RiskMAP
Increasing Resilience Together

Boise Watershed Flood Risk Review

January 14, 2015

FEMA

Meeting Objectives

Flood Risk Review

- Project Background
- Flood Study Methodologies
- Review of Data / Changes
- Discuss Next Steps
- Obtain Feedback

Why Are We Here?

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Ready
Prepare. Plan. Stay Informed.

DisasterAssistance.gov
ACCESS TO DISASTER HELP AND RESOURCES

FEMA

NATIONAL FLOOD INSURANCE PROGRAM
FloodSmart.gov
The official site of the NFIP

Project Team

- FEMA Region X
- Idaho Bureau of Homeland Security and Department of Water Resources
- STARR
- USACE, Walla Walla District
- University of Idaho
- Local Jurisdictions

USACE SCOPE OF WORK

- **Surveys** - New bathymetry and structure
- **Hydrology**
  - Developed flood frequencies for Willow Creek, Mill Slough, Ninemile Creek and regulated and unregulated flood frequencies for the Lower Boise
- **Hydraulics**
  - Detailed analysis of 74 miles on two reaches of the Boise river and three tributaries
- **Work Maps**
- **Changes Since Last FIRM Maps**
- **Shaded Depth Mapping**
- **Extreme Flow Split on Eagle Island (pending)**

Field Survey Collection

- Collected by Rogers Surveying, Inc. in the fall of 2012, under contract with USACE.
- Structure Survey on the Boise River, Ninemile Creek, Willow Creek and Mill Slough
- Channel cross sections survey on Ninemile Creek, Willow Creek and Mill Slough
- Cross Section Spacing less than 1,500 ft average

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Hydrologic Methods

Watercourse	Methods Investigated	Selected Method
Willow Creek Mill Slough Ninemile Creek	1. Gage Translation 2. Regression ➢ USGS Open File Report 93-419 ➢ USGS Water Resources Investigations Report 02-4170 ➢ USACE Site Specific Regional Regression Analysis	Willow Creek USACE Site Specific Mill Slough Results supported retaining effective FIS frequency data Ninemile Creek USGS OFR 93-419
Lower Boise River		Regulated Boise River Analysis Generalized frequency curve with Regulated historic and synthetic events Unregulated Boise River Analysis Bulletin 17B with unregulated inflows

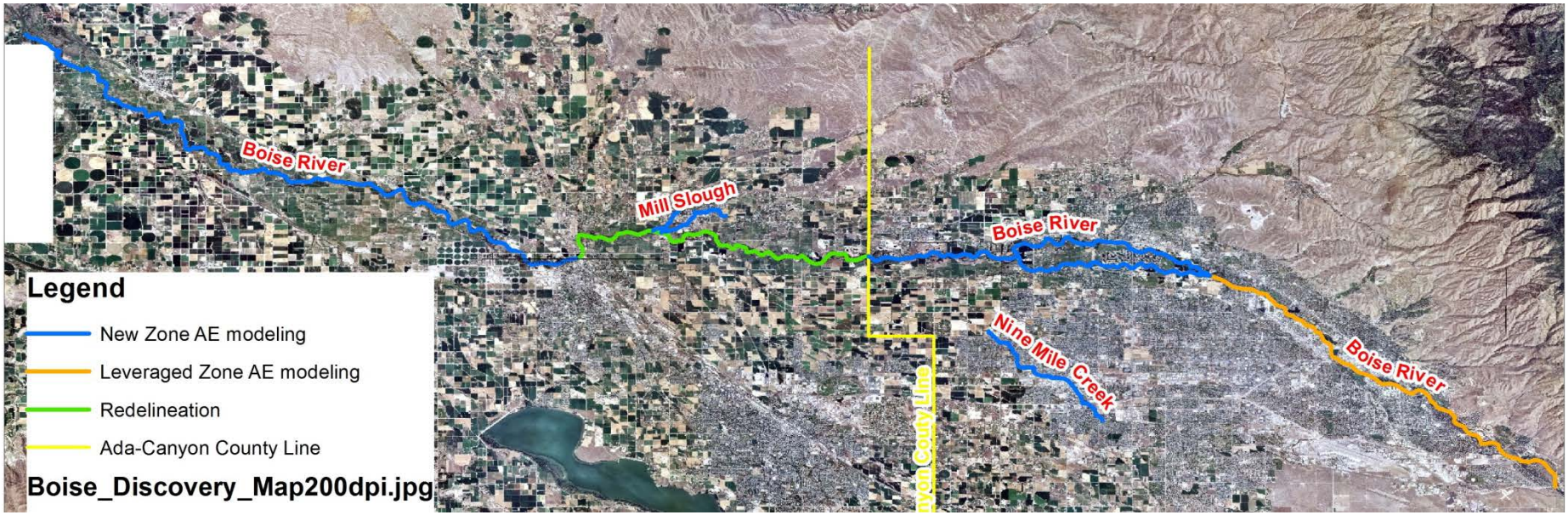
Hydrology Results

Flooding Source and Location	Drainage Area (square miles)	Peak Discharges (cubic feet per second)				
		10-Percent-Annual-Chance	4-Percent-Annual-Chance	2-Percent-Annual-Chance	1-Percent-Annual-Chance	0.2-Percent-Annual-Chance
Boise River						
Downstream Lucky Peak Dam	2,650	7,500	7,900	11,000	16,600	34,800
Ninemile Creek						
At confluence with Fivemile Creek	3.3	95	135	170	209	319
Downstream Ten Mile Road	3	89	126	158	194	295
Downstream Linder Road	1.9	63	88	111	136	209
Downstream Central Drive	0.9	38	53	66	80	119
Downstream Locust Grove Road	0.5	22	31	38	46	66
Willow Creek						
Downstream Highway 44	84.6	1,221	1,815	2,349	2,963	4,747
Mill Slough						
Downstream Boise Street	10.7	339	479	598	804	1,174

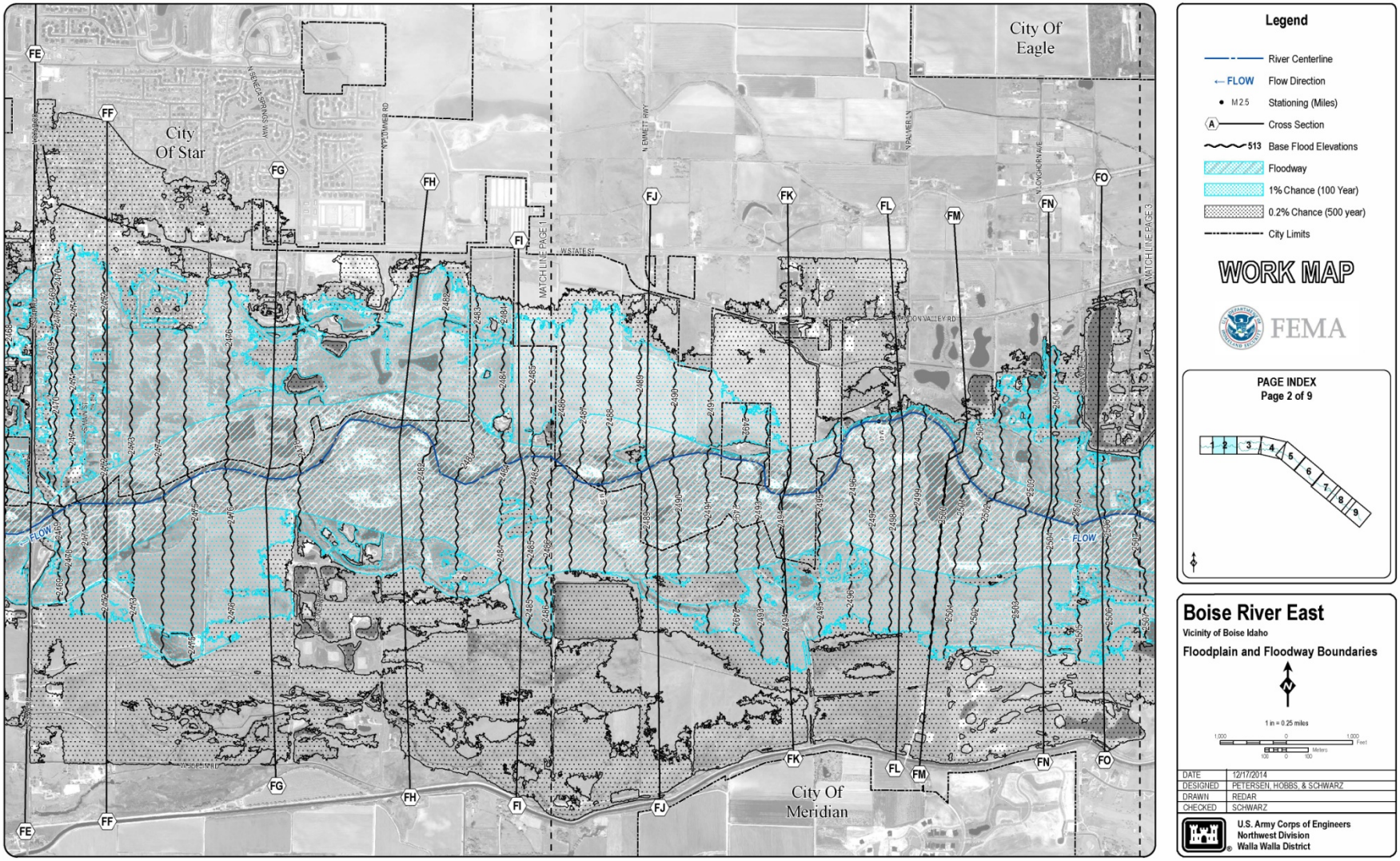
Hydraulic Methods

Method	Description
Approximate (Zone A)	• Steady State HEC-RAS model • Based on LiDAR Topography • Structures are not modeled
Detailed (Zone AE)	• Steady State HEC-RAS model • Roughness is examined closely • Based on LiDAR Topography • Channel is field surveyed or taken from Green LiDAR • Structures are modeled

