



USACE & FEMA: Working Together to Address the Nation's Levee Challenges

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Presenters:

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Today's Agenda

1. The levee challenge & our objectives for this discussion
2. Session Format – How will this interactive session work?
3. Major Areas to be covered
 - ▶ Joint USACE/FEMA efforts
 - ▶ FEMA activities
 - ▶ USACE activities
4. Answer your questions!



This Levee Session's Objective



- **KNOWLEDGE** - Provide you with insight into:
 - ▶ USACE's and FEMA's joint efforts
- **PARTICIPATION** - Provide a forum that encourages you to ask questions and provide feedback.

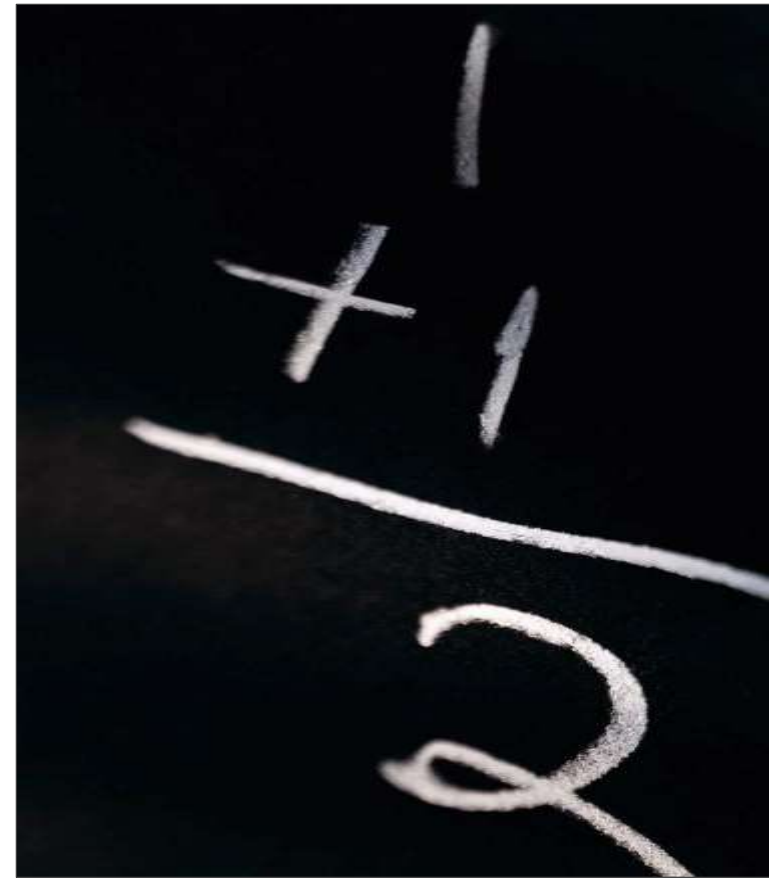
The Continuing Levee Challenge

- The nation has thousands of miles of levees.
- Levees are aging, yet more stuff is being put behind them every day.
- ASCE's 2017 report card on America's infrastructure gave a grade of "D" to levees.
- Most people living behind levees assume they are safe and protected from flooding.



Format for Today's Discussion

- **Step #1** – Facilitator provides a “question/comment”
- **Step #2** – FEMA & USACE panelists provide a response
- **Step #3** – Audience comments/ expands on question/response
- **Step #4** – Panelists may provide additional responses
- **Intermittent Step #5** – Facilitator requests feedback from the audience



Question #1 – High level Overview

What are FEMA's roles & responsibilities for levees?

What are the USACE's roles & responsibilities for levees?

Flood Hazard Analysis & Mapping

Through the National Flood Insurance Program, FEMA:



- Presents flood hazard and risk information to the public
- Establishes appropriate flood hazard zone determinations
- Establishes mapping standards
- Meets regulatory requirements
- Accredits levee systems on FIRMs
- Produces outreach and risk communication material
- Collaborates with stakeholders

National Flood Insurance Program: FEMA Risk MAP (Mapping, Assessment, Planning)

Through collaboration with State, Local, and Tribal entities, Risk MAP will deliver quality data that increases public awareness and leads to action that reduces risk to life and property



Risk = f(Hazard, Performance, Consequences)

What are the hazards and how likely are they to occur?



How will the infrastructure perform in the face of these hazards?



**Who and what are in harms way?
How susceptible to harm are they? How much harm is caused?**



**USACE Levee Safety Program: Focused on People, Risks, and Actions
Recognizes Uncertainties**

USACE Levee Safety Program Mission



...ensure levee systems provide benefit to the Nation by **working with stakeholders to assess, communicate, and manage the risks** to people, the economy, and the environment...

