USACE: EMERGENCY MANAGEMENT

John Osterhage, P.E.
Chief, Emergency Management
St. Louis District

“The views, opinions and findings contained in this report are those of the authors(s) and should not be construed as an official Department of the Army position, policy or decision, unless so designated by other official documentation.”
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http://www.mvs-wc.usace.army.mil/
(314) 331-8342
Illinois Emergency Management Agency

Flood Preparedness Workshop
Name: Bob Flemming
Date: January 30, 2019
Illinois Emergency Management Agency
– Region 6
2200 South Dirksen Parkway
Springfield, IL 62703
Office Phone Number 217-782-0922
After Hours Phone Number: 217-782-7860
The Regional Offices work directly with:

- County and Accredited Local EMA programs
  - Maintains contact with EMA prior to any flooding
  - May work from Local EOC during initial flooding
  - Coordinates information flow to either the State Unified Area Command or the State EOC
• Request for Resources
  – Any request for State resources must go through the County EMA to the Regional Office or the Agency Duty Officer then forwarded to the State EOC or State Unified Command if one is established
  – Resource being requested should be utilized for protecting **Critical Infrastructure** (hospital, major roadway, water treatment plant, etc.)
• Request for Resources (cont.)
  – Resource request should include what the Local EMA wants to accomplish (IEMA staff and partner agencies at the State EOC will be able to assist in determining the appropriate resource to address the problem)
• During and After the Flood – Document!
• Public Assistance Cost Tabulation Forms
  – Local EMA may forward a PA Cost Tabulation form to other units of Government to record the costs associated with the response activities related to the flooding event
  – Vital that units of Government complete this form (aids in determination to make a request for a Presidential Declaration)
Public Assistance Cost Tabulation Forms (cont.)

- While your specific County may not meet the PA dollar threshold, it may contribute to meeting the State dollar threshold
- Hyperlink provided below to the PA Form

https://www2.illinois.gov/iema/LocalEMA/Documents/PAforms/PA_DamageAssessment.pdf
• Disaster Impact Assessment Form
  – Local EMA, partner organizations and impacted municipalities should also complete a Disaster Impact Assessment form
  – Along with the numbers the form helps to “Tell the Story” and provides an overview how the flood impacted the jurisdiction
  – Hyperlink provided below for the form

https://www2.illinois.gov/iema/LocalEMA/Documents/PAforms/DisasterImpactForm.pdf
• Know your County Emergency Manager and Staff
  – Do not let the time of disaster be the first time you meet your Emergency Management Agency
  – Know Mutual Aid organizations that can assist your community
  – Understand the Disaster Process and how resources are requested from the State if local resources are exhausted
Contact Information

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Illinois Emergency Management Agency
Office: 217-782-0922
After Hours: 217-782-7860
Email: Robert.L.Flemming3@Illinois.gov

www.ready.illinois.gov
OUTLINE

Winter Precipitation
Soil Moisture
Current Streamflow
Current Drought Status
Forecast Rainfall
Spring Flood Outlook
Contingency Forecasts
PRECIPITATION SINCE DECEMBER 21

Departure from Normal Precipitation (in)
12/21/2018 – 2/18/2019
SNOW DEPTH

Modeled Snow Depth forecasted for 2019 February 19, 16:00 UTC

Inches of depth

- > 150
- 100 to 150
- 75 to 100
- 50 to 75
- 40 to 50
- 30 to 40
- 20 to 30
- 16 to 20
- 12 to 16
- 8.0 to 12
- 4.0 to 8.0
- 2.0 to 4.0
- trace to 2.0

Not Estimated

Elevation in feet

- > 13124
- 13124
- 9203
- 8281
- U.S.ARMY

Created 2019 Feb 19, 17:18 Z
SOIL MOISTURE

Calculated Soil Moisture Anomaly (mm)
FEB 18, 2019

The map shows the calculated soil moisture anomaly across the United States on February 18, 2019. The color scale ranges from -160 to 160 mm, indicating the deviation from the normal soil moisture levels. Areas with colors closer to green indicate higher soil moisture, while areas with colors closer to red indicate lower soil moisture conditions.
8-16 DAY TEMPERATURES

8-14 DAY OUTLOOK
TEMPERATURE PROBABILITY
MADE  19 FEB 2019
VALID  FEB 27 - MAR 05, 2019

DASHED BLACK LINES ARE CLIMATOLOGY
(DEG F) SHAD ED AREAS ARE FCST
VALUES ABOVE (A) OR BELOW (B) NORMAL
GRAY AREAS ARE NEAR-NORMAL

Probability of Below | Normal | Probability of Above
--- | --- | ---
90% | 80% | 70% | 60% | 50% | 40% | 33% | 33% | 40% | 50% | 60% | 70% | 80% | 90%
8-16 DAY PRECIPITATION

8-14 DAY OUTLOOK
PRECIPITATION PROBABILITY
MADE 19 FEB 2019
VALID FEB 27 - MAR 05, 2019

DASHED BLACK LINES ARE CLIMATOLOGY
(10THS OF INCHES) SHADED AREAS ARE FCST VALUES ABOVE (A) OR BELOW (B) NORMAL
GRAY AREAS ARE NEAR-NORMAL

