



Region VII Levee Mapping Strategy

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RiskMAP
Increasing Resilience Together



Welcome to the Jungle (of FEMA Levee Acronyms)

LAMP

PAL

NV

Zone X (shaded)

SM

65.10

FAST

NLD

Risk MAP

BFE

Zone D

SBI

LLPT

The Levee Mapping Strategy Is One of Several Levee-Related Components of Region VII's Risk MAP Strategy Plans

➤ **Multi-year Risk MAP Project Plan. Including:**

Strategies for sequencing levee projects and **levee mapping strategy**

➤ **Resource and Alignment Plan. Including:**

R7's levee work group participation and other levee-related responsibilities

➤ **Integration Plan. Including:**

Integration with FM&I Branch on levee-specific issues

➤ **Communication and Outreach Plan. Including:**

Levee-related messages, materials, and minimum requirements

➤ **External Resources Plan. Including:**

Alignment of FEMA and USACE levee stakeholder meetings & submittals

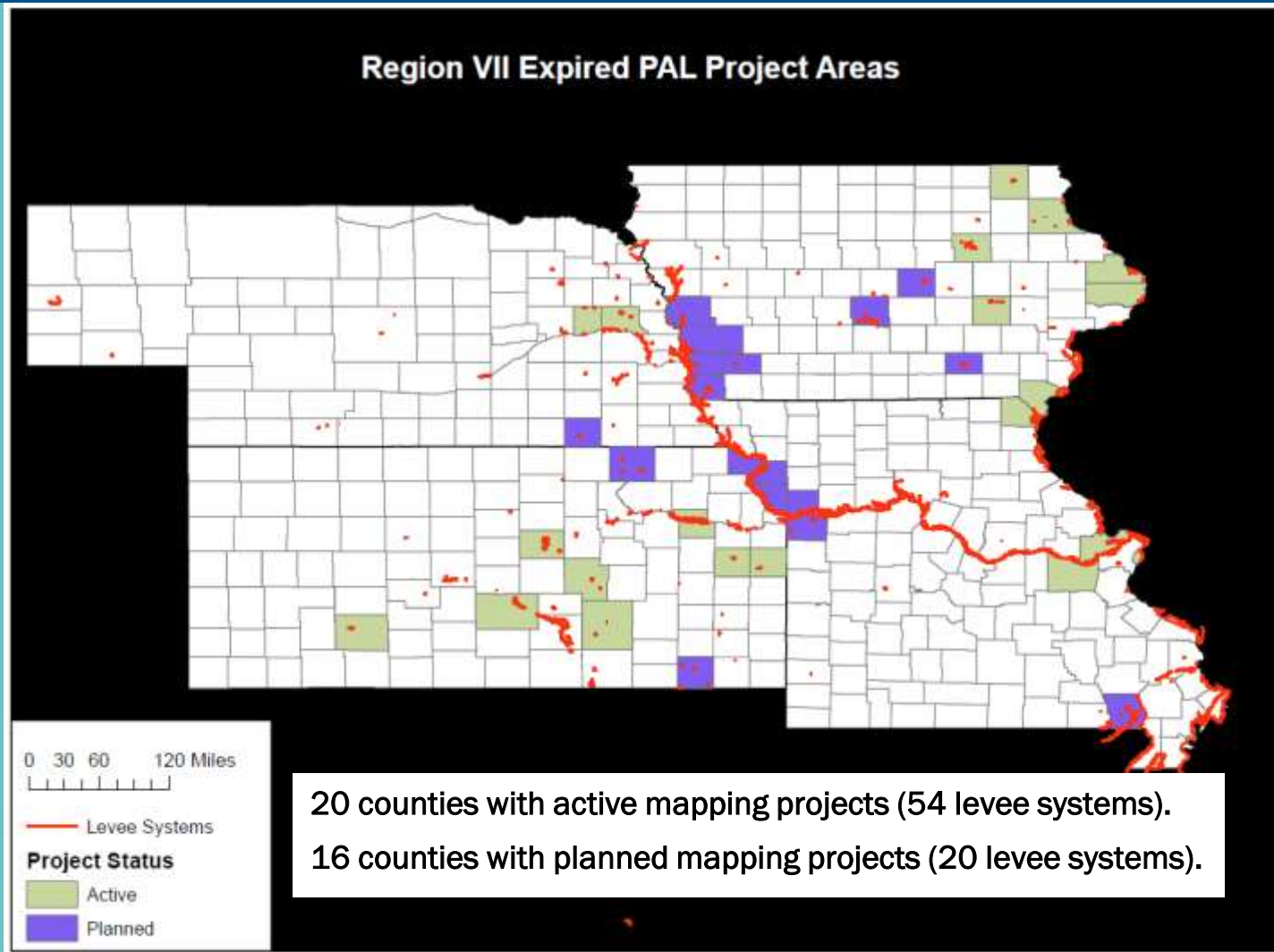
Why Does Region VII Need a Levee Mapping Strategy?

