Flood Insurance Study

for Glenrose and Central-Park Basins (G-CP)

Project:	Glenrose and Central Park Basins Floodplain Delineation
Purpose:	Update Map of Floodplain Limits
Prepared for:	City of Spokane Valley and Spokane County
Jurisdictions:	City of Spokane Valley, City of Spokane, Spokane County
Prepared by:	WEST Consultants, Inc.
Date:	May 1, 2025

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Project Team

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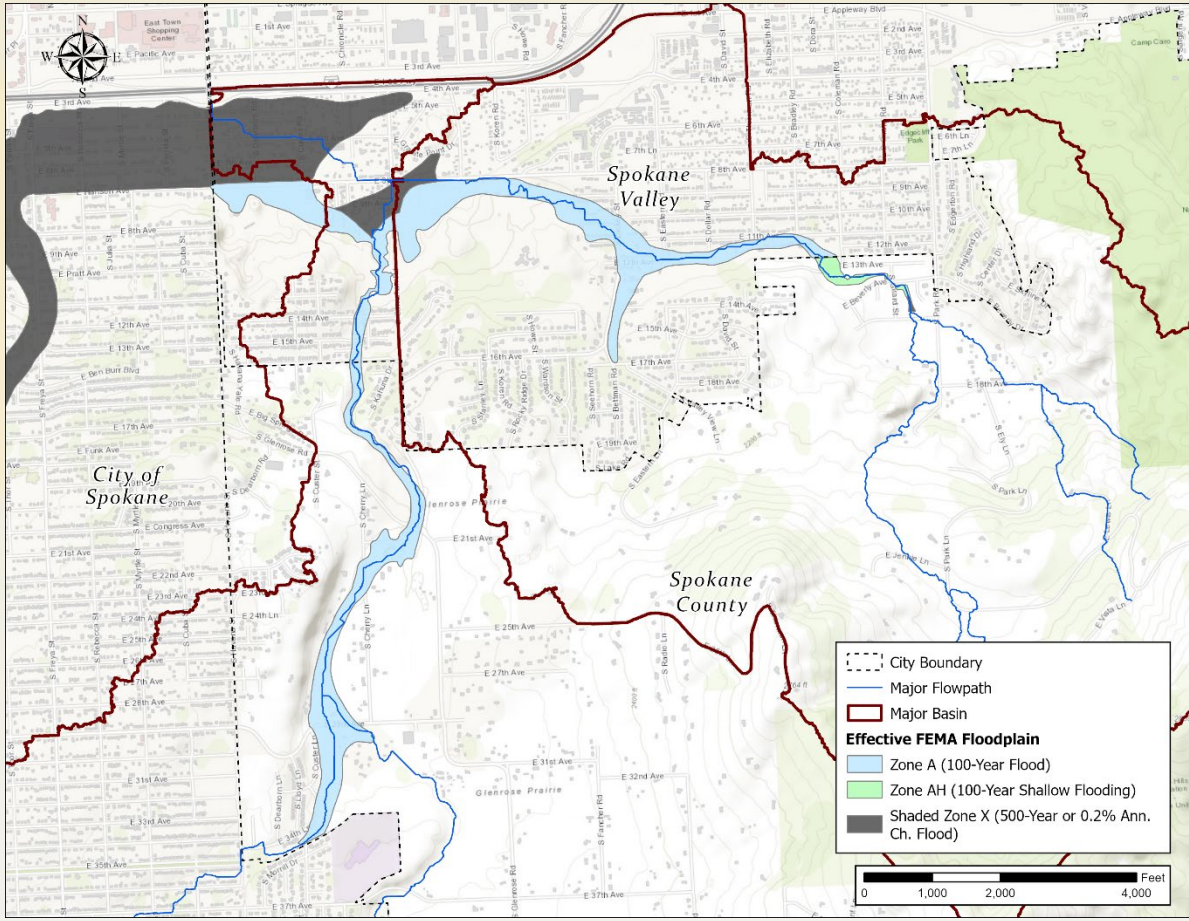
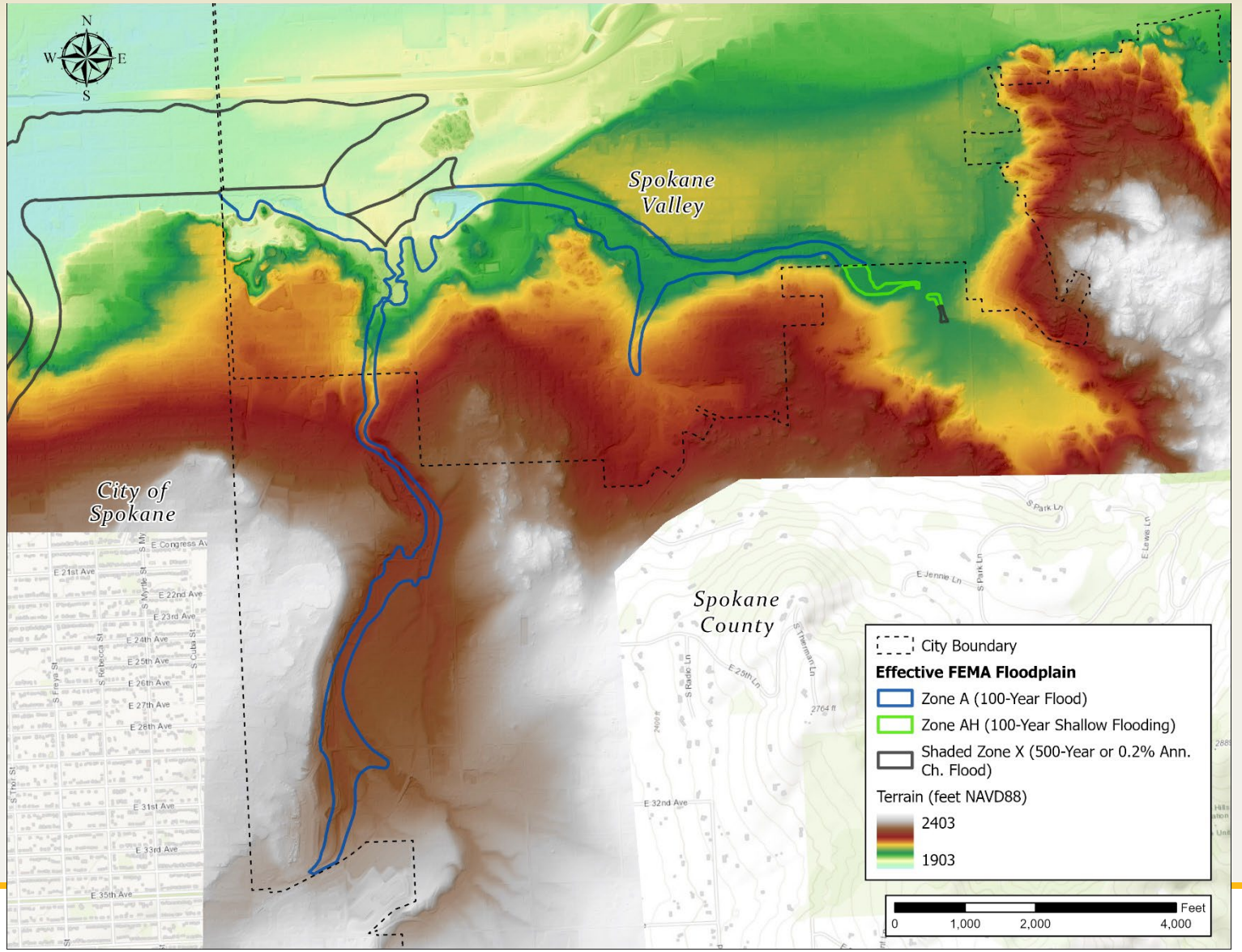
Current Condition of Flood Insurance Mapping:

