2012 Flood Season Preparedness:
New FRM/SJ Innovations & Tools

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U.S. Army Corps of Engineers
Rock Island District

21 August 2012
2012 Flood Season Preparedness
New FRM/SJ Innovations & Tools

Background
- The Historic 2011 Mississippi River Flood
- Mississippi River & Tributaries FRM System
- Operation Watershed – Response and Recovery

2012 Flood Season Preparedness
New Innovation and Tools in:
- Risk Identification
- Risk Management
- Risk Communication
The Mississippi River Basin
The Historic 2011 Mississippi River Flood

Significant Rainfall

30-Day Rain Totals (April 5 - May 5, 2011)

Inches

20
15
10
8.0
6.0
6.0
2.0
1.5
1.0
0.50
0.25
0.10
0.01
The Historic 2011 Mississippi River Flood
Mississippi River & Tributaries Flood Risk Management System
Mississippi River & Tributaries System
Levees, Floodways and Backwater Areas

- Largest Flood Risk Management System in the World
- Extends from Cape Girardeau, MO to Venice, LA.
- Over 7,500 miles of Levees
- Four Major Backwaters – 1.6 million acres
- Four Major Floodways – 366,000 acres
Major Flooding Comparison 1927 - 2011

MR&T Performs Successfully Response & Recovery
Operation Watershed Response and Recovery
Operation Watershed
Response and Recovery

Response
- Mississippi River & Tributaries Operation
- Emergency Flood Fight

Recovery
- Interagency Collaboration
- Mississippi River & Tributaries Damage Assessment
- Mississippi River & Tributaries Repair
- 2012 Flood Season Preparedness
- Post-Flood Report
- Data Management
Operation Watershed
Response and Recovery

Response
• Mississippi River & Tributaries Operation
• Emergency Flood Fight

Recovery
• Interagency Collaboration
• Mississippi River & Tributaries Damage Assessment
• Mississippi River & Tributaries Repair
• 2012 Flood Season Preparedness
• Post-Flood Report
• Data Management
2012 Flood Season Preparedness
New FRM/SJ Innovations & Tools
**Situation:** Many of our flood control and navigation systems remain in a state of vulnerability and risk due to damages incurred in 2011 historic flooding. Will require extra vigilance and advance preparedness to ensure the safety and security of our citizens, infrastructure and industry.

**Scope:** Move forward with priority activities prior to the next flood season (30 March 2012) to mitigate risks caused by 2011 flood damages to the MR&T and other Mississippi Valley flood risk reduction projects.

**Focus:** Build on ongoing Corps District efforts to regionally:
- Identify key risks in the Mississippi River Valley
- Establish how risks will be addressed and managed
- Effectively communicate this information to partners and stakeholders
Key Questions:

- How do the 2011 flood damages increase risk?
- Which damaged sites are the most concern?
- Can some levees not pass another 2011 event?
- What are the potential consequences?
- What is the plan for repairing damages?
- What do we do in the interim?
- How do we best communicate the risks?
2012 Flood Season Preparedness
New FRM/SJ Innovations & Tools

Getting Started:

- HQ supported MVD moving forward with 2012 Flood Season Preparation
- Highly important due to life safety issues with damaged MR&T System
- Emergency management partners clearly expressed support for this effort
- Scope of Work developed and approved in December 2011
- Built on ongoing District Preparedness and Operation Watershed efforts
- Coordinated regional system approach across District/State Boundaries
- Funded $780K (FCCE)
Life-Cycle Risk Management

“Getting Ready”
Actions taken BEFORE the event, including planning, training, and preparations
Flood Risk Management system assessment / inspections
Monitoring / forecasting threats
State and Local Coordination
Reservoir operations
Flood Fight Preparation

“Driving Down the Risks”
Activities that PREVENT a disaster, reduce its chance of happening, or reduce its damaging effects.
Modify mitigation plans
Identify future mitigation opportunities
Develop system improvements

Flood Season Preparedness

“The Flood Fight”
Actions taken DURING the initial impact of a disaster, including those to save lives and prevent further property damage
Emergency system strengthening
Monitor and report flood impact
Monitor system performance
Support State / Local FF

“Getting back on our feet”
Actions taken AFTER the initial impact, including those directed toward a return to normalcy.
Repair damaged systems
Assess and document system performance
Implement mitigation measures / system improvements
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Team Implementation:
- Developed regional team made up of PM, EM, Engineering, hydraulics, and other Corps staff (includes all six districts)
- Kick off of weekly regional team meetings 3 January
- Focus on implementing scope of 2012 Flood Season Preparation

Three Sub-teams Formed:
- Risk Identification – Jeff Stamper/Joey Windham
- Risk Management/Mitigation – Ben Robinson
- Communication – Gloria Piazza
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Risk Identification:

- Risk Information Papers
- Sub-System Risk Documents
- Inundation Maps
Risk Identification:

- Risk Information Papers

- Provides details on damages, risks and potential consequences at damaged system locations.

