Updates on FEMA Region V Levee Process
IAFSM 2019 Annual Conference

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FEMA

RiskMAP
Increasing Resilience Together

Outline

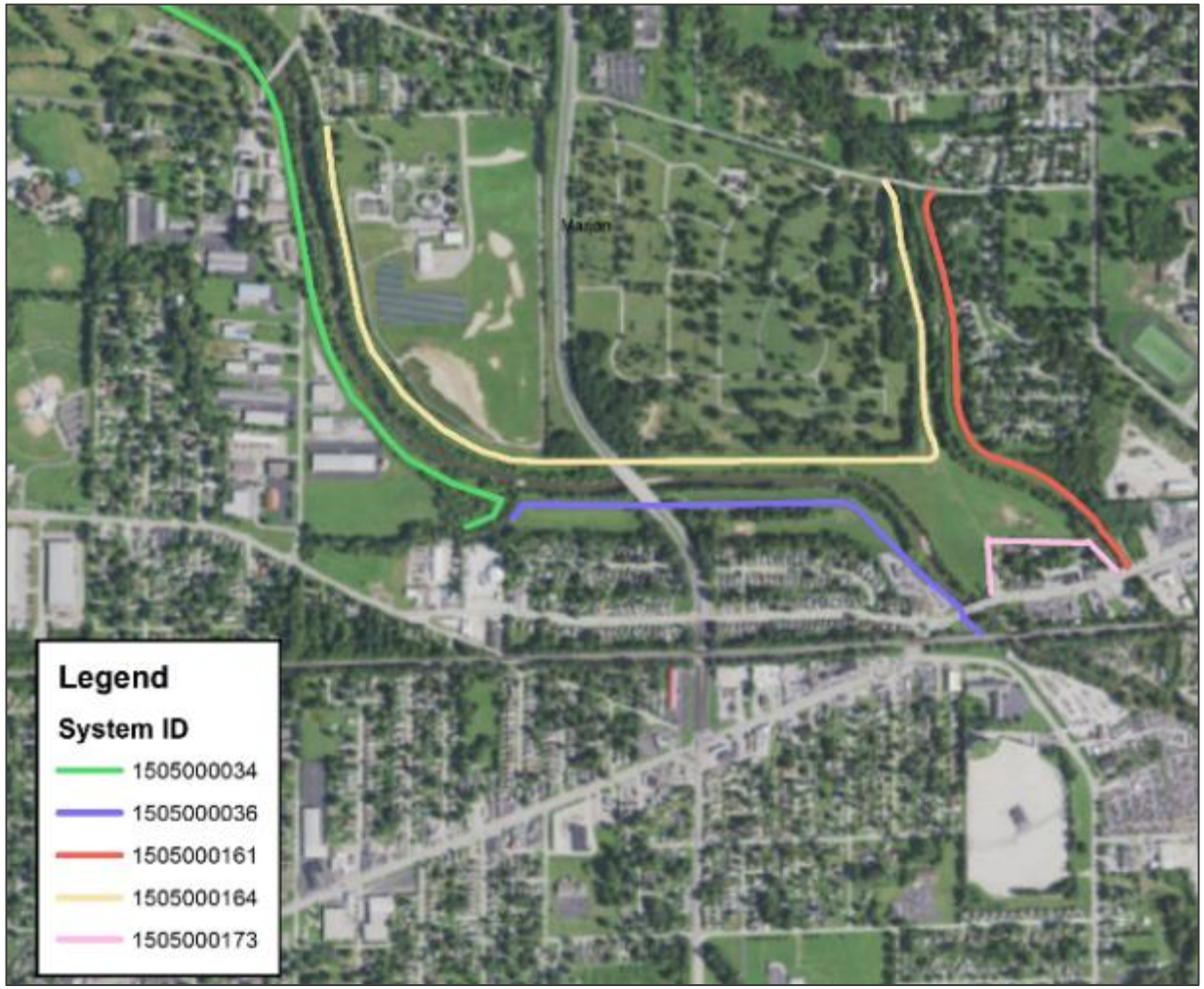
- FEMA Levee Overview
- Roles and Responsibilities
- FEMA Levee Processes
- Levee Guidance Updates

What is defined as a Levee?

44 CFR 59.1

- *Levee* – a man-made structure, usually an earthen embankment, designed and constructed in accordance with sound engineering practices to contain, control, or divert the flow of water so as to provide protection from temporary flooding.
- *Levee System* – a flood protection system which consists of a levee, or levees, and associated structures, such as closure and drainage devices, which are constructed and operated in accordance with sound engineering practices.