- Old FEMA Special Flood Hazard Areas (2010)
- No detailed hydrologic or hydraulic analyses performed
- No base (100-yr) flood elevations or depths available

Flood insurance map is approximate



Current Condition of Floodplain Mapping (relief background):



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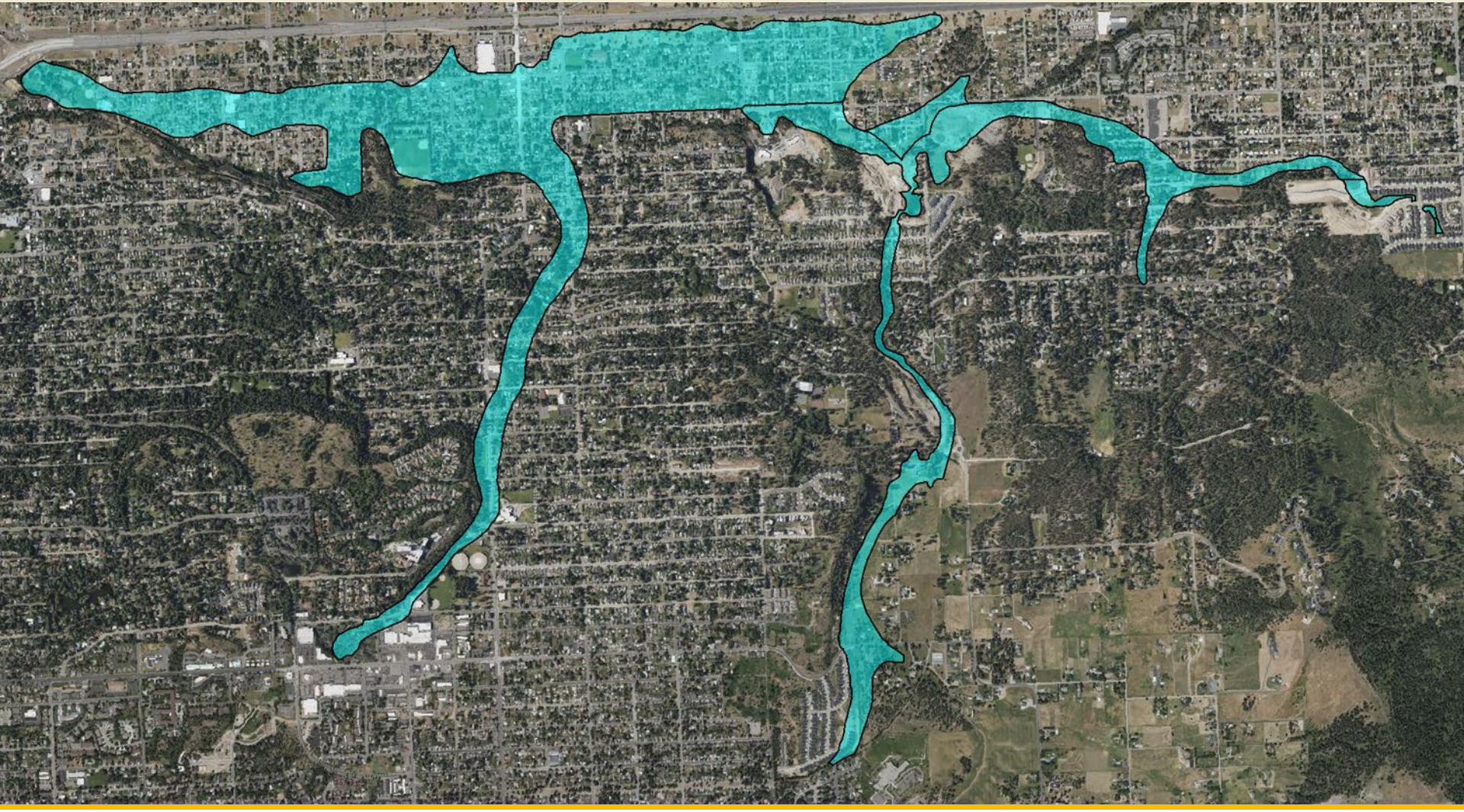
Current Condition of Floodplain Mapping (aerial background):



