

MVD 2012 Flood Season Preparedness

Regional Workshop

Identifying, Managing, and Communicating Risk

23 February



US Army Corps of Engineers
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MVD 2012 Flood Season Preparation



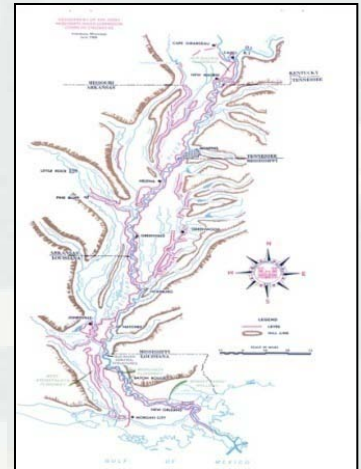
Scope:

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.

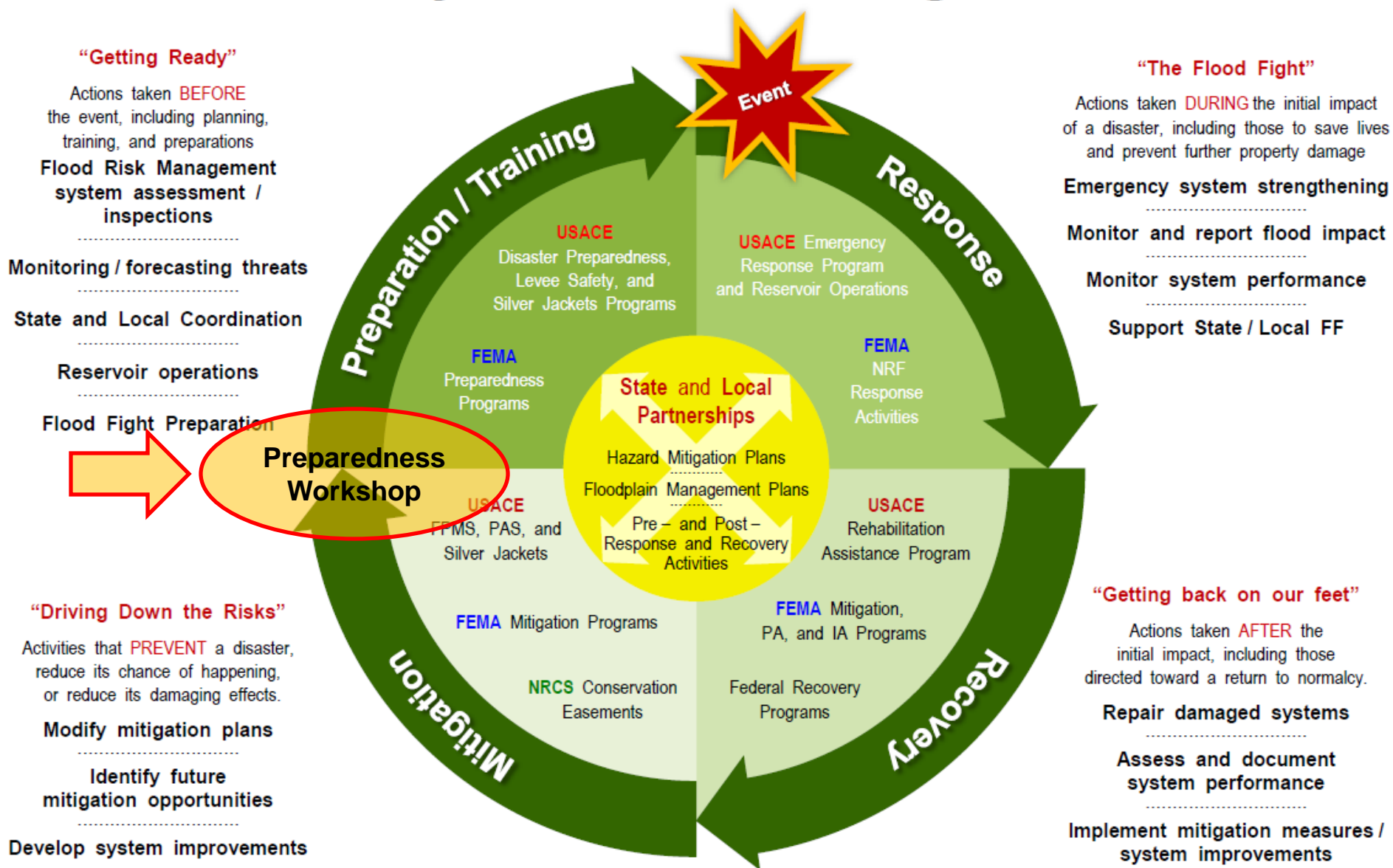
Focus:

Build on ongoing Corps District efforts to regionally:

- Identify key risks in the Mississippi River Valley
- Establish how risks will be addressed
- Effectively communicate this information to partners and stakeholders



Life-Cycle Risk Management



MVD Flood Season Preparedness Regional Workshop:

- Part of the Corps ongoing risk communication efforts.

Risk = probability x consequences

- 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 <ul style="list-style-type: none">• MG Peabody• Memphis District Commander
8:15	NWS Spring Forecast – Ben Weiger
8:30	Regional Risks <ul style="list-style-type: none">• 2012 Flood Season Preparedness Introduction – Hank DeHaan• Risk Identification – Jeff Stamper<ul style="list-style-type: none">◦ MR&T damage, inundation maps, life safety, economic risk, environmental risk• Risk Management – Ben Robinson<ul style="list-style-type: none">◦ Construction, interim measure, flood fight, modified operation• Risk Communication – Gloria Piazza<ul style="list-style-type: none">◦ Workshop, CorpsMap/web tools, talking points, regional communication plan
11:00	LUNCH
12:00	Case Study #1 – Souris River (St. Paul District, Terry Zien) <ul style="list-style-type: none">• 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

MVD 2012 Flood Season Preparedness

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?



MVD 2012 Flood Season Preparedness

Identifying and Characterizing Increased Risks due to Damages from 2011 Flood

Jeff Stamper, P.E.

Joey Windham, P.E.

23 February 2012



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MVD 2012 Flood Season Preparedness

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How Did We Identify and Characterize Risks?

- Find and inspect the damaged sites
- Assess the damaged condition at each site
- Assess the consequences
- Prioritize damages based on life safety and economic impacts
- Documentation: Risk Information Report
- Study levee damages on a system basis
- Estimate “System Level of Protection” for damaged system
- Estimate protected area inundation rate and depths



Risk Information Paper

- POC's
- Overview
- Damages
- Consequences
- Considerations
- Prelim Schedule



US Army Corps
of Engineers
Vicksburg District

Information Paper No. 16 Francis Sand Boil (Rosedale)

OPERATION WATERSHED RECOVERY – PHASE I CRITICAL SITES

Contacts

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OVERVIEW

OW-R PRIORITY: 16 of 93

DISTRICT: Vicksburg District

TYPE: Levee Damage – Boil and Seepage

RM: 615.5L (STA. 151+00)

FRAGO CLASS: 2 - Significant Potential for Loss of Life
and Significant Economic Damage

RISK: 67,180 residents, \$2.8B infrastructure

REPAIR: Eleven 8" relief Wells

REPAIR COST: \$474,000

Damage Assessment

A large, high energy sand boil was identified moving significant quantities of silt and fine sand material at the toe of a 200 foot seepage berm. The boil was bagged by the Levee Board with prison labor for initial containment and subsequently the sandbag ring was encircled by a larger earthen berm constructed by Corps hired labor forces. A filter of sand and stone was constructed over the boil throat to filter fines and dissipate energy. The stabilization of the boil took 4 days of 24 hr/day effort. Flow from the boil was estimated at approximately 300gals/min. This boil appeared to have the potential to result in backward erosion and piping that could eventually lead to loss of berm and levee foundation material. Two additional sand boils were identified approximately 100 – 150 feet from the berm toe. These boils were classified as moderate energy levels and moved approximately 5-7 cubic yards of material. These boils were also bagged by the local prisoners. Heavy seepage and numerous pin boils were noted and monitored along the slope and toe of the berm upstream and downstream of these boils for a reach of approximately 2,000 feet.