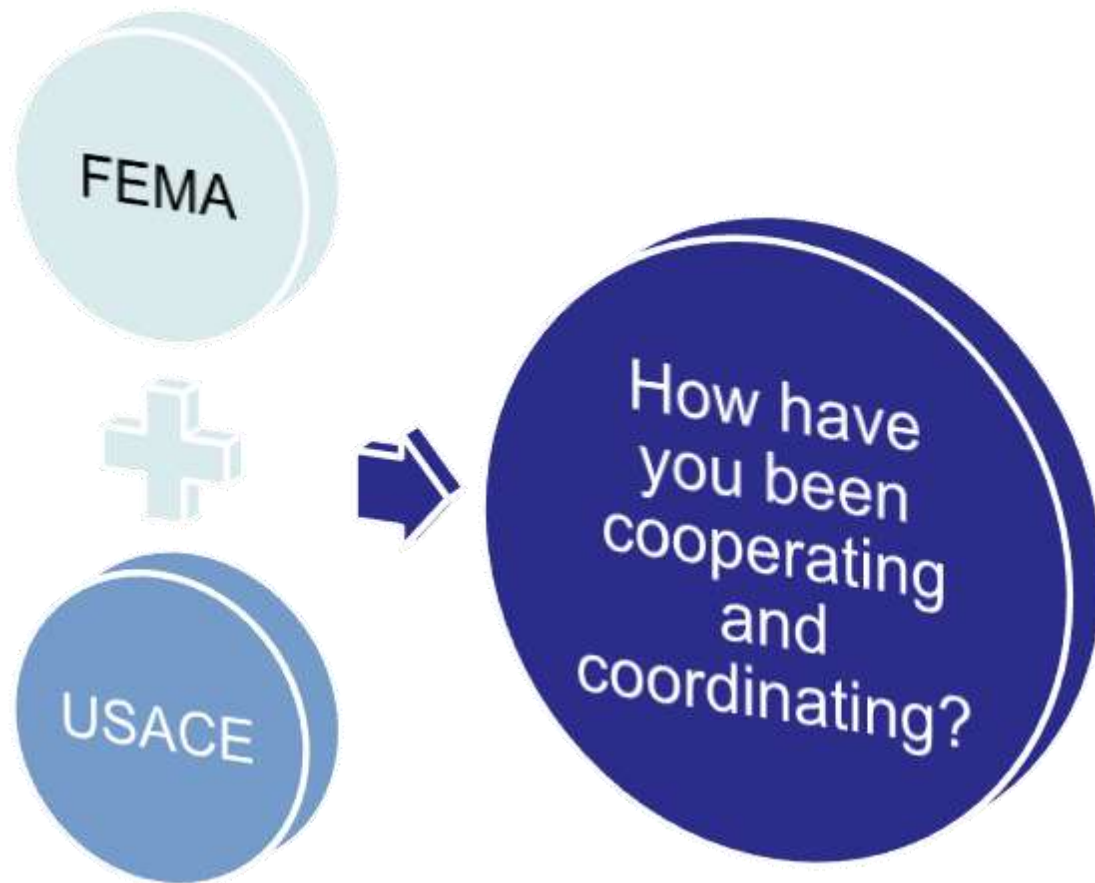
Risk-Informed Decision Making

Goals for USACE Levee Safety Program

- Develop increased understanding of benefits and risks of levee systems
- Promote actions to manage risks
- Make transparent and credible decisions
- Make wise federal investment decisions



Question #2



USACE – FEMA Coordination

- MOU for sharing information & data
- Use NLD for levee data storage and develop tools for analytics
- Risk communication strategy and alignment of messaging
- USACE & FEMA policy alignment
- Teaming to help local communities make sound flood risk management decisions – planning & mitigation



USACE – FEMA MOU (11/13/2014)

- Purpose – Formalize the commitment for alignment of levee activities, information, and messaging
- Content – Coordination of policies, direct exchange of information for accreditation, consistent information sharing with sponsors and communities, and coordination for data management
- <http://www.usace.army.mil/Missions/CivilWorks/LeveeSafetyProgram/TaskForce>

USACE – FEMA MOU (11/13/2014)

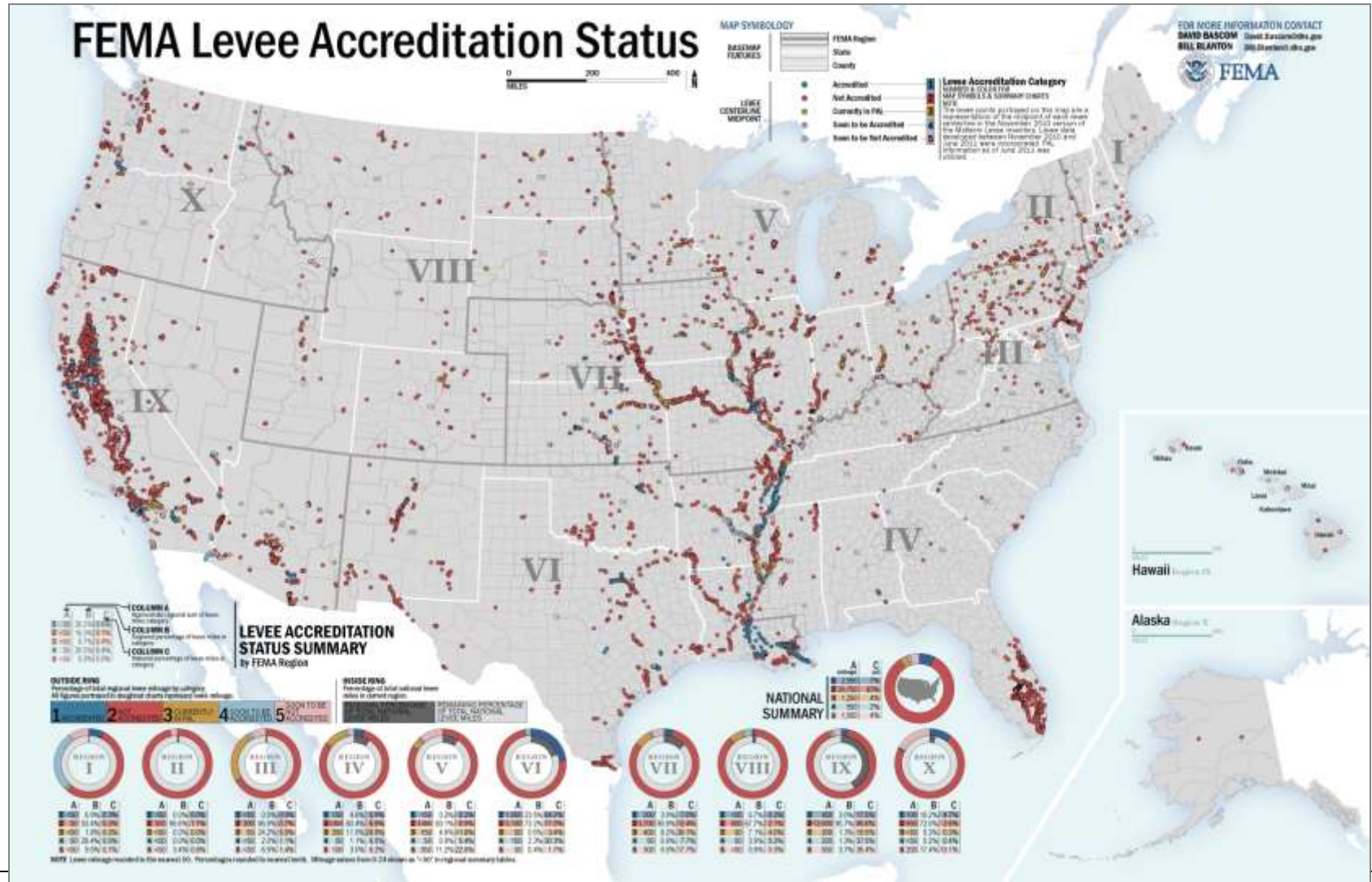
- Continue coordination as policies and activities evolve
- USACE will ensure that each time it conducts a risk assessment for a levee system, it will also provide a determination on levee performance to FEMA for NFIP mapping purposes
- FEMA will accept a risk assessment from USACE as fulfilling the design criteria requirements in 44 CFR 65.10
- USACE will identify when a levee system meets or does not meet a specified subset of requirements in 44 CFR 65.10 for inspections and screenings
- FEMA will accept a USACE screening or inspection showing that a subset of 44 CFR 65.10 requirements met

USACE – FEMA Coordination

- Anticipate the question: “How will this information impact my levee accreditation (my NFIP map)?”
- There will be direct links between USACE inspections, screenings, and risk assessments; this information can influence how a levee system is mapped by FEMA on a Flood Insurance Rate Map.
- FEMA and USACE are federal partners.
- We are coordinating at the federal level to engage stakeholders, build relationships and deliver consistent messages.



