



FEMA

Levee Analysis and Mapping Procedures (LAMP) for Non-accredited Levees

Town and Village of Herkimer, Herkimer County, NY
July 28, 2016

RiskMAP
Increasing Resilience Together



Agenda

- Introductions
- Review of the area impacted by the local levee system
- Overview of the Levee Analysis and Mapping Procedure (LAMP) process
- Outline the initial LAMP study methods for the local levee systems
- Review of the information for local levee systems
 - Applicability of LAMP Procedures based on levee data
 - Data needed for LAMP Procedures
- LAMP Path Forward

Introductions & Contact Information

- **FEMA Project Monitor**

- Alan Springett, Engineer
(212) 680-8557
Alan.Springett@fema.dhs.gov

- **Project Manager**

- Stephanie Nurre (STARR II)
(312) 262-2284
Stephanie.Nurre@stantec.com

- **Outreach**

- Cara Spidle
(202) 729 4288
Cara.Spidle@ogilvy.com

Risk Communications

KNOW YOUR RISK

Do your residents know about their flood risk?

KNOW YOUR ROLE

Do your residents know what mitigation actions they should/can take?

TAKE ACTION

Encourage your residents to take the actions that can build their resiliency to flooding.



Review of Local Levee Systems

- The flood risks landward of the non-accredited levee system will be studied with FEMA's new approach to levee mapping - LAMP



Analysis and Mapping Procedures for Non-Accredited Levee Systems

New Approach

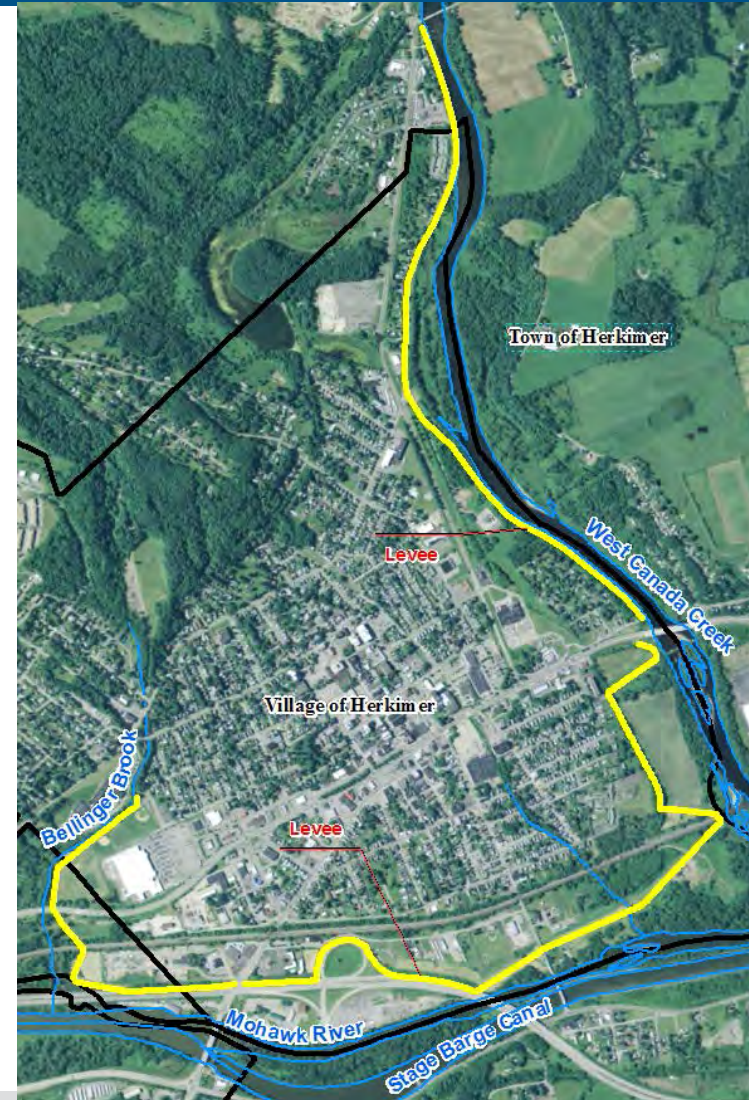
July 2013

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www.fema.gov/plan/prevent/rhm/rm_main.shtml - 1-877-FEMA MAP

Review of the Local Levee System

- Levee constructed along Mohawk River, West Canada Creek, and Bellinger Brook in Town and Village of Herkimer



LAMP Approach

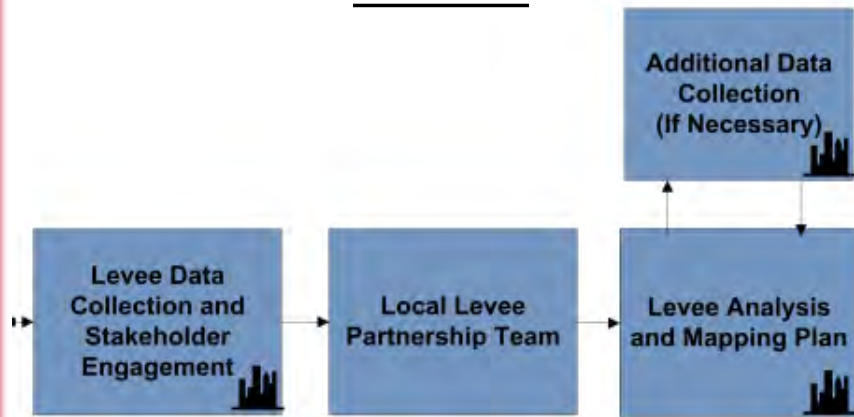


LAMP is:

- FEMA's new approach to identifying the flood risk landward of non-accredited levee systems.
- A collaborative levee evaluation process that works with interactive stakeholder engagement.
- A levee-specific study to analyze and determine updated Special Flood Hazard Areas landward of non-accredited levees.