Risk and Consequence

If the East Bank Mississippi River Levee System were to fail at the Francis site, the population at risk would be 67,180. The value of the non-residential structures is \$561,855,000, and the value of the 22,599 residential structures is \$2,261,510,000.



Figure 1: Francis Initial Sandbag Ring

Critical Repairs

Remediation, for at least a 500 ft reach of this area, is recommended prior to the next high water season.

The preliminary repair recommendation for this site includes eleven 8 inch diameter relief wells, 100 ft deep, 50 ft spacing, located at the existing berm toe. The estimated cost of this repair is \$474,113.

Special Considerations

The Francis site, is covered under the 1998 MRL SEIS (Work item 616-L). The current US Fish & Wildlife Service letter, concerning T&E species on this site, will need to be updated before further construction can proceed. 404 water quality permits, and mitigation for impacted areas have been completed for this project area. Cultural resources surveys have not been completed for item 616-L. In the event that the project design is not consistent with the above SEIS, an EA will be completed. This segment of EBMRL has recently been certified, but if left unrepaired, the sandboil site at Francis could decertify this portion of levee. Based on preliminary estimates for the recommended repair, all of the ROW that will be required to install the relief wells is already owned by the Board of Mississippi Levee Commissioners

Schedule

Final Design completed – 30 May 2012

RTA – 31 May 2012

Contract Award – 31 Aug 2012

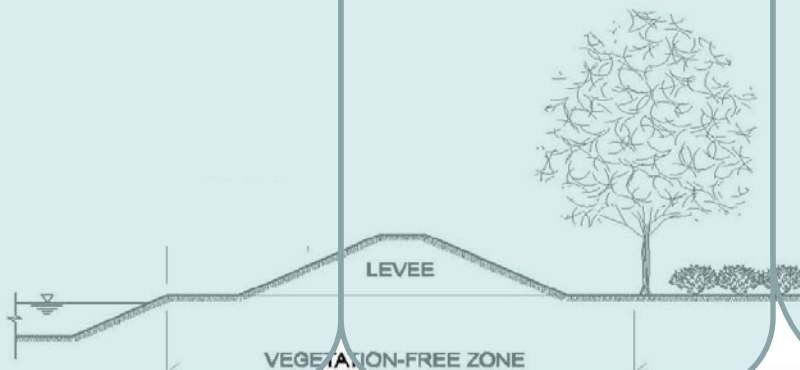
Acquisition Strategy

Work will be combined with another similar MRL projects (Winterville).

What is Included in Risk?

Component A:

How Likely is it that the Flood Event will Occur?



Component B:

How Will the Infrastructure Perform during the Flood?



Component C:

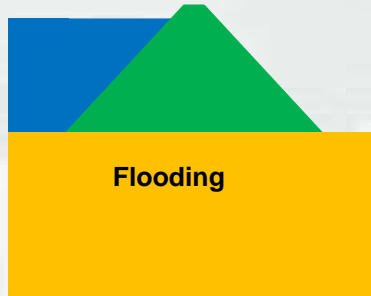
What are the Consequences for Non-Performance?

- Life Safety
- Economics
- Environmental

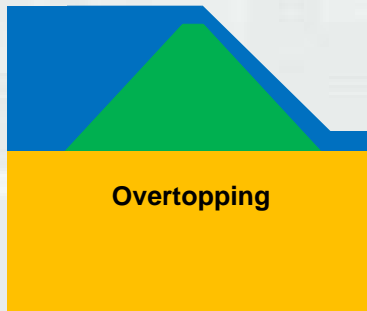


What's Included in Risk?

Components A and B - Probabilities



Component A - Essentially the flood event such as the 1% flood. Created by rainfall and tempered by reservoirs and floodways.



Component B - For a levee that only fails due to overtopping, risk would be driven by the flood event chance of occurring.



Component B - Damaged levees can fail prior to overtopping which transforms risk from a basis of gradual overtopping to a chance of sudden failure further increasing risks by potentially reducing warning time.



What's Included in Risk?

Component C - Consequences

Life Safety:

- Increased nearer the breach
- Evacuation awareness can reduce risk
- Personal preparation can reduce risk

Economics:

- Structures, infrastructure, property, and land production at increased risk
- Timely info can allow opportunities to move personal property
- Timely info can inform business decision to delay crop inputs, delay investment, or insure

Environmental:

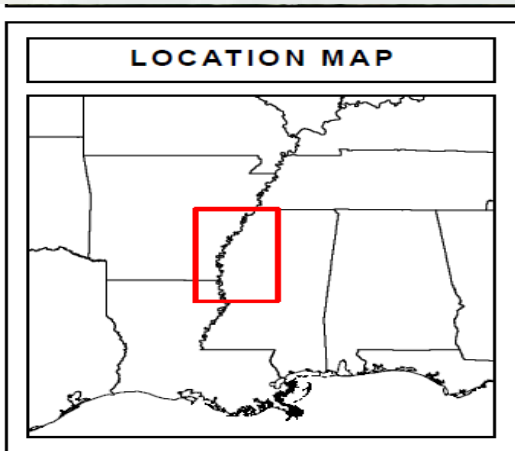
- Fuels and chemicals - move/protect if possible
- Operations of structures - modify to protect the environment



Identify the Sub-System Risks:

East Bank
Mississippi River
Levee Damages

Sub-System Map removed



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Organizing the Risks to a Leveed Sub-System

Items	Site Names	FRAGO Classification	Initial Likelihood of Failure	Inspection Rating	Failure Mode	Population at Risk	Non- Residential Structures (\$1000)	Residential Structures (\$1000)	Total All Structures (\$1000)
1	Buck Chute	1	H	U	Seepage	3996	31,141	157,396	188,537
2	Albemarle	1	H	U	Slope Stability	7656	72,963	274,488	347,451
3	Francis	2	M	U	Seepage	67,180	561,855	2,261,510	2,823,365
4	Winterville	2	M	U	Seepage	74,484	652,385	2,755,585	3,407,970
5	Yazoo, Rena Lara	2	M	U	Seepage	55,355	-	-	4,058,941
6	Tara	2	M	U	Seepage	3996	31,141	157,396	188,537
7	Walnut Point	2	M	M	Channel, Bank Erosion	Assume same as Leota due to close proximity			

