Los Angeles District COE

Jody Fischer P.E.
Levee Safety Program Manager

Patti Sexton P.E.
VP Tetra Tech

USACE SPL Levee Safety Program – Driving Risk Down

A Presentation for the FMA Conference
September 10, 2015
AGENDA

- Levee Safety Program Overview
- Periodic Inspections
- PL 84-99 Rehabilitation Program (RP), & SWIF
- Levee Screenings
- Risk Communication
  - Roles and Responsibilities
  - Emergency Action Plans
  - Pre-Storm Preparedness
U.S. Army Corps of Engineers
Levee Safety Program Mission

Assess the integrity and viability of levees and recommend actions to assure that levee systems do not present unacceptable risks to the public, property, and the environment.

Levee Safety Program Principles

- **Public safety** is the primary focus.
- Part of broader **flood risk management**.
- Must be **consistent, continuous, & periodic**.
- Levees **do not eliminate flood risk**.
- Levee safety & flood risk management are a **shared responsibility**.
- Communicate accurate and timely information to **drive action**.
Status in Implementing the USACE Levee Safety Program

Answer the Basic Questions
- National Levee Database
- Inspection Ratings And Eligibility
Initiated 2006 -2009

Tell the Story
- Sponsor Meetings
- Public Dialogue
Initiated in 2010

Build Shared Solutions
- Plan solutions
- Silver Jackets
- SWIFs
- 408s, 216s
- Advise
- Plan Path Forward

Today
Completing through Division approval in 2015

- **Risk Assessments**
  - Tailored to Decision

- **Special Inspections**
  - Post Flood

- **Periodic Inspections**
  - Visual/data review/5-10 years

- **Routine Inspections**
  - Visual Inspection/Annual

- **Rehabilitation or Repair**

- **FEMA’s Mid-term Levee Inventory and other sources**

Activities beginning now

Completing 1st time PIs in 2015

**National Levee Database**

Activities beginning now
LA District PIs
109 Systems will receive 1\textsuperscript{st} time PIs
95 are completed as of September 1, 2015
The remaining 14 will be completed by the end of January 2016.

LA District Screenings
160 total Segments to Screen
104 are completed as of September 1, 2015.
The remaining 56 will be completed by the end of January 2016.
National Levee Database

https://nld.usace.army.mil

Creation began in 2006 – Open to the Public October 2011

- Interagency Steering Committee
- Incorporating other datasets
- USACE/FEMA integration team
- Outreach activities

- The Los Angeles District currently has 144 systems and 330 miles in the NLD
- Only the executive summary with the final rating are made public

- 2,509 systems
- Known miles today = 14,514
- Bureau of Rec miles = 172.67
PURPOSE: Assess the integrity and viability of levees and recommend actions to assure that levee systems do not present unacceptable risks to the public, property, and the environment.


Periodic Inspections: 5 years
Routine Inspections: annually
Inspection Checklists

- Embankments
- Interior Drainage System
- Floodwalls
- Flood Damage Reduction Channels
- Pump Stations
- General Items
- Levee Embankments
<table>
<thead>
<tr>
<th>Rated Item</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Unwanted Vegetation Growth</td>
<td>A, M, or U</td>
</tr>
<tr>
<td>2. Sod Cover</td>
<td>&quot;</td>
</tr>
<tr>
<td>3. Encroachments</td>
<td>&quot;</td>
</tr>
<tr>
<td>4. Closure Structures</td>
<td>&quot;</td>
</tr>
<tr>
<td>5. Slope Stability</td>
<td>&quot;</td>
</tr>
<tr>
<td>6. Erosion/Bank Caving</td>
<td>&quot;</td>
</tr>
<tr>
<td>7. Settlement</td>
<td>&quot;</td>
</tr>
<tr>
<td>8. Depressions/Rutting</td>
<td>&quot;</td>
</tr>
<tr>
<td>9. Cracking</td>
<td>&quot;</td>
</tr>
<tr>
<td>10. Animal Control</td>
<td>&quot;</td>
</tr>
<tr>
<td>11. Culverts/Discharge Pipes</td>
<td>&quot;</td>
</tr>
<tr>
<td>12. Riprap Revetment and Bank Protection</td>
<td>&quot;</td>
</tr>
<tr>
<td>13. Revetments other than Riprap</td>
<td>&quot;</td>
</tr>
<tr>
<td>14. Relief Wells/Toe Drainage Systems</td>
<td>&quot;</td>
</tr>
<tr>
<td>15. Seepage</td>
<td>&quot;</td>
</tr>
</tbody>
</table>
The Checklist Levee Embankment
Encroachments

