



US Army Corps
of Engineers®

INTERAGENCY RECOVERY TASK FORCE

OPERATION WATERSHED - RECOVERY

Responding to the Historic Mississippi River Flood of 2011



“SHOULD DIVINE PROVIDENCE ever send a flood of the maximum predicted by meteorological and flood experts as a remote probability but not beyond the bounds of ultimate possibility, the floodways provided in the plan are still normally adequate for its passage without having its predicted heights exceed those of the strengthened levees.”

*Edgar Jadwin,
Major General, Chief of Engineers
December 1, 1927 in transmitting the Jadwin Plan to Secretary of War*

KEY TALKING POINTS

- The Mississippi River and Tributaries (MR&T) flood risk management system has performed remarkably well under tremendous and prolonged pressure from this historic event, it is the Flood of Record for most gauges between Cape Girardeau, MO and the Gulf of Mexico.
- Prior to the 2011 flood event \$13.6 billion had been invested in the Mississippi River and Tributaries (MR&T) project that has prevented \$370.3 billion in damages.
- Although the current 2011 flood has flooded 6,786,000 unprotected acres preliminary estimates indicate the MR&T project has prevented flooding of 9,864,000 acres and prevented damages of \$50 billion.
- As a part of the total systems response within the watershed, the reservoir system associated with the Ohio, Arkansas, Mississippi and Missouri Rivers were fully engaged to manage the flow of water into the Mississippi River.
- The 2011 flood fight is the first time the total watershed system was required to be operated in a synchronized manner to manage the highest level of water it has ever seen, it is important to point out that this event was just shy of the Project Design Flood.
- Assessment and Evaluation of this historic event and system response will serve as a valuable guide for the process and methodologies used to reset and restore components necessary to ensure the dependability and functionality of the MR&T system.
- The assessment and evaluation will be conducted utilizing the full range of USACE personnel in combination with world-class experts drawn from government, private sector, industry, and academia in their respective fields.
- The primary focus for the Recovery will be on **RESETTING** and **RESTORING** the key functional elements of the MR&T 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. **RESET** projects will directly address system functionality with respect to 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 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.
- Interagency and Stakeholder Collaboration and Communication will be essential in helping the many affected citizens, communities and industries in this region return to normalcy, safety, security and quality of life.

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OVERVIEW

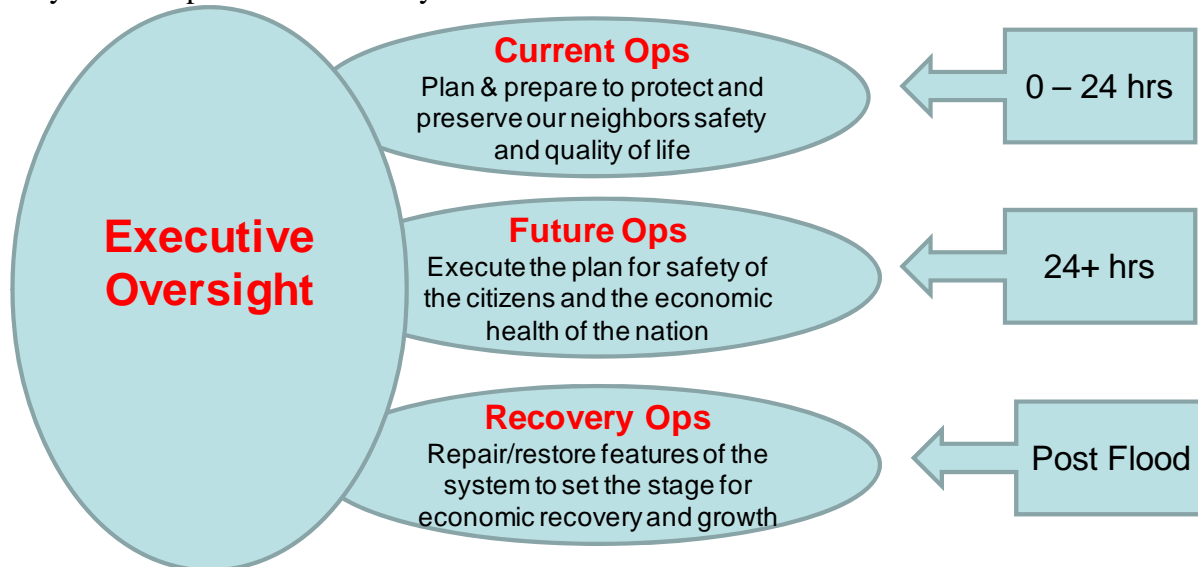
Throughout the history of human civilization there are numerous Epic natural disasters that have caused widespread destruction and loss of life. Rarely are the structures of mankind able to withstand the fury unleashed by Mother Nature. The Mississippi River and Tributaries (MR&T) flood risk management system was borne from one of these Epic disasters, the Great Mississippi River Flood of 1927. In 1927, the Mississippi River broke out of its levee system in 145 places and flooded 27,000 square miles. The flood affected Arkansas, Illinois, Kentucky, Louisiana, Mississippi, Missouri, Tennessee, Texas, Oklahoma and Kansas. Arkansas was hardest hit, with 14% of its territory covered by floodwaters. By May 1927, the Mississippi River below Memphis, Tennessee, reached a width of 80 miles. Many areas were inundated up to a depth of 30 feet. The flood caused over \$400 million in damages and killed 246 people in seven states.