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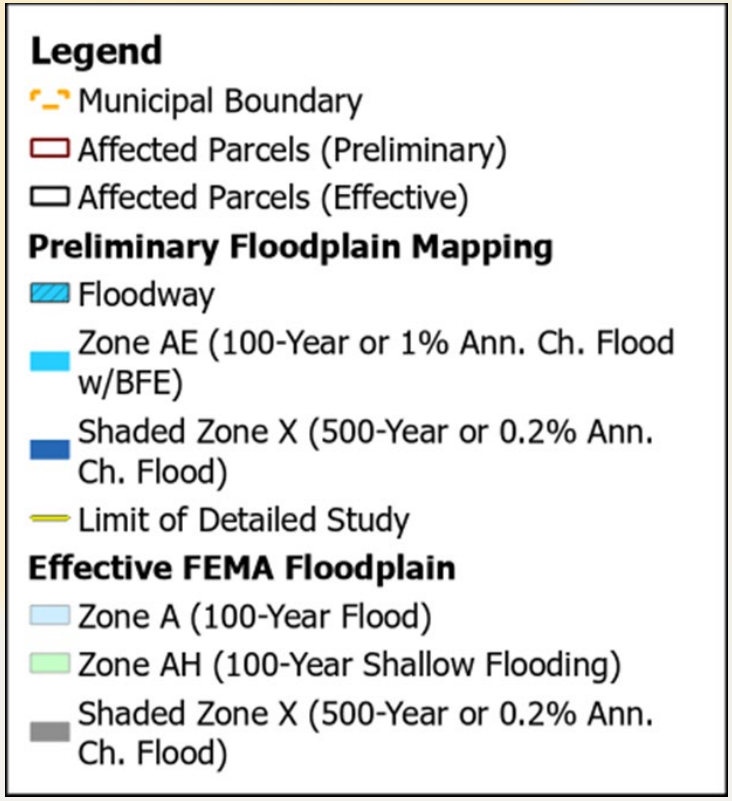
Explanation of flood condition terms:

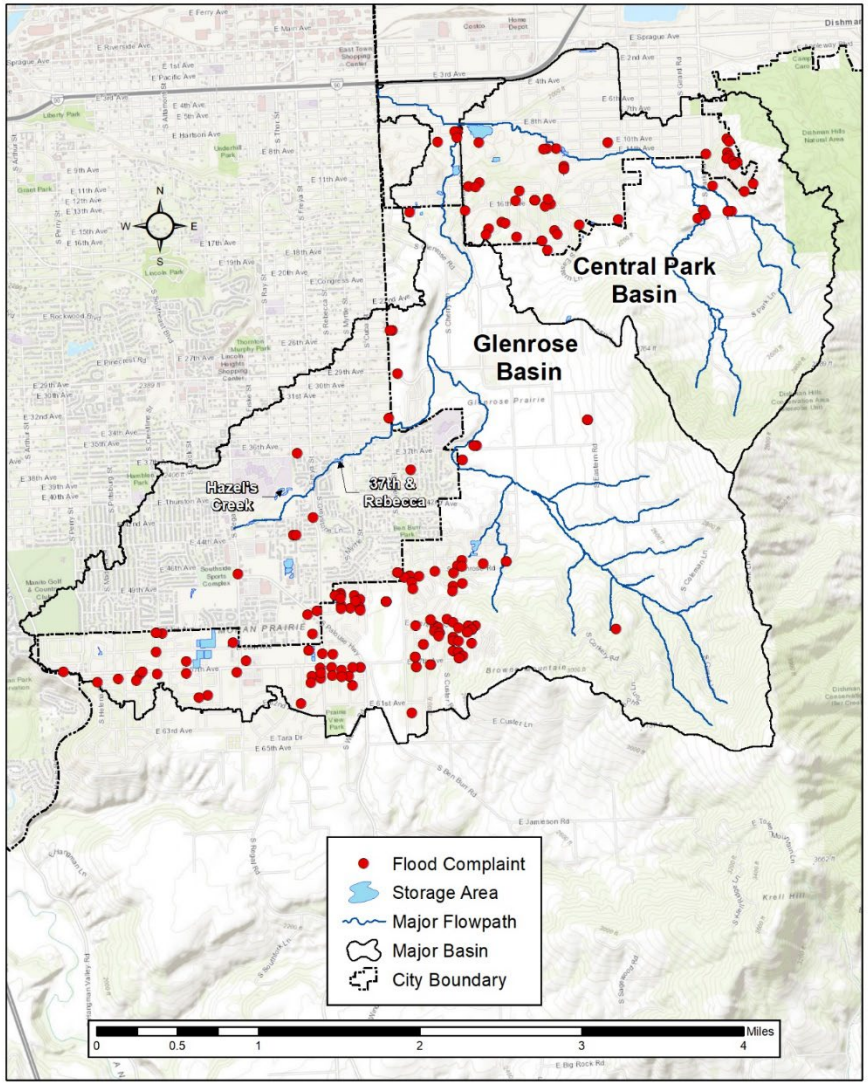
- Floodplain for 100-year Flood (or 1% Annual Chance of Flood)
- Floodplain for 500-year Flood (or 0.2% Annual Chance of Flood)

- Zone AE, Zone A, Zone AH
  - ➢ 100-year Flood
- Shaded Zone X for moderate risk
  - ➢ 500-year flood
- Floodway for 100-yr Flood



Background and Flooding:

- **Stormwater runoff**
  - flows off of property and hillsides
  - ponds in low-lying areas,
  - infiltrates into the ground.
- **Intense storms or during snowmelt, associated with**
  - topography (slope of the land)
  - nature of the soils
  - location and density of development
- **Stormwater Facilities**
  - over 900 drywells
  - retention basins
  - detention basins