Four project-types were identified during the development of Region VII's Risk Map Strategy:

- Expired Provisionally Accredited Levee (PAL) Physical Map Revisions (PMRs)
- On-hold Countywide Mapping Projects
- **Countywide Mapping Projects**
- Watershed Projects

Each of these project-types are impacted by levees and have their own strategy for sequencing and executing projects.

Active and Planned Expired PAL PMR Mapping Projects



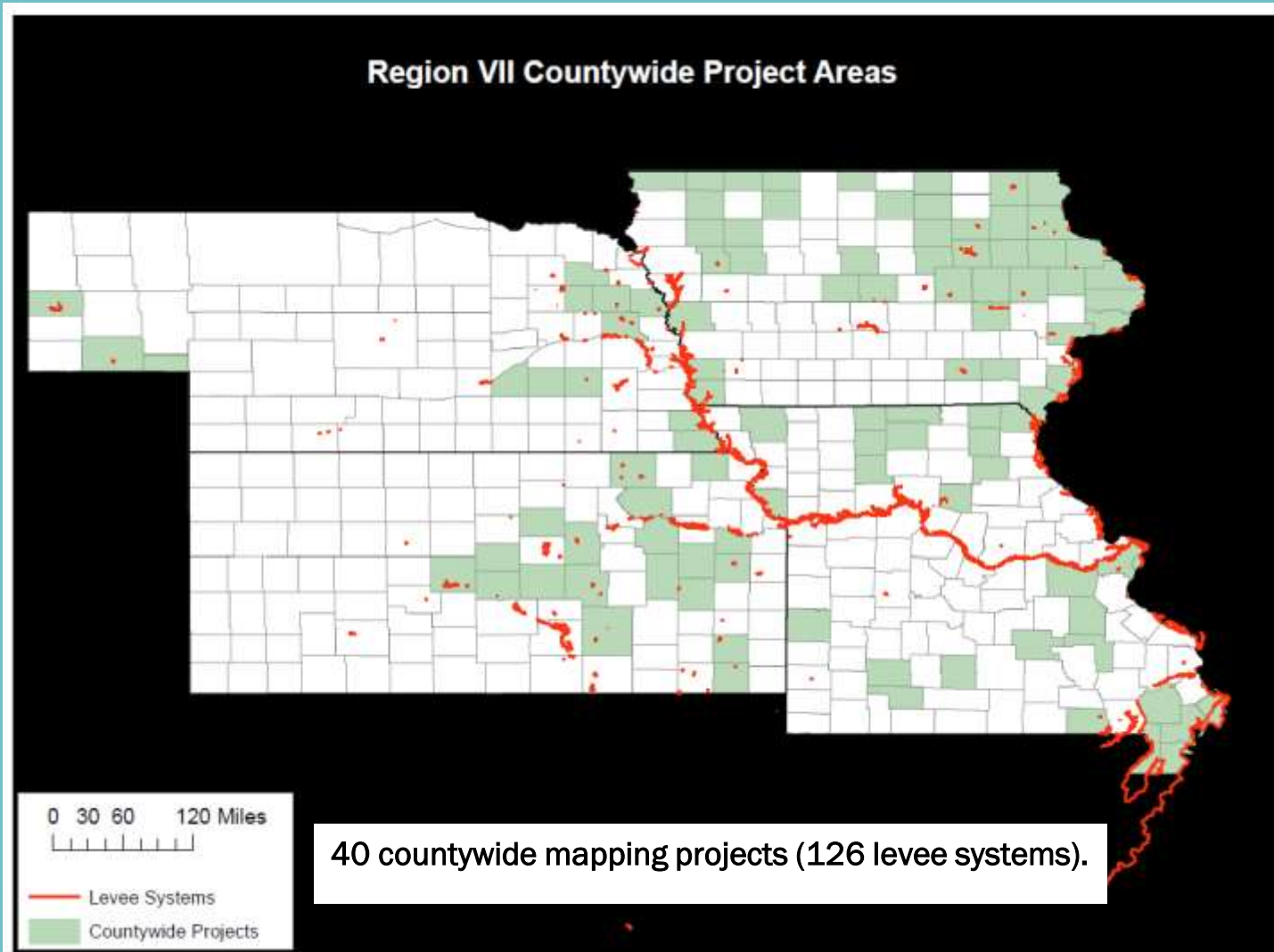
Challenges Associated with Expired PAL PMR Projects

