# Interagency Recovery Task Force IPR 19 October 1645

Table of contents

		Page
Α.	Table of Contents	1
Β.	Meeting Location	2
C.	Agenda	3
D.	Meeting Minutes and Action Items from 23 August meeting	4-6
Ε.	Critical Repairs	7-20
F.	System Performance Evaluation Presentation	21-25
G.	System Performance Evaluation Workplan	26-43
Н.	Charter	44-48
١.	G3 Manifest	49
J.	List of participants	50





Operation Watershed Responding to the Historic Mississippi River Flood of 2011 RECOVERY OPERATIONS



### **IRTF Meeting**

Date: 20 October 2011

Location: Hilton New Orleans Airport 901 Airline Drive Kenner, Louisiana 70062 1-504-469-5000

Logistics: MVD staff will fly using the G3. Meeting would start at 0900 and end by 1600 or 1630.

- Short distance from the airport, five minutes drive
- Normal working hours, day trip
- Complete focus on IRTF dialogue
- State of Louisiana, is hosting the meeting, not the Corps





**Operation Watershed** 

Responding to the Historic Mississippi River Flood of 2011



### **RECOVERY OPERATIONS**

# Interagency Recovery Task Force October 20, 2011

8:30	Sign in
9:00	Welcome – MG Walsh and Karen Durham-Aguilera
9:15	Welcome – State of Louisiana, Jerome Zeringue New Orleans District representative
9:30	Review of Minutes and Action Items from last meeting Scott Whitney
10:00	Headquarters National Perspective on System Performance – Karen Durham-Aguilera
10:30	<ul> <li>Review and Status of Operation Watershed Components:</li> <li>Critical Repair Projects</li> <li>Operation Watershed Recovery Funding Requirements</li> <li>Completion of Damage Assessments</li> <li>System Performance Evaluation – Hank DeHaan</li> <li>Discussion</li> </ul>
11:45	Lunch – Box lunches brought in
12:30	State Perspectives
1:30	<ul> <li>Federal Perspectives</li> <li>Scientific Activities and the Internal Analysis of Flood Response</li> <li>Bob Hainly, USGS</li> <li>USCG/MARAD Navigation Issues and Concerns</li> <li>Fusion Team Update</li> </ul>
2:30	PgMP and Charter signing
2:45	Discuss Action Items
3:30	Summarize, Closing Remarks, Next Meeting
4:00	Adjourn



Operation Watershed Responding to the Historic Mississippi River Flood of 2011 RECOVERY OPERATIONS Interagency Recovery Task Force Meeting Minutes, 23 August 2011



**Purpose.** This document provides a summary of the IRTF meeting held in Pearl, MS on 23 August 2011 to include a list of participants and state and federal agency perspectives.

**Background.** Interagency Recovery Task Force (IRTF) was launched to develop solutions to restore the Mississippi River Basin's flood risk management systems damaged by recent flood events. The collaborative task force, initiated by the U.S. Army Corps of Engineers Mississippi Valley Division, aims to ensure effective communication and collaboration across the many federal and state agencies that will be engaged in the recovery effort. State partners include representatives from the states of Missouri, Illinois, Tennessee, Kentucky, Arkansas, Mississippi and Louisiana. In addition to U.S. Army Corps of Engineers, federal agency task force representatives include EPA, FEMA, the Natural Resources Conservation Service, the National Oceanic and Atmospheric Administration, the U.S. Geological Survey, U.S. Fish and Wildlife Service, the U.S. Coast Guard, and the Maritime Administration. The task force's first task is to prioritize short- and long-term goals to "Reset" and "Restore" the key functional elements of the Mississippi River & Tributaries system, including levees, navigation channel, and water control structures that protects lives and livelihoods for millions of Americans. The "Reset" effort will strive to provide the rapid development and installation of initial interim measures designed to provide a basic level of protection and functionality before the next flood season, addressing floodways, dredging for navigation, and levee degradation. The "Restore" effort will strive to provide for the development and installation of permanent measures designed to return the structure to full-level protection and functionality.

**Introduction and Overview.** MG Michael Walsh and Ms. Karen Durham- Aguilera provided the participants with an overview of the MR&T system and the 2011 Flood. MG Walsh stated the Joint Chiefs listed the budget deficit as the biggest problem with the nation. The probability of a supplemental appropriation for this flood is very low. The short term goal is to reset the system before the next flood season. In the long term, the work must be prioritized throughout the division.

Prior to the 1927 flood, there were only levees to control the river. The MR&T was designed with floodways and backwater areas to make room for the river. Easements were obtained on the land affected with the operation of the floodways. There were no easements obtained in the backwater areas. The key issue with Birds Point/New Madrid floodway is that once it is operated, it cannot be shut down.

**MR&T System.** As a request from the last meeting for our members to better understand the Corps meaning of "system," Scott Whitney presented on the Mississippi River and Tributaries. First, a historical perspective was provided, and then a comparison from the 1927 flood to our current system revealed the damages prevented and lives and livelihoods saved. Together, the floodways, reservoirs, levees, and backwater areas, worked together to guide the swollen river to the gulf.

**Damage Assessments and Correlating Districts.** The Corps has been assessing the MR&T system since flood waters started to rise and continued monitoring and documenting flood damages. A list was developed early on that represented critical repairs necessary prior to the spring floods. This list was created using preliminary findings and prioritized based on risk and consequences to life and safety. A spreadsheet was shared with the team that showed the priority items by function: Mississippi River Levees, Channel Improvement, Dredging,



## **Operation Watershed**

**Responding to the Historic Mississippi River Flood of 2011** 

### **RECOVERY OPERATIONS**



and Structures. To date there are 93 areas of concern, totaling over \$800M in repair costs. Maps of the critical list items, by District, accompanied the spreadsheet.

**System Performance Evaluation.** Mr. David Busse, lead for the System Performance Evaluation Team, presented on the efforts of the team. Currently, the team is made up of 10 individual teams: Reservoirs, Levees/Floodwalls/Outlet Structures, Floodways, Channel Improvement, Communications/Collaboration, Environmental, Economics, Flow lines/Design Flood, Data Management, and Reports. This is a system wide effort and involves subject matter experts from all 6 districts in the division. Other federal and state agencies, as well as stakeholders and NGOs will partner with the team. The IRTF will be part of the review process. The Silver Jackets groups provide the functional and operational arm of the recovery effort. The USGS has an after action report and will share results with System Performance Evaluation Team.

### Catastrophic Levee Breech Plan & CUSEC

Mr. Mike Womack, Director, MEMA, gave a presentation on the State's Catastrophic Levee Breech Plan and also briefed the team on the recent meeting he attended for Central United Earthquake Consortium. The IRTF team was given a better perspective on what is involved at the State level during a major event and the scenarios created in order to facilitate a possible evacuation. The question raised is "How do we best prepare the public without causing undo fear?"

### **Inundation Maps**

- Inundation maps helped plan and prepare if response was needed. States voiced desire for consistent inundation maps from all the districts. Maps were used to communicate risk.
- National Weather service appreciated inundation maps and communication during the flood.

### **State Perspective**

- Alexander County, IL was an unprotected area affected by floodway operation. The people of Alexander County feel they were unfairly burdened by the operation of the floodway.
- Missouri would like a voice in the plan for recovery of the BPNM floodway.
- Efforts need to prioritize the creation of inundation models.
- Tools are needed to show the comparison of other floods, based on models and historical floods.
- There is a plan in place for operating the floodway but no plan for after it's been activated. After operation, what happens?
- There are key decision points, triggers, for operating the floodway. What is the process for changing those points? They don't appear to be static. What determines the triggers?
- We need a better model of what the confluence looks like for that flood profile. Substantially damaged don't want to red flag.

### **Federal Perspective**

- USFWS pleased with lines of communication. USFWS has strategic habitat plan and is concerned about reforestation between levees.
- USCG Updated action plans with lessons learned
- MARAD Navigation industry operated as safely as possible. USACE would let USCG know if tow boat wakes were damaging the levees.
- USDA-NRCS will work with requests for damages in floodplain easements. What would work better in the future? Is it possible to flood land already in the wetland reserve program?
- River Industry Executive Task Force Better SOP for towing industry about levees.



# Operation Watershed Responding to the Historic Mississippi River Flood of 2011 RECOVERY OPERATIONS



### Action Items.

- Non-structural process. Provide any recently identified methods that could help expedite buyouts. Proponent FEMA HQ.
- HQUSACE National Perspective on System Performance. Proponent Office of Homeland Security, HQUSACE
- Inundation model need to be shared. Web links to be provided.
- Phase II prioritization list is being created. IRTF will have a chance to weigh in on it.
- Shared access the Mississippi Valley Division is in the process of updating webpages and will include a new page for Operation Watershed that will include updates to the IRTF, damage assessments, and the system performance evaluation. Documents shared with the team will also be on the webpage.

### **Next Steps:**

- Meeting is scheduled for 20 October 2011, hosted by the State of Louisiana. Make reservation at the Hilton New Orleans Airport by 5 Oct, as rooms are blocked under CPA: Hilton New Orleans Airport, 901 Airline Drive, Kenner, Louisiana 70062 (1-504-469-5000)
- Encourage participation from all IRTF states and key federal agencies that were not in attendance.
- Disseminate draft PMP and charter to the IRTF again for signature at the next meeting.

# **MVDs OPERATION WATERSHED - RECOVERY**

# Phase 1 Identified 2011 Flood Repair Projects: Construction Funded

Feature	Flood Damaged Site	CORPS DISTRICT	STATE	COUNTY / PARRISH	Funding Rcvd (\$1000)		
MRL	BPNM Floodway - Make Safe and Stable	MVM	MO	Mississippi	\$18,500		
CI	Cache-Cairo	MVM	L	Alexander	\$26,110		
MRL	City of Cairo, IL	MVM	IL	Alexander	\$3,000		
MRL	Cairo Parcel 5	MVM	IL	Alexander	\$7,000		
MRL	Above Cairo Parcel 2A - Relief Wells	MVM	IL	Alexander	\$1,500		
MRL	Above Cairo Parcel 2 - Slurry Trench	MVM	IL	Alexander	\$5,500		
MRL	Buck Chute	MVK	MS	Warren	\$2,640		
MRL	Albermarle Slide	MVK	MS	Issaquena	\$1,006		
MRL	Duncan Point	MVN	LA	E Baton Rouge	\$8,850		
MRL	Baton Rouge Front	MVN	LA	E Baton Rouge	\$1,762		
PHASE 1: TOTAL CONSTRUCTION FUNDING RECEIVED \$							

Last Update: 17 Oct 2011

# MVDs OPERATION WATERSHED - RECOVERY Phase 1 Identified 2011 Flood Repair Projects: Not Construction Funded Last Update: 17 Oct 2011