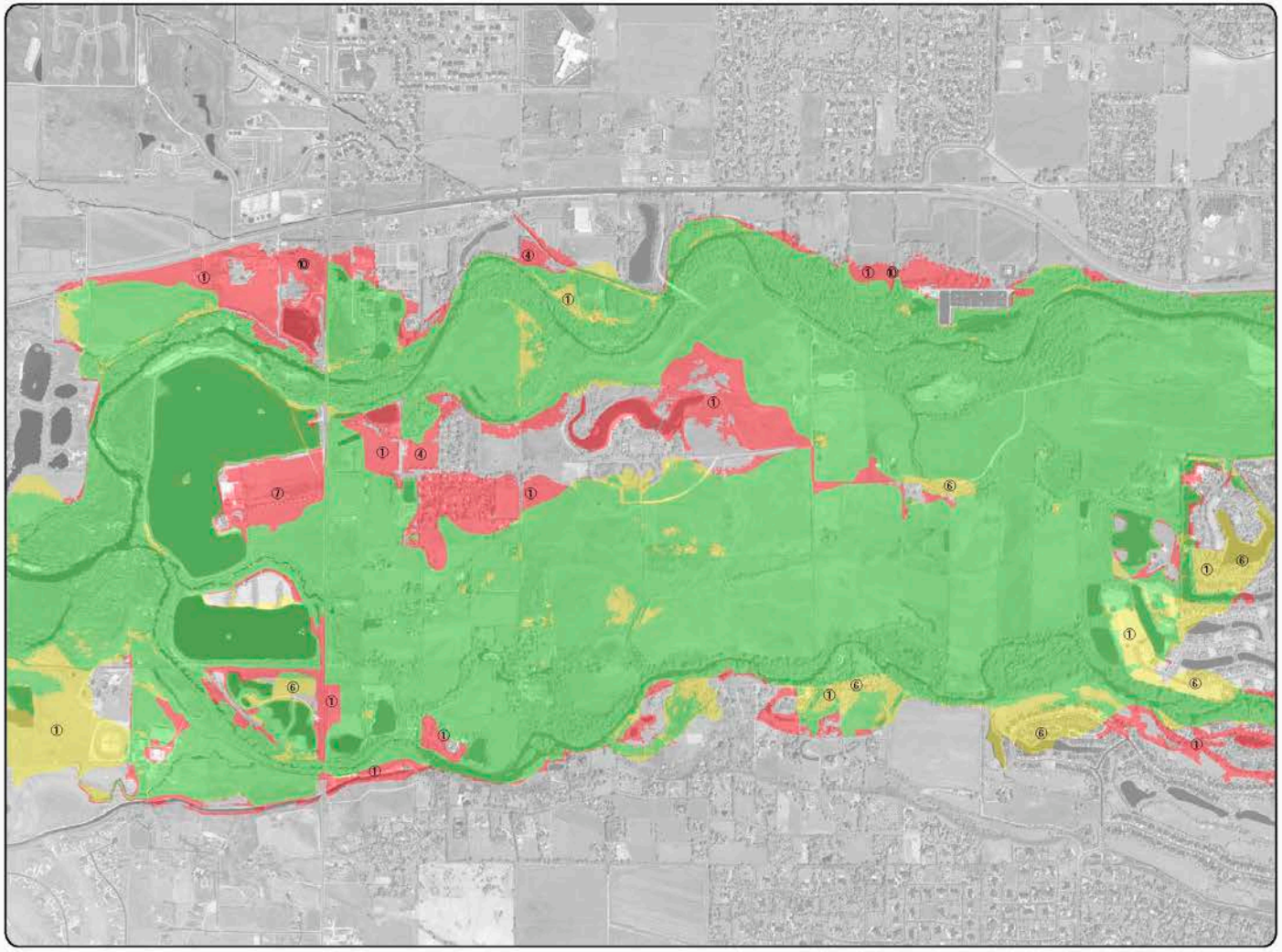
Hydraulic Scope



Floodplain Workmap



Changes Since Last FIRM



Legend

No Change

Effective FIRM 100 year areas to be removed

100 year areas to be added to FIRM

① New channel bathymetry and topo data resulted in better defined inundation areas