Inventory of Levee Status



National Levee Database

[HOME](#)[LEVEES](#)[ADVANCED SEARCH](#)[MAP](#)[HELP](#)[PROVIDE FEEDBACK](#)

Q Find levees by name, location, and more...

Levees of The Nation

The Nation

Click on a state below or on the map to zoom in.

States and Counties

Q Search this list

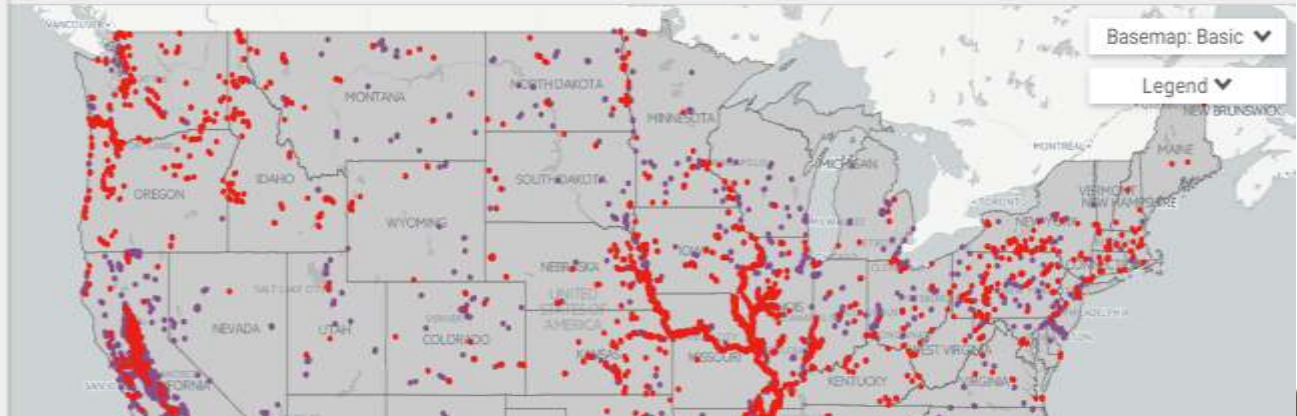
Alabama
Alaska
American Samoa
Arizona
Arkansas
California
Colorado
Connecticut
Delaware

11,622 Levee Systems
1,713 Federal
9,909 Non-Federal

29,748 Miles of Levees
12,191 Federal
17,563 Non-Federal

50,370
Levee Structures

53 years
Average Levee Age



US Army Corps
of Engineers.



How many levee miles in the NLD?

USACE:15,160

- USACE Portfolio
- Levee Systems 2,575

Non-USACE: 14,659

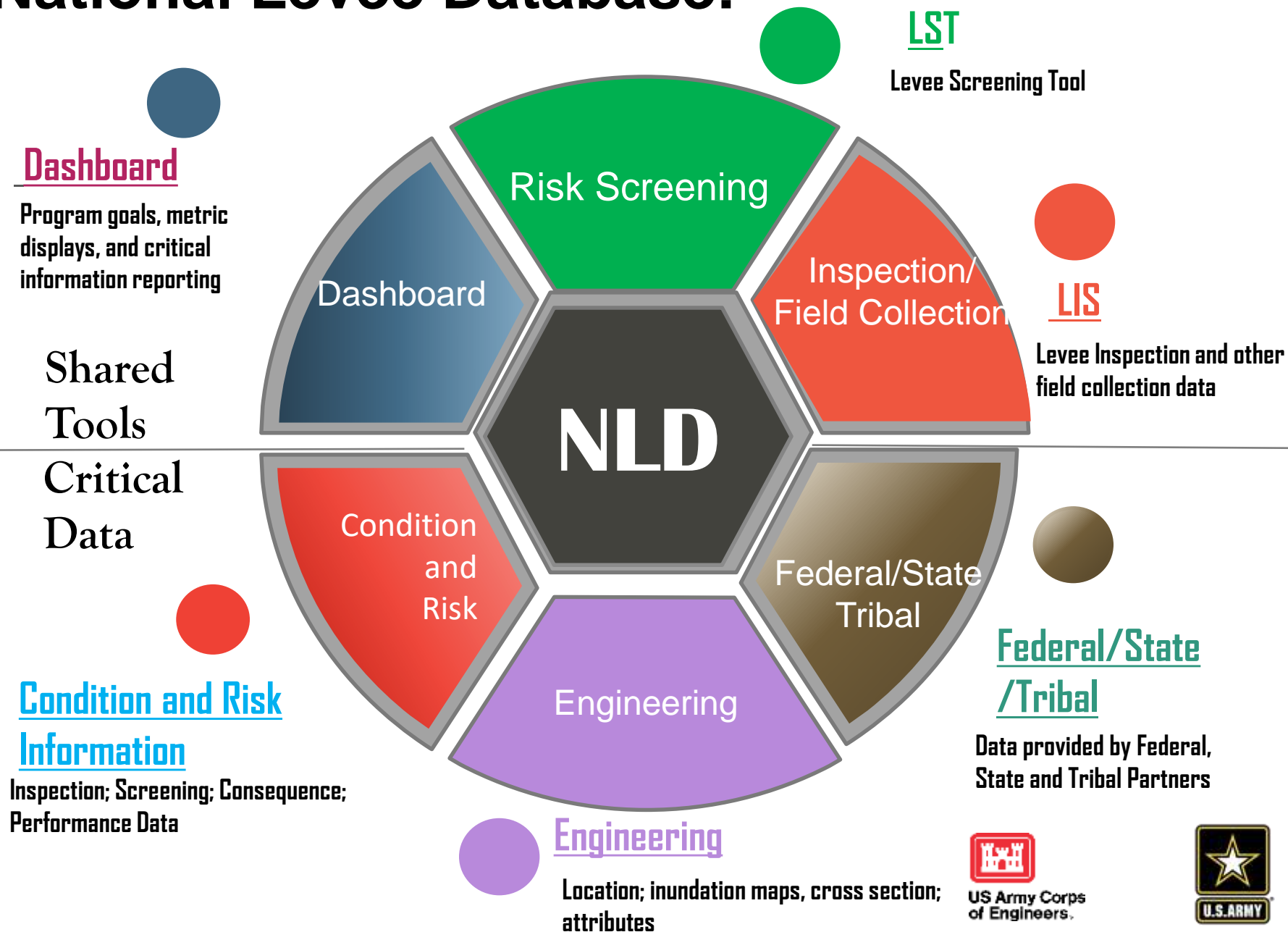
- FEMA MLI Data Set
- Additions from Illinois, Pennsylvania, Miami of Ohio; California pending
- Levee Systems 8,889
- Includes known Tribal levees



