



AGENDA – City Council Meeting

Mayor Jim Miller

Mayor Pro Tempore Stephen Willden

Council Member Audrey Barton

Council Member Christopher Carn

Council Member Michael McOmber

Council Member Lance Wadman

CITY OF SARATOGA SPRINGS

Tuesday, September 17, 2024 @ 6:00 pm

City of Saratoga Springs Council Chambers

1307 North Commerce Drive, Suite 200, Saratoga Springs, UT 84045

POLICY MEETING

CALL TO ORDER

1. Roll Call.
2. Invocation / Reverence.
3. Pledge of Allegiance.
4. Presentation: Youth Council Oath of Office; Invitation for Youth Officers to Join Council on the Dais.
5. Public Input – *Time for Public Input is limited to no more than 15 minutes total. This time has been set aside for the public to express ideas, concerns, and comments for subject matter not listed as public hearing on the agenda.*

REPORTS

1. Mayor.
2. City Council.
3. Administration.

CONSENT ITEMS

The Council may approve these items without discussion or public comment and may remove an item to the Business Items for discussion and consideration.

1. Approval of Minutes: September 3, 2024.

PUBLIC HEARINGS

The Council will accept public comment on the following:

1. Proposition #13 Recreation, Arts, and Parks Sales and Use Tax (RAP Tax). Public Hearing to receive input from the Public with respect to the levying of a .1% Sales and Use Tax, and the potential economic impact that the facilities to be financed in whole or in part with proceeds of said tax will have on the private sector.

WORK SESSION

1. UDOT Mountain View Corridor southern extension environmental document update. Presented by Avenue Consultants.
2. Saratoga Alluvial Fan study.

CLOSED SESSION

Possible motion to enter into closed session for the purchase, exchange, or lease of property; pending or reasonably imminent litigation; the character, professional competence, or the physical or mental health of an individual; or the deployment of security personnel, devices, or systems.

ADJOURNMENT

Supporting materials are available for inspection on the City Website, www.saratogasprings-ut.gov. Questions and comments to Staff and/or Council may be submitted to comments@saratogasprings-ut.gov. Meetings are streamed live at <https://www.youtube.com/c/CityofSaratogaSprings>.

PLEASE NOTE: The order of items may be subject to change with the order of the Mayor. One or more council members may participate by electronic telecommunication means such as phone, internet, etc. so that they may participate in and be counted as present for all meeting purposes, including the determination that a quorum is present.

In compliance with the Americans with Disabilities Act, individuals needing special accommodations (including auxiliary communicative aids and services) during this meeting should notify the City Recorder at 801.766.9793 at least two days prior to the meeting.



MINUTES – CITY COUNCIL MEETING

Tuesday, September 3, 2024

City of Saratoga Springs

City of Saratoga Springs City Offices

1307 North Commerce Drive, Suite 200, Saratoga Springs, Utah 84045

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Chair: Mayor Jim Miller called the meeting to order at 6:00 p.m.

Roll Call:

Present Mayor Jim Miller, Council Members Christopher Carn, Audrey Barton, Michael McOmber, Stephen Willden, and Lance Wadman

Staff Present City Manager Mark Christensen, Assistant City Manager Owen Jackson, Community Development Director Ken Young, City Attorney Kevin Thurman, Senior Planner Austin Roy, Budget Analyst Spencer Quain, Senior Planner Gina Grandpre, Police Chief Andrew Burton, City Recorder Nicolette Fike and Deputy City Recorder Kayla Moss

Others: Logan Johnson, Helen Robson, Crystal Ferrell, Jared Osmond, David Meredith

Invocation: Council Member Carn

Pledge of Allegiance: Council Member Barton

Public Input: Helen Robson, Inlet Springs Drive, has two different concerns. She reached out to council members with concerns about traffic lights going out so often in the last couple of months. This has backed traffic up dramatically. She called in to the police department for one instance and asked if they could send someone to help direct traffic. She was told it wasn't their responsibility and that they have more important things to do than direct traffic. She knows that we aren't a major metropolis but one of the biggest issues the City deals with is traffic. She used to be on the veteran's advisory board and there are a lot of veterans in the city as well as retired police officers. She suggested they may be able to be mobilized to help in these kinds of situations. She also mentioned that snowdrifts in the winter cover the lights almost causing accidents. She is also concerned about the developers in the city that come build big housing developments that bring a lot more children to the city, and then don't help to support schools in the area. This leaves the citizens with major problems in the school system.

REPORTS: Council Member McOmber mentioned that he has called in to staff to have police come and respond to a light that was out in the past. He agrees that we should be helping to direct traffic when lights are out. As we are getting close to fall and winter, he asked that we enforce the weeds and garbage in the streets and islands on Market Street to help reduce flooding. The wind is picking up because it is getting to be fall, he would like to remind developers that they need to wet down dirt so that it doesn't become a hazard.

Council Member Carn has been involved with the school district and he wanted it to be on record that Westlake was built to serve 1,750 students and the count of students was 3,200 this year. The overcrowding is a problem, and he is working on ideas to help get this situation fixed sooner rather than later.

Council Member Wadman advised that Harvest Hills Elementary has a beautiful park and there are a lot of people there this time of year to participate in soccer. People have been parking on the east side on Providence creating traffic flow issues. He asked if staff could look into ways to resolve this.

Mayor Miller advised that MAG brought up a question regarding the 5th and 5th sales tax that was enacted. Concerns were voiced that they may be using the money for Salt Lake County and not Utah County. They are asking for a full accounting of where the money has gone.

50

51 **CONSENT ITEMS:**

521. **Approval of Minutes: August 20, 2024.**

53

54 **Motion by Council Member McOmber to approve the Consent Item seconded by Council Member Carn.**

55 **Vote:**

<u>Council Member Chris Carn</u>	<u>Yes</u>
<u>Council Member Lance Wadman</u>	<u>Yes</u>
<u>Council Member Audrey Barton</u>	<u>Yes</u>
<u>Council Member Stephen Willden</u>	<u>Yes</u>
<u>Council Member Michael McOmber</u>	<u>Yes</u>

60 **Motion carried 5-0.**

61

63 **PUBLIC HEARINGS:**

641. **Budget Amendments for Fiscal Year 2024-2025. Resolution R24-49 (9-3-24).** Budget Analyst Spencer Quain advised that this is the second budget amendment of the year. Some of the amendments include HR purchase of a new software to replace one that is being discontinued, adjusting the cemetery budget to account for the bid received, and additional funding for phase 1 grading for the public works site.

65

66 Mayor Miller opened the public hearing at 6:17 pm, there were no comments so the public hearing was 67 closed.

68

69 Mayor Miller opened the public hearing at 6:17 pm, there were no comments so the public hearing was 70 closed.

71

72 **Motion by Council Member McOmber to approve the Budget Amendments for Fiscal Year 2024-2025.**

73 **Resolution R24-49 (9-3-24) seconded by Council Member Willden.**

74 **Vote:**

<u>Council Member Chris Carn</u>	<u>Yes</u>
<u>Council Member Lance Wadman</u>	<u>Yes</u>
<u>Council Member Audrey Barton</u>	<u>Yes</u>
<u>Council Member Stephen Willden</u>	<u>Yes</u>
<u>Council Member Michael McOmber</u>	<u>Yes</u>

80 **Motion carried 5-0.**

81

82 **BUSINESS ITEMS:**

83

841. **Amendments to Title 19 Land Development Code of the City of Saratoga Springs, Chapter 19.04 for Gateway Overlay Parking. Ordinance 24-38 (9-3-24).** Community Development Director Ken Young advised that currently, parking between buildings and arterial or collector streets is not allowed within the Gateway Overlay Zone. A current site plan application brought to staff's attention that this requirement could be overly restrictive. Staff has evaluated the effect of this requirement on all properties within the Gateway Overlay Zone and believes this requirement is overly restrictive. Many properties fronting collector streets are smaller and therefore have fewer development options, and many properties fronting collector streets also front arterial streets. Staff proposes eliminating collector streets from the requirement and retaining arterial streets from this requirement.

85

86 City Council agreed that they would like to have staff decide which arterial street would take priority for 87 access to parking.

88

89 **Motion by Council Member Willden to approve Amendments to Title 19 Land Development Code of the**
City of Saratoga Springs, Chapter 19.04 for Gateway Overlay Parking. Ordinance 24-38 (9-3-24) with all
staff findings and conditions adding condition that we will clarify at a future meeting the exception that

100 **when there are two arterial roads they will identify which has priority seconded by Council Member**
101 **McOmber.**

102 **Vote:**

<u>Council Member Chris Carn</u>	<u>Yes</u>
<u>Council Member Lance Wadman</u>	<u>Yes</u>
<u>Council Member Audrey Barton</u>	<u>Yes</u>
<u>Council Member Stephen Willden</u>	<u>Yes</u>
<u>Council Member Michael McOmber</u>	<u>Yes</u>

108 **Motion carried 5-0.**

109

1102. **Thrive Drive Daycare Site Plan, located at 204 E Thrive Drive, Logan Johnson as Applicant.** Director Young advised on the Site Plan, located on Lots 3 and Lot 4 of the Riverside Crossing Subdivision Plat A. The applicant is proposing amending this plat to combine Lot 3 and Lot 4. (Currently, Lot 4 has two owners so the Utah County Recorder's Office shows three parcels on these two lots). The proposed site plan fronts on Riverside Drive to the east, which is a collector street. The site plan shows parking between the building and Riverside, which does not meet the current Gateway Overlay requirement for all parking to be located behind a building that fronts on arterial or collector streets. The shape and size of the lot makes it challenging to efficiently layout the site without parking adjacent to the collector. However, following an analysis of roadways in Gateway Overlay areas, staff has proposed to remove prohibiting parking adjacent to collector streets, as this can be overly burdensome to the development of several Gateway properties. This proposed code amendment will be heard at this same City Council meeting. The proposed site plan incorporates 31% landscaping. Access to the lot will be from the south side off of Thrive Drive.