④ Raised WSEL due to higher precision feaures in hydraulic model

⑥ Fill material reduced floodplain area

⑦ New model XS extends entire floodplain

⑩ Average depth less than 1 foot

WORK MAP

FEMA

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Boise River East

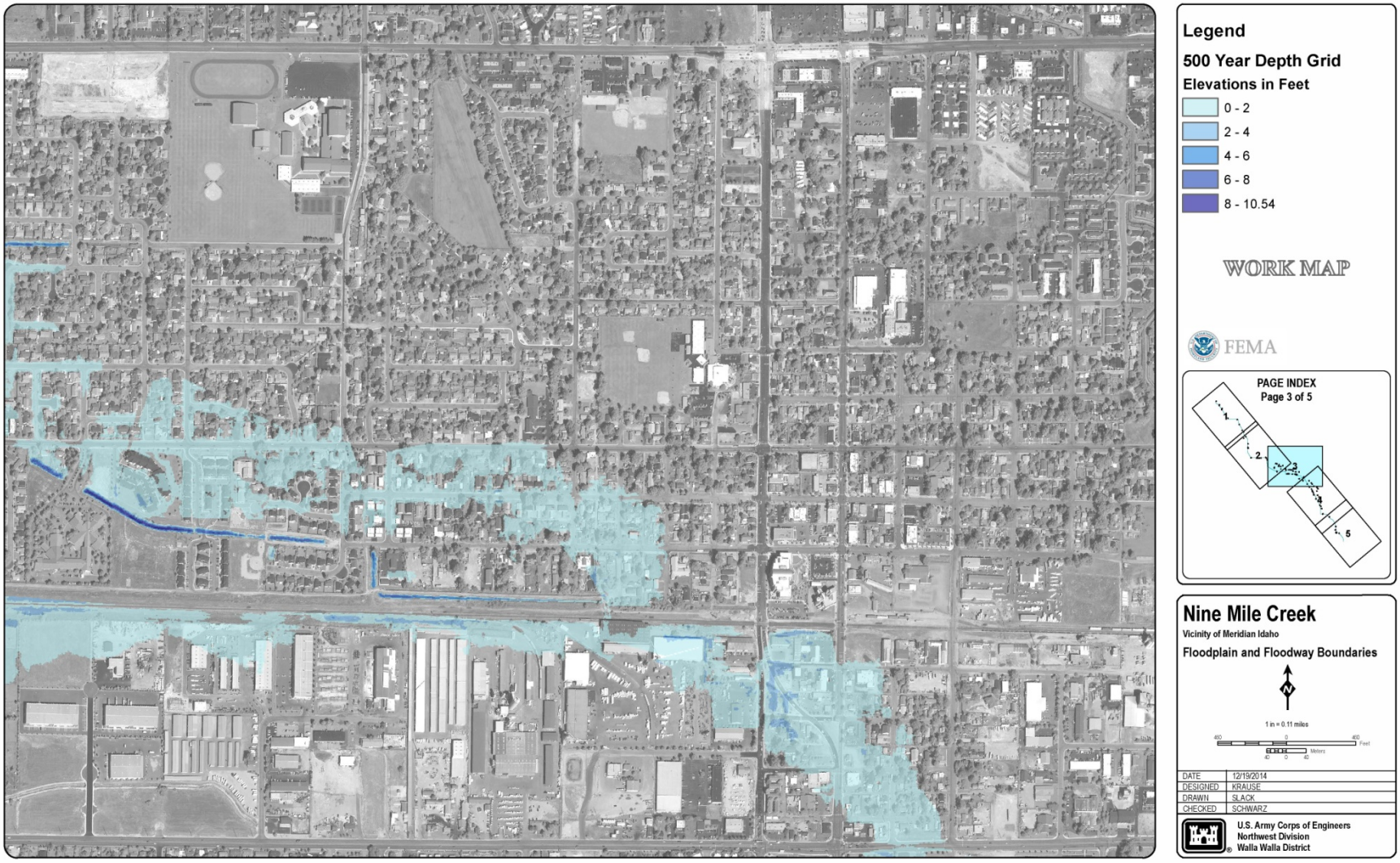
Vicinity of Boise, Idaho

Changes in Floodplain since last FIRM

DATE	12/17/2014
DESIGNED	PETERSEN, HOBBS, SCHWARZ
DRAWN	SCHNICK
CHECKED	SCHWARZ

U.S. Army Corps of Engineers
Northwest Division
Walla Walla District

Depth Grids


Legend
500 Year Depth Grid
Elevations in Feet
0 - 2
2 - 4
4 - 6
6 - 8
8 - 10.54
WORK MAP
FEMA
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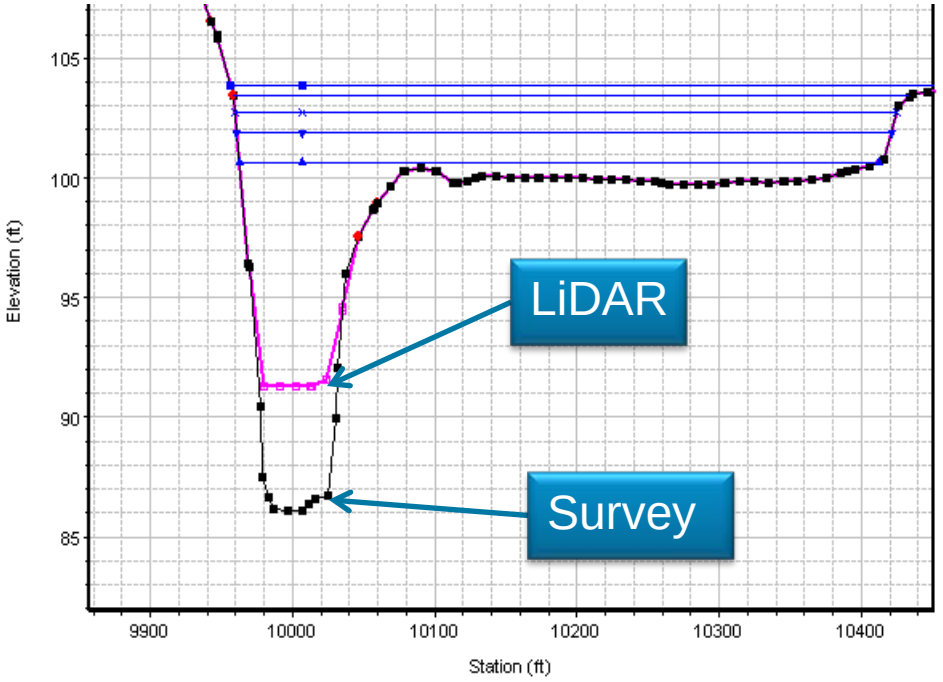
Nine Mile Creek
Vicinity of Meridian Idaho
Floodplain and Floodway Boundaries
N
1 in = 0.11 miles
400 0 400 Feet
40 0 40 Meters
DATE 12/19/2014
DESIGNED KRAUSE
DRAWN SLACK
CHECKED SCHWARZ
U.S. Army Corps of Engineers
Northwest Division
Walla Walla District

Special Cases – Boise River

Green LiDAR water penetration

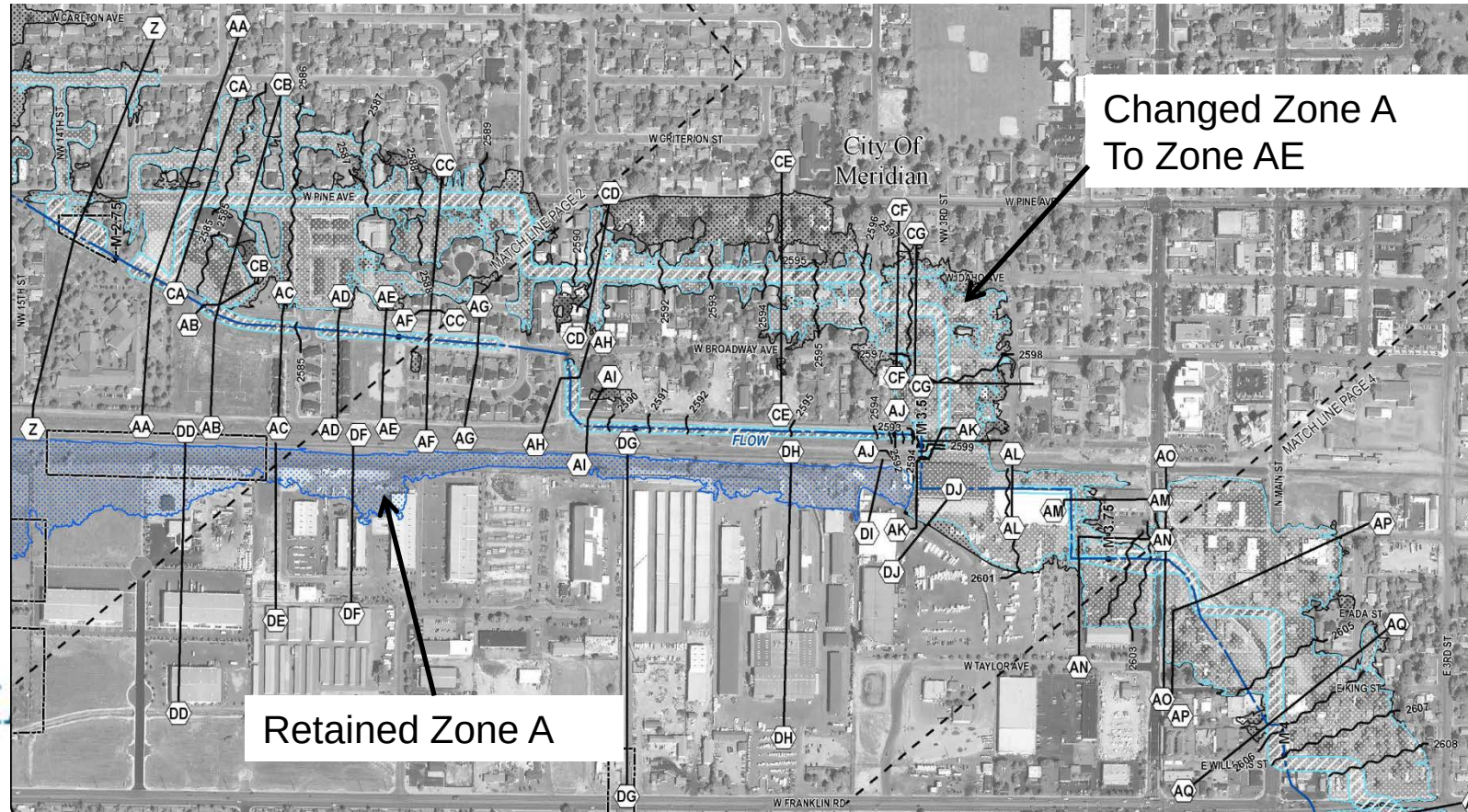
- The Boise River modeling utilized Green LiDAR (water penetrating) rather than new bathymetric surveys
- Green LiDAR failed to penetrate the water in the locations of some cross sections.
- In those areas bathymetry from the effective model was utilized, or interpolated from near by areas where good water penetration could be obtained.



Special Cases - Ninemile

Meridian Split Flow to Eightmile lateral.

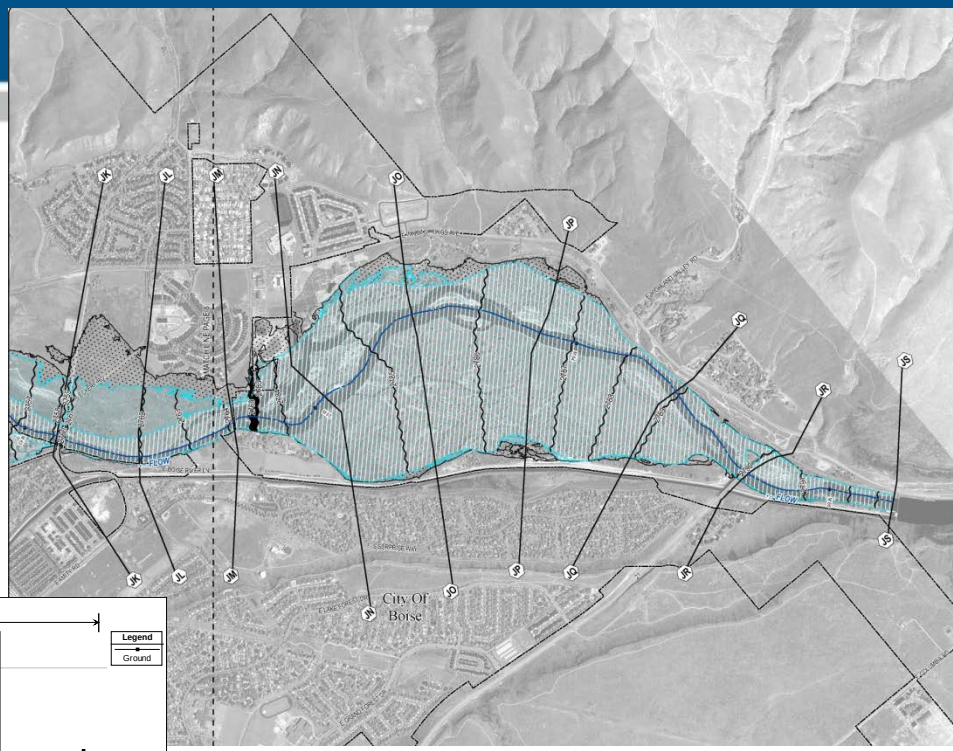
Used Zone A for split flow reach due to lack of structure survey