- Requires a separate LAMP Phase 1 – 2 (LAMP Discovery) project resulting in a levee workplan
- Costly effort to conduct Discovery when compared to the resulting outcomes
- Disconnect with contracting vehicles (PTS SO vs PTS RTO/CTP Grant)
- This process results in a significant delay in the initiation of the mapping project

Why Was A New Strategy Needed for Countywide Projects Impacted by Levees?

- Need to map all non-accredited levees as part of the countywide mapping
- Not realistic or effective to perform in-depth Discovery for every levee
- Assumed mapping and meeting requirements are needed ahead of scoping, costing, and negotiating projects
- Levee system-specific meetings requirements must be considered ahead of project initiation

FY16 Countywide Mapping Projects Impacted by Levees



Levee Mapping Decision Matrix Outputs

As part of R7's levee mapping strategy, a Levee Mapping Decision Matrix was created to provide Mapping Partners levee-specific assumptions ahead of project initiation.

- **Assumed Engineering Analysis**
- **Assumed Levee Mapping**
- **Assumed Minimum Levee Meeting Requirements**

Approaches used in developing a matrix leading to these assumptions are based on knowledge gained from LAMP Discovery projects that included 80 levee systems.

Levee Mapping Decision Matrix

	Status of LOMR	Assumed Engineering Analysis	Assumed Levee Mapping	Levee Meeting Following Project Initiation	Levee Meeting Following Completion of New Analysis	Levee Meeting in Association with FRRM
Accredited by LOMR	Meets 65.10	Valid miles = May require without-levee analysis.	Accredited with effective BFES.	Meeting not required.	Meeting not required.	None
		Unverified miles = New enhanced study (w/wo levee).	Accredited with proposed BFES.	PAL1/LLPT1. Present PAL, LAMP, and NV agreement process and requirements.	PAL2/LLPT2. Freeboard may meet 65.10 = Pursue freeboard certification or PAL agreement.	Obtain freeboard certification or present PAL agreement.
			PAL with proposed BFES.		PAL2/LLPT2. Freeboard may meet 2ft min. = Pursue PAL agreement.	Present PAL agreement.
			Non-accredited by NV with proposed BFES.		PAL2/LLPT2. Freeboard may not meet 2ft min. = Pursue freeboard data for PAL, and LAMP data.	Present PAL agreement (if applicable), obtain LAMP data, or proceed with NV.
	Does Not meet 65.10. Deficiencies will be provided to Mapping Partner.	Valid miles = May require without-levee analysis.	Freeboard may meet 2ft min. = PAL with effective BFES.	PAL1. Present PAL and NV agreement process and requirements.	Meeting not required. Pursue PAL agreement.	Present PAL agreement.
			Freeboard may not meet 2ft min. = Non-accredited by NV with effective BFES.	LLPT1. Present PAL, LAMP, and NV agreement process. Pursue freeboard data for PAL, and LAMP data.	Meeting not required. Monitor status of obtaining freeboard or LAMP data.	Present PAL agreement (if applicable), obtain LAMP data, or proceed with NV.
		Unverified miles = New enhanced study (w/wo levee).	PAL with proposed BFES.	PAL1/LLPT1. Present PAL, LAMP, and NV agreement process and requirements.	PAL2/LLPT2. Freeboard may meet 2ft min. = Pursue PAL agreement.	Present PAL agreement.