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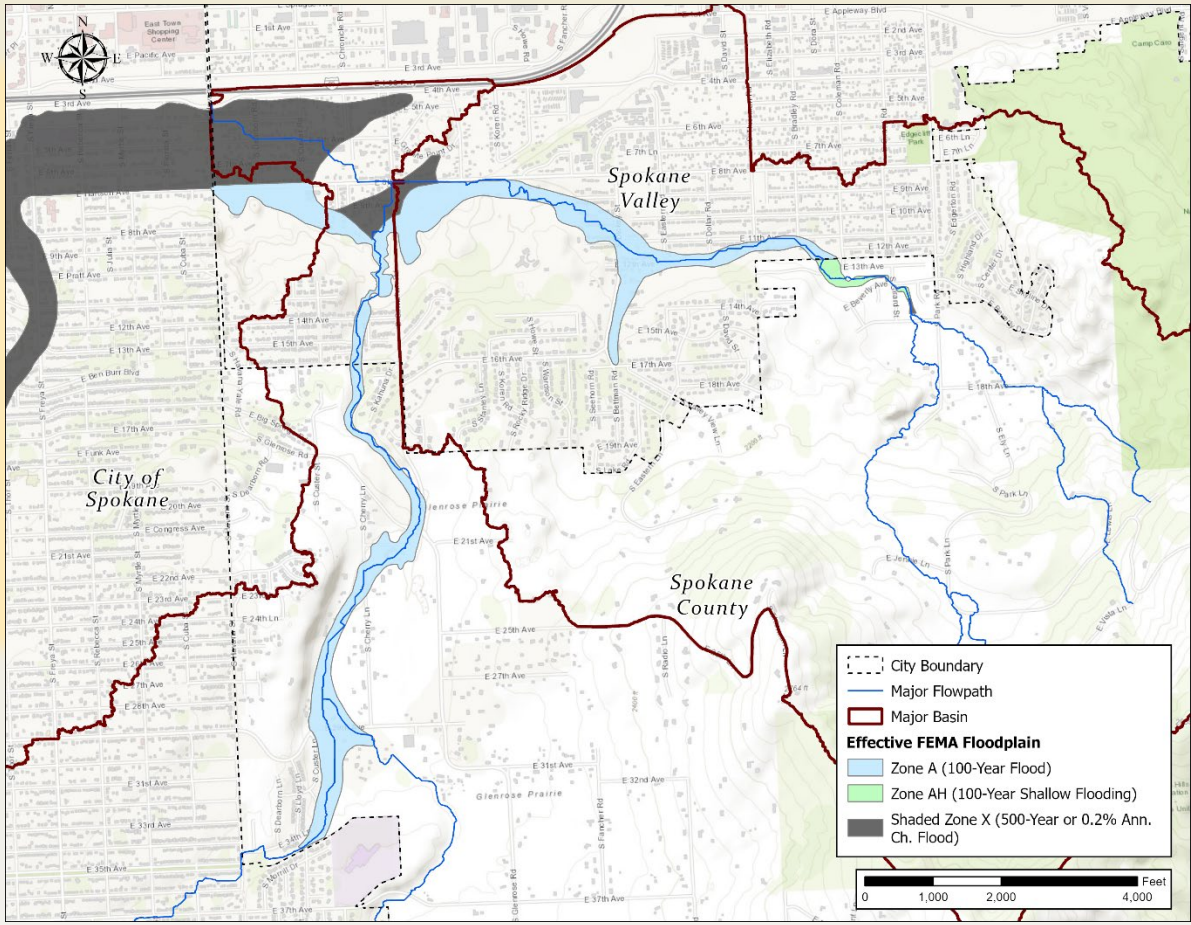
Area of Interest for Flood Insurance Remapping :

- Within City of Spokane Valley and parts of Spokane County
- Include Glenrose Creek, Bettman Creek, and Central Park Creek
- With stormwater facilities
- New residential and/or commercial development



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Tasks required to update Flood Insurance Map:

- **Develop hydrology model of G-CP watersheds** (July 21, 2023)
- Public outreach for hydrologic studies (Feb. 7, 2024)
- Have FEMA approve hydrology study (May 31, 2024)
- **Develop hydraulic models**
- ➢ **Public outreach for hydraulic studies (this meeting)**
- Response to public outreach comments
- Prepare FIS submittal to FEMA (forms, reports, maps)
- FEMA review and responses
- FEMA adopts new “effective” floodplain maps

Hydrology study includes:

Glenrose Basin

- 9 square miles, elevations 1,935 -3,660 ft.