<table>
<thead>
<tr>
<th>Rating Guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
</tr>
<tr>
<td>M</td>
</tr>
<tr>
<td>U</td>
</tr>
</tbody>
</table>
Rating Summary

- Culverts
- Vegetation
- Animal Burrows/Control
- Pump Stations
- Encroachments
- Slope Stability
- Floodwalls
- Discharge Pipes
- Bank Caving
- Closure Structures
- Sluice Gates
- Excavation
- Sod Cover
- Embankment
- Relief Wells
- Slides
- Shoaling and Riprap
- Settlement

=LA District
825 “Unacceptable” Rated Items - Levee Embankments, Floodwalls, Interior Drainage Systems

- Unwanted Vegetation Growth - Levee Embankments (277)
- Encroachments - Levee Embankments (84)
- Erosion/Bank Caving - Levee Embankments (34)
- Depressions/Rutting - Levee Embankments (106)
- Culverts/Discharge Pipes - Interior Drainage Systems (135)
- Vegetation Obstructions - Interior Drainage Systems (47)
- All Other "Unacceptable" Rated Items - Levee Embankments, Floodwalls, Interior Drainage Systems (142)
Final Ratings

LAD Ratings for 125 Systems

- **Acceptable** (1, 0.8%)
- **Minimally Acceptable** (93 Ms, 75%)
- **Unacceptable** (31 Us, 25%)

Total System Ratings

<table>
<thead>
<tr>
<th>Category</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Unacceptable Ratings</td>
<td>502</td>
</tr>
<tr>
<td>Total Minimally Acceptable Ratings</td>
<td>933</td>
</tr>
<tr>
<td>Total Acceptable Ratings</td>
<td>17</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>1452</td>
</tr>
</tbody>
</table>
1. Unwanted vegetation
2. Culverts
3. Erosion / Bank Caving
4. Encroachments
Culverts / Discharge Pipes - CMPs

- 48" Reinforced Concrete Pipe
- USMH: 200 ft
- DSMH: 3 LS
- Flow: Upstream

Images show examples of deformed and broken sections of pipes, indicating potential issues with flow and structural integrity.
Erosion Bank Caving

1. Original Toe of Levee

2. Flow

3. Riverside

4. Landside
Encroachments
## Rehabilitation Program (RP)

### Rated Items Used to Determine RP Eligibility Per PL 84-99

<table>
<thead>
<tr>
<th>Rated Item</th>
<th>Item Number</th>
<th>Rated Item</th>
<th>Item Number</th>
<th>Rated Item</th>
<th>Item Number</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Levee Embankments</strong></td>
<td></td>
<td><strong>Floodwalls</strong></td>
<td></td>
<td><strong>Interior Drainage System</strong></td>
<td></td>
</tr>
<tr>
<td>Encroachments</td>
<td>3</td>
<td>Encroachments</td>
<td>2</td>
<td>Culverts/Discharge Pipes</td>
<td>9</td>
</tr>
<tr>
<td>Closure Structures (Stop Log, Earthen Closures,</td>
<td>4</td>
<td>Closure Structures (Stop Log Closures and Gates)</td>
<td>3</td>
<td>Sluice/Slide Gates</td>
<td>10</td>
</tr>
<tr>
<td>Gates, or Sandbags Closures)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Slope Stability</td>
<td>5</td>
<td>Tilting, Sliding, or Settlement of Concrete</td>
<td>5</td>
<td>Flap Gates/Flap Valves/Pinch Valves</td>
<td>11</td>
</tr>
<tr>
<td>Structures</td>
<td></td>
<td>Structures</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Erosion/Bank Caving</td>
<td>6</td>
<td>Foundation of Concrete Structures</td>
<td>6</td>
<td>Pump Stations</td>
<td></td>
</tr>
<tr>
<td>Animal Control</td>
<td>10</td>
<td>Underseepage Relief Wells/Toe Drainage Systems</td>
<td>8</td>
<td>Intake and Discharge Pipelines</td>
<td>17</td>
</tr>
<tr>
<td>Culverts/Discharge Pipes (This item includes</td>
<td>11</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>both concrete and corrugated metal pipes.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Underseepage Relief Wells/Toe Drainage Systems</td>
<td>14</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Per 03/21/2014 Memo
825 “Unacceptable” Rated Items - Levee Embankments, Floodwalls, Interior Drainage Systems