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**US Army Corps of Engineers**

**Wicksburg District**

**OPERATION WATERSHED RECOVERY – CRITICAL REPAIR SITES**

**Buck Chute**

**Contacts**

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scott.d.whitney@usace.army.mil

**OVERVIEW**

**DISTRICT:** Wicksburg District

**TYPE:** Booms and Scourpiles

**RM:** RM 490.6 (110-400 BBL)

**FRAGO CLASS:** I – High Potential for Loss of Life

**RISK:** 3,995 residents, $188.5M infrastructure

**REPAIR:** Berms, 30 Relief Wells, and 12 Horizontal drains

**EST. REPAIR COST:** $2,640,000

**Damage Assessment**

In early 2010, MVR was notified of multiple booms in the project area. In early summer of 2010, the booms were sandbagged as River Levels reached flood stage and the flow of the booms increased. In February, 2011, when conditions in the project area were dry, two of the largest booms were pumped, revealing voids at boom sources as wide as 20 ft and as deep as 10 ft. The voids revealed no obvious "pipes" that continued downward or laterally from the void bottom. As River levels continued to rise and approach flood stages in March 2011, the boom area voids were backfilled with sand material, covered with a nonwoven filter fabric, and either sandbagged or earthen dams were constructed around them. In May 2011, an emergency berm was constructed over the area which encompassed the worst known boom areas. The top of the berm was constructed to approximate elevation 85.0 ft. Because of the high exit gradients for the predicted flood stages for the known boom areas, and the consequences of failure at this location, it was decided to flood the entire project site by raising water levels in Eagle Lake to approximate elevation 90.0 ft through the use of Muddy Bayou Control Structure. In order to reduce the risk of failure without raising water levels in Eagle Lake, remediation is recommended prior to the next high water season.

**Risk and Consequence**

If the East Bank Mississippi River Levee System were to fail at the Buck Chute site, the population at risk would be 3,995. The value of the non-residential structures is $31,141,000, and the value of the 1,486 residential structures is $157,806,000.

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**Figure 1. Aerial view of Buck Chute during 2011 flood.**

**Critical Repairs**

The reset recommendation for this site includes a 1700 ft reach of earthen berm 200 to 240 ft wide and relief wells from Station 106+50 to 123+50. A 400 ft section of the berm includes a drainage and collection feature, including horizontal drains and a permeable sand layer. The item includes 30 relief wells and 12 horizontal drains. In-place berm volumes will be approximately 13,600 cubic yards of sand for the drainage feature and 150,000 cubic yards for the remaining berm.

**Special Considerations**

The site is covered under the 1999 MRL SEIS, as item 458-L, and covers multiple work items. The SEIS does not cover planned relief wells for this site; however, an EA was prepared to cover these wells and a FONSI signed. Coordination under Section 9 of the Endangered Species Act has been completed. The 404 water quality permit for the project has been obtained, and all project impacts have been mitigated for, as this site is part of the existing MRL mitigation program. This segment of EBMRL is not currently certified, but this fix, along with other work, MVR currently has planned in the area, will allow certification of the levee system. The Board of Mississippi Levee Commissioners has acquired the necessary ROW for the project.

**Schedule**

- Bids solicited: 10 Aug 2011
- Contract Awarded: 31 Aug 2011
- Anticipated Contract Duration: 120 days
- Scheduled Completion: January 2012

**Acquisition Strategy**

Unrestricted competitive bid awarded 30 Aug 2011 to Phybray Construction, LLC for $3,100,225.00. This site was combined with No. 8 site, Abbeville.
Risk Identification:

- **Sub-System Risk Documents**
  - Provides details on the elevated risks within levee sub-system. The 3-4 page document includes a map, table and text discussing and comparing risks of all damaged locations.

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<th>Inundation Stage</th>
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**Risk Identification:**

- **Inundation Maps**
  - Regionally standardized
  - Inundation Maps display potential timing, depth, consequences of inundation.

- Prepared for eight high risk Mississippi River areas this Spring.

- Regional team is also poised to quickly prepare these standardized maps as needed.
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New FRM/SJ Innovations & Tools

Risk Management:

- Risk Management Information Papers
- Flood Season Preparedness and Emergency Response Summary Report
Risk Management:

- Risk Management Information Papers

  - Describe how risks at damaged locations are being addresses through construction, interim measures, and flood fight preparation.

  - Also identifies mobilization activation stages and has a link to the NWS site for current stage forecasts.

Risk Management:

- Risk Management Information Papers

  - Describe how risks at damaged locations are being addresses through construction, interim measures, and flood fight preparation.

