastructure	*Vulnerability:* Power lines, water systems, and transportation routes are vulnerable to wildfire damage. *Impacts:* Fire can damage or destroy communication towers or transformers, interrupting services.
	Community Activities	*Vulnerability:* Community events and recreation are vulnerable during fire season. *Impacts:* During fire season, community events may be canceled due to poor air quality or fire threat. Trails and parks may close, and evacuation plans may disrupt recreational and public services.
Dam Failure	People	Based on the location of high or significant hazard dams and maps of dam inundation areas, There is little risk of dam failure in White City.
Civil Disturbance	People	Low-income individuals may lack the resources for safety, while the elderly or disabled may struggle to navigate emergencies. Young people, particularly teenagers, may be drawn into unrest, influenced by social dynamics. In addition, marginalized individuals may feel targeted or compelled to participate. A lack of community cohesion and trust in authorities can further heighten tensions.
	Structures	Government buildings, commercial properties, and infrastructure, such as bridges and transportation hubs may be vulnerable. Government buildings may be targeted for their symbolic authority, while retail stores can attract crowds during protests. Residential neighborhoods also can be affected, especially in areas with heightened tensions. The vulnerability of these structures stems from their visibility and importance to the community, combined with factors such as location and ongoing social issues.
	Economic Assets	Retail establishments, especially shopping centers, are at risk as they often become focal points for protests. Transportation systems can be disrupted by blockades, hindering access to services. Financial institutions may face vandalism or theft, while critical service providers, such as hospitals, could experience strain during unrest. Several economic assets are vulnerable to civil disturbances, primarily due to their visibility and reliance on foot traffic.
	Natural, Historic, and Cultural Resources	Parks and open spaces may suffer from vandalism or destruction during uncontrolled events. Historic sites can become targets, as they symbolize authority or cultural significance. Cultural resources, such as community centers and places of worship, also may be affected, as they play a vital role in community identity. Their vulnerability lies in the potential for damage during protests.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Critical Facilities and Infrastructure	Governmental buildings, schools, and healthcare facilities may be at risk, since they often symbolize authority and serve as community hubs, making them targets during unrest. Utility infrastructure, such as water and power facilities, is also at risk of disruption. Its visibility and essential services contribute to its vulnerability during civil disturbances.
	Community Activities	Public demonstrations, parades, and local government meetings are particularly vulnerable to civil disturbances. These events often attract large crowds and can become tense, especially around contentious social or political issues. Factors such as the local demographic, economic conditions, and recent events can heighten these vulnerabilities, making it easier for conflicts to arise during passionate public gatherings.
Cyberattack	People	Older adults often lack familiarity with technology and online security, making them easy targets for phishing scams. Individuals engaging in online banking or shopping without strong security measures also face heightened risks. Families with children may be less vigilant about internet safety, allowing cybercriminals to exploit personal information. In addition, small business owners without robust cybersecurity practices are prime targets for attacks that can disrupt operations.
	Structures	Critical infrastructure, such as power plants, water treatment facilities, and transportation systems, often lack robust cybersecurity measures. Commercial businesses, especially financial institutions and healthcare providers, are also at risk due to weaker data protection and employee training. Educational institutions may be vulnerable because of limited funding for cybersecurity and outdated software. Obsolete technology and insufficient training heighten the susceptibility of these structures to cyber threats.
	Economic Assets	Financial institutions, such as banks and credit unions, are at risk of data theft and service disruption. Small and medium-sized businesses often lack robust cybersecurity measures, making them attractive targets. In addition, local government agencies and critical infrastructure, such as water treatment facilities, might have outdated security protocols, posing threats to public safety. The rise of remote work further exacerbates vulnerabilities, as employees accessing networks from home can unintentionally expose systems to risks. Overall, the combination of outdated technology and insufficient cybersecurity practices increases the vulnerability of an area's economic assets.
	Natural, Historic, and Cultural Resources	Natural resources like water management systems and wildlife databases can be compromised, disrupting ecosystems. Historic sites and museums that digitize collections are at risk of losing valuable artifacts and data. In addition, cultural organizations managing events may face threats if their systems lack adequate security. The limited resources of smaller organizations further increase this vulnerability.
	Critical Facilities and Infrastructure	Energy and utility services, such as electricity and water systems, which often rely on outdated technology, may be vulnerable. Transportation infrastructure, such as traffic management and public transit, is also at risk due to networked systems. Healthcare facilities