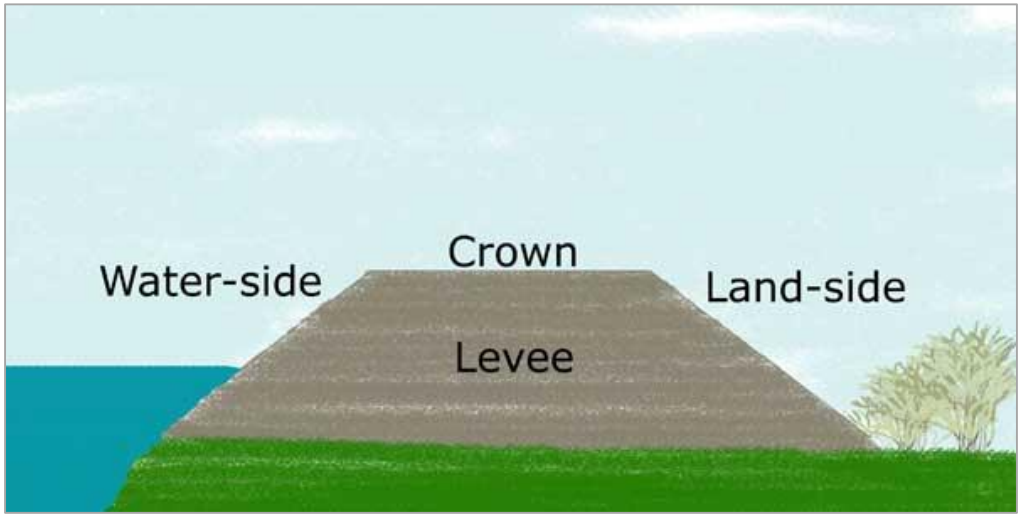
Levee System



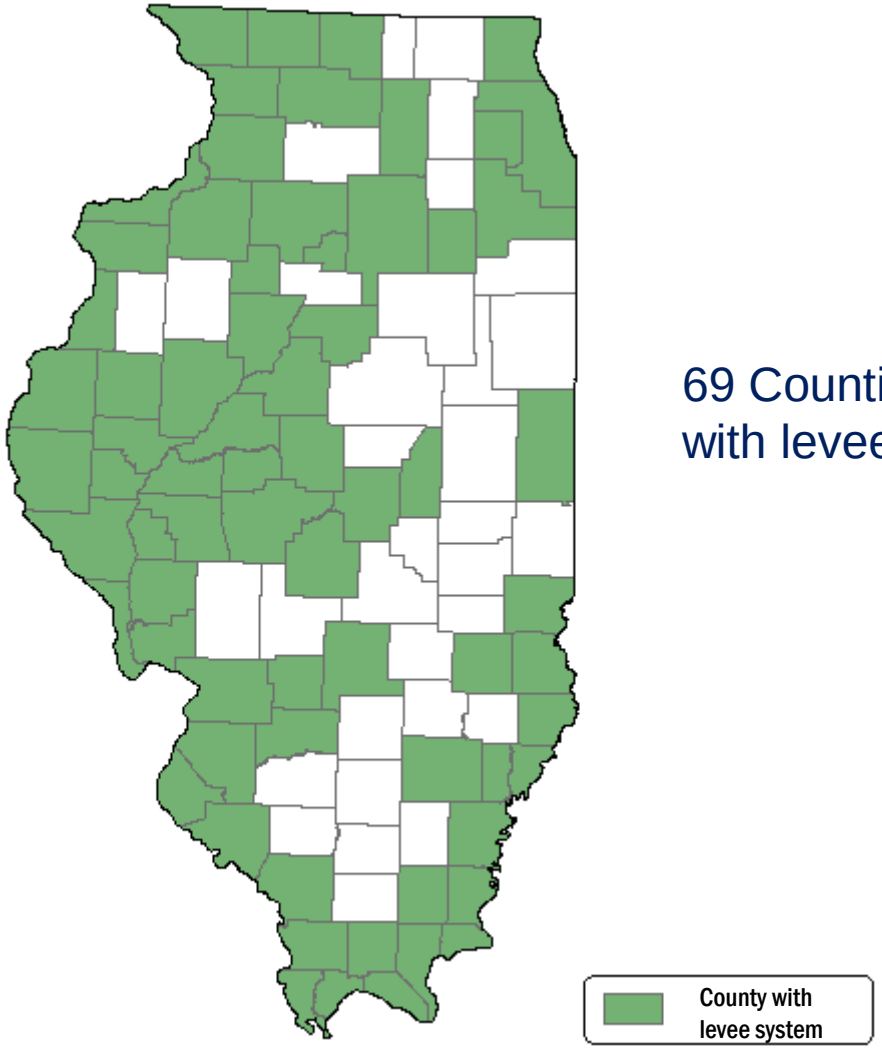
Levee Characteristics

A levee must be:

- Design and engineered as a levee
- Has an identified owner
- Operated, maintained and inspected as levee