Feature	CORPS DISTRICT	CORPS DISTRICT	STATE	COUNTY / PARRISH	Estimated Cost (\$1000)
Dredge	Kaskaskia Navigation Project	MVS	IL	Multiple	\$900
Dredge	Miss River, Cairo to Mouth of Missouri	MVS	UMRS	Multiple	\$2,000
Dredge	Miss River btn MO River & Minneapolis, MN (MVS Portion), IL	MVS	UMRS	Multiple	\$650
Dredge	Miss River Btwn Mo River and Minneapolis, MN (MVR Portion)	MVR	UMRS	Multiple	\$575
Dredge	Mississippi River (MVP Portion)	UMRS	UMRS	Multiple	\$1,000
		Upper Miss	sissippi Rive	er States SUBTOTAL	\$5,125
CI	Richardson Landing Casting Field	MVM	KY	Tipton	\$10.000
Dredge	Elvis Stahr Harbor, KY	MVM	KY		\$1.000
MRL	Island 8, KY	MVM	KY	Fulton	\$5,500
			State of K	entucky SUBTOTAL	\$16 500
CL	Merriwether-Cherokee top bank and revetment deep	M\/M		Lake	\$24 115
CI	Presidents Island	M\/M	TN	Shelby	\$26,689
CI	Merriwether-Cherokee US DS Revetment	M\/M	TN	Lake	\$8 212
CI	Fritz	M\/M	TN	Lake	\$5,822
CI	Ensley	MVM	TN / AR	Shelby / Crittenden	\$13,631
Dredge	Sycamore Chute	M\/M	TN / AR	Shelby / Crittenden	\$2,000
Dredge	McKellar Lake	MVM	TN/AR	Shelby / Crittenden	\$500
Diougo			State of Te	nnessee SUBTOTAL	0000 000 082
CI	Little Overess			Pomisoot	¢6,306
Dradaa	Little Cypress		MO	Femiscol	φ0,300 ΦΕΕΟ
Dredge			MO		\$350 \$450
Diedge	BDNM Eleadwork Bestere		MO	Mississippi	Φ400 Φ25 000
	BEININ Floodway - Residie		MO	IVIISSISSIPPI	\$25,000 \$000
			MO		\$900 \$1,500
IVINL					\$1,500
			State of	VIISSOUTI SUBTUTAL	\$27,850
Dredge	Yellow Bend Harbor	MVK	AR	0.111	\$115
MRL	Gammon Area boils LM 141	MVM	AR	Crittenden	\$2,500
MRL	Leland Chute AR 2150+00	MVK	AR	Chicot	\$2,600
MRL		IVIVK	AR	Chicol	\$587
			State of A	Arkansas SUBTOTAL	\$5,802
CI	Commerce	MVM	MS	Tunica	\$18,728
CI	Dennis	MVK	MS	Bolivar	\$4,805
CI	Mhoon Bend	M∨M	MS	Tunica	\$2,184
CI	Leland - Lagrange	MVK	MS	Washington	\$1,138
Dredge	Vicksburg Harbor, MS	MVK	MS	Warren	\$750
Dredge	Mouth of the Yazoo River, MS	MVK	MS		\$175
Dredge	Greenville Harbor, MS	MVK	MS		\$1,000
Dredge	Rosedale Harbor	MVK	MS		\$200
MRL	Francis (Sand Boil - Rosedale)	MVK	MS	Bolivar	\$474
MRL	Winterville	MVK	MS	Washington	\$510
MRL	Yazoo MP 89/90 to MP 92/93 (Rena Lara)	MVM	MS	Coahoma	\$3,000
MRL	Tara	MVK	MS	Warren	\$2,758
Dredge	Victoria Bend	MVK	MS/AR	Bolivar / Desha	\$800
			State of Mis	sissippi SUBTOTAL	\$36.522

# MVDs OPERATION WATERSHED - RECOVERY Phase 1 Identified 2011 Flood Repair Projects: Not Construction Funded Last Update: 17 Oct 2011

Feature	CORPS DISTRICT		STATE	COUNTY / PARRISH	Estimated Cost (\$1000)	
CI	Third District	MVN	LA	Orleans	\$11,400	
CI	Greenville Bend	MVN	LA	Jefferson	\$3,902	
CI	Avondale Bend, RM 108.0	MVN	LA	Jefferson	\$4,700	
CI	Avondale Bend, RM 108.3	MVN	LA	Jefferson	\$4,703	
CI	Port Allen	MVN	LA	W/E Baton Rouge	\$3,800	
CI	Alliance	MVN	LA	Plaquemines	\$4,500	
CI	Bourgere	MVN	LA	Concordia	\$23,587	
CI	Goodrich Upstream Extension	MVK	LA	E Carroll	\$3,413	
CI	Marchand	MVN	LA	Ascension	\$3,711	
Dredge	Deep Draft Projects	MVN	LA	Multiple	\$130,000	
Dredge	Gulf Intracoastal Waterway, LA	MVN	LA	Multiple	\$3,000	
Dredge	Old River, Maintenance	MVN	LA	Concordia	\$10,000	
Dredge	Red River, Maintenance	MVK	LA	Concordia / Avoyelles	\$1,200	
Dredge	Ouachita/Black River, Maintenance	MVK	LA	Concordia / Catahoula	\$1,200	
Dredge	Baton Rouge Harbor (Devils Swamp) - Maintenance	MVN	LA		\$250	
Dredge	Lake Providence Harbor, LA	MVK	LA		\$1,200	
Dredge	Madison Parish Port	MVK	LA		\$150	
MRL	Chalmette Seepage	MVN	LA	St Bernard	\$2,268	
MRL	Old River Seepage	MVN	LA	Pointe Coupee	\$21,200	
MRL	Audubon Seepage	MVN	LA	Pointe Coupee	\$233	
MRL	Lake Bruin	MVK	LA	Tensas	\$765	
MRL	Henderson	MVK	LA	E Carroll	\$1,836	
MRL	Ice Box Hole	MVK	LA	E Carroll	\$587	
MRL	Pt Coupee Seepage	MVN	LA	Pointe Coupee	\$49,626	
MRL	Pt Pleasant Seepage	MVK	LA	Iberville	\$147,866	
MRL	Algiers Seepage	MVN	LA	Orleans	\$7,888	
MRL	Blackhawk Slide	MVN	LA	Concordia	\$3,203	
MRL	Jackson Barricks Slope Paving	MVN	LA	Orleans	\$126	
MRL	Huey P Long Seepage	MVN	LA	Jefferson	\$10,044	
MRL	Belle Chase Slope Paving	MVN	LA	Plaquemines	\$116	
Struct	Morganza Control, Piezometers and relief wells	MVN	LA	Pointe Coupee	\$2,420	
Struct	Morganza Control, Stilling Basin	MVN	LA	Pointe Coupee	\$19,650	
Struct	Old River Aux CS	MVN	LA	Concordia	\$16,800	
Struct	Morganza Control, Lower Guide Levee	MVN	LA	Pointe Coupee	\$3,300	
Struct	Morganza Control,curtain wall	MVN	LA	Pointe Coupee	\$200	
Struct	Old River CS, erosion	MVN	LA	Concordia	\$3,000	
Struct	Morganza Control, seepage	MVN	LA	Pointe Coupee	\$50	
Struct	Old River CS, outflow channel	MVN	LA	Concordia	\$15,000	
Dredge	Atchafalaya Basin, Maintenance	MVN	LA	St Mary	\$6,000	
Struct	Wax Lake East PS	MVN	LA	St Mary	\$1,100	
Struct	Wax Lake West PS	MVN	LA	St Mary	\$1,400	
Struct	Franklin PS	MVN	LA	St Mary	\$1,300	
Struct	Centerville PS	MVN	LA	St Mary	\$2,500	
Struct	Northbend PS	MVN	LA	St Mary	\$1,000	
CI	Kempe Bend	MVK	LA/MS	Tensas / Jefferson	\$1,217	
			State of L	ouisiana SUBTOTAL	\$531,411	
	PHASE 1	: TOTAL C	ONSTRUCT	ION FUNDING NEED	\$704,179	



# Information Paper Birds Point New Madrid Floodway "Make Safe & Stable Operations"

# **OPERATION WATERSHED RECOVERY – PHASE I CRITICAL SITES**

### Contacts

Dennis Abernathy, P.E., Project Manager Ph. 901-544-0798 Dennis.W.Abernathy@usace.army.mil Scott D. Whitney, MVD Regional Flood Risk Manager Ph. (309) 794-5386 fax (309) 794-5710 scott.d.whitney@usace.army.mil

### **OVERVIEW**

OW-R PRIORITY: 1 of 93 DISTRICT: Memphis District TYPE: Levee Damage – Three (3) Artificial Crevasses RM: 951R to 890R FRAGO CLASS: 1 - High Potential for Loss of Life RISK: Unexploded Ordinance; Scour hole through county road; Loss of protection to 133,000 Acres agricultural land. REPAIR: Remove residual blasting agent. Limit access along county road. Sand fill scour holes and construct interim clay levee.

**REPAIR COST:** \$18,500,000

### **Damage Assessment**

Three sections of the frontline levee were artificially crevassed by MVM on 2 May 2011 for the purpose of activating the 133,000 acre Birds Point New Madrid Floodway. The combined length of crevasses is approximately four miles. Detonation of blasting agent used in creating crevasses was incomplete and the residual material that remained on site was assumed to be a viable product. Inflow thru the middle crevasse created a 45' deep scour hole across a county road. There was additional damage to levee sections adjacent to intentional crevasses from natural overtopping. Significant damage to public infrastructure and private property located within the floodway.

### **Risk and Consequence**

The risk to the public by not removing the residual blasting agent and erecting road closures was deemed unacceptable. Failure to provide interim level of protection creates tremendous economic hardship on the local economy and in particular Mississippi and New Madrid counties.

### **Critical Repairs**

The removal of residual blasting agent and providing safe traverse is critical to public safety.



Figure 1: BPNM Floodway Vicinity Map

### **Special Considerations**

An Environmental Assessment is out for Public Comment that addresses construction of the interim levee at the middle crevasse and future Restore Operations for all three crevasses. We are also operating a Claims Information Center located in New Madrid, MO.

### Schedule

CEMVG guidance provided 15 Jun 11 to commence "Make Safe & Stable" operations based on a target elevation of 51' on the Cairo gage. Construction commenced on 16 Jun 11 and construction is scheduled for completion NLT 30 Nov 11.

### **Acquisition Strategy**

Work is being accomplished by MVM hired labor forces that are being supplemented with other regional hired labor forces. We are also making use of supply services contracts for delivery of materials.



# Information Paper Cache-Cairo (Cairo, IL)

# **OPERATION WATERSHED RECOVERY – PHASE I CRITICAL SITES**

Contacts

Derrick Smith, MVM Channel Improvement PM Ph. (901) 544-3481 Derrick.A.Smith@usace.army.mil Scott D. Whitney, MVD Regional Flood Risk Manager Ph. (309) 794-5386 fax (309) 794-5710 scott.d.whitney@usace.army.mil

### **OVERVIEW**

OW-R PRIORITY: 2 of 93 DISTRICT: Memphis District TYPE: Bank Stability RM: 958-956L (Ohio River) FRAGO CLASS: 1 - High Potential for Loss of Life RISK: 5,930 residents, \$73M infrastructure REPAIR: Reconstruct bank slope and Place ACM Revetment REPAIR COST: \$26,110,000

### **Damage Assessment**

There are several areas along the Cache-Cairo Revetment in Alexander County, IL that have experienced excessive scour during the great flood of 2011. Hydrographic surveys have indicated that from River Mile 958 to 956 (OH) that there has been scour at the toe and in the slopes of the existing underwater revetment. These slopes in several areas range from 1V:2H to as steep as 1V:1H. The previously recommended and existing slopes in this area were approximately 1V:3H. These over steepened slopes represent a significant risk to life and property with many facilities located along top bank, including the Cairo Floodwall. In addition, there are several areas with only one previous layer of ACM protecting the bank which is most likely destroyed. This area is also heavily used as a fleeting area by the navigation industry

### **Risk and Consequence**

If the West Bank of the Ohio River at Cairo, IL were to fail at the Cache Cairo site, the population at risk would be 5,930. The value of the 3,540 affected structures is \$629,344,930. In addition, excessive scour has been observed approximately 500' from an existing pier of the Cairo-Ohio River Bridge. A large bank failure at this location could adversely impact both Mississippi River Navigation as well as transportation over the Ohio River.