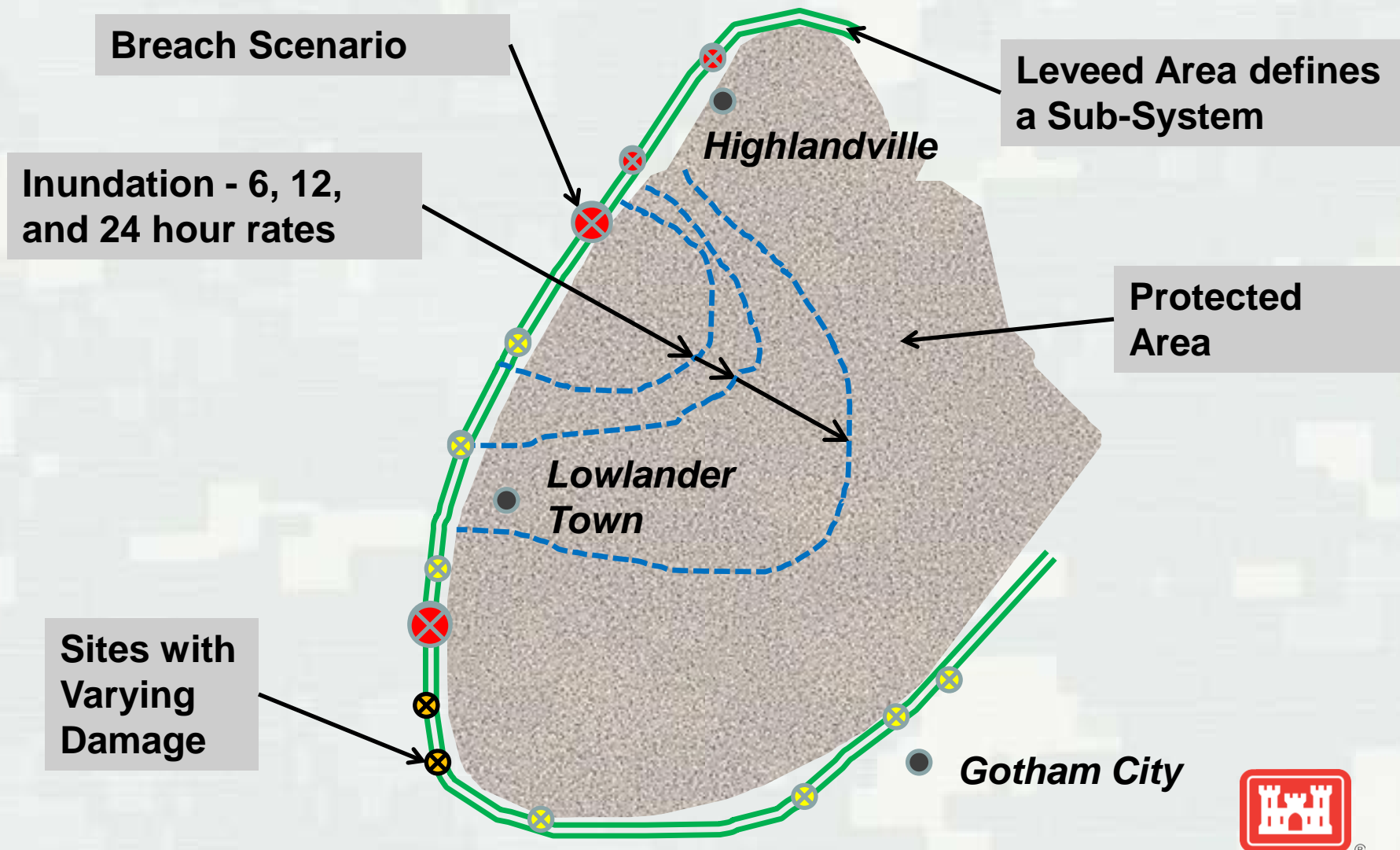


How Do We Reduce Risks?

- Create interim plans for a flood fight response to reduce chance of failure
- Use inundation rates and depths to inform evacuation procedures
- Install repairs to incrementally reduce the chance of failure
- Remain aware of system, sub-system, and the transferring of risk concepts while planning repairs



Studying Risks using a Sub-System Approach



Incremental Risk Reduction for a Sub-System

#1 Bird Beak Point

PAR – 174,000
(within 24 hours)
Economics - \$5B
(10 days inundation)

#2 Senator Byrd's Point

PAR – 14,000
(within 24 hours)
Economics - \$3B
(10 days inundation)