Illinois Counties with Levees



69 Counties in Illinois with levee systems

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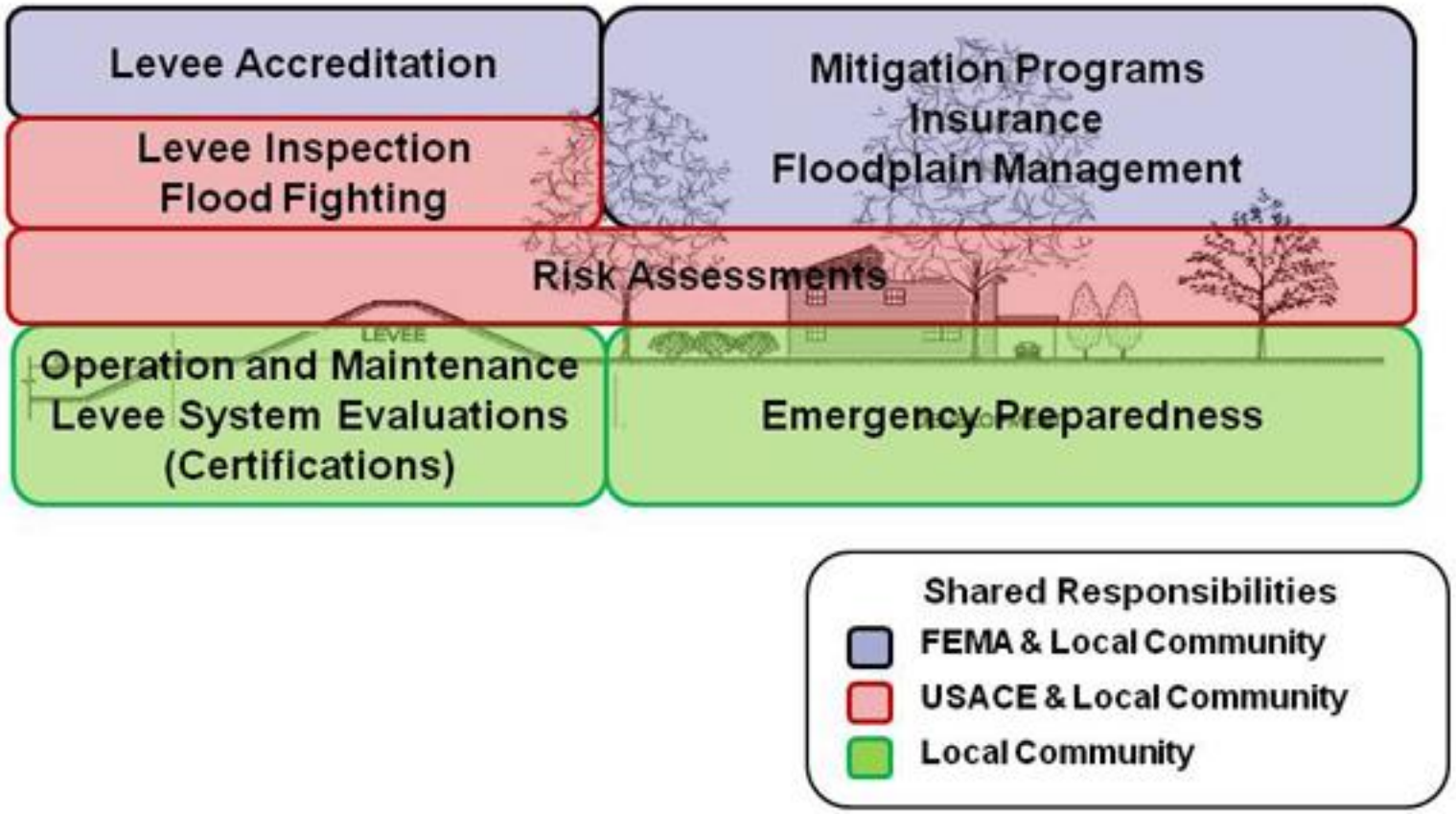
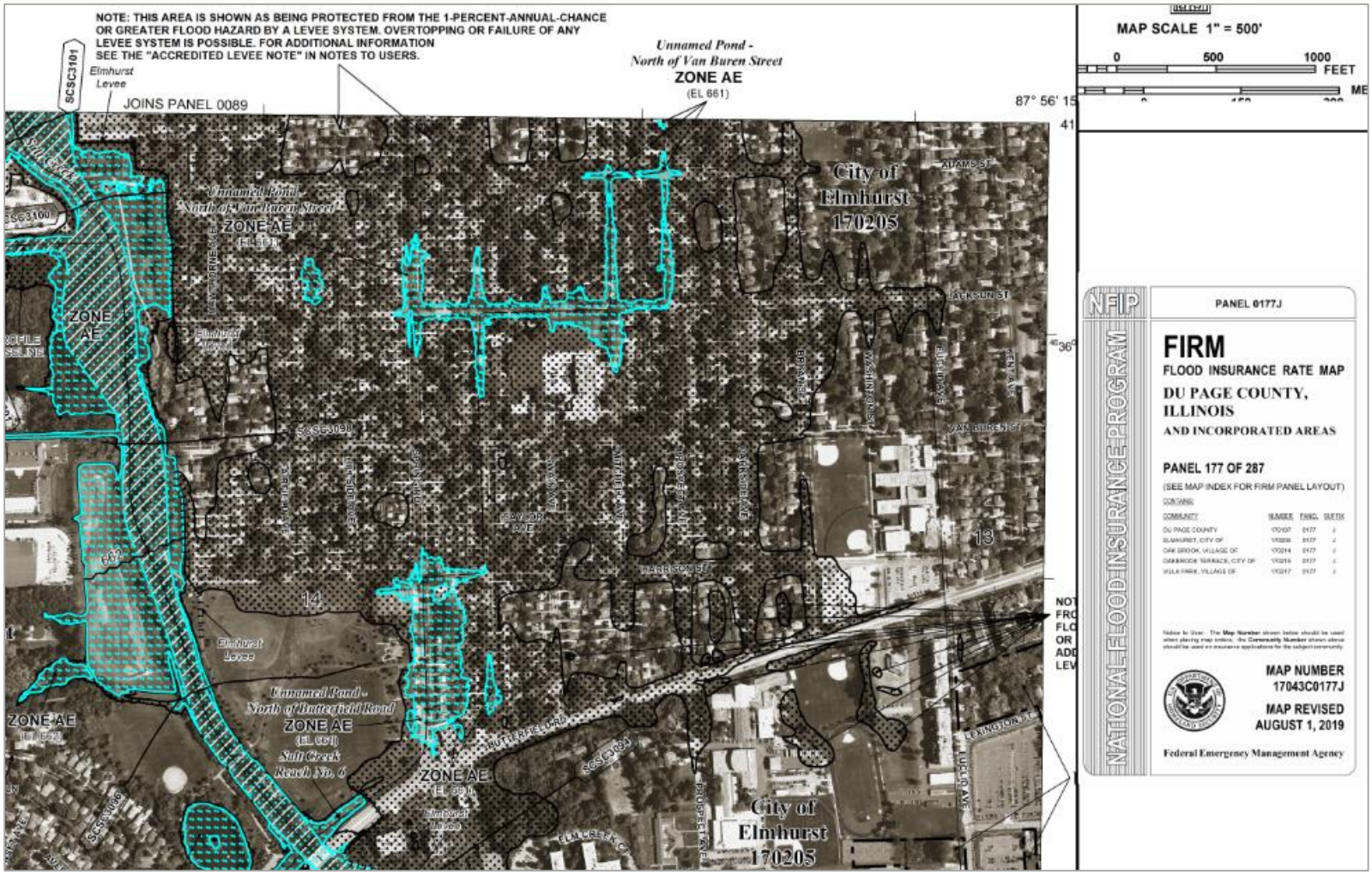
FEMA Region V Overview

- Region V
  - Six States (Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin
  - 524 Counties
  - 12 USACE Districts
  - 1,191 levee systems
- Illinois
  - 572 levee systems
  - 69 of 102 counties contain levees

Levee Roles


Levee Accreditation
Levee Inspection
Flood Fighting
Mitigation Programs
Insurance
Floodplain Management
Risk Assessments
LEVEE
Operation and Maintenance
Levee System Evaluations
(Certifications)
Emergency Preparedness
Shared Responsibilities
FEMA & Local Community
USACE & Local Community
Local Community

FEMA's View of Levees (Risk)



FEMA's Role - Levees

- FEMA's role is mapping levee-related flood risk and "accredits" levees for mapping purposes only.
- FEMA only accredits levees based on the *certification documentation provided by the community or other interested party*
- FEMA does not own, operate, maintain, inspect, or certify levees or flood control systems

Levee Accreditation

Once FEMA receives levee certification package from a community, levee owner:

- FEMA performs a “completeness” review
- FEMA accredits levees based on certification submittal findings received
- FEMA reviews against 44 CFR 65.10
- FEMA accreditation review checklist is included in February 2018 Levee Guidance

Levee Certification

Certification documentation should:

- Document that levee or flood control system *meets Federal design, construction, maintenance, and operations standards* to provide protection from a flood of 1% annual chance or greater
  - Standards are outlined in 44 CFR Section 65.10
- Be based on investigations and review of the current levee condition by a registered professional

FEMA Flood Insurance Rate Maps (FIRMs) are based on *current conditions* and *reflect the existing risk.*