Probability of Below | Normal | Probability of Above

90% 80% 70% 60% 50% 40% 33% 33% 40% 50% 60% 70% 80% 90%
EARLY MARCH TEMPERATURES

WEEK 3-4 OUTLOOK
TEMPERATURE PROBABILITY
MADE 15 FEB 2019
VALID MAR 02 - 15, 2019

EC MEANS 50/50 CHANCES
FOR ABOVE OR BELOW
A MEANS ABOVE NORMAL
B MEANS BELOW NORMAL
MARCH-MAY TEMPERATURES

THREE-MONTH OUTLOOK
TEMPERATURE PROBABILITY
1.5 MONTH LEAD
VALID MAM 2019
MADE 17 JAN 2019

EC MEANS EQUAL
CHANCES FOR A, N, B
A MEANS ABOVE
N MEANS NORMAL
B MEANS BELOW
MARCH-MAY PRECIPITATION

THREE-MONTH OUTLOOK
PRECIPITATION PROBABILITY
1.5 MONTH LEAD
VALID MAM 2019
MADE 17 JAN 2019

EC MEANS EQUAL
CHANCES FOR A, N, B
A MEANS ABOVE
N MEANS NORMAL
B MEANS BELOW
CUIVRE RIVER AT TROY, MISSOURI

Chance of Exceeding River Stage at Cuivre River at Troy (TRYM7)
Forecast for the period 02/25/2019 - 05/26/2019
This is a conditional simulation based on the conditions as of 02/18/2019

- Major: 29.0 FT
- Moderate: 25.0 FT
- Minor: 21.0 FT

PROVISIONAL for Internal Coordination Only
Weekly Chance of Exceeding River Stage at Cuivre River at Troy (TRYM7)
Forecast for the period 02/25/2019 - 05/26/2019
This is a conditional simulation based on the conditions as of 02/18/2019

PROVISIONAL for Internal Coordination Only
MISSISSIPPI RIVER AT WINFIELD, MISSOURI (L&D 25)

Chance of Exceeding River Stage at Mississippi River at Cap Au Gris (Winfield) L&D 25 (CAGM7)
Forecast for the period 02/25/2019 - 05/26/2019
This is a conditional simulation based on the conditions as of 02/18/2019

PROVISIONAL for Internal Coordination Only

Major: 34.0 FT
Moderate: 30.0 FT
Minor: 26.0 FT

Conditional Simulation
Historical Simulation

Stage (FT)

Exceedence Probability

99% 98% 95% 90% 80% 70% 60% 50% 40% 30% 20% 10% 5% 2% 1%
Weekly Chance of Exceeding River Stage at Mississippi River at Cap Au Gris (Winfield) L&D 25 (CAGM7)
Forecast for the period 02/25/2019 - 05/26/2019
This is a conditional simulation based on the conditions as of 02/18/2019

PROVISIONAL for Internal Coordination Only

Major: 34.0 FT
Moderate: 30.0 FT
Minor: 26.0 FT

Date
02/25 6 CST
03/04 6 CST
03/11 6 CDT
03/18 6 CDT
03/25 6 CDT
04/01 6 CDT
04/08 6 CDT
04/15 6 CDT
04/22 6 CDT
04/29 6 CDT
05/06 6 CDT
05/13 6 CDT
05/20 6 CDT

Stage (FT)
17.5
20.0
22.5
25.0
27.5
30.0
32.5
35.0
37.5

Exceedance Probability
10-25%
25-50%
50-75%
75-90%
> 90%
MISSOURI RIVER AT ST. CHARLES

Chance of Exceeding River Stage on the MISSOURI R at ST CHARLES MO 1E
Forecast for the period 02/23/2019 - 05/24/2019
This is a conditional simulation based on the current conditions as of 02/18/2019

- Major: 36.0 FT
- Moderate: 30.0 FT
- Minor: 25.0 FT

Exceedence Probability:
- 99% to 98%
- 95%
- 90%
- 80%
- 70%
- 60%
- 50%
- 40%
- 30%
- 20%
- 10%
- 5%
- 2%
- 1%
Weekly Chance of Exceeding River Stage on the MISSOURI R at ST CHARLES MO 1E Forecast for the period 02/23/2019 - 05/18/2019
This is a conditional simulation based on the current conditions as of 02/18/2019

- Major: 36.0 FT
- Moderate: 30.0 FT
- Minor: 25.0 FT

Exceedance Probability:
- 10-25%
- 25-50%
- 50-75%
- 75-90%
- > 90%

Date:
- 02/23 6 CST
- 03/02 6 CST
- 03/09 6 CST
- 03/16 6 CDT
- 03/23 6 CDT
- 03/30 6 CDT
- 04/06 6 CDT
- 04/13 6 CDT
- 04/20 6 CDT
- 04/27 6 CDT
- 05/04 6 CDT
- 05/11 6 CDT
- 05/18 6 CDT
CONTINGENCY FORECASTS

How confident should we be in the forecast?

http://www.weather.gov/crh/rfc_ensemble
Preliminary River Model Output – Use with Caution

NCRFC Ensemble Model Output
EADM7 -- Mississippi River -- St Louis (Eads Bridge), MO

For official forecast, go to http://water.weather.gov/ahps

River Model Output
with 24 hrs Future Rainfall

- Maximum
- Future Rainfall (24 hour)
- Best Estimate
- Future Rainfall (24 hour)
- Minimum
- Future Rainfall (24 hour)
- Zero
- Future Rainfall (24 hour)

Observed Values

Major Stage = 40 ft.
Moderate Stage = 35 ft.
Minor Stage = 30 ft.
Flood Stage = 30 ft.