Levee Analysis and Mapping Process (LAMP) Process

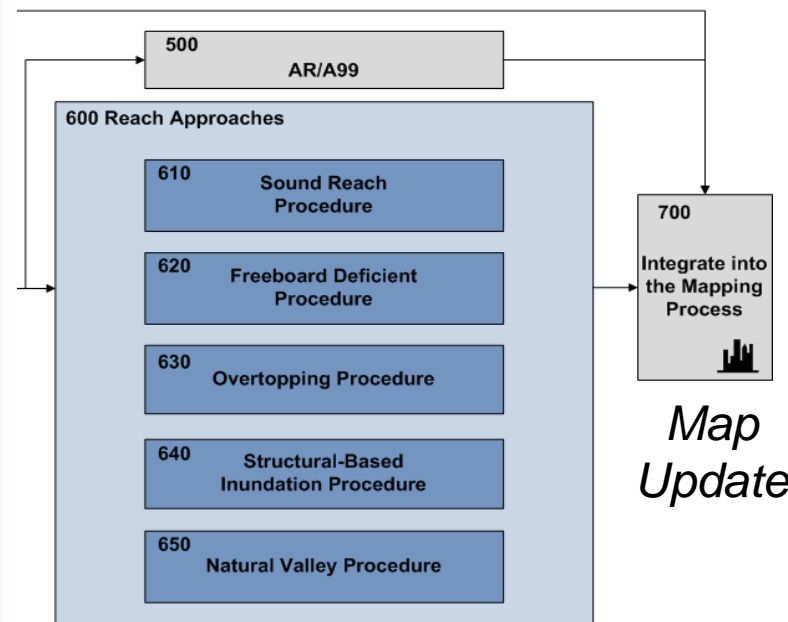
Phase 1



Engagement and Planning Process

**We are here*

Phase 2



Detailed Flood Hazard Analyses

Phase 3

Map Update

LAMP – Phase 1

- LAMP Phase 1 Objectives
 - Establish a Local Levee Partnership Team (LLPT) to collect local levee data and related levee system information
 - Perform an initial flooding analysis (First Pass Analysis)
 - Prepare a Levee Analysis and Mapping Plan



Analysis and Mapping Plan
Cayuga Creek Levees – Villages of Lancaster & Depew
Erie County
New York

2016



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Local Levee Partnership Team (LLPT)

■ Meeting-Specific Objectives:

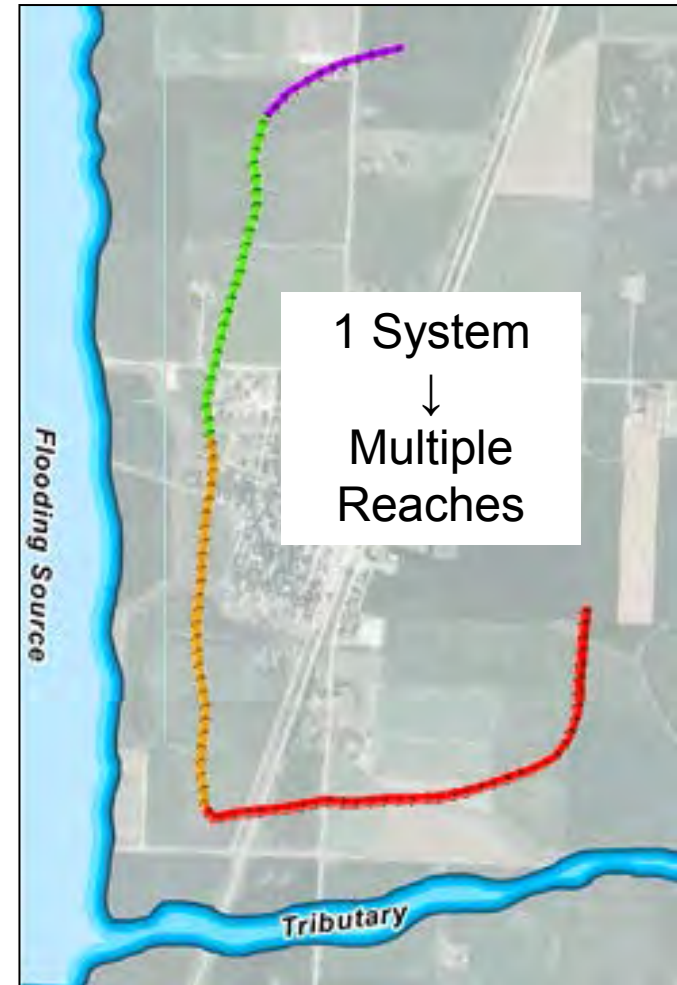
- Important information and data related to how the levee system will be analyzed and mapped is obtained and considered.
- LLPT members have an opportunity to explain the unique conditions related to their levee system that will impact the analysis and mapping.
- LLPT members comment on methods for levee system reaches, analyses, and mapping within the allowable guidelines.
- A reasonable schedule is developed for obtaining input or additional data.