- Unwanted Vegetation Growth - Levee Embankments (277)
- Encroachments - Levee Embankments (84)
- Erosion/Bank Caving - Levee Embankments (34)
- Depressions/Rutting - Levee Embankments (106)
- Culverts/Discharge Pipes - Interior Drainage Systems (135)
- Vegetation Obstructions - Interior Drainage Systems (47)
- All Other "Unacceptable" Rated Items - Levee Embankments, Floodwalls, Interior Drainage Systems (142)
Deficiency Correction

**LEVEE DEFICIENCY CORRECTION PROCEDURES**

USACE, LOS ANGELES DISTRICT  
LEVEE SAFETY PROGRAM  
24 APRIL 2015

Deficiencies noted on the inspection checklist portion of the report shall be addressed by the local sponsor. In order to address deficiencies, or likewise, in order to return the levee system to an Active status in the RIP program, or raise the levee system rating, the deficiencies shall be addressed in the following manner so that proof of deficiency correction can be established.

a. Repair action should be taken to correct deficiencies identified in the Periodic Inspection Report.

b. A report should be provided to the USACE Levee Safety Officer describing the action taken for each deficiency and should consist of a spreadsheet that includes the following columns: Levee System, Levee Segment, Inspection ID, Project Station, Levee Station, Category, Rated Item, Original Rating, Deficiency Description, Deficiency Recommendation, Deficiency Photograph, Repair Photograph, and Repair Date / Status / Actions.

c. The report should be officially transmitted by letter on agency letterhead and signed by the Superintendent or Engineer of Record. The letter should certify that the repairs have been completed and that they were performed in accordance with your agency standard procedures. The signer should be a State Licensed Professional Engineer who is employed by your agency, and whose primary responsibility is levees.

d. Repair photographs should be taken from the same general location and direction as the deficiency photograph, and both shall be included in the submittal.

e. If soil compaction is performed, laboratory compaction test results and field density test results should be provided with a map indicating the location of tests.

f. USACE Headquarters approval is required for any variances to the USACE vegetation policy, established in ETL 1110-2-583.

g. Questions and submittals should be coordinated with the District Levee Deficiency Correction Program Coordinator, Greg Dombrosky, at (213) 452-3592 or gregory.a.dombrosky@usace.army.mil.

h. Questions on the Levee Safety Program should be directed to the District Levee Safety Program Manager, Jody Fischer, at (213) 452-3576 or jody.l.fischer@usace.army.mil.

i. All formal correspondence is to be addressed to the District Levee Safety Officer, Richard J. Leifeld, P.E., at 915 Wilshire Boulevard, Suite 930, Los Angeles, California, 90017-3401.