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		that use electronic records and connected medical devices face vulnerabilities that can compromise patient safety.
	Community Activities	Online registration for events, local government services, and educational programs that rely on digital tools may be targeted due to inadequate security measures, outdated software, and insufficient staff training.
Hazardous Materials Incident (Transporta-tion & Fixed Facility)	People	Individuals with pre-existing health conditions, such as respiratory issues, and the elderly are at higher risk due to their compromised health. Children also are more susceptible. Those living near industrial areas or transport routes for hazardous materials face increased exposure risk, while low-income families may lack resources and information to effectively prepare for incidents.
	Structures	Industrial facilities, such as manufacturing plants and warehouses, often store hazardous chemicals which may leak. Residential buildings, schools, and hospitals also are at risk, particularly if located along transportation routes for hazardous materials. Older buildings may lack modern safety features, increasing their vulnerability.
	Economic Assets	Industrial facilities, transportation infrastructure, and nearby commercial properties may be affected. Industrial facilities handling chemicals are at risk of spills or leaks, while roads and railways used for transporting hazardous materials can lead to accidents and contamination. In addition, nearby commercial, and residential areas face potential health risks and economic losses.
	Natural, Historic, and Cultural Resources	Waterways and habitats are vulnerable to hazardous materials incidents, which can disrupt ecosystems. Historic sites and structures may suffer damage from toxic exposure, leading to degradation over time. In addition, cultural landmarks risk losing their significance due to contamination events. The proximity of these resources to industrial areas or transport routes exacerbates their risk.
	Critical Facilities and Infrastructure	Chemical manufacturing plants, waste treatment facilities, and transportation networks, such as highways and railroads may be at risk. Their vulnerability stems from factors such as proximity to residential areas, aging infrastructure, and inadequate safety measures. Natural hazards, such as flooding and earthquakes, can further increase risks by damaging containment systems.
	Community Activities	Local markets, school events, and outdoor gatherings are vulnerable to hazardous materials incidents if they are near industrial zones and transport corridors. This risk is heightened by inadequate emergency preparedness, lack of public awareness, and the potential for spills during transport. Large crowds at events can complicate evacuation efforts, increasing the risks for participants and nearby residents.
Public Health Epidemic/ Pandemic	People	Individuals with pre-existing health conditions like asthma and heart disease and adults over 65 may be vulnerable. Low-income families may struggle to access healthcare and vaccinations, increasing their risk. Marginalized communities with limited access to information and those living in high-density conditions also are at greater risk due to the rapid spread of diseases and the challenges in implementing preventive measures.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
	Structures	Several structures are vulnerable to public health epidemics or pandemics, particularly due to their ability to facilitate the spread of disease. High-density residential areas, such as apartment complexes, are at risk, as close living quarters can lead to faster transmission. Public gathering spaces, such as schools and community centers, also pose significant threats because large groups are in confined spaces. Healthcare facilities can become hotspots for infections if infection control measures are insufficient. In addition, workplaces with high foot traffic, such as retail stores, contribute to vulnerability.
	Economic Assets	Small businesses in retail, hospitality, and food service are particularly vulnerable to public health epidemics or pandemics. These sectors face risks from fluctuating consumer demand and potential operational restrictions. The tourism industry also is affected, as travelers may avoid high-risk areas. Healthcare facilities can become overwhelmed, straining resources and impacting operations. In addition, local supply chains may experience disruptions, leading to shortages and inflation. Overall, the direct effects of illness, along with prolonged shutdowns and consumer hesitance, leave these economic assets exposed to significant downturns.
	Natural, Historic, and Cultural Resources	Natural resources like wildlife and ecosystems can be disrupted by increased human activity, raising the risk of zoonotic diseases. Historic sites may deteriorate due to reduced visitor access and funding, while cultural resources, such as community events, face cancellations, impacting social connections.
	Critical Facilities and Infrastructure	Public health epidemic or pandemic incidents can affect healthcare facilities, nursing homes, public transportation systems, schools, and food supply chains. Hospitals and clinics may become overwhelmed with patients, while vulnerable populations in nursing homes are at higher risk. Public transportation can facilitate the spread of disease, and schools gather large groups, thereby increasing transmission potential. These facilities often lack adequate resources, including medical supplies and testing capabilities, making them more susceptible to the impacts of a health crisis.
	Community Activities	Large gatherings like festivals and sporting events can facilitate the rapid spread of diseases due to close contact. Public transportation also is at risk, as it serves many people in confined spaces. Schools and childcare facilities are particularly susceptible, given that children can easily transmit infections. In addition, food-related events, such as farmers' markets, can pose risks if hygiene practices are not followed. The interconnectedness of community members and varying adherence to health guidelines further exacerbate these vulnerabilities.
Terrorism	People	Young children and newcomers may lack awareness of potential threats, while the elderly and individuals with disabilities may struggle to respond quickly in emergencies. Marginalized communities often face bias, making them more susceptible to targeting. In addition, those with lower socioeconomic status may lack access to security measures and emergency preparedness resources.
	Structures	Government buildings, transportation hubs, commercial centers, and public spaces are particularly vulnerable to terrorism incidents.

DRAFT

Hazard	Vulnerable Asset	Description of Vulnerability and Impacts
		Government buildings are symbolic targets, while transportation hubs and commercial centers are attractive due to their potential for high casualties and crowd presence. Public spaces also are at risk due to their open nature and lack of security. Their vulnerability is heightened by inadequate security measures, high occupancy rates, and their locations in densely populated areas, which can amplify the impact of incidents.
	Economic Assets	Infrastructure, commercial establishments, and community facilities may be vulnerable. Critical infrastructure, such as transportation networks and power grids, could disrupt the economy if targeted. Commercial establishments, especially those with high foot traffic, and community facilities like schools and hospitals also are at risk, as they can provoke widespread concern and disruption. Their accessibility and interconnectivity increase vulnerability, meaning that damage to one asset can have a broader economic impact and hinder recovery efforts.
	Natural, Historic, and Cultural Resources	Natural resources like water supplies and parks could be targeted for their significance to the community. Historic sites and cultural resources, such as museums or community centers, also are at risk due to their accessibility and importance to local identity. Their vulnerability is often heightened by inadequate security measures.
	Critical Facilities and Infrastructure	Public transportation systems, healthcare facilities, schools, and utility services like water and power plants may be affected. Their vulnerability arises from high accessibility and the potential impact of an attack, as crowded transportation and public spaces can lead to mass casualties and panic. Attacking utility services could disrupt the town's essential functions, creating chaos.
	Community Activities	Festivals, parades, and sporting events are particularly vulnerable to terrorism incidents. These events attract large crowds, making it easier for perpetrators to inflict harm and instill fear. In addition, community centers and places of worship serve as social hubs, increasing their risk. Factors such as limited security measures and open access to public spaces, contribute to this vulnerability.

Hazards Not Profiled

Avalanche and Dam Failure have been omitted from further discussion of hazard impacts and from mitigation actions. As shown in the description in Volume 1, avalanche risk is primarily in the Wasatch Mountains in SLCo and White City is not in an inundation zone. No previous occurrences of avalanche or dam failure have impacted White City.

Jurisdiction-Specific Changes in Vulnerability

Hazard events can impact communities, infrastructures, and ecosystems. The severity of these impacts can be influenced by climate change, population patterns, and land use developments. Understanding these factors is crucial for White City to develop a resilient community and minimize the impacts of

DRAFT

hazards. Table 9 displays the unique changes within the community and the related effects on each identified hazard affecting White City.

DRAFT

Table 9: Jurisdiction-Specific Changes in Vulnerability in White City

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
Avalanche	N/A	N/A	N/A	N/A
Drought	Climate change affects drought incidents by altering precipitation patterns and increasing temperatures. Warmer weather can lead to longer dry periods and more severe droughts, while changes in rainfall can reduce snowpack in nearby mountains, crucial for summer water supply. Higher temperatures also increase evaporation rates, further straining local water resources.	Drought can significantly influence population patterns by impacting economic opportunities and the quality of life. Water scarcity often leads to reduced agricultural productivity, prompting residents to migrate to areas with more stable job prospects. Increased water costs can make living less affordable, driving some residents away. Conversely, efforts to address drought, such as sustainable development or improved water management, may attract newcomers, resulting in changes in the community's demographic composition over time.	Development in White City has been minimal since the previous plan update and has not affected the risk of drought.	Increased
Earthquake	Rising temperatures can lead to glacial melting, which affects pressure on tectonic plates and may trigger seismic activity through isostatic rebound. In addition, increased rainfall and flooding can erode soils, weakening structural integrity and heightening vulnerability during earthquakes. Although the direct links between climate change and earthquakes are still under investigation, environmental	Earthquakes can significantly alter population patterns by prompting residents to leave for safer areas after a seismic event. This migration can lead to changes in population density and attract new residents and businesses during the rebuilding process. The perception of the area as a safe place to live may shift, impacting long-term demographics, as some residents return to rebuild while others relocate permanently.	Development in White City has been minimal since the previous plan update and has not affected the risk of earthquakes.	Same