			Non-accredited by NV with proposed BFES.		PAL2/LLPT2. Freeboard may not meet 2ft min. = Pursue freeboard data for PAL, and LAMP data.	Present PAL agreement (if applicable), obtain LAMP data, or proceed with NV.
Accredited on FIRM	River-Side Flood Hazard Zone	Assumed Engineering Analysis	Assumed Levee Mapping	Levee Meeting Following Project Initiation	Levee Meeting Following Completion of New Analysis	Levee Meeting in Association with FRRM
	A or FHBM	A or FHBM miles = New enhanced study (w/wo levee).	PAL with proposed BFES.	PAL1/LLPT1. Present possible outcomes from new analysis. Present PAL, LAMP, and NV agreement process and requirements.	PAL2/LLPT2. Freeboard may meet 2ft min. = Pursue PAL agreement.	Present PAL agreement.
			Non-accredited by NV with proposed BFES.		PAL2/LLPT2. Freeboard may not meet 2ft min. = Pursue freeboard data for PAL, and LAMP data.	Present PAL agreement (if applicable), obtain LAMP data, or proceed with NV.
	AE	Valid miles = May require without-levee analysis.	Freeboard may meet 2ft min. = PAL with effective BFES.	PAL1. Present PAL and NV agreement process and requirements.	Meeting not required. Pursue PAL agreement.	Present PAL agreement.
			Freeboard may not meet 2ft min. = Non-accredited by NV with effective BFES.	LLPT1. Present PAL, LAMP, and NV agreement process. Pursue freeboard data for PAL, and LAMP data.	Meeting not required. Monitor status of obtaining freeboard or LAMP data.	Present PAL agreement (if applicable), obtain LAMP data, or proceed with NV.
		Unverified miles = New enhanced study (w/wo levee).	PAL with proposed BFES.	PAL1/LLPT1. Present possible outcomes of new analysis. Present PAL, LAMP, and NV agreement process and requirements.	PAL2/LLPT2. Freeboard may meet 2ft min. = Pursue PAL agreement.	Present PAL agreement.
			Non-accredited by NV with proposed BFES.		PAL2/LLPT2. Freeboard may not meet 2ft min. = Pursue freeboard data for PAL, and LAMP data.	Present PAL agreement (if applicable), obtain LAMP data, or proceed with NV.
	Non-Accredited on FIRM	Hydraulically Significant	Assumed Engineering Analysis	Assumed Levee Mapping	Levee Meeting Following Project Initiation	Levee Meeting Following Completion of New Analysis
Yes		Valid AE miles = New with-or-without-levee, or floodway analysis if not in effective model.	Natural Valley with effective BFES or WSELS.	LLPT1. Present LAMP and NV agreement process and requirements.	Meeting not required. Monitor status of obtaining LAMP data.	Obtain LAMP data or proceed with NV.
		Valid A miles = New with-levee analysis if not in effective model.				
		Unverified AE miles = New with-and-without-levee, and floodway analysis.	Natural Valley with proposed BFES or proposed WSELS.		LLPT2. Pursue LAMP data.	
Unverified A miles = New with-and-without-levee analysis.						
No	Valid A or AE miles = No new analysis.	Natural Valley with effective or proposed WSELS/BFES.	Meeting not required.	Meeting not required.	None	
	Unverified A or AE miles = New without-levee analysis.					