Figure: Google Map of Cairo, IL

### **Critical Repairs**

Preliminary investigations suggest that a stone blank / stone toe will need to be constructed for bank stability, with a new layer of ACM constructed to protect against future scour at the toe. The Geotechnical Analysis is underway to determine the most cost effective corrective measures. Topographic Survey Crews are collecting the necessary data from the floodwall to water's edge for use in the analysis. The estimated cost of this repair is \$26,110,000.

### **Special Considerations**

The Cache Cairo site is covered under the 1976 MR&T EIS. Based on preliminary estimates for the recommended repair, the entire ROW that will be required is below the ordinary high water mark.

### Schedule

Survey – 14 Sep 2011 Geotechnical Analysis – 15 Nov 2011 Design – 16 Dec 2011

### Acquisition Strategy

Phase I (Stone placement) will be constructed by using existing stone placement MATOC contract.

Phase II (ACM) will be constructed by hired labor crews during 2012 sinking season.



# Information Paper City of Cairo, IL

# **OPERATION WATERSHED RECOVERY – PHASE I CRITICAL SITES**

Contacts

Regina Kuykendoll Cash, MVM MRL Project Manager Ph. 901-544-3680 regina.kuykendoll-cash@usace.army.mil

Scott D. Whitney, MVD Regional Flood Risk Manager Ph. (309) 794-5386 fax (309) 794-5710 <u>scott.d.whitney@usace.army.mil</u>

### **OVERVIEW**

OW-R PRIORITY: 3 of 93 DISTRICT: Memphis District TYPE: Levee Damage – Boil and Seepage LM: 8/21+00 – 9/16+00 FRAGO CLASS: 1– High Potential for Loss of Life. RISK: 5,930 residents, \$630M infrastructure REPAIR: 2 Berms and 7 relief Wells REPAIR COST: \$3,000,000

#### **Damage Assessment**

The most significant issues observed during the damage assessment were tremendous amounts of seepage and sand boils in the City of Cairo. Major seepage in the form of three high energy boils with sand cones from 8 to 15 feet was present in segment 3. A high energy sand boil occurred next to a piezometer and was piping a large amount of coarse material, it was immediately ringed and later stabilized. Another large energy boil was discovered further west in the same field, it was ringed, stabilized and then shifted 5 ft south and the ring was expanded to contain it. Another large sand boil was ringed near levee mile 9/10+00. This piped material most likely left behind voids of unconsolidated material in the subsurface beneath the System 1 flood control works, especially in the area near the floodwall where three high energy boils were found. The importance of installing seepage control measures in this area has never been more evident as during this past flood. The possible subsurface damage caused by this most recent flood, when coupled with subsurface damage caused by floods of the past, could have detrimental effect on System 1.

### **Risk and Consequence**

The flood control works that make up System 1 form a Vshape that protects the tip of Southern Illinois' Alexander County. It is unbroken except for the locations designed as gates. The system protects urban and rural lands, including industries such as Bunge, ADM Grain, Consolidated Grain and Barge, and Riverbend Rice. It also protects an airport, electrical substations, museums, oil and gas pipelines, US oil gas wells, schools, thousands of acres of farmland, and the Magnolia Manor National Symbol. According to the data



Figure 1: Aerial view of completed sand boil ring

found on the Levee Screening Tool, the total population at risk within System 1 is approximately 5,930 people with 3,540 structures. The Levee Screening Tool values the property within the System 1 protected area at approximately \$629,344,930. Cities and communities within the protected area include Klondike, Future City, Cairo, Urbandale, Mound City, and Mounds.

### **Critical Repairs**

The preliminary repair recommendation for this site includes seven relief wells and two earthen berms. The estimated cost of this repair is \$3,000,000.

#### **Special Considerations**

The Bunge Corp and the water treatment plant own the land where the relief wells and berm will be constructed. The City of Cairo and Bunge will need to provide the ROW prior to construction of any berms or wells. The Bunge Corporation currently plans to expand their facilities in the area of the planned berms and wells. If no agreement can be reached, relief wells may replace the berms. Some additional drainage considerations will be constructed to account for the addition of relief well water. The cost for pumping that water will be the responsibility of the City. The City does not have the funding to operate and maintain the pumping stations that they have today, so this additional water will be an issue. Provide ROW plans to Sponsor NLT 1 Feb 12 and obtain ROW from Sponsor within 6 months of receiving plans.

#### Schedule

Complete P&S 1Jun 12, RTA 15 Jun 12, Award 1 Aug 12

### Acquisition Strategy

Will use unrestricted solicitation for this contract.



# Information Paper Cairo, IL Parcel 5

# **OPERATION WATERSHED RECOVERY – PHASE I CRITICAL SITES**

### Contacts

Regina Kuykendoll Cash, MVM MRL Project Manager Ph. 901-544-3680 regina.kuykendoll-cash@usace.army.mil Scott D. Whitney, MVD Regional Flood Risk Manager Ph. (309) 794-5386 fax (309) 794-5710 scott.d.whitney@usace.army.mil

### **OVERVIEW**

OW-R PRIORITY: 4 of 93 DISTRICT: Memphis District TYPE: Levee Damage – Boil and Seepage LM: 6/15+00 – 8/20+00 FRAGO CLASS: 1– High Potential for Loss of Life. RISK: 5,930 residents, \$630M infrastructure REPAIR: Berms, relief wells, and slurry trench REPAIR COST: \$7,000,000

### **Damage Assessment**

The most significant issues observed during the damage assessment were tremendous amounts of seepage and sand boils segment 5. Numerous medium to large sand boils were observed along the levee toe and in the woods toward the west. Heavy seepage and sand boils were observed in the sump area for the Goose Pond Pump Station. Evidence of the extremely high pressures can be seen in the hundreds of sand boils in the area that piped thousands of cubic yards of material over the course of the flood. This piped material most likely left behind voids of unconsolidated material in the subsurface beneath the System 1 flood control works, especially in the area near the floodwall where three high energy boils were found. The importance of installing seepage control measures in this area has never been more evident as during this past flood. The possible subsurface damage caused by this most recent flood, when coupled with subsurface damage caused by floods of the past, could have a detrimental effect on System 1.

### **Risk and Consequence**

The flood control works that make up System 1 form a Vshape that protects the tip of Southern Illinois' Alexander County. It is unbroken except for the locations designed as gates. The system protects urban and rural lands, including industries such as Bunge, ADM Grain, Consolidated Grain and Barge, and Riverbend Rice. It also protects an airport, electrical substations, museums, oil and gas pipelines, US oil gas wells, schools, thousands of acres of farmland, and the Magnolia Manor National Symbol. According to the data found on the Levee Screening Tool, the total population at risk within System 1 is approximately 5,930 people with 3,540 structures. The Levee Screening Tool values the



Figure: Close up view of sand cone

property within the System 1 protected area at approximately \$629,344,930. Cities and communities within the protected area include Klondike, Future City, Cairo, Urbandale, Mound City and Mounds.

### **Critical Repairs**

The preliminary repair recommendation for this site includes two earthen berms, seventeen 8 inch diameter relief wells and forty-two hundred linear feet of slurry trench. The estimated cost of this repair is \$7,000,000.

### **Special Considerations**

Constructing seepage measures on the Ohio River side has significant ROW issues. The design for this parcel balances constructing relief wells, berms and slurry trenches. Each seepage measure can be constructed as a feasible project; however, there are limitations due to ROW, borrow sources, surface drainage issues and cost (i.e. berms - limited borrow sources and problems acquiring ROW within berm footprint; relief wells - can be designed to reduce required ROW and eliminate need for borrow material; however, due to local concern of increased surface water and pumping required due to seepage flows from the wells, the Sponsor is not in agreement with relief wells). Therefore, the above project is considered to balance any increase in seepage and need for borrow sources or additional ROW. Provide ROW plans to Sponsor NLT 1 Apr 12 and obtain ROW from Sponsor within 6 months of receiving plans.

### Schedule

Complete P&S 2 Jul 12, RTA 16 Jul 12, Award 14 Sep 12

### Acquisition Strategy

Will use unrestricted solicitation for this contract.



# **Information Paper** Above Cairo Parcel 2A - Relief Wells

# **OPERATION WATERSHED RECOVERY – PHASE I CRITICAL SITES**

### Contacts

Regina Kuykendoll Cash, MVM MRL Project Manager Ph. 901-544-3680 regina.kuykendoll-cash@usace.army.mil Scott D. Whitney, MVD Regional Flood Risk Manager Ph. (309) 794-5386 fax (309) 794-5710 scott.d.whitney@usace.army.mil

### **OVERVIEW**

OW-R PRIORITY: 5 of 93 DISTRICT: Memphis District TYPE: Levee Damage – Boil and Seepage LM: 16/30+00 – 20/12+50 FRAGO CLASS: 1– High Potential for Loss of Life. RISK: 5,930 residents, \$630M infrastructure REPAIR: 28 Relief Wells REPAIR COST: \$1,500,000

### **Damage Assessment**

The most significant issues observed during the damage assessment were tremendous amounts of seepage and sand boils in the City of Cairo. Major seepage in the form of hundreds of small to medium boils 150 to 300 ft from levee toe was present in segment 5. Numerous small and medium sand boils were found and ringed with sandbags. One large sand boil was found in a small ditch beside Luby St and was immediately ringed with sandbags. Overnight the boil stopped flowing and a smaller boil appeared roughly 20 ft to the west. Several other small to medium boils were also found in the same area and ringed with sandbags. Most of the area around Luby St. was standing in 12 to 18 in of water even though the ditches on the side of Hwy 3 were not blocked, which indicated heavy seepage in addition to the sand boils. The importance of installing seepage control measures in this area has never been more evident as during this past flood. The possible subsurface damage caused by this most recent flood, when coupled with subsurface damage caused by floods of the past, could have detrimental effect on System 1.

### **Risk and Consequence**

The flood control works that make up System 1 form a Vshape that protects the tip of Southern Illinois' Alexander County. It is unbroken except for the locations designed as gates. The system protects urban and rural lands, including industries such as Bunge, ADM Grain, Consolidated Grain and Barge, and Riverbend Rice. It also protects an airport, electrical substations, museums, oil and gas pipelines, US oil gas wells, schools, thousands of acres of farmland, and the Magnolia Manor National Symbol



Figure: Large boil beside Luby St. after it stopped flowing.

According to the data found on the Levee Screening Tool, the total population at risk within System 1 is approximately 5,930 people with 3,540 structures. The Levee Screening Tool values the property within the System 1 protected area at approximately \$629,344,930. Cities and communities within the protected area include Klondike, Future City, Cairo, Urbandale, Mound City, and Mounds.

### **Critical Repairs**

The preliminary repair recommendation for this site includes twenty-eight 8 in diameter relief wells. The estimated cost of this repair is \$1,500,000.

### **Special Considerations**

Due to the tremendous magnitude and long duration of the May 2011 flood, the area protected by System 1 was under hydraulic pressures far exceeding anything experienced before. Evidence of the extremely high pressures can be seen in the hundreds of sand boils in the area that piped thousands of cubic yards of material over the course of the flood. This piped material most likely left behind voids of unconsolidated material in the subsurface beneath the System 1 flood control works, especially in the area near the floodwall where three high energy boils were found.

### Schedule

Contract Award: NLT 30 Sep 11

### **Acquisition Strategy**

Will use 8a sole-source set-aside.