Sites with
Varying
Damage

Levee

Protected
Area

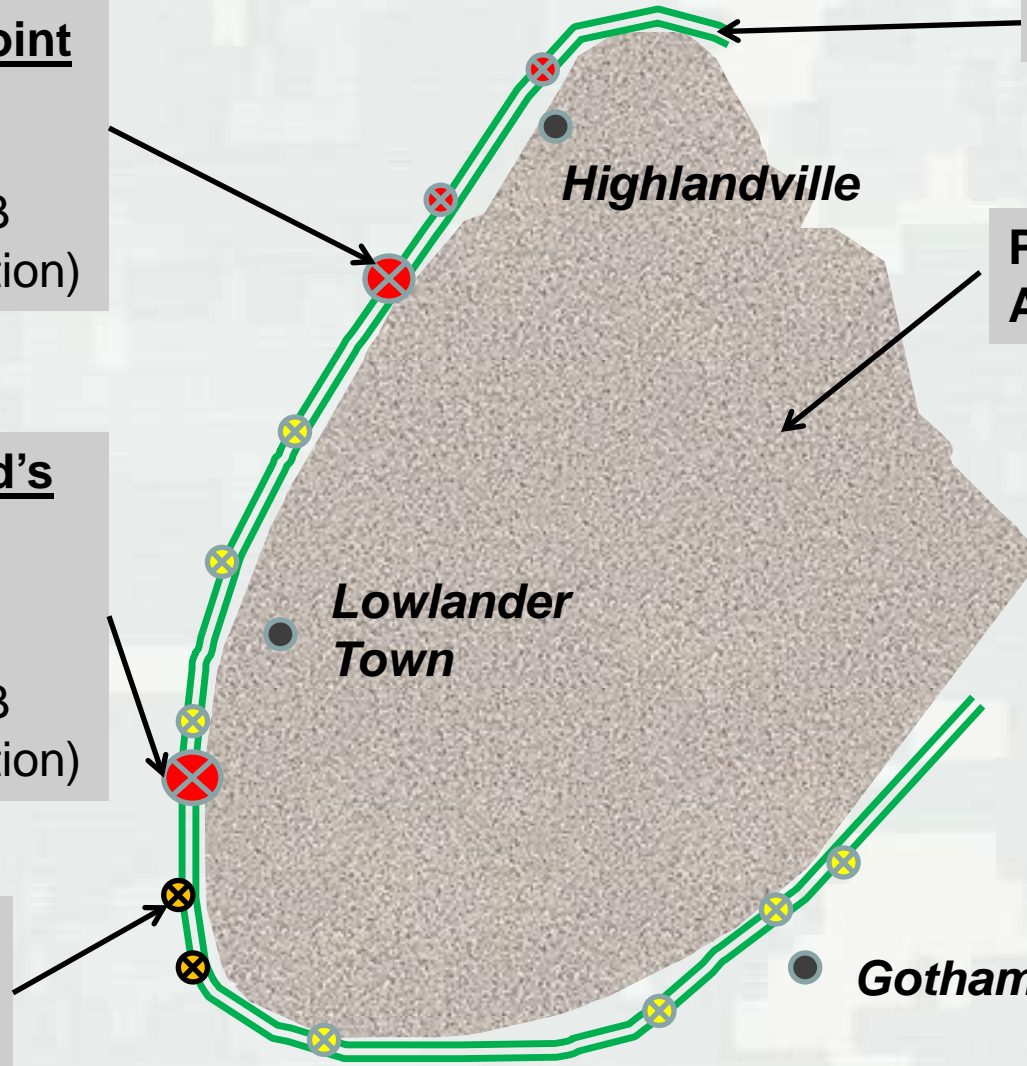
Highlandville

Lowlander
Town

Gotham City



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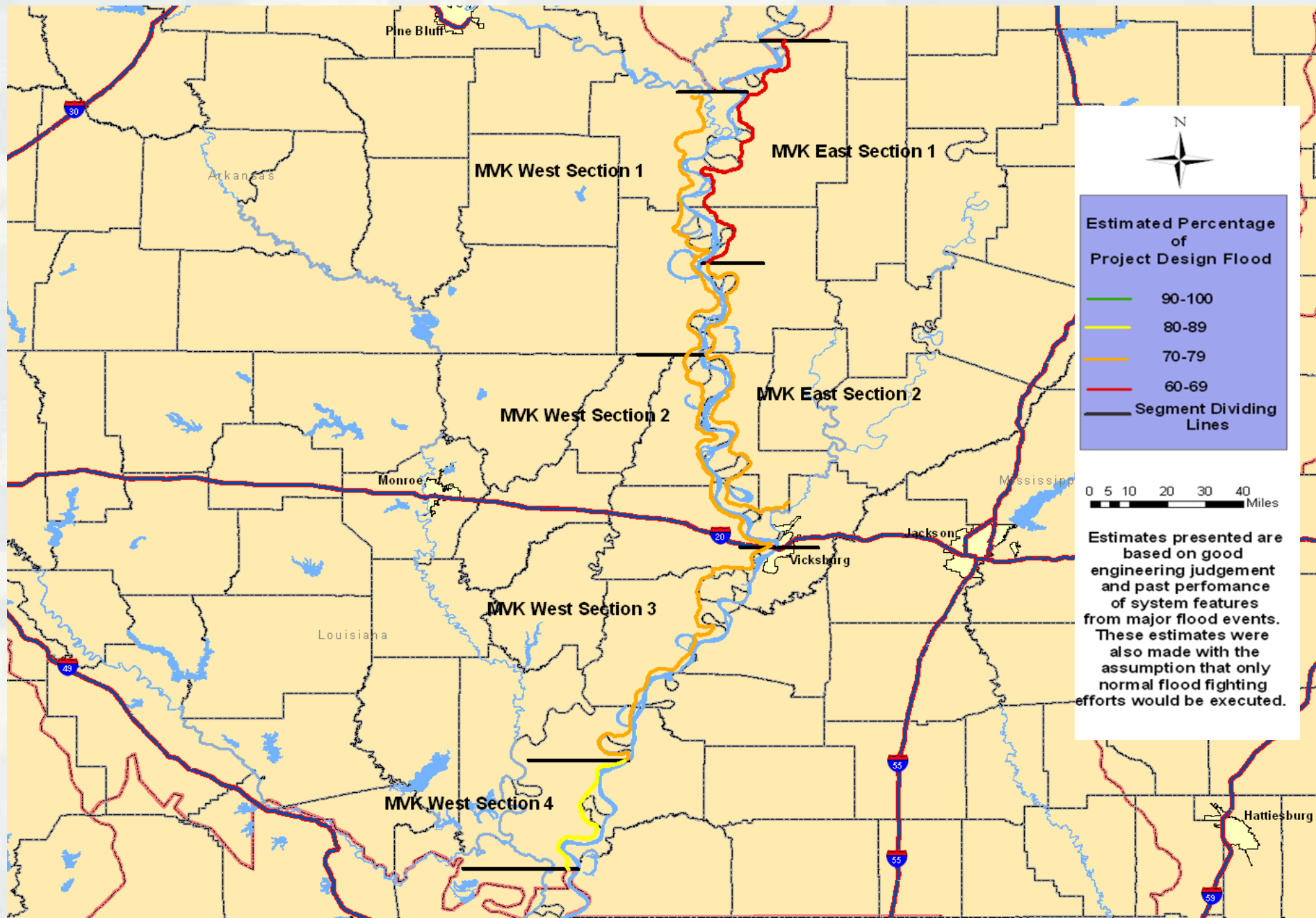
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Level of protection map



Inundation Map removed



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Inundation Maps

General Maps - produced using daily and forecasted stages that can be found on National Weather Service gages throughout the impacted area

High Level Maps - sensitive information and are produced using assumptions concerning breach conditions and stages at an area of interest



General Maps

Inundation Map removed



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General Maps

Inundation Map removed



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General Maps

Inundation Map removed



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High Level Maps

Inundation Map removed



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Inundation Mapping Challenges

-Standardization

- Hydraulic Modeling Assumptions
- Scale
- Depth Interval
- Datum
- Templates
- Modeling Assumptions

-Consistency Across District Boundary

-Level of Distribution

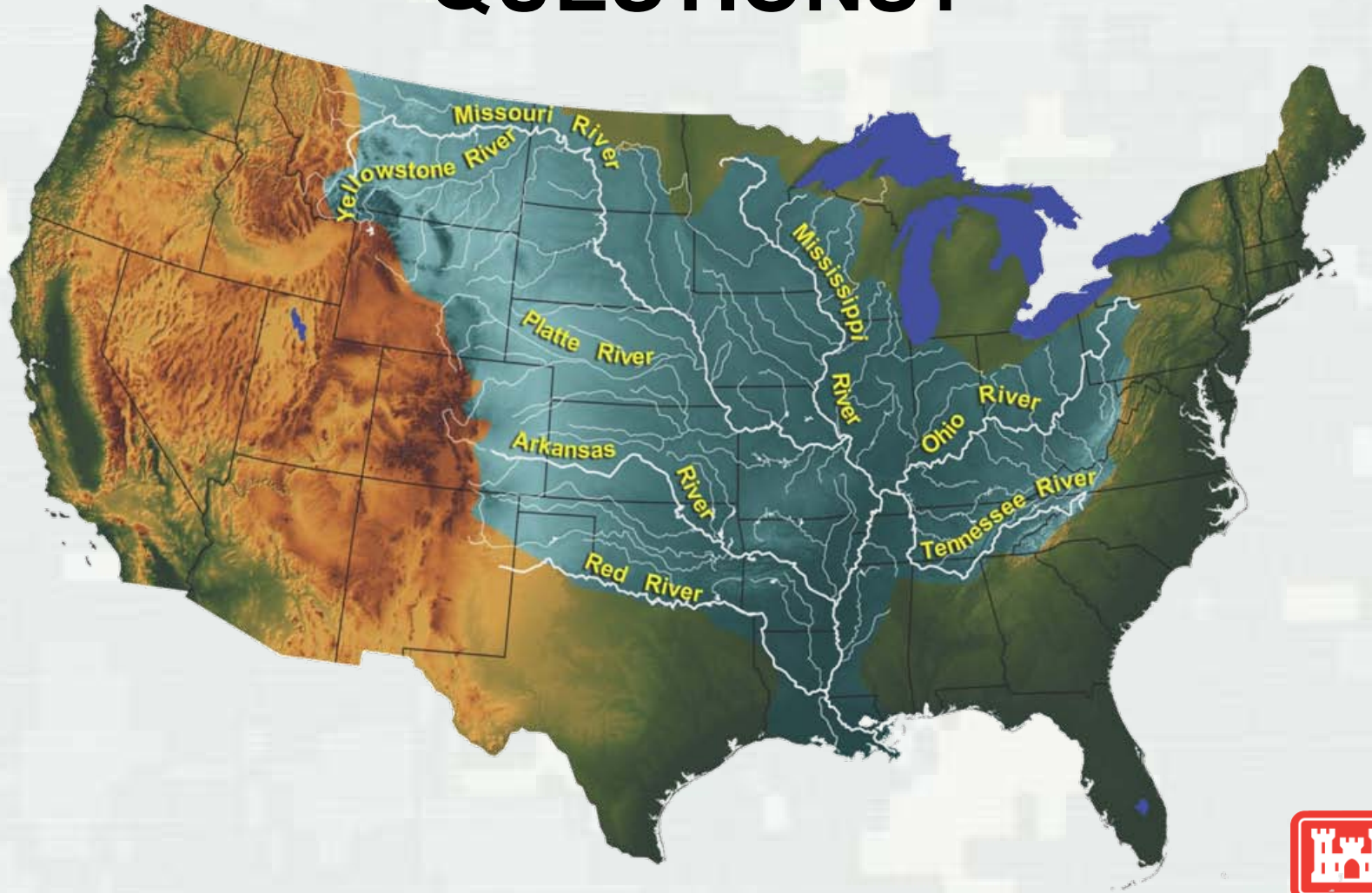
- Internal
- Partnering Agencies
- Public

-Method of Distribution

- Email Distribution
- Format of Data, ex. Shapefiles
- Corps Website



QUESTIONS?



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Risk Management

Ben Robinson
Joan Stemler

23 February



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MVD 2012 Flood Season Preparedness

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What is the plan for repairing damages?



Construction



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MVD 2012 Flood Season Preparedness

What is the plan for repairing damages?