Total: 29,819

- Levee Systems 11,464

National Levee Database:



Things are going to change....

NLD team manages
Geospatial data

Stakeholder manages
media, attributes,
reports, etc.

Individual Accounts to
manage data

Online Report capability

Share/transfer data

❖ **Process**

New Web Pages

New Map views

New Search result
engine

Summary Levee System
Information Page

Cloud based servers;
URL name will change

❖ **View**

Levee Inspection/Field
Collection data
incorporated into NLD

Levee Screening Data
viewable

Flood fight/Performance
Data

Dashboard feature

FEMA Status

❖ **Data/**
❖ **Information**

National Levee Database – Schedule:

- **NLD Updates Phase 1**

- New web pages/map/move to cloud
 - Complete date April 2017

- **NLD Updates Phase 2**

- Dashboard
- LIS connection/LST connection
- Complete date July 2017

- **LIS Updates**

- Field collection tool
- Web pages in NLD/Reports
- Complete date July 2017



US Army Corps
of Engineers



Question #3

So what are your agencies working on in addition to the NLD and data sharing?

And how are you letting us know?

Implementation : New USACE Risk Communication Guidance

- USACE Guidance for engaging sponsors and FEMA in Levee Safety Program activities (includes communicating risks associated with levees):
 - Placing information in a risk context
 - Focusing on risk factors and risk reduction actions
- Objectives:
 - Improve public sponsor engagement in and knowledge of USACE levee safety activities
 - Develop increased understanding of benefits and risks of levee systems
 - Promote actions to manage risks
 - Build foundation for shared responsibilities of solutions

USACE PUBLIC AWARENESS COMMUNICATION TEAM RISK COMMUNICATION WORKSHOPS

FY16 - Complete	FY17 - Q1 Complete	FY17 – Q3 – Upcoming
LRH - Huntington	LRN - Nashville	LRB – Buffalo (April)
LRL - Louisville	NWK - Kansas City	POA – Alaska (May)
LRP - Pittsburgh	NOW - Omaha	NAE - New England (late June)
MVK - Vicksburg	NWP - Portland	
MVM - Memphis	NWS - Seattle	
MVN - New Orleans	NWW - Walla Walla	
MVP - St. Paul	SPK - Sacramento	FY17 - Q4 - Scheduling
MVR - Rock Island	SPL - Los Angeles	POH – Honolulu (Jun/Jul)
MVS - St. Louis		SPN - San Francisco
SAJ - Jacksonville		
SAM - Mobile	FY17 – Q2 Complete	
SAS - Savanna	LRC - Chicago	
SAW - Wilmington	LRE - Detroit	
SPA - Albuquerque	LRL – Louisville (repeat)	
SWF - Fort Worth	NAB - Baltimore	
SWG - Galveston	NAO - Norfolk	
SWL - Little Rock	NAN - New York	
SWT - Tulsa	NAP - Philadelphia	



FEMA – USACE Coordination

Why should FEMA and USACE work together to communicate risk?

- Complementary Goals for both agencies
- Provide timely and best available information to inform public and reduce risks to life and property

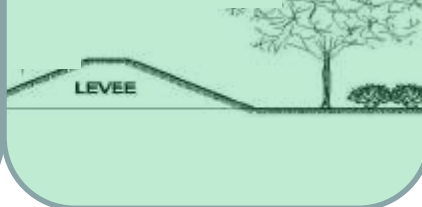


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What are the hazards and how likely are they to occur?



How will the infrastructure perform in the face of these hazards?