LAMP Analyses & Methodology

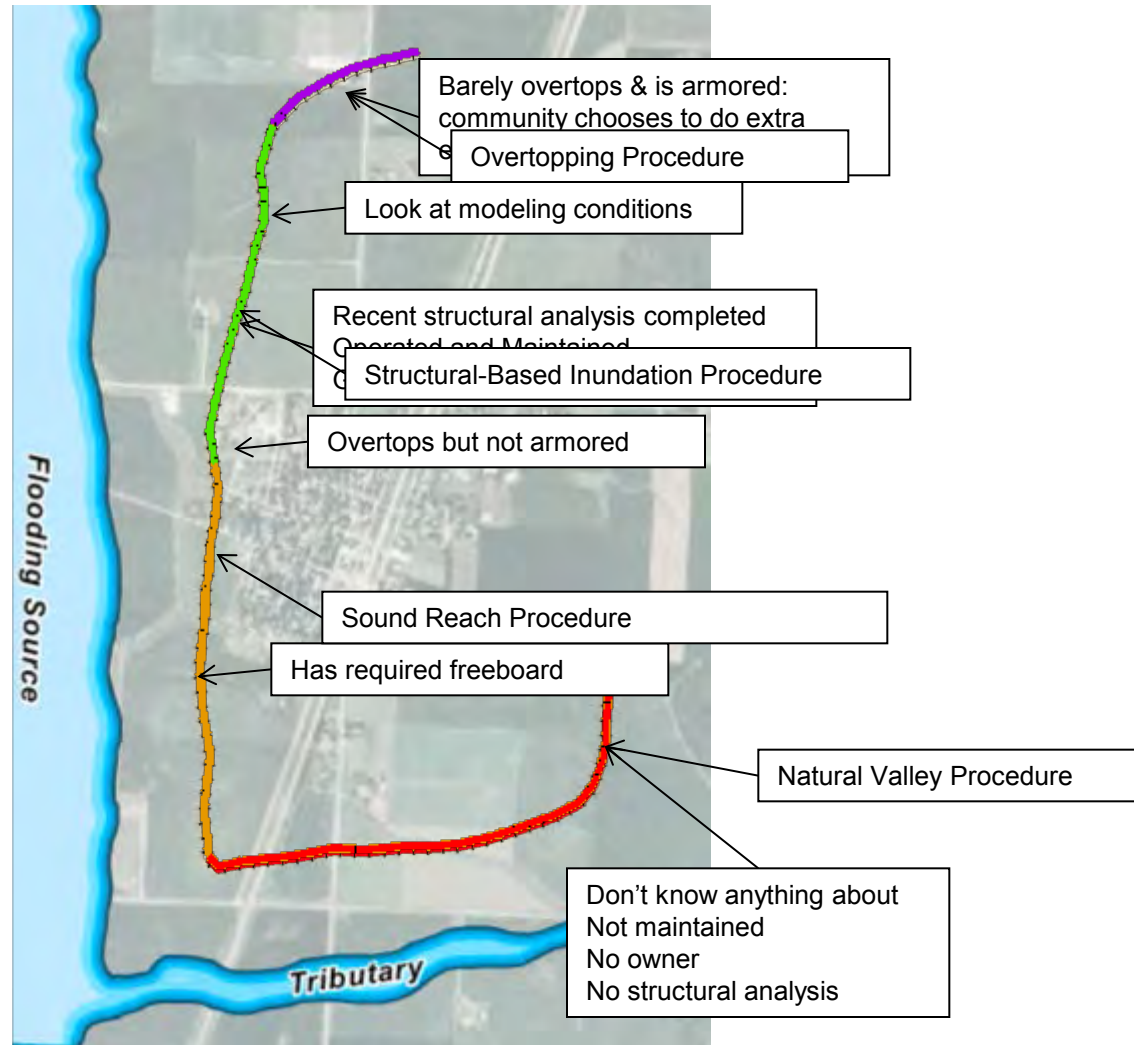
There are five procedures detailed in the LAMP Final Approach Document.

- Natural Valley
- Structural-Based Inundation
- Overtopping
- Freeboard Deficient
- Sound Reach

A levee system may be broken up into multiple reaches in order to analyze the flood risk in its vicinity.