Levee Mapping Decision Matrix - Assumed Engineering and Mapping

Accredited on FIRM	River-Side Flood Hazard Zone	Assumed Engineering Analysis	Assumed Levee Mapping
	A or FHBM	A or FHBM miles = New enhanced study (w/wo levee).	PAL with proposed BFEs.
			Non-accredited by NV with proposed BFEs.
	AE	Valid miles = May require without- levee analysis.	Freeboard may meet 2ft min. = PAL with effective BFEs.
			Freeboard may not meet 2ft min. = Non-accredited by NV with effective BFEs.
		Unverified miles = New enhanced study (w/wo levee).	PAL with proposed BFEs.
	Non-accredited by NV with proposed BFEs.		
Non-Accredited on FIRM	Hydraulically Significant	Assumed Engineering Analysis	Assumed Levee Mapping
	Yes	Valid AE miles = New with-or-without-levee, or floodway analysis if not in effective model.	Natural Valley with effective BFEs or WSELs.
		Valid A miles = New with-levee analysis if not in effective model.	
		Unverified AE miles = New with-and-without-levee, and floodway analysis.	Natural Valley with proposed BFEs or proposed WSELs.
		Unverified A miles = New with-and-without-levee analysis.	
	No	Valid A or AE miles = No new analysis.	Natural Valley with effective or proposed WSELs/BFEs.
		Unverified A or AE miles = New without-levee analysis.	

Levee Mapping Decision Matrix - Assumed Minimum Levee Meeting Requirements

	Assumed Levee Mapping	Levee Meeting Following Project Initiation	Levee Meeting Following Completion of New Analysis	Levee Meeting in Association with FRRM
Accredited on FIRM	PAL with proposed BFEs.	PAL1/LLPT1. Present possible outcomes from new analysis.	PAL2/LLPT2. Freeboard may meet 2ft min. = Pursue PAL agreement.	Present PAL agreement.
	Non-accredited by NV with proposed BFEs.	Present PAL, LAMP, and NV agreement process and requirements.	PAL2/LLPT2. Freeboard may not meet 2ft min. = Pursue freeboard data for PAL, and LAMP data.	Present PAL agreement (if applicable), obtain LAMP data, or proceed with NV.
	Freeboard may meet 2ft min. = PAL with effective BFEs.	PAL1. Present PAL and NV agreement process and requirements.	Meeting not required. Pursue PAL agreement.	Present PAL agreement.
	Freeboard may not meet 2ft min. = Non-accredited by NV with effective BFEs.	LLPT1. Present PAL, LAMP, and NV agreement process. Pursue freeboard data for PAL, and LAMP data.	Meeting not required. Monitor status of obtaining freeboard or LAMP data.	Present PAL agreement (if applicable), obtain LAMP data, or proceed with NV.
	PAL with proposed BFEs.	PAL1/LLPT1. Present possible outcomes of new analysis.	PAL2/LLPT2. Freeboard may meet 2ft min. = Pursue PAL agreement.	Present PAL agreement.
	Non-accredited by NV with proposed BFEs.	Present PAL, LAMP, and NV agreement process and requirements.	PAL2/LLPT2. Freeboard may not meet 2ft min. = Pursue freeboard data for PAL, and LAMP data.	Present PAL agreement (if applicable), obtain LAMP data, or proceed with NV.
Non-Accredited on FIRM	Assumed Levee Mapping	Levee Meeting Following Project Initiation	Levee Meeting Following Completion of New Analysis	Levee Meeting in Association with FRRM
	Natural Valley with effective BFEs or WSELs.	LLPT1. Present LAMP and NV agreement process and requirements.	Meeting not required. Monitor status of obtaining LAMP data.	Obtain LAMP data or proceed with NV.
	Natural Valley with proposed BFEs or proposed WSELs.		LLPT2. Pursue LAMP data.	
	Natural Valley with effective or proposed WSELs/BFEs.	Meeting not required.	Meeting not required.	None