Central Park Basin

- 3.3 square miles, elevations 1,940 - 3,054 ft

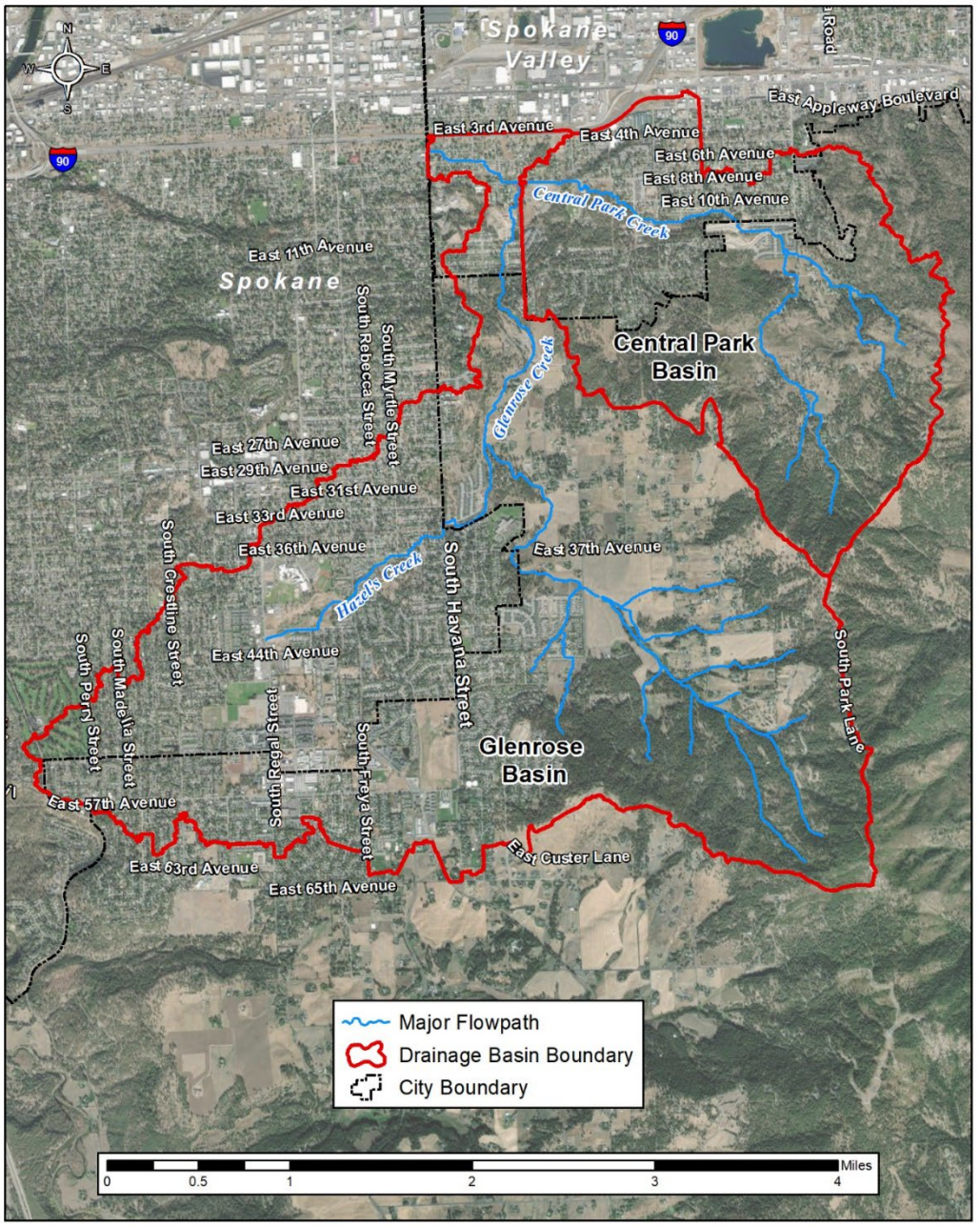
Hydrology Model

- EPA model HSPF
- 195 subbasins
- Geology
- Land cover, land use

Stormwater Facilities

- Detention/retention basins
- Dry wells

Develop Flows at Key Locations for hydraulic model



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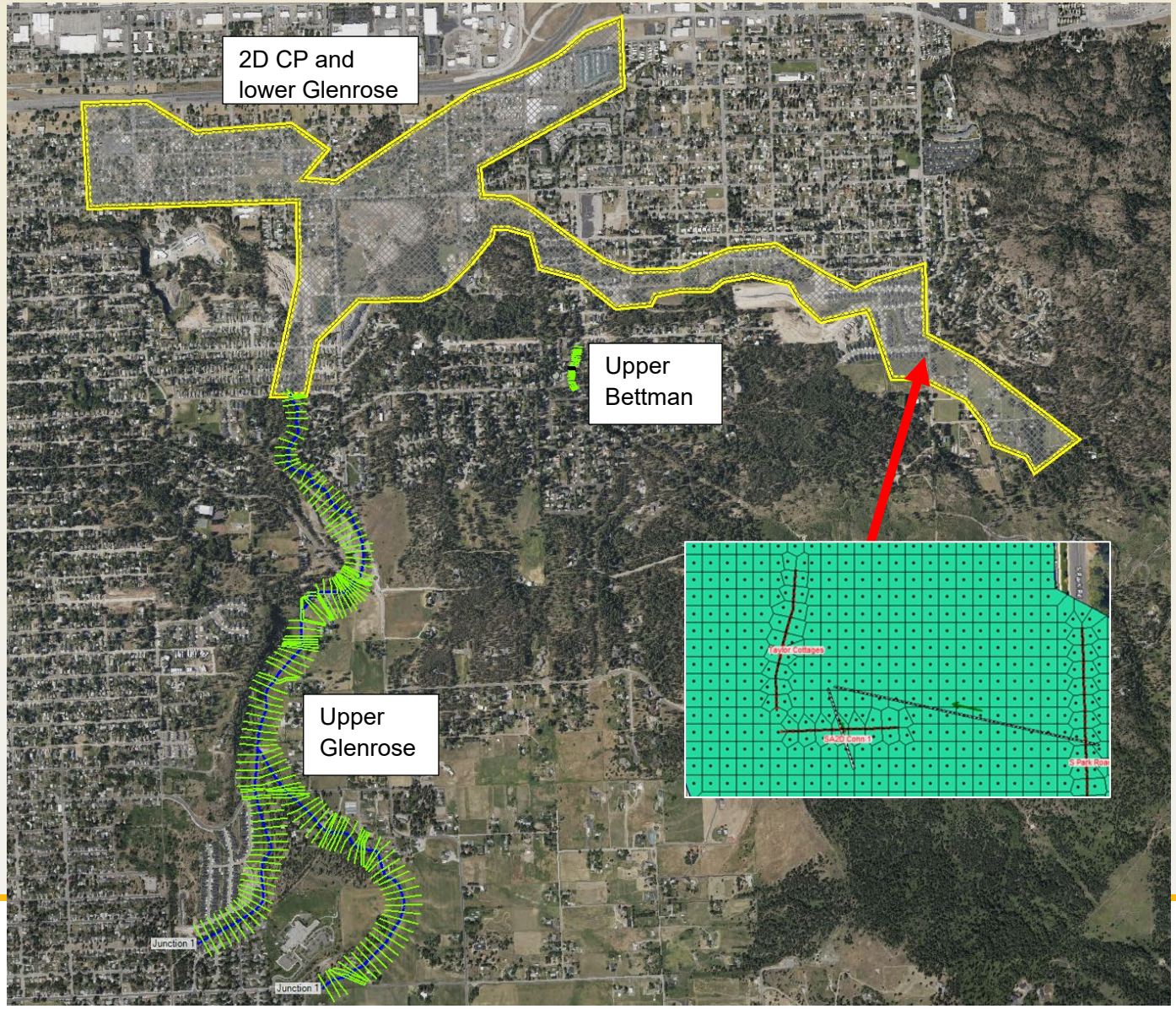
Hydraulic Models

- Computes surface water elevations, depths and velocities
- Uses terrain, land cover, and inflows

- Upper Glenrose (1D steady-state)
- Upper Bettman (1D steady-state)
  - 1D uses cross sections and flow is in one direction

- Downstream Glenrose-Central Park (unsteady-state 2D)
  - 2D used polygons and flow is from cell to cell