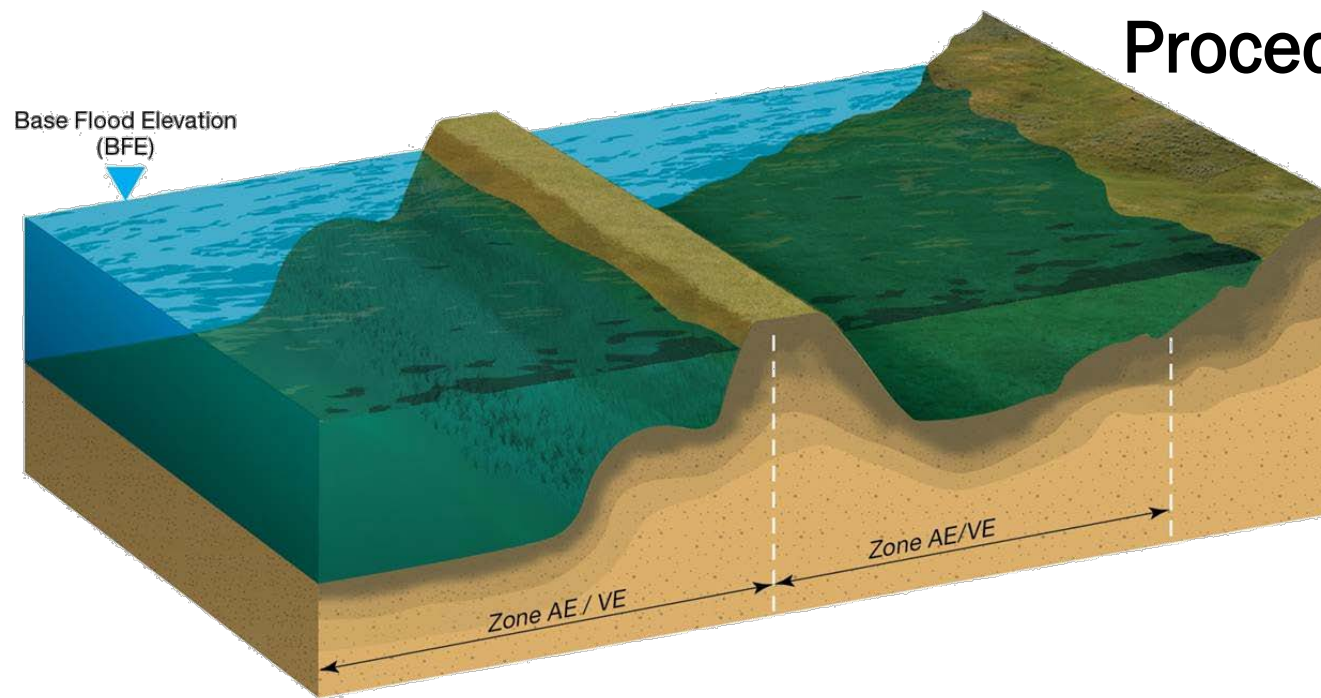


So... What's a Reach?