Date Time (UTC)

Graph Creation Date: Mon. 25 Feb 2013 18:10:45 +0000 UTC
CONTESTENCY FORECASTS

Preliminary River Model Output - Use with Caution

NCRFC Ensemble Model Output
EADM7 -- Mississippi River -- St Louis (Eads Bridge), MO

This product has not been reviewed by NWS Forecasters

For official forecast, go to http://water.weather.gov/ahps

River Model Output with 72 hrs Future Rainfall

- Maximum\(^a\)
  - Future Rainfall (72 hour)
- Best Estimate\(^b\)
  - Future Rainfall (72 hour)
- Minimum\(^c\)
  - Future Rainfall (72 hour)
- Zero
  - Future Rainfall (72 hour)

- Observed Values

Major Stage = 40 ft.
Moderate Stage = 35 ft.
Minor Stage = 30 ft.
Flood Stage = 30 ft.

\(^a\) Maximum future rainfall – 95th percentile, or the amount of precipitat\(\text{ic}\) has a 5% chance of being reached/exceeded.

\(^b\) Best estimate future rainfall – 50th percentile, or the amount of having a 50% chance of being reached/exceeded.

Graph Creation Date: Sun, 24 Feb 2013 18:30:46 +0000 UTC

US Army Corps of Engineers\(\text{ }^R\)
QUESTIONS?

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EMERGENCY MANAGEMENT

How We Assist Levee Sponsors

USACE Flood Action Stages

Phase 1: Flood Area
Engineers contact the affected local levee sponsors

Phase 2: Deploy flood fight teams to local levee areas for technical assistance

PL84-99 Post Flood Recovery Program
USACE ASSISTANCE

Assistance We Can Provide

- Sandbags
- Crisafulli Pumps
- Plastic
- Sandbagging Machine
- Technical Assistance
THANK YOU
DISCUSSION TOPICS

- Upcoming Policy Changes
- Risk Assessments & Communication
- Periodic Inspection Schedule
- Handouts
LEVEE POLICY UPDATES

Published September 2018
Section 408 / Alterations – EC 1165-2-220
http://www.usace.army.mil/Missions/Civil-Works/Section408

Coming this Spring for External Review:
Levee Safety Policy and Procedures - EC 1165-2-218
Levee Inspections and Site Visit Procedures – ECB No. 2019-xx

Final Steps Underway:
ER 500-1-1 Rehabilitation Program
Four Parts
1. Program Governance
2. Risk Assessment
3. Risk Management
4. Risk Communication
PROPOSED CHANGES TO ALIGN WITH RISK MANAGEMENT GOAL

• Less frequent, but more comprehensive activities
  • More sponsor engagement
    • Levee Sponsor Handbook
  • Levee Risk Management Summaries
    • Focus on risk
    • System-based, segment info highlighted
LEVEE RISK MANAGEMENT SUMMARY

Levee Risk Management Summary (LRMS)  

**Purpose:**
The intent of the Levee Risk Management Summary (LRMS) is to summarize the best available information related to risk assessments, levee inspections, past performance, and recent risk management activities to aid in the generation of an up-to-date set of risk-informed recommendations for the levee system.

For multi-segment systems, Levee System information is important to consider in risk management and risk communication decisions as well as information associated with the specific Levee Segment. Levee Segment information included herein is focused on the segment for which this LRMS is intended (as noted below).

**Levee System (Name, NLD ID):**
**Levee Segment (Name, NLD ID):**

<table>
<thead>
<tr>
<th>Levee Segment Information for This System</th>
<th>Levee Segment Name</th>
<th>Levee Segment NLD #</th>
<th>LSAC</th>
</tr>
</thead>
</table>

**Comprehensive Recommended Actions – Prioritized by Risk (Levee System):**

<table>
<thead>
<tr>
<th>Tracking No.</th>
<th>Priority Rank</th>
<th>Action</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Four Categories based on Tolerable Risk Guidelines</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1. Understand Risk</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2. Build Awareness</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3. Day-To-Day Responsibilities</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4. Manage/Reduce Risk</td>
</tr>
</tbody>
</table>

Recommend Update to the Risk Assessment: **YES** **NO**
PROPOSED CHANGES TO ALIGN WITH RISK MANAGEMENT GOAL