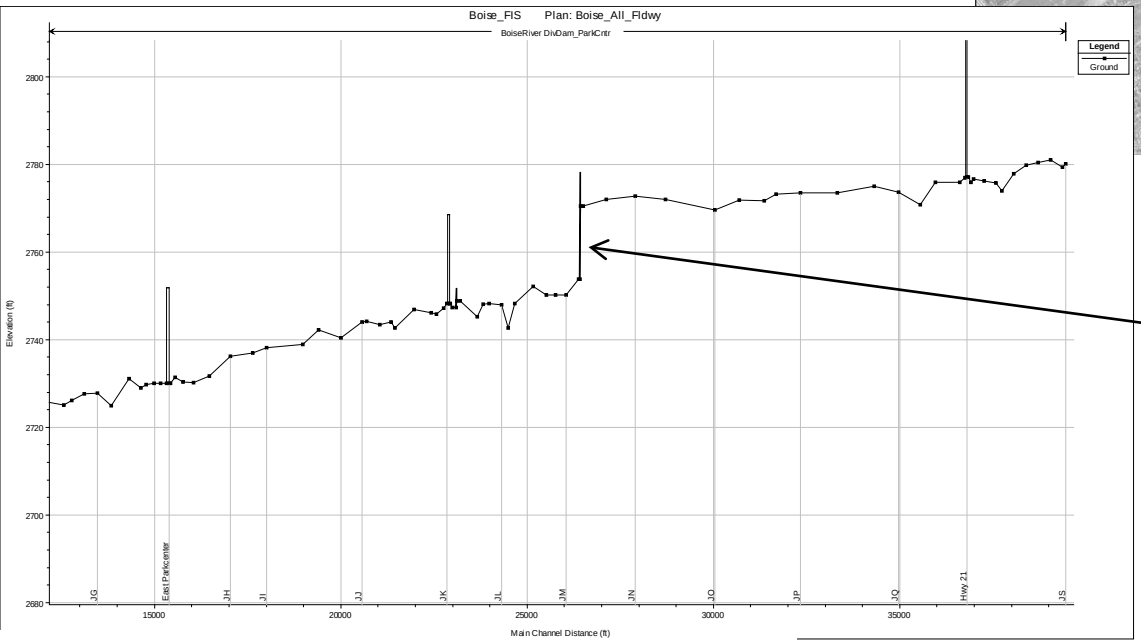


Special Cases – Ada County

Barber pool Floodway

- Former reservoir bottom is braided and the bed could become unstable if the old dam were completely removed
- The Floodway extents were set on the 1-percent floodplain to account for the area all being active channel





Remaining Barber Dam Structure

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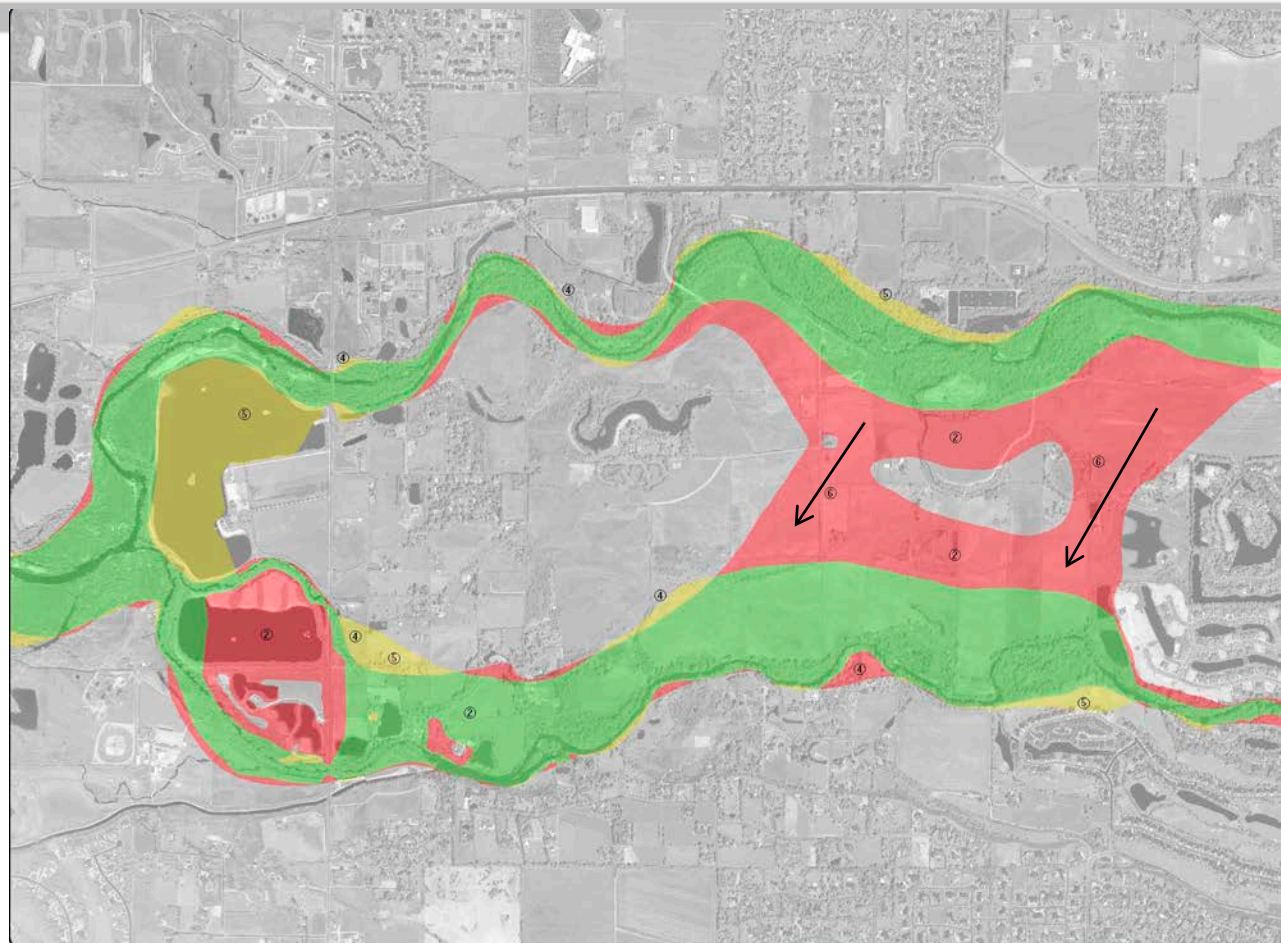
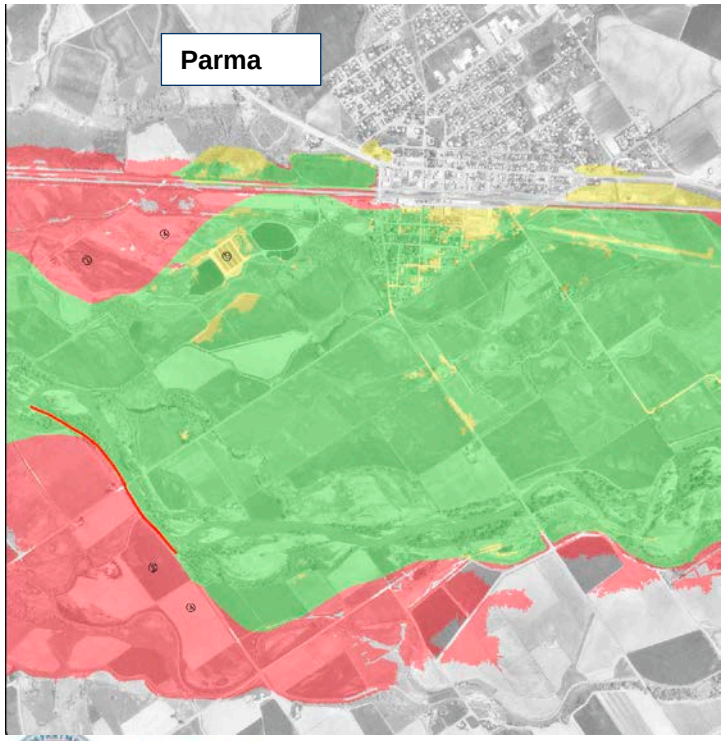
Special Cases – Ada County