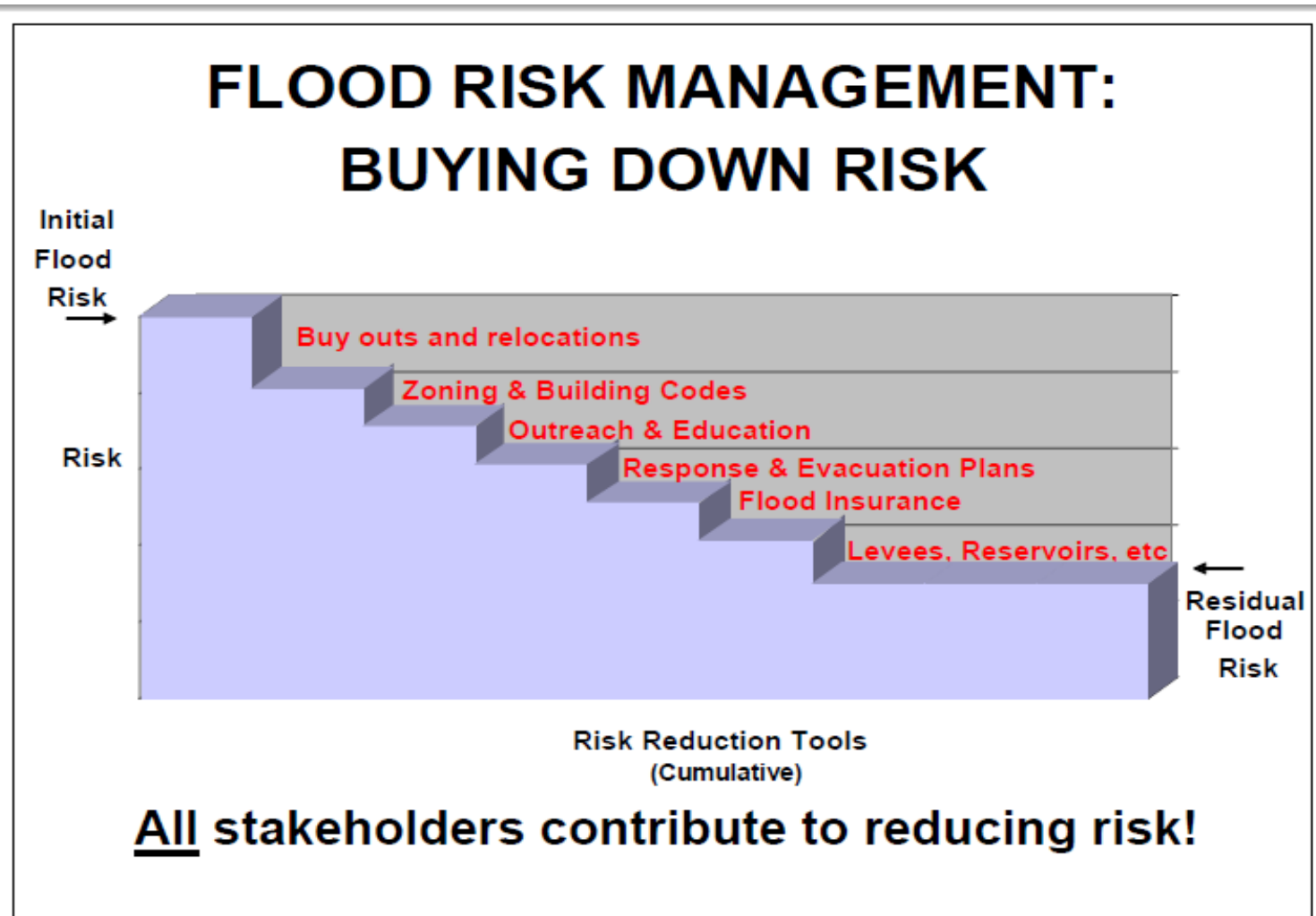


**Who and what are in harms way?
How susceptible to harm are they? How much harm is caused?**



**USACE Levee Safety Program: Focused on People, Risks, and Actions
Recognizes Uncertainties**

Beyond Building Bigger, Safer Levees



FEMA – USACE Coordination

- Opportunity for increased visibility on what each agency is doing with respect to levees
- Improve coordinated messages between the agencies
- Improve relationships
- Link specific inspection and screening items and risk assessments to NFIP
- More joint participation with levee sponsors and communities
- Leverage ongoing activities – Silver Jackets and RiskMAP
- Share best practices and lessons learned



FEMA – USACE Coordination

Challenges:

- Ensuring information is current
- Focus on risk communication and risk reduction:
 - USACE's primary relationship is with levee sponsor
 - FEMA's primary relationship is with community
- Coordination of activities between the two agencies:
 - 10 FEMA Regions
 - 8 USACE Divisions
 - 41 USACE Districts
 - Thousands of communities and levee sponsors



FEMA – USACE Coordination

- Coordination is crucial, especially areas where:
 - Ongoing FEMA mapping study where there is a levee
 - Ongoing levee evaluation to accredit a levee
 - Scheduled / planned FEMA outreach meetings
 - Risk assessment has revealed issues that may potentially affect the accreditation of a levee
 - Politically sensitive or contentious issues

Case Study

Tulsa/West Tulsa Oklahoma

- FEMA Region 6 and USACE met with Tulsa County and City of Tulsa recently
- USACE high level risk assessment determined levees do not meet NFIP accreditation requirements.
- Purpose of the meeting was to determine the best course of action given actions already underway.
- FEMA and USACE are working with the levee sponsor and community to ensure public awareness of their flood risk and what they can do about it.
- Mapping behind the levees will be informed by the pace at which local actions occur.

Question #4

Your Cooperation and communication is appreciated, what is its impact on:

- our certification/accreditation efforts?
- Will risk informed analysis have an impact?

USACE Activities versus FEMA 44 CFR 65.10 Requirements

NFIP REQUIREMENTS AND RELATION TO USACE ACTIVITIES

NFIP REQUIREMENTS (44 CFR 65.10)		CAN COMPLIANCE BE DETERMINED THROUGH:		
CFR CRITERIA CATEGORY	CFR CRITERIA SUBCATEGORY	USACE INSPECTION	USACE SCREENING	USACE RISK ASSESSMENT
Design Criteria	Freeboard (levee height)	NO	RARELY	YES
	Closure devices for all openings	NO	RARELY	YES
	Embankment protection	NO	RARELY	YES
	Embankment and foundation stability	NO	RARELY	YES
	Settlement	NO	RARELY	YES
	Interior drainage	NO	NO	RARELY
Operation Plans	Closures	YES	YES	YES
	Interior Drainage Systems	YES	YES	YES
Maintenance Plan		YES	YES	YES

Why a USACE Levee Inspection Alone ≠ Accreditation for the NFIP



- Visual Inspection
- No engineering analyses, including hydraulic modeling performed
- Focus on condition to top of levee regardless of design level (100 year or 1% is used for the NFIP)
- Inspection information informs the NFIP

Why a USACE Levee Risk Screening Alone \neq Accreditation for the NFIP



- Screenings look at performance from a levee safety perspective – not just the 1%
- Screenings are a screening level assessment based on best available information
- Level of rigor of analysis will not allow for an accreditation decision for all NFIP criteria