• Less frequent, but more comprehensive activities
  • More sponsor engagement
    • Levee Sponsor Handbook
  • Levee Risk Management Summaries
    • Focus on risk
    • System-based, segment info highlighted
  • Comprehensive Deliverable Packages
    • Levee System Summary, Levee Risk Management Summary, Inspection Checklist, Risk Assessment Fact Sheet
• Revised inspection frequency
  • Inspections 2-3 years: Periodic Inspections - 5 years, Periodic Assessments - 10 years, one routine inspection between each
  • Site visits as needed
Example 10 year cycle of inspection and risk assessment activities

- Year 0 – Periodic Inspection and Risk Assessment
- Year 5 – Periodic Inspection
- + 1 – Routine Inspection
- + 2 – Routine Inspection
- + 3 – Site Visit
- + 4 – Site Visit
- + 6 – Site Visit
- + 7 – Routine Inspection
- + 8 – Site Visit
- + 9 – Site Visit
PROPOSED CHANGES TO ALIGN WITH RISK MANAGEMENT GOAL

• Less frequent, but more comprehensive activities
  • More sponsor engagement
    • Levee Sponsor Handbook
  • Levee Risk Management Summaries
    • Focus on risk
    • System-based, segment info highlighted
  • Comprehensive Deliverable Packages
    • Levee System Summary, Levee Risk Management Summary, Inspection Checklist, Risk Assessment Fact Sheet
• Revised inspection frequency
  • Inspections 2-3 years: Periodic Inspections - 5 years, Periodic Assessments - 10 years, one routine inspection between each
  • Site visits as needed

• Revised inspection procedures and guidelines
INSPECTION PROCESS UPDATES

- New Ratings (Good, Fair, Poor)
- Revamped Observation Rating Guidelines
  - Added accessibility/emergency planning
  - Record seepage observations, no rating
- Incorporated use of judgment in ratings
  - Consider all observations together
  - Justification for each Item Rating to document how judgment was used
- Clarity on Links to 44 CFR 65.10 (NFIP Accreditation)
- Pipes, Relief Wells, Toe Drains, and Closures Data Tables
  - Condition, inspection schedule, etc.
- Option for No Verdict System Rating
## 1. Levee Inspection Summary

### US Army Corps of Engineers®

<table>
<thead>
<tr>
<th>1-1 Name of System:</th>
<th>____________________________________________________________________________________________________________________________________________</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-2 Name of Segment:</td>
<td>____________________________________________________________________________________________________________________________________________</td>
</tr>
<tr>
<td>1-3 Public Sponsor, Phone, E-mail:</td>
<td>____________________________________________________________________________________________________________________________________________</td>
</tr>
<tr>
<td>1-4 Sponsor Representative, Phone, E-mail:</td>
<td>____________________________________________________________________________________________________________________________________________</td>
</tr>
<tr>
<td>1-5 Sponsor Organization:</td>
<td>____________________________________________________________________________________________________________________________________________</td>
</tr>
<tr>
<td>1-6 Inspection Report Prepared by:</td>
<td>____________________________________________________________________________________________________________________________________________</td>
</tr>
<tr>
<td>1-7 Date(s) of Inspection:</td>
<td>____________________________________________________________________________________________________________________________________________</td>
</tr>
<tr>
<td>1-8 Type of Inspection:</td>
<td>[ ] Routine Inspection [ ] Periodic Inspection [ ] Special Inspection</td>
</tr>
<tr>
<td>Purpose of Special Inspection:</td>
<td>____________________________________________________________________________________________________________________________________________</td>
</tr>
</tbody>
</table>

### 1-9 Contents of Inspection Checklist:

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>01. Levee Inspection Summary</td>
<td></td>
</tr>
<tr>
<td>02. Pre-Inspection Form</td>
<td></td>
</tr>
<tr>
<td>03. General Items</td>
<td></td>
</tr>
<tr>
<td>04. Embankment</td>
<td></td>
</tr>
</tbody>
</table>

### 1-10 Ratings:

<table>
<thead>
<tr>
<th></th>
<th>Good</th>
<th>Fair</th>
<th>Poor</th>
<th>No Verdict</th>
</tr>
</thead>
</table>

**Overall Segment Rating:**

**Overall System Rating:**

LSPM Signature: ______________________ Date Approved: __________________

EM Signature: ______________________ Date Approved:  __________________

### NFIP ACCREDITATION CRITERIA EVALUATION

<table>
<thead>
<tr>
<th>44 CFR 65.10 Criteria</th>
<th>44 CFR 65.10 Paragraph</th>
</tr>
</thead>
<tbody>
<tr>
<td>MET NOT MET</td>
<td>All closure devices, whether manual or automatic, are operated in accordance with an officially adopted operation manual</td>
</tr>
<tr>
<td>MET NOT MET</td>
<td>Manuals document a flood warning system that will be used to trigger emergency operation activities and demonstration that sufficient flood warning time exists for the completed operation of all closure structures.</td>
</tr>
<tr>
<td>MET NOT MET</td>
<td>Manuals identify specific actions and assignments of responsibility by individual name or title.</td>
</tr>
<tr>
<td>MET NOT MET</td>
<td>Manuals identify provisions for periodic operation of closure structures for testing and training purposes, in accordance with the adopted operation manual</td>
</tr>
<tr>
<td>MET NOT MET</td>
<td>Officially adopted maintenance plans documents the formal procedure that ensures that the stability, height, and overall integrity of the levee and its associated structures and systems are maintained</td>
</tr>
<tr>
<td>MET NOT MET</td>
<td>Maintenance plans specify the maintenance activities to be performed, the frequency of their performance, and the person by name or title responsible for their performance</td>
</tr>
</tbody>
</table>
### Levee Embankments Feature