Hydraulic Models



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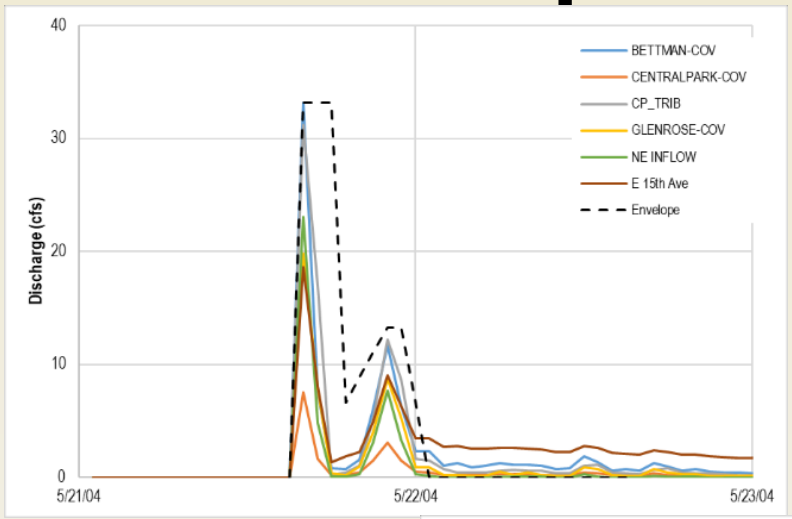
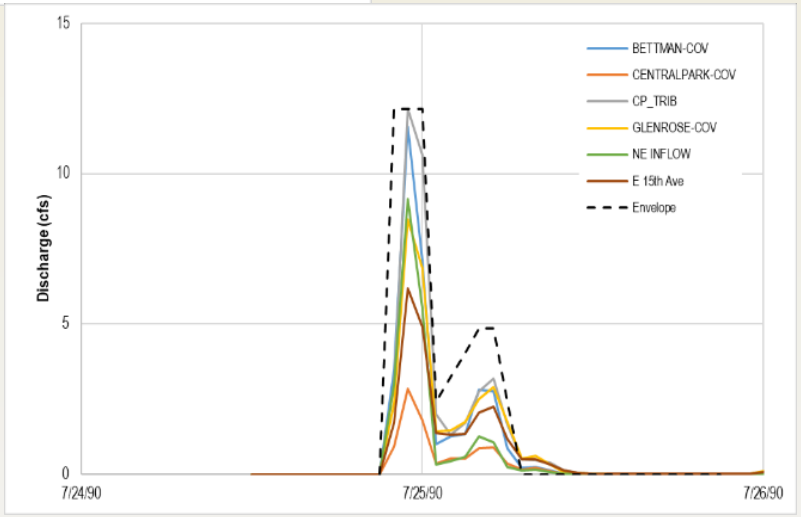
Flows and Shapes

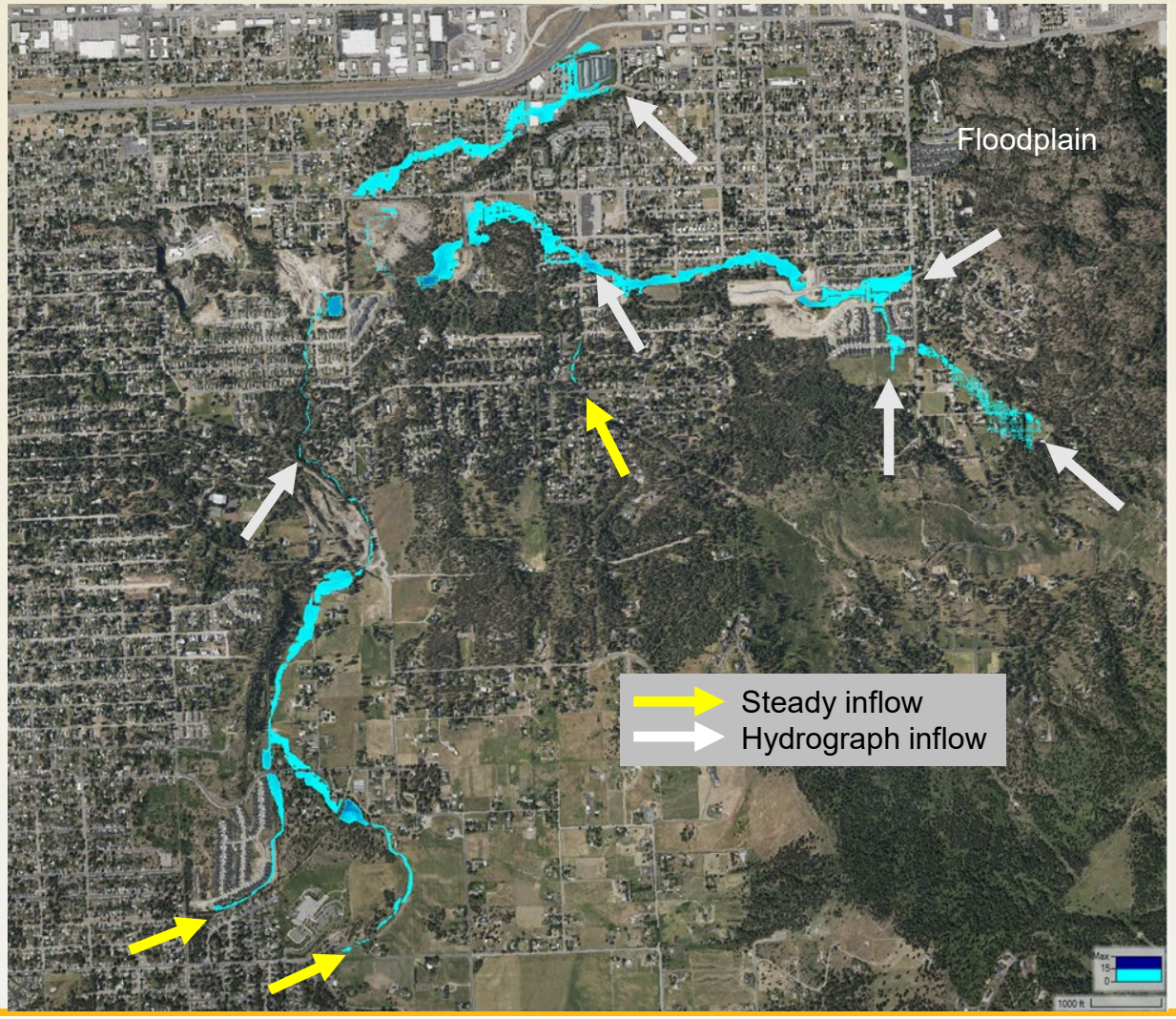
- Steady flows in Upper Glenrose and Upper Bettman from Hydrology Model

- Unsteady flows in 2D model of lower Glenrose-Central Park from Hydrology Model modified to mimic flow volumes
  - First peak dominant in upstream areas
  - Flood volume dominant in downstream areas