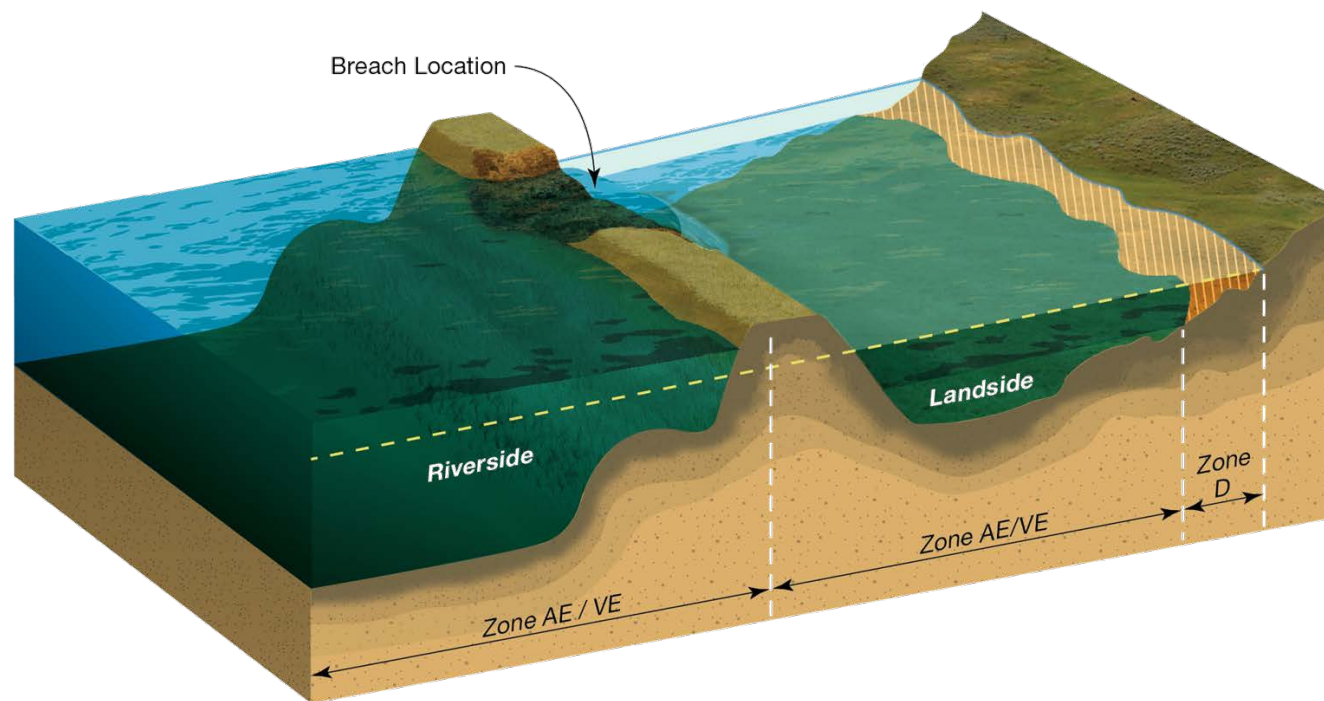
Natural Valley Procedure

- Used to determine Zone D in subsequent Procedures

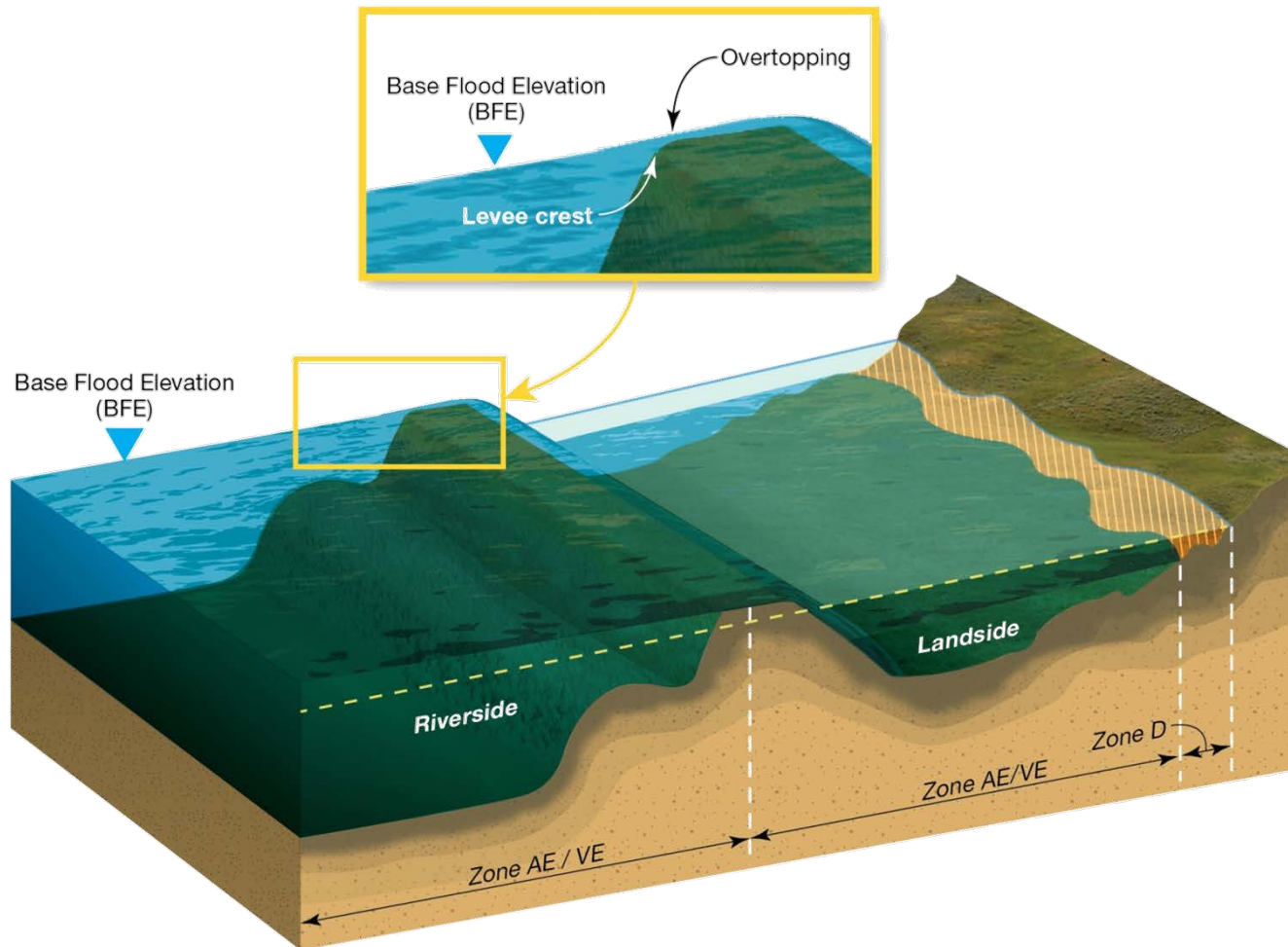


Structural-Based Inundation Procedure