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Item</th>
<th>Item Rating</th>
<th>Number of Observations</th>
<th>Item Rating Justification</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-4</td>
<td>Vegetation</td>
<td>Poor</td>
<td>1 1 1</td>
<td>Non-compliant vegetation observed within localized areas of the VFZ that inhibits flood fight activities and is expected to negatively impact levee integrity.</td>
</tr>
</tbody>
</table>

#### Observation Rating Guidelines

**Good**
- The levee is free of non-compliant vegetation (brush, weeds, leafy spurge, or trees) or has negligible non-compliant vegetation* within the VFZ, OR
- Vegetation is maintained within the parameters and boundaries of an approved variance.

**Fair**
- Non-compliant vegetation within the VFZ is less than 2 inches in diameter, AND
- There is no approved variance for the observed vegetation.

**Poor**
- Vegetation is not maintained within the parameters and boundaries of an approved variance, OR
- There is no approved variance for the observed vegetation, AND
- Non-compliant vegetation within the VFZ is 2 inches or greater in diameter or dense brush of any diameter.

*Non-compliant vegetation and the vegetation-free zone (VFZ) are detailed in ETL-1110-2-583 (or more current version).

#### Observation Data Table - Vegetation

<table>
<thead>
<tr>
<th>Observation Number</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observation Rating</td>
<td>Good</td>
</tr>
<tr>
<td>Observation Location</td>
<td>Floodside Slope and Crown</td>
</tr>
<tr>
<td>Unresolved Issue Y/N</td>
<td>Y</td>
</tr>
<tr>
<td>Years Since 1st Observed</td>
<td>5</td>
</tr>
</tbody>
</table>

**Levee Station or River Mile**

<table>
<thead>
<tr>
<th>Point</th>
<th>Line</th>
<th>Start</th>
<th>End</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>98:00</td>
<td>111:00</td>
</tr>
</tbody>
</table>

**GPS Latitude / Longitude**

<table>
<thead>
<tr>
<th>Start</th>
<th>End</th>
</tr>
</thead>
<tbody>
<tr>
<td>-90.5769, 38.69096</td>
<td>-90.5781, 38.68722</td>
</tr>
</tbody>
</table>

**Description of Observation:**
Former location of unwanted vegetation within 15' VFZ. Trees have been removed by levee sponsor. Resolved.

**Recommendations:** None

**Photo Number:** 3
### Pipes Table

This table provides a direct link to observations recorded under Pipe condition Items 6.1 & 6.2: Data entered into this table can be imported into checklist observations and vise versa. Users have the option to print this table format (or portions of the table for a summary, exc. Exclude description of observation…) and/or user could print the checklist format.

<table>
<thead>
<tr>
<th>Pipe ID</th>
<th>Pipe Type</th>
<th>Pipe Size</th>
<th>Year Constructed</th>
<th>Year Rehabilitated</th>
<th>Station or River Mile Start</th>
<th>Station or River Mile End</th>
<th>GPS Latitude Start</th>
<th>GPS Longitude Start</th>
<th>GPS Latitude End</th>
<th>GPS Longitude End</th>
<th>Notes</th>
<th>Observation No</th>
<th>Year Last Inspected</th>
<th>Scheduled Inspection (Year)</th>
<th>Observation Rating</th>
<th>6.1 Primary Item</th>
<th>6.2 Away from Levee</th>
<th>Description of Observation</th>
</tr>
</thead>
<tbody>
<tr>
<td>CMP</td>
<td>18&quot;</td>
<td>NA</td>
<td>16+56</td>
<td>16+56</td>
<td>30.52754</td>
<td>81.46675</td>
<td>30.5267</td>
<td>81.44648</td>
<td>30.5267</td>
<td>81.44638</td>
<td></td>
<td>2010</td>
<td>2020</td>
<td>Fair</td>
<td>6.1 Primary Item</td>
<td>6.2 Away from Levee</td>
<td>6.1 Primary Item</td>
<td></td>
</tr>
<tr>
<td>RCP</td>
<td>24&quot;</td>
<td>NA</td>
<td>18+72</td>
<td>18+75</td>
<td>30.52352</td>
<td>81.41238</td>
<td>30.5267</td>
<td>81.41238</td>
<td>30.5267</td>
<td>81.41238</td>
<td></td>
<td>2010</td>
<td>2020</td>
<td>Fair</td>
<td>6.1 Primary Item</td>
<td>6.2 Away from Levee</td>
<td>6.1 Primary Item</td>
<td></td>
</tr>
</tbody>
</table>

### Gates Table

This table provides a direct link to observations recorded under Gates Items 6.3 & 6.4: Data entered into this table can be imported into checklist observations and vise versa. Users have the option to print this table format (or portions of the table for a summary, exc. Exclude description of observation…) and/or user could print the checklist format.