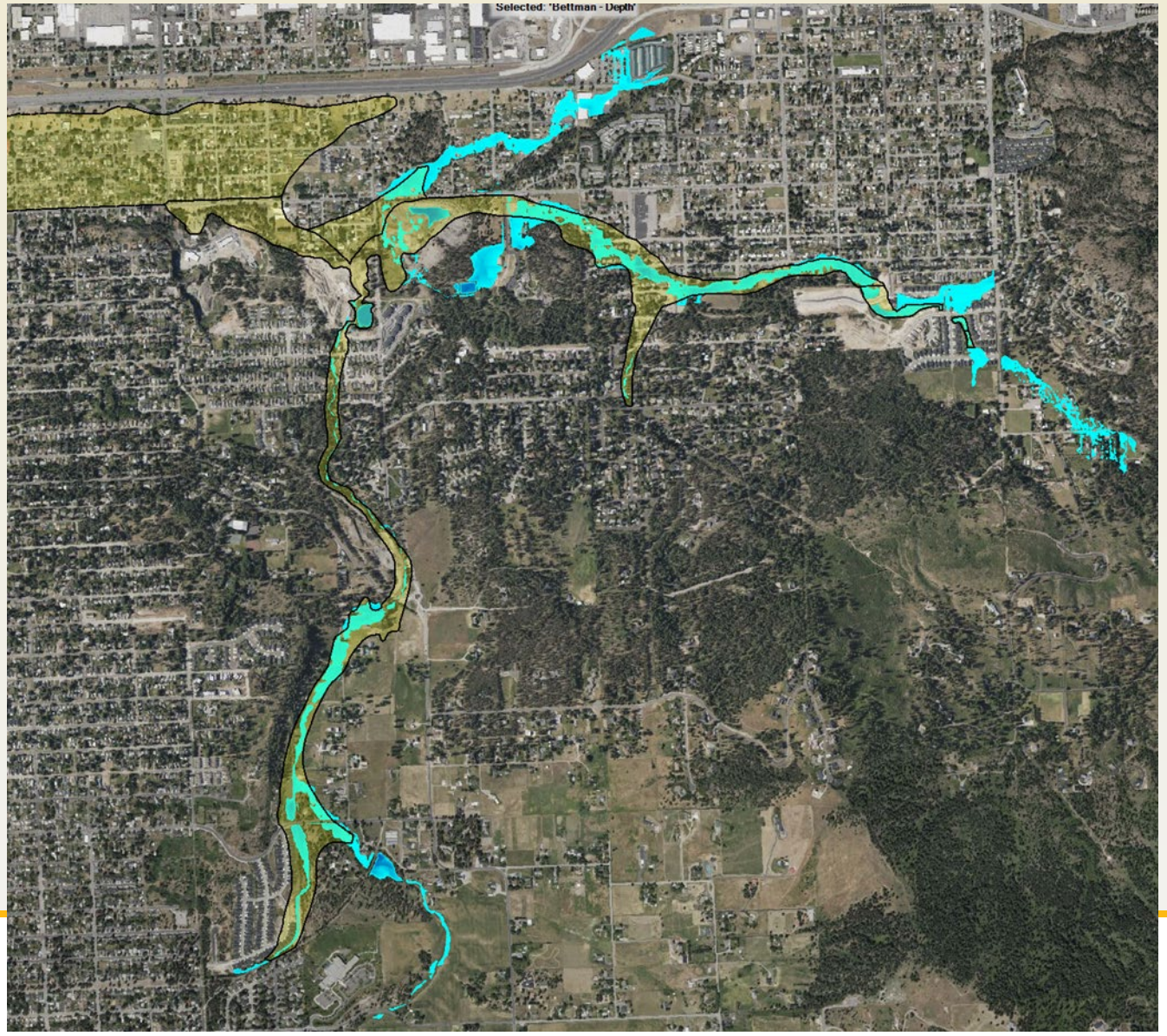




Example 100-year Floodplain and Inflows



Compare Effective and Preliminary Floodplains



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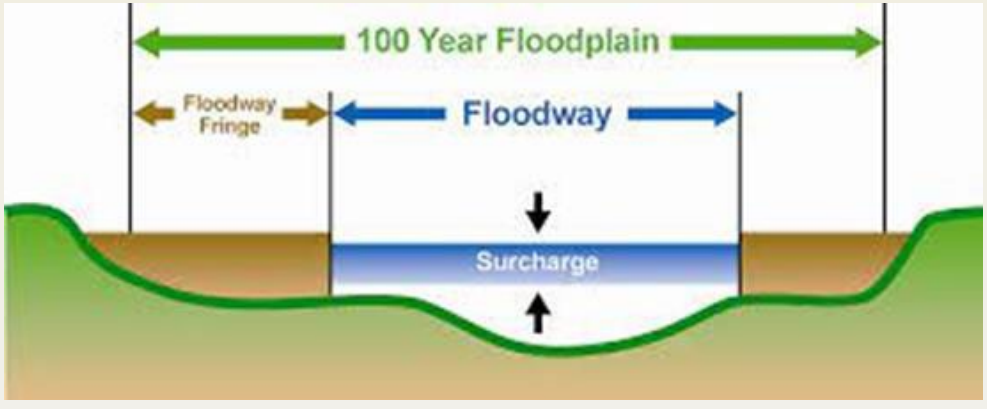
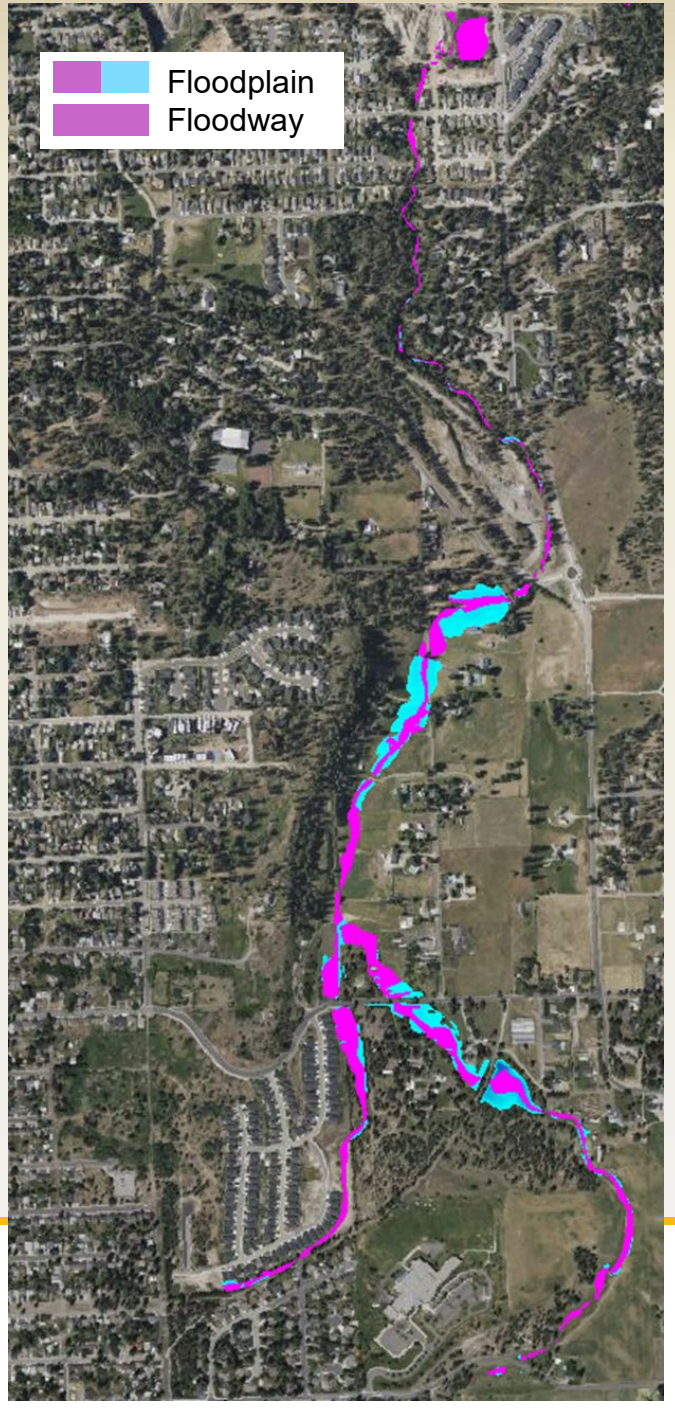
Floodway Analysis