Complying with 44 CFR 65.10: *Mapping of Areas Protected by Levee Systems*

44 CFR Section 65.10

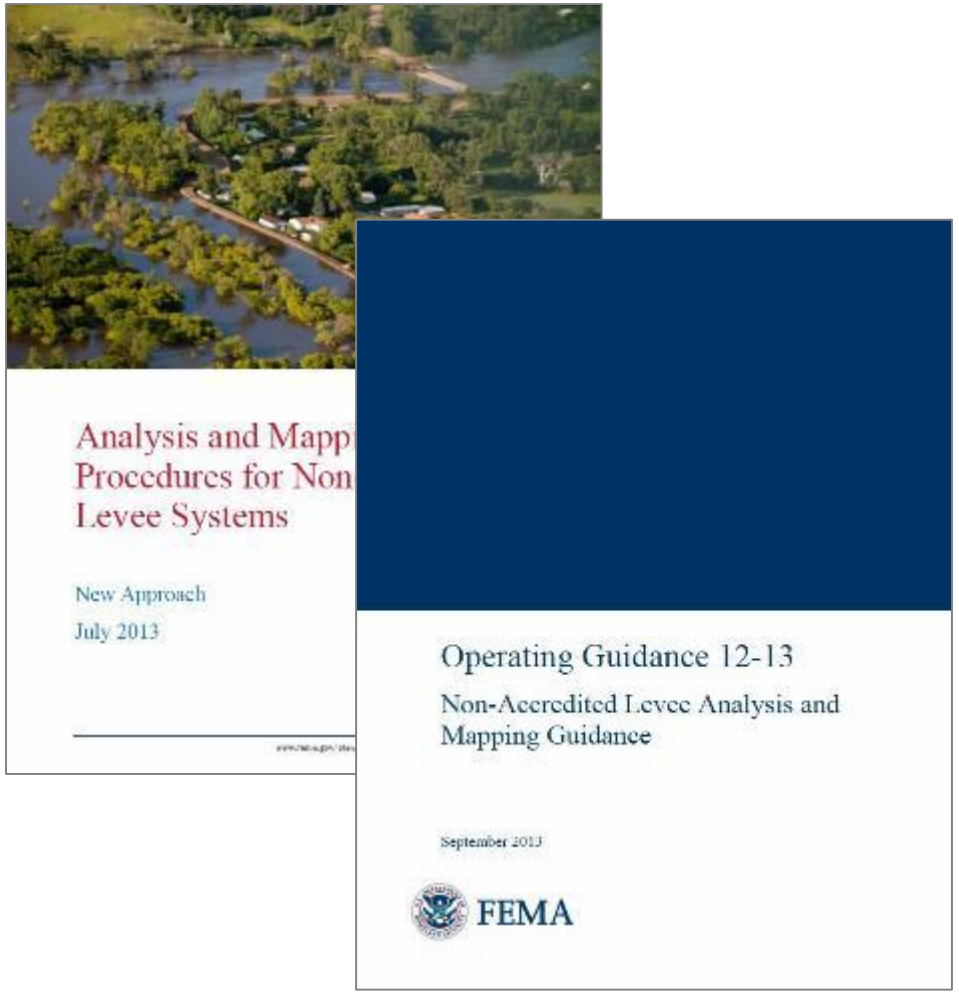
- 65.10(a) – General
- 65.10(b) – Design Criteria
- 65.10(c) – Operations Plans and Criteria
- 65.10(d) – Maintenance Plans and Criteria
- 65.10(e) – Certification Requirements

Complying with 44 CFR 65.10 (b): *Design Criteria*

- 65.10(b)(1) – Freeboard
- 65.10(b)(2) – Closures
- 65.10(b)(3) – Embankment Protection
- 65.10(b)(4) – Embankment and Foundation Stability
- 65.10(b)(5) – Settlement Analysis
- 65.10(b)(6) – Interior Drainage
- 65.10(b)(7) – Other Design Criteria

Analysis and Mapping Procedure for Non-Accredited Levee Systems

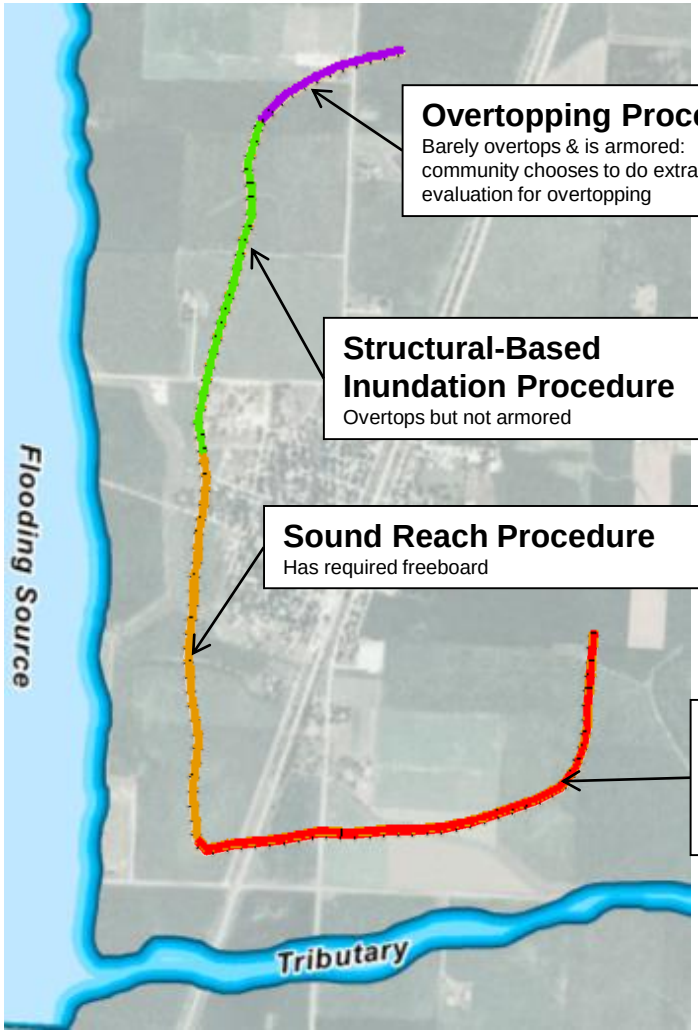
- Approach Document
  - Finalized July 2013
- Operation Guidance
  - Finalized September 2013
  - Superseded by February 2018 Levee Guidance



Analysis and Mapping Procedure for Non-Accredited Levee Systems

- 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

Applying Procedures to Individual Reaches



Overtopping Procedure
Barely overtops & is armored: community chooses to do extra evaluation for overtopping