- Levee has history or potential for breaches



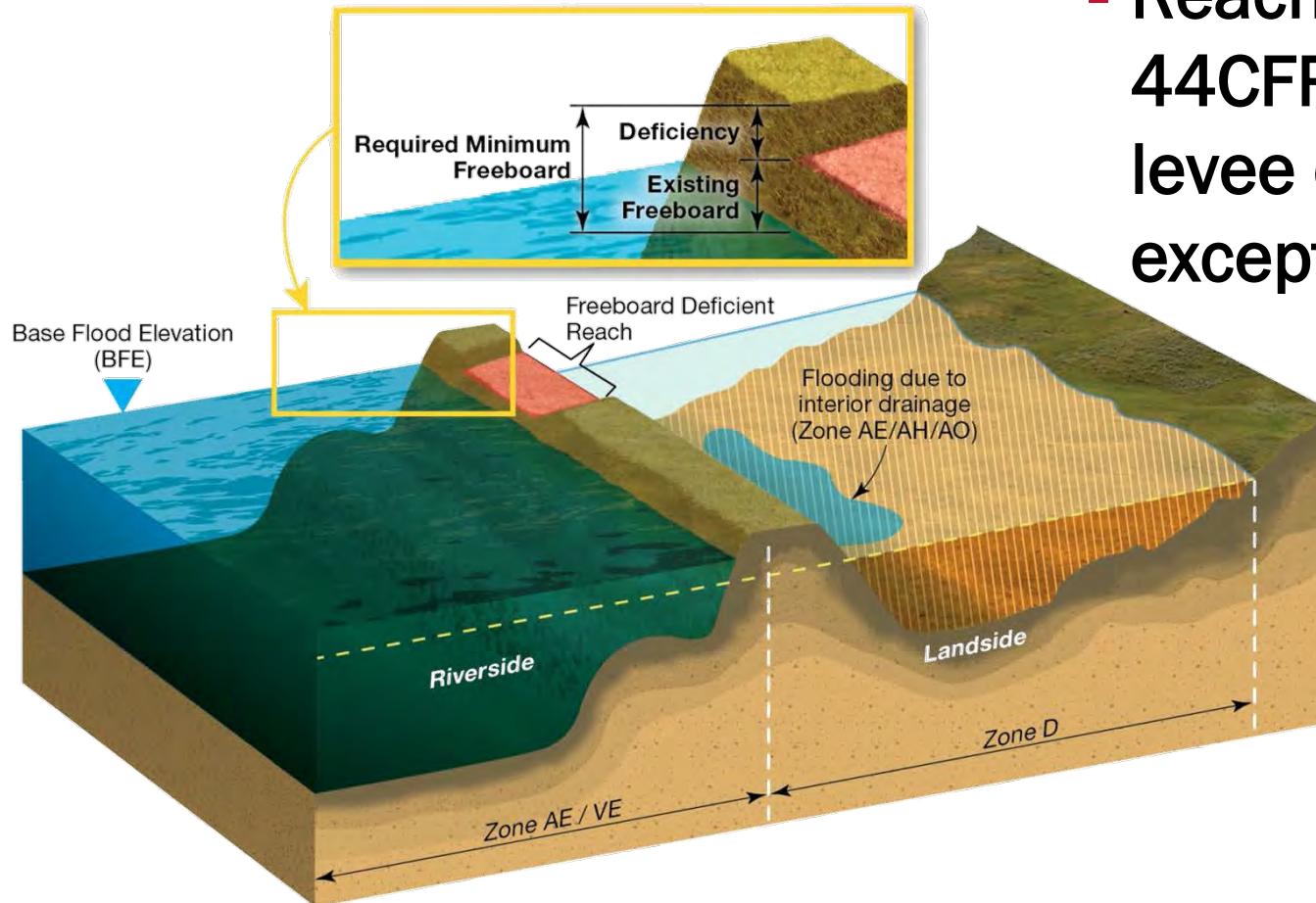
Overtopping Procedure



- Reach meets 44CFR 65.10 levee certification except freeboard
- Levee designed to be overtopped in 1% storm with no erosion