  - Also identifies mobilization activation stages and has a link to the NWS site for current stage forecasts.
Risk Management:
- Flood Seasons Preparedness and Emergency Response Summary Report

- Provides regional summary of how elevated 2012 Mississippi River system risks are being addressed through construction, interim measures, flood fight activity, or modified operations.
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Risk Communication:

- CorpsMap
- Preparedness Website
- Communication Plan
- Flood Season Preparedness Workshop
Risk Communication:

- **CorpsMap**
  - Provides stakeholder and public access to regionally standardized risk maps and documents.
  - Includes access to risk information papers and risk management information papers.
Risk Communication:

- Preparedness Website
- Website and updated Brochures were developed to improve access to regional risk communication products, tools and program info.
Risk Communication:

- **Communication Plan**
  - Provides structure and guidance on how to best communicate system risks brought about by 2011 flood damages.
  - Document focuses on effective internal and external communication processes with partners, stakeholders, and the public.
  - FREEBOARD and other internal/external communication tools further developed

### Feature

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Risk Communication:

- Regional Flood Season Preparedness Workshop
  - Conducted to advance regional communication and coordination of flood season preparedness between MVD, USACE Districts, Federal and State partners.
  - Identify, manage, and communicate elevated system risks with regional tools and through District case studies.
  - Goal: Improve preparedness and risk management through enhanced communication.

Regional Flood Risk Management
Regional 2012 Flood Season Preparedness Workshop
23 February 2012

Workshop Purpose: To clearly convey risks imposed on the system from the 2011 flood, by identifying, managing, and communicating those risks through the use of regional tools.

8:00 Welcome & Introduction
  - MG Peabody
  - Memphis District Commander

8:15 NWS Spring Forecast – Ben Weiger

8:30 Regional Risks
  - 2012 Flood Season Preparedness Introduction – Hank DeHaan
  - Risk Identification – Jeff Stemper
    o MR&T damage, inundation maps, life safety, economic risk, environmental risk
  - Risk Management – Ben Robinson
    o Construction, interim measure, flood fight, modified operation
  - Risk Communication – Gloria Piazza
    o Workshop, CorpsMap/web tools, talking points, regional communication plan

11:00 LUNCH

12:00 Case Study #1 – Souris River (St. Paul District, Terry Zien)
  - District Flood Season Preparation
  - Souris River Risk Identification, Management, Communications

12:30 Case Study #2 – Regional Flood Fight Center - (Rock Island District, Rodney Delp)

1:00 Case Study #3 – Len Small (St. Louis District, Mike Rodgers)

1:30 Case Study #4 – Fulton County (Memphis District, Steve Barry)

2:00 Case Study #5 – Frances MRL (Vicksburg District, Gordon Watkins)

2:30 Case Study #6 – Morganza (New Orleans District, Mike Stack)

3:00 Discussion – next steps, institutionalizing annual flood preparedness workshops

3:30 Adjournment
Regional Flood Risk Management
Regional 2012 Flood Season Preparedness Workshop
23 February 2012

**Workshop Purpose:** To clearly convey risks imposed on the system from the 2011 flood, by identifying, managing, and communicating those risks through the use of regional tools

8:00 Welcome & Introduction
- MG Peabody
- Memphis District Commander

8:15 NWS Spring Forecast – Ben Weiger

8:30 Regional Risks:
- 2012 Flood Season Preparedness Introduction – Hank DeHaan
- Risk Identification – Jeff Stamper
  - MR&T damage, inundation maps, life safety, economic risk, environmental risk
- Risk Management – Ben Robinson
  - Construction, interim measure, flood fight, modified operation
- Risk Communication – Gloria Piazza
  - Workshop, CorpsMap/web tools, talking points, regional communication plan

11:00 LUNCH

12:00 Case Study #1 – Souris River (St. Paul District, Terry Zien)
- District Flood Season Preparation
- Souris River Risk Identification, Management, Communications

12:30 Case Study #2 – Regional Flood Fight Center - (Rock Island District, Rodney Delp)

1:00 Case Study #3 – Len Small (St. Louis District, Mike Rodgers)

1:30 Case Study #4 – Fulton County (Memphis District, Steve Barry)

2:00 Case Study #5 – Frances MRL (Vicksburg District, Gordon Watkins)

2:30 Case Study #6 – Morganza (New Orleans District, Mike Stack)

3:00 Discussion – next steps, institutionalizing annual flood preparedness workshops

3:30 Adjournment
2012 Flood Season Preparedness
New FRM/SJ Innovations & Tools
Enhanced Flood Season Preparedness

Risk Identification

Risk Management

Risk Communication

2012 Flood Season Preparedness and Emergency Response Summary

March 2012
Questions?

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