122

123 Council Member Carn asked how many kids are in a class.

124

125 The applicant Logan Johnson advised that there will be a capacity of about 100 kids at the facility. There will be a drop off window that staggers for about 2 hours in the morning and afternoon. There are 17 parking spots that will be occupied by staff. They have seen some good distribution at other sites with limited issues.

129

130 Council Member McOmber had a couple of concerns. When you are coming over the hill you're looking at a parking lot right away, and not the building. He would like to see the parking lot moved to the other side. He also asked if the elevations meet the design standards outlined in the gateway overlay zone.

133

134 Director Young advised that the elevations do meet what is outlined in the gateway overlay zone currently.

135

136 Council Member Carn asked if he knows what development is kitty-corner from them. That may shield the parking lot depending on what is planned there.

138

139 Council Member Wadman asked if there is any shielding between the residential use and this facility.

140

141 The applicant advised there is some grading difference, a 5 foot public utility easement and another setback. A fence is not allowed in the gateway overlay zone.

143

144 **Motion by Council Member McOmber to deny the Thrive Drive Daycare Site Plan, located at 204 E Thrive Drive, Logan Johnson as Applicant with all staff findings based on the gateway overlay, landscape shielding being minimal, and the position of the parking lot seconded by Council Member Wadman.**

147 **Vote:**

<u>Council Member Chris Carn</u>	<u>Yes</u>
<u>Council Member Lance Wadman</u>	<u>Yes</u>

150 Council Member Audrey Barton Yes
151 Council Member Stephen Willden No
152 Council Member Michael McOmber Yes
153 Motion carried 4-1.

154
155 Council Members asked for clarification on what they approved in business item 1. They thought they had
156 approved something different than what was implied by this application. It was decided they would
157 reconsider the vote they took previously.

158
159 Motion by Council Member McOmber to reconsider the vote on business item 1 seconded by Council
160 Member Carn.

161 Vote:

162 Council Member Chris Carn Yes
163 Council Member Lance Wadman Yes
164 Council Member Audrey Barton Yes
165 Council Member Stephen Willden Yes
166 Council Member Michael McOmber Yes
167 Motion carried 5-0.

168
169.1. **Amendments to Title 19 Land Development Code of the City of Saratoga Springs, Chapter 19.04 for**
170 **Gateway Overlay Parking. Ordinance 24-38 (9-3-24).**

171
172 Council Member McOmber would not like to allow parking lot access on the collector roads, he would
173 prefer that it defaults to the local road if that is an option.

174
175 City Manager Mark Christensen suggested tabling this item since there was so much hesitancy.

176
177 Motion by Council Member McOmber to table Amendments to Title 19 Land Development Code of the
178 City of Saratoga Springs, Chapter 19.04 for Gateway Overlay Parking. Ordinance 24-38 (9-3-24)
179 seconded by Council Member McOmber.

180 Vote:

181 Council Member Chris Carn Yes
182 Council Member Lance Wadman Yes
183 Council Member Audrey Barton Yes
184 Council Member Stephen Willden Yes
185 Council Member Michael McOmber Yes
186 Motion carried 5-0.

187
188 The Council decided that they would also like to reconsider their vote on business item 2 since they didn't
189 come to a conclusion on the ordinance change.

190
191.2. **Thrive Drive Daycare Site Plan, located at 204 E Thrive Drive, Logan Johnson as Applicant.**

192
193 Motion by Council Member Carn to reconsider the vote on business item 2 seconded by Council Member
194 Wadman.

195 Vote:

196 Council Member Chris Carn Yes
197 Council Member Lance Wadman Yes
198 Council Member Audrey Barton Yes
199 Council Member Stephen Willden Yes

200 Council Member Michael McOmber Yes

201 Motion carried 5-0.

202
203 Motion by Council Member Carn to table the Thrive Drive Daycare Site Plan, located at 204 E Thrive
204 Drive, Logan Johnson as Applicant with all staff findings based on the gateway overlay, landscape
205 shielding being minimal, and the position of the parking lot seconded by Council Member McOmber.

206 Vote:

207 Council Member Chris Carn Yes

208 Council Member Lance Wadman Yes

209 Council Member Audrey Barton Yes

210 Council Member Stephen Willden No

211 Council Member Michael McOmber Yes

212 Motion carried 4-1.

213

2143. **Adopting Mixed Waterfront Design Standards, City-Wide, City-Initiated. Ordinance 24-39 (9-3-24).**

215 Senior Planner Austin Roy advised that on May 2, 2023, the City Council adopted amendments to Title 19
216 regarding the Mixed Waterfront Ordinance. The adopted ordinance references a document, the "Mixed
217 Waterfront Design Standards". The Mixed Waterfront Design Standards went to the City Council on
218 January 2, 2024 as a work session item. Following the feedback from the City Council, the draft was
219 updated and went to the Planning Commission for a recommendation on August 15, 2024. There are
220 three areas in the city that have mixed waterfront zoning. He presented some of the included design
221 standards to the City Council.

222

223 Council Member McOmber asked if it is outlined in the guide that they can't have one single color on the
224 elevation of the building. He is concerned there are pictures in the guide that don't depict the accurate
225 requirements for colors.

226

227 Senior Planner Roy advised that this is in conjunction with all other design standards so they would be
228 required to have three different colors. Staff and the consultant wanted to be careful in adding colors or
229 materials to a guide because materials and styles change so much over time and they wouldn't want them
230 to build exactly what is shown, it was more like a blank canvass. Senior Planner Austin Roy noted they
231 could add a note indicating it was conceptual in nature only.

232

233 Motion by Council Member Barton to adopt Mixed Waterfront Design Standards, City-Wide, City-
234 Initiated. Ordinance 24-39 (9-3-24) with all staff findings and conditions seconded by Council Member
235 Wadman.

236 Vote:

237 Council Member Chris Carn Yes

238 Council Member Lance Wadman Yes

239 Council Member Audrey Barton Yes

240 Council Member Stephen Willden Yes

241 Council Member Michael McOmber Yes

242 Motion carried 5-0.

243

2444. **Jordan Promenade (Wander) Village Plan 3 Major Amendment #2. Located Approximately Riverside**
245 **Drive and 400 North. Oakwood Homes as applicant. Ordinance 24-40 (9-3-24).** Senior Planner Gina
246 Grandpre advised The Jordan Promenade ("Wander") Village 3 project, located northeast of the
247 intersection of Pony Express and Riverside Drive is being amended to reconfigure a section of townhomes
248 on the north side of Village 3 and to change the number of allowed townhome units in a building from 2-
249 6 units per building to 2-8 units per building.

250
251 Council Member McOmber advised that they haven't allowed 8 units per building in other areas, and did
252 not allow it when they first requested. He does not think this makes the neighborhoods better because it
253 will reduce view corridors. He wants to make sure they are preserving corridors the best they can. He
254 would like to see an upgrade to the design standards instead of downgrading them. He thinks that the
255 product has gotten worse as the development has continued being built.

256
257 The applicant respectfully disagreed with Council Member McOmber's assessment that the design has
258 gotten worse as the development has progressed. He also pointed out that Village Plan 3 has the most
259 open space of any of the other villages. He doesn't think that linking up two more buildings will reduce
260 view corridors, he thinks it will open up the corridors.

261
262 Council Member Willden would like to see where the change from 6 to 8 is impacting the area. He is okay
263 with approving the layout change but he would like to see where the changes are taking place. He would
264 like them to bring back where the 8 unit connected townhomes would be.

265
266 **Motion by Council Member Willden to approve Jordan Promenade (Wander Village Plan 3 Major**
267 **Amendment #2. Located Approximately Riverside Drive and 400 North. Oakwood Homes as Applicant.**
268 **Ordinance 24-40 (9-3-24) Except that the change from 6 to 8 units to be brought back at a later date**
269 **with additional information, and including any other staff findings and conditions seconded by Council**
270 **Member McOmber.**

271 **Vote:**

272 **Council Member Chris Carn Yes**
273 **Council Member Lance Wadman Yes**
274 **Council Member Audrey Barton Yes**
275 **Council Member Stephen Willden Yes**
276 **Council Member Michael McOmber Yes**

277 **Motion carried 5-0.**

278
2795. **Amendments to Title 19 Land Development Code of the City of Saratoga Springs, Chapter 19.18 – Sign**
280 **Regulations, Raising Cane's – Crystal Ferrell as applicant. Ordinance 24-41 (9-3-24).** Senior Planner
281 Grandpre advised that the applicant, Raising Cane's, is seeking an amendment to Section 19.18 to permit
282 architectural elements that serve as market branding without categorizing them as signs. The applicant is
283 asking for approval of these revisions to specifically define and allow these types of installations.

284
285 The applicant Crystal Ferrell gave a presentation to the City Council regarding what signs they are
286 requesting and gave reasons why they are asking for the code changes.

