IRON COUNTY
RURAL PLANNING ORGANIZATION

ICRTEC CHAIR—MAYOR Geoffrey Chesnut • ICRTAC CHAIR—Rob Dotson • TRANS. PLANNING DIRECTOR—Myron Lee

MINUTES
Rural Transportation Executive Council (RTEC)

November 1, 2023, 1:00 p.m.
(Note: Prior to the ICCOG Meeting)
Enoch City Offices
900 East Midvalley Road
Enoch, Utah 84721

MEMBERS IN ATTENDANCE:	**REPRESENTING:**
Mayor Betty Gould	Kanarraville Town
Paul Cozzens	Iron County
Mayor Garth O. Green	Cedar City
Mayor Geoffrey Chesnut	Enoch City

MEMBERS EXCUSED:	**REPRESENTING:**
Mayor Tod Robinson	Paragonah
Commissioner Marilyn Wood	Iron County
Mayor Mollie Halterman	Parowan
Mayor Clayton Calloway	Brian Head Town

OTHERS IN ATTENDANCE:	**REPRESENTING:**
Nate Wiberg	FCAOG
Reed Erickson	Iron County
Tracy Munson	UDOT
Richard Wilson	Iron County Engineering
George Colson	Iron County Emergency Management
Kyle Wilson	Sen. Romney's Office
Dan Jessen	Parowan City
Paul Bittmenn	Cedar City
Jonathan Stathis	Cedar City
Terry Palmer (Online)	Iron County Building Official
Kendall Allen (Online)	Iron Count GIS Analyst
David Ence (Online)	Kanarraville
Janet Steffensen (Online)	Kanarraville
Angela Crowder (Online)	DEM
McKenzie Goodenough (Online)	DEM
Jamie Huff (Online)	DEM
Rachel Mares, PE (Online)	WSP
Katie Jones CRS Engineering (Online)	CRS

Drew Burman, PE (Online)	WSP
Jimmy Austin (Online)	WSP
Margaret Doherty (Online)	FEMA
Holly Strand (Online)	DEM
Natalie Thomas (Online)	DEM

I. Quorum Declaration

Mayor Geoffrey Chesnut welcomed everyone, called the meeting to order, and declared that a quorum was present to conduct business.

II. Utah DEM Risk MAP Program: Iron County BLE Study - Discovery Meeting

McKenzie Goodenough the NFIP Planner, Jamie Huff the State Risk MAP Coordinator, Rachel Mares, PE the WSP Study Lead, Katie Jones CRS Engineering, Drew Burman, PE the Water Resource Engineer, Jimmy Austin the GIS Analyst, Margaret Doherty from FEMA introduced themselves and presented the Iron Conty flood risk study and base level engineering and discover phase 1 meeting. The notes and slides for this meeting are in Attachment 1.

III. Approve Minutes for a September 13, 2023

Mayor Geoffrey Chesnut presented the meeting minutes from September 13, 2023, for consideration of adoption.

Commissioner Paul Cozzens made a motion to approve the minutes from September 13, 2023. Mayor Garth Green seconded the motion. The motion was carried by unanimous vote.

IV. Transportation Priority List Update

Nathan Wiberg presented the Iron County RPO Transportation Priority List and explained that the RTAC has recommended changes to the list. Those changes are:

- Project C40 – Estimated cost was changed to $16 million.
- C18 A & C18 – These two projects were a single project, but it was determined to separate it into two individual projects. An Airport Loop Road project and a SR-271/SR-274 realignment.
- C7 – Moved to a safety project instead of a capacity project.
- C50 – Roundabout at 1150 West to replace a four-way stop is a newly added project.
- C34 – The estimated cost for this project was changed from $2.5 million to $150,000 because it is a study. Projects C34 and C36 were combined to create a single project.
- TA5 – This project was moved to the completed section of the list.
- TA51 – The Center Street, I-15 overpass sidewalk project was added as a phase one project.

Commissioner Paul Cozzens made a motion to approve the Iron County Rural Planning Organization Transportation Priority List with the explained changes. Mayor Garth Green seconded the motion. The motion was carried by unanimous vote.

V. Cedar Belt Route Corridor Acquisition

This discussion regards the property located along the Belt Route located at 4000 N 4400 W. Richard Wilson explained that they have reached out to the property owner to express interest in selling the property. He stated that they have had an appraisal on the property and the owner has agreed to sell the entire 20-acre parcel to Iron County. Richard explained that the property owner did not want to sell just a piece of the property to the County so they would need to purchase the entire 20-acres. Richard explained that they need approval from this board for $210,000 from the corridor preservation fund. He explained that they will also need an additional $1,500 for the appraisal and title work to make sure that there are no liens or back taxes on the property. There was discussion regarding the title work and closing cost work.

Commissioner Paul Cozzens made a motion to approve $211,500 for the purchase of the property discussed, with a provision to split the and the funds from the sales will go back into the corridor preservation fund. Mayor Garth Green seconded the motion. The motion was carried by unanimous vote.

VI. UDOT Updates & Business

Tracy Munson explained that the TPA grants are out open and that UDOT has a grant writer that can help the municipalities through the federal grant writing process. Tracy stated that the project C50 from the Transportation Priority List was funded as a UDOT safety project and has been accelerated. The design will start in July.

Kyle Wilson stated that Romney's office will support the local jurisdictions when they are applying for federal grants.

VII. Project and Study Updates

A. **Solutions Development Study –** Jonathan Stathis explained that the consultants are finalizing the report and that UDOT and Cedar City are reviewing it. The plan proposes center medians and bikes lanes through the downtown area, with various bike lane design options. The fire department commented on the plan, wishing to keep intersections open. The plan shows center medians on SR-56 where there are lots of driveways. The Plan also shows bike lanes along SR-56.

There was a discussion about bike lanes and parking. It was explained that the projects in the plan will be phased out over many years and not built all at once.

VIII. Other Discussion Items

There were no other discussion items.

IX. Next Meeting

The next meeting is scheduled for January 3, 2024. Location: Kanarraville

X. Adjourn

A motion to adjourn was made by Mayor Garth Green, seconded by Commissioner Paul Cozzens. The motion was carried by unanimous vote.

Attachment 1

***The notes and slides provided by DEM are dated 11/9/2023 but the same information was shared at this meeting. DEM did make a change in the contacts.**

IRON COUNTY FLOOD RISK STUDY – BASE LEVEL ENGINEERING AND DISCOVERY (PHASE 1)

DISCOVERY MEETING PART 1 NOTES

Project Meeting	Iron County Flood Risk Study – Phase 1 Discovery Meeting Part 2
Date and Time	Thursday, November 9, 2023, 10:00-11:30am MDT
Location	City Council Chambers at Cedar City Offices 10 N Main St, Cedar City, UT 84720 Virtual Options: Teams - Click here to join the meeting

KEY POINTS

Iron County communities are receiving a Base Level engineering (BLE) analysis as the initial phase of the larger Iron County Risk MAP Study. The purpose of the Risk MAP study is to provide more accurate and detailed mapping of flood hazards within Iron County to support communities in their ongoing risk resiliency and mitigation efforts. The BLE Study provides flood mapping throughout the county as an initial tool to help communities identify where more detailed studies may be warranted in the next phase of the project.

The study team has completed the BLE analyses for the 3,584 streams across Iron County and the draft floodplains for the 1% annual chance event have been posted to Iron County, Utah Discovery Study (arcgis.com). The purpose of this meeting is for each community to review the results and provide feedback regarding: requests for detailed analyses and the type of detailed analysis, questions or comments on the results, areas of on-going or planned development, any data to provide, and identified training needs. Printed maps were reviewed with the communities and feedback was noted on the maps. The online map linked above was also used to submit this feedback.

TIMELINE

Project Phase	Dates	Project Task
Phase 0	2018-2020	Project Planning/LiDAR Collection (complete)
Phase 1	2022-2024	Base Level Engineering (BLE) - draft results complete Discovery Meetings Part 1 & Part 2 (in-progress)
Phase 2	2024-2026	Data and Product Development
Phase 3	2026	Preliminary NFIP Map Release
	2027	Due Process
Phase 4	2028	FIS and FIRM Delivery

PRESENTATION

Presenters: Jamie Huff (Utah DEM), Rachel Mares (WSP)

1. Recap of Base Level Engineering (BLE) Analysis
    a. WSP conducted a county-wide 2-dimensional hydrologic and hydraulic analysis.
        i. Produced at a large-scale; results in an approximate (Zone A) floodplain
        ii. Calculates: 0.2%, 1%, 1%-plus, 2%, 4%, and 10% chance floods
        iii. Draft results can be viewed here: Iron County, Utah Discovery Study (arcgis.com)
    b. Communities can start using this data immediately to manage flood risk
        i. Where effective data is available, use the most restrictive data
2. Flood Risk Study – Phase 2 (Data Development)
    a. Regulatory Product Update – incorporates Zone A BLE data in areas not receiving a detailed analysis, incorporates detailed study data for areas requesting a detailed analysis.
    b. Communities will receive Flood Insurance Rate Map (FIRM) panels, Flood Insurance Study (FIS), digital data, non-regulatory products
3. Choosing a Study Type
    a. Zone A – add the BLE floodplains to the FIRM as Zone A. This is recommended where development is not occurring or planned to occur.
    b. Zone AE – detailed study that will include updated hydrology, hydraulics, base flood elevations (BFEs). Without a floodway, the community is responsible for evaluating the cumulative effect of developments in the floodplain.
    c. Zone AE w/ Floodway – detailed study that will include updated hydrology, hydraulics, base flood elevations (BFEs), and a floodway. With the floodway, the community can allow development within the floodplain (outside of the floodway) without needing to evaluate the cumulative effect of development in the floodplain.
4. Objectives for Remainder of Discovery Meeting
    a. Review BLE printed and online maps
    b. Identify stream/s to study in more detail
    c. Choose a study type
    d. Identify Areas of growth & data you may have
    e. Identify training needs

Iron County Flood Risk Study

Phase 1 Discovery Meetings | 11-9-2023

FEMA

RiskMAP
Increasing Resilience Together

Kickoff Meeting Agenda

- **Opening Remarks**
- **Introductions**
  - Project Objectives
  - Background

Presentation (Part 1):

- **Intent of today's meeting is to prepare for discussions**
  - Flood Risk Overview
  - Flood Study Kickoff Meeting Recap
  - Project Phases
  - Flood Study Types
  - Project Data Collection
  - Data Collection Format Instructions
  - NFIP Basics
  - BLE Assessment Overview
- **Break into working groups (Part 2)**

Consider These Questions:

Are you certain of where all of your flood risk is located within your community?

We are a semi-arid state

If a large thunderstorm or high snow melt year occurred, would you know where the highest risk areas were to prioritize your community's limited resources?

Would you like information and data to better explain to your residents where these flood risk areas are?

In a fast growing community are you certain, you are not allowing development in high risk areas?

Property owners are relying on you to make those decisions

"Floods are 'acts of God,' but flood losses are largely acts of man" – Gilbert F. White

Photo Credit: Bill Taufer, Sevier Co. Emergency

Additional Considerations

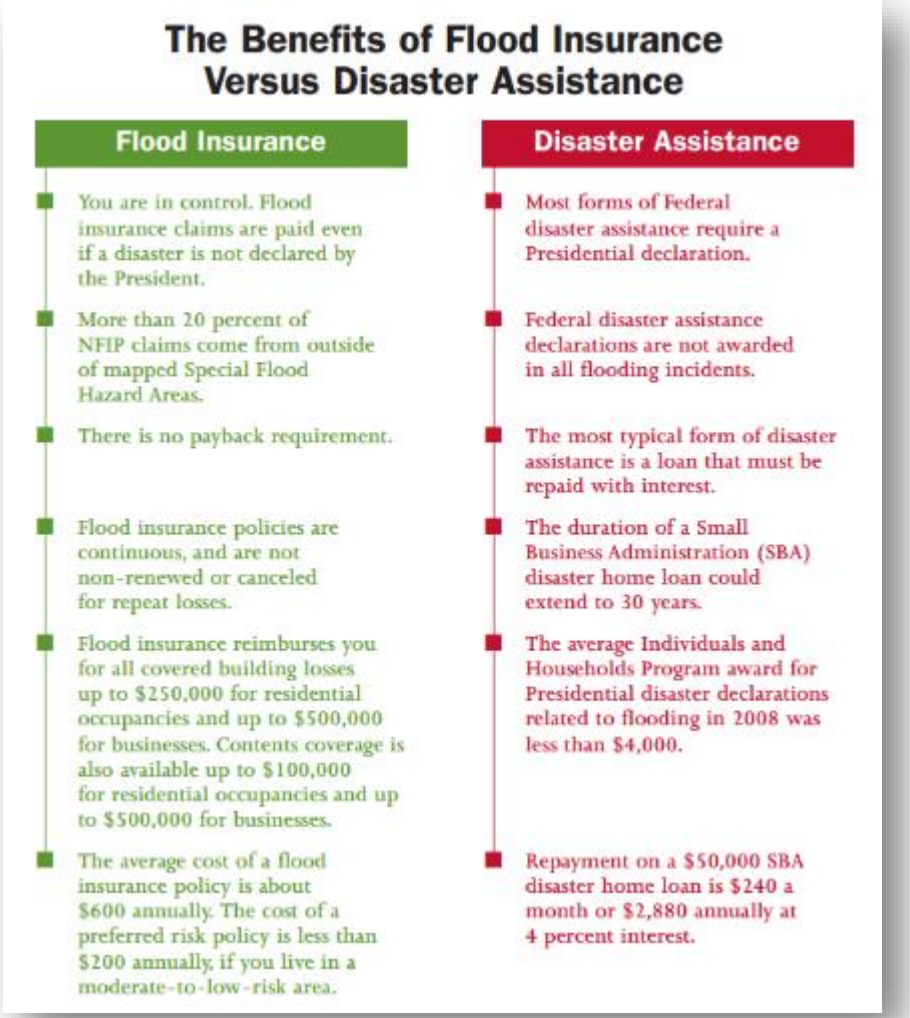
- Flood maps show flood risk to the 1%-annual-chance flood event
- Smaller and larger events can occur
- Short duration, high-intensity rain events causing more localized flooding are becoming more common
- Drought is exacerbating wildfire risk
  - Flooding is the secondary hazard

Photo Credit: Scott Alvord, Utah DEM

Additional Considerations

- Most flood events in Utah are not federally declared
  - Federal assistance is not common
- If declared, Individual Assistance is also not common
- Does your community have reserve funds for a disaster?
  - For repairs?
  - For residents to recover or rebuild?
- Identifying the risk is the first step to becoming more resilient
  - **Considering risk in development planning early saves in impacts later on**

Flood Insurance vs. Disaster Assistance



The Benefits of Flood Insurance Versus Disaster Assistance

Flood Insurance	Disaster Assistance
You are in control. Flood insurance claims are paid even if a disaster is not declared by the President.	Most forms of Federal disaster assistance require a Presidential declaration.
More than 20 percent of NFIP claims come from outside of mapped Special Flood Hazard Areas.	Federal disaster assistance declarations are not awarded in all flooding incidents.
There is no payback requirement.	The most typical form of disaster assistance is a loan that must be repaid with interest.
Flood insurance policies are continuous, and are not non-renewed or canceled for repeat losses.	The duration of a Small Business Administration (SBA) disaster home loan could extend to 30 years.
Flood insurance reimburses you for all covered building losses up to $250,000 for residential occupancies and up to $500,000 for businesses. Contents coverage is also available up to $100,000 for residential occupancies and up to $500,000 for businesses.	The average Individuals and Households Program award for Presidential disaster declarations related to flooding in 2008 was less than $4,000.
The average cost of a flood insurance policy is about $600 annually. The cost of a preferred risk policy is less than $200 annually, if you live in a moderate-to-low-risk area.	Repayment on a $50,000 SBA disaster home loan is $240 a month or $2,880 annually at 4 percent interest.