# **Information Paper** Above Cairo Parcel 2 – Slurry Trench

# **OPERATION WATERSHED RECOVERY – PHASE I CRITICAL SITES**

### Contacts

Regina Kuykendoll Cash, MVM MRL Project Manager Ph. 901-544-3680 regina.kuykendoll-cash@usace.army.mil Scott D. Whitney, MVD Regional Flood Risk Manager Ph. (309) 794-5386 fax (309) 794-5710 scott.d.whitney@usace.army.mil

### **OVERVIEW**

OW-R PRIORITY: 6 of 93 DISTRICT: Memphis District TYPE: Levee Damage – Boil and Seepage LM: 18/40+00 – 20/12+00 FRAGO CLASS: 1– High Potential for Loss of Life. RISK: 5,930 residents, \$630M infrastructure REPAIR: Slurry Trench REPAIR COST: \$5,500,000

### **Damage Assessment**

The most significant issues observed during the damage assessment were tremendous amounts of seepage and sand boils in the City of Cairo. Major seepage in the form of hundreds of small to medium boils 150 to 300 ft from levee toe was present in segment 5. Numerous small and medium sand boils were found and ringed with sandbags. Numerous heavy seepage with medium to large sand boils was observed. A sandbag weir was built across the west ditch at approximately sta. 19/45+00, and another was built across the east ditch at roughly stat. 19/40+00. A large boil was found just downstream of the weir in the west ditch, and it was ringed with sandbags. The boil stabilized, but several days later 2 more medium boils appeared just outside the sandbag ring. The importance of installing seepage control measures in this area has never been more evident as during this past flood. The possible subsurface damage caused by this most recent flood, when coupled with subsurface damage caused by floods of the past, could have detrimental effect on System 1.

### **Risk and Consequence**

The flood control works that make up System 1 form a Vshape that protects the tip of Southern Illinois' Alexander County. It is unbroken except for the locations designed as gates. The system protects urban and rural lands, including industries such as Bunge, ADM Grain, Consolidated Grain and Barge, and Riverbend Rice. It also protects an airport, electrical substations, museums, oil and gas pipelines, US oil gas wells, schools, thousands of acres of farmland, and the Magnolia Manor National Symbol. According to the data found on the Levee Screening Tool, the total population at



Figure: Sandbag weir in east ditch at sta. 19/40+00

risk within System 1 is approximately 5,930 people with 3,540 structures. The Levee Screening Tool values the property within the System 1 protected area at approximately \$629,344,930. Cities and communities within the protected area include Klondike, Future City, Cairo, Urbandale, Mound City, and Mounds.

### **Critical Repairs**

The preliminary repair recommendation for this site includes installing a 3 ft wide trench of varying depths between 70 and 90 ft of 7,311 ft in length. The estimated cost of this repair is \$5,500,000.

### **Special Considerations**

Due to the tremendous magnitude and long duration of the May 2011 flood, the area protected by System 1 was under hydraulic pressures far exceeding anything experienced before. Evidence of the extremely high pressures can be seen in the hundreds of sand boils in the area that piped thousands of cubic yards of material over the course of the flood. This piped material most likely left behind voids of unconsolidated material in the subsurface beneath the System 1 flood control works, especially in the area near the floodwall where three high energy boils were found.

### Schedule

Contract Award: NLT 30 Sep 11

### **Acquisition Strategy**

Will use unrestricted solicitation for this contract.



US Army Corps of Engineers Vicksburg District

# Information Paper Buck Chute

# **OPERATION WATERSHED RECOVERY – PHASE I CRITICAL SITES**

Contacts

 Kent Parrish, MVD Regional MRL Team Leader Ph. 601-631-5006 fax. 601-631-5151 Kent.D.Parrish@usace.army.mil
 Scott D. Whitney, MVD Regional Flood Risk Manager Ph. (309) 794-5386 fax (309) 794-5710 scott.d.whitney@usace.army.mil

### **OVERVIEW**

OW-R PRIORITY: 07 of 93 DISTRICT: Vicksburg District TYPE: Boils and Seepage RM: RM 459.6 (110+00 BEL) FRAGO CLASS: 1 – High Potential for Loss of Life RISK: 3,996 residents, \$188.5M infrastructure REPAIR: Berm, 30 Relief Wells, and 12 Horiz. drains EST. REPAIR COST: \$2,640,000

### **Damage Assessment**

In early 2010, MVK was notified of multiple boils in the project area. In early summer of 2010, the boils were sandbagged as River Levels reached flood stage and the flow of the boils increased. In February, 2011, when conditions in the project area were dry, two of the largest boils were pumped, revealing voids at boil 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 boil 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 boil 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 boil 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 3,996. The value of the non-residential structures is \$31,141,000, and the value of the 1,436 residential structures is \$157,396,000.



Figure 1. Aerial view of Buck Chute during 2011flood fight. 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 pervious 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 1998 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 MVK 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 - 30 Aug 2011 Anticipated contract duration 120 days. Scheduled completion in January 2012.

### **Acquisition Strategy**

Unrestricted competitive bid awarded 30 Aug 2011 to Phylway Construction, LLC for \$3,100,225.00. This site was combined with No. 8 site, Albermarle.



US Army Corps of Engineers Vicksburg District

# Information Paper Albemarle Slide

# **OPERATION WATERSHED RECOVERY – PHASE I CRITICAL SITES**

Contacts

 Kent Parrish, MVD Regional MRL Team Leader Ph. 601-631-5006 fax. 601-631-5151 Kent.D.Parrish@usace.army.mil
 Scott D. Whitney, MVD Regional Flood Risk Manager Ph. (309) 794-5386 fax (309) 794-5710 scott.d.whitney@usace.army.mil

### **OVERVIEW**

OW-R PRIORITY: 08 of 93 DISTRICT: Vicksburg District TYPE: Levee slide and boils RM: RM 463.5 (8170+00) FRAGO CLASS: 1 – High Potential for Loss of Life RISK: 7,656 residents, \$347.5M infrastructure REPAIR: Berm EST. REPAIR COST: \$1,006,000

### **Damage Assessment**

During the flood of 2011, the initial site assessment identified five medium sized, high energy sand boils at the toe of the levee. Also found was a significant landside slide immediately downstream of the boils. A stone ring was placed around the sand boils, and a filter of sand was placed over the throat. The MS Levee Board worked throughout the night to stabilize the boil. Corps hired labor forces were called in and began stabilization of the slide the following day. An additional slide developed over the second night. Both slides were accompanied with and possibly the result of heavy seepage exiting at the slide face and on the slope below. Hired labor continued to work by placing crushed limestone at the toe and sand on the lower end of the slide to provide additional weight and drainage. A small slide near the levee toe formed immediately above the sand boils on the third day that connected the two larger slides. Hired labor forces worked for approximately 14 days to stabilize both the slides and the boils. Approximately 6,000 tons of #57 stone and 11.000 tons of sand were used to stabilize the slope. The boils at the levee toe and the embankment instability could have progressed to loss of levee foundation material and/or significant loss of the net levee section if these emergency repairs had not been undertaken.

### **Risk and Consequence**

If the East Bank Mississippi River Levee System were to fail at the Albemarle site, the population at risk would be 7,656. The value of the non-residential structures is \$72,963,000, and the value of the 2,599 residential structures is \$274,488,000.



Figure 1. Albermarle Levee Slide

### **Critical Repairs**

The reset recommendation for this site includes a 2,500 foot reach of earthen berm from Station 8160+00 to 8185+00. The recommended berm width is 150 feet, which will address both the slope stability issues in the landside slope of the levee as well as the high exit gradients that exist in the vicinity of the toe. Granular fill from the emergency berm will be moved to the outer limits of the reset berm. In-place berm volume will be approximately 130,000 cubic yards.

### **Special Considerations**

The Albemarle site is covered under the 1998 MRL SEIS (item 465-L) and covers multiple work items. 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 MVK 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 - 30 Aug 2011 Anticipated contract duration 120 days. Scheduled completion in January 2012.

### **Acquisition Strategy**

Unrestricted competitive bid awarded 30 Aug 2011 to Phylway Construction, LLC for \$3,100,225.00. This site was combined with No. 7 site, Buck Chute.







US Army Corps of Engineers New Orleans District

# Information Paper Duncan Point

# **OPERATION WATERSHED RECOVERY – PHASE I CRITICAL SITES**

Contacts

 Gary Hawkins, MVN District Program Manager OW-R Ph. (504) 862-2565 fax. (504) 862-1572
 <u>Gary.L.Hawkins@usace.army.mil</u>
 Scott D. Whitney, MVD Regional Flood Risk Manager Ph. (309) 794-5386 fax (309) 794-5710

scott.d.whitney@usace.army.mil

### **OVERVIEW**

OW-R PRIORITY: 9 of 93
DISTRICT: New Orleans District (MVN)
TYPE: Levee Damage – Boil and Extensive Seepage
RM: 224 Left Descending Bank (PLD 0185+00 to 0195+00)
FRAGO CLASS: 1– High Potential for Loss of Life and Significant Economic Damage.
RISK: 440,171 residents, in excess of \$37B in structures
REPAIR: Seepage Berm and Highway Relocation
REPAIR COST: \$8,850,000

### **Damage Assessment**

There is extensive seepage at this site to include a sand boil at levee toe and soft, spongy conditions one-third up the levee slope, requiring extensive flood-fight efforts. Site had to be continually monitored during the flood fight. A stabilization berm was constructed in 2010. Seepage moved from berm to area north on protected-side toe of the levee. Adjacent highway experienced spongy conditions requiring closure. This is MVNs number one priority for levee safety. The levee system in this area is built to current design criteria. If this site goes without repair for the next flood season the risk could vary from extensive sheet flow and standing water near the toe of the levee to sloughing of protected side slope to the most severe case with the development of sand boils and movement of material under the levee which could ultimately result in a levee failure.

### **Risk and Consequence**

The Mississippi River East Bank System consists of approximately 107.2 miles of Mississippi River Levees. The System is located on the east side of the Mississippi river stretching from the north side of Baton Rouge down to the Bonnet Carré Spillway. The levees protect residential, commercial, industrial (heavy and light), pasture and farm land from Baton Rouge to New Orleans. If the levees were to fail at the Duncan Point site, the population at risk could be 440,171. The housing units at risk in this system are 190,270 at an approximate total value of \$28,121,906,000. The total value of non-residential structures is approximately \$9,736,095,000. The total estimated value of structures is in excess of \$37B.



Figure: Duncan Point Sandbag Repair

### **Critical Repairs**

Recommended repair is a seepage berm and relocation of highway. The estimated cost of this repair is \$8,850,000.

### **Special Considerations**

NEPA compliance will be achieved through an environmental assessment with an expected completion date of Septermber 2011. No mitigation costs are expected as result of construction of this Reset action.

### Schedule

Duncan Point is scheduled to advertise via a MATOC low bid contract on 9 September 2011. The award date is scheduled for 23 September 2011. The construction duration is anticipated to take seven months after award.

### **Acquisition Strategy**

Duncan Point is planned to be advertised via a MATOC Low Bid Contract.



US Army Corps of Engineers New Orleans District

# Information Paper Baton Rouge Front

# **OPERATION WATERSHED RECOVERY – PHASE I CRITICAL SITES**

### Contacts

Gary Hawkins, MVN District Program Manager OW-R Ph. (504) 862-2565 fax. (504) 862-1572 Gary.L.Hawkins@usace.army.mil Scott D. Whitney, MVD Regional Flood Risk Manager Ph. (309) 794-5386 fax (309) 794-5710 scott.d.whitney@usace.army.mil

### **OVERVIEW**

OW-R PRIORITY: 10 of 93 DISTRICT: New Orleans District (MVN) TYPE: Levee Damage – Slope Pavement Failure RM: 230 Left Descending Bank (BRLD Sta. 40+00) FRAGO CLASS: 1 - High Potential for Loss of Life RISK: 440,171 residents, in excess of \$37B in structures REPAIR: Flood Side Berm REPAIR COST: \$1,761,000

#### **Damage Assessment**

Baton Rouge Front is a known flood-side slope paving site that is experiencing large cracking due to flood side stability that was monitored closely during high water. MVN began monitoring 1 Apr 11. Engineering has previously taken borings at the site and have started design on a permanent fix. CN railroad tracks are on top of the levee section at this location. The CN railroad was restricted to use of the landside track only and no parking and speed limit of 10 mph on 6 May 11, due to placement of sand bags on the riverside track. If this site goes without repair for the next flood season the risk would be the advancement of ongoing flood-side slope slide and scour due to undermining of concrete slope pavement.