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	effects may impact the region's seismic risk.			
Extreme Heat	Climate change significantly impacts extreme heat by increasing the frequency and intensity of heat waves. Rising global temperatures lead to longer and hotter summers, affecting residents and local infrastructure while heightening health risks, especially for vulnerable populations. Urban heat islands from reduced vegetation and extensive pavement further amplify these effects.	By causing residents to relocate due to damaged homes or safety concerns. Some may move to areas perceived as safer or seek better job opportunities elsewhere. The economic impact and infrastructure damage can also make certain neighborhoods less desirable, leading to shifts in demographics and the socioeconomic landscape as new residents with different backgrounds move in.	Development in White City has been minimal since the previous plan update and has not affected the risk of extreme heat.	Increased
Extreme Cold	By increasing the intensity of winter storms. Higher atmospheric temperatures allow for more moisture, resulting in heavier snowfall and potentially lower temperatures during these events. In addition, fluctuations in weather patterns may disrupt seasonal cycles, leading to unpredictable periods of extreme cold mixed with warmer spells.	By driving some residents to relocate to warmer areas. Harsh winters can hinder economic activities and deter new residents and businesses, influencing housing demand and the attractiveness of certain neighborhoods. This may disproportionately affect lower-income families, leading to changes in demographics and socioeconomic stratification in the community.	Development in White City has been minimal since the previous plan update and has not affected the risk of extreme cold.	Increased
Flooding	Higher temperatures increase the frequency and intensity of extreme weather events and alter precipitation patterns. They lead to more	Flooding can significantly alter population patterns by displacing residents from affected areas, leading them to seek shelter elsewhere. This may cause a	Development in White City has been minimal since the previous plan update and has not affected the risk of flooding.	Decreased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	intense rainstorms and accelerated snowmelt from nearby mountains, raising water levels in rivers and streams. This combination raises the risk of flooding, especially in areas with inadequate drainage and urban development in flood-prone zones, heightening the potential for damage to homes and infrastructure.	population decline where flooding occurs, as individuals might hesitate to return due to ongoing risks or property damage. As neighborhoods become less desirable, people may migrate to safer areas, changing demographic trends and putting pressure on housing in those regions. Over time, these shifts can influence urban planning and development, as local governments address flooding risks and changing population needs.		
Landslide/ Slope Failure	Climate change increases the risk of landslides through heavier rainfall and temperature fluctuations. Intense rain saturates soil, destabilizing slopes, while freeze–thaw cycles weaken the ground. Changes in vegetation can also reduce stability, leading to a higher potential for landslides.	Landslides and slope failures can impact population patterns by making some areas unsafe, leading to displacement and lower property values. This prompts residents to move to safer regions, thereby increasing density in more stable areas. Concerns about future landslides may also deter newcomers from high-risk zones, shaping long-term demographic trends.	Development in White City has been minimal since the previous plan update and has not affected the risk of landslides.	Increased
Radon	Climate change can affect radon levels by altering soil temperatures and moisture conditions. Higher temperatures may increase radon emissions from the ground, while heavy rainfall can change groundwater and soil saturation, impacting radon migration into buildings.	Radon exposure can influence population patterns as increased health awareness may drive families to move away from areas with high radon levels. This shift could particularly affect vulnerable groups, changing demographics and demand in the housing market. Homes with lower radon levels may become more sought after, and public health campaigns can	Development in White City has been minimal since the previous plan update and has not impacted the risk of radon exposure.	Decreased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
		encourage community action, making previously undesirable areas more attractive once mitigation measures are implemented.		
Heavy Rain	Climate change increases the frequency and intensity of heavy rain, as higher temperatures allow the atmosphere to hold more moisture. This leads to stronger storms, flash flooding, and overwhelmed drainage systems.	Heavy rain can shift population patterns by pushing residents out of flood-prone areas and attracting them to safer neighborhoods. Frequent flooding may lead to evacuations and economic disruptions, prompting relocations. Over time, ongoing heavy rains can affect housing demand and community stability, altering the town's population distribution.	Development in White City has been minimal since the previous plan update and has not affected the risk of heavy rain.	Increased
High Wind	Climate change affects high winds by altering atmospheric patterns and increasing extreme weather events. Rising temperatures may lead to more substantial, unpredictable winds and more frequent thunderstorms, posing risks to infrastructure and air quality.	High winds can alter population patterns by making certain areas less desirable. Frequent damage may drive residents to safer neighborhoods, deter newcomers, and slow growth in affected regions.	Development in White City has been minimal since the previous plan update and has not affected the risk of high wind.	Increased
Lightning	Climate change increases temperatures and alters precipitation, leading to more intense thunderstorms and frequent lightning strikes. Urbanization can enhance this effect, posing risks to public safety and infrastructure.	Lightning can influence population patterns by causing property damage and wildfires, leading some residents to relocate. Areas with higher lightning activity may deter new residents, while safer locations could increase migration as people seek protection from severe weather.	Development in White City has been minimal since the previous plan update and has not affected the risk of lightning strikes.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
Severe Winter Weather	Climate change impacts heavy snow and blizzards by altering precipitation patterns. Higher temperatures can lead to more rain than snow, affecting snowpack levels—additionally, increased storm intensity results in heavier, more unpredictable snowfall.	Increased population equals an increased number of people needing to get to work and quicker snow removal. Heavy snow or blizzards can impact population patterns by influencing where people live and work. Transportation disruptions may lead residents to seek housing closer to jobs, increasing density in some areas while depopulating others. Families might also avoid regions with frequent heavy snowfall, shifting demand to milder areas. Over time, these trends can alter community demographics and economic activity, prompting adjustments in town planning and resource allocation.	Development in White City has been minimal since the previous plan update and has not impacted the risk of severe winter weather.	Increased
Tornado	Climate change may increase the frequency and intensity of tornadoes. Higher temperatures lead to more moisture in the air, creating conditions for severe thunderstorms. Changes in wind patterns and precipitation can also heighten tornado risks, resulting in more destructive storms and greater threats to infrastructure and communities.	Tornadoes can influence population patterns by prompting residents to move to safer areas after damage occurs. This can decrease density in affected neighborhoods while increasing the demand for housing in safer regions. New residents may also move in for recovery opportunities, altering demographics. Over time, repeated tornado threats might push long-term residents to areas with better disaster preparedness, reshaping the city's population distribution.	Development in White City has been minimal since the previous plan update and has not affected the risk of tornadoes.	Increased
Wildfire	By raising temperatures and creating drier conditions, prolonged droughts lead to more dry vegetation, which	Displaced individuals often seek safer areas, shifting demographics, while declining property values might deter newcomers.	Development in White City has been minimal since the previous	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	serves as fuel for fires. Erratic seasons extend the growing period, while more lightning strikes can ignite wildfires. These factors heighten the threat to ecosystems and community safety.	Conversely, some may be drawn to rebuilding efforts, impacting long-term growth and community dynamics.	plan update and has not affected the risk of wildfires.	
Dam Failure	N/A	N/A	N/A	N/A
Civil Disturbance	Climate change can increase civil disturbances by intensifying environmental stresses and social tensions. Rising temperatures may lead to drought, wildfires, and poor air quality, particularly affecting vulnerable communities. Resource scarcity, especially water, can spark conflicts and protests. In addition, an influx of migrants from harder-hit areas may strain local resources, further escalating tensions. This cycle of unrest is driven by the impacts of climate change on the environment and community dynamics.	By encouraging residents to move for safety, leading to outflows and new arrivals. These events can reveal social issues, impacting community dynamics, employment, and property values, ultimately reshaping demographics, and social cohesion.	Development in White City has been minimal since the previous plan update and has not affected the risk of civil disturbance.	Increased
Cyberattack	Possible attack on the industry, which is seen as producing large amounts of greenhouse gases and burning fossil fuels. Climate change can heighten cyberattack risk by	Cyberattacks can change population patterns by eroding trust in essential services. Compromised systems may cause residents to leave due to safety concerns, while high-profile incidents can deter businesses, leading to job losses.	Development in White City has been minimal since the previous plan update and has not affected the risk of cyberattacks.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
	increasing vulnerabilities during extreme weather. Disruptions like power outages offer cybercriminals opportunities but focusing on emergency responses can weaken cybersecurity measures. As organizations adopt new technologies to cope with climate impacts, they may unintentionally introduce additional vulnerabilities.	This perception of vulnerability may also make the town less appealing to newcomers, resulting in demographic shifts and changes in local development.		
Hazardous Materials Incident (Transportation & Fixed Facility)	Climate change elevates the risk of hazardous materials incidents by increasing extreme weather events like heavy rain and wildfires. These events can breach storage tanks and heighten material volatility. Vulnerable infrastructure can lead to more spills or accidents, while climate shifts may also introduce new challenges for managing hazardous substances and public health.	By causing evacuations and temporary declines in density. In the long run, unsafe areas may deter new residents, affecting growth and diversity. In addition, negative perceptions can lower property values and economic prospects, leading families to relocate, which impacts local demographics.	Development in White City has been minimal since the previous plan update and has not affected the risk of hazardous materials incidents.	Increased
Public Health Epidemic/ Pandemic	By increasing the spread of vector-borne diseases and raising the risk of waterborne illnesses due to flooding or drought. Worsening air quality can also exacerbate respiratory conditions like asthma, especially in vulnerable populations.	By prompting migration for safety and better healthcare. Vulnerable groups may move to areas with improved services, while economic instability can drive people to seek new employment opportunities. In addition, restrictions like quarantine measures can limit movement and social interactions, reshaping the	Development in White City has been minimal since the previous plan update and has not affected the risk of epidemics/ pandemics.	Increased