FEMA disaster grants average about $5,000 per household, or a Small Business Administration (SBA) loan

vs.

Average flood insurance claim payment over the past five years was approximately $69,000

Ready.gov:
https://community.fema.gov/AP_Story?id=a0Wt000000BAAzbEAH

Video: https://www.youtube.com/watch?v=qIq-MRxs4oc

Why is knowing flood risk important?

- Most common natural hazard
- A majority of flooding in Utah occurs outside of a mapped Special Flood Hazard Area (SFHA)
- Less than 11% of Utah's flood risk on our rivers, creeks, and streams are mapped
- Residents look to community officials to provide information
  - Development
  - Emergencies

Floods are common in Utah

Mitigation Plans

- **Five County:** Completed in 2022
- Updated every five years
- All hazards identified
- Information includes:
  - Risk identification
  - Vulnerability Analysis
  - Risk communication
  - Assess validity of local codes
  - Grants and funding opportunities
  - Planning

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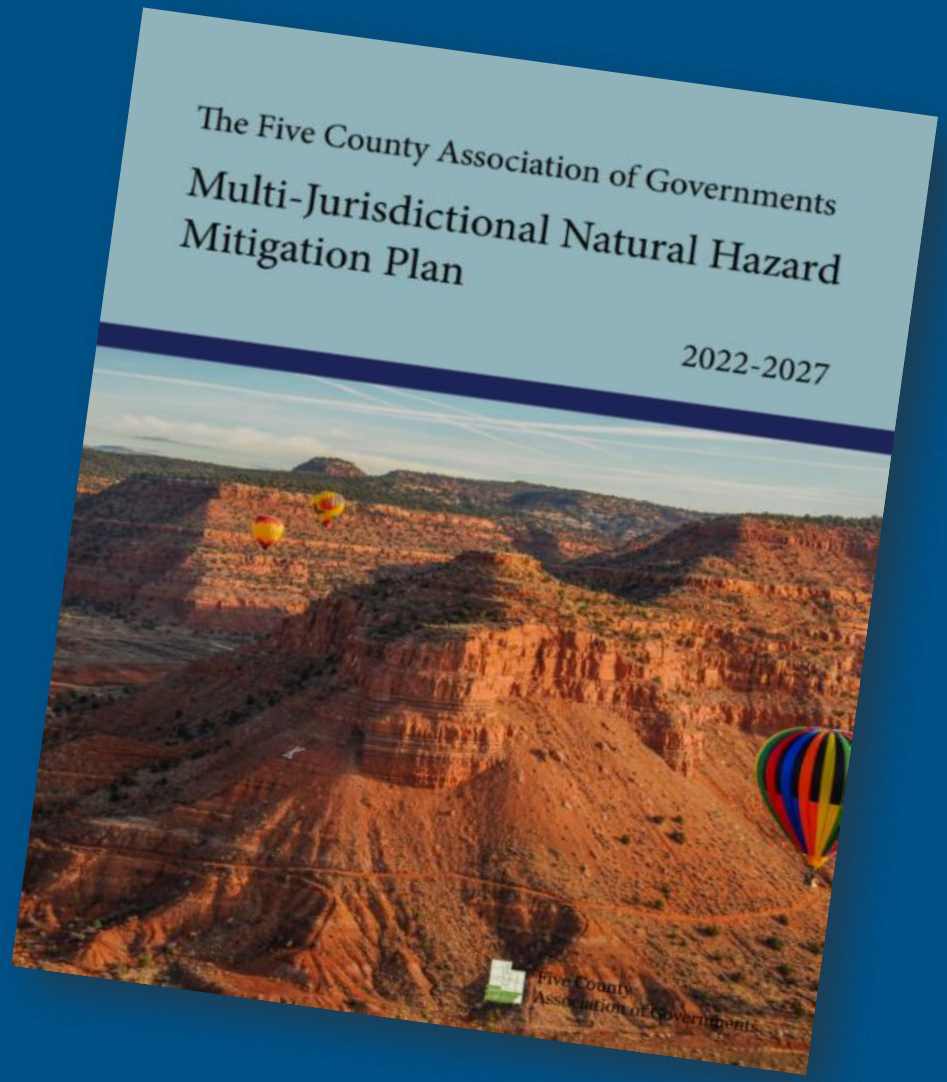


Utah's Floodplain Programs Promote Resilience

Promotes flood risk mitigation

Floodplain Mapping

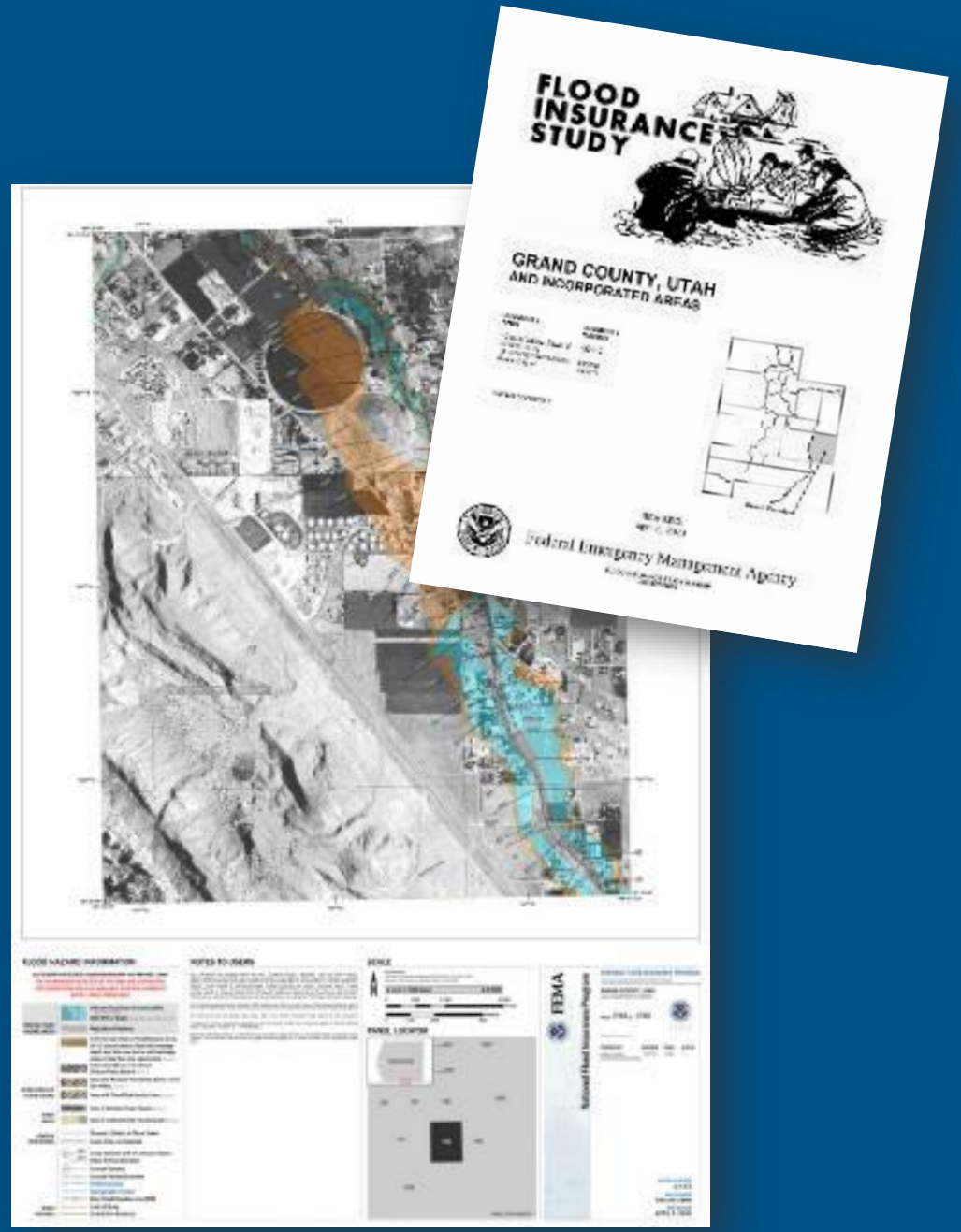
- Promotes Flood Risk Awareness & Resiliency
- Develops Floodplain Data
- Provides Technical Assistance, Outreach and Education

Floodplain Management (NFIP)

- Coordinates Floodplain Development Compliance
- Promotes Flood Insurance
- Provides Technical Assistance, Outreach and Education

Identify Risk Through Mapping

- Utah partners with FEMA to develop flood studies
- Where it can rain, it can flood
- Flood risk is not static and changes over time
- Products:
  - Flood Insurance Rate Maps (FIRM)
  - Flood Insurance Study (FIS)
  - Provide Digital (GIS) Flood Hazard Data for local governments
  - Non-regulatory products



FEMA

What are Flood Maps Used For?

- Informs community about the flood risk
- Sets minimum floodplain development standards so the community builds safely and resiliently
  - Development requirements in an ordinance
- Determines requirement for flood insurance
  - Structures with mortgages, flood insurance is required in high-risk areas
  - Cost is based on the structure's risk in the high-risk area
  - Helps property owners financially protect themselves against flood loss
- Identifies locations of potential mitigation

FEMA

UTAH

Project Details Review

Recap of all project communication

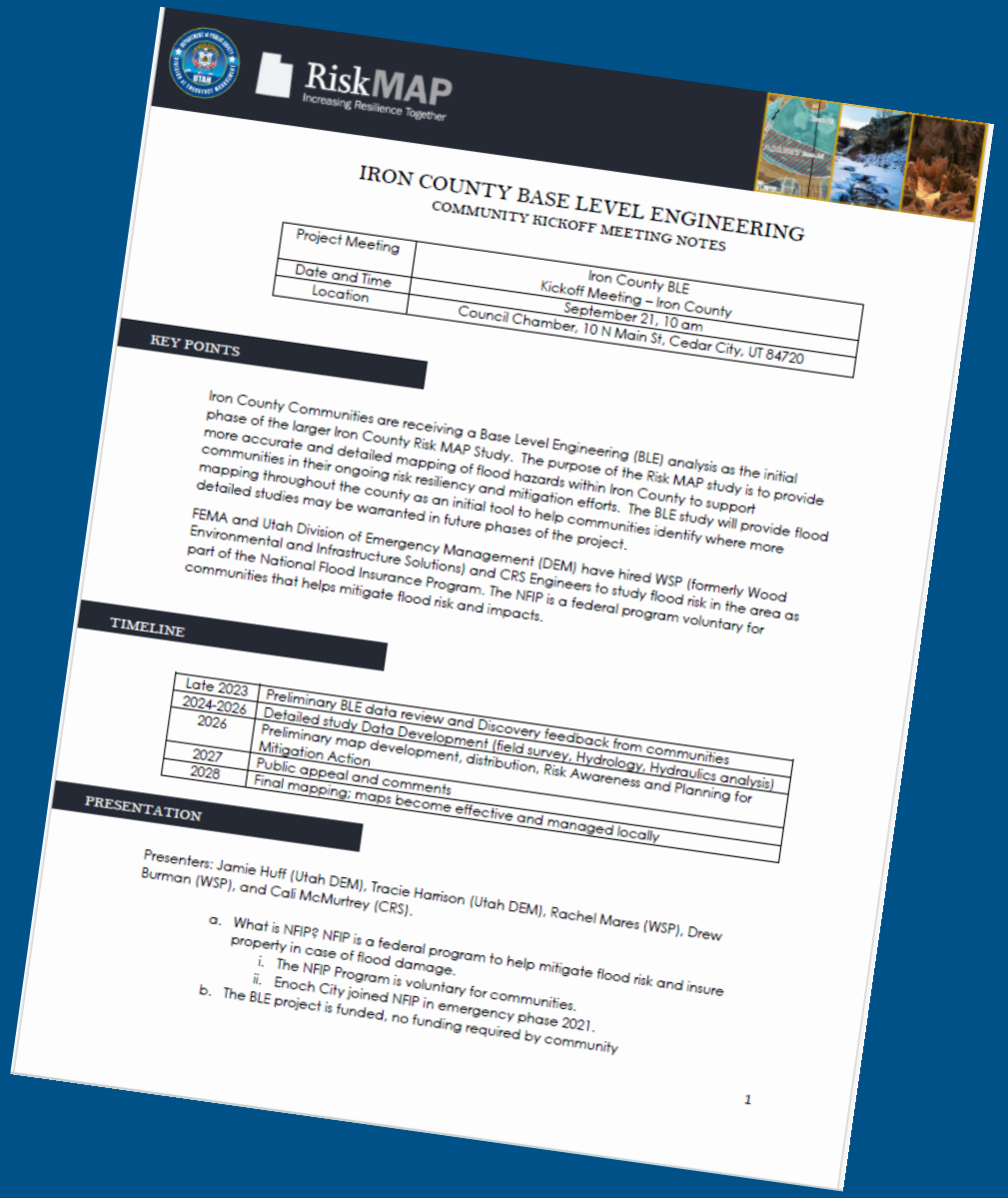
Kickoff Meeting Recap

Held on:

September 21, 2022

Summary:

- Flood Insurance Rate Map (FIRM) and
- Flood Insurance Study (FIS) are getting revised
- 7 impacted entities
- Assessment of **3,584 stream miles**
- Iron County Flood Study Project Repository https://floodhazards.utah.gov/mapping/



RiskMAP
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IRON COUNTY BASE LEVEL ENGINEERING
COMMUNITY KICKOFF MEETING NOTES

Project Meeting	Iron County BLE
Date and Time	Kickoff Meeting – Iron County September 21, 10 am
Location	Council Chamber, 10 N Main St, Cedar City, UT 84720

KEY POINTS

Iron County Communities are receiving a Base Level Engineering (BLE) analysis as the initial phase of the larger Iron County Risk MAP Study. The purpose of the Risk MAP study is to provide more accurate and detailed mapping of flood hazards within Iron County to support communities in their ongoing risk resiliency and mitigation efforts. The BLE study will provide flood mapping throughout the county as an initial tool to help communities identify where more detailed studies may be warranted in future phases of the project.

FEMA and Utah Division of Emergency Management (DEM) have hired WSP (formerly Wood Environmental and Infrastructure Solutions) and CRS Engineers to study flood risk in the area as part of the National Flood Insurance Program. The NFIP is a federal program voluntary for communities that helps mitigate flood risk and impacts.