### **Risk and Consequence**

The Mississippi River East Bank System consists of approximately 107.2 miles of Mississippi River Levees. The System is located on the east side of the Mississippi river stretching from the north side of Baton Rouge down to the Bonnet Carré Spillway. The levees protect residential, commercial, industrial (heavy and light), pasture and farm land from Baton Rouge to New Orleans. If the levees were to fail at the Baton Rouge Front site, the population at risk could be 440,171. The housing units at risk in this system are 190,270 at an approximate total value of \$28,121,906,000. The total value of non-residential structures is approximately \$9,736,095,000. The total estimated value of structures is in excess of \$37B.



Figure 1: Baton Rouge Front Cracked Slope Pavement

### **Critical Repairs**

Recommended repair is flood-side berm. The total project is estimated to cost \$1,761,000.

### **Special Considerations**

NEPA compliance will be achieved through a categorical exclusion. Additional environmental compliance documentation including, but not limited to Section 404(b)(1), Section 401 Water Quality Certification, Threatened and Endangered Species, and Section 106 Cultural Resources will be prepared as required. No mitigation costs are expected as result of construction of the proposed Reset action.

### Schedule

The Baton Rouge Point repair is scheduled to advertise on 16 October 2011. The award date is scheduled for 31 October 2011. The construction duration is anticipated to take six months after award.

### **Acquisition Strategy**

The Baton Rouge Front repair contract is planned to be executed via a MATOC Low Bid Contract.







3

BUILDING STRONG









udy Cost:		Team	Base Estimate	Additional Capability	Full Estimate
		Regional Management & Review	\$900,000		\$900,000
	1	Reservoirs (Fusion Team)	\$1,680,000	\$500,000	\$2,180,000
	2	Levee/Floodwall/ Outlet Structures	\$1,600,000		\$1,600,000
	3	Floodways	\$1,725,000		\$1,725,000
	4	Channel Improvements	\$88,000		\$88,000
	5	Communications/ Collaboration	\$142,000		\$142,000
	6	Environmental	\$450,000		\$450,000
	7	Economics	\$610,600		\$610,600
	8	Flow Lines/Design Flood	\$89,000		\$89,000
	9	Data Management	\$130,000	\$140,000	\$270,000
	10	Reports	\$400,000		\$400,000
	$\vdash$	Totals	\$7,814,600	\$640,000	\$8,454,600









# **Reservoir Team**

### Questions to be Answered

- How did the reservoir operations impact the performance of the MR&T system? How did any minor, major deviations or deviation directives impact the
- MR&T system and what was the resultant impact to the impact to individual reservoir projects?
- Did present authorities for the USACE projects in the Missouri Basin, which do not prescribe a coordinated operation for the entire Mississippi River Basin, impact the operation or the flooding on either river?
- -How were operational decisions at Corps reservoirs made with systemwide considerations and how can coordination be improved? Are revisions needed to the Water Control Manuals to respond to major
- events? ΕH 13

BUILDING STRONG











# Channel Improvement Description Scope/Objectives -Review performance of the Channel Improvement Project during the 2011 Flood Event -Identify future efforts to enhance the capabilities of the system to achieve long term risk reduction -Highlight priority of needed repairs



### Communications Objectives • Analyze communication within the Division and between our interagency partners • Determine that the message sent with inundation mapping products was effective • Establish a recommended best practice for the release of inundation mapping • Document and analyze social media use during the flood • Provide recommendations for future flood events

21

BUILDING STRONG<sub>®</sub>



### Environmental Team Objectives • Identify & evaluate environmental consequences associated with 2011 flood. • Identify & document environmental consequences avoided by the MR&T system. • Evaluate & describe how environmental information & decision support was used to operate the MR&T system. • Establish the environmental decision support needed to operate the MR&T system.

Evaluate environmental consequences of potential changes proposed for the MR&T system.

<section-header><section-header><section-header><section-header><list-item><list-item><list-item><list-item><list-item><list-item><list-item><list-item>

24

BUILDING STRONG

Flow Line Tea	am
Scope This MR&T system performance evaluation team is the adequacy of the project flood components and o project flood adequately captures risk	s tasked assessing determining if
Objectives	
Review current project design flood methodolo components	ogies and
•Hydrology – storms, reservoirs •Hydraulics – routings, flow lines	
Freeboard components     Additional flow line components     Wind ways	
•Vessel generated wave	1 International Contraction
25	BUILDING STRONG® Pre-Decisional







# **Operation Watershed – Recovery**

**Responding to the Historic Mississippi River Flood of 2011** 

# System Performance Evaluation FY12 Work Plan

Contacts:

Regional Program Management Lead Hank DeHaan, 309-794-5853

Regional Technical Management Lead Dave Busse, 314-331-8202



US Army Corps of Engineers BUILDING STRONG®

7 October 2011







Operation Watershed - Recovery System Performance Evaluation

# Table of Contents

1.	Purpose and Scope of the System Performance Evaluation (SPE)
2.	SPE Scope Questions4
3.	System Performance Evaluation Team5
4.	SPE Team Responsibility Assignment Matrix6
5.	Team/Scope Question Matrix7
6.	Study Cost8
7.	Study Schedule9
8.	Draft SPE Report Outline10
9.	Detailed FY12 Work Plan Breakdown11

## 1. Purpose and Scope of the System Performance Evaluation:

The System Performance Evaluation (SPE) will assess and document the performance of the MR&T system and how the entire Mississippi River Watershed was managed as a system during the historic Mississippi River Basin Flood Event that extended from March through July 2011. The purpose of this evaluation is to:

- 1. Evaluate and document the performance of the MR&T System and how the entire watershed was managed during the 2011 Flood
- 2. Identify and prioritize recapitalization requirements to prepare the system for future events
- 3. Identify opportunities to improve the systems performance and reliability

The resulting report will provide valuable information for future system management, operation and improvement. It will also serve as a reference for future flood risk management efforts elsewhere.

The evaluation will focus primarily on the performance and contributions from the following structural & relational items:

- 1. Reservoirs
- 2. Levees/Floodwalls
- 3. Floodways
- 4. Channel Improvements
- 5. Outlet Structures (e.g. Old River...etc)
- 6. Operational Decisions
- 7. Collaboration
- 8. Communication

As the System Performance Evaluation moves forward the teams addressing these items will focus on answering three key questions:

- 1. How did the MR&T System perform?
- 2. How could the MR&T System perform now?
- 3. What does the MR&T System need to perform in the future?

The Evaluation team will develop, test and utilize a system model as a basis for analyzing many aspects of the scope. The goal of the MR&T System Evaluation model development effort is to build a single unsteady HEC-RAS model of the MR&T system which will provide a tool to evaluate the 2011 flood event on a system basis.

### 2. SPE Scope Questions:

In order to fully address the scope of the System Performance Evaluation, the efforts of the teams and final report will answer the following primary questions:

- 1. How did the affected projects perform as a system during the flood event? How did the 2011 flood event compare to the design event and did the event expose any vulnerabilities?
- 2. How were the major tributaries, including the Missouri, Ohio and Arkansas Rivers operated during the Mississippi River flood and did they impact the mainstem Mississippi, including transfer of risk?
- 3. Did present authorities for the Corps projects in the Mississippi River basin (including tributaries), which do not prescribe a coordinated operation for the entire Mississippi River basin, impact the operations or the flooding risks on the MR&T?
- 4. Were operations made with system-wide considerations, and how can coordination be improved?
- 5. How were operational decisions communicated among Corps offices, to local and state officials, other Federal Agencies, and the effected public?
- 6. How effectively were the operations of flood risk management components, under the jurisdiction of multiple MSCs, integrated across the watersheds to manage risk?
- 7. What insights can be gained for the effective operation of the system in the future?
- 8. What were the consequences associated with the event? (including: economic, life and safety, environmental, historical, and cultural losses)
- 9. What are the risks associated with the infrastructure systems? What immediate measures should be taken to reduce risk to the system in the short term?
- 10. Did river/reservoir forecasting provide the required real time data to meet the water control information needs of USACE operators and decision makers, and how could this forecasting be improved?
- 11. How did the levees, structures, and interior drainage systems perform? What insights can be gained for the effective repair of the system? What discrepancies are present, if any, between the inspection criteria and the design criteria?
- 12. What are the long term measures, including their priority and urgency that should be taken to respond to issues raised over the system performance and to better integrate flood risk management systems within the watershed to reduce future flood risk?
- 13. What measures can be taken to improve USACE decision making during responses to major flooding events in the future?
- 14. Is the project flood, as identified, adequate? Does it adequately capture the risk?
- 15. Is the current channel capacity adequate? Has the channel capacity been altered due to this event?
- 16. How did the channel improvements program perform? How do we expect the channel to perform in the future?

# 3. System Performance Evaluation Team

A System Performance Evaluation Team has been developed to affectively evaluate and document the performance of the MR&T System. This team is made up of a Regional Management Team and ten Project Delivery Teams (PDTs) focused on key aspects of the evaluation. The Regional Management Team will work together to provide technical and program management support to the PDTs to ensure the evaluation effort and products are well coordinated and adhere to the scope, schedule, and budget of the System Performance Evaluation.



# System Performance Evaluation Team

## 4. SPE Team Responsibility Assignment Matrix:

The System Performance Evaluation is moving forward with a Regional Management Team and ten Project Delivery Teams. The following table identifies the key teams along with Team Leads and the Regional Management Leads that support team efforts and coordination. The Regional Management Leads provide both technical and project management support to the teams. Team financial management is coordinated by PM leads identified under "PDT Coordination Roles" and funds are managed through their districts (identified in the "Funded District" column).

			Regional Man	agement Lead		Funded
	Team	Team Lead	Primary	Secondary	PDT Coordination Roles	District
1	Reservoirs	Joan Stemler	Joey	Susan Wilson	Tech Writer:	MVS
	(Fusion Team)		Windham		PM: Susan Wilson	
					Data: Jule Bartels	
2	Levee/Floodwall/	Pete	Jeff Stamper	Mike	Tech Writer:	MVK
	Outlet Structures	Montalbano		Renacker	PM: Mike Renacker	
					Data: M. Mullen	
3	Floodways	Will Veatch	Joey	Marco	Tech Writer:	MVM
			Windham	Goodman	PM: Marco Goodman	
					Data: C. Alexander	
4	Channel	Rick	Jeff Stamper	Marco	Tech Writer:	MVM
	Improvements	Robertson		Goodman	PM: Marco Goodman	
					Data: Jack Smith	
5	Communications/	Katy Breaux	Hank	Joey	Tech Writer:	MVK
	Collaboration		DeHaan	Windham	PM: Mike Renacker	
					Data: Katy Breaux	
6	Environmental	David Vigh	David Vigh	Gary Hawkins	Tech Writer:	MVN
					PM: Gary Hawkins	
					Data: Barb Kleiss	
7	Economics	Larry Kilgo	Rich	Gary Hawkins	Tech Writer:	MVN
			Manguno		PM: Gary Hawkins	
					Data:	
8	Flow Lines/Design	Nancy Powell	Joey	Gary Hawkins	Tech Writer:	MVN
	Flood		Windham		PM: Gary Hawkins	
					Data: Nancy Powell	
9	Data Management	Michael	Scott	Michael	Tech Writer: B. Daniels	MVS
		(Sonny)	Whitney	(Sonny)	PM: Susan Wilson	
		Trimble		Trimble	Data: B. Daniels	
10	Reports	Bret Walters	Hank	Bret Walters	Tech Writer: B. Walters	MVR
			DeHaan		PM: Hank DeHaan	
					Data: Bret Walters	

### Operation Watershed - Recovery System Performance Evaluation

### 5. Team/Scope Question Matrix:

The following table identifies the linkage between the 10 PDT teams and the 16 SPE scope questions shown on pages 4 and 5. The "Xs" in the table cells denote which questions the teams will help answer. For example, the "1. Reservoir Team" will provide information in the final SPE Report that will help answer questions 1, 2, 3, 4, 6, 10, 11, 13, and 15.