Levee Mapping Decision Table – NDRN FY16 CTP Projects

USACE District	County	Jurisdiction	System Name	Levee System Accred Status on Effective FIRM	Flooding Sources	Zone	CNMS Status	Assumed Engineering Analysis	Assumed Levee Mapping
Omaha	Nemaha, Fremont, Atchison	Hamburg city, Nemaha County, Fremont County, Atchison County	L-575 (BW-McKissock-Buchanan-Atchison-Hamburg)	Accredited Levee System	MISSOURI RIVER	A	Unverified	None	Non-accredited with proposed MO River BFEs.
Omaha	Burt	Tekamah city, Burt County	TEKAMAH	Accredited Levee System	MUD CREEK, TEKAMAH DIVERSION DITCH	AE	Unverified	New enhanced	Non-accredited with proposed BFEs.
Omaha	Cheyenne	Cheyenne County	Sidney - Lodgepole Creek LB & Deadwood Draw RB	Non-Accredited Levee System	Lodgepole Creek	AE	Unverified	None	Non-accredited with effective BFEs.
Omaha	Cheyenne	Cheyenne County, Sidney city	Sidney - Lodgepole Creek LB & Deadwood Draw LB	Accredited Levee System	Lodgepole Creek/ Draw creek	AE	Unverified	None	PAL with effective BFEs.
Omaha	Cheyenne	Sidney city	Sidney - Lodgepole Creek RB	Accredited Levee System	Lodgepole Creek	AE	Unverified	None	PAL with effective BFEs.
Omaha	Nemaha	Nemaha County	R-548 - Missouri River & Little Nemaha	Non-Accredited Levee System	Missouri/Nemaha	A	Unverified	New approximate	Non-accredited with proposed WSEs.
Omaha	Nemaha	Nemaha County	R-548 LN - Little Nemaha LB & Happy Hollow RB	Non-Accredited Levee System	Little Nemaha, Unnamed Trib	A	Unverified	New approximate	Non-accredited with proposed WSEs.
Omaha	Nemaha	Nemaha County	R-548 LN - Little Nemaha LB & Moores RB	Non-Accredited Levee System	Little Nemaha, Moores, Unnamed Trib	A	Unverified	New approximate	Non-accredited with proposed WSEs.
Omaha	Nemaha	Nemaha County	R-548 LN - Little Nemaha RB & Jarvis Creek LB	Non-Accredited Levee System	Little Nemaha, Jarvis Creek, Unnamed Trib	A	Unverified	New approximate	Non-accredited with proposed WSEs.
Omaha	Nemaha	Nemaha County	R-548 LN - Little Nemaha RB & Whiskey Run LB	Non-Accredited Levee System	Little Nemaha, Whiskey Run, Jarvis Creek	A	Unverified	New approximate	Non-accredited with proposed WSEs.
Omaha	Nemaha	Nemaha County	R-548 LN - Little Nemaha RB & Whiskey Run RB	Non-Accredited Levee System	Little Nemaha, Whiskey Run	A	Unverified	New approximate	Non-accredited with proposed WSEs and proposed BFEs.
Omaha	Nemaha, Otoe	Nemaha County, Otoe County	R-562 - Peru - Missouri River RB	Non-Accredited Levee System	Missouri River, Camp Creek	A	Unverified	New approximate	Non-accredited with proposed WSEs and proposed BFEs.

Levee Mapping Decision Matrix/Table Rollout with CTPs



FY16 Countywide Levee Mapping Decision Summary

- Provisionally Accredited Levees - 14 levee systems
- Non-accredited, LAMP - eligible, Natural Valley - 55 levee systems
- Non-accredited, LAMP- ineligible, Natural Valley - 24 levee systems
- Levee systems to avoid mapping - 28 levee systems
- Levee systems to incorporate leverage mapping - 5 levee systems

Benefits of Applying the Levee Mapping Decision Matrix

- Consistencies between projects and Mapping Partners
- More appropriate and complete scopes of work and costs estimates
- Reduced project schedules
- Supports planning and sequencing future levee mapping projects





FEMA