TIMELINE

Late 2023	Preliminary BLE data review and Discovery feedback from communities
2024-2026	Detailed study Data Development (field survey, Hydrology, Hydraulics analysis)
2026	Preliminary map development, distribution, Risk Awareness and Planning for Mitigation Action
2027	Public appeal and comments
2028	Final mapping; maps become effective and managed locally

PRESENTATION

Presenters: Jamie Huff (Utah DEM), Tracie Harrison (Utah DEM), Rachel Mares (WSP), Drew Burman (WSP), and Cali McMurtrey (CRS).

a. What is NFIP? NFIP is a federal program to help mitigate flood risk and insure property in case of flood damage.
   i. The NFIP Program is voluntary for communities.
   ii. Enoch City joined NFIP in emergency phase 2021.
b. The BLE project is funded, no funding required by community

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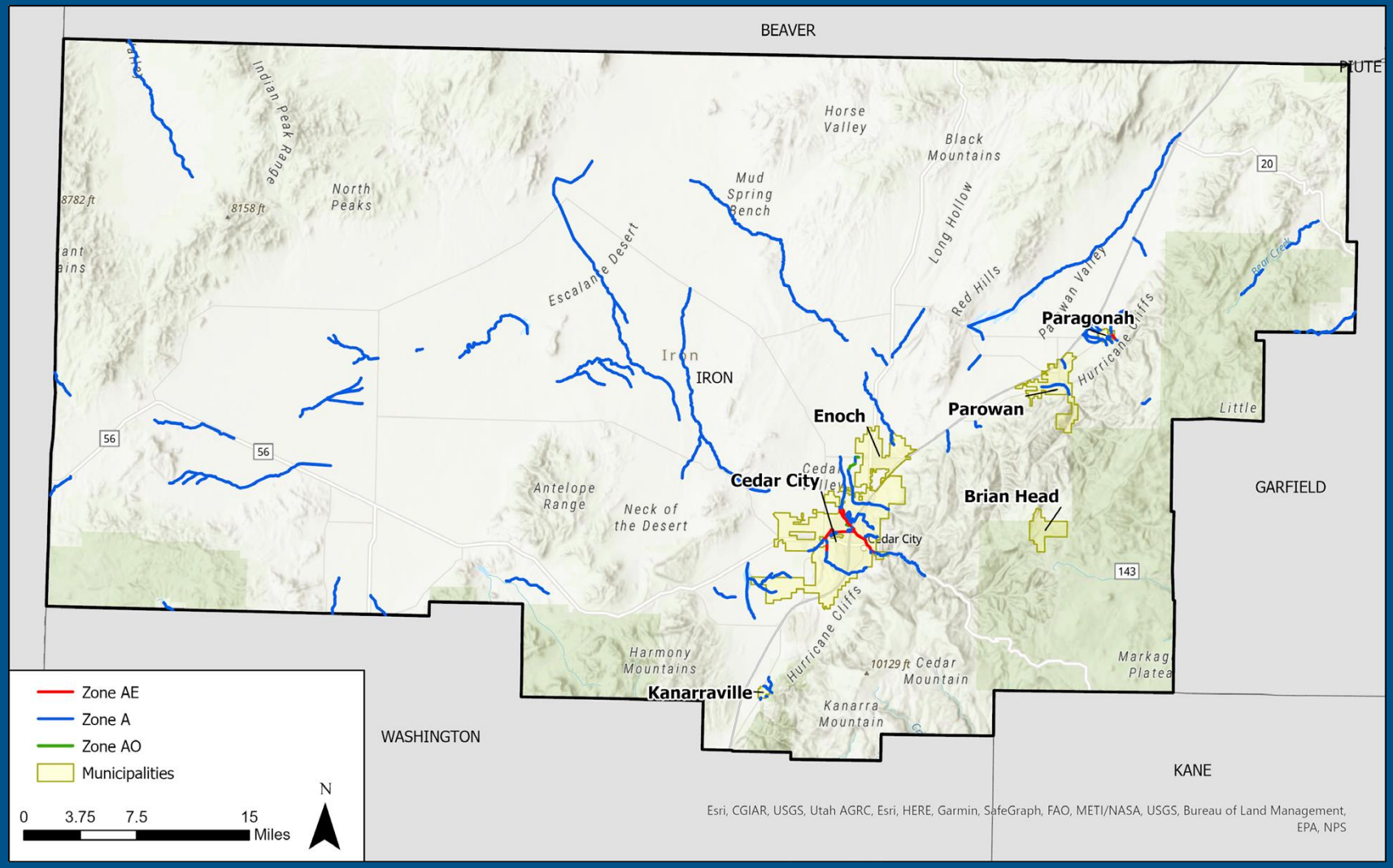
Iron County Project Area FIRMs:



Project Objectives

- Improving flood risk information state-wide
- Available info does not accurately reflect the flood risk
  - No flood risk
  - Outdated flood risk
  - Minimal detailed studies
  - Flood risk that stops at political boundaries
- Most of your counties have **NEVER** had a flood risk assessment
- Determine where your community's regulatory floodplains need to be updated
- Determine and discuss possible mitigation actions

Flooding from 7/26/2021 Storm. 2.5 inches in 1 hr.

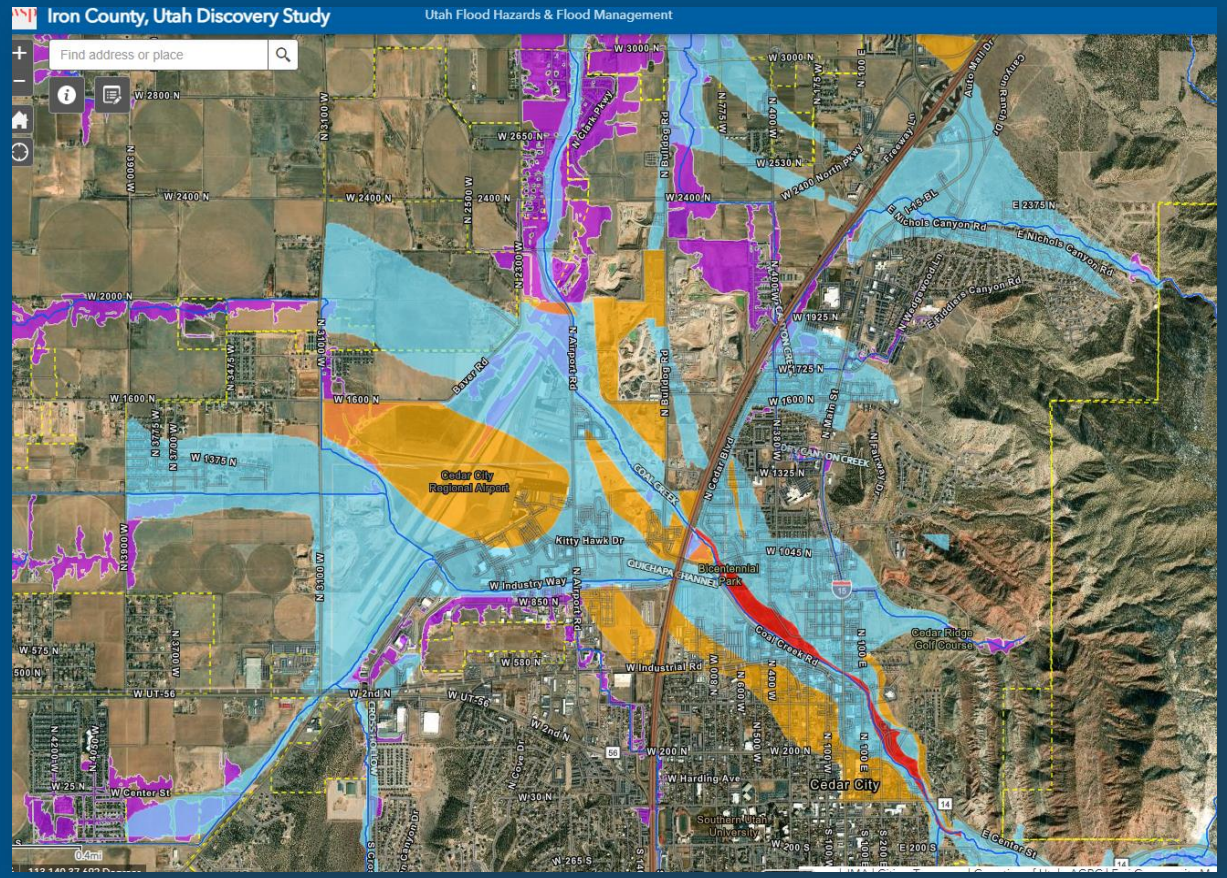
Communities Included
7 Total

If your community participates, you already have a community adopted floodplain ordinance.

Entity	Participation Status	Date
Iron County	Participating	7/17/1986
Town of Brian Head	Not Participating	
Cedar City	Participating	10/16/1984
City Enoch	Participating	11/1/2021 (E)
Town of Kanarraville	Participating	12/11/1985
Town of Paragonah	Participating	9/24/1984
City of Parowan	Participating	3/18/1986
Paiute Tribe: Cedar Band	Not Participating	
Paiute Tribe: Indian Peaks Band	Not Participating	

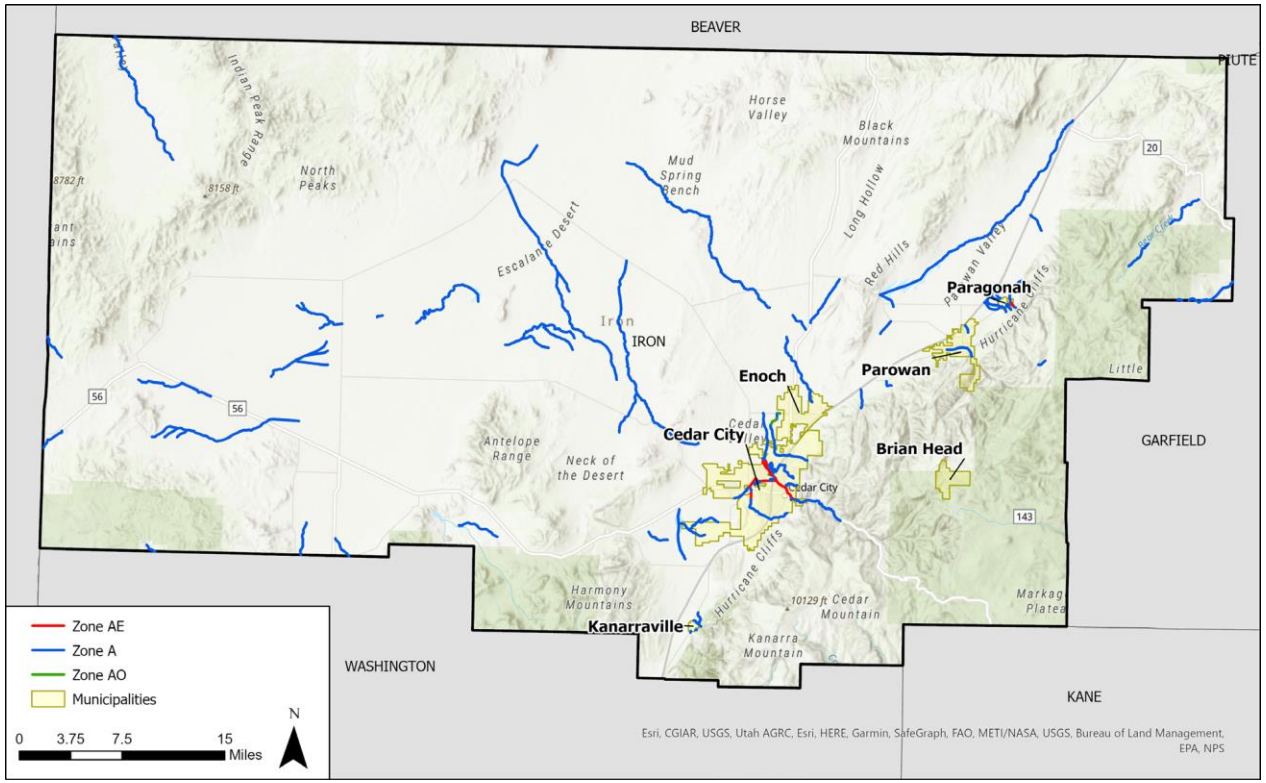
Develop New Zone A Risk Assessment

- Conducted in 2 Phases
  - Phase 1:
    - Zone A Base Level Engineering (BLE)
    - 2-Dimensional Analysis
    - Approximate Study to inform where detailed studies are needed
    - Approximately 1 year
  - Phase 2:
    - Regulatory FIRM Update
    - Detailed Studies
    - Approximately 5-7 years
- Community input needed throughout process



Current Flood Insurance Rate Maps:

- Iron County: 1980's
  - 244 miles of Zone A
  - 7.5 miles of Zone AE
  - 1 mile of Zone AO



FEMA

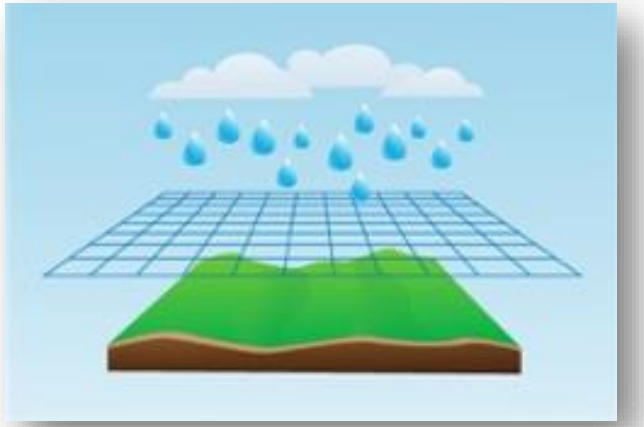
Phase 1 (Complete)

Base Level Engineering Review today

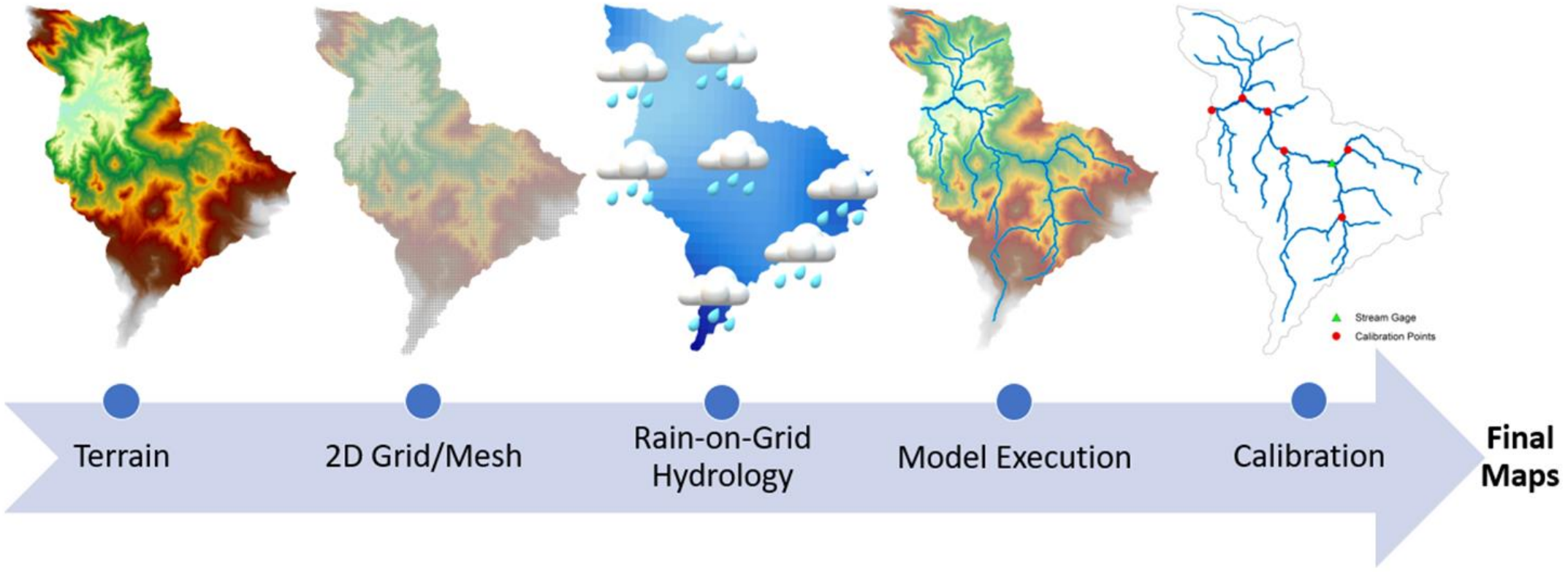
What is BLE?