Modified operations



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Reservoir Operations

MVD

- Little snow pack and reservoirs are near target elevations
- Have taken measures early on to proactively increase storage

NWD

- Aggressive releases and favorable weather conditions have resulted in greater storage available than this time last year.

LRD

- Authority to use storage as seen fit in both Kentucky and Barkley; plan is to use storage up to 370 to protect BP/NM to a Cairo stage of 55 feet; if the floodway overtops, the remaining 3 feet of practical storage will be used to protect the MR&T levees. We found we can't use all 5 feet due to Kentucky lock construction and gate vibration issues under surcharge.

SWD

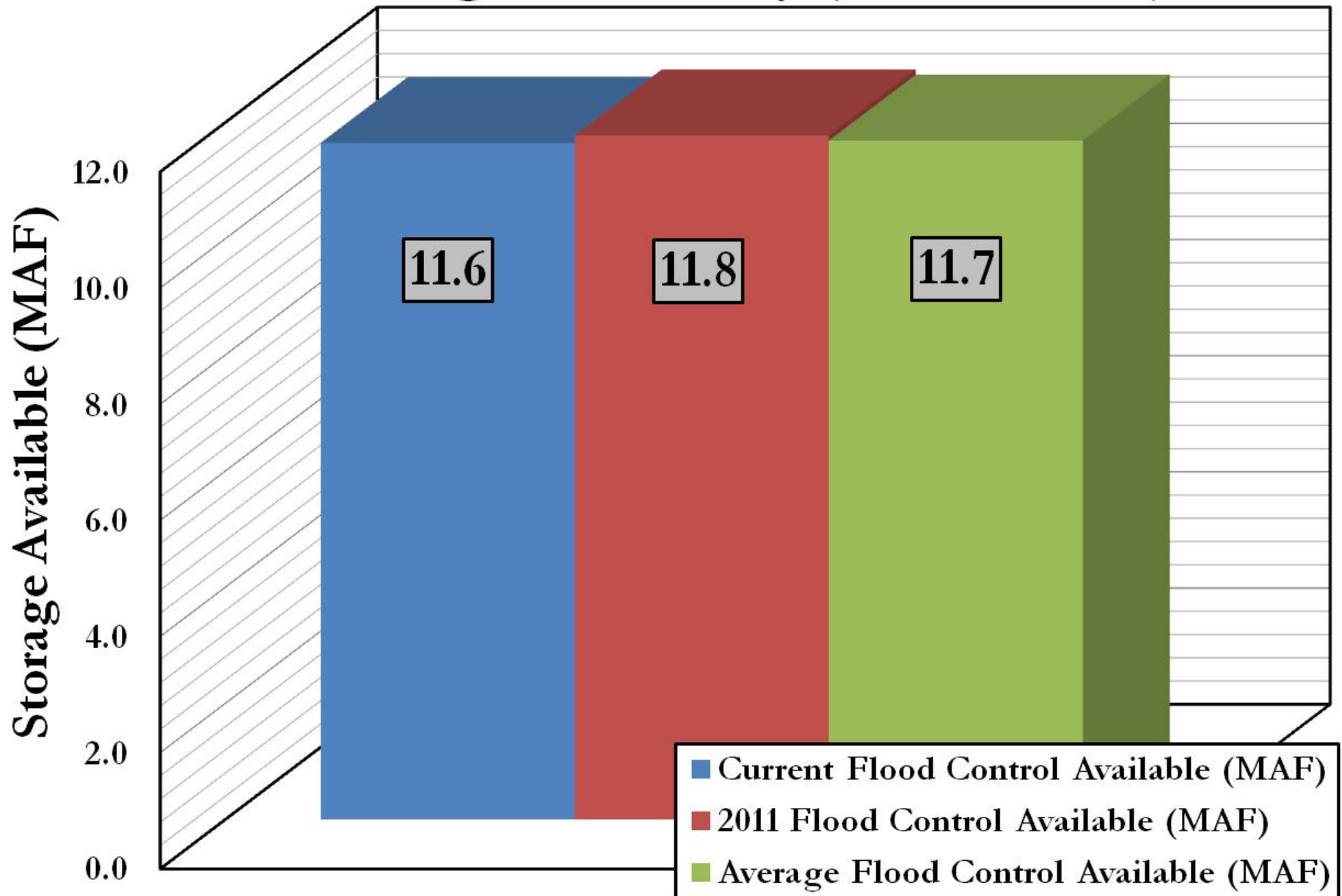
- Reservoirs are all in good shape to perform as designed for the upcoming flood season. A few lakes are much below top of conservation elevations due to the ongoing drought



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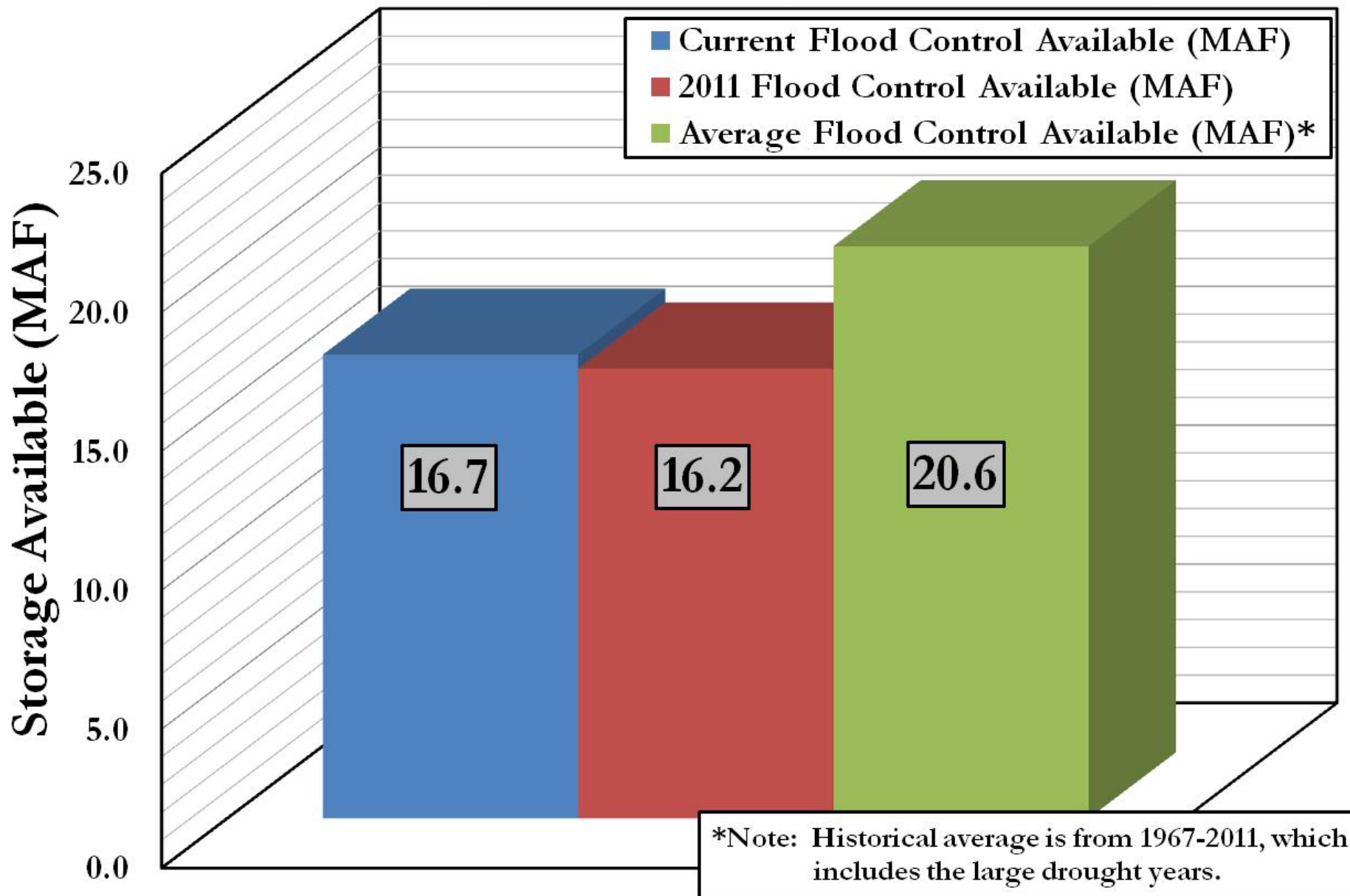
Mississippi Valley Division