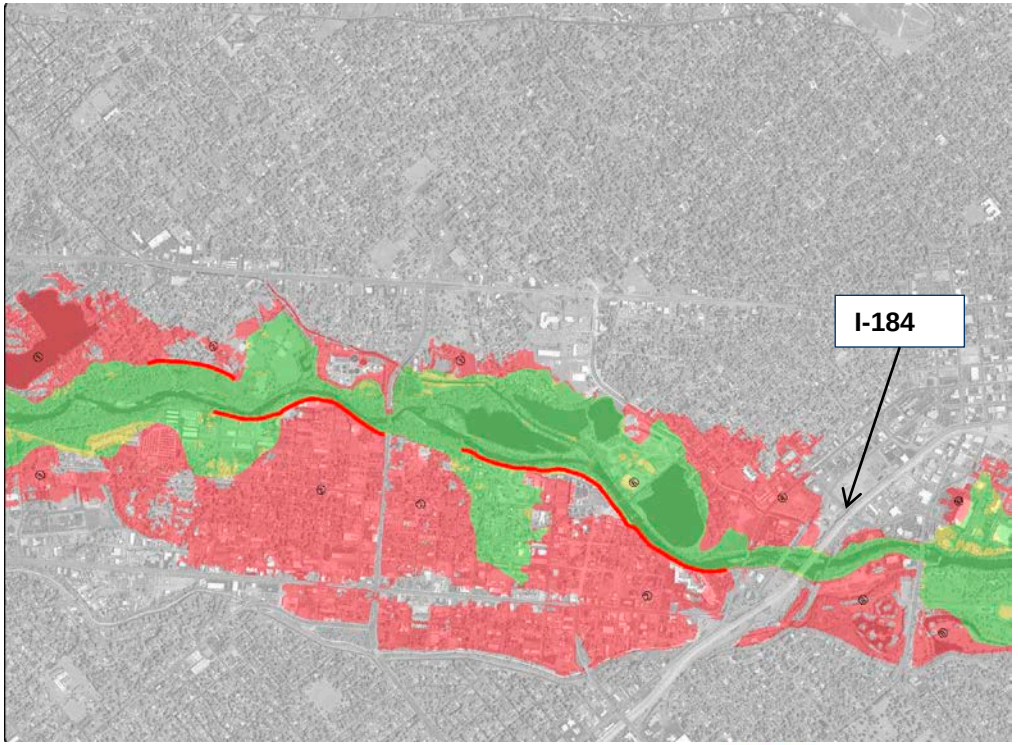
Eagle Island Floodway

- New cross island floodway added to preserve flow path for 1-percent flow exchange
- Was not accounted for in effective mapping
- Floodway cannot be maintained to <1.0 foot rise without this floodway flow exchange area



Boise River Levees





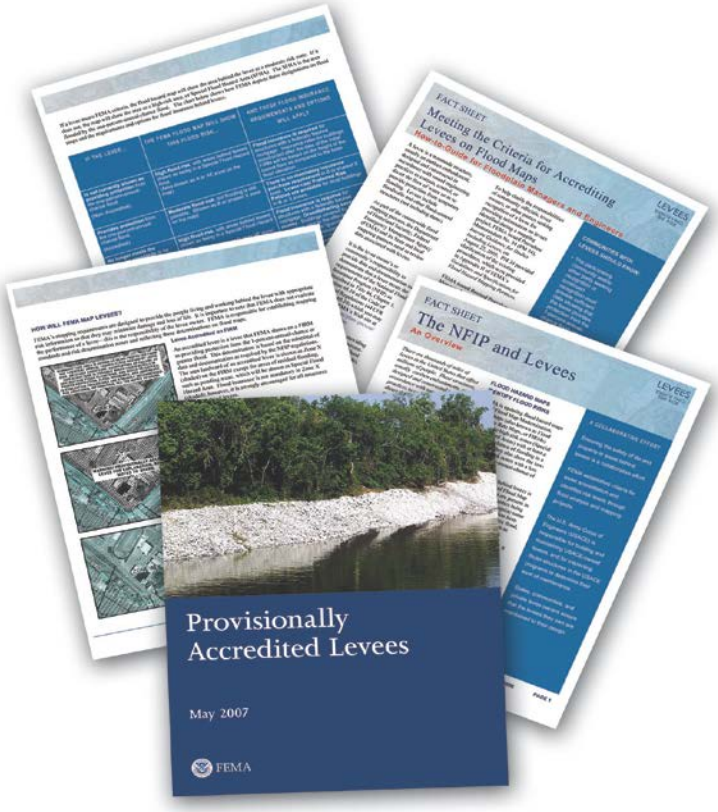
FEMA's Role - Levees

Map levee-related flood risk and "accredits" levees for mapping purposes only.

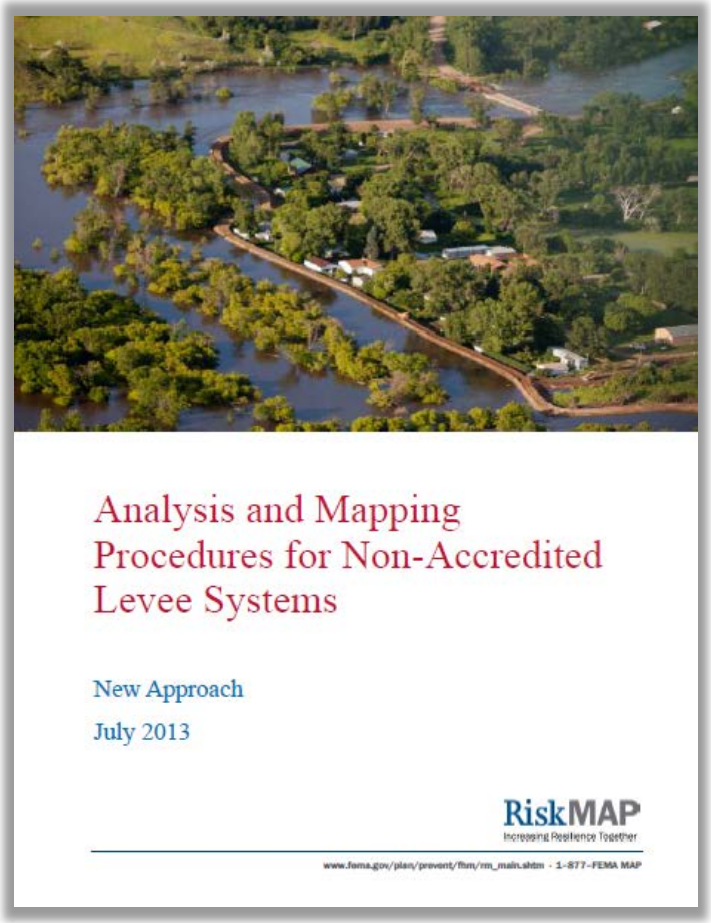
Accredit levees based on the *certification documentation provided by the community or another interested party.*

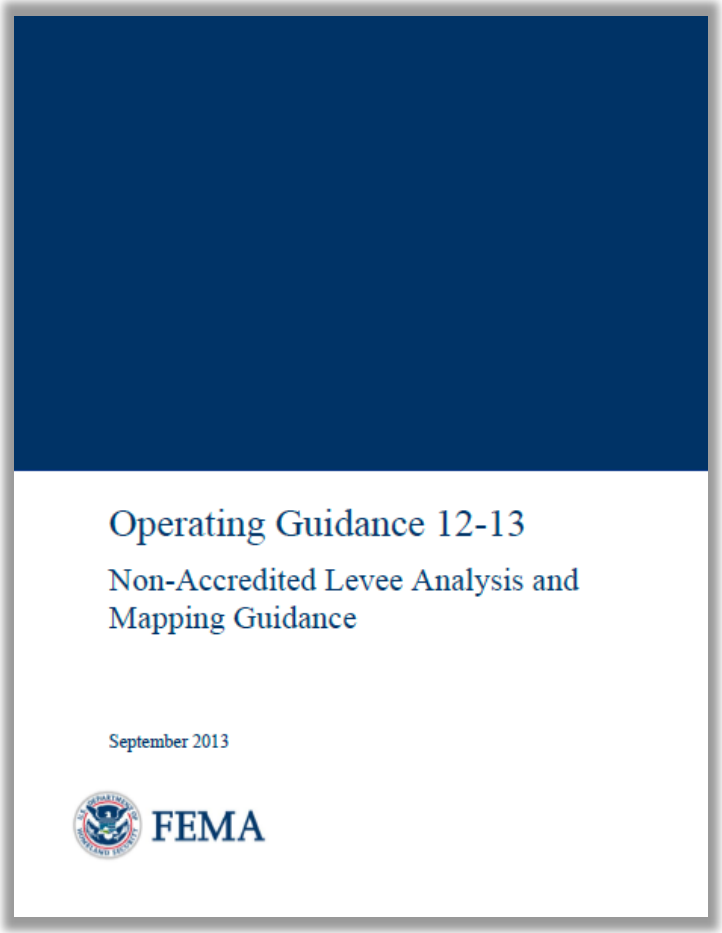
FEMA does not own, operate, maintain, inspect, or certify levees or flood control systems.

Produce and/or distribute outreach and communication materials.