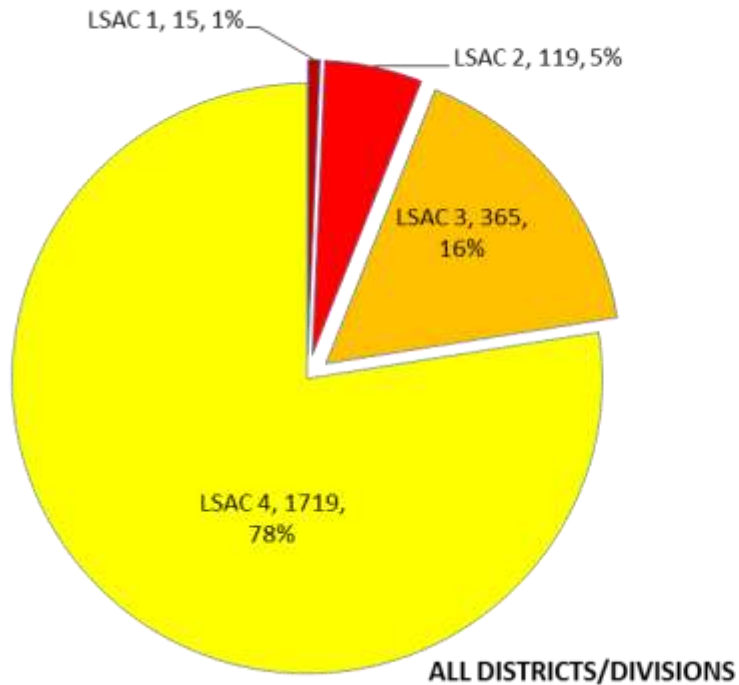
NFIP Findings-Screening

44 CFR 65.10 Design Provision	Description	Relevant Screening Result		NFIP Finding
Freeboard	<i>Height of the levee sufficient to meet the freeboard requirements of 44 CFR 65.10 and/or the assurance requirements of EC 1110-2-6067</i>	H&H/ACE Overtopping	Yes	Positive Finding
Closure Devices for All Openings	<i>All openings must be provided with closure devices according to sound engineering practice</i>	All ratings in closure performance module	LL/LL/LL/ N/A/LL	Positive Finding
Embankment Protection	<i>No appreciable erosion is expected during the base flood</i>	Erosion performance mode - Erosion/Bank Caving factor	LL	Positive Finding
Embankment and Foundation Stability	<i>No seepage into or through the levee foundation and embankment will jeopardize the stability of the levee</i>	Embankment and Foundation Seepage and Piping/Seepage	LL-N/A	Inconclusive
		Embankment Stability/Slope Stability	ML-No	
		Floodwall Stability/Tilting, Sliding or Settlement	-	
		Floodwall Underseepage and Piping/Seepage	-	
Settlement	<i>Future settlement will not impact levee's ability to pass the base flood</i>	H&H/Global Settlement Concerns	No	Positive Finding

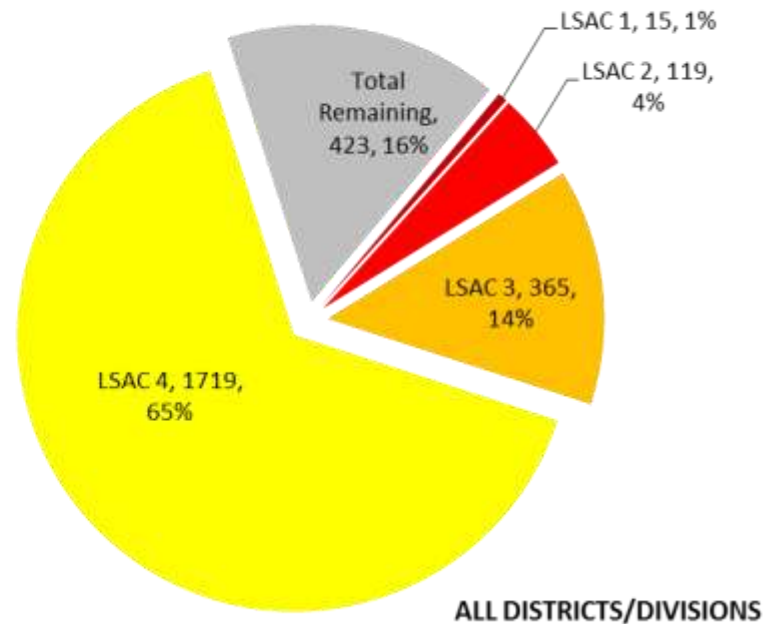
39 of 45 - LST #5877 Little River Headwater Diversion Levee

Levee Safety Action Classification (LSAC) Recommendations

LSOG LSAC Recommendations



LSOG LSAC Recommendations



**What USACE levee activity can meet
the NFIP levee accreditation
requirements in 44 CFR 65.10?**

High Level Risk Assessments

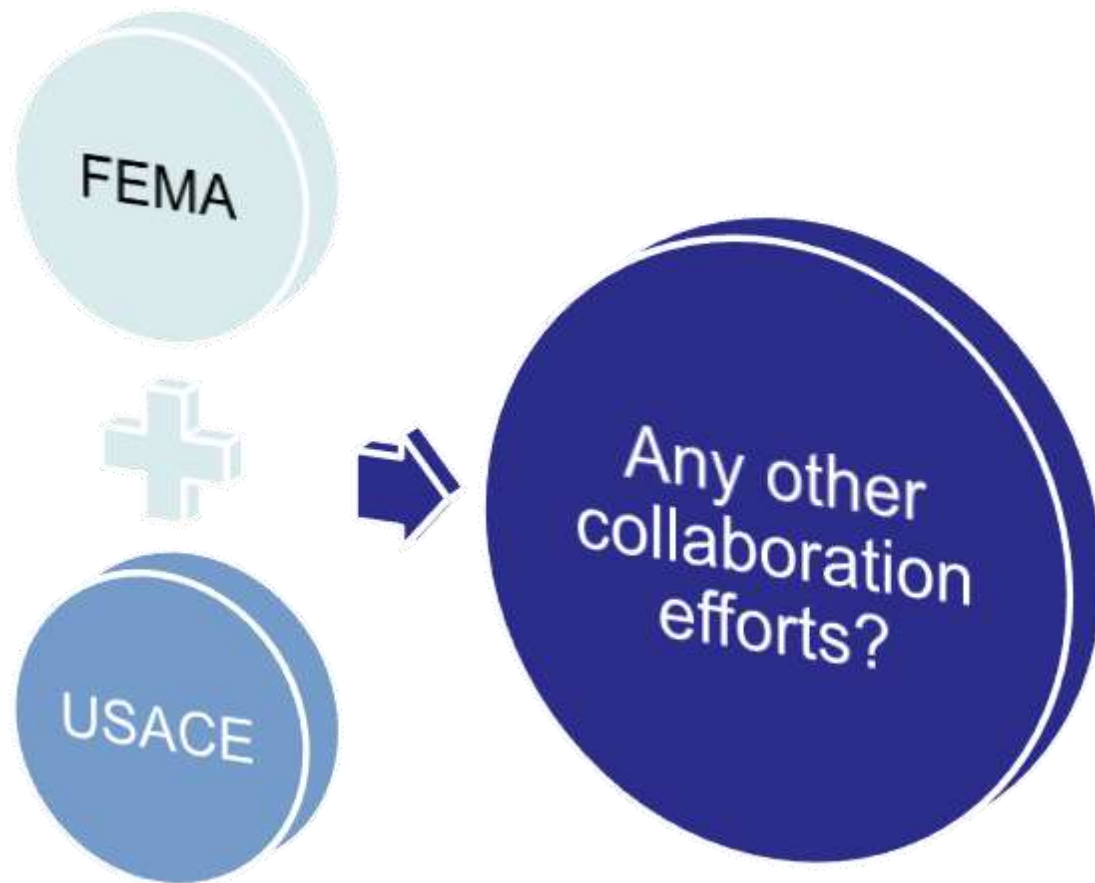
Questions to be answered by a USACE High Level Risk Assessment