287
288 Council Member Barton advised that she gets nervous allowing any exceptions because of the precedence
289 it sets. She loves the design and that they came back with a concept that fits the city better, but she is
290 nervous what others may bring in the future.

291
292 Council Member Wadman was also concerned that if they make the code change it will open the door to
293 other applicants.

294
295 Council Member Carn was concerned with how we got here. He is worried that planning commission is
296 writing code with an applicant to try and make their concept work. He doesn't think he can agree to this
297 because of the same reasons that have already been brought up.

299 **Motion by Council Member McOmber to deny Amendments to Title 19 Land Development Code of the**
300 **City of Saratoga Springs, Chapter 19.18 – Sign Regulations, Raising Cane’s – Crystal Ferrell as applicant.**
301 **Ordinance 24-41 (9-3-24) with staff findings and conditions and as per staff recommendation seconded**
302 **by Council Member Wadman.**

303 **Vote:**

304 **Council Member Chris Carn Yes**
305 **Council Member Lance Wadman Yes**
306 **Council Member Audrey Barton Yes**
307 **Council Member Stephen Willden Yes**
308 **Council Member Michael McOmber Yes**

309 **Motion carried 5-0.**

310

311.6. **Redwood Square Preliminary Plat & Site Plan, located approximately Redwood Road and Aspen Hills Blvd., David Meredith as Applicant.** Planning Director Sarah Carroll advised this 5.14-acre development consists of five buildings over two lots and includes 24.56% landscaping with a trail along Redwood Road. UDOT has granted a conditional access permit onto and off Redwood Road. The applicant is also working with the adjacent properties to the north and south to provide access. The proposed site plan provides the required parking for several RC uses including retail, restaurant, and takeout. Based on the parking provided, there is not enough for medical uses, which require a higher parking ratio than retail. The development is governed by a development agreement restricting certain uses in the RC zone and shall comply with those limits as well as the RC zone.

320

321 Jared Osmond was present as applicant.

322

323 Council Member Carn mentioned to the applicant that he likes their product. He thinks that they are under parked at times because they are always so popular. He wants to make sure the neighbors are screened from hearing too much noise from the development.

326

327 **Motion by Council Member Carn to approve Redwood Square Preliminary Plat & Site Plan, located approximately Redwood Road and Aspen Hills Blvd., David Meredith as Applicant with all staff findings and conditions seconded by Council Member Barton.**

328 **Vote:**

331 **Council Member Chris Carn Yes**
332 **Council Member Lance Wadman Yes**
333 **Council Member Audrey Barton Yes**
334 **Council Member Stephen Willden Yes**
335 **Council Member Michael McOmber Yes**

336 **Motion carried 5-0.**

337

338 **ADJOURNMENT:**

339 There being no further business, Mayor Miller adjourned the meeting at 8:09 p.m.

340

341

342 Jim Miller, Mayor

343 Dated

344

345

346 Nicolette Fike, City Recorder

347

Mountain View Corridor South

Pioneer Crossing to Redwood Road



Saratoga Springs City Council Meeting

September 17, 2024

State Environmental Study (SES)

Proposed Action

A 10-mile southern extension of Mountain View Corridor from Cory Wride Highway (SR-73) to Redwood Road, near Pelican Point.

Goals:



Enhance network connectivity and vehicle mobility in northwest Utah County.



Improve road network connectivity and resiliency in southern Saratoga Springs.



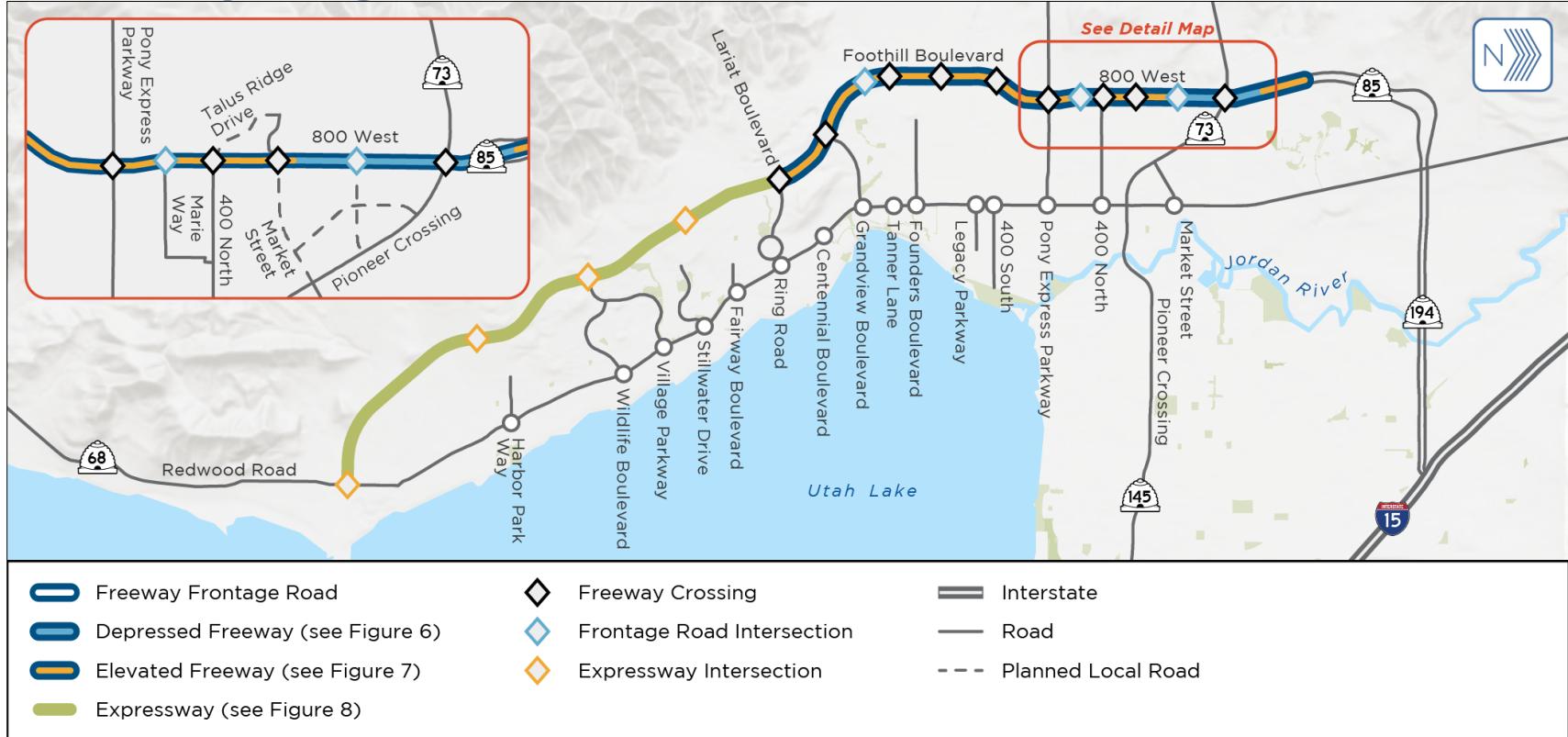
Support active transportation improvements parallel to the Proposed Action consistent with existing and planned routes.