<table>
<thead>
<tr>
<th>Gate Type</th>
<th>Levee Station or River Mile</th>
<th>GPS Latitude</th>
<th>GPS Longitude</th>
<th>Notes</th>
<th>Observation No</th>
<th>Date Last Operated</th>
<th>Date of Scheduled Operation</th>
<th>Observation Rating</th>
<th>Description of Observation</th>
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<tbody>
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<td>Sluice</td>
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PROPOSED CHANGES TO ALIGN WITH RISK MANAGEMENT GOAL

• Less frequent, but more comprehensive activities
  • More sponsor engagement
    • Levee Sponsor Handbook
  • Levee Risk Management Summaries
    • Focus on risk
    • System-based, segment info highlighted
• Comprehensive Deliverable Packages
  • Levee System Summary, Levee Risk Management Summary, Inspection Checklist, Risk Assessment Fact Sheet
• Revised inspection frequency
  • Inspections 2-3 years: Periodic Inspections - 5 years, Periodic Assessments - 10 years, one routine inspection between each
  • Site visits as needed
• Revised inspection criteria
  • National Levee Database
NLD Updates – Anticipated Early February 2019

https://levees.sec.usace.army.mil
LEVEE SAFETY POLICY
MILESTONES

Public Webinars

Review & Adjudicate
Comments

Training & Roll-out
LS EC & ECB

Nov  Dec  Jan  Feb  Mar  Apr  May  Jun  Jul  Aug  Sep  FY 20
RISK COMMUNICATION
Simplified risk informed model:
Risk = Probability of Load x Probability of Failure x Consequences
HAZARDS
What are the hazards and how likely are they to occur?

PERFORMANCE
How will the levee perform in the face of these hazards?

CONSEQUENCE
Who and what are in harm’s way?
How susceptible to harm are they?
How much harm is caused?

RISK = f (HAZARD, PERFORMANCE, CONSEQUENCE)
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USACE RISK EQUATION

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RISK = f (HAZARD, PERFORMANCE, CONSEQUENCE)
RISK COMMUNICATION – PUBLIC AWARENESS
Contents:

- Project Description
- Risk Characterization
- What is driving the risk & What is being done about it?
- Ongoing Activities and Studies
- PL 84-99 Eligibility Status
- NFIP Status
- Risk Manager contact info

Levee System Summary
East St. Louis and Vicinity Flood Protection Project Levee System
Madison and St. Clair Counties, Illinois

U.S. ARMY CORPS OF ENGINEERS
February 16, 2017

Project Description: The East St. Louis and Vicinity Flood Protection Project (East St. Louis) Levee System is located in Madison and St. Clair Counties, Illinois. The project, originally constructed between the 1930s and 1950s, reduces the risk of flooding from the Mississippi River to the communities of East St. Louis, Cahokia, Sauget, Madison, Brooklyn, Ilion, Fairmont City, and Granite City and many heavy and light industries, airports, transportation hubs, hospitals and numerous Superfund sites. The levee system has undergone several major modifications, including most recently projects to correct underscoping deficiencies. The system is nearly 29 miles in length and consists of two segments: the Metro East Sanitary District (MEDS) levee, operated by local interests, and the Chain of Rocks East levee, operated by USACE. Together these two levee segments provide benefits to approximately 250,000 people that live or work behind the levee, with more than $8.4 billion in land and property value. Since 2013, it is estimated that the system has prevented over $1 billion in flood damages.

Risk Characterization: The East St. Louis levee system has prevented the community from flooding during numerous major flood events, however these events have also exposed vulnerabilities in the system, and there is a possibility that in any given year floodwaters could overtop or breach the levee. A levee failure could result in flooding of depths up to 45 feet, significant loss of life, and extensive economic damage. Due to the heavily industrialized and populated region, the consequences of failure are high. Therefore, partnerships with the local sponsor, local community and USACE to implement flood risk management activities are essential.

What is driving the risk?
Historically, seepage has been observed along the system during floods. While some water seeping through and under the levee is normal in this region, there are places along this levee where seepage has been severe enough to move soil particles from beneath the levee and deposit material on the landside of the levee in the form of sandboils, which weakens the levee. The original features used to control these effects are old and no longer effective. The extent of any damage sustained within the levee soils due to sand boils and seepage from previous flood events is not known.

The loved area is and has historically been highly industrialized. Over the years, industries have installed pipes to discharge storm water through and under the levee system, some of which have fallen into disrepair. When pipes are damaged, water can be transmitted through and begin to carry levee soils into the pipe. This weakens the levee embankment. Additionally, heavy seepage and sink holes have been observed around these pipes in recent high water events confirming their poor condition and indicating that some levee material has already been lost.