The MR&T project was designed to function as a system of levees, floodwalls, floodways, and reservoirs that function as a single system to prevent similar devastation and loss of life in the unlikely event that such an epic event should ever reoccur. Just such an epic flood event is currently occurring; setting new gage records at most locations from Cape Girardeau, MO to the Gulf of Mexico. While under tremendous and prolonged pressure from the largest flood in recorded history, the MR&T project is performing as designed to protect lives and livelihoods.

INTRODUCTION

OPERATION WATERSHED was activated in the early morning hours of on 1 May 2011 per directive by MG Walsh over concerns for the rapid escalation of the Mississippi River Basin Flood Event. Operation Watershed was established with three Operational Cells (Figure 1): Current Operations (Lead: David Sills), Future Operations (Lead: Dennis Norris) and Recovery Operations (Lead: Scott Whitney).

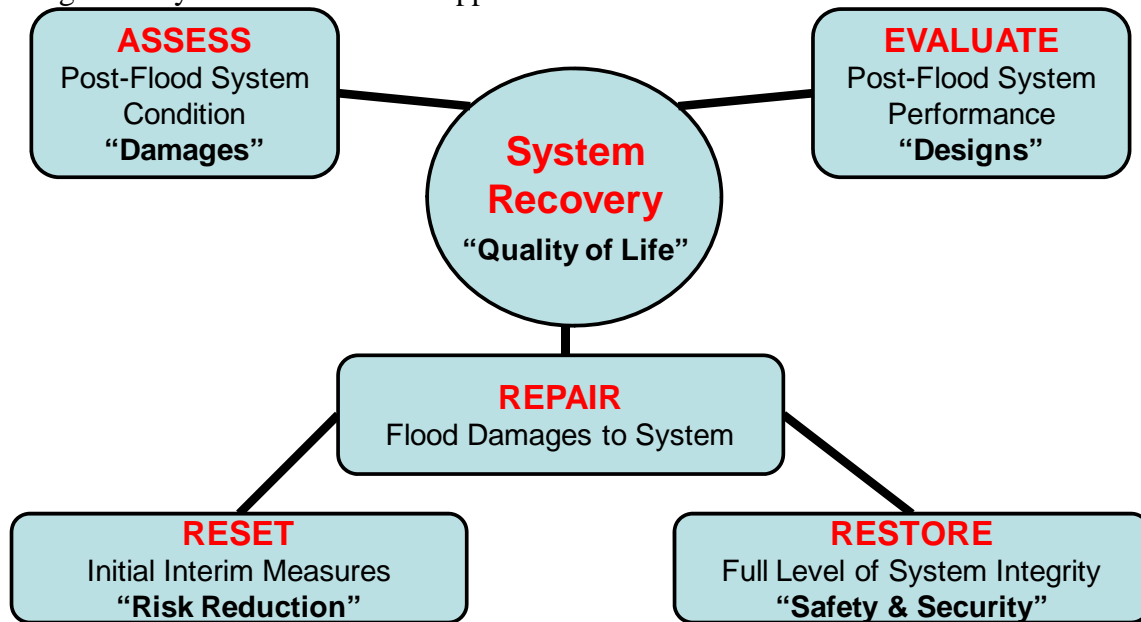
Figure 1: Characterization of Operation Watershed components to deliver effective and timely flood response and recovery.