Analysis and Mapping of Non-Accredited Levees





FEMA Levee Status: Accredited vs. Non-Accredited

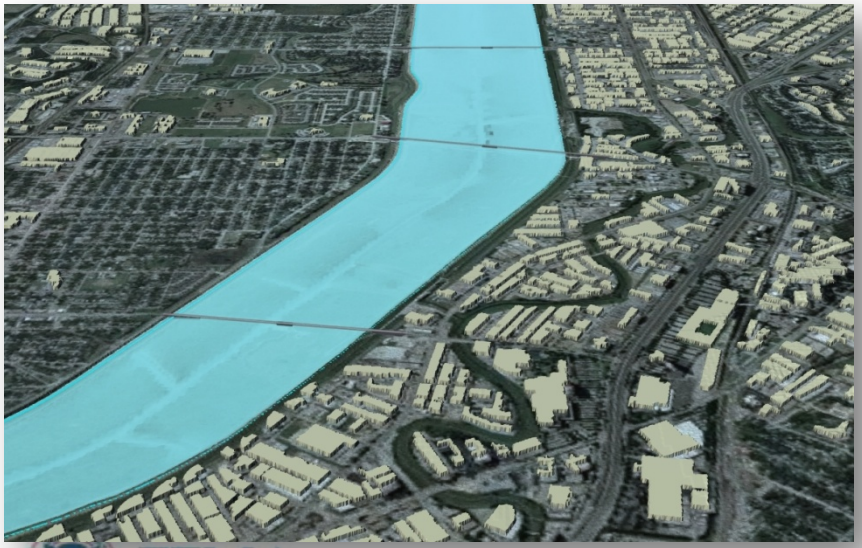
- Accreditation – FEMA's process to review and accept certification data and documentation and to update the Flood Insurance Study
- To be accredited by FEMA, a levee must meet ALL Section 65.10 requirements, including
  - General Requirements—65.10(a)
  - Design Criteria—65.10(b)
  - Operation Plans and Criteria—65.10(c)
  - Maintenance Plans and Criteria—65.10(d)
  - Certification Requirements—65.10(e)
- Non-accredited levee – any levee that does not meet certification requirements or the definition of a levee.

Non-Levee Embankment

- **any manmade topographic feature that does not meet the definition of a levee, e.g. highway embankment (FHWA Policy) or railroad grade**

Old Method - *Mapping Flood Hazards*

- **Complete certification of system** submitted to FEMA
- Mapped as contained within levee system boundaries



- **Certification** submittal *not received* or *incomplete*
- Traditionally mapped as if the levee did not provide a reduction in flood risk

Your role…

Do you agree with the work maps in areas affected by levees?

YES, then we need written request from local elected officials to proceed with the map update.

NO, or you cannot provide written request to proceed, FEMA will further assess eligibility under the new policy based on available data.

Eligibility requirements:

1. Responsive owner
2. Design intent
3. Operation and Maintenance Plans
4. Hydraulically significant

If eligible, then FEMA secludes the area affected by the levee for this map update and starts planning for a future update to apply the new procedures.

Seclusion

ATTENTION: The levee, dike, or other structure inside this boundary does not comply with Section 65.10 of the NFIP Regulations. As such, this FIRM panel will be revised at a later date to update the flood hazard information associated with this structure. The flood hazard data shown inside this boundary (which have been re-published from the May 5, 2004 FIRM for the City of Floodville), should continue to be used until this FIRM panel is revised to update the flood hazard information in this area.

FIRM note for seclusion area

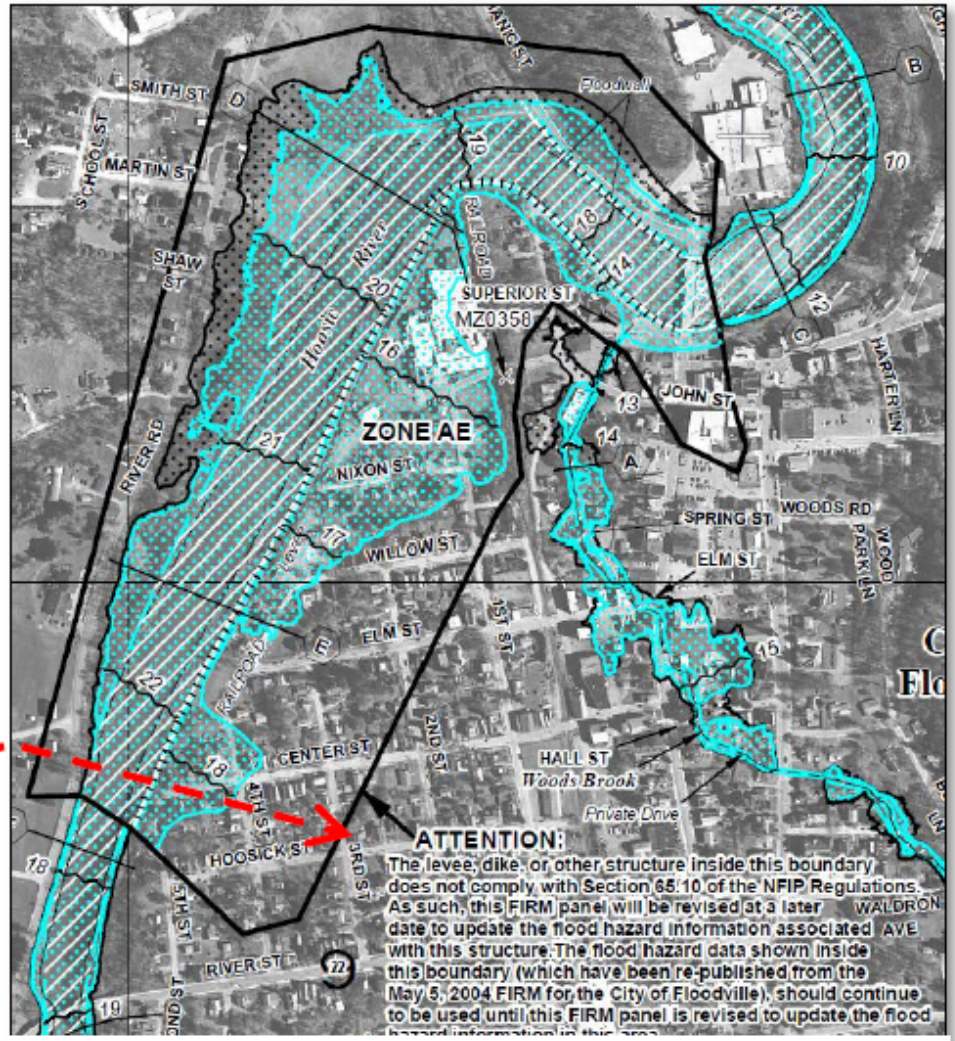


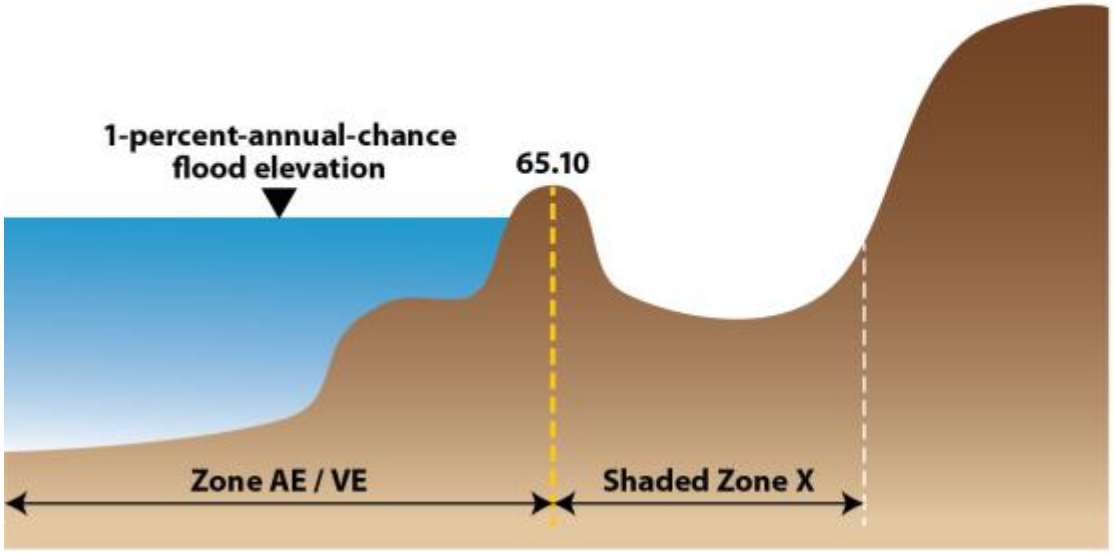
Figure 1 - Fencing off effective levee-based flood hazard data

What's New?