DRAFT

Type of Hazard Event	Effects of Climate Change	Changes in Population Patterns	Changes in Land Use and Development	Overall Vulnerability
		community's demographics and impacting local economies.		
Terrorism	Terroristic activity is sometimes centered around climate change. Climate change impacts terrorism incidents by creating conditions of resource scarcity and social unrest. Increased competition for essential resources, such as water, can fuel tensions, making communities more vulnerable to extremist ideologies. Extreme weather events may disrupt social order and infrastructure, offering terrorist groups opportunities to exploit crises. In addition, climate-driven population displacement can heighten tensions in receiving areas, raising the risk of domestic terrorism. Law enforcement's focus on climate-related challenges can also limit its capacity to address terrorism threats. Ultimately, while climate change may not directly cause terrorism, its effects can create an environment conducive to extremist activities.	Terrorism incidents can alter population patterns by instilling fear and prompting residents to relocate to perceived safer areas, resulting in demographic shifts and potential declines in property values. Some neighborhoods may see an outflow of residents, while others could experience an influx of people seeking refuge from violence. In addition, increased security measures may deter businesses and residents from certain locations, leading to long-term changes in population density and urban development patterns.	Development in White City has been minimal since the previous plan update and has not affected the risk of terrorism.	Increased

DRAFT

Additional Public Involvement

White City provided several opportunities for public participation. Figure 1 presents examples of public outreach.

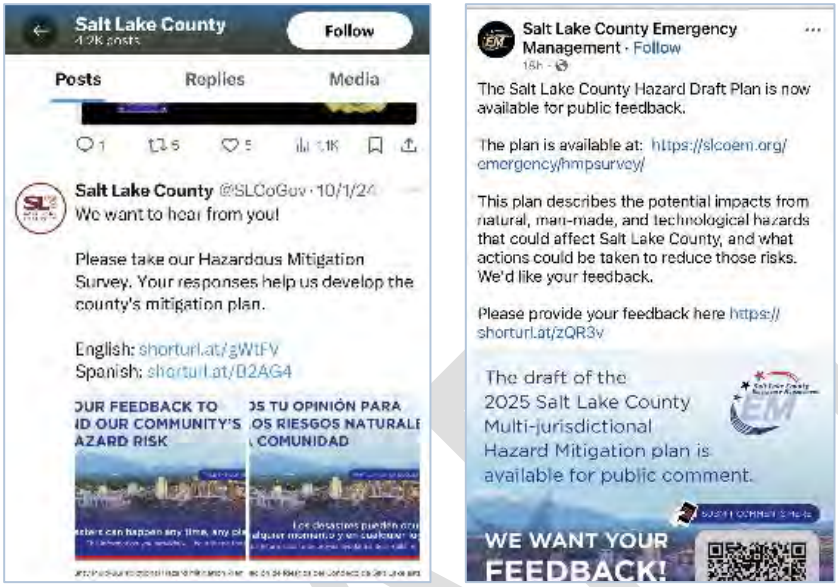


Figure 1: Social Media Posts for the Hazard Mitigation Survey (*left*) and Draft Plan Review (*right*)

Plan Integration

Incorporating the underlying principles of the Hazard Mitigation Plan and its recommendations into other plans is a highly effective and low-cost way to expand their influence. All plan participants will use existing methods and programs to implement hazard mitigation actions where possible. As previously stated, mitigation is most successful when it is incorporated into the day-to-day functions and priorities of government and public service. This plan builds on the momentum developed through previous and related planning efforts and mitigation programs, and it recommends implementing actions, where possible, through these other program mechanisms. These existing mechanisms include:

- Regularity Capabilities
- Administrative Capabilities
- Fiscal Capabilities

Respective planning stakeholders will conduct implementation and incorporation into existing planning mechanisms and will be done through the routine actions of:

- Monitoring other planning/program agendas
- Attending other planning/program meetings
- Participating in other planning processes

DRAFT

- Monitoring community budget meetings for other community program opportunities

The successful implementation of this plan will require constant and vigilant review of existing plans and programs for coordination and multi-objective opportunities that promote a safe, sustainable community. Regular efforts should be made to monitor the progress of mitigation actions implemented through other planning mechanisms. Where appropriate, priority actions should be incorporated into planning updates. Table 10 lists existing planning mechanisms in which the Hazard Mitigation Plan has been integrated. Table 11 lists the opportunities for integrating elements of this plan into other plans.