j. An example cover letter and spreadsheet is attached.
<table>
<thead>
<tr>
<th>Lane</th>
<th>Lane Segment</th>
<th>Respect ID</th>
<th>Project Station</th>
<th>Lane Station</th>
<th>Category</th>
<th>Deficient Item</th>
<th>Original Rating</th>
<th>Revised Rating</th>
<th>Remarks</th>
<th>Inspection Action</th>
<th>Inspection Pictures</th>
<th>Completed Work</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>SBR1</td>
<td>SBR-08</td>
<td>U.S.40</td>
<td>000-000</td>
<td>Lower Embankments</td>
<td>E. Depressional Rutting</td>
<td>U(C)</td>
<td>A</td>
<td>2 depressions, 14&quot; deep at edge of the lane crown.</td>
<td>Repair depressions. Anterior overhang is presently causing the depression.</td>
<td></td>
<td></td>
<td>Deficiency Addressed - 07/14/13 - Bases repaired and long-term animal control program implemented. 5 man crew removed base soil around the deficiency. Using a maneuverer the crews completed 6 passes with the equipment to compact underlying soil and fill the basen. 2&quot; seep mixture was placed by hand in the existing surface.</td>
<td>12/06/2014 - Rating changed to Acceptable. Deficiency corrected by local sponsor.</td>
</tr>
<tr>
<td>SBR1</td>
<td>SBR-08</td>
<td>U.S.40</td>
<td>028+50</td>
<td>Lower Embankments</td>
<td>T.C. Ramps Repairs &amp; Bank Protection</td>
<td>U(C)</td>
<td>A</td>
<td>Significant ramp displacement with exposure of embankment observed in two areas.</td>
<td>Replace ramp embankment.</td>
<td></td>
<td></td>
<td>Deficiency Addressed - 05/14/13 - 5 man crew. Using a gradal the crews repaired the existing embankment and completed the underlying soil. Placing 10 tons of 4&quot; rock to stabilize the existing embankment and cover the exposed embankment.</td>
<td>12/06/2014 - Rating changed to Acceptable. Deficiency corrected by local sponsor.</td>
</tr>
<tr>
<td>SBR1</td>
<td>SBR-08</td>
<td>U.S.40</td>
<td>024+20</td>
<td>Lower Embankments</td>
<td>T.C. Ramps Repairs &amp; Bank Protection</td>
<td>U(C)</td>
<td>A</td>
<td>Significant ramp displacement with exposure of embankment observed.</td>
<td>Replace ramp embankment.</td>
<td></td>
<td></td>
<td>Deficiency Addressed - 05/14/13 - 5 man crew. Using a gradal the crews repaired the embankment and completed the underlying soil. Placing 10 tons of 4&quot; rock to stabilize the existing embankment and cover the exposed embankment.</td>
<td>12/06/2014 - Rating changed to Acceptable. Deficiency corrected by local sponsor.</td>
</tr>
<tr>
<td>SBR1</td>
<td>SBR-08</td>
<td>U.S.40</td>
<td>024+20</td>
<td>Lower Embankments</td>
<td>E. Erosion Bank Caving</td>
<td>U(C)</td>
<td>A</td>
<td>Erosion has occurred at this location due to alluvial soil surcharged from the embankment area. Repair identified for the section.</td>
<td>Repair erosion. The impact of the erosion on the safety of the lane needs to be evaluated.</td>
<td></td>
<td></td>
<td>Deficiency Addressed - 06/12/13 - Bases repaired and long-term animal control program implemented. 3 man crew. Using a gradal the crews repaired the erosion and completed 3 passes with the equipment to compact underlying soil</td>
<td>12/06/2014 - Rating changed to Acceptable. Deficiency corrected by local sponsor.</td>
</tr>
<tr>
<td>SBR1</td>
<td>SBR-08</td>
<td>U.S.40</td>
<td>025+40</td>
<td>Flood Damage</td>
<td>E. Concrete Surfaces</td>
<td>U(C)</td>
<td>A</td>
<td>Concrete in 1' of slope微信群 up to 2' observed on the slab joint. Top of lane.</td>
<td>Repair to eliminate the crack and surface exposure to the river.</td>
<td></td>
<td></td>
<td>Deficiency Addressed - 06/12/13 - Bases repaired and long-term animal control program implemented. 3 man crew. Crews removed the base material and loaded into the adjacent embankment to stabilize the area. Concrete was back mixed and poured to fill the void.</td>
<td>12/06/2014 - Rating changed to Acceptable. Deficiency corrected by local sponsor.</td>
</tr>
<tr>
<td>SBR1</td>
<td>SBR-08</td>
<td>U.S.40</td>
<td>027+40</td>
<td>Lower Embankments</td>
<td>E. Erosion Bank Caving</td>
<td>U(C)</td>
<td>A</td>
<td>Erosion has occurred on the critical slope for a length of 10' due to collapsed area due to rainout and runoff from the crown. Erosion appears to have progressed into the lane section.</td>
<td>Repair erosion. The impact of the erosion on the safety of the lane needs to be evaluated.</td>
<td></td>
<td></td>
<td>Deficiency Addressed - 06/12/13 - Bases repaired and long-term animal control program implemented. 3 man crew. Using a gradal the crews repaired the erosion and completed 3 passes with the equipment to compact underlying soil</td>
<td>12/06/2014 - Rating changed to Acceptable. Deficiency corrected by local sponsor.</td>
</tr>
</tbody>
</table>
Letter of Intent