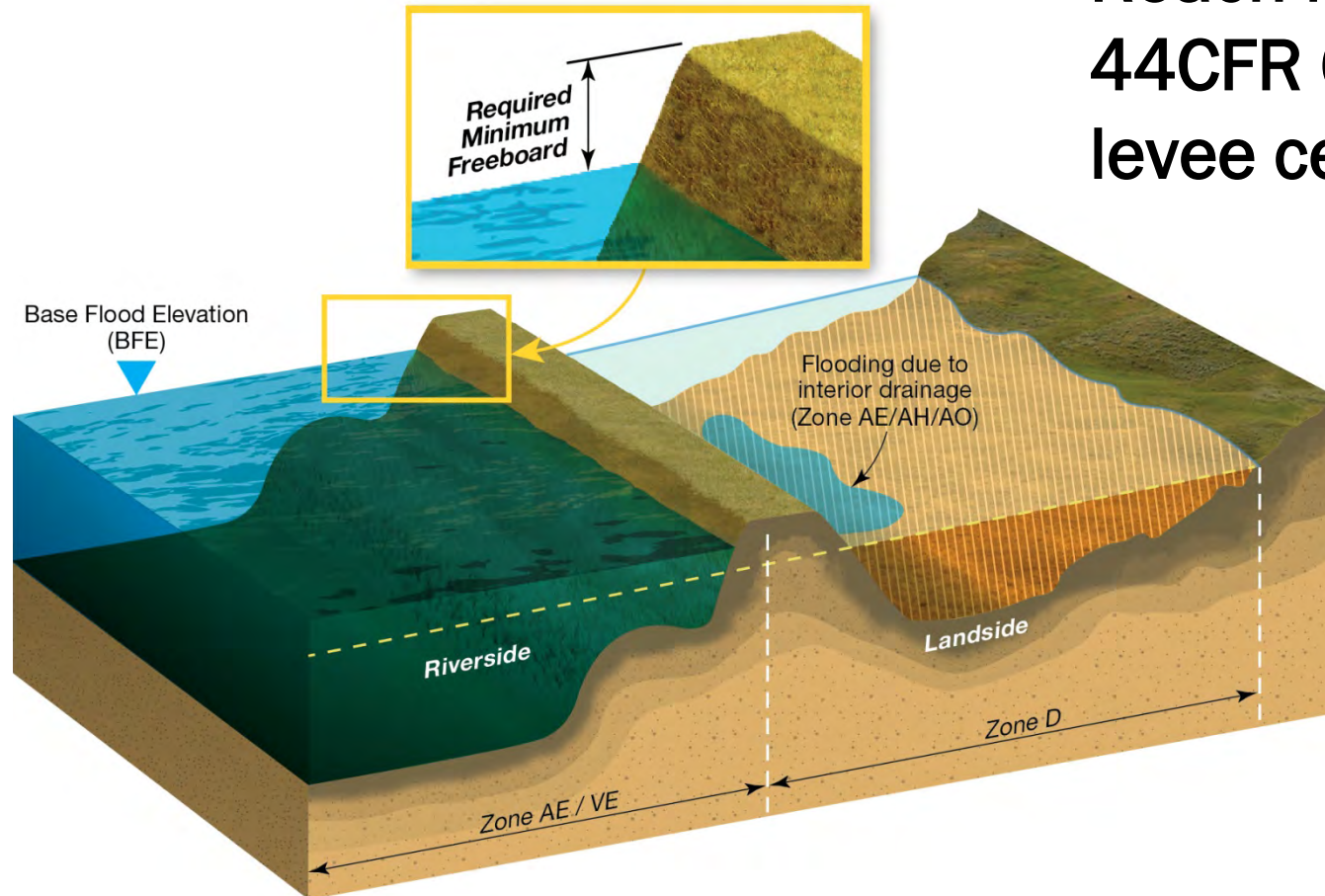
Freeboard Deficient Procedure

- Reach meets 44CFR 65.10 levee certification except freeboard



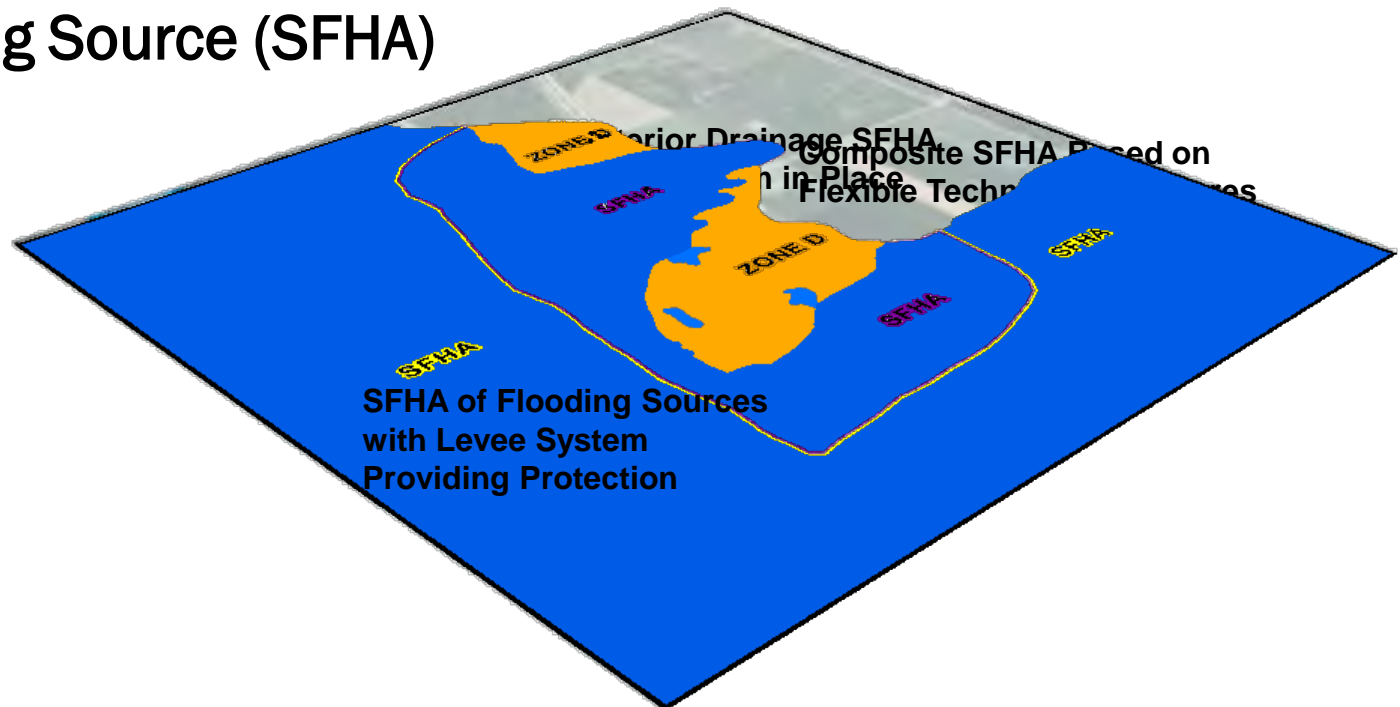
Sound Reach Procedure

- Reach meets 44CFR 65.10 levee certification



So...What's the Final Map Look Like?

1. Natural Valley (Zone D)
2. Interior Drainage (SFHA)
3. Landside Hazard (SFHA)
4. Flooding Source (SFHA)



Zone D

- Defined as “undetermined, but possible, flood hazards”
- No federal mandatory purchase requirement
- Insurance rates are similar to approximate Zone A
- Minimal NFIP-required floodplain management, but possible to use for floodplain management purposes

Application of LAMP to Levees in the Village and Town of Herkimer

- **LLPT discussions on applicable LAMP Procedure**
 - **Natural Valley Procedure**
 - Mapping landward of the levee to show natural floodplain flooding
 - **Structural Based Inundation Procedure**
 - Is there historical evidence that this levee has been breached in the past?
 - Is there evidence that finds this levee system vulnerable to breaching?
 - **Overtopping Procedure**
 - Is levee designed to be overtopped in 1% storm?
 - **Freeboard Deficient Procedure**
 - Does the levee system meet all 44CFR 65.10 levee certification requirements except freeboard
 - **Sound Reach Procedure**
 - Does the levee system meet all 44CFR 65.10 levee certification requirements except that it is attached to “reaches” that cannot be certified

Application of LAMP to Levees in the Village and Town of Herkimer

- **Additional data needs for applicable LAMP Procedures**
 - **Natural Valley Procedure**
 - FEMA has sufficient information for this procedure
 - **Structural Based Inundation Procedure**
 - If applicable, data needs are ... (e.g. history and details of breaching)
 - **Overtopping Procedure**
 - If applicable, data needs are ... (e.g. 44CFR65.10 items, levee armoring details)
 - **Freeboard Deficient Procedure**
 - If applicable, data needs are ... (e.g. 44CFR65.10 items except freeboard)
 - **Sound Reach Procedure**
 - If applicable, data needs are ... (e.g. 44CFR65.10 items)

Application of LAMP to Levee in the Village of Herkimer



Application of LAMP to Levee in the Village and Town of Herkimer



LAMP Path Forward

■ LAMP - Phase 1

1st LLPT Meeting

(We are here)

Apply initial LAMP Procedures and develop First Pass Analyses

2nd LLPT Meeting
(virtual)

Review First Pass Analysis and finalize which Procedure(s) will be applied in future Phase 2 Detailed Analysis (if applicable)

Prepare a LAMP Plan document that summarizes LLPT discussions; First Pass Analyses; and recommended LAMP Procedure to be applied in Phase 2

3rd LLPT Meeting

Draft LAMP Plan will be shared with all LLPT members

Finalize LAMP Plan.

Share Final LAMP Plan with all LLPT members

July 2016

Feb 2017



FEMA

Know, plan for, mitigate against and communicate about the risks in your community.

Levee Certification

- Please see *“Meeting the Criteria for Accrediting Levees on Flood Maps – How-to-Guide for Floodplain Managers and Engineers”*
- http://www.fema.gov/media-library-data/20130726-1600-20490-4180/lv_accredit_checklist_nov08.pdf

FACT SHEET

LEVEES
IDENTIFYING
THE RISK

Meeting the Criteria for Accrediting Levees on Flood Maps

How-to-Guide for Floodplain Managers and Engineers

A levee is a manmade 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. Levees include floodwalls and other flood-control structures (not including dams).

As part of the countywide flood mapping process, the Department of Homeland Security, Federal Emergency Management Agency (FEMA) and its State and local mapping partners need to review data associated with levees.

It is the levee owner's or community's responsibility to provide data and documentation to demonstrate that a levee meets the requirements of the National Flood Insurance Program (NFIP) as described in Title 44, Chapter 1, Section 65.10 of the Code of Federal Regulations (44 CFR, Section 65.10) which you may view on FEMA's Web site at www.fema.gov/plan/prevent/thm/lv_fpm.shtm.

To be recognized as providing protection from the 1-percent-annual-chance flood on Flood Insurance Rate Maps (FIRMs), levee systems must meet and continue to meet the minimum design, operation, and maintenance standards of 44 CFR Section 65.10 of the NFIP regulations.


To help clarify the responsibilities of community officials, levee owners, or other parties seeking recognition of a levee for providing information on levees identified during a mapping project, FEMA issued Procedure Memorandum No. 34 (PM 34), *Interim Guidance for Studies Including Levees*, on August 22, 2005. PM 34 provided clarification of the existing procedures, which were provided in Appendix H of FEMA's *Guidelines and Specifications for Flood Hazard Mapping Partners*.

FEMA issued Revised Procedure Memorandum No. 43, *Guidelines for Identifying Provisionally Accredited Levees*, on March 16, 2007, which will allow mapping contractors and partners to issue preliminary and, in some cases, effective flood maps while communities and levee owners are compiling and submitting the full documentation necessary to show compliance with 44 CFR Section 65.10 requirements.

This document provides information regarding what types of information you'll need to submit during the mapping process for your levee to be recognized as providing protection on FIRMs, including a checklist and an index of further resources you may wish to consult.

COMMUNITIES WITH LEVEES SHOULD KNOW:

- The participating community and/or other party seeking recognition or continued recognition must provide sufficient data showing that the levee provides protection from the 1-percent-annual-chance flood (also known as the base flood) for FEMA to recognize the levee on a FIRM.
- Communities must actively participate in the levee documentation process.
- Levees structures without sufficient documentation will not be credited as providing flood protection.
- Some levees may qualify to be shown as Provisionally Accredited Levees on the FIRM. Guidance regarding Provisionally Accredited Levees is available at www.fema.gov/plan/prevent/thm/lv_fpm.shtm.

 **FEMA**

April 2007 PAGE 1

Data Requirements

	Sound	Freeboard Deficient	Overtopping Approach	Structural-Based Inundation	Natural Valley
Elevation Information for the Levee Crest	Required	Required	Required	Required	
BFE + Freeboard Less than Levee Crest	Required				
BFE Less than Levee Crest	Required	Required			
Operations and Maintenance Plan	Required	Required	Required	Recommended	
Structural Design Requirements	Required	Required	Required	Recommended	
Inspection Reports	Required	Required	Required	Recommended	
Evaluation of Overtopping Erosion Potential			Required		

Key Considerations for Selecting Technical Procedures

- Levee system characteristics
- Data availability
- Reasons [44CFR65.10](#) cannot be met
- Length/size of the levee system and/or reach
- Levee profile vs. BFEs
- Levee Reach discussions
- Levee performance history
- Accreditation status of levee system on current NFIP maps
- Flooding characteristics
- Contributing drainage area
- Duration of flooding
- Terrain of protected area
- Level of risk in leveed area
- Community/levee owner willingness to contribute data or analyses
- Original design and as-built plans
- O&M report, inspections, tests
- Current models
- Current survey data
- Geotechnical analyses
- Impact areas hydraulically independent