Table 10: Integration of Previous Plans by White City

Plan	Description
General Plan	Priorities for land use, the community, and transportation in White City

Table 11: Opportunities for Integration with Future Plans of White City

Plan	Description
Comprehensive Emergency Management Plan	Framework for hazard response, recovery, mitigation and preparedness.
Continuity Plan (COOP)	Overview of operational needs in an emergency
Emergency Communications Plan	Overview of emergency communication protocols between White City and other organizations
Community Wildfire Protection Plan	Provides information on wildfire preparedness and response efforts

Capability Assessment

Local mitigation capabilities are existing authorities, policies, programs, and resources that reduce hazard impacts or could help carry out hazard mitigation activities.

Planning and Regulatory Capabilities

Planning and regulatory capabilities are the plans, policies, codes, and ordinances that prevent and reduce the impacts of hazards.

DRAFT

Table 12: Assessment of the Planning Capabilities of White City[2]

Plan	Does it address hazards? (Y/N)	How can it be used to implement mitigation actions?	When was the last update? When is the next update?
General Plan	Y	Project tracking and alignment of White City's overall goals into mitigation actions	2022
Capital Improvement Plan	Y – included in General Plan	Incorporation of funding sources and project tracking over time into mitigation actions	2022
Climate Change Adaptation Plan	N	N/A	N/A
Community Wildfire Protection Plan	Y	Incorporation of wildfire preparedness and response efforts into mitigation actions and responsible agencies	2021
Economic Development Plan	Y – included in General Plan	Alignment of economic goals and funding sources into mitigation actions	2022
Land Use Plan	Y – included in General Plan	Incorporation of land use, agency, and historical information into mitigation actions	2022
Local Emergency Operations Plan	Y – adopted MSD's EOP in 2020, updated to the MSD's CEMP in 2025	White City adopted the MSD's EOP in 2020, which was updated in 2025 and now called the CEMP. It can inform mitigation actions as far as agency involvement, funding sources, and response efforts.	2025
Stormwater Management Plan	Y	Incorporation of stormwater management efforts into flooding, dam failure, heavy rain, and heavy snow/blizzard hazard mitigation actions.	2020
Transportation Plan	Y	Incorporation of transportation goals into mitigation actions	2022
Substantial Damage Plan	N	N/A	N/A
Other? (Describe)			

Table 13: Assessment of the Regulations and Ordinances of White City

Regulation/Ordinance	Does it effectively reduce hazard impacts?	Is it adequately administered and enforced?	When was the last update? When is the next update?
Building Code	Building codes ensure structures are constructed to meet	Yes	2017

[2] CEMP = Comprehensive Emergency Management Plan, EOP = Emergency Operations Plan, MSD = Municipal Services District.

DRAFT

Regulation/Ordinance	Does it effectively reduce hazard impacts?	Is it adequately administered and enforced?	When was the last update? When is the next update?
	established standards and brought up to code when remodeling occurs. White City has several commercial buildings. White City automatically adopts the state's version as amended of the International Building Code and International Residential Code, both currently dated 2021.		
Flood Insurance Rate Maps	Y	Y	2023
Floodplain Ordinance	Y	Y	2023
Subdivision Ordinance	Y	Y	2023
Zoning Ordinance	Y	Y	2023
Natural Hazard-Specific Ordinance (Stormwater, Steep Slope, Wildfire)	Y	Y	2023
Acquisition of Land for Open Space and Public Recreation Use	Y	Y	2017
Prohibition of Building in At-Risk Areas	Y	Y	2023
Other? (Describe)			

Administrative and Technical Capabilities

Administrative and technical capabilities include staff and their skills. They also include tools that can help carry out mitigation actions.

Table 14: Assessment of the Administrative Capabilities of White City[3]

Administrative Capability	In Place? (Y/N)	Is staffing adequate?	Are staff trained on hazards and mitigation?	Is coordination between agencies and staff effective?
Chief Building Official	Y, MSD	Need more building inspectors.	Yes	Yes
Civil Engineer	Y, MSD	Yes	Yes	Yes
Community Planner	Y, MSD	Yes	Yes	Yes
Emergency Manager	Y	Y	Yes	Yes

[3] MSD = Municipal Services District, UFA = Unified Fire Authority.

DRAFT

Administrative Capability	In Place? (Y/N)	Is staffing adequate?	Are staff trained on hazards and mitigation?	Is coordination between agencies and staff effective?
Floodplain Administrator	Y, MSD	Yes	Yes	Yes
Geographic Information System (GIS) Coordinator	Y, MSD	Yes	Yes	Yes
Planning Commission	Y	Yes	Yes	Yes
Fire Safe Council	N, UFA provides fire service.	N/A	N/A	N/A
CERT (Community Emergency Response Team)	N	N/A	N/A	N/A
Active VOAD (Voluntary Agencies Active in Disasters)	Y	Y	Yes	Yes
Other? (Please describe.)				

Table 15: Assessment of the Technical Capabilities of White City[4]

Technical Capability	In Place? (Y/N)	How has it been used to assess/mitigate risk in the past?	How can it be used to assess/mitigate risk in the future?
Mitigation Grant Writing	Y, MSD and county	White City is part of the MSD. All services are currently contracted out – UFA, UPD or through the MSD.	Grant applications can include mitigation actions.
Hazard Data and Information	Y, MSD and county	Identify areas most at risk for specific hazards	Identify areas to prioritize for mitigation projects and other efforts
GIS	Y, MSD	Identify, map, and share hazards in the city	GIS can be used for grant applications to show the hazards and areas of interest. GIS can also be used to track mitigation efforts over time.
Mutual Aid Agreements	Y	Assist in emergency planning, resource requests, and emergency response efforts	Can be used to share responsibility of mitigation actions and response efforts
Other? (Please describe.)			

[4] MSD = Municipal Services District, UFA = Unified Fire Authority, UPD = Unified Police Department.

DRAFT

Financial Capabilities

Financial capabilities are the resources to fund mitigation actions. Talking about funding and financial capabilities is important to determine what kinds of projects are feasible given their cost. Mitigation actions like outreach programs are lower cost and often use staff time and existing budgets. Other actions, such as earthquake retrofits, could require substantial funding from local, state, and federal partners. Partnerships, including those willing to donate land, supplies, in-kind matches, and cash, can be included.