		Questions															
	Team	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Reservoirs	Х	Х	Х	Х		Х	Х			Х		Х	Х			
	(Fusion Team)																
2	Levee/Floodwall/	Х						Х	Х	Х		Х	Х		Х	Х	
	Outlet Structures																
3	Floodways	х			Х		Х	х		Х	х	Х	Х	Х	х		
4	Channel	Х						Х		Х						Х	Х
	Improvements																
5	Communications/					Х	Х	Х						Х			
	Collaboration																
6	Environmental							Х	Х								
7	Economics								Х								
8	Flow Lines/Design	Х													Х	Х	
	Flood																
9	Data Management																
10	Reports			Х	Х	Х	Х	Х	Х	Х			Х	Х			

### Operation Watershed - Recovery System Performance Evaluation

### 6. Study Cost:

The total cost of the System Performance Evaluation is estimated to be approximately \$8 million. Initial expenditures on the SPE effort in FY11 totaled \$300,000. The following table provides a financial breakdown of this effort by PDT for FY12. A more comprehensive breakdown of the FY12 costs and associated team efforts is captured in the Detailed FY12 Work Plan Breakdown that starts on page 11.

	Team	Base	Additional	Full Estimate
		Estimate	Capability	
	Regional Management	\$900,000		\$900,000
	& Review			
1	Reservoirs	\$1,680,000	\$500,000	\$2,180,000
	(Fusion Team)			
2	Levee/Floodwall/	\$1,600,000		\$1,600,000
	Outlet Structures			
3	Floodways	\$1,725,000		\$1,725,000
4	Channel	\$88,000		\$88,000
	Improvements			
5	Communications/	\$142,000		\$142,000
	Collaboration			
6	Environmental	\$450,000		\$450,000
7	Economics	\$610,600		\$610,600
8	Flow Lines/Design	\$89,000		\$89,000
	Flood			
9	Data Management	\$130,000	\$140,000	\$270,000
10	Reports	\$400,000		\$400,000
	Totals	\$7,814,600	\$640,000	\$8,454,600

### System Performance Evaluation FY12 Cost Estimate

### 7. Study Schedule:

The following schedule represents the key System Performance Evaluation activities and milestones that the Product Delivery Teams and Regional Management Team are focused on completing.

<u>SPE Schedule</u>					
Activity/Milestone	Date				
PMP final edits due to PM/Planner	14 Sep				
Team IPR, Memphis	12 Oct				
ATR #1, Memphis (ATR kick-off, review methodologies)	13 Oct				
Submit initial inputs for Interim Report to Reports PDT	23 Nov				
Assemble Interim Report (Teams will continue refinement and development)	28 Nov – 2 Dec				
DQC Review of Interim Report	5-9 Dec				
Edit Interim Report based on DQC Review	12 Dec – 6 Jan				
Complete Initial Model Runs (Hydraulics)	31 Dec				
Provide Preliminary Recommendations to Reports PDT (All Teams)	10 Jan				
Complete Initial Model Runs (All Teams)	20 Jan				
Submit final inputs for Interim Report to Reports PDT	20 Jan				
ATR #2, Review (Review Interim Report)	23-27 Jan				
Incorporate ATR #2 Comments and Edit Interim Report	6-9 Feb				
Submit Interim Report to MVD	10 Feb				
MVD Review of Interim Report	13-24 Feb				
Incorporate MVD Comments	27 Feb – 2 Mar				
Submit final inputs for Draft Report to Reports PDT	22 Mar				
DQC Review of Draft Report	2-6 Apr				
Edit Draft Report Based on DQC Review	9-13 Apr				
ATR #3 Review (Review Draft Report)	16-19 Apr				
Submit final Inputs for Draft Final Report to Reports PDT	30 Jun				
Submit Draft Final Report to MVD	31 Jul				
Submit Draft Final Summary Report to MVD	30 Aug				

## 8. Draft SPE Report Outline:

The following draft report outline was developed to fully capture the scope of the System Performance Evaluation. Further refinement of the outline will be made as teams complete evaluation efforts and document review takes place.

# Operation Watershed System Performance Evaluation Report

- 1. Study Purposes
- 2. The MR&T Project
  - a. General
  - b. Background.
  - c. Geographical extent
  - d. System Infrastructure and operational/management measures
- 3. The 2011 Flood.

### 4. MR&T System Physical and Operational Performance during the 2011 Flood.

- a. Emergency and Strategic
- b. Water management
- c. Emergency Management
- d. Communication Measures and Plans

### 5. MR&T System Impacts and Damages due to the 2011 Flood

- a. Avoided Damages
- b. Physical Damages
- 6. MR&T System Recovery after the 2011 Flood
  - a. System Damage Assessment
  - b. Physical Repairs
  - c. Operational/Management Changes
  - d. Additional Studies or Data Needs

## 7. Conclusions

- a. Significant issues
- b. Impacts of constraints

### 8. Strategy for Recovery

### 9. Detailed FY12 Work Plan Breakdown:

The following pages provide a detailed breakdown of the System Performance Evaluation effort and includes Regional Management and Project Delivery Team activities, products, completion dates, and budget allocations for FY12. Additional capabilities are also identified and will be completed if time and funding are available.

last update 10-7-2011

System Performance Evaluation			Primary FY11 Tasks and Products	
Team	Team Scope, Activities & Scheduled Completion Dates		(by quarter)	FY12 Budget
Regional Management &	General Scope: Lead the overall evaluation effort by providing guidance to align team efforts with	Activity	QTR 1: (1) Update PMP, (2) Establish FY12 Work Plan, (3)	QTR 1:
Review	objectives and desired results and managing resources to meet expectations and achieve cost and	Completion	Establish FY12 Financial Mgmt structure and tracking spreadsheets,	\$250,000
	schedule goals.	Schedule	(4) Refine SPE Report outline and team writing assignments, (5)	
			Conduct team IPR, ATR #1, and DQC review, (6) Complete SPE	
	Activities:		Interim Report, (7) Conduct weekly PDT Meetings, (8) Conduct	
	a) Ensure effective communication and collaboration amongst internal and external team members and	Daily	weekly Regional Management Team Meetings	
	stakeholders		<b>QTR 2:</b> (1) Conduct ATR #2, (2) Complete SPE Draft Report (3)	
	b) Conduct regular Regional Management Team and PDT meetings to review, discuss, resolve	Weekly/	Conduct weekly PDT Meetings, (4) Conduct bi-weekly Regional	QTR 2:
	program project issues and challenges	Monthly	Management Team Meetings	\$250,000
	c) Provide regular Sr. Mgmt briefings and status reports on program/project execution successes and	Monthly	QTR 3: (1) Conduct DQC review and ATR #3, (2) Continue	
	challenges		refinement of SPE Draft Report based on review, (3) Conduct weekly	QTR 3:
	d) Refine and produce guidance documents (e.g., PMP, Work Plan, etc.) that clearly define SPE	12 Oct	PDT Meetings, (4) Conduct bi-weekly Regional Management Team	\$250,000
	scope, schedule, and budget		Meetings	
	e) Set-up FY12 SPE Financial Structure and Tracking System	12 Oct	QTR 4: (1) Submit Draft Final Report and Summary Reports to	
	f) Assure quality SPE products are completed on schedule and within budget	As needed	MVD, (2) Conduct PDT Meetings as needed, (3) Conduct Regional	QTR 4:
	g) Complete SPE Interim Report	2 Dec	Management Team Meetings as needed	\$150,000
	h) Complete SPE Draft Report	30 Mar		
	i) Submit Draft Final Report to MVD	31 July		
	j) Submit Draft Final Summary Report to MVD	30 Aug		TOTAL FY12:
				\$900,000

System Performance Evaluation			Primary FY11 Tasks and Products	
Team	Team Scope, Activities & Scheduled Completion Dates		(by quarter)	FY12 Budget
1. Reservoirs (Fusion Team)	General Scope: Evaluate how the flood control reservoirs, floodways, and levees within the entire Mississippi River Basin impacted the performance of the MR&T System. This will require completing a comprehensive hydrualic model of the MR&T system by a coordinated effort from numerous hydrualic proffesional representing each district throughout MVD. Specific topics that will be analysed include reservoir deviations and the transfer of risk. In additions the effectiveness of river forcast will be anlaysed both for use within and exterior to the Corps. Activities a) Establish Scope, Budget, and question to be answered b) Establish PDT to complete Mission c) Through the Fusion Team and interviews with LRD, MVD, SWD, NWD, NWS, and state agencies document the effectiveness of reservoir and river forcast for decision making processes d) Develope a comprehesive Mississippi River hydrualic model that will be used to analyse how flood control reservoirs, floodways, and levees impacted the performance of the MR&T system e) Through hydraulic modeling effort, provide data needed to perform an analysis on the MR&T system in the 2011 floods from and environemental and economic perspective. f) Support the Floodway performance team from a hydrualic modeling prespective to answer questoins on floodway performance for the 2011 flood event. g) Complete report detailing finding of interviews, investigations and hydrualic modeling as pertaining to reservoirs and flood forcasting.	Activity Completion Schedule June 2011 July 2011 Oct 2011 Jan 2012 July 2012	QTR 1: (1) Interviews are conducted with LRD, MVD, SWD, NWD, HQ, and state agencies on the usefulness of reservoir and river forcasts, (2) Reservoir Data is collected in order to execute modeling effort and analyse operation decisions made during the flood, (3)Modeling Scenarios are Finalized, (4) IPR/ATR meeting is held in order to establish requirments and scope of ATR, (5) Complilation of operation decision made during the flood that will be analysed is completed, (6) Each District Complete its assigned reach of modeling effort, (7) Conclusions are finalized from Interviews concerning River Forcast, (8) Inputs for Interim report or submitted to PM, (9) Model is handed over to HEC to combine and complete modeling scenarios identified in scope QTR 2: (1) Results of Modeling is handed over to Environmental and Economics Team, (2) Conclusion from Modeling efforts are completed and inputs to reports are written, (3) ATR #2 is completed and comments and model modification are completed, (4) Draft Interim report inputs are completed, (2) Modeling efforts are completed in order to address ATR comments, (3) Additions to report are modified in order to address ATR comments QTR 4: (1) Submit draft final report sections to PM, (2) Technical support to entire PDT for finalizing Report, 3) If funding and time is extended additional scearios will be completed via 2D modeling and will be added to report	QTR 2: \$468,000 QTR 3: \$378,000 QTR 4: \$112,000 TOTAL FY12: \$1,680,000
2. Levee/Floodwall/ Outlet Structures	General Scope:         Evaluate how the levees, floodwalls and associated structures performed within the MR&T Project.         Utilize during and post flood collected data as the primary sources of information in the evaluation.         Isolate the most critical prolbem areas "Hot SPots" as targets for both segment and systems analysis utilizing the Levee Screening Too Recommend actions according to immediate, short-term and long-term remediation. Compare event to the design flood concerning predictable vulnerabilite and increased associated risk.         Activities         a) Review collected data inclulding DAR's, AAR's, Lessons Learned, etc         b) Delineate "hotSpots" in most impacted levee/floodwall segments         c) Coordinate with floodways team on commonalities         d) Ensure consistency of NLD data         e) Ensure consistency of economic data beween DAR's and screenings         f) Populate screenings for pertinent segments/systems         g) Perform evaluation of floodway and Old River Control Structures         h) Produce Remediation recomendations for Immediate, short-term and long-term work.	Activity Completion Schedule	QTR 1: QTR 2: QTR 3: QTR 4:	QTR 1: \$400,000 QTR 2: \$500,000 QTR 3: \$500,000 QTR 4: \$200,000 TOTAL FY12: \$1,600,000