Structural-Based Inundation Procedure
Overtops but not armored

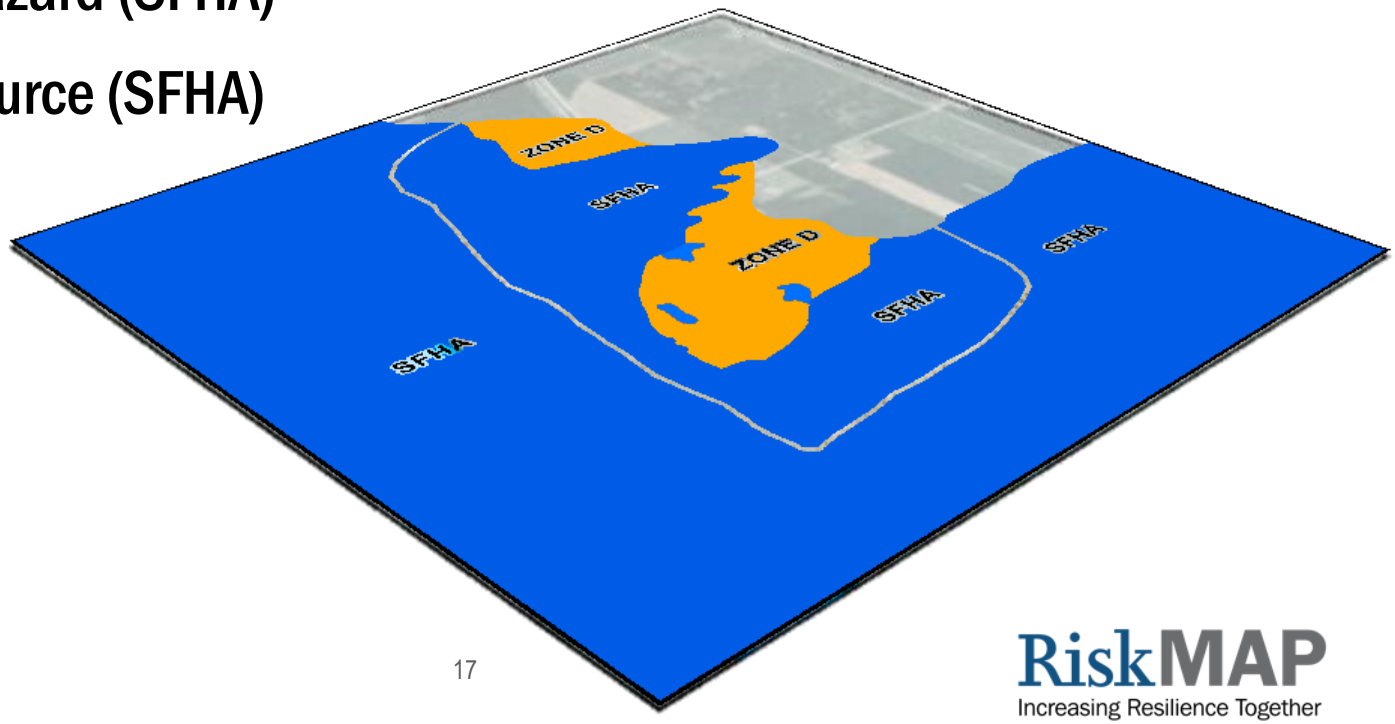
Sound Reach Procedure
Has required freeboard

Natural Valley Procedure
Don't know anything about
Not maintained
No owner
No structural analysis

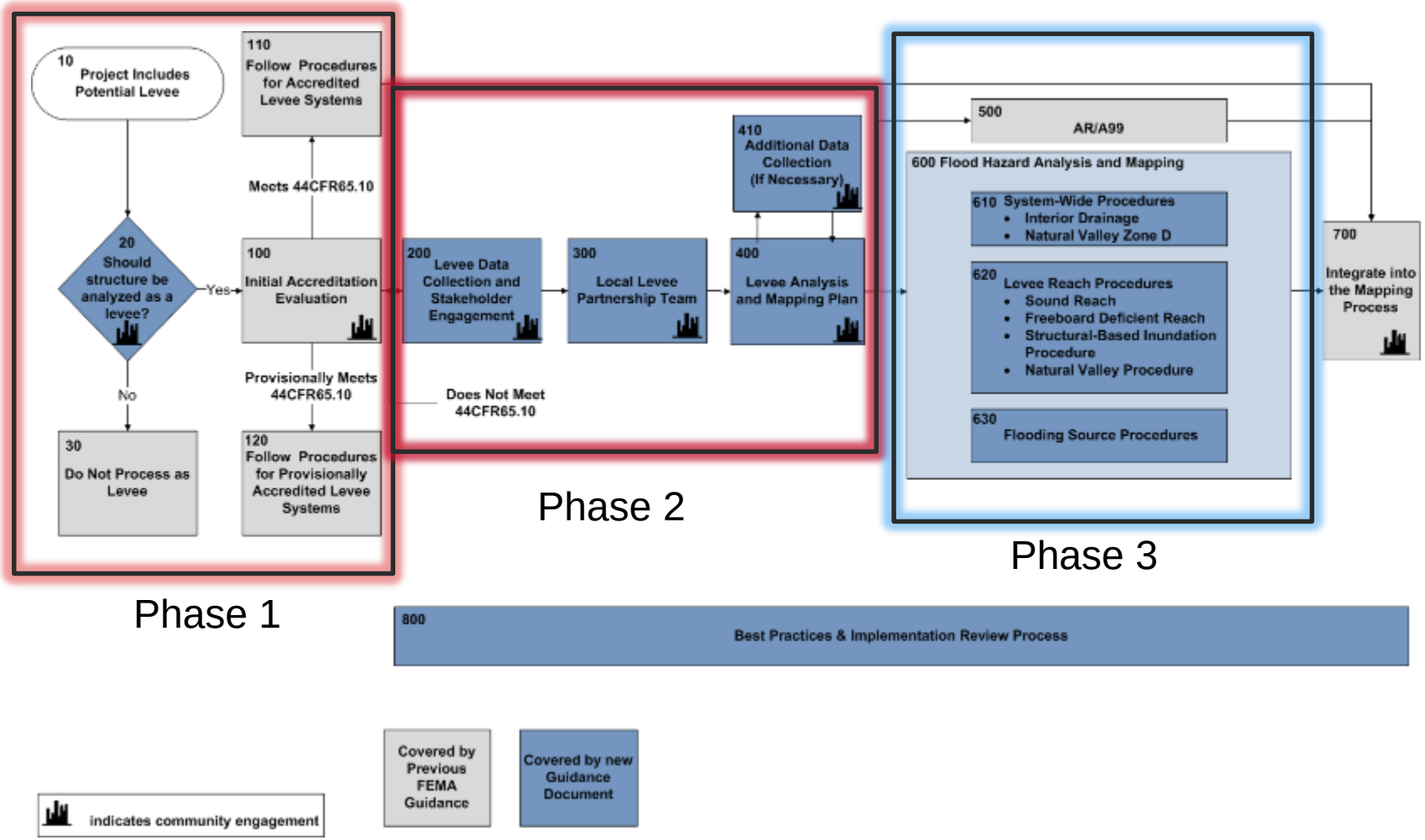
So…What Could the Final Map Look Like?