What is being done about it?
MEDS and USACE have staff dedicated to the routine maintenance necessary for effective levee operation. Extensive rehabilitation of features designed to control impacts of seepage has recently been completed on the Chain of Rocks levee, which has greatly increased the ability of this segment to withstand future floods. Along the MEDS segment, the local sponsor has begun making repairs, however additional work is needed. To reduce likelihood of failure due to the underscoping, the sponsor should continue rehabilitating seepage control and implementing a vigilant levee monitoring program, especially in locations where repairs are incomplete.

Efforts are underway by the local sponsor to properly seal abandoned pipes and repair damaged pipes that are still in use, however, the condition of many pipes along the MEDS segment is unknown. To reduce likelihood of failure due to the weaknesses associated with underscoping and pipes, the sponsor should complete inspection of all pipes, implement repairs accordingly, and continue a vigilant levee monitoring program.
INSPECTION SCHEDULES
## 2019 INSPECTIONS

### Periodic Inspections

<table>
<thead>
<tr>
<th>System</th>
<th>State</th>
<th>Status</th>
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<tbody>
<tr>
<td>Monarch Chesterfield Levee System</td>
<td>MO</td>
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</tr>
<tr>
<td>Festus-Crystal City Levee System</td>
<td>MO</td>
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</tr>
<tr>
<td>Grand Tower and Degonia Levee System</td>
<td>IL</td>
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<tr>
<td>Consolidated North County Levee System</td>
<td>MO</td>
<td>Weather Delay</td>
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<tr>
<td>Meredosia, New Pankeys Pond, Mud Creek, Indian Creek, Willow Creek North</td>
<td>IL</td>
<td>Complete</td>
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### Routine Inspections

<table>
<thead>
<tr>
<th>System</th>
<th>State</th>
<th>System</th>
<th>State</th>
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</thead>
<tbody>
<tr>
<td>Augusta Bottoms &amp; Dutzow Bottoms System</td>
<td>MO</td>
<td>Pike Grain No 2 System</td>
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<tr>
<td>Big Five Levee System</td>
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<td>Pike Grain No 3 System</td>
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<td>Brevator Levee System</td>
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<td>Pike Grain No 4 System</td>
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<tr>
<td>Darst Levee System</td>
<td>MO</td>
<td>Prairie Du Pont &amp; Fish Lake System</td>
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</tr>
<tr>
<td>Earth City Levee District System</td>
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<td>Riverport Levee District System</td>
<td>IL</td>
</tr>
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<td>Elsberry / King's Lake System</td>
<td>MO</td>
<td>Sandy Creek Levee System</td>
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</tr>
<tr>
<td>Greens Bottom Section 2 Levee System</td>
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<td>City of St. Louis System</td>
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<tr>
<td>Harrisonville, Stringtown, Ft. Chartres System</td>
<td>IL</td>
<td>St. Genevieve Levee System No. 2</td>
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<tr>
<td>Keach Drainage &amp; Levee District System</td>
<td>IL</td>
<td>Wood River D&amp;LD Upper System*</td>
<td>MO</td>
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<tr>
<td>Metro East &amp; Chain of Rocks System</td>
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<td>Wood River D&amp;LD Lower System*</td>
<td>IL</td>
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<tr>
<td>Mo University Levee System</td>
<td>MO</td>
<td>Wood River D&amp;LD East and West System*</td>
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<tr>
<td>Pike Grain No 1 System</td>
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<td>*complete</td>
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## 2020 INSPECTIONS (TENTATIVE)

### Periodic Inspections

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<td>Big Five (PA)</td>
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<tr>
<td>Harrisonville, Stringtown and Ft. Chartres*</td>
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<td>MESD and Chain of Rocks</td>
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</tr>
<tr>
<td>Nutwood</td>
<td>IL</td>
</tr>
<tr>
<td>St. Peters Old Town*</td>
<td>MO</td>
</tr>
<tr>
<td>Valley Park</td>
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*Periodic Assessment

### Routine Inspections

<table>
<thead>
<tr>
<th>System</th>
<th>State</th>
<th>System</th>
<th>State</th>
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<td>Kaskaskia Island Levee System</td>
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</tr>
<tr>
<td>Bluffdale Levee System</td>
<td>IL</td>
<td>Kuhs Levee System</td>
<td>MO</td>
</tr>
<tr>
<td>Bois Brule Levee System</td>
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<td>Lakeside 370 Levee System</td>
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<td>Cape Girardeau Flood Protection System</td>
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<td>Mauvaise Terre Levee System</td>
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<td>Columbia Drainage &amp; Levee District System</td>
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<td>McGee Creek Levee System</td>
<td>IL</td>
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<td>Coon Run SE Systems</td>
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<td>Prairie du Rocher &amp; Edgar Lake System</td>
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<td>Dively Drainage &amp; Levee District System</td>
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<td>Robertson Mutual Levee System</td>
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<td>Schafer Levee System</td>
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<td>Elm Point Levee System</td>
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<td>Scott County Drainage &amp; Levee District System</td>
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<td>Spankey Drainage &amp; Levee District System</td>
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<td>Hanover Levee System</td>
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<td>St. Genevieve No. 3 Levee System</td>
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<td>Hartwell Drainage &amp; Levee District System</td>
<td>IL</td>
<td>St. Peters No. 1 Levee System</td>
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<tr>
<td>Howard Bend Levee System</td>
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HANDBOUTS