last update 10-7-2011

System Performance Evaluation			Primary FY11 Tasks and Products	
Team	Team Scope, Activities & Scheduled Completion Dates		(by quarter)	FY12 Budget
3. Floodways	General Scope:Investigate the performance of the MR&T floodway systems during the 2011 flood, identify factors that led to floodway operation, and propose new operational procedures that should be made, including changes to water control manurals. A review of data complilation, computation of discharge and other procedures will be conducted. Streamflow measurements at Tarbart landing discharge range will specifically be addressed. Impacts caused by the operation of the floodways will be investigated and a full evaluation of the floodways will be performed, encompassing structural, geotechnical, and hydrualic assessment. Activities a) Determine how floodways reduce risk across the MR&T system b)Tarbert Landing discharge analysis c) Review of current numerical and physical models for design and operation d) Compile a multi-district team to investigate a plan for integrating systemic components e) Review and modification of water control manuals f) Determine means and effectiveness of risk communication with local and state authorities, other federal entities, sponsors, and stakeholders g) System review of discharge measurement adequacy for operational requirements h) Develop list of measures to improve operational readiness i) Retrieve relevant data from post flood inspection report j) Identification of reset repairs k) Conduct modeling for reset repairs l) Complete Report Detailing Findings and Recommendations	Activity Completion Schedule Sep 2011 Oct 2011 Dec 2011 Jan 2012 July 2011	<ul> <li>QTR 1: (1) Model feature additions and determine means of effective risk communication, (2) 2011 flood calibration of river models and identify changes to water control manuals,</li> <li>(3) Modeling of floodway scenarios. Hand off model to HEC for merging into the MR&amp;T model, (4) Assemble and archive discharge data</li> <li>QTR 2: (1) Interim report. Water control manual addendums complete, (2) Floodway scenarios to determine how the floodways reduced risk across the MR&amp;T system</li> <li>(3) Retrieve relevant data from Reset document, (4)Complete Draft Report</li> <li>QTR 3: (1) Comparison of 2011 Flood to Project Flood.</li> <li>(2) List of measures to improve operational readiness.</li> <li>QTR 4: (1) Determine system ability to contain the project flood. Draft final report complete.</li> </ul>	QTR 1: \$607,000 QTR 2: \$467,000 QTR 3: \$651,000 QTR 4: TOTAL FY12: \$1,725,000
4. Channel Improvements	General Scope:        Review the performance of the Channel Improvement Project during the 2011 flood event.         - Identify future efforts to enhance the capabilities of the system to achieve long term risk reduction.         - Highlight priority of needed repairs.         Activities         a) Conducted a meeting to review top bank scour damage and their proposed repairs and review damage to the revetment system and to make a recommendation concerning the need for a 2011 revetment construction season.         b. Review damage and propose repairs to the dike system. Reliance on DARs is critical.         c. Conduct a meeting to evaluate the performance of the channel improvement project during the flood at the annual E-Action meeting in MVS.         d. Write report documenting the performance of the channel improvement system and the current condition of the system.         e. Channel Improvement PDT review report and submit final to MR&T System Performance Evaluation Project Manager.	Activity Completion Schedule FY11 Oct 2011 Feb 2012 Feb 2012 Mar 2012	<ul> <li>QTR 1: Review damages in DARs</li> <li>QTR 2: (1) Interim Report, (2) Regional E-Action team meeting. (3) Determine and analyze recommended actions or changes.</li> <li>QTR 3: (1) Submit draft final report sections to PM</li> <li>QTR 4: (1) Technical support to entire PDT for finalizing Report and conducting reviews. (2) Complete contributions to draft final report after all reviews.</li> </ul>	QTR 1: \$26,000 QTR 2: \$25,000 QTR 3: \$27,000 QTR 4: \$10,000 TOTAL FY12: \$88,000

System Performance Evaluation Team	Team Scope, Activities & Scheduled Completion Dates		Primary FY11 Tasks and Products (by quarter)	FY12 Budget
5. Communications/	General Scope:	Activity	<b>QTR 1:</b> 1) Perform data collection 2) conduct meetings 3) write	QTR 1:
Collaboration	• Analyze communication within the Division and between our interagency partners	Completion	interim reports	\$ 73,000
	• Determine that the message sent with inundation mapping products was effective	Schedule		
	• Establish a recommended best practice for the release of inundation mapping			
	• Document and analyze social media use during the flood			
	Provide recommendations for future flood events			QTR 2:
			<b>QTR 2:</b> 1) Edit Interim Report, 2) ATR #2, 3) Incorporate Comments	\$ 39,000
			and submit to division	
	Activities:			
	a) Extact feedback on communication from AAR's, First Impressions Report and other existing data	ongoing		
	b) Identify key stakeholders	Samt 2011	QTR 3: 1) Make reviews and edits to submit final report	QTR 3:
	c) Interview stakeholders either as part of the agency meetings, NGO meetings or individually by	Sept 2011		\$ 30,000
	phone of email d) Heat A comparison with State EM and lower bounds	Oct 2011		
	a) Host Agency meetings with State EM and levee boards	Oct 2011		
	e) Host meeting with environmental and Navigation NGOS to get perspective for the reset and	Oct 2011	OTP 4.	OTP 4.
	f) Compile all data and break out by subject to incorporate in the report	000 2011	Q1K 4:	QIR4:
	a) Dreft a white paper on social media	Dec 2011		TOTAL EV12.
	b) Draft Lnundation manning standards	Sept 2011		101AL F 112; \$142.000
	I) Draft mundation mapping standards	Mar 2012		\$142,000
		Wiai 2012		

ystem Performance Evaluation Team	Team Scope, Activities & Scheduled Completion Dates		Primary FY11 Tasks and Products (by quarter)	FY12 Budget
5. Environmental	General Scope:         Evaluate MR&T environmental system performance and impacts. Identify and recommend future efforts to enhance system environmental capabilities and provide recommendations for any appropriate authority changes and additions. Determine and document the 2011 flood and the operation of the MR&T system and its effects on environmental features (physical, biological, social, cultural and recreational resources) and make recommendations for future operations and authorities/changes as appropriate.         Activities:       a) Collect and analyze scientific data from all sources possible including state DNRs and DEQs,	Activity Completion Schedule 15 Nov 2011	<ul> <li>QTR 1: 1) Perform data collection 2) conduct meetings 3) write text for interim report</li> <li>QTR 2: 1) Additional data collection 2) conduct meetings 3) write/refine text and recommendations for draft reports</li> <li>QTR 3: 1) Revise text for final reports 2) Coordinate responses to comments 3) refine and support recommendations</li> <li>QTR 4: 1) Respond to comments/provide revised text for reports.</li> </ul>	QTR 1: \$175,000 QTR 2: \$150,000 QTR 3: \$100,000 QTR 4:
	<ul> <li>WL&amp;F, NMFS, and so on including oyster data, sediment, and water quality.</li> <li>b) Districts describe and capture civil works related issues and activities from system operation. Conference call/meet as appropriate.</li> <li>c) Develop narratives on all data analysis and system operation related to environmental,</li> <li>d) Provide prelim. analysis and draft write-ups</li> <li>e) Write executive summary input</li> <li>e) Develop advice and key recommendations input including any authority changes.</li> <li>f) PDT provides refined assessments/report text</li> <li>g) PDT provides prioritized recommendations</li> </ul>	On-going 23 Nov 2011 Feb 2012 Feb 2012 Mar 2012 Mar 2012 May 2012		\$25,000 TOTAL FY12: \$450,000
. Economics	General Scope: Evaluation of the economic consequences resulting from the 2011 Flood event will be addressed through analysis of the major impact areas of: 1) Flood Damage for Urban (residential, non- residential) and Agricultural, 2) Navigation, and 3) Social (demographic) Effects. Evaluation of economic consequences will also include those associated with potential changes proposed for the MR&T system.	Activity Completion Schedule	<b>QTR 1:</b> Navigation Impact Assessment; a. Acquire industry data b) Acquire and process WCSC detailed data c) Development impact estimation framework Flood Damage Assessment; a)Identify inputs and sources b) Load model with test data c) Model execution with test data, c) Interim Report Preparation; Socio-Economic Assessment a)Define area, b)Identify and acquire data, c)Prepare data for analysis.	<b>QTR 1:</b> \$218,500
	Activities: a) Navigation Impact Assessment b) Flood Damage Impact Assessment - Actual 2011 Damages c) Flood Damage Impact Assessment - Scenarios d) Socio-Economic Impact Assessment e) Interim Report Input f) Draft Report Preparation g) Final Report Preparation h) DQC/AR Coordination	28 Feb 2012 31 Jan 2011 28 Feb 2012 28 Feb 2012 12 Nov 2011 31 Mar 2012 30 June 2012 30 June 2012	<ul> <li>QTR 2: Navigation Impact Assessment, a)Compute Impacts, b)</li> <li>Interim Report preparation, c)Draft Report Preparation; Flood Damage Assessment, a) Load data, b) Model execution – actual 2011 damages, c) Model execution – no MR&amp;T in place, d) Model Execution – MR&amp;T levees in place without floodways, e) Model Execution - additional scenario TBD 1, f)Model Execution - additional scenario TBD 2; Socio-Economic Assessment a) Perform geospatial analysis, b Compile and summarize results, c) Interim Report preparation, d) Draft Report Preparation</li> <li>QTR 3: Final Report Preparation, DQC/ATR Coordination.</li> </ul>	<b>QTR 2:</b> \$303,800
			QTR 4:	QTR 3: \$88,300 QTR 4: <b>\$0</b>
				Total FY12: \$610,000

