ASFPM FEMA/USACE Levee Discussion
From Inspections to LAMP – What it Means to You

June 2013

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Today’s Agenda

- The levee challenge & our objectives for this discussion
- Session Format – How we are going to do this
- Major Areas to be covered
  - FEMA & the USACE roles related to levees
  - The USACE/FEMA Task Force
    - Can results from inspections, screenings and risk assessments be used for certification?
    - Is the National Levee Database (NLD) a good tool to share information?
  - LAMP – the new Levee Analysis and Mapping Process
  - Impact of the NAS report on levees and the NFIP
A Snapshot of the Levee Challenge

- The nation has thousands of miles of levees.
- Over 1/4 of the counties in the US have levees.
- ASCE gave a report card grade of “D-” to levees.
- Levees are aging and more stuff is being put behind them.
- Citizens living behind levees assume they are safe from flooding.
This Levee Session’s Objective

- Discuss some of the USACE’s and FEMA’s joint efforts on programs such as:
  - The USACE/FEMA Task Force
  - NLD – National Levee Database
  - “LAMP”

- Provide a forum that encourages you to ask questions and provide feedback.
Format for Today’s Discussion

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

- For many communities, levee certification/accreditation is their main concern. Many stakeholders are confused about the roles of FEMA and the USACE related to levees. The differences between USACE levee safety activities and the analysis required to meet the requirements of 44 CFR 65.10 remain unclear to many stakeholders. Stakeholders continue to expect that USACE inspection or screening activities can lead directly to an accreditation decision for the NFIP.

- What are FEMA’s and the USACE’s respective missions/roles related to levees?
FEMA Responsibilities

**Mitigation**
Any sustained action taken to reduce or eliminate long term risk to people and property from natural hazards and their effects.

**Recovery**
Putting a community back together after a disaster

**Preparedness**
Getting people and equipment ready to quickly and effectively respond to a disaster before it happens

**Response**
Saving life and property during and immediately after a disaster
FEMA’s Role in Levees

- Present flood hazard and risk information
- Establish appropriate risk zone determinations
- Establish mapping standards
- Accredit levee systems on FIRMs
- Produce outreach and communication materials
- Explain risk of living with levees
How Does an Owner Get a Levee System Accredited?

Follow FEMA Procedure Memorandum (PM) No. 63, issued 09/02/2010, to demonstrate compliance with 44 CFR 65.10.
How Does an Owner Get a Levee System Accredited? (cont)

PM 63 includes a checklist to determine if all of the required elements of 44 CFR 65.10 are included in accreditation submittal:

► Design criteria:
  • Freeboard, Closure, Embankment Protection and Foundation Stability, Settlement, Interior Drainage, Other Criteria (as needed)

► Operation Criteria:
  • Flood Warning System, Plan of Operation, Periodic Operation of Closures, Interior Drainage Plan

► Maintenance Criteria:
  • Documented in an officially adopted plan including inspection frequency and responsibilities
USACE Authorities Related to Levees

- Project specific authorizations
- Continuing authorities to address studies, modifications, and technical assistance
- Public Law (P.L.) 84-99: Disaster preparedness, advance measures, emergency operations, and rehabilitation (also known as the Rehabilitation and Inspection Program or RIP)
- Section 221 of the Flood Control Act of 1970 (amended) requires that a written agreement with a non-federal sponsor, including operation and maintenance requirements. (Inspection of Completed Works Program)
- WRDA 2007, National Levee Safety Act
USACE Levee Safety Program Mission

Work with stakeholders to assess, communicate, reduce and then manage the residual risks to people, the economy, and the environment from inundation associated with the presence of levee systems.
USACE Levee Portfolio Risk Management

- Risk informed
- Extensive stakeholder involvement
- Urgency of actions commensurate with risk
Question #1 Follow-up

- Audience comments and or Questions
- Panelist responses
Question #2

So what are you doing to align your respective missions & roles related to levees? – specifically related to certification and accreditation
Through Section 100226, FEMA and USACE are: ...directed to convene a joint task force with USACE to “better align information and data collected” under ICW with NFIP levee accreditation so that

1. Data can be used interchangeably.
2. Information collected for ICW is sufficient to satisfy accreditation.
Principles

- Life safety will not be compromised
- Ensure timely communication of information (transparency)
- Ensure local communities/sponsors continue to have a lead role in submitting a NFIP accreditation package
- Mutually beneficial to both USACE and FEMA activities
- Consider big picture recommendations – changes to 44 CFR 65.10
Challenges

- NFIP maps focus on the 1-percent-annual-chance flood
- USACE focus on overall levee risk
- Implementation in the context of both programs evolving (ripple effect, schedules)
- Partial certifications and submittals
- Agencies have different authorities
Levee sponsors and communities have a key leadership role in ensuring a levee is properly operated and maintained, implementing emergency response activities, and making floodplain management decisions.
Why a USACE Levee Inspection ≠ 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 Screening ≠ 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
What USACE levee activity can result in an NFIP accreditation decision?