The Base Level Engineering (BLE) Zone A approach combines **high-resolution ground elevation data** and **modeling** to create engineering models and flood hazard data

- Produced at a large scale
  - Not as refined when compared to a detailed study
- Uses high-resolution ground elevation data (LiDAR)
- 2D BLE models use rain-on-grid hydrology, which converts rainfall to runoff
  - Uses Hydrologic Engineering Center's River Analysis System's (HEC-RAS)
  - Calculates: 0.2%, 1%, 1% plus, 2%, 4%, and 10% chance floods
- Can initiate a discussion if more detailed analysis is needed

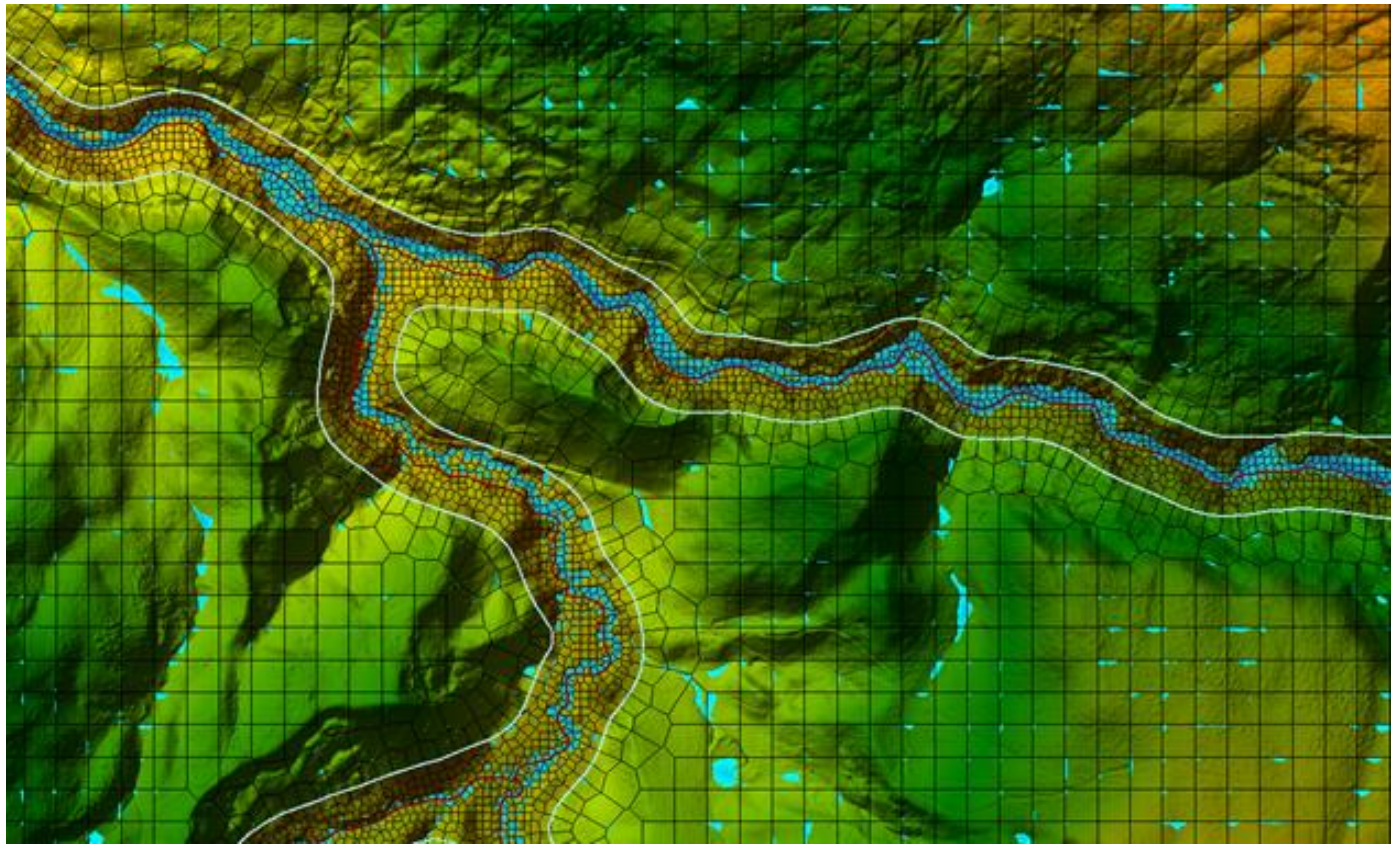


How it is Developed

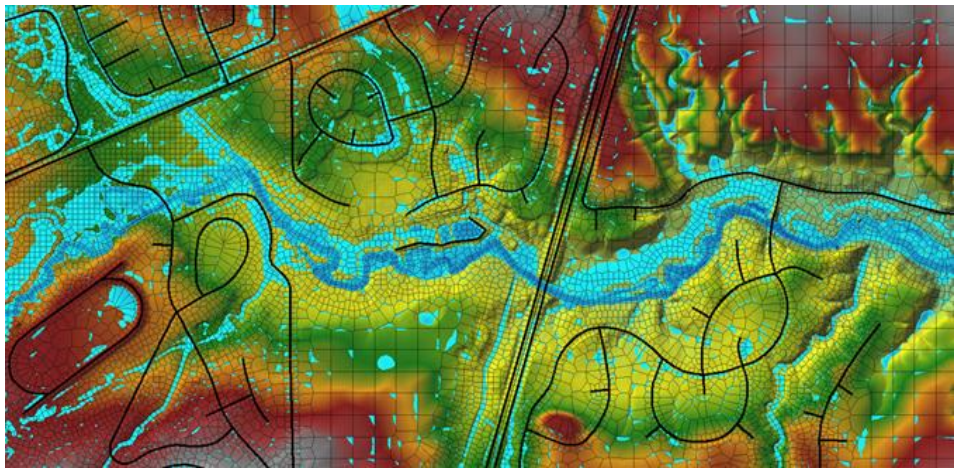


What is looks like

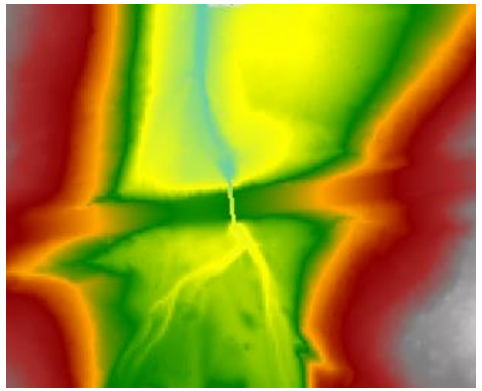
Mesh Enhancement: Define Streams

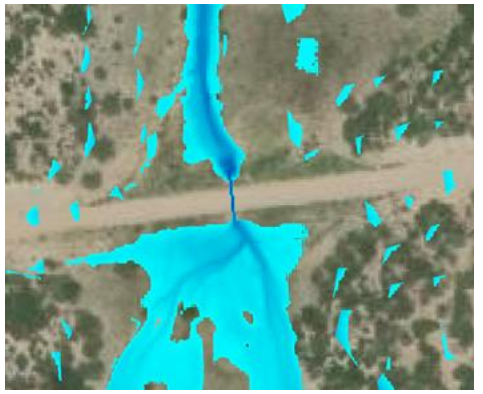


Breaklines: Define Features/Roads



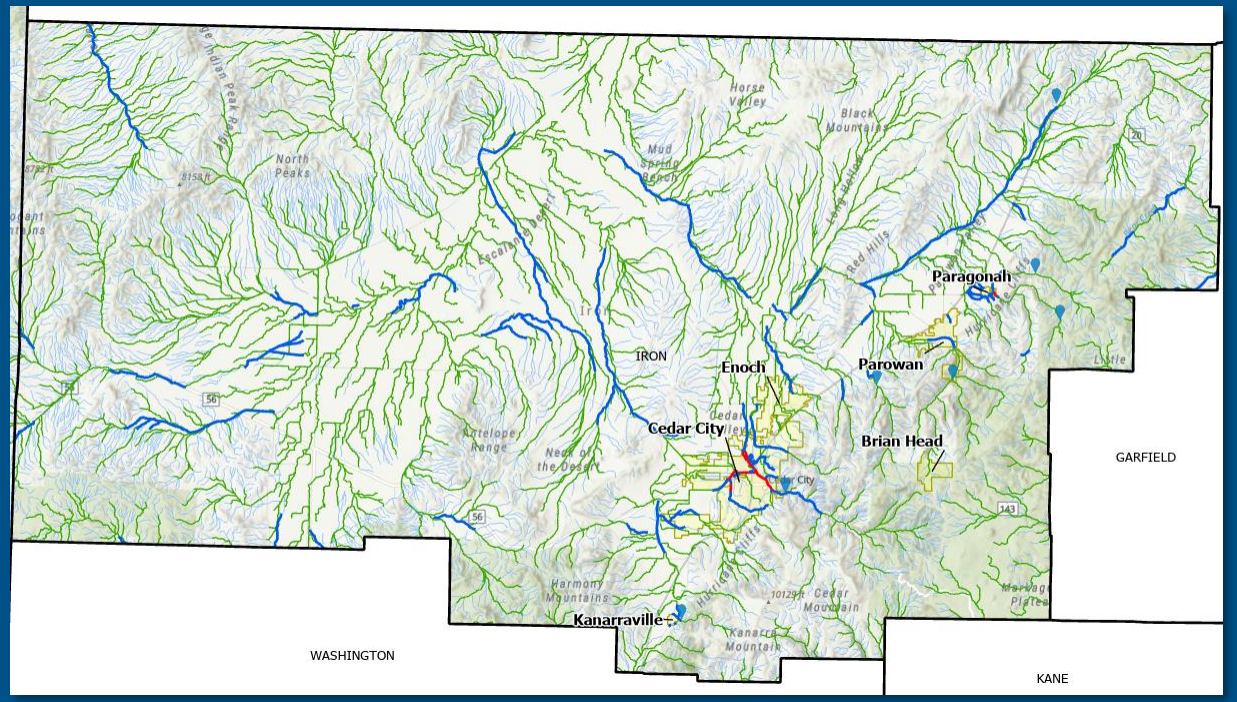
Hydroconnectors: Define Structures





Streams to be Assessed

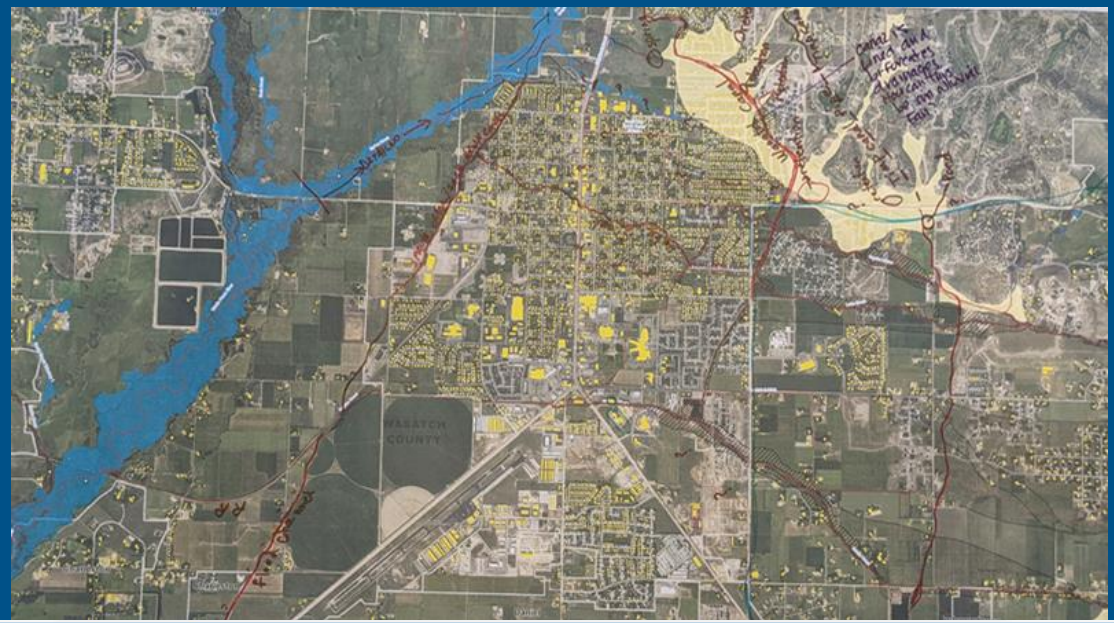
- **Starting Point**
  - USGS National Hydrography Dataset (NHD)
  - More than just major tributaries
- **Filters**
  - Natural channels only
  - Drainage areas larger than 1 square mile
  - **<u>Project total: 3,584 stream miles</u>**
- **Stream Types**
  - Ephemeral - flash
  - Intermittent - seasonal
  - Perennial - flows year-round

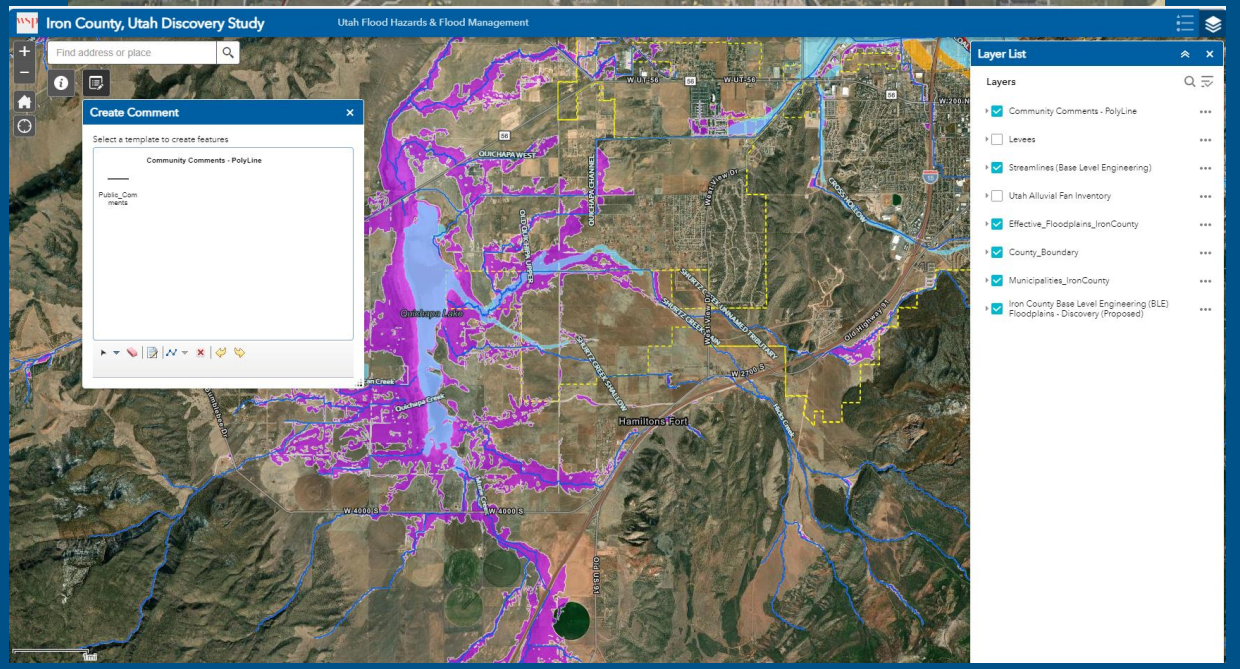


FEMA

Discovery Meeting (today)