System Performance Evaluation Team	Team Scope, Activities & Scheduled Completion Dates		Primary FY11 Tasks and Products (by quarter)	FY12 Budget
8. Flow Lines/Design Flood	General Scope:         From analysis of the events that transpired in the 2011 Mississippi River Flood, analyse if the Design Project Flood and the corresponding Project Flow line should still be considered adequate.         Activities         a) Compile information on the hydrology used to determine project flood flows and current frequency information, assess adequacy of methodologies and conclusions in context with 50 plus years of additional data and with climate change         b) Compile information on approved project flood flow lines, identify components, compare against 2011 flood data, assess adequacy of methodologies, components of flow line.         c) Compile freeboard requirements and assess adequacy of these requirements.         d) Integrate conclusions from the reservoir and floodway PDTs into the assessment.         e) Prepare document presenting data, assessment, and conclusions.         f)Complete final report of finding and suggestion for future activitites	Activity Completion Schedule Dec 2011 Jan 2012 Feb 2012 June 2012 July 2012 ?	QTR 1: (1) Compile information on the hydrology used to determine project flood flows and current frequency information, assess adequacy of methodologies and conclusions in context with 50 plus years of additional data and with climate change, (2) Compile information on approved project flood flow lines, identify components, compare against 2011 flood data, assess adequacy of methodologies, components of flow line. (3) Compile freeboard requirements and assess adequacy of these requirements. QTR 2: (1) Analyse modeling results or recommend other model runs to anlayse the adequacy of the current project flowline, (2) Integrate conclusions from the reservoir and floodway PDTs into the assessment. (3) Submit inputs for Interim Report QTR 3: (1) Address comments from ATR, (2) Prepare document presenting data, assessment, and conclusions for Final Draft Report. QTR 4: (1) Address comments from ATR#2, (2) Complete Final Report for Submittal to MVD	QTR 1: \$40,000 QTR 2: \$27,000 QTR 3: \$18,000 QTR 4: \$4,000 TOTAL FY12: \$89,000

last update 10-7-2011

System Performance Evaluation Team	Team Scope, Activities & Scheduled Completion Dates		Primary FY11 Tasks and Products (by quarter)	FY12 Budget
9. Data Management	<ul> <li>General Scope: The Operation Watershed Recovery Data Management Team is creating a data inventory, access system and preservation options to manage post-flood data from various areas within the Mississippi Valley Division.</li> <li>Activities <ul> <li>a) DATA INVENTORY - will provide comprehensive listing of the diverse array of data types and data sets that have been collected or generated by various Operation Watershed flood response or recovery teams. The inventory will also provide contact information and current location for individual data sets.</li> <li>b) DATA STORAGE - regional access and availability of collected flood data is critically important for evaluation and assessment teams. This activity will establish organizational standards (such as file structures), file management system and operational protocols for how and where these datasets will be housed for immediate access and utilization.</li> <li>c) DATA ARCHIVE - this activity will develop several options and list of considerations for the long-term storage of the flood data. Not all data sets will require archiving, those that do must consider the duration of storage, future usage, storage medium, formatetc.</li> <li>d) DATA MANAGEMENT SUPPORT - provide necessary training or direct assistance needed by Operation Watershed - Recovery teams.</li> </ul> </li> </ul>	Activity Completion Schedule 30 Oct 2011 30 Dec 2011 30 Feb 2011 30 July 2011	QTR 1:         Data Inventory         - Complete and distribute Data Inventory for MVN, MVK, MVM, MVS and MVD         Digitization         - Identify a component to digitize hard copy data quickly and efficiently         -Perform QA/QC on digitized data         - This task will be performed concurrently with task 4         Data Review Plan         - Determine an organizational scheme conducive for future use         -Review data integrity         - Compare/contrast existing data management practices for best practices         Data Organization and Inventory         -Inventory all collected data for inclusion into a shared environment (distribution platform)         -Identify document asset management system appropriate for Corps needs (e.g. ProjectWise)         QTR 2:         Data Management, Maintenance, and Preservation         -Develop information distribution system for internal and external use         -Perform quality control/quality assurance         -Load inventoried data into identified systems         -Provide reference services and maintenance of organizational scheme         -Develop long-term preservation safety copy         -Create and administer migration plan for future maintenance of data	<b>QTR 1:</b> \$85,000 <b>QTR 2:</b> \$35,000
			<b>QTR 3:</b> - Support to teams for final report preparation	QTR 3: \$10,000 QTR 4: \$0 TOTAL FY12: \$130,000

System Performance Evaluation Team 10. Reports	Team Scope, Activities & Scheduled Completion Dates         General Scope:         Compile information provided by other teams, provide organization/framework for reports, provide technical writing and fill data gaps to ensure complete and balanced presentation of the scope and editorial review to ensure readability of reports and other documents. Provide background and context information needed to interpret results that are not provided by other teams.	Activity Completion Schedule	Primary FY11 Tasks and Products (by quarter)QTR 1: (1) Update PMP, (2) Prepare Work Plan, (3) Refine SPE Report outline and work with team writers to clarify process, (4) Establish general prioritization criteria for reset, repair and improvement recommendations, (5) Complete/Reproduce/ Distribute SPE Interim Report	FY12 Budget QTR 1: \$100,000
	Activities a) Develop initial prioritization criteria for reset, repairs, and improvements b) Collect, compile, organize, sort and summarize information related to the background, facts, history, chronology, etc. about the rivers, flooding, the MR&T System and impacts in order to provide context for the factors used in the evaluation. c) Provide a comprehensive list of existing authorities applicable to the MR&T Program, a summary of authorized work d) Complete SPE Interim Report e) Provide an analysis of additional authorities needed to implement the range of actions recommended in the final report. f) Complete SPE Draft Report g) Submit Draft Final Report to MVD h) Submit Draft Final Summary Report to MVD	1 Nov 2011 23 Nov 2011 30 Nov 2011 2 Dec 2011 20 Feb 2012 30 Mar 2012 31 July 2012 30 Aug 2012	<ul> <li>QTR 2: (1) Complete/Reproduce/Distribute SPE Draft Report, (2) Scope Summary Report</li> <li>QTR 3: (1) Review/Revise draft reports, (2) Fill data gaps</li> <li>QTR 4: (1) Submit/Reproduce/Distribute Draft Final Report, (2) Submit/Reproduce/Distribute Summary Report</li> </ul>	QTR 2: \$125,000 QTR 3: \$100,000 QTR 4: \$75,000 TOTAL FY12: \$400,000
			TOTALS	\$7,814,000

# Interagency Recovery Task Force

Together...restoring the 3<sup>rd</sup> largest watershed in the world!

The Interagency Recovery Task Force (IRTF) was established to create a highly communicative and collaborative forum of state and federal agencies with common interests and authorities to affect the repair, recovery and evaluation necessitated by the historic 2011 Mississippi River flood event. The signatory state and federal agencies will consider a wide range of traditional and innovative options to develop meaningful solutions for short and long-term restoration efforts. The following state and federal representatives are committed to working together to effectively and efficiently serve the American public and private interests for the protection of human life/safety and economic prosperity:

MG Mike Walsh DE, Mississippi Valley Division, USACE

Roy Wright Federal Emergency Management Agency

Thomas Christensen Natural Resources Conservation Service

Steve Hadley U.S. Coast Guard

Cynthia K. Dohner U.S. Fish & Wildlife Service Ben Weiger National Weather Service

William Werkheiser U.S. Geological Survey

Doug Mundrick U.S. Environmental Protection Agency

James Murphy Maritime Administration

Jerome Zeringue State of Louisiana

Mike Womack State of Mississippi

BG John Heltzel State of Kentucky

Dru Buntin State of Missouri

David Maxwell State of Arkansas

Cecil H. Whaley, Jr. State of Tennessee

Joseph G. Klinger State of Illinois



### **Interagency Recovery Task Force Charter**

This charter establishes and formalizes the expectations for implementation of the Interagency Recovery Task Force Team for the States of Louisiana, Mississippi, Arkansas, Tennessee, Kentucky, Missouri, and Illinois, and the following agencies: National Weather Service, Federal Emergency Management Agency, U.S. Department of Agriculture, Environmental Protection Agency, U.S. Geological Survey, U.S. Fish & Wildlife Service, U.S. Coast Guard, and Maritime Administration. A review of this charter will be conducted annually, or at any time, with the consent of the core member agencies.

For the purposes of this document, the following definitions will be used:

<u>Repair</u>effort will strive to provide the rapid development and installation of initial interim measures designed to provide a basic level of protection and functionality before the next flood season. Reset projects will directly address system functionality with respect to floodways, dredging for navigation, and levee degradation.

<u>Restore</u> effort will strive to provide for the development and installation of permanent measures designed to return the navigation and MR&T structures to the full level protection and functionality. Restore projects will be designed to return the system to full pre-flood functionality necessary to ensure safety and security from future catastrophic flooding.

Mitigation is the effort to reduce loss of life and property by lessening the impact of disasters.

<u>Risk</u> is defined as the product of the probability of a flooding event and the consequences of the flooding event.

<u>Life-cycle</u> denotes all phases of the flooding emergency: preparation, response, recovery and mitigation. The intent is to integrate mitigation into all phases.

### Vision Statement:

Establish and strengthen a mutual and holistic method of rehabilitating our flood risk management systems damaged by recent flood events, by collaborating and combining solutions for short and long-term restoration efforts.

### Mission Statement:

Through an intergovernmental team of State and Federal agencies a collaborative process will:

• A multi-agency forum does not currently exist to solve the many regional issues and challenges that will be presented in the recovery from this historic flood event.

- Provide Safety and Security for Citizens Lives and Livelihoods
- Create strong regional effort to inspect, review, reset and restore our flood risk management system
- Pursue all potential funding methods from federal and state sources.
- Give consideration to traditional and non-traditional alternatives in repair and restoration.
- Implement a collaborative and communicative approach across regional and state boundaries to prioritize our efforts and resources during the challenging recovery process
- Facilitate strategic, integrated life-cycle mitigation actions to reduce the threat, vulnerability and consequences of flooding in the Mississippi River Valley;
- Create or supplement a mechanism to collaboratively solve issues and implement or recommend solutions;
- Increase and improve flood risk communication and outreach,

### Goals:

- 1. Implement a consistent approach across region and state boundaries in order to prioritize agencies, authorities, and resources in the rehabilitation process.
- 2. Create a strong team to inspect, review, repair and restore our flood risk management system and adjacent project.
- 3. Create an IRTF management plan
- 4. Share responsibility for all flood plain management restoration initiatives, programs, and projects in order to reduce flood risks long term.
- 5. Supply an effective outreach program to communicate short and long term to the public, as well as, educate on the agencies' responsibilities, programs and authorities.
- 6. Pursue all potential funding methods from federal and state resources
- 7. Ensure continuous pre- and post-disaster collaboration.
- 8. Give consideration to all structural and non-structural alternatives in repair and restoration.
- 9. Learn about programs, identifying limitations and opportunities, and combine programs to create integrated, comprehensive and sustainable solutions.
- 10. Create a multi-agency technical resource for state and local agencies.
- 11. Improve flood risk outreach by presenting a unified interagency message to better educate and advise mutual customers as a result of gaining familiarity with each agency's missions, processes and programs.
- 12. Improve internal and external risk communication, including increased awareness of residual risk.
- 13. Identify and facilitate improvements to existing programs, policies and processes.
- 14. Identify other collaboration opportunities to combine resources and identify gaps; minimize duplication of effort and ensure consistency.
- 15. Catalog and share information on past and future projects and initiatives.
- 16. Prioritize current and future initiatives individually and collectively.

### **Roles & Responsibilities:**

The team will be intergovernmental and multiple state in nature. Membership will vary based on available resources and team focus; however, the core member agencies involved at all times will include the U.S. Army Corps of Engineers (USACE), the Federal Emergency Management Agency (FEMA),

the U.S. Geological Survey (USGS), the National Weather Service (NWS), the U.S. Department of Agriculture (USDA), the U.S. Coast Guard (USCG), the Environmental Protection Agency (EPA), the U.S. Fish & Wildlife Service (USFWS), the Maritime Administration (MARAD), the State of Louisiana, the State of Mississippi, the State of Arkansas, the State of Tennessee, the State of Kentucky, the State of Missouri, and the State of Illinois. Representatives may be from the regional and state levels of the organizations. As the intergovernmental team evolves, other State, Federal, Non-Governmental Organizations (NGO) and local agencies may choose to participate in this initiative. All participating agencies will contribute experience and information to all team efforts.

Initially, the lead agency will be USACE. The USACE representative will maintain and distribute a contact sheet. With the support of a team consensus, the leadership role may rotate among the core members. With the support of all team members, the agency assuming the leadership role is responsible for organizing, coordinating and facilitating team meetings, as well as recording and maintaining final meeting minutes. The representative of the lead agency may request assistance in performing any of these responsibilities.

### Meetings:

At a minimum, meetings will be conducted on a quarterly basis. Coordination between meetings may occur through email and teleconferencing. Meeting agendas shall be published at least one week prior to a meeting. Draft minutes shall be distributed via email for comment. Final minutes shall be distributed to all members and posted on a public website.

### **Decision Making:**

Decisions will be accomplished through team consensus after discussion. . The core member agencies that should be involved in all major decisions are USACE and FEMA.