The Operation Watershed – Recovery cell is operating with expectation that damages from this Systemic and Historic event will require extensive repair/rehabilitation of USACE projects, facilities and structures in addition to PL84-99 levee repairs. While not yet fully realized, the geographical extent and magnitude of flood related damages are expected to be of such a magnitude as to surpass the USACE ability to fully

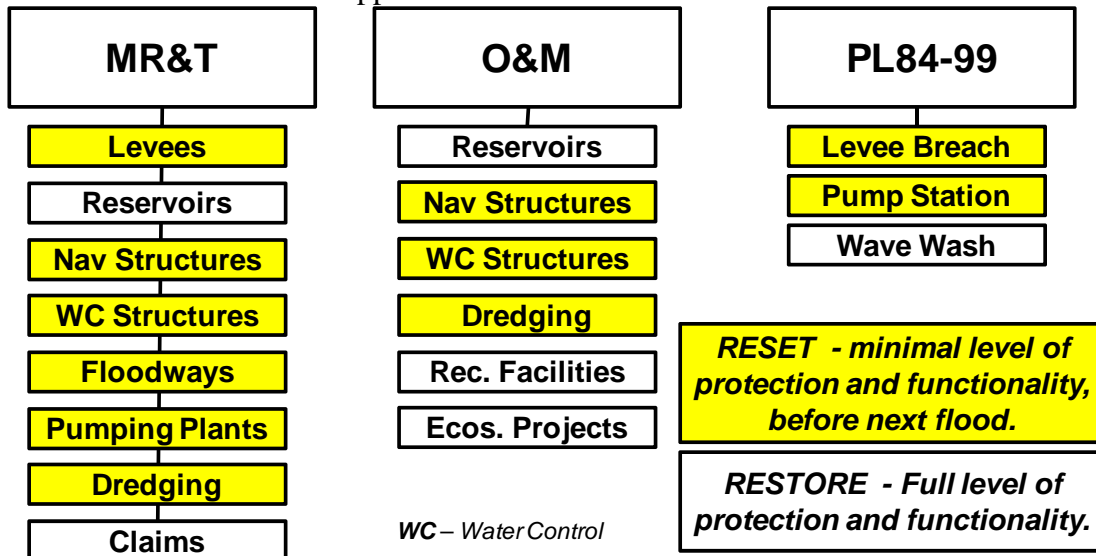
repair/rehabilitate under normal funding mechanisms. It is important that MVD proactively prepare for the near-term assessment of damages, evaluation of system performance, repair alternatives designed to reset and restore this valuable flood risk management system (Figure 2).

Figure 2: Graphical representation of the components of Operation Watershed – Recovery designed to deliver effective and efficient reset and restore of the valuable flood risk management system for the Mississippi River.



Flood related damages or impairments are anticipated to fall under one of the following three USACE authorities shown in Figure 3.

Figure 3: USACE Authorities and components expected to experience damages from the historic Mississippi River Flood of 2011.



Under normal circumstances, each of these authorities is accustomed to their traditional process and protocols by which to prioritize, fund and affect repair/rehabilitation. However, the current focus on the US deficit suggests a low probability for a supplemental funding appropriation which has typically been enacted to cover such natural disasters. Thus, it is likely the USACE will either have to absorb repairs under normal operating

budgets or hope for some other innovative means of financing repairs. Regardless of authority, all of these projects and authorities are not expected to have sufficient funds within their current or foreseeable future funding allotments to effectively repair/rehabilitate in a timely fashion. Therefore, Systemic evaluation and documentation of damages, alternatives and repair costs must be carefully considered in light of prospective funding shortfalls.

During the two weeks of Operation Watershed-Recovery, MVD and District staff pushed to develop action plans, concept papers, funding mechanism, management structure and workplan. An initial DRAFT Program Management Plan (PgMP) has been developed in is currently under internal review. The PgMP is intended to provide basic outline of goals, objectives, tasks, funding mechanisms and management structure that will allow this effort to move forward in an informed, structured and consistent manner. The PgMP will be further refined and developed in coming weeks as associated teams are assembled and work to further refine the scope, schedule and budget for their respective Operation Watershed Recovery functional elements.

INTERAGENCY RECOVERY TASK FORCE

Purpose & Intent:

The Interagency Recovery Task Force (IRTF) is intended to create 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. The Task Force will consist of lead agencies and state appointed members involved in the assessment, documentation, and repair of flood risk management, flood plain management and watershed management systems.