Flood Storage Availability (14-FEB-2012)

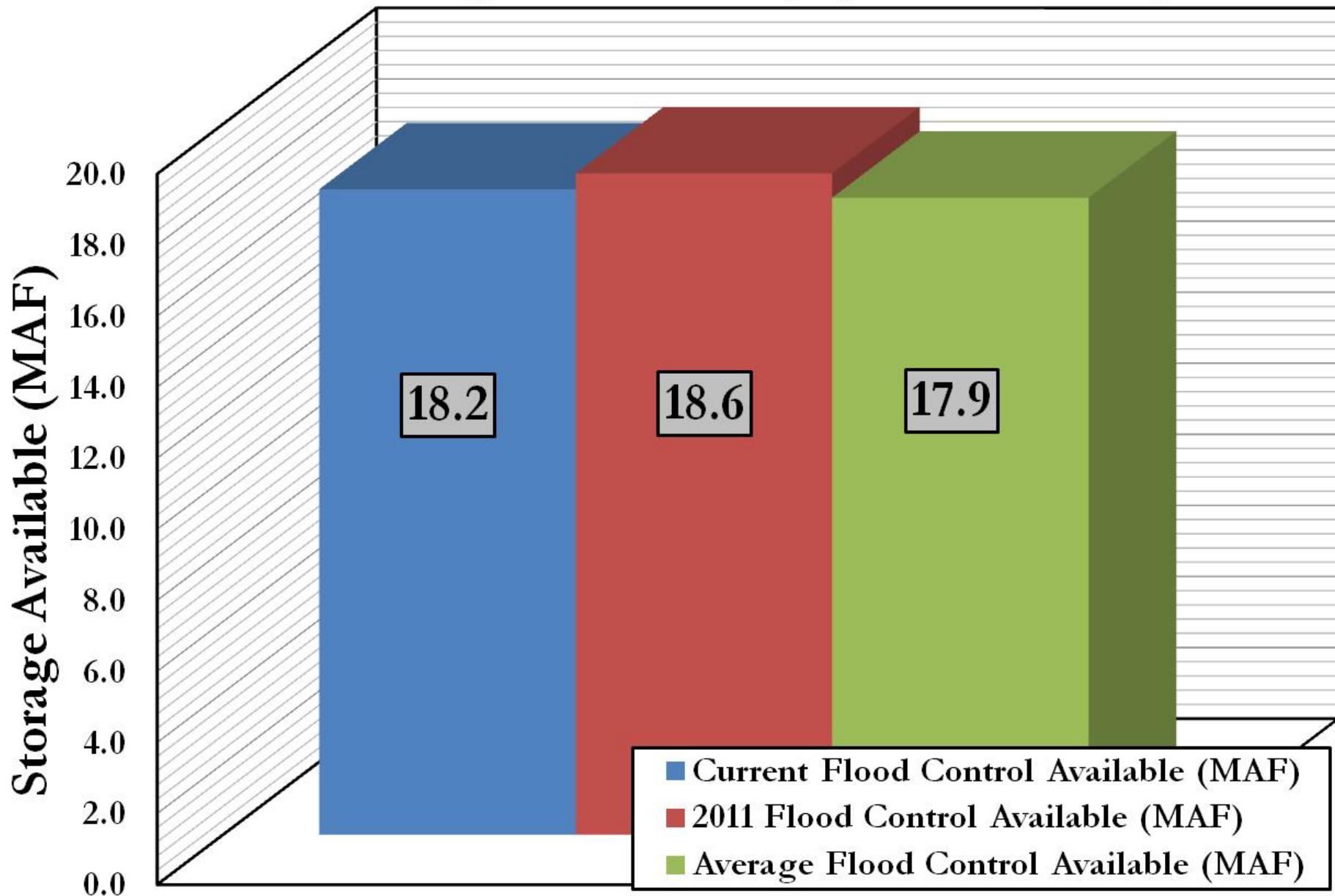


Northwestern Division

Flood Storage Availability (14-FEB-2012)

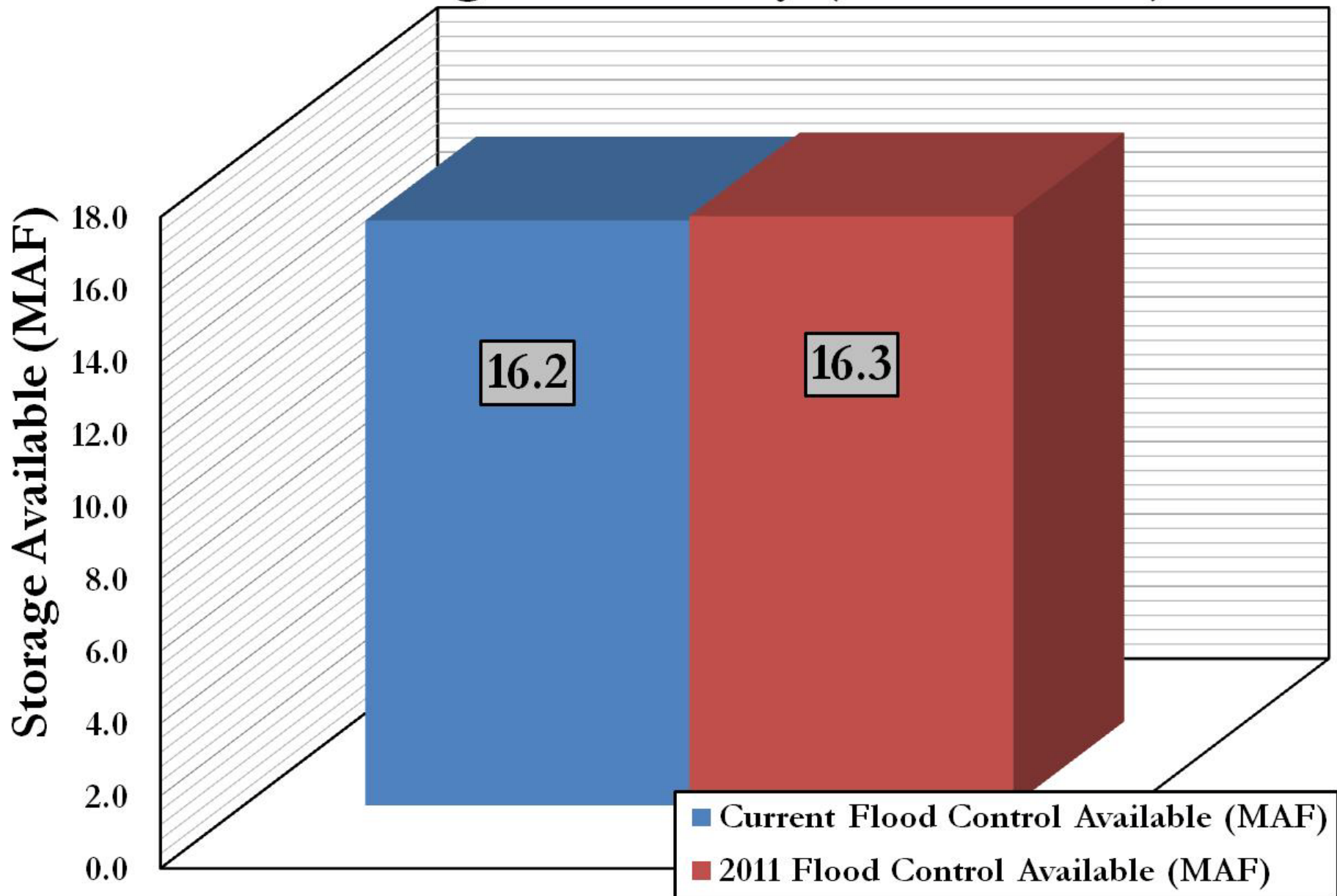


Great Lakes and Ohio River Division Flood Storage Availability (14-FEB-2012)