Table 16: Assessment of the Financial Capabilities of White City

Funding Resource	In Place? (Y/N)	Has it been used in the past and for what types of activities?	Could it be used to fund future mitigation actions?	Can it be used as the local cost match for a federal grant?
Capital Improvement Project Funding	Y	Road improvements	Yes	Yes
General Funds	Y	No	Yes	Yes
Hazard Mitigation Grant Program (HMGP/404)	Y, not used	No	Yes	No
Building Resilient Infrastructure & Communities (BRIC)	Y, not used	No	Yes	No
Flood Mitigation Assistance (FMA)	Y, not used	No	Yes	No
Public Assistance Mitigation (PA Mitigation/406)	Y, not used	No	Yes	No
Community Development Block Grant (CDBG)	Y	No	Yes	No
Natural Resources Conservation Services (NRCS) Programs	N	No	Yes	No
U.S. Army Corps (USACE) Programs	N	No	Yes	No
Property, Sales, Income, or Special Purpose Taxes	Y	Yes, to cover policing costs	Yes	Yes
Stormwater Utility Fee	Y	Stormwater management, increased essential service fees (police, fire)	Yes	Yes

DRAFT

Funding Resource	In Place? (Y/N)	Has it been used in the past and for what types of activities?	Could it be used to fund future mitigation actions?	Can it be used as the local cost match for a federal grant?
Fees for Water, Sewer, Gas, or Electric Services	Y	Yes, road improvements	Yes	Yes
Impact Fees from New Development and Redevelopment	Y	Increased essential service fees (fire, police)	Yes	Yes
General Obligation or Special Purpose Bonds	Y	Yes	Yes	Yes
Federal-funded Programs (Please describe)	Y, not used	No	Yes	No
Private Sector or Nonprofit Programs	Y, not used	No	Yes	Yes
Other?				

Education and Outreach Capabilities

Education and outreach capabilities are programs and methods that could communicate about and encourage risk reduction. These programs may be run by a participant or a community-based partner. Partners, especially those who work with underserved communities, can help identify additional education and outreach capabilities.

Table 17: Assessment of the Education and Outreach Capabilities of White City[5]

Education and Outreach Capability	In Place? (Y/N)	Does it currently incorporate hazard mitigation?	Could it be used to support mitigation in the future?
Community Newsletter(s)	Y	Y	Y
Hazard Awareness Campaigns (such as Firewise, Storm Ready, Severe Weather Awareness Week, School Programs)	Y	Y	Y
Public Meetings/Events (Please describe.)	Y	Y	Y
Emergency Management Listserv	Y through MSD/UFA	Y	Y
Local News	Y	Y	Y
Distributing Hard Copies of Notices (e.g., public libraries, door-to-door outreach)	Y	Y	Y

[5] MSD = Municipal Services District, SLCo EM = Salt Lake County Emergency Management, UFA = Unified Fire Authority.

DRAFT

Education and Outreach Capability	In Place? (Y/N)	Does it currently incorporate hazard mitigation?	Could it be used to support mitigation in the future?
Insurance Disclosures/Outreach	N	Y	Y
Organizations that Represent, Advocate for, or Interact with Underserved and Vulnerable Communities (Please describe.)	Y, through SLCo EM	Y	Y
Social Media (Please describe.)	Y	Y	Y
Other? (Please describe.)	N/A	N/A	N/A

Opportunities to Expand and/or Improve Capabilities

Actions that can expand and improve existing authorities, plans, policies, and resources for mitigation include budgeting for mitigation actions, passing policies and procedures for mitigation actions, adopting and implementing stricter mitigation regulations, approving mitigation updates, and making additions to existing plans as new needs are recognized. Table 18 lists the opportunities for White City.

Table 18: Opportunities to Expand or Improve the Capabilities of White City

Capability	Opportunity to Expand and/or Improve
Planning and Regulation	Current planning mechanisms can be expanded to incorporate access and functional needs in plans. The Community Wildfire Protection Plan (2021) can be regularly updated, enabling the city to incorporate the latest conditions and best practices.
Administrative and Technical	The city could use additional building inspectors. Building codes are an effective mitigation method. Additionally, current GIS capabilities can be expanded to track hazards, such as diseases.
Financial	The city can apply for previously unused grants, such as the Flood Mitigation Assistance (FMA) grant program.
Education and Outreach	Implementing hazard-specific public outreach campaigns such as for high wind can help expand current education and outreach approaches.

Mitigation Strategy

Mitigation strategies provide proactive measures that are designed to minimize the impacts of hazards on White City. Table 19 shows mitigation action alternatives, and

Table 20 shows the status of previous mitigation activities. Table 21 is the 2025 mitigation action plan for White City.

DRAFT

Table 19: Mitigation Action Alternatives for White City

Action	Type of Action	Selected for inclusion in the plan?	If not selected, why not?
Continue social media engagement	Education and Awareness Programs		
Adopt new building codes as they are approved to bring some existing structures up to current codes	Structure and infrastructure Projects	Yes	

Table 20: Status of Prior Mitigation Actions of White City[6]

Action	Hazard(s)	Agency Lead	Support Agency(ies)	Status Update
Establish an emergency fund to support response and recovery operations	All hazards	White City	GSL MSD, SLCo EM	Incomplete
Conduct seismic retrofitting and implement a program for residents similar to the "Fix the Bricks" initiative	Earthquake	White City	GSL MSD, SLCo EM	Incomplete
Provide additional education and materials to the public regarding the earthquake risk and potential mitigation actions that can be taken	Earthquake	White City	GSL MSD, SLCo EM, UDEM	Ongoing
Develop a training program for contractors so they become qualified to conduct seismic retrofitting	Earthquake	White City	GSL MSD, SLCo EM	Incomplete

[6] GSL MSD = Greater Salt Lake Municipal Services District, SLCo EM = Salt Lake County Emergency Management, UDEM = Utah Division of Emergency Management.

Table 21: 2025 Mitigation Action Plan for White City[7]