Develop SWIF
(2 years)

Implement SWIF

System Wide Improvement Framework

U.S. ARMY CORPS OF ENGINEERS

System Wide Improvement Framework

USACE levee systems that are eligible for rehabilitation assistance under Public Law (P.L.) 84-99 following flood or storm damage include those federally-authorized, operated and maintained by a non-federal sponsor or non-federally built, operated and maintained by a non-federal sponsor. These levees remain eligible if they are operated and maintained to acceptable or minimally acceptable standards.

USACE now offers non-federal sponsors a process through the system-wide improvement framework (SWIF) to remain temporarily eligible for P.L. 84-99 assistance while they correct unacceptable operation and maintenance deficiencies as part of a broader, system-wide improvement to their levee systems. Submitting a system-wide improvement framework plan is a two step process. A Letter of Intent is submitted followed by submission of a SWIF plan. The applicant has up to two years to develop the plan.

A SWIF provides committed sponsors the opportunity to transition their levees over time to USACE standards. By using a SWIF, sponsors can prioritize deficiencies to address the highest risk first to achieve system-wide risk reduction.

In preparing the requirements for a SWIF, USACE recognized that sponsors may engage at the federal, state, and local levels to address complex levee system issues in a more long-term, comprehensive approach to identify solutions that optimize resources; prioritize improvements and corrective actions based on risk; and coordinate overlapping or competing programs and requirements.

Examples of situations where a SWIF is appropriate are when a longer-term, holistic approach may be necessary to address multiple engineering deficiencies AND operation and maintenance deficiencies; when broader improvements involve multiple levee segments/systems, or when additional time and coordination are needed to consider complex, endangered species habitat or Native American concerns while meeting requirements for levee safety.

The following should be considered prior to submitting a SWIF:

- A SWIF may include corrective actions for overarching operation and maintenance deficiencies, for example, a system-wide culvert replacement.
- A SWIF is not intended for correction only of individual operation and maintenance deficiencies, for example, a single culvert replacement.
- A SWIF is not a process for acceptance into the P.L. 84-99 program.
- A SWIF may include a vegetation variance request.
- A SWIF recognizes regional differences.
- A SWIF must be closely synchronized to align with other USACE levee policies.

For further information, contact your local USACE representative.

U.S. ARMY CORPS OF ENGINEERS – HEADQUARTERS
WASHINGTON, D.C.
WWW.USACE ARMY MIL LEVEE SAFETY
FEMA will not provide assistance for emergency protective measures under the Stafford Act where NRCS or USACE authority is applicable, as those authorities are more specific than FEMA's. When other Federal agencies have the specific authority to repair facilities that are also eligible under the Stafford Act, FEMA defers to the other Federal agencies. This is codified in 44 CFR §206.226(a), Assistance under other Federal agency (OFA) programs.

This policy designates FEMA's authorities on levees and other flood control works. The policy was coordinated with USACE and NRCS.
Conclusions - Lessons Learned

1. Keep on top of vegetation

2. Have a system to track permits.
   • GIS system recommended

3. TV culverts on a rotating basis.
   • Typical cost $1,000 per pipe

4. Use USACE checklist for local inspections
Conclusions – BE PREPARED

1. When notified about upcoming PI, do a pre-inspection sweep of system

2. Be ready for Flood Events
Conclusions – BE PREPARED

You are invited to join flood emergency response partners to discuss flood preparedness in your region. Hosted by County Offices of Emergency Services in partnership with the State-Federal Flood Operations Center, these meetings provide regional and local updates on annual preparedness activities.