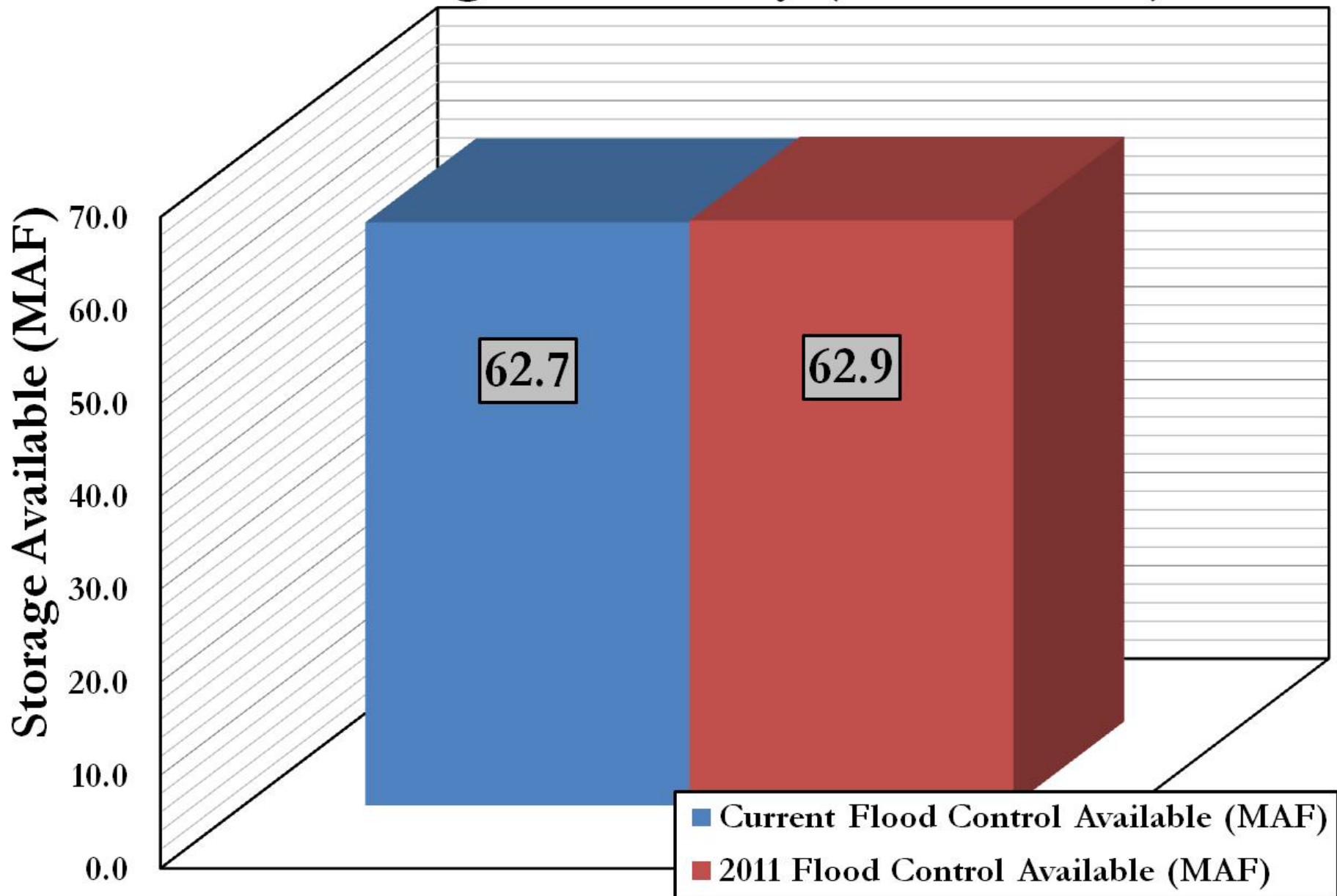


Southwestern Division

Flood Storage Availability (14-FEB-2012)



Greater Mississippi Basin System Total Flood Storage Availability (14-FEB-2012)



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What do we do in the interim?



Flood fight preparations



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MVD 2012 Flood Season Preparedness

What do we do in the interim?



Interim measures



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Risk Management Products

- Risk Mitigation Papers
- Summary Report
- Communications Plan

Risk Mitigation Paper Removed



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Risk Management Products

2012 Flood Season Preparedness and Emergency Response Summary

SECTION I - 2011 FLOOD

1. GENERAL OVERVIEW

Discuss in general the factors which led to the Great Flood of 2011 including: meltwater, storms, and other weather related factors.

2. 2011 FLOOD FIGHT ACTIVITIES

- A. KEY DECISIONS
- B. MONITORING/REPORTING
- C. EMERGENCY ACTIONS/ REPAIRS REQUIRED DURING FLOOD

SECTION II - DAMAGES & IMMEDIATE NEEDS

1. GENERAL APPROACH/ CRITERIA/ FACTORS CONSIDERED / DATA USED

Discuss the DARs, factors considered (i.e. FRAGO, OPORD) and other guidance given to select these immediate needs items.

Appendix: funded items list

Appendix: FRAGO

Appendix: OPORD

2. PHYSICAL COMPONENTS/FEATURES

A. MR&T SYSTEM

• MRL Items

General breakdown and discussion of immediate needs construction efforts (i.e. relief wells, repair work, etc.).

• CI Items

General breakdown and discussion of immediate needs construction efforts (i.e. stone revetment, ACM, etc.).

• Dredging Items

General breakdown and discussion of immediate needs construction efforts (i.e. Mechanical dredging, Hydraulic dredging, etc.).

• Structures

General breakdown and discussion of immediate needs construction efforts.

Appendix: CorpsMap

Appendix: Construction Fact Sheets

B. NON-MR&T SYSTEM MEASURES

• PL 84-99

General breakdown (i.e. 2 items identified for a total of \$ _____, 1 in Nd., 1 in II., etc. General discussion of immediate needs construction efforts.

Appendix: CorpsMap

Appendix: Construction Fact Sheets

- Risk Management Papers
- Summary Report
- Communications Plan



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Risk Management Products

This is a working document and subject to change.

Overarching Key Messages

- **Public safety**
The safety of the public is our number one priority.
- **Making informed decisions**
No matter how effective the flood risk management system is, there is always a residual flood risk that people must be prepared for.
- **Reducing risk and damages**
The Corps is fully committed to reducing the risk of damages from floods by working closely with our partners and stakeholders to maintain and operate the MR&T flood risk management system.
- **Coordination & collaboration**
The Corps continues to work and communicate with our partners and stakeholders, including the local levee boards, National Weather Service and Governor's Office of Homeland Security and Emergency Preparedness.

Key Messages / Talking Points

- The Corps and its partners are fully committed to keeping the public informed. Both the Corps and its partners are closely monitoring weather and river conditions.
- The Corps has been working to ensure businesses and industries along the river are made aware of the high water activities.
- We are coordinating closely with other government agencies, communities, stakeholders, contractors and organizations
- All operations will be conducted in the safest manner possible.
- The priority of U.S. Army Corps of Engineers, Mississippi Valley Division, during any disaster is the well being and safety of local citizens and our employees.
- We coordinate with the Coast Guard during high water flows to advise mariners to exercise caution when navigating, maintaining safety and preventing harmful impacts to the flood risk management system.
- The Corps is committed to maintaining the integrity of the flood risk management system. We coordinate with the local levee authorities to ensure that operations adjacent

- Risk Management Papers
- Summary Report
- Communications Plan



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QUESTIONS?