Background:

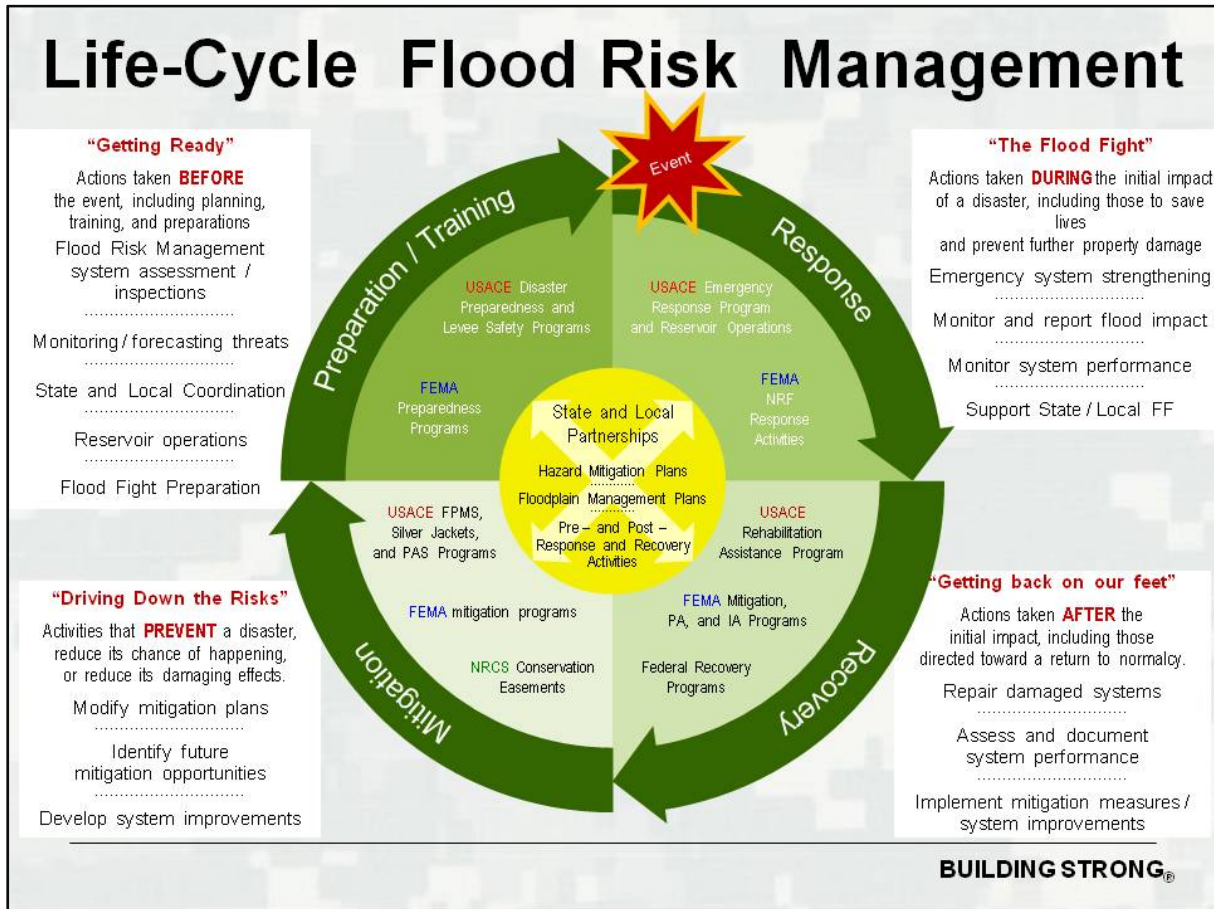
In the last 15 years, the Mississippi River Valley has experienced several flood events, which in turn have created collaborative working groups to address the many challenges associated with the recovery process.. However, the Spring Mississippi River Basin Flood 2011 will need the assistance of multiple federal and state agencies to include the following states: Missouri, Illinois, Tennessee, Kentucky, Arkansas, Mississippi, and Louisiana.

Goals & Objectives:

