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

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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
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
- Develops and shares 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.
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...
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

FEMA + USACE

How have you been cooperating and coordinating?
USACE – FEMA Coordination

- FEMA and USACE are federal partners.
- Coordinating at the federal level to share data, engage stakeholders, build partnerships and deliver consistent messages.
- Anticipate the question: “How will this information from USACE impact my levee accreditation (my NFIP map)?”
- There are 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 – USACE Coordination

Challenges… and Opportunities:

- 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
USACE – FEMA Coordination Activities

- USACE & FEMA policy alignment
- Risk communication strategy, outreach and alignment of messaging
- Teaming to help local communities make sound flood risk management decisions – planning & mitigation
- Exploring other opportunities for FEMA/USACE collaboration
- Use NLD for levee data storage
- Data sharing
- Voluntary levee inventory and review
Inventory of Levee Status
NATIONAL LEVEE DATABASE – NEW LOOK

Public Release May 2018
OTHER DATA SHARING

- Integrated Water Resources Science and Services (IWRSS)
  - USACE, USGS, NOAA, and FEMA
  - Collaborative interoperability data standards for climatic and hydrological data
  - Establish flood inundation map sharing

- Fort Worth District and FEMA Region 6 Flood Inundation Mapping Pilot Collaboration

- Inspection Information Results

- Risk Assessment Results

- SWIF where accreditation is a local objective
Question #3

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

And how are you letting us know?
Risk Assessment & Communication

Why should FEMA and USACE work together to assess and communicate risk?

- Complementary goals for both agencies
- Provide timely and best available information to inform public and reduce risks to life and property
Implementation of 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
Sharing Risk assessment Results with sponsors and others

Inundation scenarios are used to evaluate levee-related flood risks

\[ \text{RISK} = f(\text{HAZARD}, \text{PERFORMANCE}, \text{CONSEQUENCE}) \]
Assessments Support Risk Management

**HAZARDS**
- Reservoir Operations
- Channel Conveyance Modifications
- Bridge Enlargement
- Clearing Snagging & Debris
- Interior Drainage Features

**PERFORMANCE**
- Improve O&M
- Monitor Levee Performance
- Erosion Protection
- Overtopping Resilience

**CONSEQUENCE**
- Elevating Structures
- Relocation
- Buyout/Aquisition
- Flood Proofing
- Flood Warning System
- Flood Insurance
- Emergency Preparedness Plans
- Land Use Regulation
- Evacuation Plans/Drills
- Zoning
- Communication for Awareness
There Are Ways to Reduce Risk Beyond Building Bigger, Safer Levees

FLOOD RISK MANAGEMENT: BUYING DOWN RISK

Initial Flood Risk

- Buy outs and relocations
- Zoning & Building Codes
- Outreach & Education
- Response & Evacuation Plans
- Flood Insurance
- Levees, Reservoirs, etc

Risk Reduction Tools (Cumulative)

Residual Flood Risk

All stakeholders contribute to reducing risk!
REDUCING CONSEQUENCES OF FLOODING TO PEOPLE – EVACUATION EFFECTIVENESS

RISK COMMUNICATION IS CRUCIAL & URGENT FOR LEVEE SAFETY PROGRAM SUCCESS

- Need to get full benefit from Risk Assessments – we’ve invested a lot
- Information must be timely to be helpful
- Important service we are providing to our sponsors and communities
- Moral obligation, especially where there are life safety concerns
- Lead the way in risk informed decision making for communities and sponsors
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

<table>
<thead>
<tr>
<th>NFIP Requirements (44 CFR 65.10)</th>
<th>Can Compliance Be Determined Through:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>USACE Inspection</td>
</tr>
<tr>
<td><strong>Design Criteria</strong></td>
<td></td>
</tr>
<tr>
<td>CFR Criteria Category</td>
<td>CFR Criteria Subcategory</td>
</tr>
<tr>
<td>Freeboard (levee height)</td>
<td>NO</td>
</tr>
<tr>
<td>Closure devices for all openings</td>
<td>NO</td>
</tr>
<tr>
<td>Embankment protection</td>
<td>NO</td>
</tr>
<tr>
<td>Embankment and foundation stability</td>
<td>NO</td>
</tr>
<tr>
<td>Settlement</td>
<td>NO</td>
</tr>
<tr>
<td>Interior drainage</td>
<td>NO</td>
</tr>
<tr>
<td><strong>Operation Plans</strong></td>
<td></td>
</tr>
<tr>
<td>Closures</td>
<td>YES</td>
</tr>
<tr>
<td>Interior Drainage Systems</td>
<td>YES</td>
</tr>
<tr>
<td><strong>Maintenance Plan</strong></td>
<td></td>
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</tbody>
</table>
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 ≠ 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 meet most of the NFIP levee accreditation requirements in 44 CFR 65.10?

Higher Level Risk Assessments

- Semi-quantitative RA
- Quantitative RA
Questions to be answered by a USACE Higher 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 accreditation on a FEMA Flood Insurance Rate Map?*
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
Cost Sharing Risk Assessments

- A QRA will provide adequate information to reach an accreditation decision.

- An accelerated levee system evaluation can be initiated by a written request from an NFS or a public entity representing a community.

- USACE will estimate the cost and schedule; requester agrees to 50% cost share.