Schedule

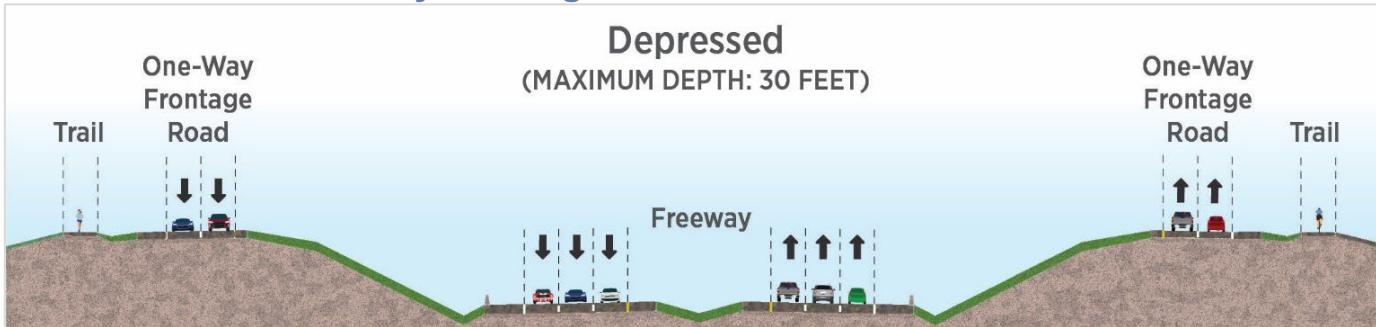


Roadway Segments and Access Locations

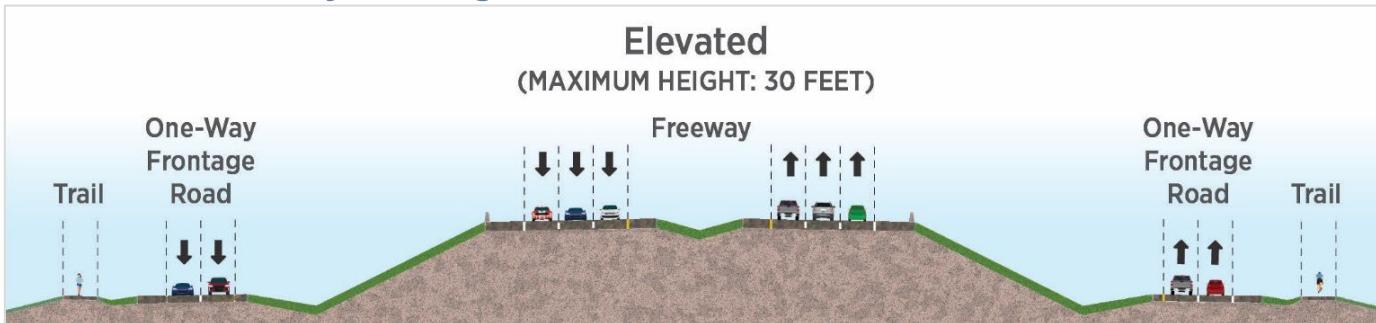


Roadway Cross Section

Freeway Frontage Road: SR-73 – Sunrise Park

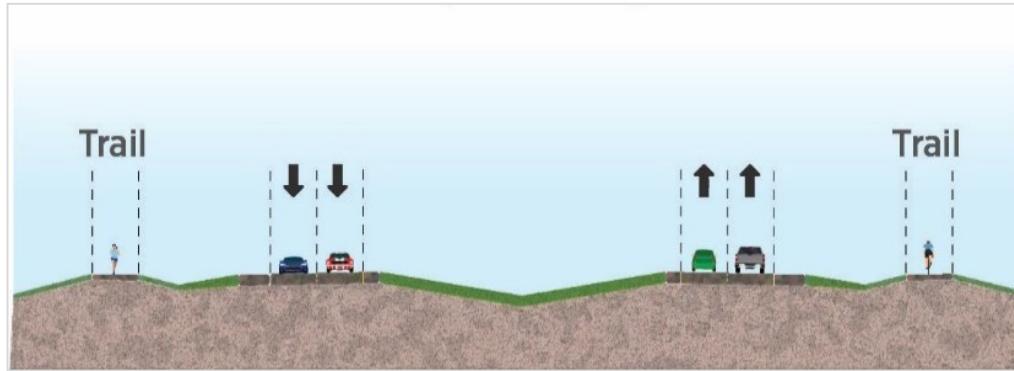


Freeway Frontage Road: Sunrise Park - Lariat Boulevard



Roadway Cross Section

Expressway Road: Lariat Boulevard – Redwood Road



Public and Stakeholder Engagement (to date)

Public Scoping

- Online Meeting (Oct. 11, 2023)
- In-person meeting (Oct. 12, 2023)
- Public Comment Period (Oct. 11 – Nov. 10, 2023)

Preliminary Design Concept

- Splash Days (Jun. 6 – 8, 2024)
- Website Tools
 - Interactive Comment Map, Travel Pathway Visuals, and Cross-sections
- Public Comment Period (Jun. 4 – Jul. 5, 2024)
- Stakeholder Meetings
 - Landowners/developers, Saratoga Springs Engineering, Alpine School District, and Emergency Services



Evaluate Environmental Impacts (ongoing)



Land Use

Hazardous Materials



Cultural Resources (archaeology)

Air Quality



Traffic Noise

Wetlands and Floodplains



Outdoor Recreation

Right-of-Way Acquisition



Community Facility

Visual / Aesthetics



Next Steps

Prepare and Publish SES

- Anticipated winter 2024



Hold Public Hearing and Comment Period



Anticipated early 2025

Publish Decision

- Anticipated spring 2025

Project Contact Information



Hotline: 385-283-0123



Email: mvcsouth@utah.gov



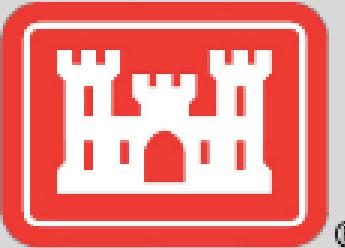
Website: udotinput.utah.gov/mvcsouth



Sign up for project updates here!

Discussion

Questions and Answers



**U.S. Army Corps
of Engineers**
Sacramento District

Presentation of Technical Work of Saratoga Springs Alluvial Fan Flooding

Working Together to Reduce Flood Risk



Working Together to Reduce Flood Risk

Michelle Brown

Flood Risk Program Manager

Morgan Marlatt, P.E.

Chief, Hydraulic Engineering Section

Taryn Lausch

Geologist

Sasha Lussier, M.S.

Water Resources Planner



**U.S. Army Corps
of Engineers
Sacramento District**

*Information labeled CUI in this presentation contains Controlled Unclassified Information and is protected by law, regulation, or government wide-policy.

Project Background

- The City has experienced flooding and debris flows in the past that have affected residential developments.
- The worst debris flow event was after the Dump Fire (2012) burned approximately 6,000 acres in the Lake Mountains and a rainfall event generated and transported approximately 70,000 tons of debris flow that caused damage to homes, roads, and other infrastructure.
- Previous study (2020) identified fourteen active alluvial fans that have the potential to affect the City.
- The City has constructed two debris basins and has planned five additional debris basins.



Photo: Salt Lake Tribune 2012 Saratoga Springs begins recovery from flood of mud - The Salt Lake Tribune (sltrib.com)



Photo: KSL News Saratoga Springs , UT www.ksl.com/article/21975694

Project Goals and Approach

- **GOAL:** The goal of this project was to further evaluate risks and mitigation strategies associated with alluvial fan flooding in Saratoga Springs, UT.
 - Guidance to help inform development
 - Information to inform mitigation projects – debris basins
- **APPROACH:** To further support the City's flood-preparedness efforts and ability to make risk informed decisions, in 2022 USACE initiated another phase of the project to inform the City of :
 1. Flooding that may result if a range of rainfall events were to occur.
 2. Expected geomorphic hazard (landslide or movement of the earth) given the past and present geologic conditions.
 3. Range of expected debris flow volumes that could be generated within a watershed for various rainfall amounts.



Photo: CRS Engineers Debris Flow Mitigation Saratoga Springs, UT

Terminology

Alluvial Fans

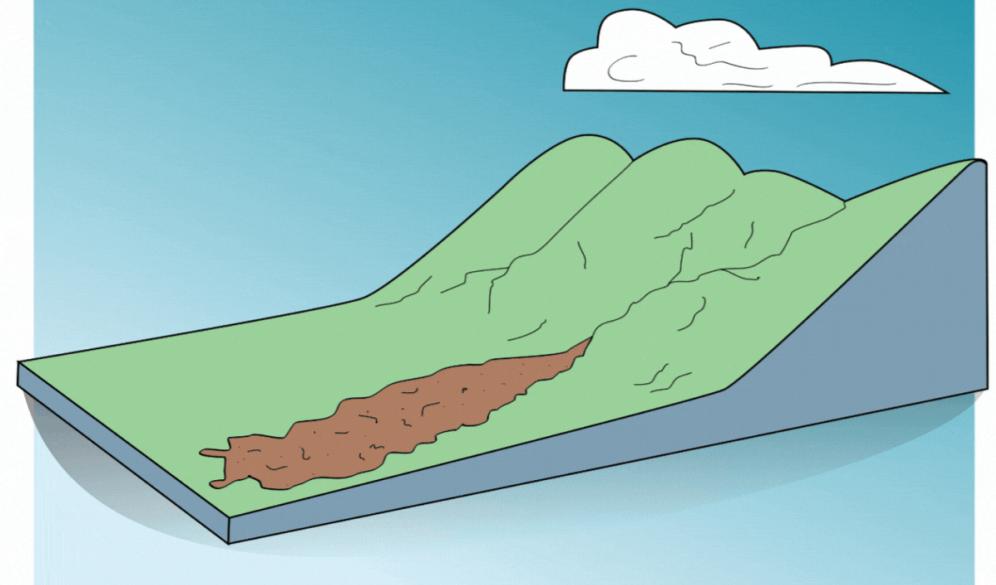
An accumulation of sediment that fans outwards from a concentrated source, such as a narrow canyon.



A fan-shaped pile of sediment forms at the base of this unidentified mountain. Source: www.protrails.com/lexicon/term/155