VENTURA
Tuesday, September 15
9:00 – 11:30 am
Ventura County Hall of Justice
800 S. Victoria Avenue
Pacific Conference Room
Ventura

SANTA BARBARA
Wednesday, September 16
9:00 – 11:30 am
Santa Barbara County Office of Emergency Management
Emergency Operations Ctr
4408 Cathedral Oaks Road
Santa Barbara

SAN BERNARDINO
Thursday, September 17
9:00 – 11:30 am
San Bernardino OES
Training Room
1843 Miro Way
Rialto

MERCEDEs
Tuesday, September 22
1:00 – 3:30 pm
Merced County
Emergency Operations Center
3500 N. Apron Ave
Atwater

FRESNO
Wednesday, September 23
9:00 – 11:30 am
Firebaugh Community Ctr
City Council Chambers
1655 13th Street
Firebaugh

MONTEREY
Thursday, September 24
9:00 – 11:30 am
Seaside Community Center
220 Coe Ave
Seaside

Preseason meetings include scheduled presentations from these agencies:

National Weather Service (NWS)
County Office of Emergency Services (OES)
California Governor’s Office of Emergency Services (Cal OES)
Department of Water Resources (DWR)
California Conservation Corps (CCC)
CAL FIRE
U.S. Army Corps of Engineers

Who should attend these meetings?
• Managers and key emergency responders from California public agencies with primary responsibility for flood emergency response and coordination
• Tribal governments, counties, cities, flood control districts, reclamation districts, and local maintaining agencies

For questions please contact Pat Clark at (916) 574-1249, patricia.clark@water.ca.gov, or call the Flood Operations Center directly at (916) 574-2619.
LEVEE SCREENINGS
RISK ASSESSMENTS
Communicating in a Risk Context

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?

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

- A screening is an abbreviated risk assessment of the levee.

- The screening takes only existing information, mainly from the Periodic Inspection Report, and existing hydraulic models.

- The screening considers evacuation preparedness as well as evacuation effectiveness through information provided by the Sponsor.
Sample Levee Screening
Assessment Rating Summary
Primary Factors

- Embankment & Foundation Seepage - ML
- Embankment Stability - ML
- Embankment Erosion - LL
- Culvert Gate Closure - LL
- Flood Wall Stability - LL
- Flood Wall Underseepage - LL

Sample Levee Screening
Major Contributors to Risk Prior to Capacity Exceedance

Sample Levee Screening
## Potential Flood Impacts

<table>
<thead>
<tr>
<th>Depth of Flooding, feet</th>
<th>Population at Risk</th>
<th># of Structures</th>
<th>Property Value ($1,000's)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-2</td>
<td>1257.2</td>
<td>312.9</td>
<td>$1,396.69</td>
</tr>
<tr>
<td>2-6</td>
<td>571.2</td>
<td>86.3</td>
<td>$44,881.88</td>
</tr>
<tr>
<td>6-15</td>
<td>387.9</td>
<td>206.2</td>
<td>$44,780.16</td>
</tr>
<tr>
<td>&gt; 15</td>
<td>0.0</td>
<td>0.0</td>
<td>$0.00</td>
</tr>
<tr>
<td>TOTAL</td>
<td>2216.3</td>
<td>605.4</td>
<td>$91,058.73</td>
</tr>
</tbody>
</table>

Sample Levee Screening
Contribution to Risk: Evacuation Effectiveness

![Bar Graph](image)

**Evacuation Effectiveness**

- **Evacuation Planning**
- **Community Awareness**
- **Flood Warning Effectiveness**
- **Transportation System-Day**
- **Transportation System-Night**

Sample Levee Screening
Performance Index vs Life Loss Prior to Overtop

Sample Levee Screening
Performance Index vs Life Loss Overtopping
Performance Index vs Economic Damages

Sample Levee Screening
Screening Results: Take Away

1. Major Findings & Understandings
2. Recommendations (Repair, Research)
3. Levee System Action Classification

- LSAC 1  Highest Risk
- LSAC 2  10%
- LSAC 3  36%
- LSAC 4  54%
- LSAC 5  Lower Risk
## NFIP Findings