- Collect your comments and feedback for:
  - Detailed flood risk analysis
  - Training





Phase 2

Revise the FEMA Flood Insurance Rate Maps (FIRMs) and Flood Insurance Study (FIS)

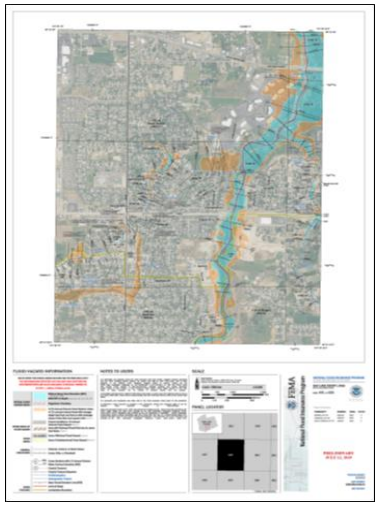
Phase 2
Regulatory Product Update

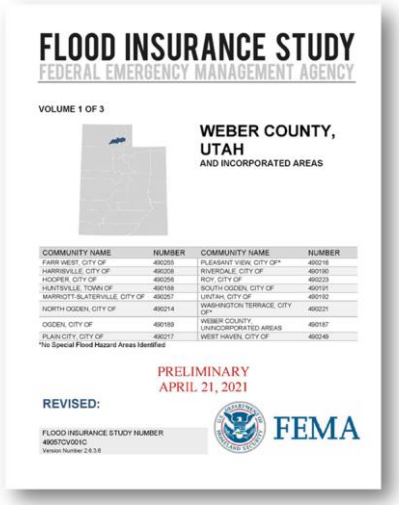
Incorporates

- Zone A BLE data
  - Areas not receiving a detailed study
- Detailed study data
  - H&H modeling

Products for Your Community

- Flood Insurance Rate Map (FIRM) panels
- Flood Insurance Study (FIS)
- DVD of digital data





Project Will Update Your Flood Risk Zones

High Risk Zones (1%-annual-chance):

- (approximate) Zone A
- Zones AE (A1-A30) (detailed)
- Zones AO (Sheet Flow)
- Zones AH (Ponding)
- Zone A99 (Areas to be protected by levees, etc. under construction)
- Zone AR (restoration of previously accredited flood protection system)
- Zone V (coastal Velocity)
- Zone VE (V1-V-30)

Moderate and Low Risk Zones (0.2% +)

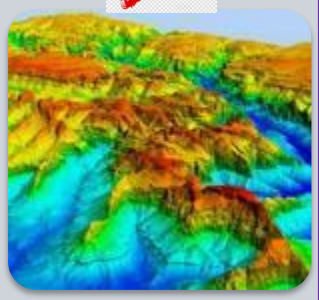
* = No mandatory insurance requirement

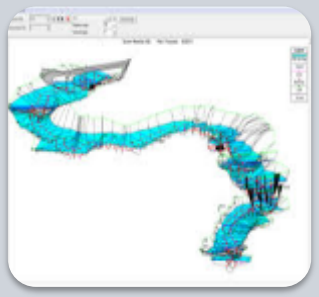
- *Shaded Zone X (B)
  - 0.2% annual chance
  - Moderate Risk
- *Unshaded Zone X (C)
  - Low Risk
  - Low risk, does not mean no risk
- Zone D
  - undetermined risk

FEMA

Project Timeline

Project Phases





Phase 0 (~2 Years)	Phase 1 (~1 Year)	Phase 2 (~2-3 Years)	Phase 3 (~1 Year)	Phase 4 (~ 2 years)
LiDAR Collection	Base Level Engineering/ Discovery	Data Development Field Survey, Hydrology, Hydraulics. Floodplain Mapping	Preliminary Map Development	Post Preliminary Activities Community and Public Review, Appeal period, Adoption

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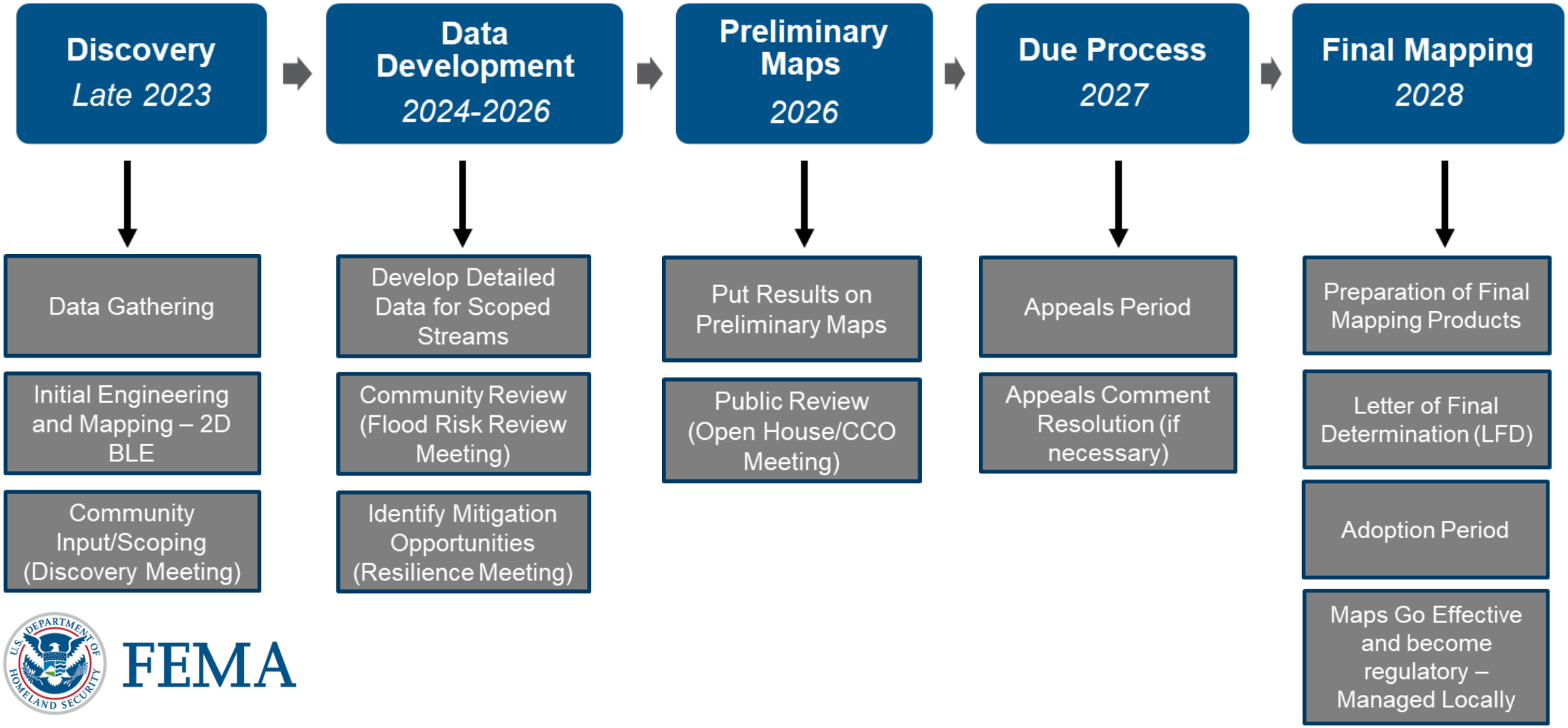
Overall Timeline



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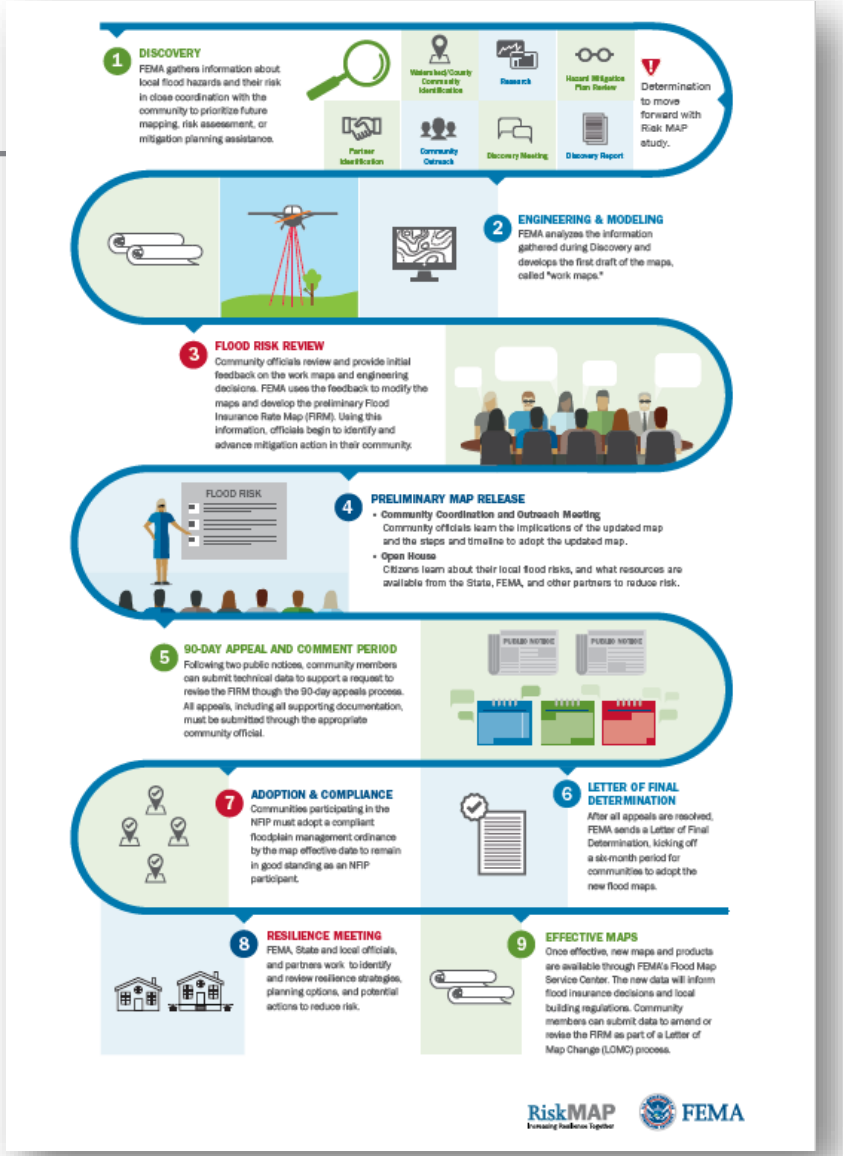
After today

- Collect your comments
- Conduct meetings for communities that could not attend
- Compile comments
- Send meeting notes and comment tracker for community concurrence
- Finalize Phase 2 (detailed study scope)
- Conduct meeting to initiate Phase 2 (i.e. Phase 2 Kickoff Meeting)
- Many more communication opportunities as the study progresses



Best Available Information

- Communities with no data or outdated data may be able to use the Zone A/BLE data immediately for planning and regulatory purposes for the below conditions
- When draft or preliminary data is available (approximately 1 year from now), only that information which consists of more restrictive data shall be considered BAI

  These include:

  - 1%-annual-chance (100-year) flood discharges
  - Flood hazard zone boundaries (including floodways)
  - Water-surface elevations (i.e. BFEs)
- Consider adopting language in your ordinances

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November 9, 2023 Meeting Preparation

We would like to hear from you

Steps 1-3:
Choosing a Study Type

Choosing a Study Type

- We would like to hear from you:
  - Step 1: Review BLE Zone A data
  - Step 2: Choose streams to study in more detail
  - Step 3: Choose study type

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Types of Studies

Zone A

- **Approximate**
  (Legacy Process)
- **Base Level Engineering**
  - Updated topography
  - Updated Hydrology
  - Updated Hydraulic modeling
  - Water Surface Elev.
  - Does not include structures

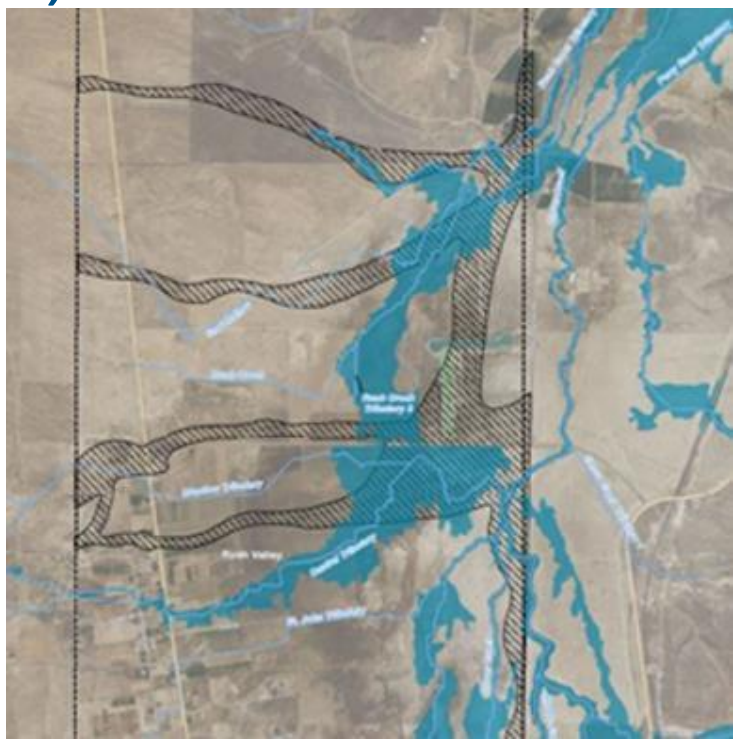
Zone AE

- **Detailed**
  - Field survey
  - Updated topography used
  - Updated Hydrology
  - Updated Hydraulic modeling
  - BFEs developed
  - No Floodway

Zone AE

- **Detailed w/ Floodway**
  - Field survey
  - Updated topography used
  - Updated Hydrology
  - Updated Hydraulic modeling
  - BFEs developed
  - Floodway