1. Natural Valley

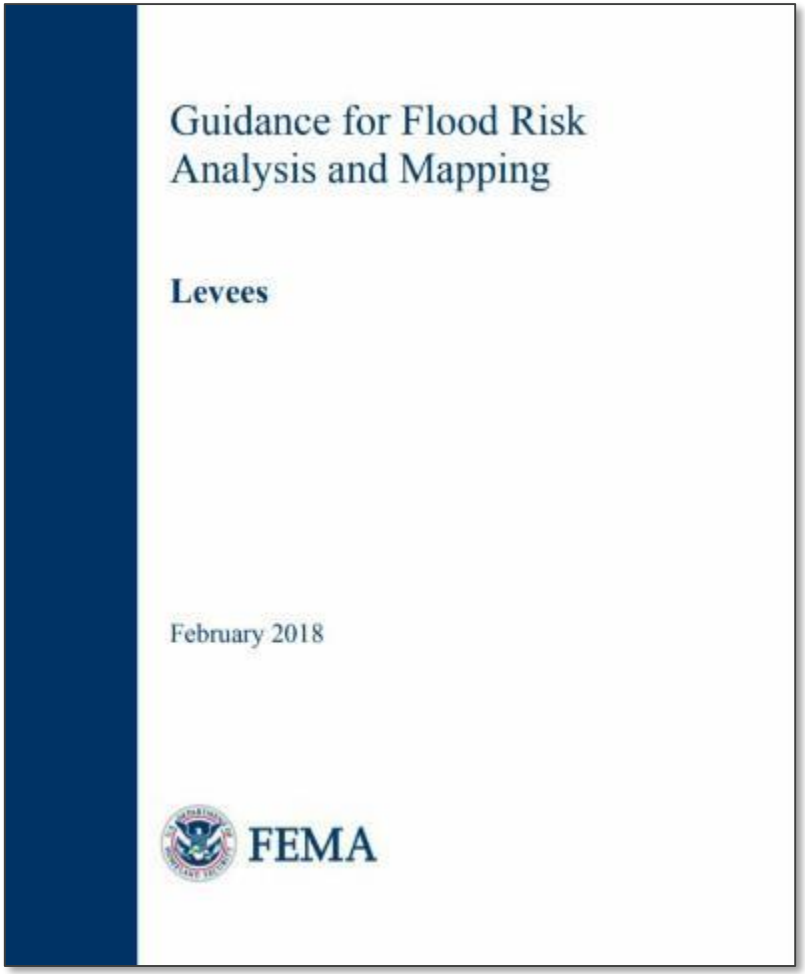
   (Difference between Natural Valley and SFHA - Zone D)
2. Interior Drainage (SFHA)
3. Landside Hazard (SFHA)
4. Flooding Source (SFHA)