DEBRIS FLOW

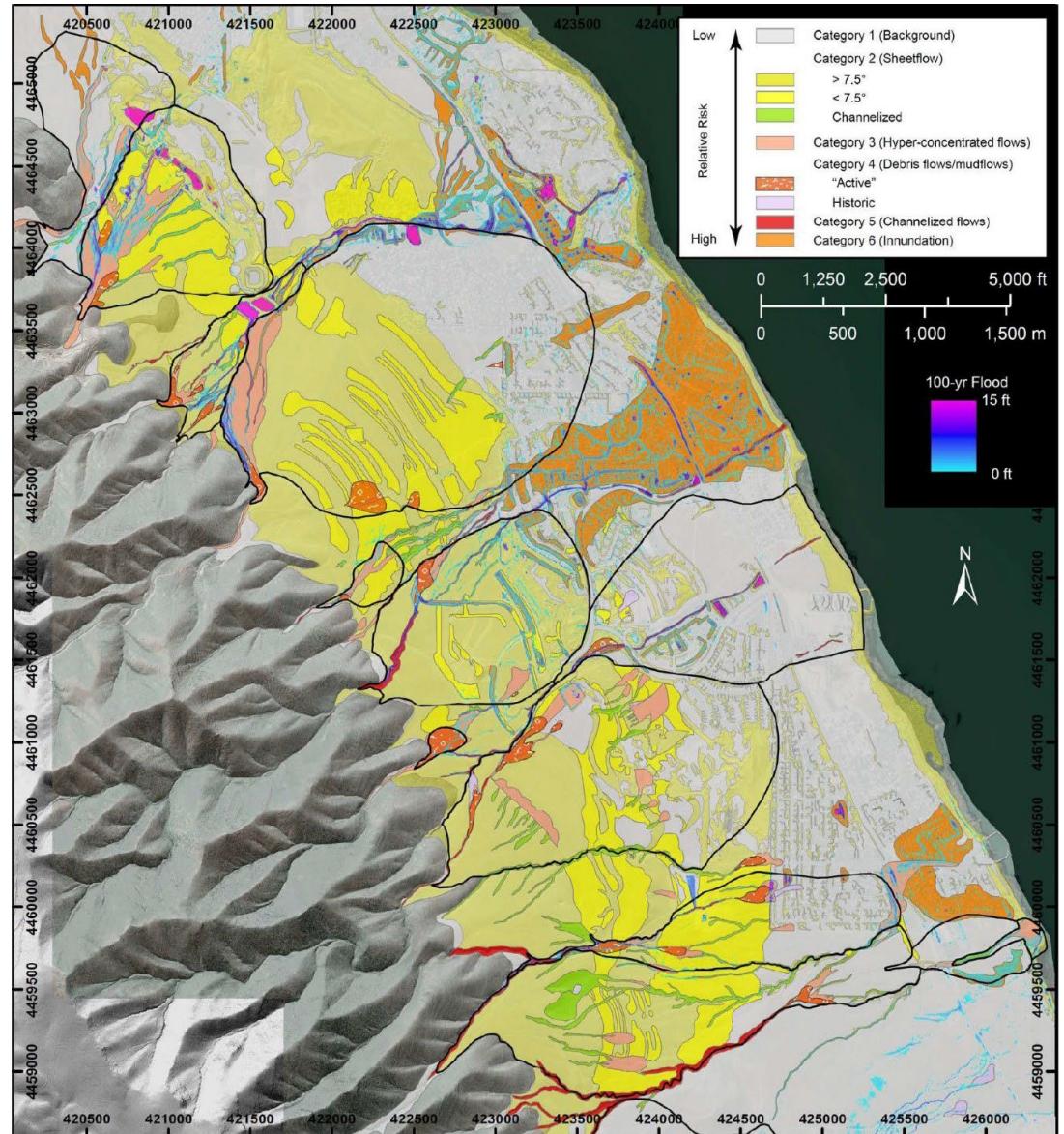
Rapidly moving mix of water, mud, trees, and other materials that flows downvalley and can travel great distances.



TYPES OF LANDSLIDES

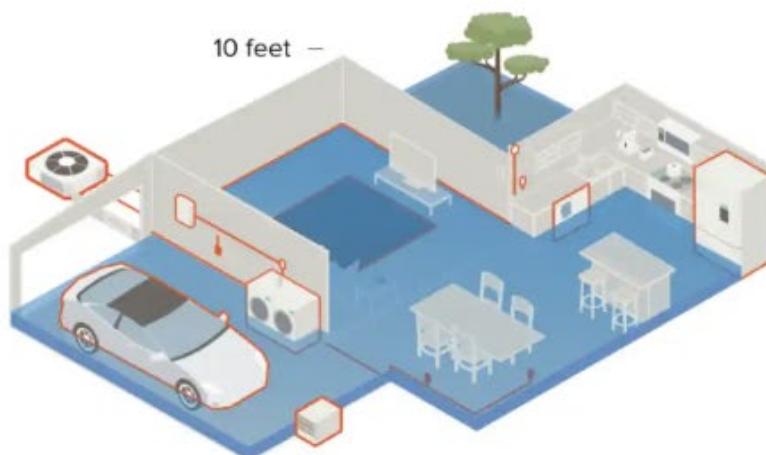
Geologic Hazard Assessment

- Risk mapping was conducted by studying the shape of the fan surface, with support from observations made during the site visit and analyzing aerial photographs
- Risk mapping in this study is tied to geologic processes
 - Categories range from 1-6, the highest risk categories are 5 and 6 (channelized flows and inundation)
- The geologic hazard analysis does not display substantial evidence of past debris flows
 - Active zones appear limited to minor portions of the large fans
- The highest risk for damaging flows occurs near the top of the fan where confined flows are released and become unconfined, spreading out over the fan surface
 - Damaging flow events are most likely to occur during a large rainfall event after a major fire



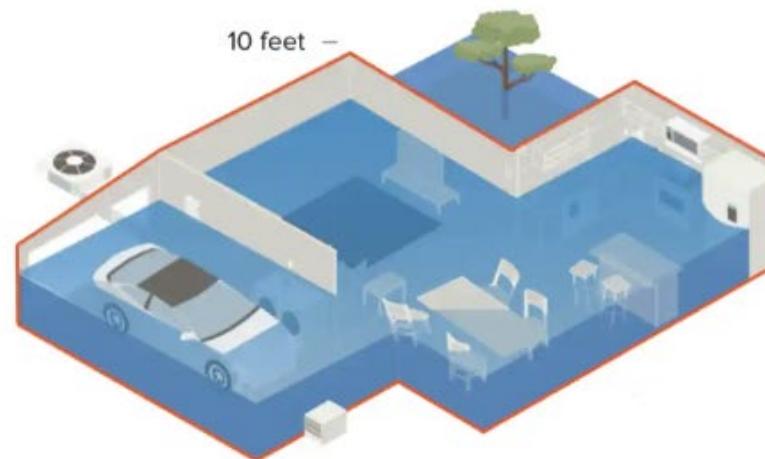
The depth of floodwater has a big impact on what could be affected in a flood.

1 foot+ of water



If 1 foot of water enters a home, electrical outlets, furnaces, and HVAC systems can be damaged.

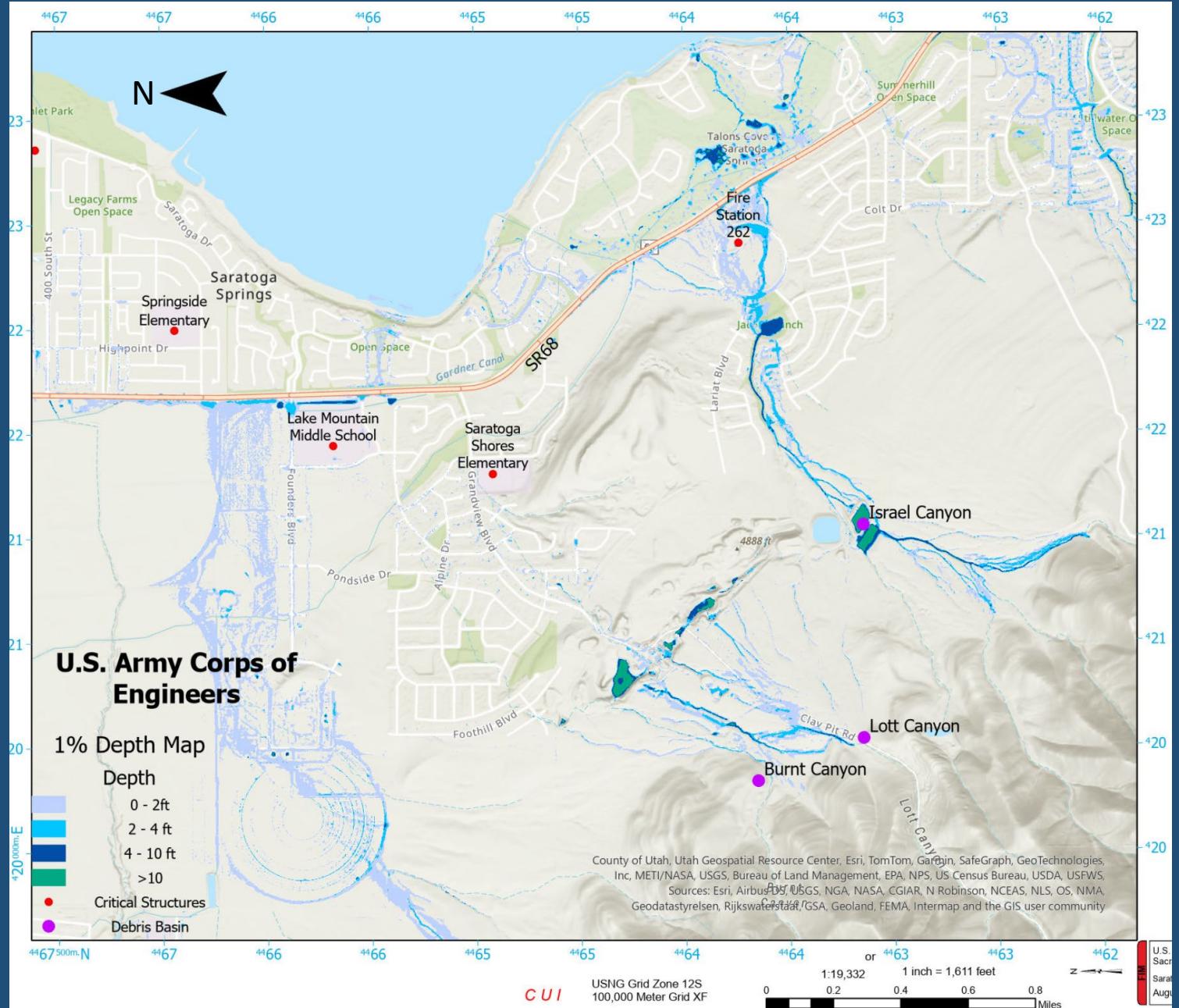
3 feet+ of water



At 3 feet, floodwater can cause damage to the building's infrastructure, water supply, sewage, and plumbing systems.

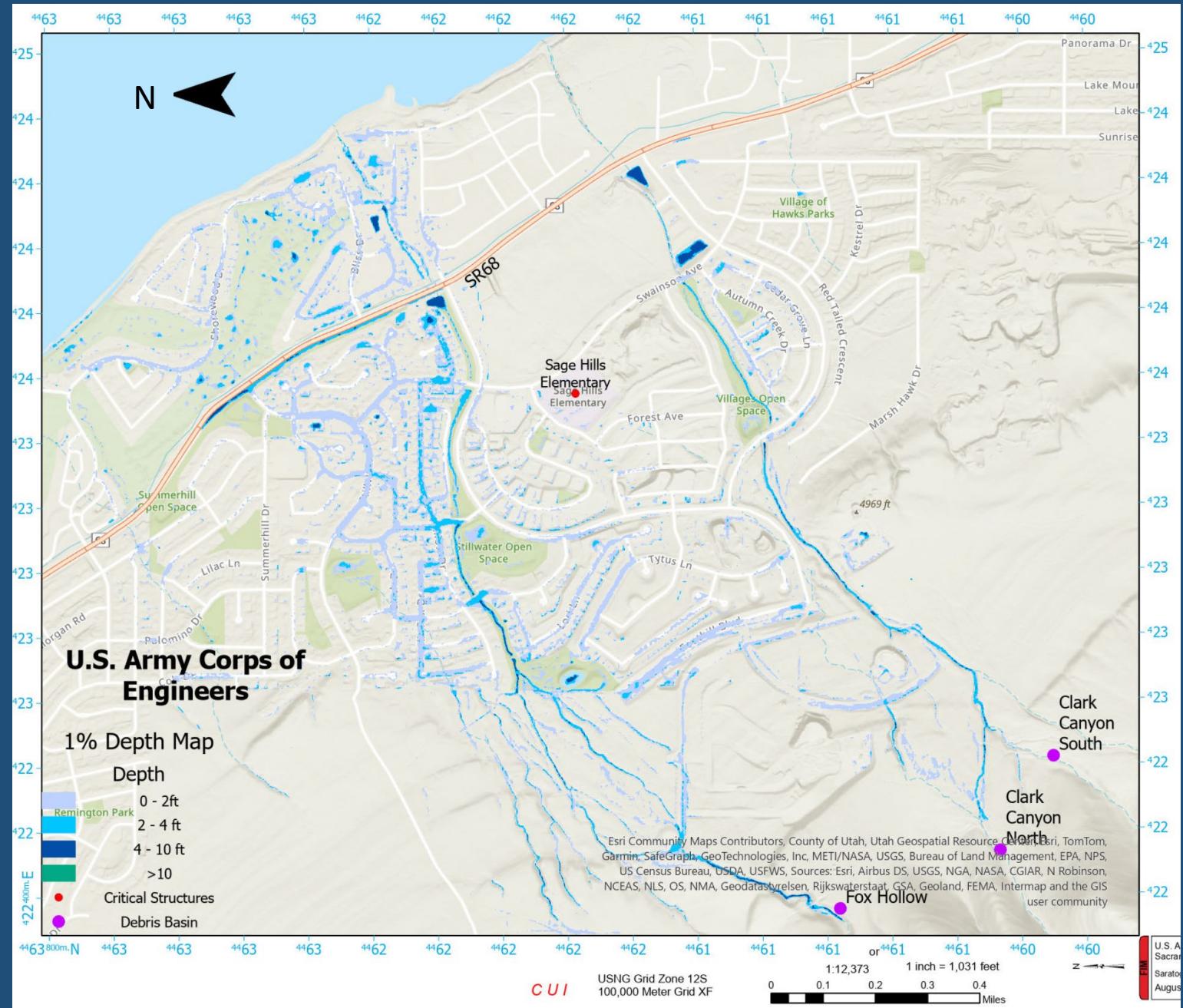
1% Floodplain

- Likelihood of occurring in a single year is 1%,
- Will likely happen once within a 100-year time frame,
- But does not mean then next one is 100 years away.



1% Floodplain

- Even 6 inches of fast-moving flood water can knock you off your feet
- a depth of 2 feet will float your car!
- **NEVER** try to walk, swim, or drive through such swift water.
- If you come upon flood waters, **STOP!**
TURN AROUND
AND GO ANOTHER WAY.



1% Floodplain

- These are not FEMA Flood Insurance Rate Maps(FIRM).
- These maps are not for flood insurance purposes.



Debris Flow

- Hydraulic Model updated to reflected debris flows (non-Newtonian behavior).
- Performed for the highest hazard alluvial fans
 - Fox Hallow
 - Israel Canyon
 - Clark Canyon North
- Debris flow maps showing:
 - maximum expected runout extents
 - maximum expected debris depths in the developed areas.



Debris flow damage Saratoga Springs, UT. Source: KSL.com

Terminology

Non-Newtonian Fluid

A substance that acts like a liquid when you move it slowly but can behave like a solid when you apply a quick force, like hitting.

These fluids (such as honey, ketchup, or oobleck) change consistency depending on how much force is applied. This differs from regular liquids (water) which have the same "thickness" regardless of how you move them.



Debris Basins

A structure that captures debris flow; including sediment, gravel, boulders, and vegetative debris that washes out of nearby canyons during heavy rains. This debris basin proactively captures large objects from entering the downstream neighborhoods.



Lossee Canyon Debris Basin, Saratoga Springs, Utah.

Source: [Lossee Canyon Debris Basin - CRS Engineers](#)



Maximum Expected Runout Extents, Israel Canyon



Refer to Map Notes for disclaimer, flood warnings, stream gages, and data sources.
Prepared By CESPK-EDH-A

Spatial Reference
Name: NAD 1983 StatePlane Utah
Central FIPS 4302 Feet

CUI

Scale: 1:14,000
or
1 inch = 1,167 feet
0 0.25 0.5 Miles

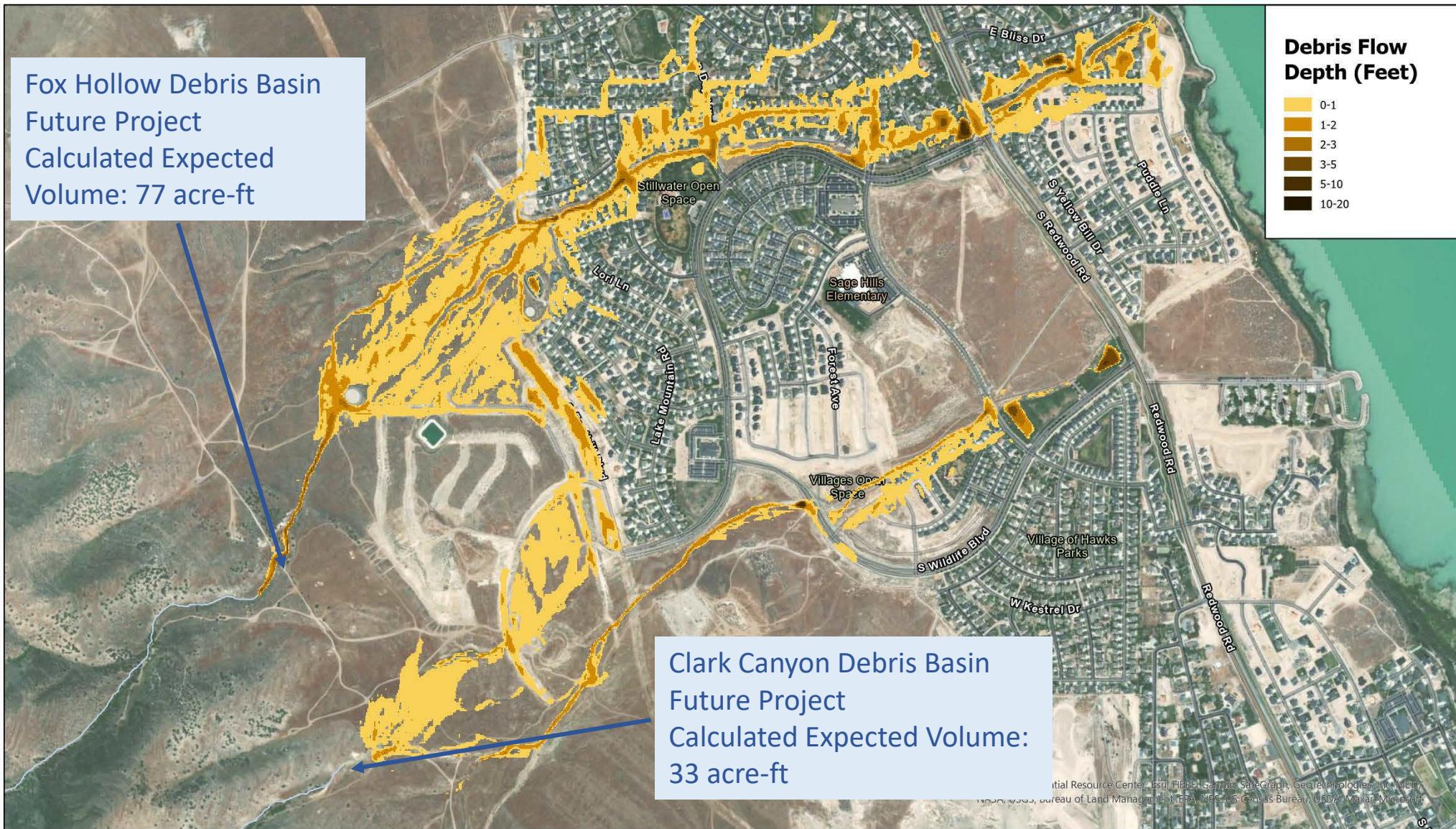


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Maximum Expected Runout Extents, Fox Hollow and Clark Canyon North



Refer to Map Notes for disclaimer, flood warnings, stream gages, and data sources.
Prepared By CESPK-EDH-A

Spatial Reference
Name: NAD 1983 StatePlane Utah
Central FIPS 4302 Feet

CUI

Scale: 1:10,000
or
1 inch = 833 feet
0 0.25 0.5 Miles

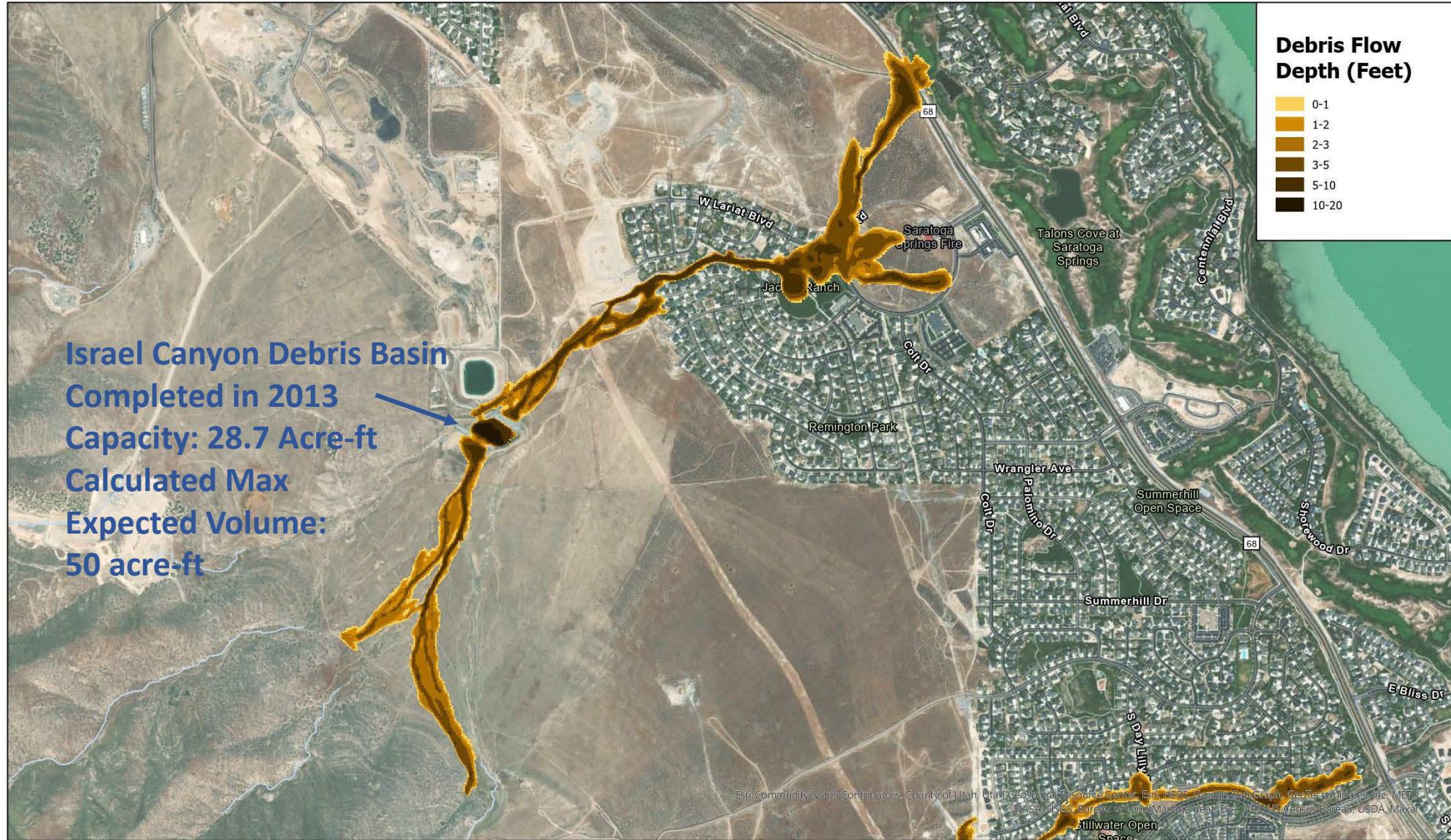


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Maximum Expected Debris Depths, Israel Canyon



Refer to Map Notes for disclaimer, flood warnings, stream gages, and data sources.
Prepared By CESPK-EDH-A

Spatial Reference
Name: NAD 1983 StatePlane Utah
Central FIPS 4302 Feet

CUI

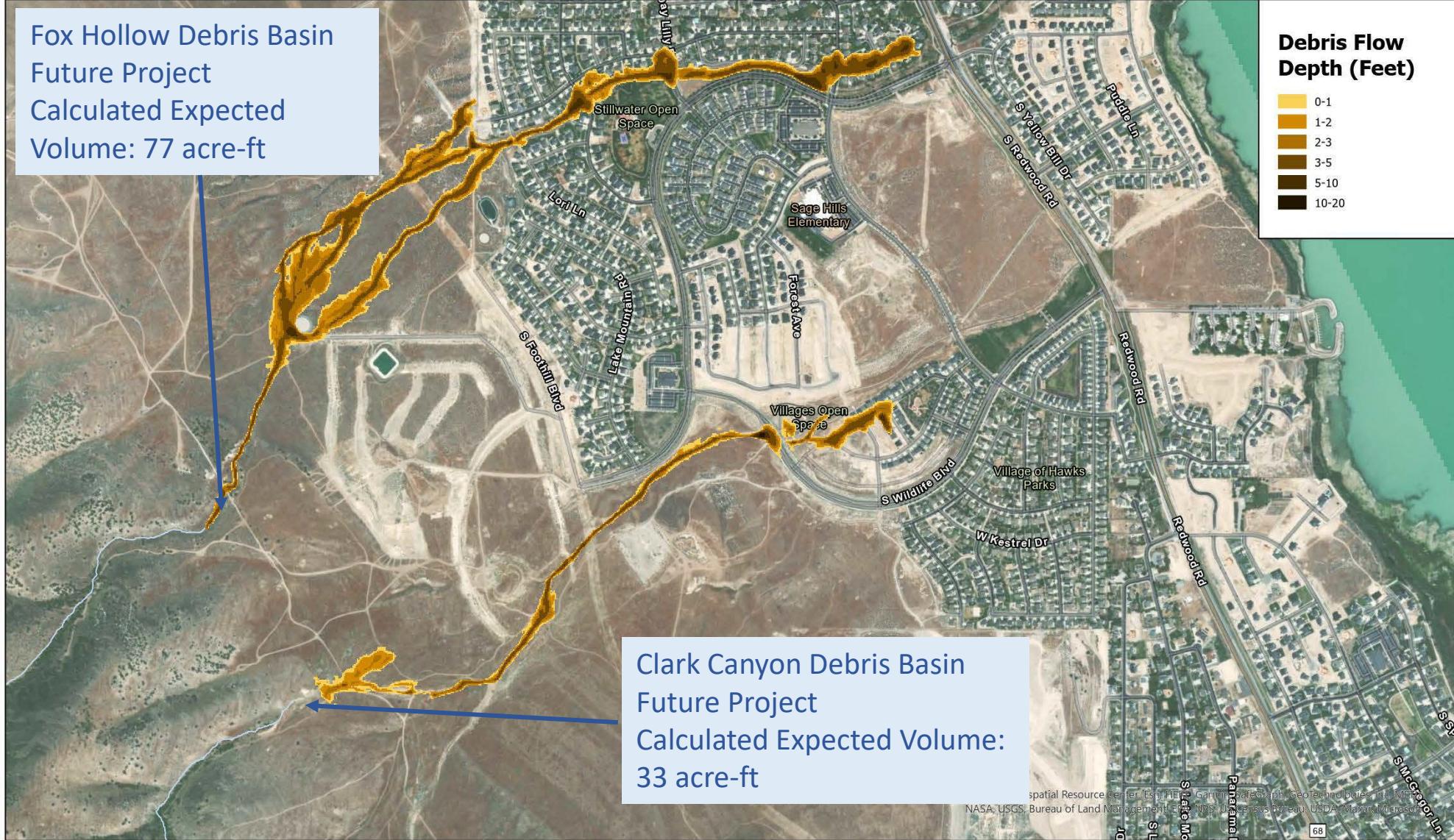
Scale: 1:11,500
or
1 inch = 958 feet
0 0.25 0.5 Miles

N
W
E
S

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Maximum Expected Debris Depths, Fox Hollow and Clark Canyon North



Refer to Map Notes for disclaimer, flood warnings, stream gages, and data sources.
Prepared By CESPK-EDH-A