Risk Assessments
Levee System:

*Loss of life is of paramount concern.*

*Economic and environmental losses are also important.*

How Likely is it that the Hazard (flood, earthquake) will Occur?

How Will the Infrastructure Perform during this Hazard?

What are the Consequences for Non-Performance?

The USACE Risk Framework
## NFIP Requirements and Relation to USACE Activities

<table>
<thead>
<tr>
<th>NFIP Requirements (44 CFR 65.10)</th>
<th>Can Compliance Be Determined Through:</th>
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<tbody>
<tr>
<td><strong>CFR Criteria Category</strong></td>
<td><strong>CFR Criteria Subcategory</strong></td>
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<tr>
<td><strong>Design Criteria</strong></td>
<td>Freeboard (levee height)</td>
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<td>Closure devices for all openings</td>
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<td>Embankment protection</td>
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<td>Embankment and foundation stability</td>
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<td>Interior Drainage Systems</td>
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<td><strong>Maintenance Plan</strong></td>
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Who gets a Risk Assessment?

Current Approach:
1. In support of planning studies
2. High risk areas
3. Based on available funding

Not every levee in the portfolio will get a risk assessment. Will be conducting very few each year. Where a risk assessment is conducted will likely not coincide with an accreditation need.
Question #2 Follow-up

- Any concerns or thoughts on the risk assessment approach for accreditation?
- Other audience comments and or Questions
- Panelist responses
Audience Feedback #1

- Does having the USACE provide "partial" data towards certification have value?
- When should this data (both positive and negative) be supplied to FEMA?
  - Always
  - Only when the status changes
  - Only when requested by the sponsor
Question #3

How will the USACE share their results with FEMA, and how can communities and levee owners access the data to help them with their certification efforts?
Inspections + Screenings + Risk Assessment

PROPOSED ALIGNMENT DATA CONTRIBUTION

USACE
- Scenario 1: Inspection Data
- Scenario 2: Screening Data
- Scenario 3: Risk Assessment Data

Sponsor/FEMA
- Accreditation Request Data

Accreditation Request Package Submission
Levee Screenings

Risk Assessments
Tailored to Decision

Special Inspections
Post Flood

Rehabilitation or Repair

FEMA’s Mid-term Levee Inventory and other sources

National Levee Database

Levee Inspections
Visual Inspection/Annual
Data Integration Goals

- Identify key aspects of data management and exchange to develop a data management portfolio centered on National Levee Database (NLD).
  - Each agency can develop a platform that meets the specific needs of their mission while sharing data in support of the other.

- Efforts continue to improve the overall ease and accessibility of the NLD to end users, including non-agency stakeholders.

- Develop a Memorandum of Understanding.
Question #3 Follow-up

- Audience comments and or Questions
- Panelist responses
Audience Feedback #2

- Have you had a chance to use the NLD?
- Would it be useful to you have this type of data available to you on the NLD?
Question #4

If we cannot get our levee certified, how will FEMA now analyze and map non-accredited levees?
Revising the Former Levee Analysis and Mapping Approach

February 2011
Congressional request to discontinue “without levee” approach

March 2011
FEMA commences review of the “without levee” approach: LAMP

July 2012
Congress passed the Biggert-Waters Flood Insurance Reform Act

Today
Considering the “without levee” analysis and mapping approach as a part of the ongoing NFIP Reform
Flood Hazard Maps and Former Approach

When a levee was found to be in compliance with 44CFR65.10, the flood hazard was mapped to be contained within the levee system.

However, areas with non-accredited levees were mapped as if the levee system provided no flood hazard reduction ("without levee" approach).
How FEMA Developed the New Approach?