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Risk Communication

Gloria Piazza
Tim Eagan
23 February



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MVD 2012 Flood Season Preparedness

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Risk Communication

How do improve internal communications to better serve our external customers?

- Division to Division, Division to District
- After Action and Damage Assessment Reports
- National Levee Database
- Use of inundation maps
- CorpsMap and Freeboard
 - ▶ Use of Android phones for real-time data during flood fight



Risk Communication

What did we learn from the 2011 flood?

- Post Flood Report – Communication Team
 - ▶ Our partners want MAPS!

Inundation Map removed



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Risk Communication

What did we learn from the 2011 flood?

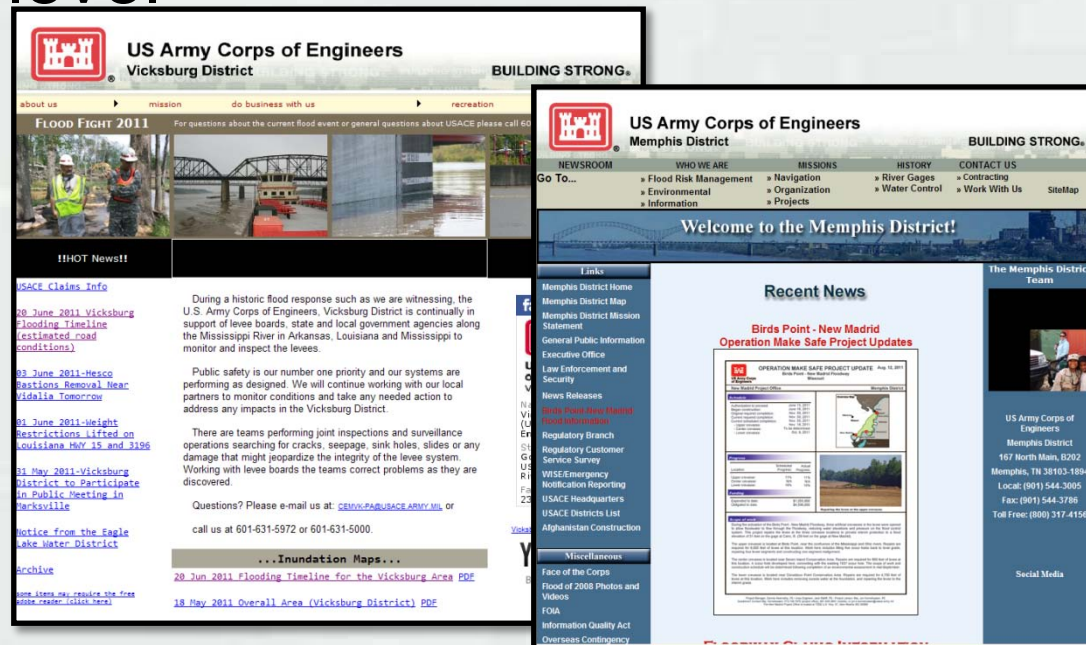
- Use of social media: Facebook, Youtube, Twitter
 - Immediate responses to questions, press releases, links to other pages



Risk Communication

What did we learn from the 2011 flood?

- Emergency Management Web pages
 - Served up additional support documents at a local level



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Risk Communication

How are we communicating Increased Risk now?

- CorpsMap – Fact sheets, info papers
 - ▷ CorpsMap Brochure – how to navigate
- Flood Season Preparedness web site
- Regional Flood Risk Management Workshop
- Communication Plan – talking points, FSP fact sheet, press releases, continue social media



Future Risk Communication

- Improving communication with partners
- Continue improvements to new products
- Policy and standards for map creation and release
- Continue to update CorpsMap and websites

How can we improve our communication efforts?



Risk Communication Web Sites

MVD Home page:

<http://www.mvd.usace.army.mil>

Facebook page:

<http://www.facebook.com/CEMVD>


CorpsMap:

[http://geo.usace.army.mil/egis/cm2.cm26.
map?map=MVD_OWS](http://geo.usace.army.mil/egis/cm2.cm26.map?map=MVD_OWS)



Web page and CorpsMap Demo

Tim Eagan

**US Army Corps of Engineers**
Mississippi Valley Division
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WHO WE ARE | MISSION | [Other USACE Links](#) | [MS River Commission \(MRC\)](#)

Regional Flood Risk Management Programs

Flood Season Preparedness

Silver Jackets

National Flood Risk Management Programs

Operation Watershed Recovery

Interagency Recovery Task Force

MR&T Post Flood Report

Damage Assessments

Construction

Press Releases

Information Resources

St. Paul District

Rock Island District

St. Louis District

Memphis District

Vicksburg District

New Orleans District

Contact Us


Regional Flood Risk Management Program

The U.S. Army Corps of Engineers (USACE) established the National Flood Risk Management Program in May 2006 for the purpose of integrating and synchronizing USACE flood risk management programs and activities, both internally and with counterpart activities of the Department of Homeland Security, Federal Emergency Management Agency (FEMA), other Federal agencies, state organizations, and regional and local agencies.

Some of the specific goals of the National Flood Risk Management Program include:

- Providing current and accurate floodplain information to the public and decision makers.
- Identifying and assessing flood hazards posed by aging flood damage reduction infrastructure.
- Improving public awareness and comprehension of flood hazards and risk, Integrating flood damage and flood hazard reduction programs across local, state and federal agencies.
- Improving capabilities to collaboratively deliver and sustain flood damage reduction and flood hazard mitigation services to the nation

Hot Topics

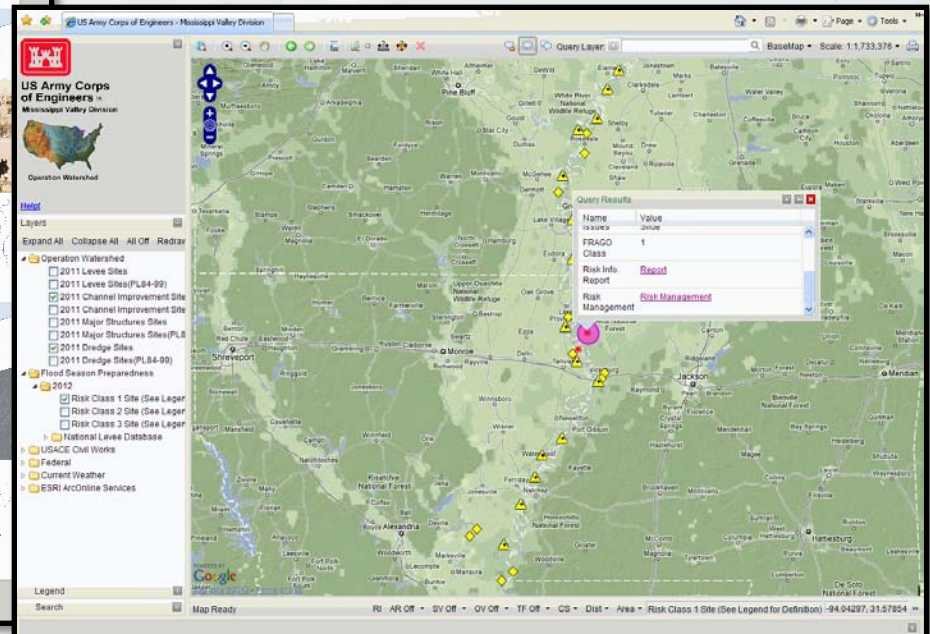


2011 Fall Our Mississippi



2012 Winter Our Mississippi

Points of contact:



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