- Draft Levee System Summaries
- WE NEED YOUR FEEDBACK!
- Sponsor Handbooks
- Pipe Inspection Fact Sheets

http://www.mvs.usace.army.mil/
(See Quick Links “Levee Safety” – bottom left of the screen)

- Inspections and Risk Assessment Information
- Levee Safety Documents
  - Bi-annual Maintenance Log
  - Pipe Inspections and Relief Well Maintenance
- Templates and Guidance Documents
- Contact Us
THANK YOU

CONTACT INFO:
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Levee Safety Program Manager
314-331-8425
Rachel.L.Lopez@usace.army.mil

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314-331-8420
Joshua.S.VerDught@usace.army.mil
“The views, opinions and findings contained in this report are those of the authors(s) and should not be construed as an official Department of the Army position, policy or decision, unless so designated by other official documentation.”
PL 84-99 Program Overview

The Repair Process:

• After the flood event, Request for Assistance (RFA) and Non-Structural Alternatives (NSA’s) are sent to all levee districts.

• Levee districts have 30 days to return these documents to St. Louis District (MVS).

• MVS assesses flood damages within its area of responsibility.
  • Debris should be removed from the levee so that the engineering teams can assess the damages (Damage Survey Report – DSR).

• Using the DSR and inputs from other branches within MVS, a Project Information Report (PIR) is prepared.
  • A Levee District must be active within the USACE Rehabilitation and Inspection Program (RIP) to be eligible for Flood Control and Coastal Emergency (FCCE) funding authorized by PL 84-99.
  • To qualify, the total repair cost must exceed $15,000 and have a Benefit to Cost (BC) ratio greater than 1.0.

• Once the PIR is approved by Division, funds for E&D and an Environmental Assessment (EA) are requested.

• Once Plans & Specs and the EA are ready, funds for Construction are requested for KT Award.

• Construction Costs:
  • Federal levees: repaired at 100% federal expense.
  • Non-federal levees: repaired at 80% / 20% cost share

• The Levee District must provide lands, easements, and Right of Way (ROW) for the repairs.
2015-2017 Flood Repair Projects

Legend
- Levee
- MVS District
- Red: 2017 Damage; Under Construction
- Green: 2015 Damage; Under Construction
- Purple: 2015 Damage; Construction Complete
- Yellow: 2015 Damage; Notice of Project Completion

Note:
- Federally constructed levee names are in caps.
- Non-federally constructed levees are in lower case.
PL 84-99 Program

Current Status:
• All projects have been awarded. The line of protection has been established within each affected project.
• Work at Ft. Chartres and Columbia is being impacted by high river levels.
• Work at Mud Creek, Meredosia St. Genevieve, and Augusta Bottom is being impacted by wet weather and site conditions

What you can do for MVS:
• Return Cooperation Agreement to Project Manager (PM) ASAP.
• Notify PM of potential problems providing lands and easements.
• Return Real Estate documentation (Authorization for Entry and Attorney Certification) to MVS ASAP.
Thank you...

CONTACT INFO:
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(O) 314-331-8235
Robert.W.Heer@usace.army.mil
2019 FLOOD PREPAREDNESS

Jeremy Eck
ICW Program Manager
St. Louis District Section 408 Coordinator

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U.S. Army
SECTION 408 AND PL84-99 PROGRAMS

- **Jeremy Eck**, ICW Program Manager and 408 Coordinator
- Alterations
  - Section 408 for Federal Systems
  - Levee Safety Compliance Review for Non-Fed’s
- Risk Communication
- Routine & Periodic Inspections
  - Outbriefs
  - Eligibility
- System-Wide Improvement Framework (SWIF) Program
- Technical Support
SECTION 408 PERMISSIONS

• New Guidance
  – Interim Policy Memos & EC 1165-2-220

• Provides USACE authority to grant permission to alter a USACE civil works project if
  1. Does not impair usefulness of the project
  2. Not injurious to the public interest

• Non-federal sponsors can request cursory reviews to ensure the safety of their levee system
PL84-99 ELIGIBILITY

• Interim Policy for Determining Eligibility dated March 21, 2014

• 18 Eligibility Items

• Non-federal sponsors must request Initial Eligibility Inspections (IEI) formally
SWIF’S

- System-Wide Improvement Framework Program (SWIF)
  - Nov 29, 2011  Policy

- Letter of Intent (LOI)
  - 2 years eligibility

- SWIF Plan
  - 2 years eligibility
  - 1 year extension possible

- Possible Improvements Coming
MAJOR POINTS

• Participate in Inspections
• Maintenance Update – Provide Semi-Annually
• Prepare for Potential Flooding
  • Drains / Gates
  • Pump Stations – Power, Fuel, Operator
  • Drive the System
• Update Contacts
• Help Us Help You