- What are the most likely failure modes?
- What are the primary risk drivers?
- What is the current estimated risk?
- What Risk Reduction Measures are appropriate?
- Is further investigation needed?
- *New question added: How might this information inform a FEMA accreditation?*

Benefits to the Risk Assessment Approach

- Analysis based on a range of flood events
- Being able to prioritize actions and determine sense of urgency of implementing actions
- Identification of potential consequences for different scenarios
- Understanding of areas of uncertainties and confidence in decisions
- Supports risk management decisions – levee sponsor, community, and individual residents

Question #5



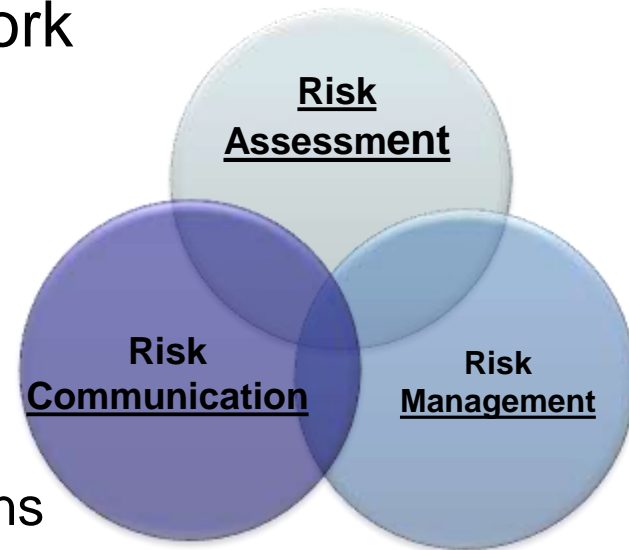
FEMA – USACE Policy Alignment

- FEMA is updated levee-related Guidance and Standards for Flood Hazard Mapping:
 - Consolidate guidance and transform to new format
 - Alignment with Risk MAP project lifecycle

- Objectives as it relates to USACE:
 - Align definitions / terminology
 - Identify required collaboration points with USACE
 - Explore additional opportunities for data sharing
 - Define expectations for inter-agency coordination throughout the Risk MAP project lifecycle

Levee Safety Program Guidance

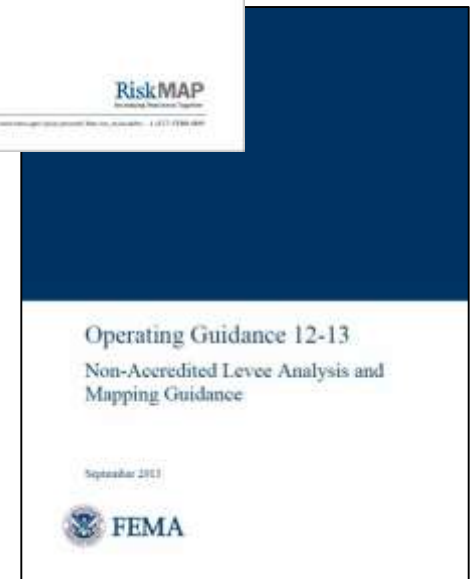
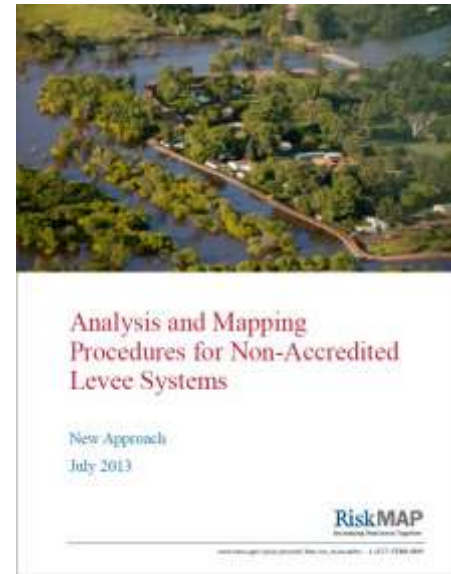
- Organizational and programmatic policy
 - ▶ Roles and responsibilities
- Applying the risk framework
 - ▶ Risk Assessments
 - Inspections
 - Risk characterization
 - Uncertainty
 - ▶ Risk Management
 - Risk management actions
 - Portfolio risk management
 - ▶ Risk Communication



Risk Informed Decisions

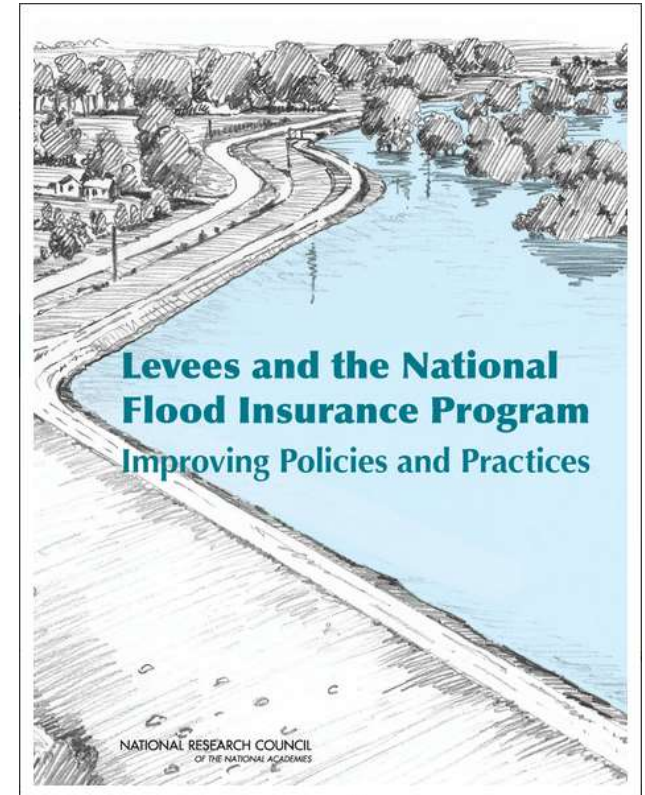
FEMA's Levee Analysis and Mapping Approach