- Floodway “squeezes” floodplain until rise not more than 1 foot
- Regulatory purpose for future floodplain development
- Requested only for Glenrose system





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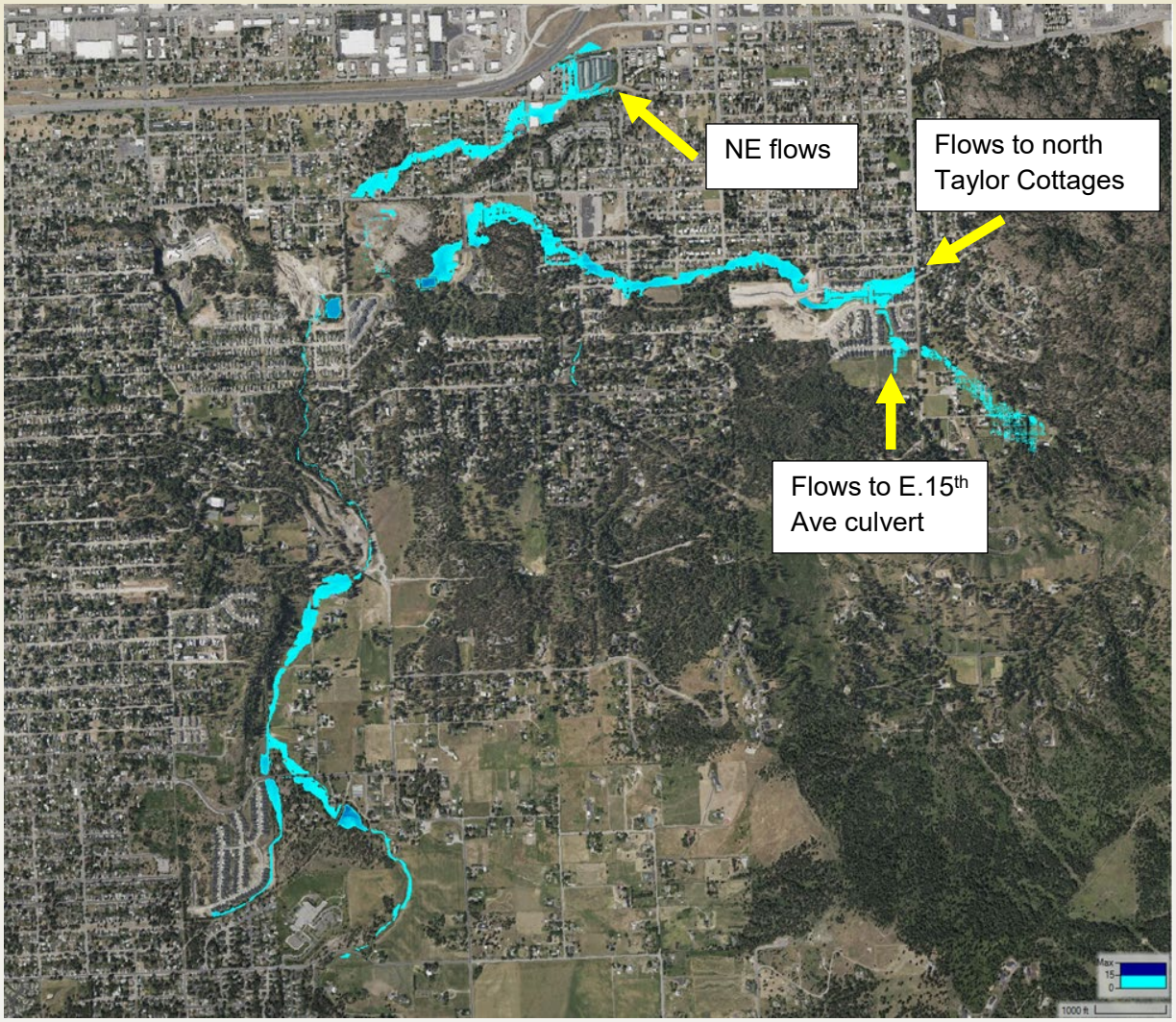
Key findings and mitigation options from the hydraulic analysis

- Work to eliminate or capture flows from high ground to NE
  - Dry wells
  - Detention/retention basins
- Work to capture flows into northern part of Taylor Cottages
  - Dry wells
  - Detention/retention basins
- Culvert under E. 15th Avenue
  - Terrain modification



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- Develop hydraulic models
- ➢ **Public outreach for hydraulic studies (this meeting)**
- Response to public outreach comments (about Sept. 2025)
- Prepare FIS submittal to FEMA (forms, reports, maps) (about Oct. 2025)
- FEMA review and responses (about Spring 2026)
- FEMA adopts new “effective” floodplain maps (about end 2026)

Questions About...

- This presentation of the hydraulic analysis?
- Updated floodplain limits?
- Impacts to your property?
- Anything else?

Hard copies of maps around the room show preliminary floodplain and parcels