- Template agreement is available at:
  
  http://www.usace.army.mil/missions/civilworks/projectpartnershipagreements
Question #5

FEMA + USACE

Any other collaboration efforts?
FEMA – USACE Policy Alignment

- Feb. 2018: FEMA updated levee-related Guidance and Standards for Flood Hazard Mapping:
  - Consolidated 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 Engineering Circular
FEMA’s Future: Identifying and Communicating Flood Risk

- Biggert-Waters Flood Insurance Reform Act of 2012 (BW-12)
- 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.
FEMA’s Future: Identifying and Communicating Flood Risk

- Goal is to develop a framework to better analyze & identify flood risk associated with levees, regardless of accreditation status.

- 44 CFR 65.10 does not allow us to:
  - Price risk appropriately for NFIP (FEMA)
  - Communicate residual risk (FEMA)
  - Manage risk (Communities)

- Data informs actuarial risk rating for flood insurance premiums for the NFIP

- Partner with USACE given their role as the international leader with expertise on conducting flood risk assessments for levee systems.
Question #6 – for USACE

Levee areas of interest

Any updates on other levee activities?
HQ USACE - Led Activities

- Levee Portfolio Report
- Non-Project Segments
- WRRDA 2014 Section 3013 Levee Veg Revisit
- Voluntary Inventory and Review of Any Levee in the Nation
- Voluntary Federal Levee Safety Guidelines
Levee portfolio report

A Summary of Condition and Flood Risks Associated with the USACE Levee Portfolio

PREPARED BY U.S. ARMY CORPS OF ENGINEERS LEVEE SAFETY PROGRAM

NOVEMBER 2017

WHAT IS ‘AT STAKE’ BEHIND THE USACE LEVEE PORTFOLIO?

- Over 11 million people live and work behind levees
- Over $1.3 trillion of property value behind levees
- 86% of people live behind 7% of levees
Levee Safety Action Classification (LSAC) Recommendations

LSOG LSAC Recommendations

- LSAC 1, 15, 1%
- LSAC 2, 119, 5%
- LSAC 3, 365, 16%
- LSAC 4, 1719, 78%

ALL DISTRICTS/DIVISIONS

LSOG LSAC Recommendations

- Total Remaining, 423, 16%
- LSAC 2, 119, 4%
- LSAC 3, 365, 14%
- LSAC 4, 1719, 65%

ALL DISTRICTS/DIVISIONS
Screening Level Risk Assessments (SLRA) for Non-Project Segments connected to USACE Levees

For tracking purposes giving district credit for four distinct areas.
1) Segment entered into the NLD
2) SLRA started in the Levee Screening Tool (LST)
3) Screening entering into the approval process within the LST
4) HQ LSO Approved screening

Each quadrant of the pie chart represents one of the areas above.

- 1. % loaded into NLD: 26%
- 2. % Started in the LST: 54%
- 3. % in LST Approval Process: 46%
- 4. % HQ LSO Approved: 1%

Progress By Division

<table>
<thead>
<tr>
<th>Division</th>
<th>Number of Non Project Segments</th>
<th>Number of Segments in the NLD</th>
<th>Number of Segments in the LST</th>
<th>Number of Segments submitted or Better in the LST</th>
<th>Number of Segments HQ LSO Approved</th>
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<tbody>
<tr>
<td>LRD</td>
<td>20</td>
<td>18 90%</td>
<td>17 89%</td>
<td>1 3%</td>
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<tr>
<td>MVD</td>
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<td>97 87%</td>
<td>69 45%</td>
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<tr>
<td>NAD</td>
<td>57</td>
<td>2 4%</td>
<td>2 4%</td>
<td>-92 -56%</td>
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<tr>
<td>NWO</td>
<td>11.2</td>
<td>96 84%</td>
<td>50 43%</td>
<td>0 0%</td>
<td>0 1%</td>
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<td>FEO</td>
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<tr>
<td>SAD</td>
<td>46</td>
<td>46 100%</td>
<td>12 26%</td>
<td>0 0%</td>
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<tr>
<td>SPD</td>
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<td>81 88%</td>
<td>79 79%</td>
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<tr>
<td>EWD</td>
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<td>0 0%</td>
<td>0 0%</td>
<td>0 0%</td>
<td>1 17%</td>
</tr>
<tr>
<td>Total</td>
<td>444</td>
<td>357 79%</td>
<td>203 46%</td>
<td>-31 -7%</td>
<td>0 2%</td>
</tr>
</tbody>
</table>

Objective is to have all Non-Project Segments through HQ LSO Approval by the End of FY 2019.

Overall Scoring being tracked towards 2019 will be:
- 95%-100% Green
- 80%-95% Amber
- <80% Red
Voluntary National Levee Inventory and Review

Inventory
- General Location and Condition of Nation’s Levees
- Consequences behind levee systems
- National Levee Database

Review
- Inspection
- Screening Level Risk Assessment
- Levee System Summary

Partnership/Communication
- Create ongoing Partnership with State and Tribe
- Training / Sharing Best Practices
- Effective Communication

Ongoing Activity
One Time Activity
Ongoing Activity

WRRDA 2014 – Title IX, Section 9004
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 within states & owner/operators
- Assist with data management (National Levee Database)
- Provide access to tools
WRRDA 2014 – SECTION 3013

• Comprehensive review of the guidelines (ETL 583 and PGL) to determine if they are appropriate for all regions.

• Provide greatest benefits for public safety and ensure levee safety investments minimize environmental impact.

• Account for woody vegetation benefits to levee safety.

• Consult with federal agencies, state, tribal, regional and local government, NGOs, and the public.

• Solicit and consider views of independent experts.

• Produce a summary report to congress.

• No USACE directed vegetation removal unless it is shown to present an unacceptable risk.

• Reconsider any previous action affected by the former guidelines.
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!