- For Non-Accredited Levee Systems
- Approach Document
 - ▶ Finalized July 2013
- Operating Guidance
 - ▶ Finalized September 2013



Future: Mapping Flood Risk

- Biggert-Waters Flood Insurance Reform Act of 2012 (BW-12)
- Homeowners Flood Insurance Affordability Act (HFIAA) of 2014
- Water Resources Reform and Development Act (WRRDA) of 2014
- National Research Council (NRC) – National Academy of Sciences (NAS)
- American Society of Civil Engineers (ASCE) 2014 Report on National Flood Risk Management
- Association of State Floodplain Managers (ASFPM), National Association of Flood & Stormwater Management (NAFSMA), etc.
- Technical Mapping Advisory Council (TMAC)



National Flood Mapping Program

42 U.S.C. §4101b (Section 216 of BW12)

(b) Mapping

(1) In general

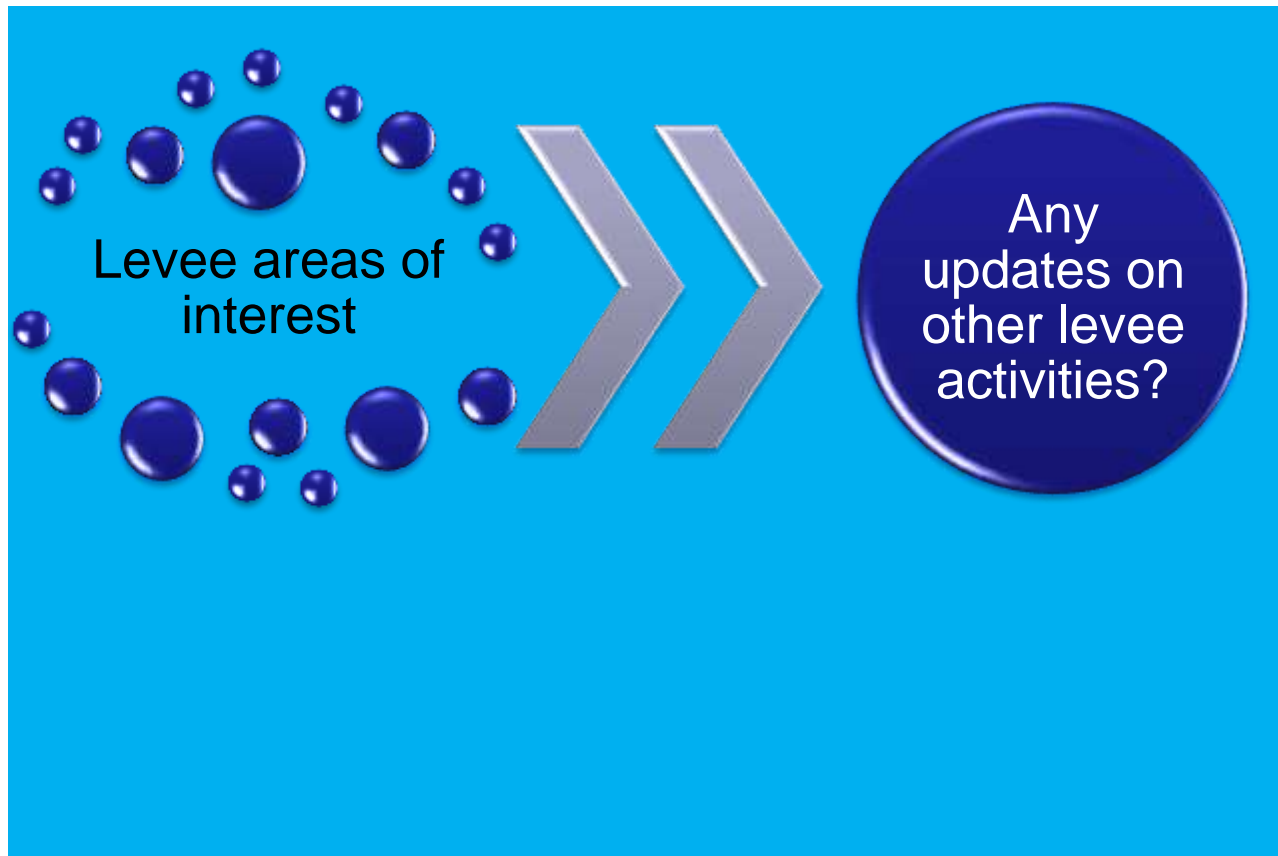
In carrying out the program established under subsection (a), the Administrator shall—

(A) identify, review, update, maintain, and publish National Flood Insurance Program rate maps with respect to—

- (i) all populated areas and areas of possible population growth located within the 100-year floodplain;
- (ii) all populated areas and areas of possible population growth located within the 500-year floodplain;
- (iii) areas of residual risk, including areas that are protected by levees, dams, and other flood control structures;
- (iv) areas that could be inundated as a result of the failure of a levee, dam, or other flood control structure;
- (v) areas that are protected by non-structural flood mitigation features; and
- (vi) the level of protection provided by flood control structures and by non-structural flood mitigation features;

(B) establish or update flood-risk zone data in all such areas, and make estimates with respect to the rates of probable flood caused loss for the various flood risk zones for each such area

Question #6 – for USACE



INVENTORY & REVIEW OF NATION'S LEVEES

Why is it important?

- Reduce risk to those that live & work in leveed areas
- Reduce risk of property & environmental losses
- Encourage the use of appropriate engineering policies, procedures & technical practices



BENEFIT: INCREASE UNDERSTANDING OF RISK

- Establish a baseline understanding of levee condition and risks
- Identify orphan levees
- Inform state emergency management efforts
- Identify risk management partners



BENEFIT: IMPROVE TECHNICAL CAPACITY



- Build inspection, assessment & communication capacity w/in states & owner/operators
- Assist w/ data management (National Levee Database)
- Provide access to tools



Last Opportunity – Final Audience Feedback



- What is the best way for us to help you stay engaged?
- Have you noticed improved FEMA-USACE coordination?
- Any other issues/concerns or questions you would raise?

Not the End

WE ALL STILL HAVE WORK TO DO!