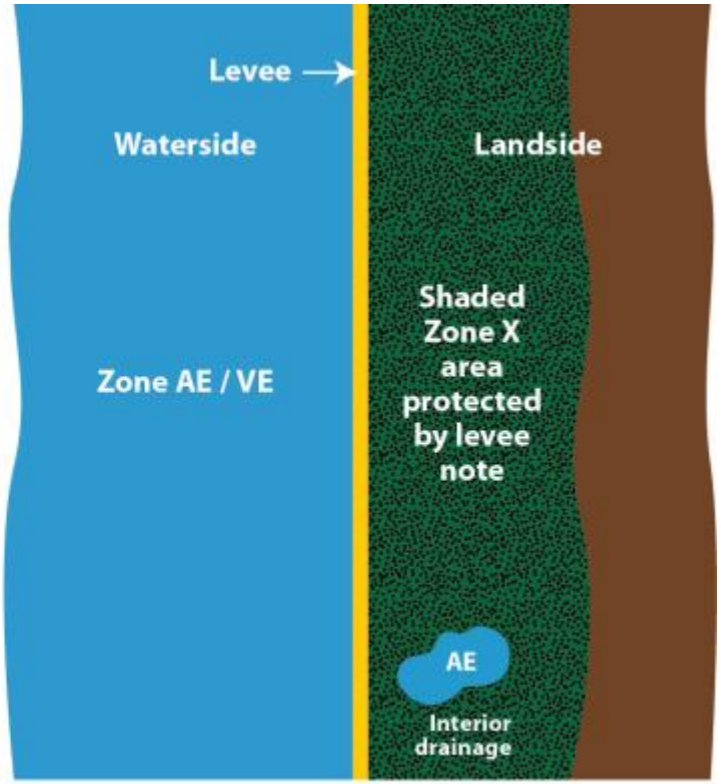
- Interactive stakeholder engagement throughout the analysis and mapping process:
  - FEMA will engage community officials and decision makers in a collaborative discussion
- A suite of analysis and mapping procedures of the hazard associated with levees will be reviewed with the interested parties
  - Intention is to recognize of the uncertainty associated with hazard identification behind levees.
  - New Development – Allows communities to split a levee system into distinct reaches that are analyzed based on the attributes of the specific reach.

Accredited System

- Criteria: Entire Levee System or Flood Control Structure meets (or exceeds) 44 CFR 65.10 Criteria
- Mapping Approach: Mapping as Fully Accredited; Natural Valley Floodplain Analysis to Map Shaded Zone X and Levee Protection Note

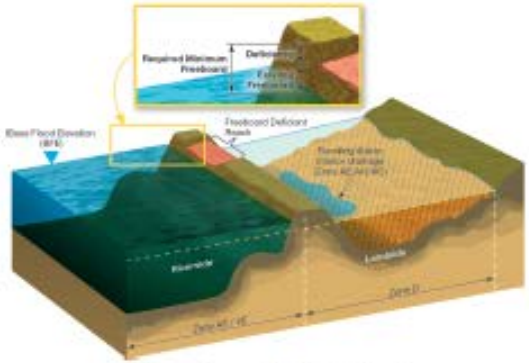


CROSS SECTION VIEW

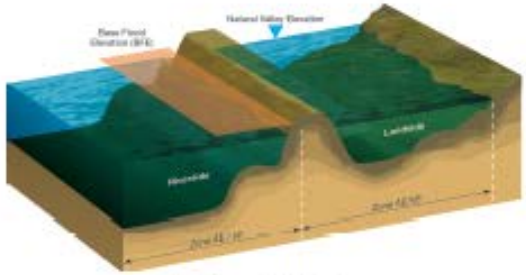


PLAN VIEW

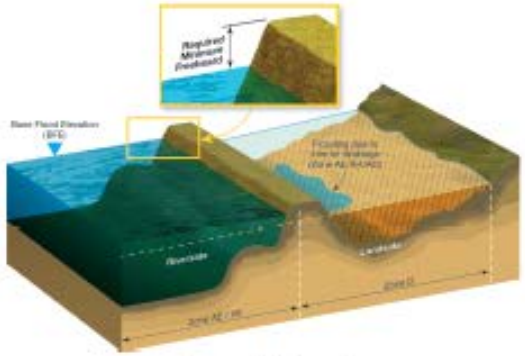
Non-Accredited Levee Flood Hazards



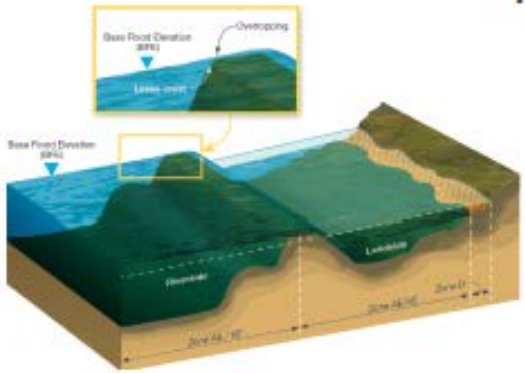
Freeboard Deficient Procedure



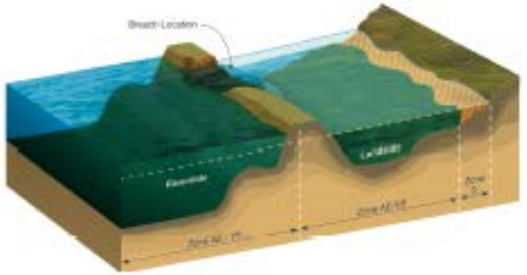
Natural Valley Procedure



Sound Reach Procedure



Overtopping Procedure



Structural-Based Inundation Procedure

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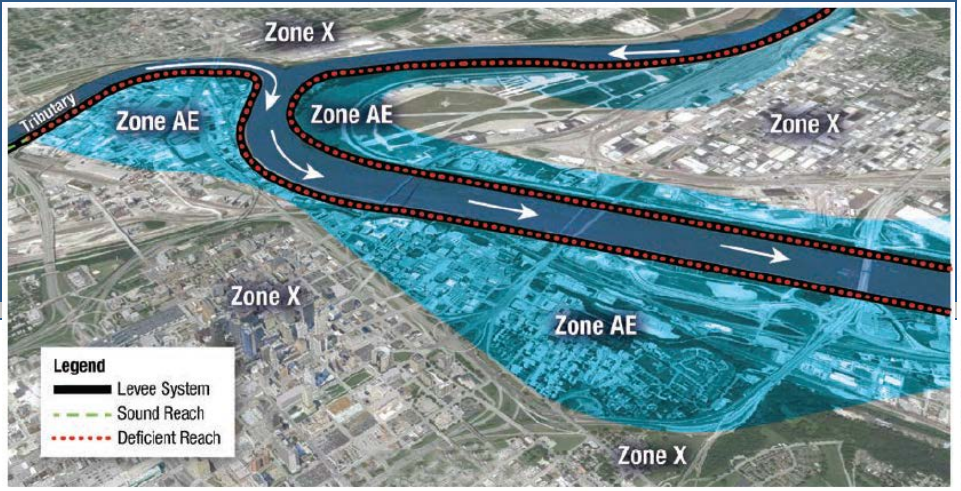