- Suspended in-progress studies and revisions of non-accredited levee systems.
- Sought an approach that would:
  - Comply with statutory and regulatory requirements
  - Be cost-effective, repeatable, and flexible
  - Leverage local input, knowledge, and data
  - Align available resources
- Convened a multidisciplinary project team to evaluate technical options for non-accredited levee systems.
- Sought and implemented feedback:
  - Independent Scientific Body and Community Roundtable
  - Public Review
  - National Academy of Sciences (NAS)
FEMA convened a multidisciplinary project team to evaluate technical options for non-accredited levee systems – members represented:

- FEMA
- U.S. Army Corps of Engineers (USACE)
- Experts from academia and engineering communities

The FEMA-led team:

- Explored possible approaches
- Conducted proof of concept case studies
- Assessed the feasibility of each procedure
- Sought feedback from various stakeholders
Public Review

- Posted a public review document to the Federal Register Notice, (76 FR 78015) from December 15, 2011 until January 30, 2012 to generate feedback

- FEMA held three public online forums
  - Walk participants through the public review document
  - Provide clarification
  - Answer questions
FEMA received hundreds of comments that influenced the approach in various ways, including:

► Applicability of the New Process
► Definition of a Levee and Non-Levee
► Embankment Issues
► Local Input
► Levee Reaches
► Document Structure
Overview of the New Levee Analysis and Mapping

FEMA is replacing the former levee analysis and mapping approach with a suite of alternative procedures.

- The following suite of new procedures have undergone an extensive process of scientific review and public input:
  - Sound Reach
  - Freeboard Deficient
  - Overtopping
  - Structural-Based Inundation
  - Natural Valley
Sound Reach Procedure

Levee reach designed, constructed, and maintained to withstand and reduce the flood hazard posed by a 1-percent-annual-chance flood event.
Freeboard Deficient Procedure

Applies to levee reaches that do not meet the freeboard requirements outlined in Title 44 CFR 65.10.
Overtopping Procedure

Can be used for levee systems, or portions of a levee system, where the crest of the levee is below the 1-percent-annual-chance flood elevation.
Structural-Based Inundation Procedure

Applies to reaches that do not meet the structural standards outlined in Title 44 CFR 65.10 but may still provide a measure of flood risk reduction.
Natural Valley Procedure

Refers to the river channel and floodplain of a river system or coastal area prior to the addition of flood control structures and construction of levees – can be applied to one or more reaches in the levee system or the entire system.
Summary of Reaches

- Barely overtops & is armored: community chooses to do extra evaluation for overtopping
- Overtopping Procedure
- Overtops but not armored
- Structural-Based Inundation Procedure
- Has required freeboard
- Sound Reach Procedure
- Natural Valley Procedure
- Don’t know anything about
  - Not maintained
  - No owner
  - No structural analysis
Hallmarks of the New Approach

- Increase Coordination and Engagement with Stakeholders
- Establish Local Levee Partnership Team
- Acknowledge Uncertainty with Zone D
- Subdivide Systems into Levee Reaches
- Model and Map Levee Reaches with Suite of Technical Procedures
How FEMA Will Use the New Approach

- FEMA will use the new approach to produce:
  - FIRMS
  - Flood Insurance Studies (FIS) Report
  - Related Products for communities and tribes impacted by non-accredited levee system

- Goals of the new Approach
  - Identify more refined flood hazards associated with the non-accredited levee systems for the 1% annual chance flood
  - Reflect the results in FIRMs and related products
Question #4 Follow-up

- Audience comments and or Questions
- Panelist responses
QUESTION #5

Recently the National Academy of Sciences (NAS) came out with recommendations related to levees and the NFIP. How will that impact this new “LAMP” approach and will FEMA still implement “LAMP”? 
In March 2013, the National Research Council of the National Academy of Sciences released the “Levees and the National Flood Insurance Program: Improving Policies and Practices” (NAS Report).
LAMP and the NAS Report

LAMP will be implemented, and represents an important first step towards addressing many of the conclusions and recommendations of the report:

► Moving Towards a Modern Risk Analysis
► Improving Flood Risk Awareness
► Recognizing Uncertainty in Flood Risk
► Supporting Locally-Tailored Risk Management Strategies
► Communicating Flood Risk behind Levees
► Synchronizing Methodologies with the USACE
► Developing a Consistent Federal Message
Continued Evolution

- Work on longer term levee issues
- Periodically issue operating guidance and standards
- Provide communities with a clearer idea of their role
- Emerging information and guidance will affect the future of the Approach
Evaluating the National Flood Insurance Program (NFIP)

Opportunity for more comprehensive alignment between USACE and FEMA rests with future fundamental reform efforts.
Question #5 Follow-up

- Audience comments and or Questions
- Panelist responses
FEMA and the USACE are concerned with public safety and the increasing flood risks associated with accredited levees; should the following be required for certification:

- Flood warning, preparedness and evacuation plans be required?
- Public communication about the risk?
- Stronger floodplain management to reduce potential consequences?
- Mandatory insurance, which would also communicates risk? Premiums could be risk based.

Is the 1% Annual Chance Event for accreditation still appropriate?
Questions/Comments ???