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Time-frame	Priority	Comments
1	Enhance security at critical infrastructure locations to prevent potential terrorist acts.	Terrorism, Civil Disturbance	White City	UPD, UFA, MSD, SLCo IT, SLCo PW, SLCo Clerk's Office, SLCo Sheriff's Office, utility companies, water districts, SLCo EM	Increased security protocols (in both technology and policy) for staff/first responders, clearer expectations and understanding for local jurisdictions and the public	Medium	SLCo EM general funds, UPD general funds, Sheriff's Office general funds, UFA general funds, MSD general funds, utility companies, water districts	Short-term	Medium	
2	Develop and implement public education programs on disaster awareness and mitigation.	Civil Disturbance, Drought, Wildfire, Earthquake, Extreme Heat, Extreme Cold, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide/Slope Failure, Lightning, Public Health Epidemic/Pandemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	White City	UFA, UPD, Sheriff's Office, SLCo PW, SLCo EM, utility companies, water districts, MSD, NWS	Increased understanding of local resources, improved relationships with the public and stakeholders, and outlined plans/SOPs for programs.	Low	SLCo EM general funds, White City general fund, SHSP grant, HSGP grant	Short-term	Medium	Share data via social media, online, and hard copies, as well as coordinate with SLCo EM to identify community representatives that can amplify the mitigation message. For example, sharing opportunities for structural and non-structural retrofits to homes to address earthquakes.
3	Integrate WebEOC, Crisis Track, GIS, and other technological enhancements in White City.	Civil Disturbance, Drought, Wildfire, Earthquake, Extreme Heat, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide, Lightning, Public Health Epidemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	White City	UFA, UPD, SLCo PW, SLCo Health Department, SLCo EM, UDEM, UDOT, utility companies, water districts, MSD	Provision of a common operating platform for stakeholders, increased situational awareness, improved response time.	Low	SLCo EM general funds, UFA general funds, White City general funds, HSGP grant, EOC grant program	Medium-term	Medium	Existing software that we just need additional documentation/training on.
4	Enhance and continue to promote the implementation of CERT and SAFE Hubs.	Civil Disturbance, Drought, Wildfire, Earthquake, Extreme Heat, Extreme Cold, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide/Slope Failure, Lightning, Public Health Epidemic/Pandemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	White City	MSD, SLCo EM	Increased awareness of local resources.	Low	SLCo EM general funds, White City general funds, MSD general funds	Short-term	Medium	SAFE Hubs (previously S.A.F.E. Neighborhoods) is going through a rebrand currently with new public awareness campaign and information for all partners.
5	Establish access and functional needs registry and improve incorporation of those with access and	Civil Disturbance, Drought, Wildfire, Earthquake, Extreme Heat, Extreme Cold, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide/Slope Failure,	White City	MSD, SLCo EM	Increased situational awareness for the public and stakeholders, and greater understanding of resources available for those with access and functional needs.	Low	SLCo EM general funds, HSGP grant, White City general funds, MSD general funds	Short-term	High	The State of Utah's Access and Functional Needs Registry is dissolving in 2025. White City needs a way to account for those with access and functional needs,

[7] ATF = Bureau of Alcohol, Tobacco, Firearms and Explosives, BRIC = Building Resilient Infrastructure and Communities, CWPP = Community Wildfire Protection Plan, DHS = Department of Homeland Security, EOC = Emergency Operations Center, ESGP = Enhanced Security Grant Program, FBI = Federal Bureau of Investigation, FD = Fire Department, FEMA = Federal Emergency Management Agency, FFSL = Division of Forestry, Fire, and State Lands, FMA = Flood Mitigation Assistance, HMGP = Hazard Mitigation Grant Program, HSGP = Homeland Security Grants Program, LEPC = Local Emergency Planning Committee, MSD = Municipal Services District, NRCS = Natural Resources Conservation Service, NWS = National Weather Service, PDM = Pre-Disaster Mitigation, SHSP = State Homeland Security Program, SIAC = Statewide Information and Analysis Center, SLC = Salt Lake City, SLCo EM = Salt Lake County Emergency Management, SLCo IT = Salt Lake County Information Technology, SLCo PW = Salt Lake County Public Works, UDEM = Utah Division of Emergency Management, UDEQ = Utah Department of Environmental Quality, UDOT = Utah Department of Transportation, UFA = Unified Fire Authority, UPD = Unified Police Department.

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Time-frame	Priority	Comments
	functional needs in plans.	Lightning, Public Health Epidemic/Pandemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire								including incorporation into plans/SOPs.
6	Procure generators and transfer switches for schools, public facilities, and critical facilities.	Extreme Heat, Extreme Cold	White City	SLCo EM, MSD, school districts	Provision of backup generators for cooling centers and Code Blue centers. Maintenance of an accurate inventory of what the county has to provide to other agencies or jurisdictions as needed.	Medium	White City general funds, SLCo EM general funds, MSD general funds, school districts, HMA grant	Long-term	Medium	
7	Increase the size of culverts and bridges.	Flooding, Heavy Rain, Severe Winter Weather,	SLCo Flood Control Engineering	SLCo EM, White City, MSD	Allowance for larger runoff during spring melt season, and reduce the amount of debris buildup.	High	SLCo PW capital improvement funds, UDOT, MSD capital improvement funds, White City general funds	Long-term	Medium	
8	Procure FMA grants in coordination with the MSD and SLCo EM.	Flooding, Heavy Rain	MSD	White City, SLCo Flood Control Engineering, SLCo EM	Increased understanding of grants available and how funds can be used for mitigation efforts.	Low	PDM grant, HMGP grant, FMA, NRCS grant, White City/MSD capital improvement budgets and bonds	Medium-term	Medium	
9	Develop an enhanced emergency notification communications system for White City.	Civil Disturbance, Drought, Earthquake, Extreme Heat, Extreme Cold, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide/Slope Failure, Lightning, Public Health Epidemic/Pandemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	SLCo EM	MSD, UFA, UPD, White City, UDOT	Early notification of impending wildfire to decrease loss of life, improved relationships with the public and stakeholders, and faster delivery of information with templates/plans ready to go.	Medium	SLCo EM general funds, MSD general funds, White City general funds, HSGP grant, BRIC grant	Short-term	Medium	
10	Promote the Firewise Initiative and regularly review/update the Community Wildfire Protection Plan (CWPP) for White City.	Wildfire	UFA	SLCo EM, MSD, White City, FFSL	Increased awareness of the plan (for the public and stakeholders), increased eligibility for grants/other funding sources, and regular review of CWPP.	Low	SLCo EM general funds, MSD general funds, White City general funds, Community Wildfire Assistance grant, Fire Prevention and Safety grant	Short-term	Medium	
11	Conduct public awareness campaign on Tier 2 reporting software for chemical reporting.	Hazardous Materials Incident	UFA	SLCo EM, UPD, White City, Sheriff's Office	Increased understanding of Tier 2 reporting and how local agencies can find and submit information. Provision of a common operating platform for hazardous materials reporting.	Low	White City general funds, SLCo EM general funds, LEPC, State of Utah general funds, MSD general funds	Long-term	Medium	