<table>
<thead>
<tr>
<th>44 CFR 65.10 Design Provision</th>
<th>Description</th>
<th>Relevant Screening Result</th>
<th>NFIP Finding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freeboard</td>
<td>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</td>
<td>H&amp;H/ACE Overtopping</td>
<td>Yes</td>
</tr>
<tr>
<td>Closure Devices for All Openings</td>
<td>All openings must be provided with closure devices according to sound engineering practice</td>
<td>All ratings in closure performance module</td>
<td></td>
</tr>
<tr>
<td>Embankment Protection</td>
<td>No appreciable erosion is expected during the base flood</td>
<td>Erosion performance mode - Erosion/Bank Caving factor</td>
<td>HL</td>
</tr>
<tr>
<td>Embankment and Foundation Stability</td>
<td>No seepage into or through the levee foundation and embankment will jeopardize the stability of the levee</td>
<td>Embankment and Foundation Seepage and Piping/Seepage, Embankment Stability/Slope Stability, Floodwall Stability/Tilting, Sliding or Settlement, Floodwall Underseepage and Piping/Seepage</td>
<td>Positive Finding</td>
</tr>
<tr>
<td>Settlement</td>
<td>Future settlement will not impact levee's ability to pass the base flood</td>
<td>H&amp;H/Global Settlement Concerns</td>
<td>No</td>
</tr>
</tbody>
</table>
COMMUNICATING RISK

- History
- Emergency Action Plans
- Who’s Responsibility is it Anyway?
Past & Present Philosophies

- Historical messages
- Katrina – messages that went wrong
- New thoughts regarding risk – shared responsibility
- Moving forward – Corps part of shared risk

The Corps is responsible for overseeing and reducing the risk that levees pose.

The levee owners are responsible for ensuring proper operation, maintenance & rehabilitation of their levees, and to inform the public of the risk that the levees pose.

The public have the right and responsibility to know the risk in which they live.
Los Angeles District Actions

- The LA Dist. & SPD are working toward increasing the funding to repair Corps maintained levees.

- The Corps will assist sponsors in communicating this risk to the public through attending public meetings and assisting on writing Emergency Action Plans and coordinating levee repairs.

- The LA Corps is now beginning to implement a “Communicating Risk” Process / Plan meant to assist the Sponsors and the public in reducing the risk through preparedness, action plans, and awareness.

- The Rehabilitation Program is moving toward communication
Emergency Plan Development
- Responsibility for Uniformity and Coordination
- Guidelines for Federal Agency Project Owners
- EAP
- EPP
- Emergency Communications, Announcements, Dissemination
- Project Owner’s Responsibilities
- Emergency Exercise Requirements, Frequency, Levels.
- Homeland Security Exercise & Evaluation Program (HSEEP)
- Incident Management Authorities & Responsibilities
- Security Provisions
- Responsibility for Evacuation (Non-Federal)
- Review & Approval of Emergency Plan
FEMA ACTIONS

- FEMA has implemented the Community Rating System (CRS) which allows the community a flood insurance reduction for completing tasks on a checklist.

- This is done on a point system and is similar to what the Corps is moving toward encouraging sponsors to do.
Driving the Risk Down is a Shared Responsibility

- Assist Sponsor in Preparing EAPs
- Attend Public Meetings if Invited
- Inspect & Report to Sponsor
- Encourage Repairs
- Communicate Risk
- Drive the risk down

Corps

- Implement Public Meetings & Ads
- Implement Table Top Exercises
- Communicate Risk to Public
- Prepare EPPs and EAP
- Drive the risk down
- Inspect & Repair

Sponsor / Levee Owner

- Have an evacuation route
- Respond when given warning
- Be aware of & Understand local risks
- Make educated decisions on where to live

Individual

- Participate in Table Top Exercises
- Communicate Evacuation to Public
- Review & Comment on EPPs & EAPs

Emergency Responder
Thank you from

Los Angeles District
U.S. Army Corps of Engineers

Jody L. Fischer, P.E.
Levee Safety Program Manager
(213) 452-3576
Jody.l.fischer@usace.army.mil

Anne Hutton
Chief Emergency Management
(213) 452-3444
Anne.C.Hutton@usace.army.mil

Tetra Tech, Inc.
Irvine, CA

Patti Sexton, P.E.
Vice President
(949) 809-5099
Patti.Sexton@tetratech.com

LA Corps’ Public Website
www.spl.usace.army.mil/Missions/CivilWorks/LeveeSafetyProgram