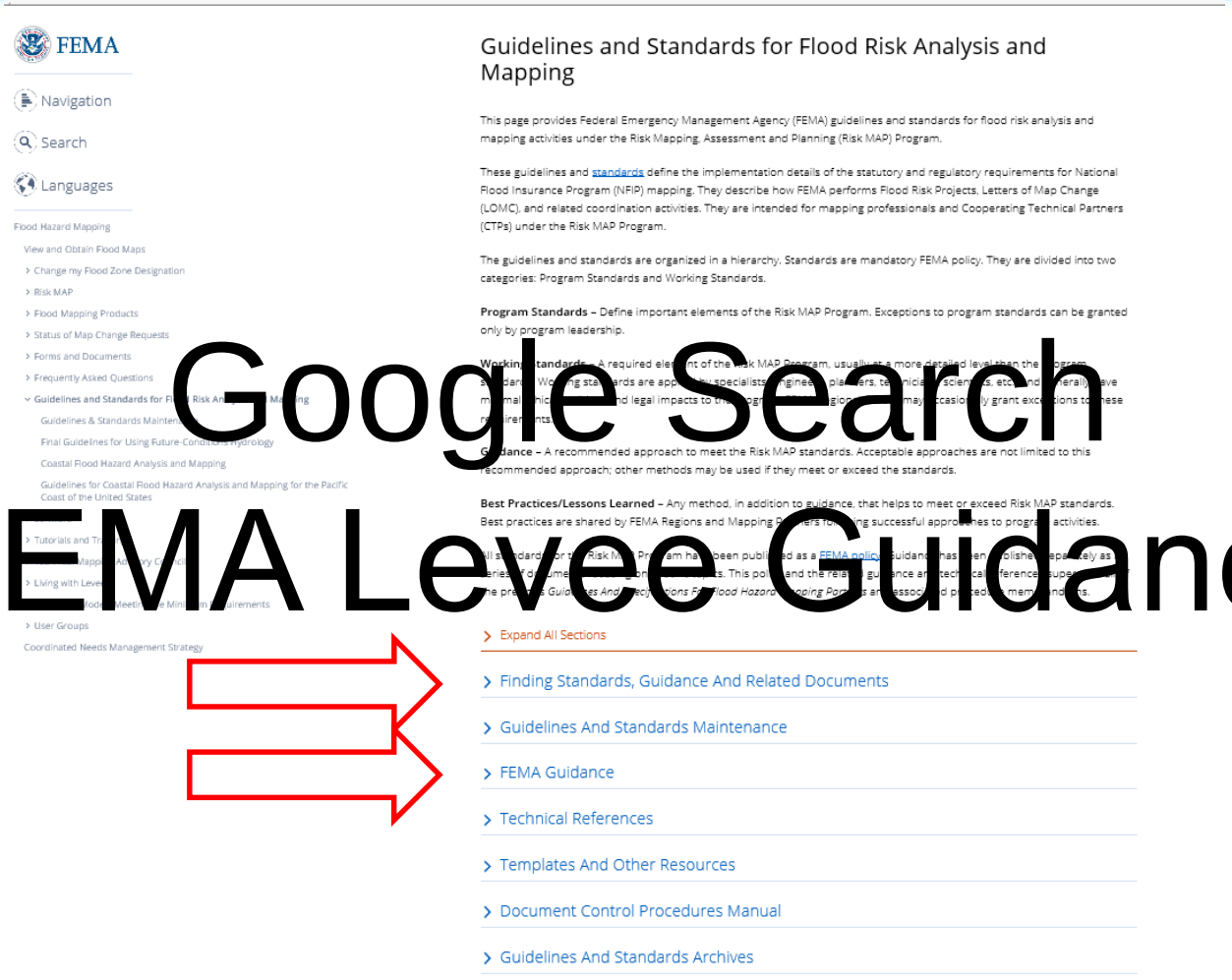
The Process


10
Project Includes Potential Levee
20
Should structure be analyzed as a levee?
Yes
No
30
Do Not Process as Levee
100
Initial Accreditation Evaluation
Meets 44CFR65.10
110
Follow Procedures for Accredited Levee Systems
Provisionally Meets 44CFR65.10
120
Follow Procedures for Provisionally Accredited Levee Systems
Phase 1
200
Levee Data Collection and Stakeholder Engagement
300
Local Levee Partnership Team
400
Levee Analysis and Mapping Plan
410
Additional Data Collection (If Necessary)
Does Not Meet 44CFR65.10
Phase 2
500
AR/A99
600 Flood Hazard Analysis and Mapping
610 System-Wide Procedures
Interior Drainage
Natural Valley Zone D
620
Levee Reach Procedures
Sound Reach
Freeboard Deficient Reach
Structural-Based Inundation Procedure
Natural Valley Procedure
630
Flooding Source Procedures
700
Integrate into the Mapping Process
Phase 3
800
Best Practices & Implementation Review Process
indicates community engagement
Covered by Previous FEMA Guidance
Covered by new Guidance Document

FEMA Levee Guidance Updates



https://www.fema.gov/guidelines-and-standards-flood-risk-analysis-and-mapping



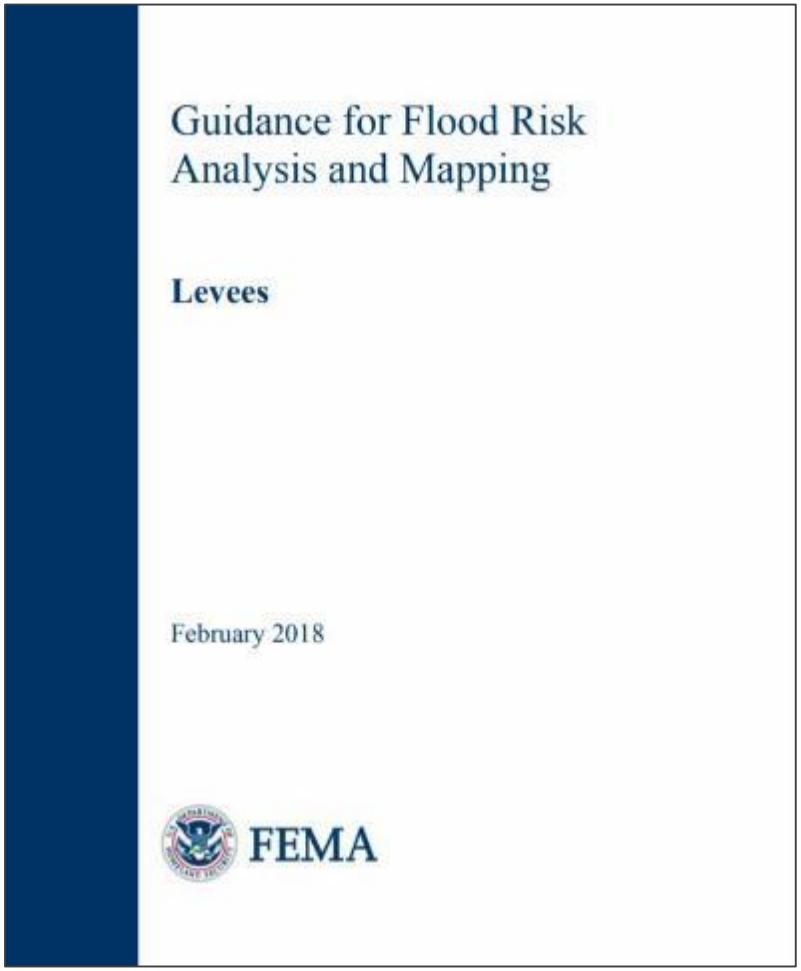
Google Search

"FEMA Levee Guidance"

February 2018: Levee Guidance Transformation

Chapters:

1. Levee Overview
2. Glossary
3. Levee Data Inventory
4. Accredited Levee Systems
5. Provisionally Accredited Levee Systems
6. Non Accredited Levee Systems
7. Non-levee reaches and Non-levee features
8. FEMA and Other Federal Agency Coordination



February 2018 : Levee Guidance Transformation

- New or Significant Changes:
  - Inclusion/development of guidance on:
    - Levee data inventory
    - Clarification of accreditation requirements
    - Mapping considerations for non-levee features
    - FEMA and Other Federal Agencies coordination; focus on USACE
    - References to resources outside of FEMA's Risk MAP program
- Notes:
  - Transforms and supersedes existing Risk MAP program guidance on:
    - Provisionally Accredited Levees
    - Analysis and mapping of non-accredited levees
  - Does not replace:
    - Levee Seclusion guidance
    - Zone A99 and Zone AR Determinations guidance
    - Levee-Specific Non-Regulatory Flood Risk Dataset guidance already available
  - Related templates are also being updated as part of this transformation

February 2018 : Levee Guidance Transformation

- Chapter 3 – Levee Data Inventory
  - National Levee Database
  - Identification of Levees
  - FEMA Regulatory Levee Data
  - Tracking Levee Accreditation Status
  - Reporting Levee System Updates
  - Levee Data Storage Requirements

USACE – National Levee Database

https://levees.sec.usace.army.mil

February 2018 : Levee Guidance Transformation

- Chapter 4 – Accredited Levee Systems
  - 44 CFR 65.10 Requirements
  - Additional Levee Accreditation Considerations
    - Levee System at Tie In Considerations
    - Other Federal Agency Submittals (USACE Risk Assessments)
    - Continued Accreditation
    - Expiration of Data Certification or Endorsement
    - Updated Modeling along an Accredited Levee
    - Noted Structural of Maintenance Deficiencies
  - Levee Accreditation Reviews
  - Accredited Levee Mapping and Notes