Study Option:
Keep *Base Level Engineering (BLE)*



- Zone A is determined
- Water surface elevations are included (i.e. BFE) within model
- Updated terrain accuracy
- Updated hydrology
  - Rain on grid analysis

Limitations:

  - BFEs will not be identified on the FIRM
  - No field survey conducted
  - Structures (bridges/culverts) not included
  - Although more accurate with today's terrain, may not be as accurate in urban areas

Study Option: Detailed Study: Without Floodway

- Zone AE, AH, AO determined
- Detailed Hydrology
  - Refined analysis from BLE
    - Gage or Regression Analysis
- Field Survey Conducted
  - Channel Cross Sections
  - Structures (Bridges/culverts) included)
- Detailed Hydraulic Model
  - 1D/2D modeling
  - 50-, 25-, 10-, 1-, 0.2%-annual-chance recurrence intervals modeled
- BFEs identified on the FIRM

Limitations:

- No floodway determined

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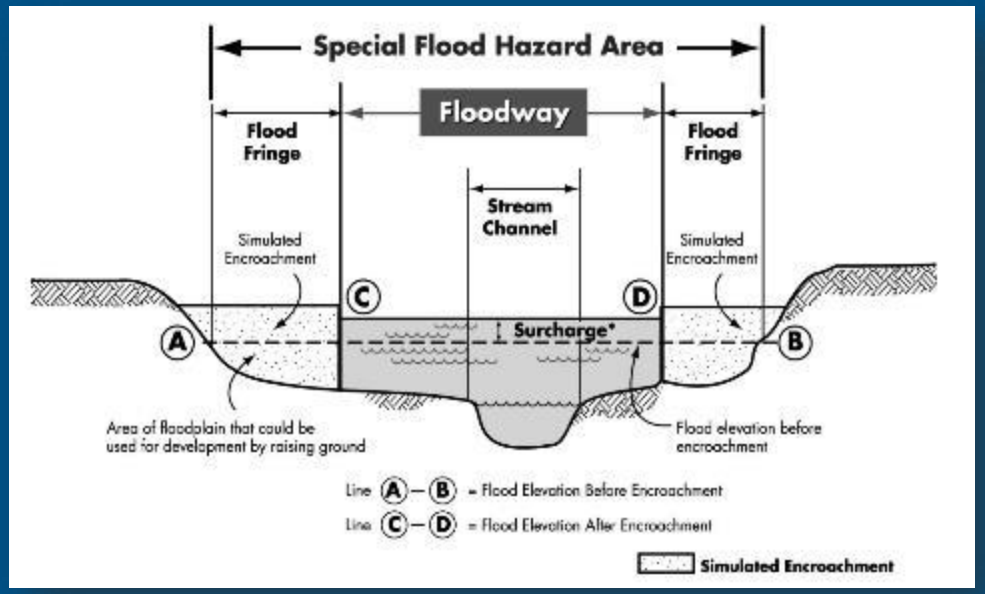
Study Option:
Detailed Study: Floodway

- Zone AE, AH, AO determined
- Detailed Hydrology
  - Refined analysis from BLE
    - Gage or Regression Analysis
- Field Survey
  - Channel Cross Sections
  - Structures (Bridges/culverts included)
- Detailed Hydraulic Model
  - 1D/2D modeling
  - 50-, 25-, 10-, 1-, 0.2%-annual- chance recurrence intervals modeled
- BFEs identified on the FIRM
- Floodway is determined

What is a Floodway?

A "Regulatory Floodway" means the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height



Floodway Schematic

Mapped Floodway

Decisions for Detailed Studies

Without Floodway

- More detailed information for urban areas or identified areas of growth
  - Increased development and data requirements provide greater safety measure for development
  - No floodway is determined identifying the higher risk zone
- Community to determine the process of identifying development that increases water surface elevations of no more than 1 ft

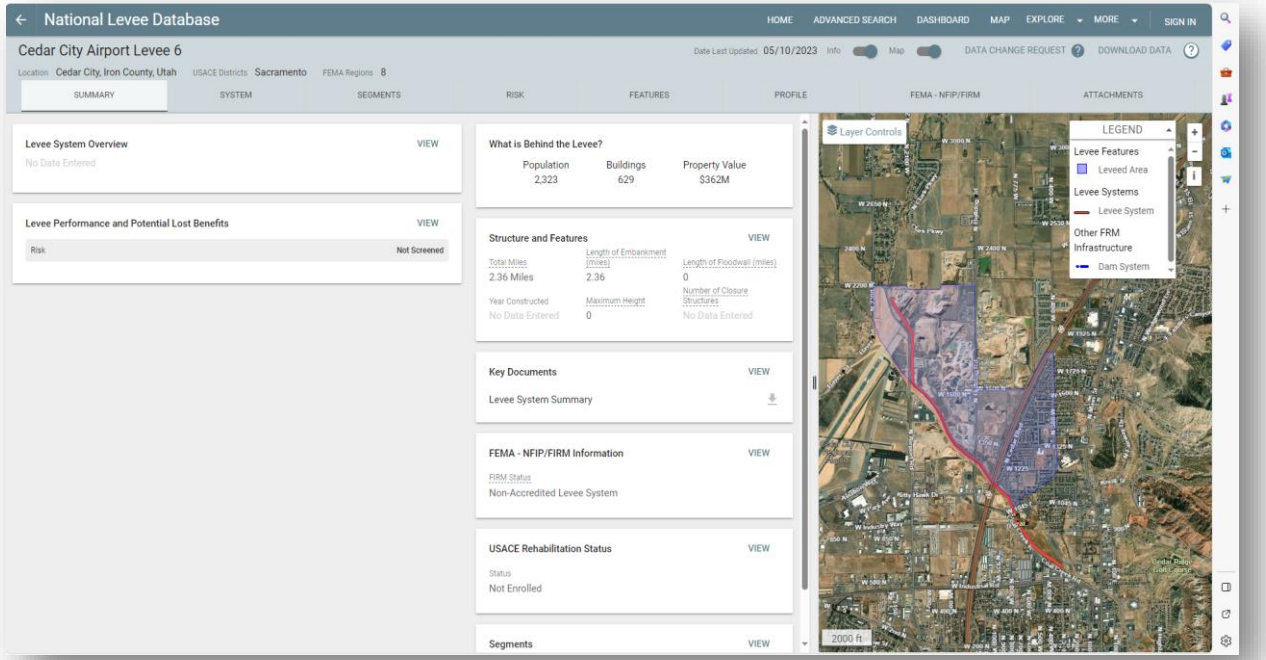
With Floodway

- More detailed information for urban areas or identified areas of growth
  - Increased development and data requirements provide greater safety measure for development
  - More restrictive development requirements
- 1-Dimensional (1D) Modeling
- Some areas may warrant a 2- Dimensional (2D) model to be used

  It may be more accurate, however:
  - Floodway may appear larger
  - 2D model may be difficult to maintain by the community

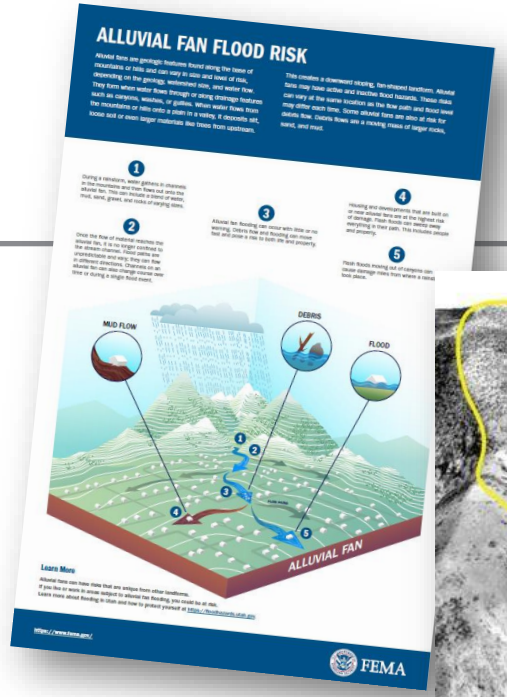
Levee to be Reviewed

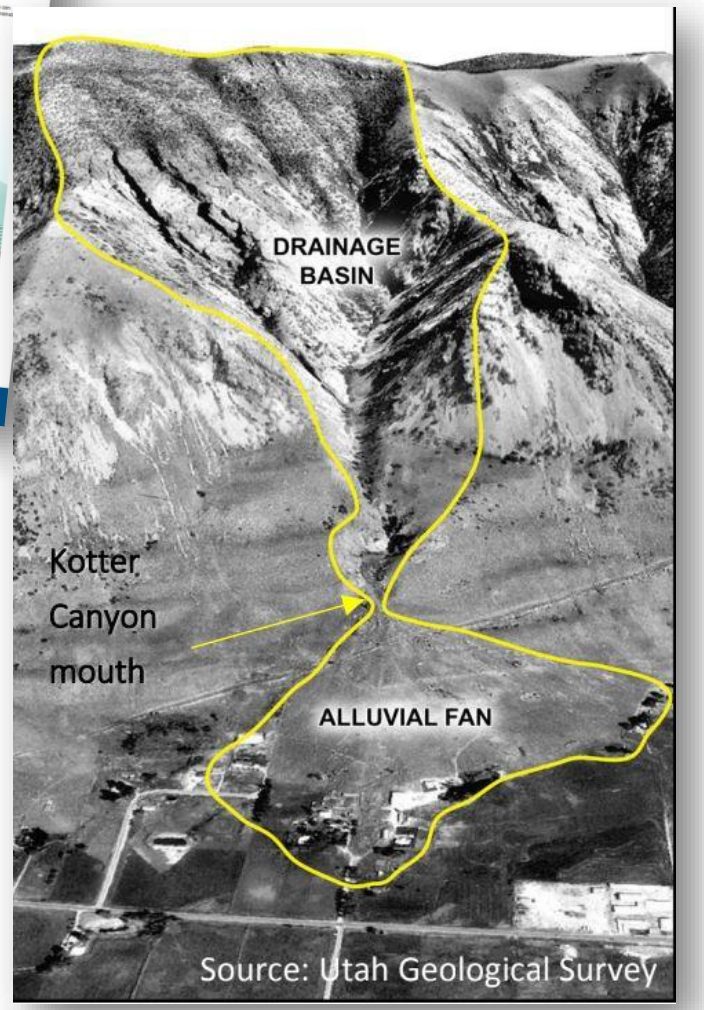
- Levee Identified in the National Levee Database
  - Cedar City Airport Levee 5
  - Cedar City Airport Levee 6
  - Accredited and shown on FIRM east of I-15
- Levee Coordination meeting early 2024



Alluvial Fans

- High Hazard Zone:
  - Flooding and debris flow
- Detailed flood risk is not being assessed for this study, but risk still exists:
  - No water surface elevations identified
  - Further flood risk analysis is required
- Additional Development Requirements:
  - Check IBC, IRC and ASCE 24 requirements in alluvial fans
- Additional community planning considerations required





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What is being Collected:
Additional *Flood Study Requests*

Keep the BLE Data

(More restrictive) Data can be used and adopted as-is

FIRM Panels created

No BFEs on map, but in the data

Upgrade or Revise to a Detailed Study

Upgrades BLE to place BFEs on the map

field survey

Hydrology Analysis

Hydraulic Analysis

No Floodway

Upgrade or Revise to a Detailed Study with Floodway

Upgrades or revises BLE or current detailed study to place BFEs on the map

Field survey

Hydrology Analysis

Hydraulic Analysis

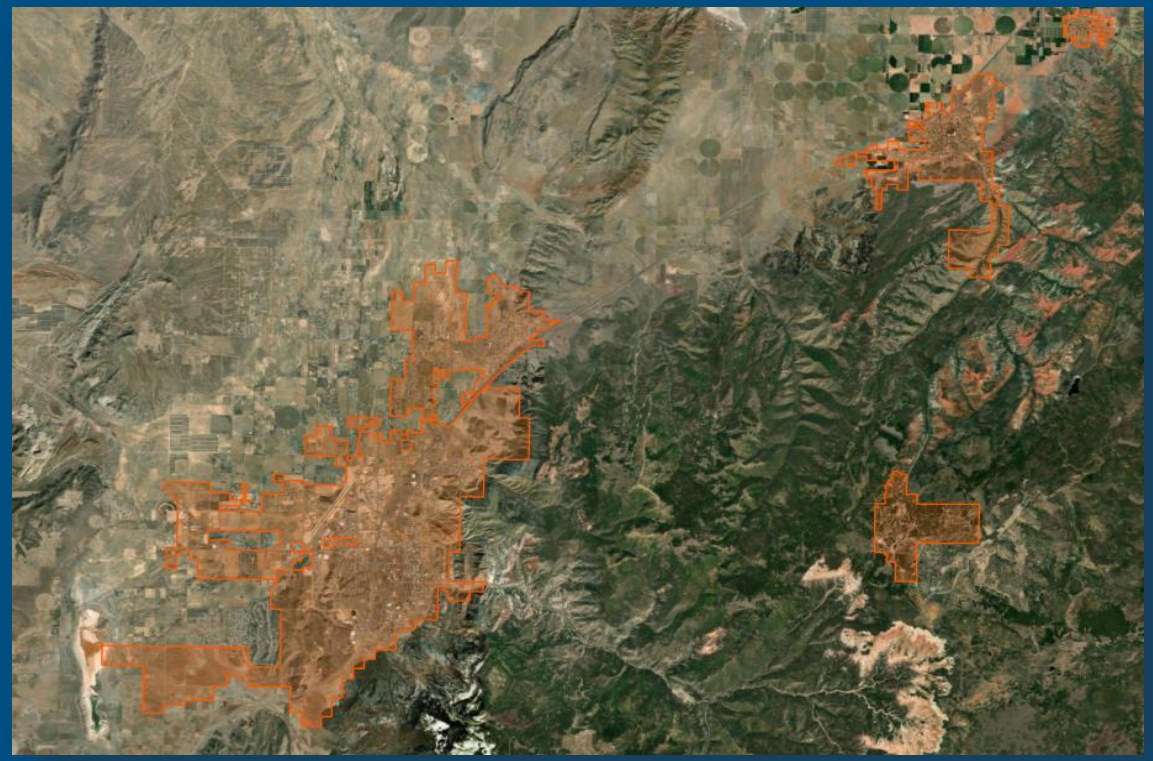
Floodway Developed

Step 4:
Identify Community Growth & Available Data

Community Input

Step 4:

- Identify community growth areas
- Available data your community may have



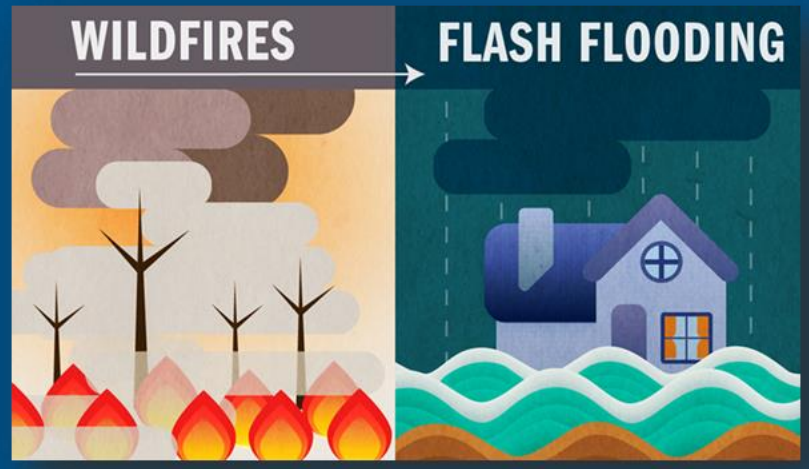
What is being Collected:
Areas of Growth, Development, and Mitigation

- Identify areas in your community that are currently experiencing development pressure or are planned for future development.
- Identify where in your community you have experienced flooding. What type: stormwater, riverine, flash flooding, shallow flooding? Do you have erosion concerns?
- Identify where your capital improvement plans include culverts, bridges, stream channel stabilization/alterations, etc.
- Are there any flood mitigation projects your community has started or completed; if so, where are they located?
- Have you performed any additional mitigation activities (see fact sheet)?
- Has the community collected any data associated with structures (basins, bridges, culverts, etc.), H&H data or any other data to inform a flood study?