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Time-frame	Priority	Comments
12	Enact local regulations and codes for development to reduce landslide and slope failure damage to critical infrastructure and buildings.	Landslide/Slope Failure	MSD	SLCo EM, UFA, White City, SLCo Office of Regional Development, local utilities	Reduction in the likelihood of landslides and critical infrastructure/building damage, and ensuring that future development is up to code and follows policy to avoid repetitive loss properties.	Medium	SLCo EM general funds, MSD general funds, State of Utah general funds, White City general funds	Long-term	Medium	
13	Leverage WebEOC and GIS to track the spread of contagious disease.	Public Health Epidemic/ Pandemic	SLCo Health Dept	SLCo EM, UFA, MSD, UPD, Sheriff's Office	Use of GIS and WebEOC software to maintain situational awareness and track illnesses in White City.	Low	SLCo EM general funds, SLCo Health Department general funds, State of Utah general funds	Short-term	Medium	White City already has this software; need to improve training and documentation.
14	Create public awareness campaigns and public education programs on radon risks and provide home radon testing.	Radon	SLCo EM	SLCo Aging & Adult Services, UDEQ, SLCo Health Department, White City, MSD	Decrease in radon-caused cancer deaths, increase in engagement and understanding with the public on what SLCo and White City can do or help with.	Low	SLCo general funds, White City general funds, UDEQ general funds	Short-term	Low	
15	Develop road resurfacing project that includes permeable pavement for areas with rain-based flooding.	Severe Weather – Heavy Rain	SLCo Flood Control Engineering	SLCo Parks and Recreation Department, MSD, SLCo PW & Municipal Services, White City, UDOT	Reduction of pollutants discharged in runoff, reduction in maintenance time/costs on roads, and increase traction on roads.	High	SLCo Flood Control Engineering general funds, SLCo PW & Municipal Services general funds, UDOT general funds, FMA, HMGP grant	Long-term	Low	
16	Create a public education program for property owners to learn about tree maintenance and high strength windows	Severe Weather – High Wind	SLCo EM	SLCo Aging & Adult Services, SLCo PW & Municipal Services, UFA, White City, MSD, NWS	Reduction in damage during high wind event to critical infrastructure, prevention of personal injuries (people driving on roads or walking in the neighborhood), and improvement of relationships with stakeholders and the public.	Low	SLCo PW & Municipal Services general funds, SLCo EM general funds, White City general funds, MSD general funds, UFA general funds	Short-term	Low	
17	Develop a severe winter weather mitigation program to maintain access to primary roadways and evacuation routes.	Severe Winter Weather – Heavy Snow, Blizzard	SLCo PW & Municipal Services	SLCo EM, White City, MSD, UDOT, NWS	Use of roads by emergency services like police, fire, and paramedics to provide their services.	Low	MSD general funds, SLCo PW & Municipal Services general funds, White City general funds	Short-term	High	A severe winter storm with heavy snowfall requires our operators and equipment to be used to clear roads and streets for the public and emergency vehicles to use. The primary effort will be to keep the roads open by clearing snow.
18	Conduct public awareness campaign about lightning safety.	Severe Weather – Lightning	White City FD	SLCo Parks and Recreation, UFA, SLCo PW & Municipal Services, SLCo EM, MSD	Increase in lightning strike awareness for the public.	Low	SLCo general funds, MSD general funds, White City general funds	Short-term	Low	

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Time-frame	Priority	Comments
19	Improve outreach for "see something, say something" QR code to deter terrorist acts.	Terrorism (including Cyberattack)	SLCo EM	SLCo Sheriff's Office, UPD, UFA, MSD, White City, SLCo IT	Ensuring that residents and local agencies are aware of local intelligence resources and ways in which they can report suspicious activity, and encouragement of QR code use/outreach at all special events in White City.	Low	SLCo EM general funds, White City general funds, MSD general funds, UPD general funds	Short-term	Medium	
20	Be a part of the countywide intelligence group/division to monitor and analyze threats before an incident occurs.	Terrorism (including Cyberattack)	SLCo EM	White City, SLCo Sheriff's Office, SIAC, DHS, ATF, FBI, MSD	Establishment of a central group to collect and analyze information, develop SOPs for intelligence, and promote greater collaboration.	Low	ESGP grant, SHSP grant, SLCo EM general funds, White City general funds	Short-term	Medium	This would be a core group of stakeholders that meet on a regular basis to share and collaborate on intelligence data.
21	Code Enforcement – Review critical infrastructure facilities to ensure that building materials are up to code and are tornado resistant.	Tornado	MSD	White City, SLCo EM, SLCo PW & Municipal Services, SLCo Flood Control Engineering, UFA, UPD, SLCo Facilities Management	Ensuring that critical infrastructure facilities are operational/functional in the event of a disaster and preservation of life and safety.	Medium	SLCo EM general funds, MSD general funds, White City general funds, UFA general funds	Short-term	Low	
22	Enhance interoperable radio communications systems in White City..	Civil Disturbance, Drought, Earthquake, Extreme Heat, Extreme Cold, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide/Slope Failure, Lightning, Public Health Epidemic/Pandemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	MSD	UFA, UPD, SLCo Sheriff's Office, SLCo EM, White City PD	Improved communication between different agencies, and provision of a common operating platform.	Medium	SLCo EM general funds, White City general funds, MSD general funds, HSGP grant	Short-term	Medium	
23	Be a part of the countywide single source of information sharing/gathering for intelligence	Civil Disturbance, Terrorism	SLCo EM	SLCo Sheriff's Office, SIAC, MSD, White City	Increased coordination between local agencies/jurisdictions.	Medium	White City general funds, MSD general funds, ESPG grant, SHSP grant	Short-term	Medium	Have one common operating platform to be used by all agencies in White City and the MSD to collect suspicious activity reports. Develop a public awareness campaign to educate the public on how and what to report.
24	Install xeriscaping on government-owned buildings.	Drought, Wildfire	MSD	Water companies/ districts, MSD, State of Utah, White City, SLCo Facilities Management	Decrease in the cost of landscape irrigation, reduction in water use, and reduction of wildfire risk.	High	SLCo Facilities general funds, State of Utah general funds, MSD general funds	Short-term	Low	
25	Improve communication to the public and stakeholders on resources available	Severe Winter Weather	SLCo EM	The Office of Homeless and Criminal Justice Reform, MSD,	Prevention of further damage to critical infrastructure, ensuring that homeless individuals have warming resources available, and	Low	SLCo EM general funds, SLCo Health Department general funds, UT	Short-term	Low	

DRAFT

#	Action	Hazard(s)	Lead Agency	Potential Partners	Benefits (Losses Avoided)	Cost Estimate	Funding Source(s)	Time-frame	Priority	Comments
	when Code Blue is in effect during severe winter weather.			White City, NWS, UT Department of HHS, White City	offloading of some of the pressure on local homeless resource providers with standard protocols to follow during Code Blue.		Department of HHS general funds, White City general funds, MSD general funds			
26	Establish an emergency fund to support response and recovery operations.	Civil Disturbance, Drought, Earthquake, Extreme Heat, Extreme Cold, Flooding, Hazardous Materials Incident, Heavy Rain, High Wind, Landslide/Slope Failure, Lightning, Public Health Epidemic/Pandemic, Radon, Severe Winter Weather, Terrorism, Tornado, Wildfire	MSD	UFA, UPD, SLCo EM	Provision of a means to effectively respond to and recover from impacts.	High	White City general funds	Medium-term	Medium	
27	Conduct seismic retrofitting and implement a program for residents similar to the “Fix the Bricks” initiative.	Earthquake	UFA	SLCo EM	Improvement of the resilience of facilities to withstand earthquakes, and protection of buildings and people from falling debris.	Medium	White City general funds	Short-term	High	
28	Develop a training program for contractors so they become qualified to conduct seismic retrofitting.	Earthquake	UFA	SLCo EM	Provision of a workforce to improve the resilience of facilities to earthquakes.	Low	White City general funds	Short-term	Low	

DRAFT

THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT