

# Broome County Levee Flood Hazard Identification

General Meeting for City of Binghamton, Village of Endicott, Village of Johnson City, Village of Port Dickinson,  
Town of Union, and Town of Vestal

May 14, 2018



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# Today's Goals

1

Recap Levee Flood Hazard



2

Review Study Information and Updated Analysis



3

Discuss Opportunities for Collaboration

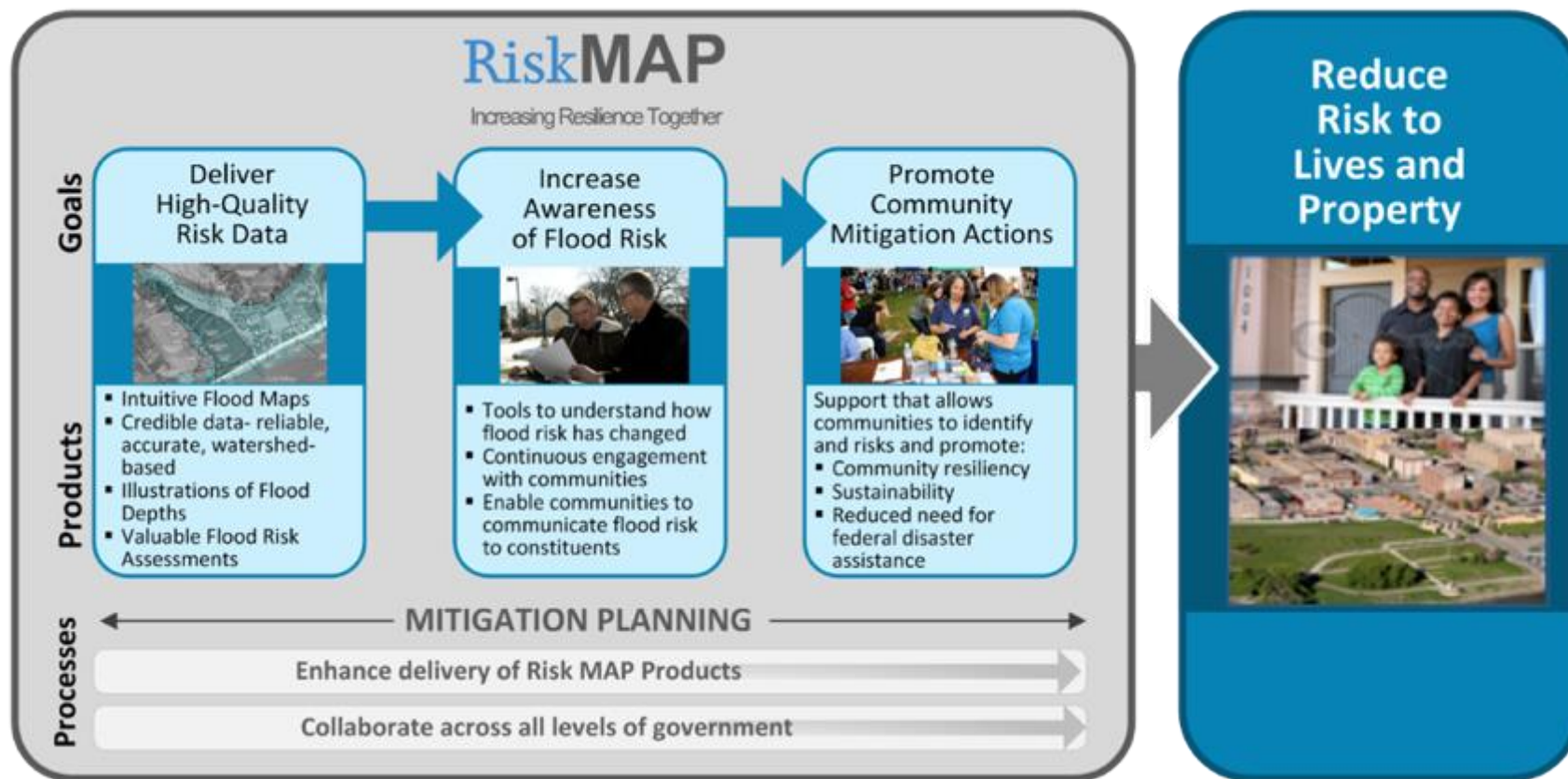


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# FEMA Mitigation Division

## Risk MAP - Mapping Assessment and Planning:

Provide updated flood hazard data to  
create stronger and safer communities



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# BROOME COUNTY

MAY 2018

## KNOW YOUR RISK

FEMA's Levee Flood Hazard Identification will help Broome County understand the flood hazards associated with levee systems and how to better mitigate this risk going forward



200,600

POPULATION  
BASED  
ON 2010  
CENSUS



\$138,599,247

TOTAL LOSSES PAID

### LEVEE IMPACT AREAS:

- CITY OF BINGHAMTON
- TOWN OF VESTAL
- TOWN OF UNION
- VILLAGE OF JOHNSON CITY
- VILLAGE OF PORT DICKINSON
- VILLAGE OF ENDICOTT



NFIP  
PARTICIPANT

33

LEVEE  
SEGMENTS  
STUDIED



3,119

NUMBER OF  
INSURANCE  
CLAIMS  
RECORDED



### Proposed Mitigation Actions:

- Work with local school districts and higher educational facilities to understand and mitigate flood vulnerabilities.
- Conduct Bathymetric surveys of all county-owned flood control watershed reservoirs for prioritization of dredging and cleaning



1,129

NUMBER OF  
FLOOD  
INSURANCE POLICIES

\$905,795

PREMIUMS IN FORCE

HAZARD MITIGATION  
PLAN EXPIRATION  
DATE

6/1/23



262,515,700

FLOOD INSURANCE COVERAGE

## Broome County Local Levee Analysis & Mapping Timeline

LLPT 1 - June 2016  
(NEW \*May 2018)

YOU ARE HERE

LLPT 2 -  
(NEW \*May 2018)

Review LLPT Plan  
(June 2018)

LLPT 3  
(June 2018)

End of Phase 1,  
Discuss Accreditation



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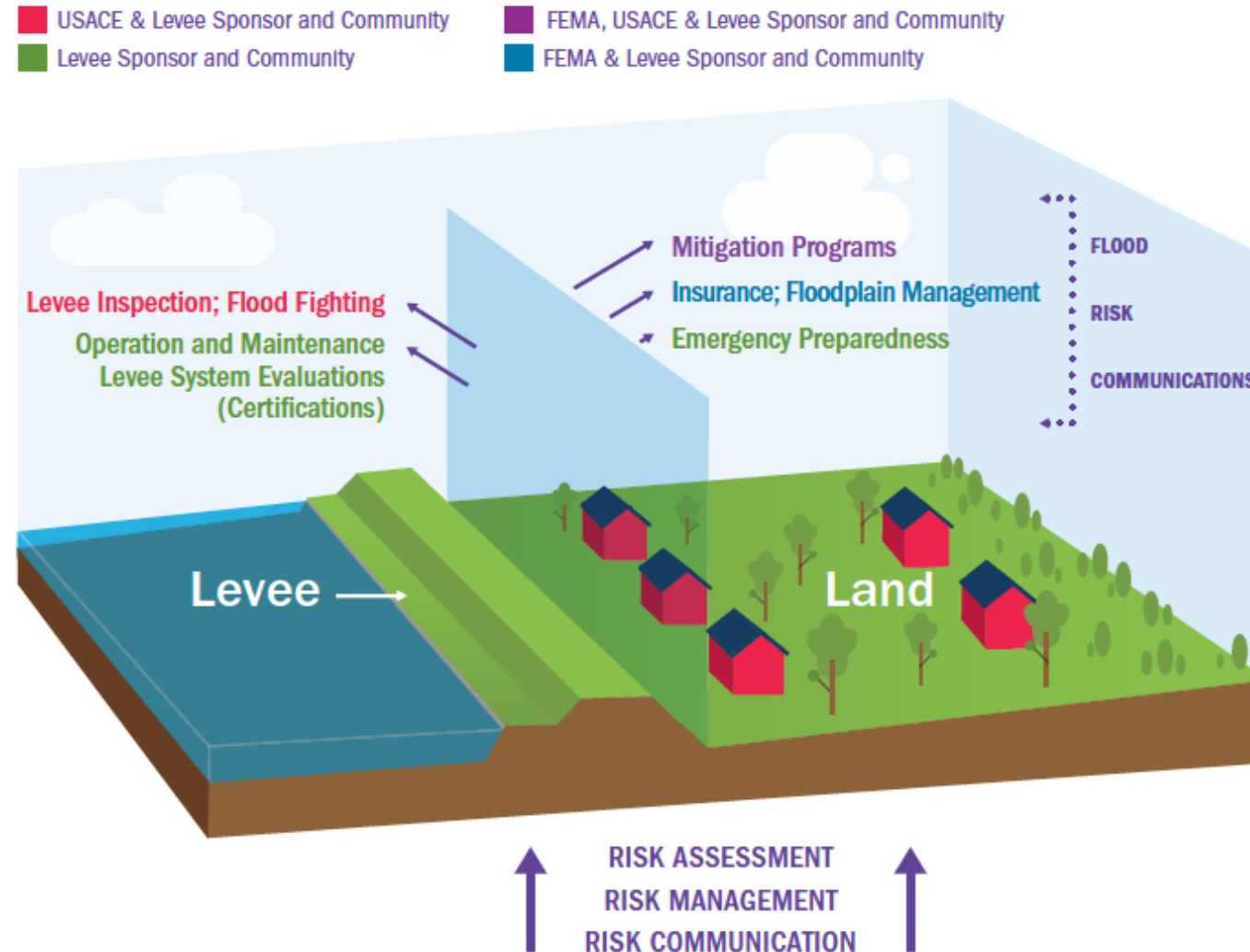
# Recap Levee Flood Hazard



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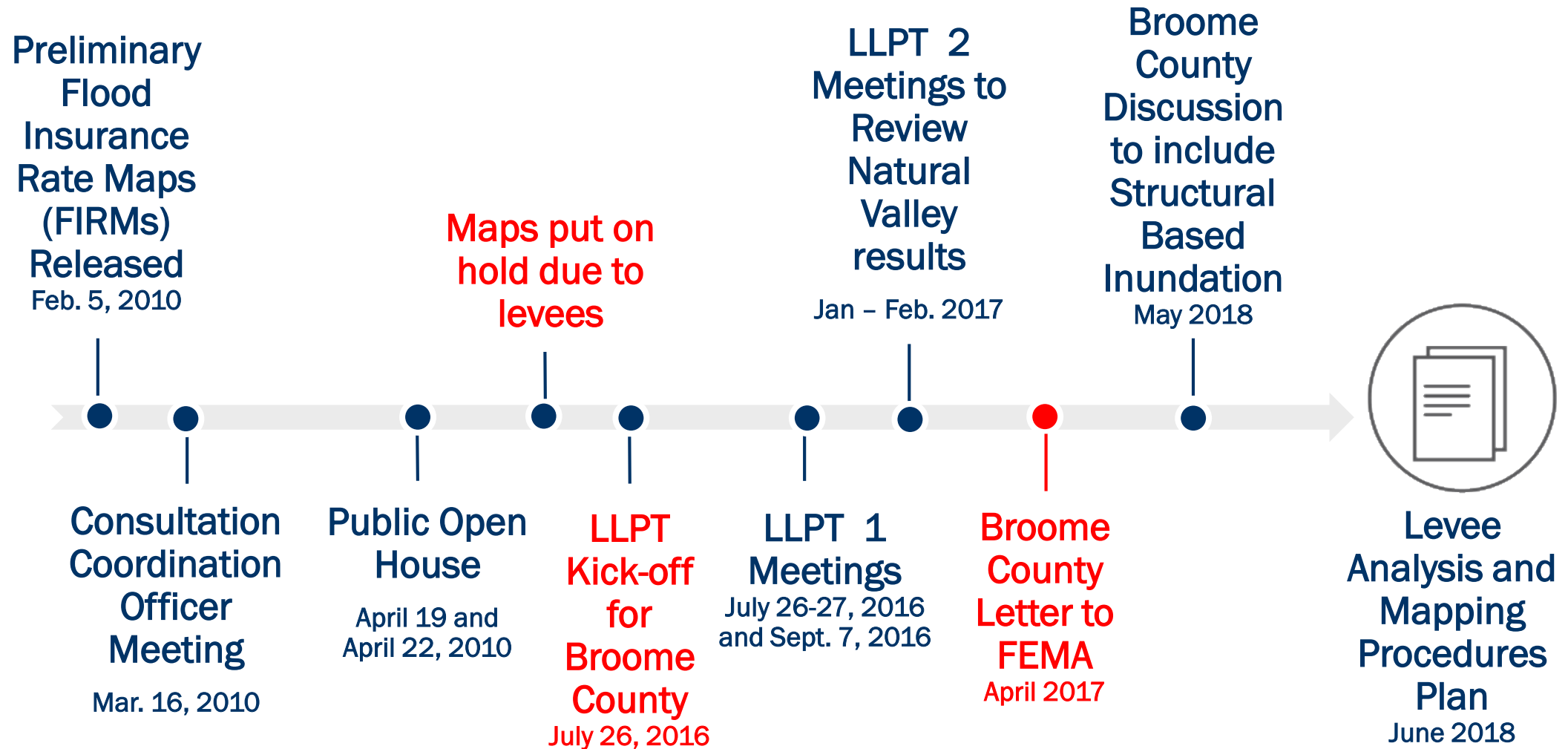
# Shared Levee Responsibilities

## SHARED RESPONSIBILITIES & FLOOD RISK COMMUNICATIONS



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# Outreach Activities: 2010 - Present



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# Review Study Information and Updated Analysis



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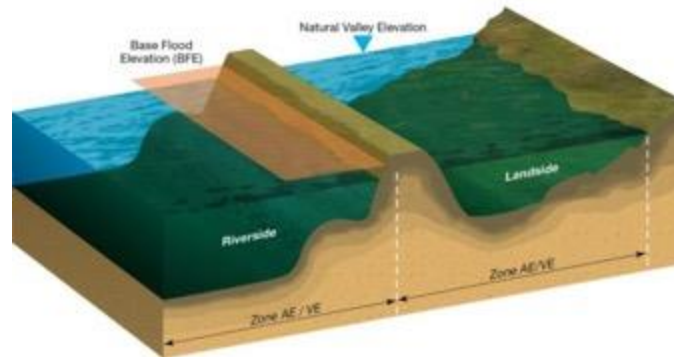


# Initial Concerns Raised by Broome County Communities

1. Provision of sufficient information to municipal officials to adequately understand which LAMP mapping methodology tool best applies to each levee reach.
2. Provision of USACE Levee Screening Tool data
3. FEMA coordination of levee analysis effort with USACE *Upper Susquehanna River Basin Comprehensive Flood Damage Reduction Feasibility Study*
4. Giving communities sufficient time to fully explore funding options and obtain public input before choosing preferred levee analysis procedures

# Levee Mapping Option: Natural Valley

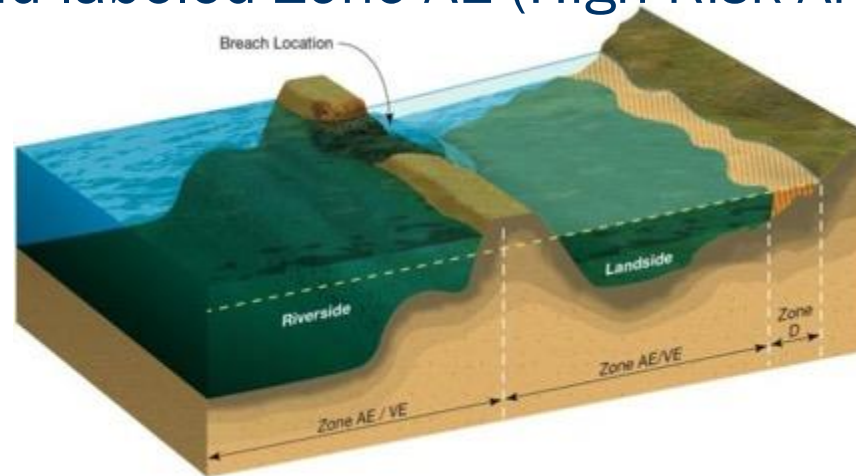
- This analysis maps the special flood hazard area for the land behind the levee as though there is no levee present.
- When would we see this?
  - If a levee is not accredited or is not eligible for one of the other procedures.
  - It is also always applied initially and to the entire levee system to provide a baseline of all areas that could potentially flood.
- What's the Zone?
  - For the un-accredited levee subject to levee analysis mapping procedures, the mapped area behind the levee is labeled Zone D.



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# Levee Mapping Options: Structural-Based Inundation

- When would we see this?
  - For levee systems that do not meet structural standards – or if FEMA does not have enough information to determine if standards are being met.
- What's the Zone?
  - The mapped area behind the levee is based on breaching the levee at more than one location and labeled Zone AE (High-Risk Area).



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# Structural Based Inundation

(\*Approximate extent of floodplain expected from Structural Based Inundation Procedure, at Levee # 5, Chenango River, Binghamton NY)



Upstream Breach Location

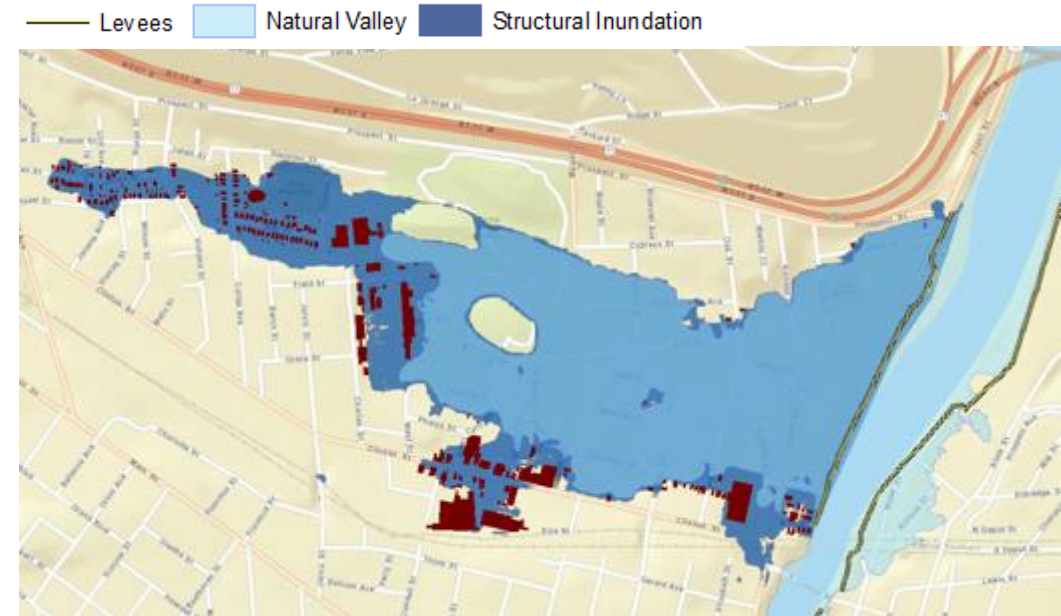
As Needed

Downstream Breach Location

Illustration of breach locations used for this procedure.

**\*Rule of Thumb: Water Surface Elevation tends to be equal to the lowest point on the levee crest:**

1. Increased Flood Depths
2. Increased Velocities
3. Broader Extent of Flooding



Approximate Structural Based Inundation Compared with Natural Valley:  
236 Structures additional structures (606 structures within Natural Valley)



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Microsoft Remote Desktop

+

↗

✎

⚙

↔

New

Start

Edit

Preferences

Remote Resources

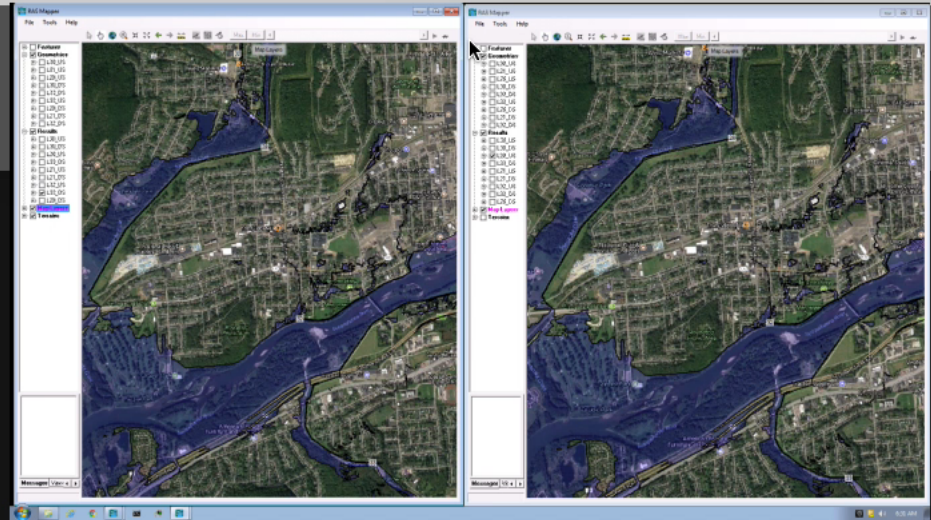
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DewberryPC

User name: dewberry\slawler

Laptop

Deyang





# Coordination with U.S. Army Corps

- **Levee Safety Screenings**

- Qualitative assessment of levee systems based on visual inspection and levee impact area
- LSAC ratings indicate urgency of action

- **Upper Susquehanna Study**

- Study leveraged 2010 FEMA Preliminary H&H Analyses.
- Methodologies are consistent
- New modeling performed in areas where FEMA modeling studies do not exist
  - Levee study areas have effective FEMA models
- Updated levee crest surveys closely match existing surveys in NLD

# Discuss Opportunities for Collaboration



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# Data Requirements for Study Procedures

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

\* - No cost to community

\*\* - Potential additional cost to community

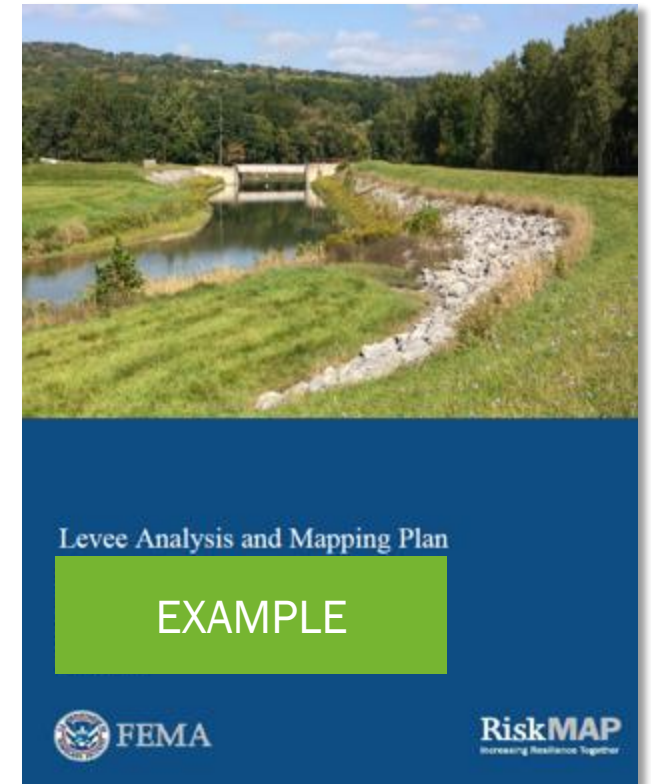


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# Levee Analysis and Mapping Plan

Levee Analysis and Mapping Plan includes the following:

- Levee Overview
- Levee Analysis and Mapping Procedure Background
- LLPT and Stakeholder Engagement
- Freeboard Profile Comparison
- Initial Data Analysis and Findings
- Supporting Data (meeting notes, collected data, analyses



# Next Steps

- Levee plans will be updated as new information becomes available
- Information and analysis developed will be available for communities and county for development and preparedness planning
- No immediate plans for countywide update of flood hazard mapping
- Next phases of levee analysis (advanced analysis, updated mapping) will not commence until countywide update begins, at which point levee plans and initial analysis will be revisited
- Communities are encouraged to maintain contact with FEMA, USACE, NYSDEC on any efforts to improve levee systems



# Contacts

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		Alan Springett, Alternative Project Monitor <a href="mailto:alan.springett@fema.dhs.gov">alan.springett@fema.dhs.gov</a>	(202) 680-8557
Production and Tech. Services	Project Engineers, Floodplain Analysis and Mapping – STARR II	Srikanth Koka, STARR II <a href="mailto:skoka@dewberry.com">skoka@dewberry.com</a>	(703) 849-0584
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		Paige Mandy <a href="mailto:paige.mandy@ogilvy.com">paige.mandy@ogilvy.com</a>	(212) 880-5295



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# Initial Concerns Raised by Broome County Communities

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# Community Breakouts



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# Structural Based Inundation Analysis

## A. Breach locations:

- Upstream
- Center (if needed)
- Downstream

## B. Breach Height:

- Near the levee toe

## C. Breach width:

- 100-500 ft.

## D. Flow at breach location:

- Time series of peak flow event in main channel
- Time at which failure begins
- Flow through the breach

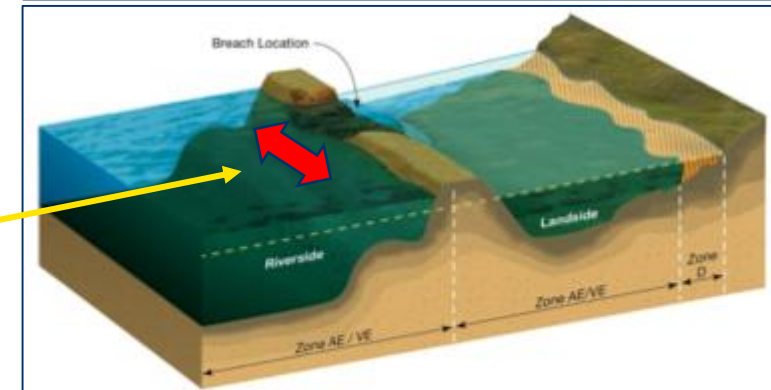
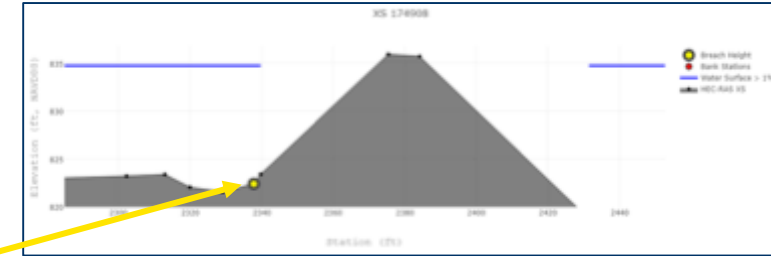
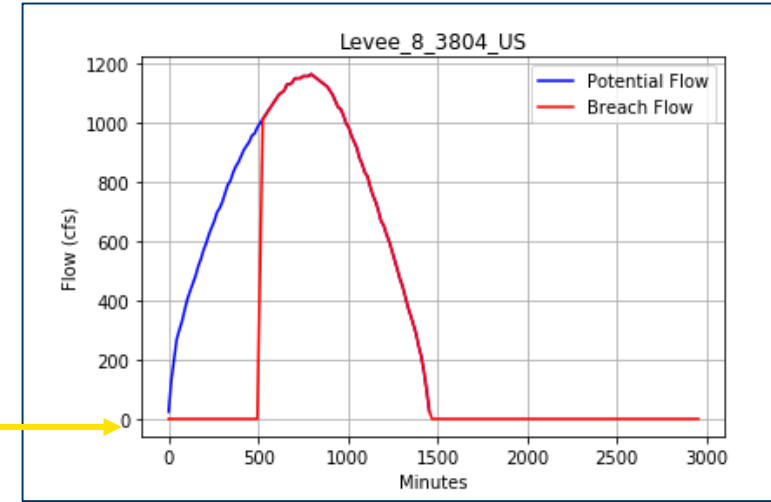
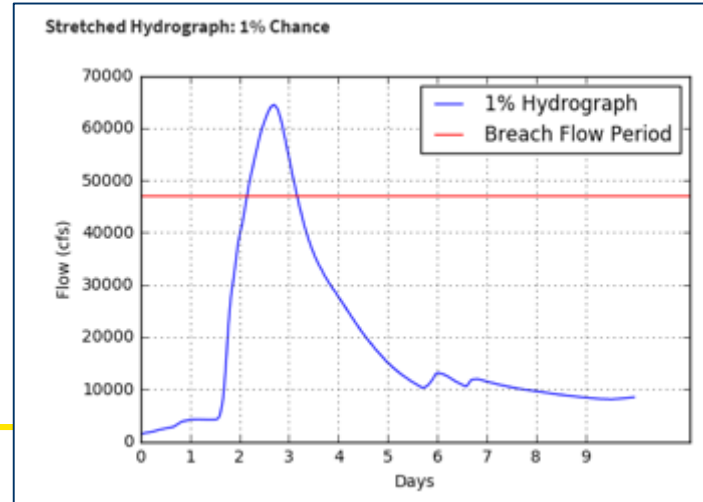


Figure 4-7. Structural-Based Inundation Cross Section View

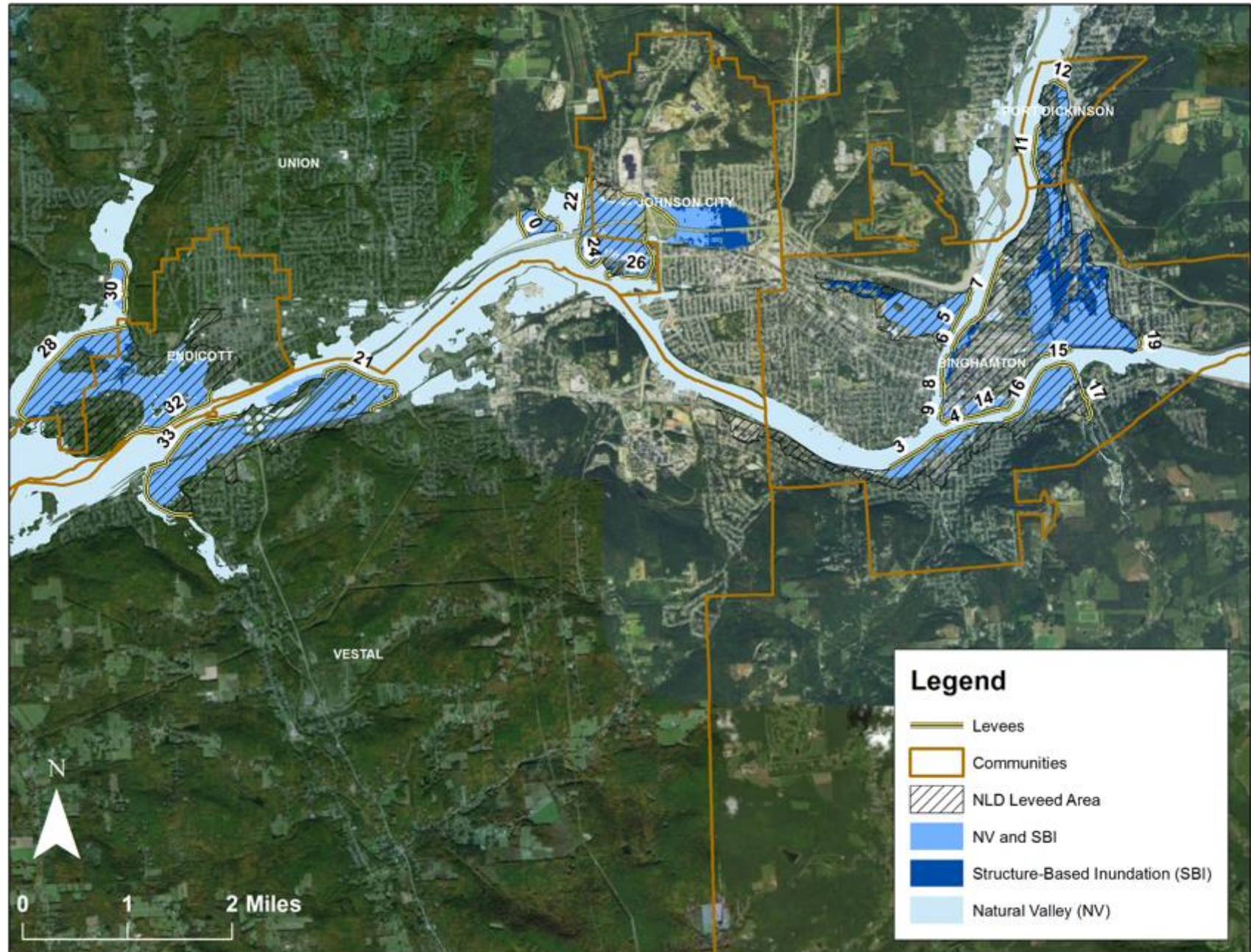


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# First Pass Analysis Results

- Natural Valley Complete
- Structural Based Inundation Complete
- Results will be presented at Break-Out Sessions



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**Thank You**

*Challenges, Innovation, The way forward*