Post Fire Flood Risk and Debris Flow Assessments

- Flood and debris flow risk increases after fire

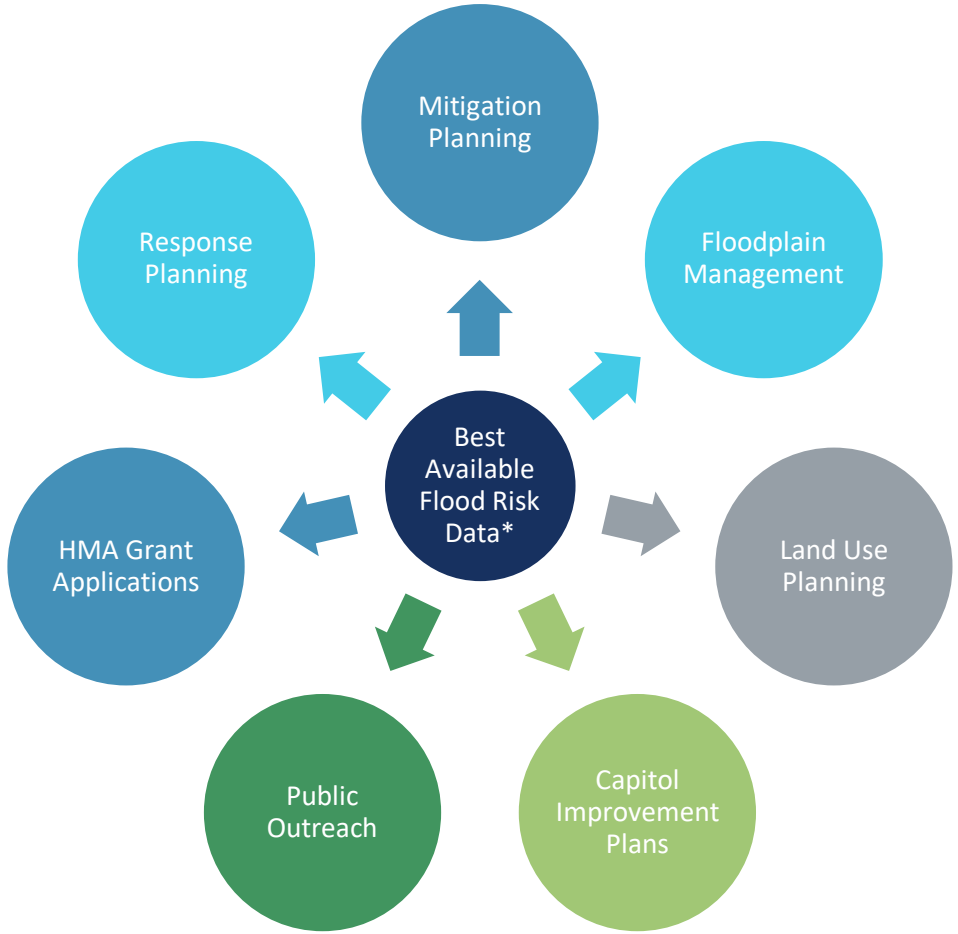
Ad



Step 5: Identify Training Needs

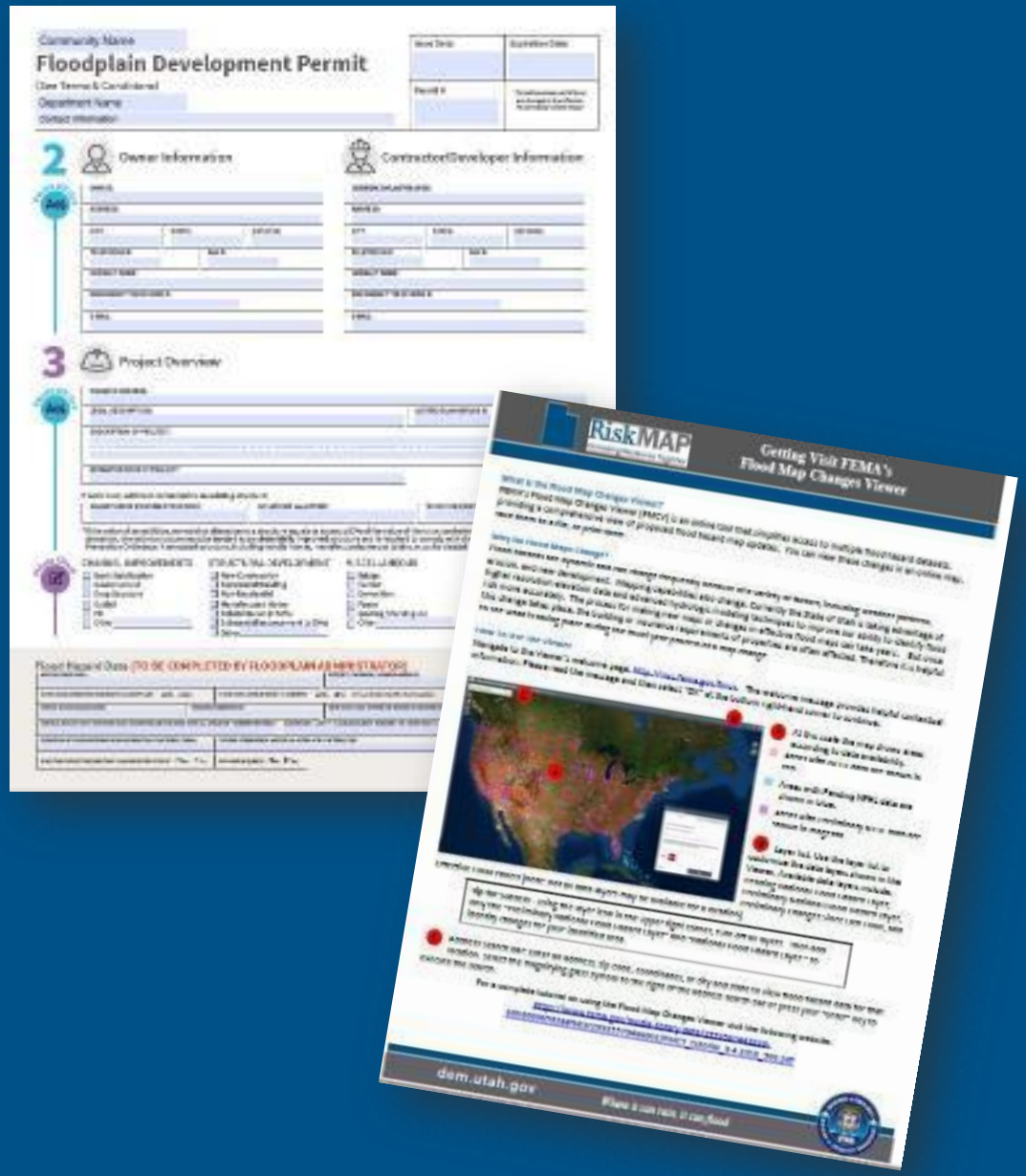
Step 5: Identify Training Needs

*Draft data can be used immediately only if more restrictive



What is being Collected:
Training Opportunities

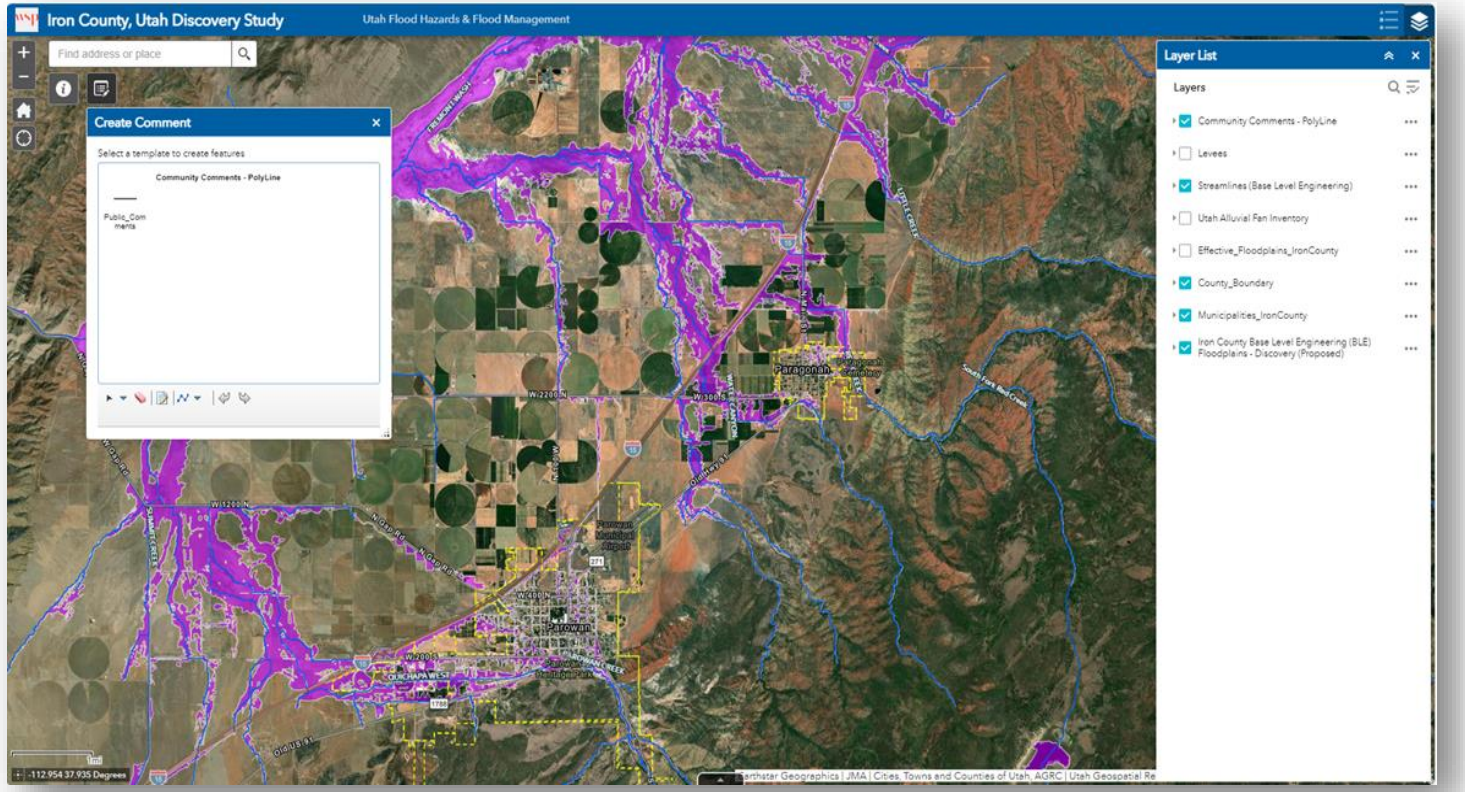
- Ideas to consider
  - NFIP Basics
  - How to create or update a Floodplain Ordinance
  - How to create or revise a Floodplain Development Permit
  - How can my community join the NFIP?
  - How to read a Flood Insurance Rate Map and Study
  - How to use the BLE Zone A data
  - More detail about the flood risk products
  - Are there any job aides or fact sheets we can develop on a specific floodplain management topic that would be helpful?
  - Our team is available to provide any additional training or information you may need