Spatial Reference
Name: NAD 1983 StatePlane Utah
Central FIPS 4302 Feet

Scale: 1:10,000 or 1 inch = 833 feet

0 0.25 0.5 Miles

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Debris Basins

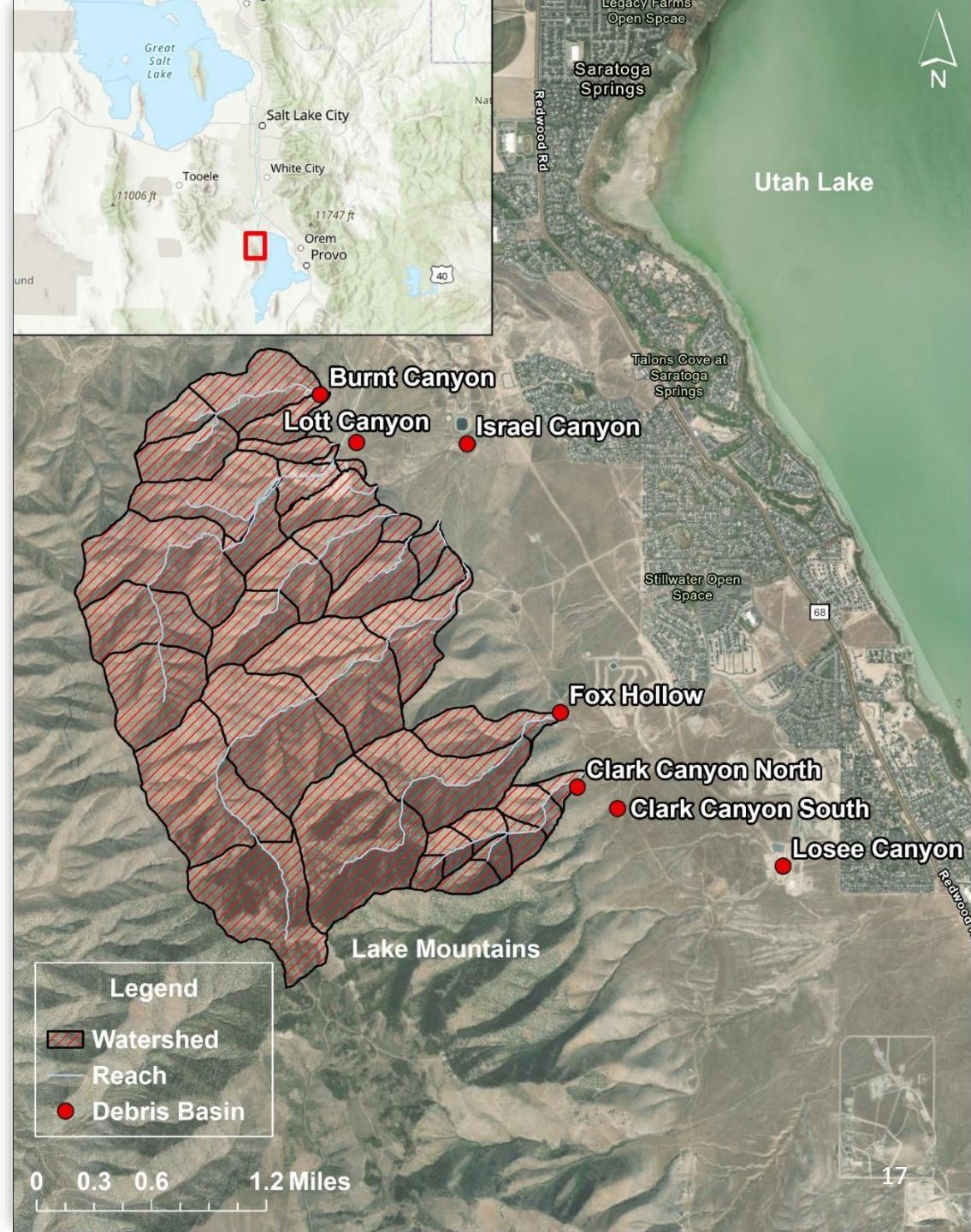
- The City has constructed two debris basins and has planned five additional debris basins.
- The USACE calculated expected ranges of debris volumes to aid in sizing the planned debris basins.

Completed

- Israel Canyon
- Losee Canyon

Planned

- Burnt Canyon
- Lott Canyon
- Fox Hollow
- Clark Canyon North
- Clark Canyon South





Managing Risk

Policies and Practices:

- Emergency Action Plans
- Risk communication to residents living near active alluvial fans with instructions to prepare for flooding and debris flow
- Flood Warning Systems
- Designating alluvial fan areas not developed on as parks, outdoor amphitheaters, and other nonpermanent structures
- Modify homes already built on high-risk alluvial fans (elevation of structures or flood proofing, ie walls that face the canyon, relocation of furnace, water heaters, appliances and electronics to higher locations.

New Protective Structures:

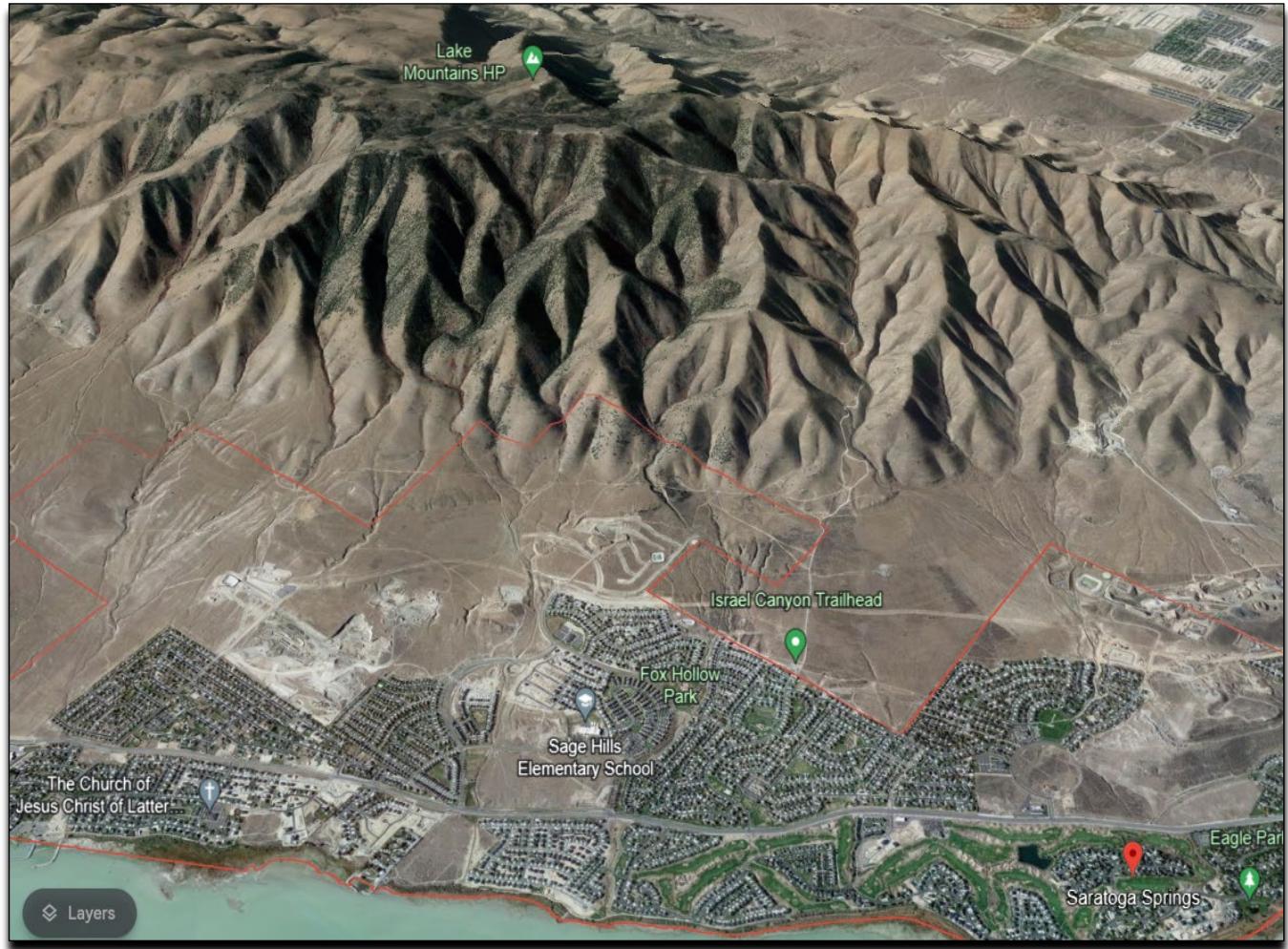
- Debris basins
- Reservoirs or Levees
- Enhanced Channel Modifications
- Debris Fences
- Grade Control Structures
- Reinforced Channels

Photo: Losee Canyon Debris Basin

Source: CSR Engineers

NEXT STEPS

- 1) Continually update hydraulic modeling to reflect current conditions. (USACE models were for conditions 2019-2022).
- 2) Communicate risk assessment results to stakeholders.
- 3) Review existing local mitigation actions or plans and incorporate and prioritize new risk reduction actions to manage alluvial fan flooding risk.
- 4) Implement zoning ordinances to reduce or disallow construction in flood and debris flow prone areas.





Questions



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