Figure 2: Example of an area mapped using the *Natural Valley* procedure

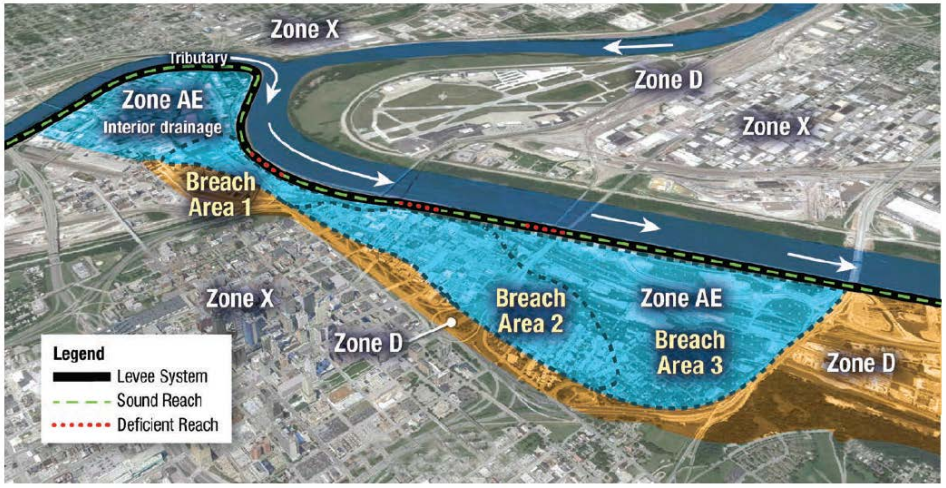


Figure 2: Example of mapped flood zones behind structural breach areas

FEMA

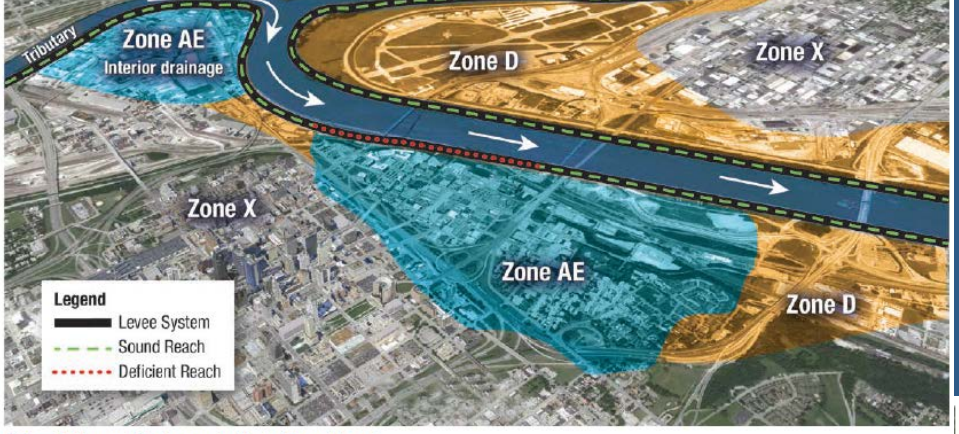


Figure 2: Mapped flood zones behind a Sound Reach

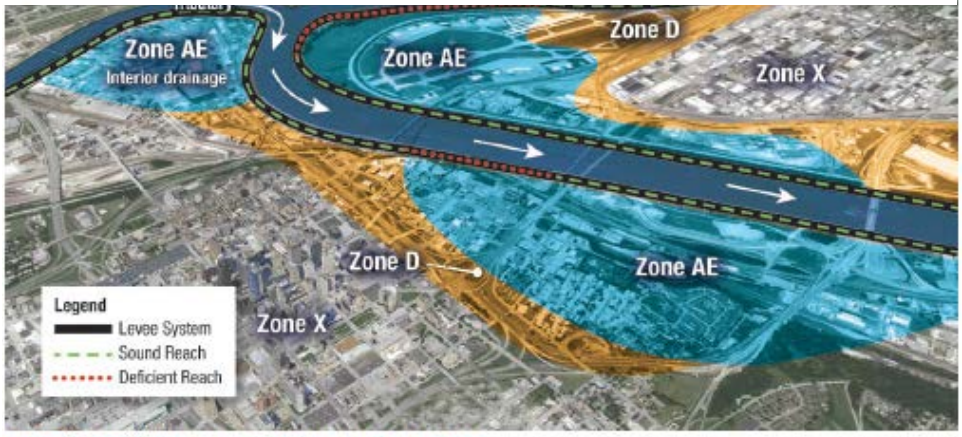


Figure 2: A levee reach mapped using the ***Overtopping*** procedure

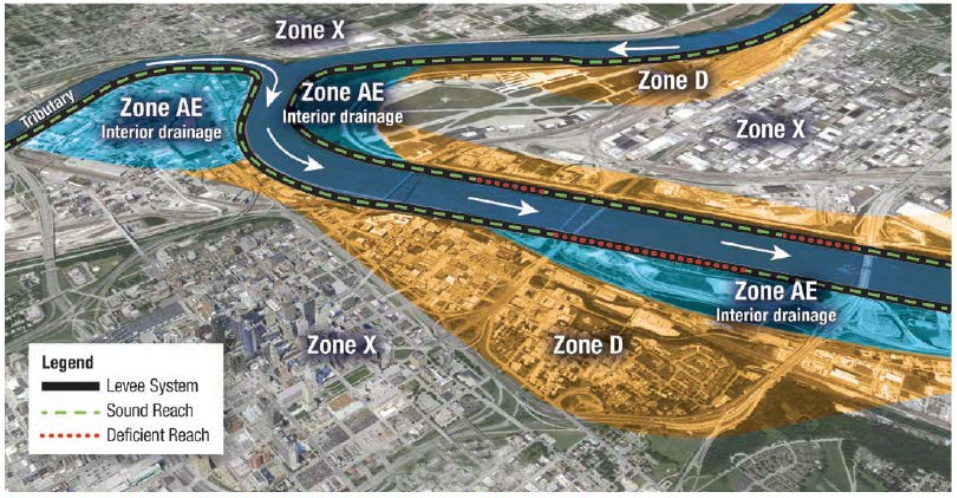


Figure 2: Example of new Zone D flood hazard areas behind a freeboard deficient reach

Feedback Needed

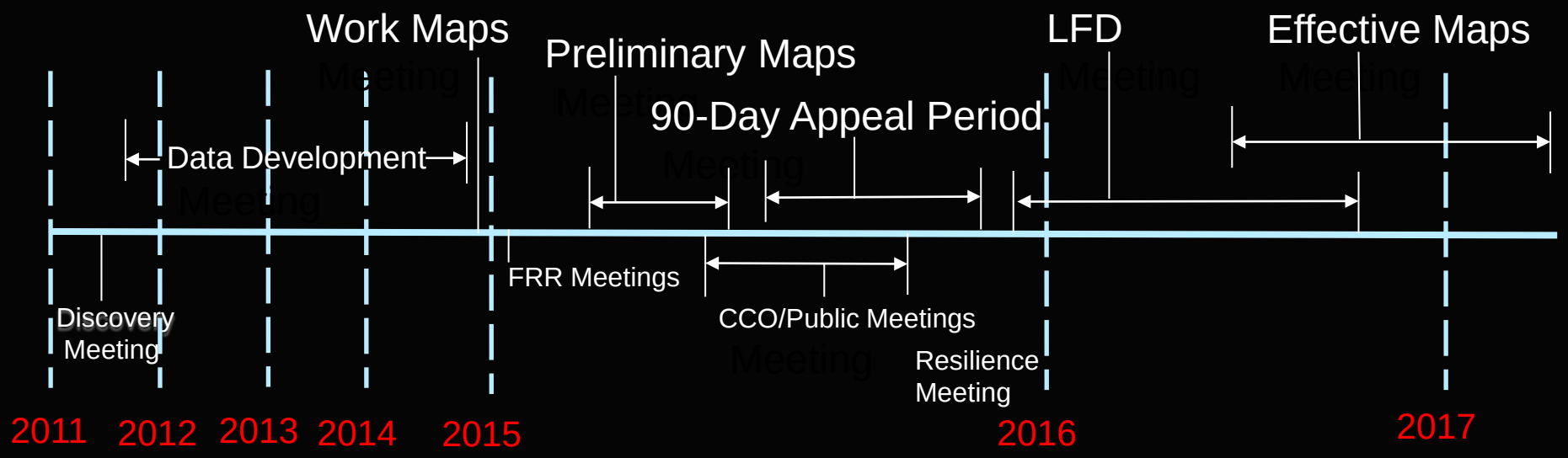
Within 30 days, notify us on the following:

- 1. Are you in agreement with the work maps in the leveed areas?
- 1a. If yes, will you provide written request to proceed with the map update?
- 1b. If no, provide feedback/info on the levees (ownership, design reports, operation and maintenance plans and reports, hydraulic significance).
- 2. Do you need more information on the new policy or more time to coordinate internally. How much

Next Milestones*

*Subject to coordination and funding

- Flood Risk Review Meeting for Community Staff ……January 14th/15th, 2015
- Issue preliminary maps ……Spring/Summer, 2015
- Coordination and Public Meetings……approximately 1-2 months after issuance of preliminaries [Summer/Fall 2015]
- 90-Day Appeal Period……starts shortly after the public meeting
- FEMA issues Letter of Final Determination (LFD) ……3-6 months following the end of the appeal period depending on comments and appeals received [between late 2015 and Fall 2016]
- Effective date ……6 months after LFD [between Mid 2016 and Spring 2017]



Next Steps …Your roles

- Review Draft Flood Hazard Products
  - Provide comments within 30 days
  - Attend upcoming meetings
- Attend the CCO Meeting and Coordinate a Public Meeting as desired
  - Provide comments
  - Proactive outreach
- Be aware of the appeal period
  - Appeals must go through the community
- Attend the Resilience Meeting
- Ordinance Adoption

Review Comments

Review of Draft Flood Hazard Products

- Submit comments by February 17, 2015
- Send to:

  Tracy Schwarz

  Tracy.Schwarz@usace.army.mil

  509-527-7522

Letters of Map Change (LOMC) (ways to appeal at any time)

- LOMA - for property owners who believe a property was incorrectly included in a SFHA. An elevation certificate supports a LOMA, but by itself, does not remove the insurance requirement.
- LOMR – removes land that has been graded or filled (physical changes) since the date of the map. A LOMR can waive flood insurance requirements.

- (LOMA) Hotline - 1-877-FEMA-MAP

Contacts

FEMA:		
Regional Engineer:	David Ratté	(425) 487-4657
Risk Analyst/GIS Specialist:	Amanda Siok	(425) 487-4626
Mitigation Planner:	Brett Holt	(425) 487-4553
USACE:		
Floodplain Management:	Tracy Schwarz	(509) 527-7522
STARR:		
Project Manager:	Ferrin Affleck	(702) 551-0289
State of Idaho:		
Floodplain Coordinator:	Keri Sigman	(208) 287-4928
RiskMap Coordinator:	Ryan McDaniel	(208) 258-6593
Region X Service Center:	http://www.starr-team.com/	
Flood Insurance Information:	www.floodsmart.gov	

Questions, Answers, and Discussion

Hydrology Results
Optional Slide for Discussion