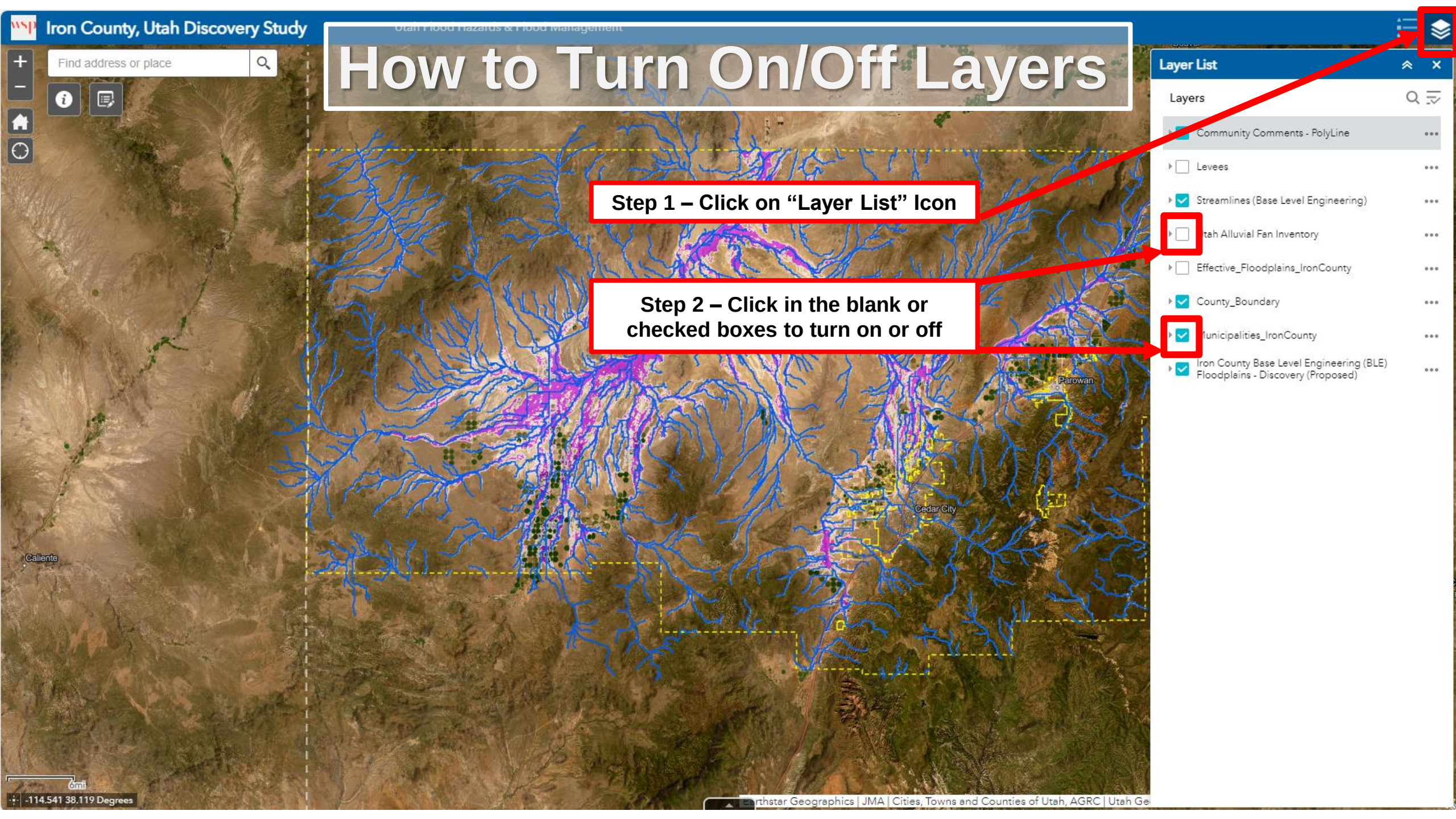


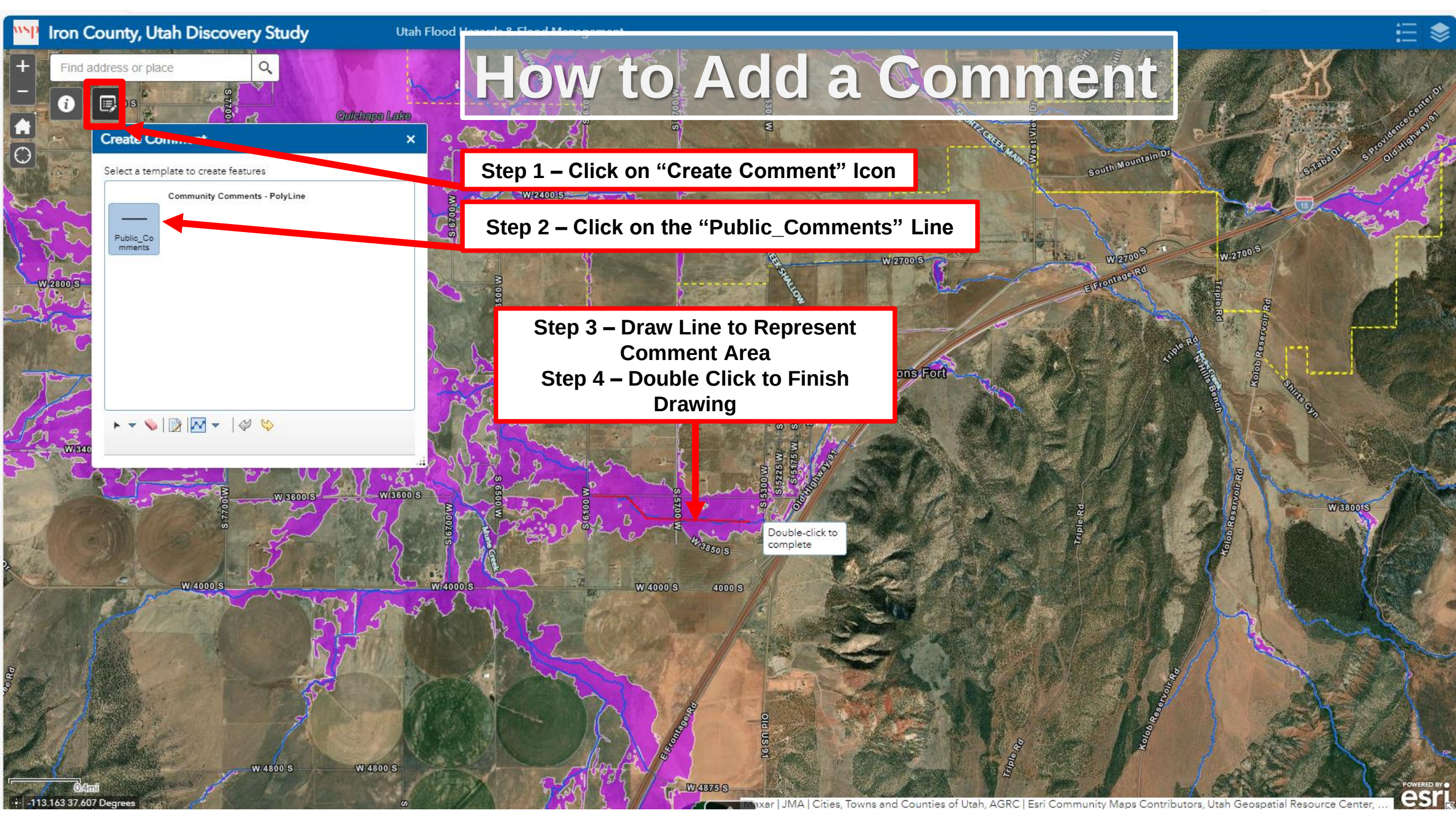
Discovery Online Web Map

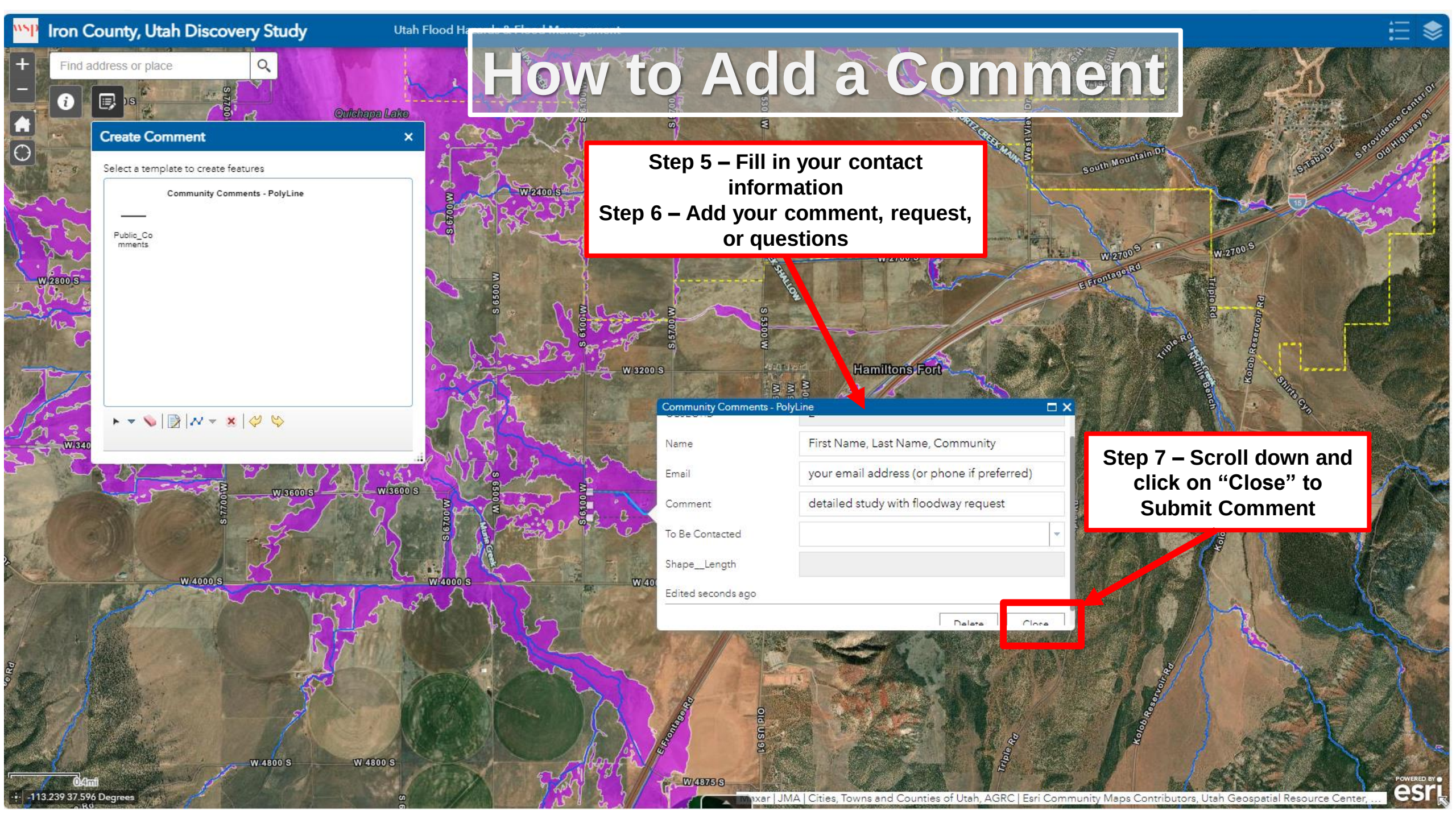
Iron County Discovery Online Map

- Iron County, Utah Discovery Study (arcgis.com)
- Review BLE Results
- Compare to Effective Data
- Review Recommended Detailed Study Areas
- “Mark Up” map with:
  - Detailed Study Requests
  - Comments
  - Known Data
  - Areas of Development
  - Etc.!




Iron County, Utah Discovery Study
Find address or place
How to Turn On/Off Layers
Step 1 – Click on “Layer List” Icon
Step 2 – Click in the blank or checked boxes to turn on or off
Layer List
Layers
Community Comments - PolyLine
Levees
Streamlines (Base Level Engineering)
tah Alluvial Fan Inventory
Effective_Floodplains_IronCounty
County_Boundary
lunicipalities_IronCounty
Iron County Base Level Engineering (BLE) Floodplains - Discovery (Proposed)
Parowan
Cedar City
Caliente
-114.541 38.119 Degrees


Iron County, Utah Discovery Study
Utah Flood Hazards & Flood Management
How to Add a Comment
Find address or place
Create Comment
Select a template to create features
Community Comments - PolyLine
Public_Comments
Step 1 – Click on "Create Comment" Icon
Step 2 – Click on the "Public_Comments" Line
Step 3 – Draw Line to Represent Comment Area
Step 4 – Double Click to Finish Drawing
Double-click to complete
Quichapa Lake
W 2400 S
W 2700 S
W 2800 S
W 3600 S
W 3850 S
W 4000 S
W 4800 S
W 4875 S
E Frontage Rd
Old Highway 91
Old US 91
Triple Rd
Kolob Reservoir Rd
South Mountain Dr
Shirts Cyn
-113.163 37.607 Degrees
Maxar | JMA | Cities, Towns and Counties of Utah, AGRC | Esri Community Maps Contributors, Utah Geospatial Resource Center, ...
esri


Iron County, Utah Discovery Study
Utah Flood Hazards & Flood Management
How to Add a Comment
Find address or place
Create Comment
Select a template to create features
Community Comments - PolyLine
Public_Comments
Step 5 – Fill in your contact information
Step 6 – Add your comment, request, or questions
Community Comments - PolyLine
Name
First Name, Last Name, Community
Email
your email address (or phone if preferred)
Comment
detailed study with floodway request
To Be Contacted
Shape__Length
Edited seconds ago
Delete
Close
Step 7 – Scroll down and click on “Close” to Submit Comment
Quichapa Lake
Hamiltons Fort
W 2400 S
W 2700 S
W 2800 S
W 3200 S
W 3600 S
W 4000 S
W 4800 S
W 4875 S
S 6700 W
S 6500 W
S 6100 W
S 5700 W
S 5300 W
E Frontage Rd
Old US 91
Triple Rd
Kolob Reservoir Rd
South Mountain Dr
S Providence Center Dr
Old Highway 91
S Taba Dr
Shirts Cyn
0.4mi
-113.239 37.596 Degrees
Maxar | JMA | Cities, Towns and Counties of Utah, AGRC | Esri Community Maps Contributors, Utah Geospatial Resource Center, ...
POWERED BY esri

Project Information

Iron County Flood Study Project Repository Website

- Project Website for stakeholders
- Updated periodically with project information
- **https://iron-county-utah-em.hub.arcgis.com/**

- Additional Mapping Information: https://floodhazards.utah.gov/mapping/

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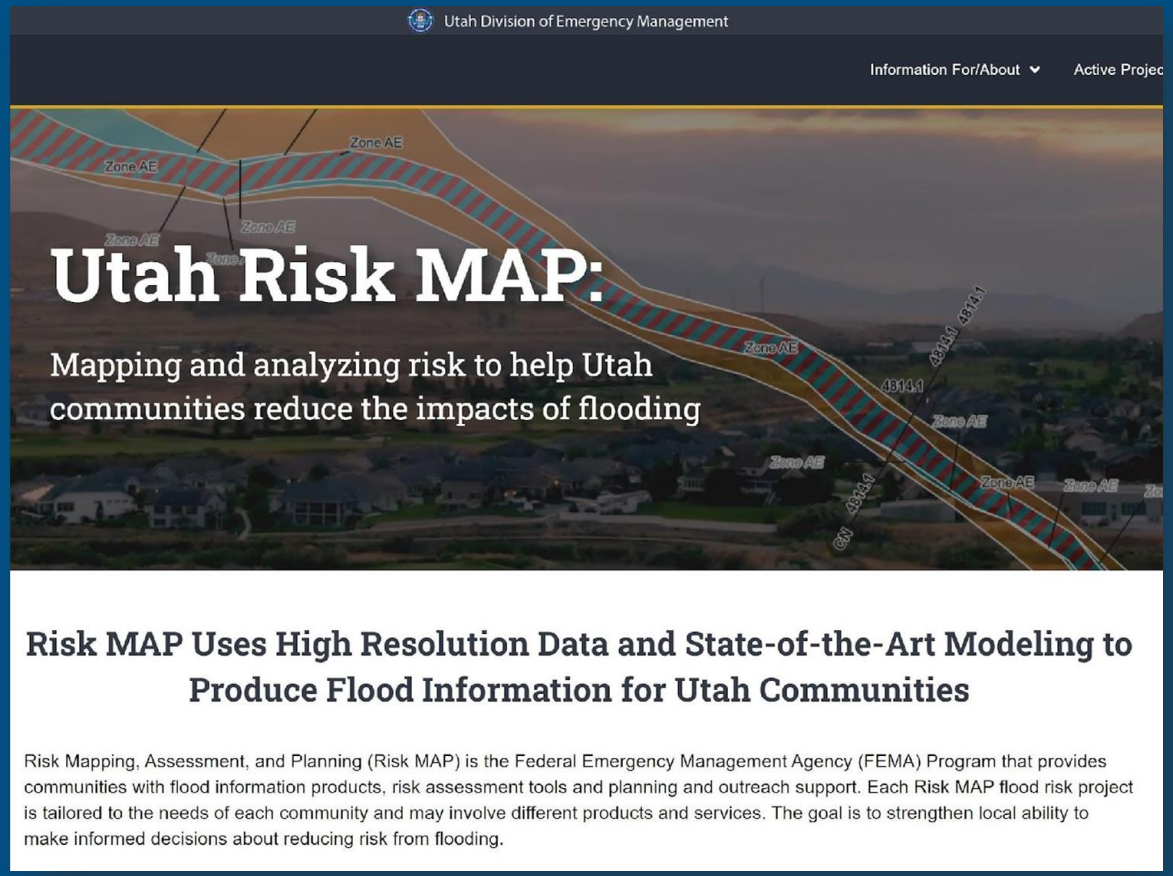
Project Website

- Utah Risk MAP project website overview
- https://floodhazards.utah.gov/
- Additional information on floodplain programs



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Questions?

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Andrew.burman@wsp.com

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Recap: Prepare for next meeting

Step 1: Review BLE map

Step 2: Identify stream/s to study in more detail

Step 3: Choose Study Type

Step 4: Identify areas of growth & data you may have

Step 5: Identify training needs