February 2018 : Levee Guidance Transformation

- Chapter 4 – Levee Tie in Considerations

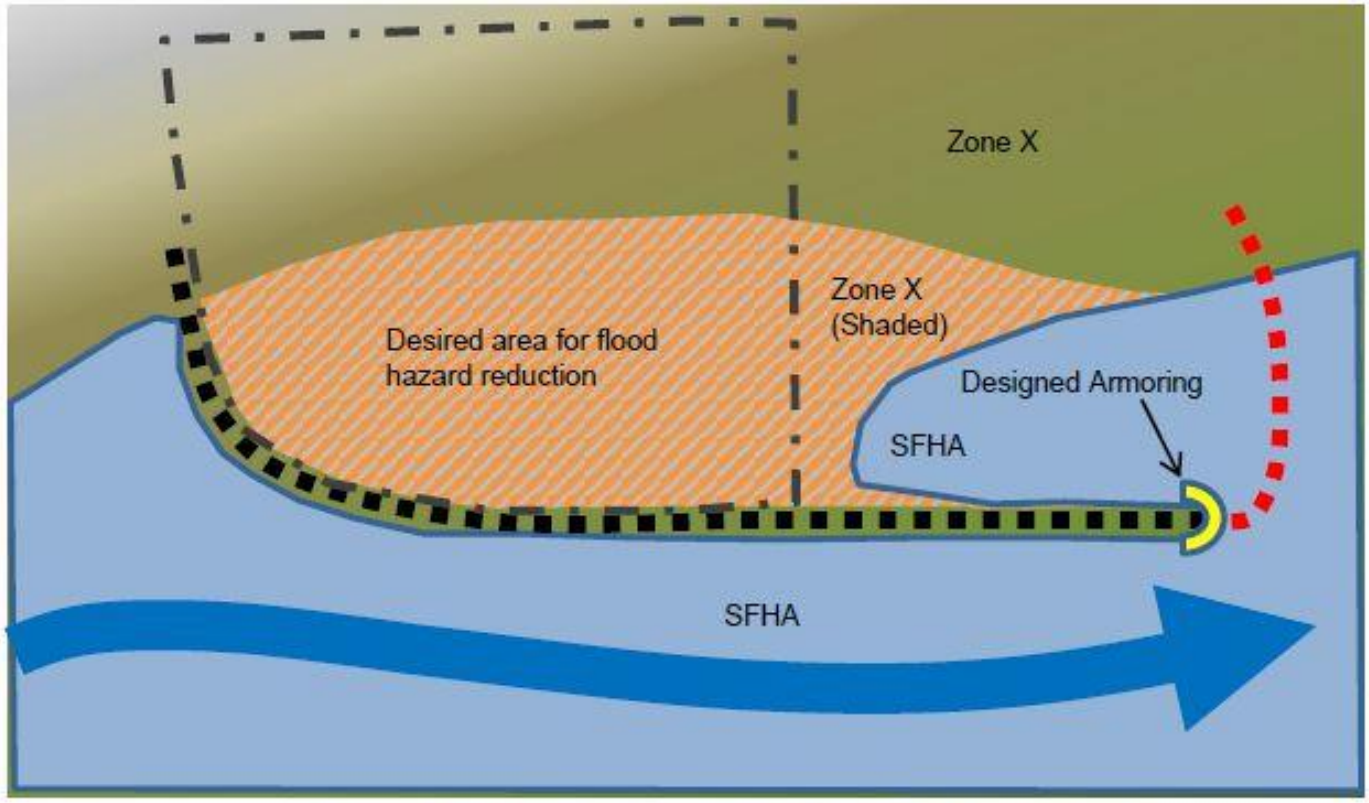


Figure 6: Levee System Tying into Non-Levee Reach

February 2018 : Levee Guidance Transformation

- Chapter 7 – Non-Levee Reaches and Non-Levee Features

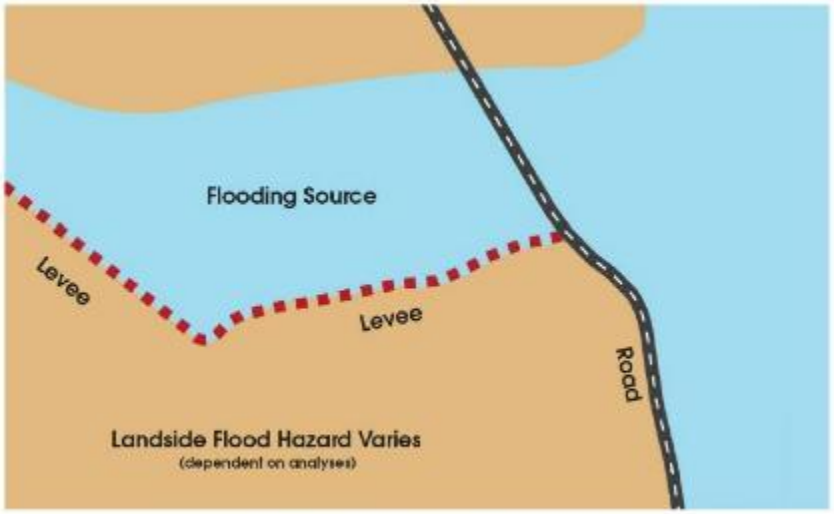


Figure 36: Non-Levee Reach

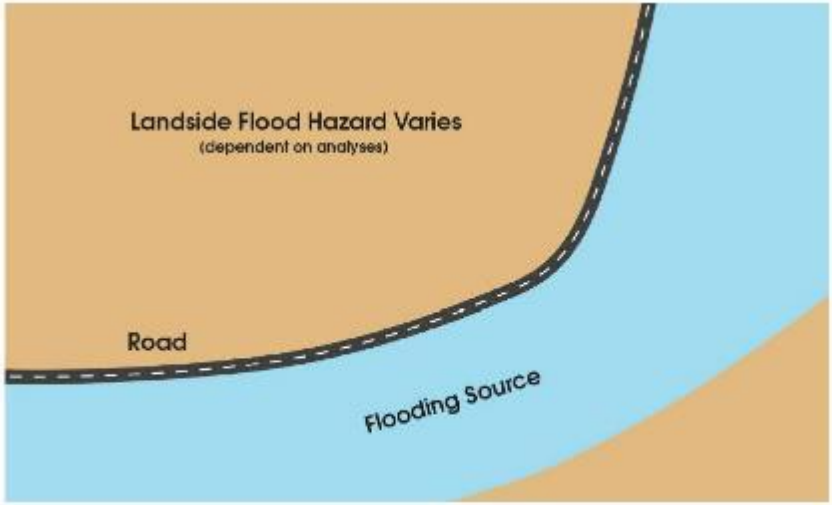


Figure 37: Non-Levee Feature

" Levees reduce the risk of flooding. But no levee system can eliminate all flood risk. There is always the chance that a flood will exceed the capacity of a levee, no matter how well it was built. Levees do not always perform as intended. In fact, levees sometimes fail even when a flood is small."

— American Society of Civil Engineers

Questions?

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