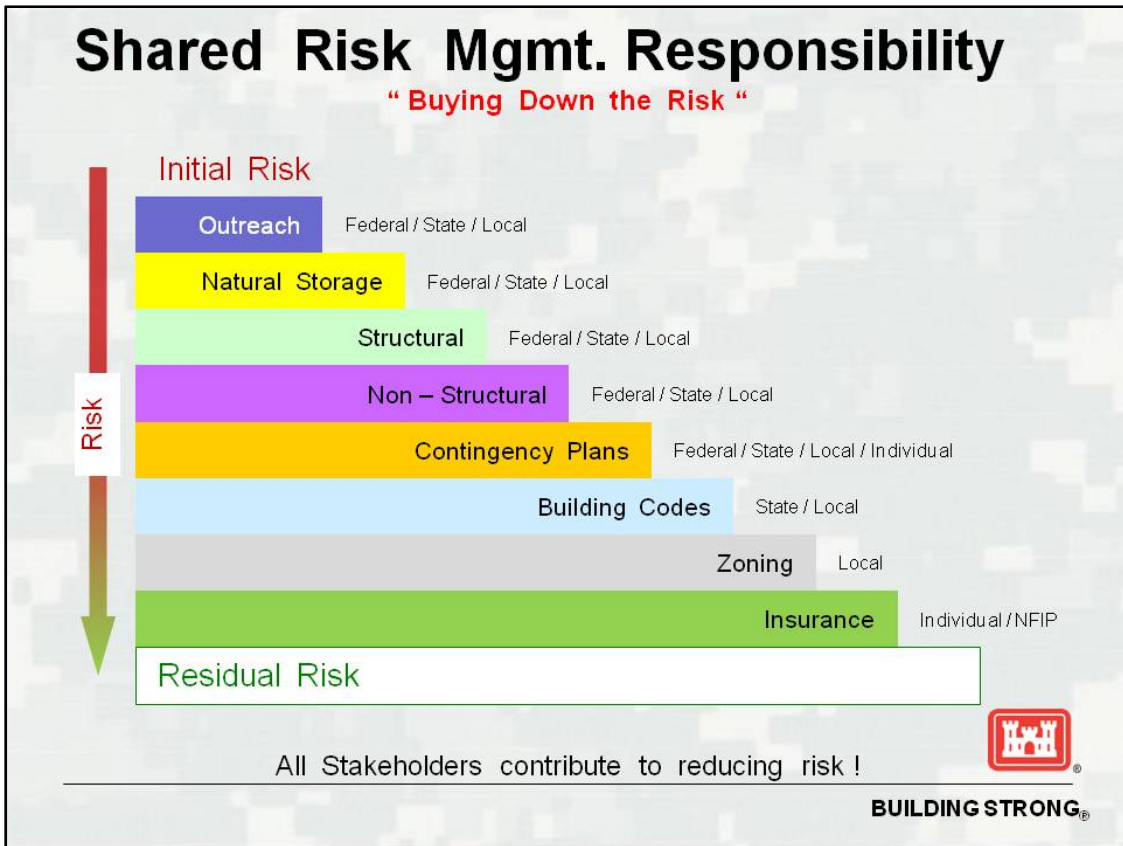
- Provide an interagency forum to establish an integrated, collaborative, and holistic approach to recovering and rehabilitating flood risk management and floodplain management systems damaged by the historic Mississippi River Basin flooding of 2011, integrating solutions for long-term flood risk management
- Implement a collaborative and communicative approach across regional and state boundaries in order to prioritize our efforts and resources during the challenging recovery process.
- Create strong regional efforts to inspect, review, reset and restore our flood risk management system and adjacent projects.
- Create an IRTF management plan.
- Share responsibility for all flood plain management restoration initiatives, programs, and projects in order to reduce flood risks long term.
- Develop and implement an effective outreach program to communicate and educate the general public regarding participating agencies' responsibilities, programs and authorities, both short and long term to the public.
- Pursue all potential funding methods from federal and state resources.
- Give consideration to all structural and non-structural alternatives in repair and restoration.

REGIONAL FLOOD RISK MANAGEMENT

The primary intent of REGIONAL FLOOD RISK MANAGEMENT is to create increased awareness and synchronization around “FRM Life Cycle” activities and shared responsibility with “Buying Down the Risk”.



Effective flood risk management requires the integration of mitigation planning, preparedness, response, and recovery programs and activities into a coordinated flood risk management "life-cycle" framework. The four general phases of the flood risk management cycle are mitigation planning, preparation, response, and recovery. The conceptual framework for implementing the flood risk management program is focused on ensuring our programs and authorities and those of our federal, state, local, and tribal partners are coordinated and synchronized so that our combined actions achieve effective management of the flood risk. The above figure depicts the flood risk management cycle and the relationship of USACE program activities within the cycle. This approach recognizes the reality that, ultimately, Mother Nature will "grade" the success of the collaborative effort during future flood events.



USACE is a key contributor in “buying down” the Nation’s flood risks through its programs to 1) plan structural and nonstructural projects to manage flood risks, 2) inspect the condition of existing flood risk management infrastructure, 3) provide technical and planning support to states and communities, 4) conduct emergency measures to alleviate flooding consequences, and 5) rehabilitate levees and other flood risk management infrastructure damaged by flooding. However, responsibility of managing the Nation’s flood risks does not lie exclusively with USACE or any other single Federal or non-Federal entity. Rather, responsibility is shared across multiple Federal, State, and local government agencies, with a complex set of programs and authorities, and private citizen choices/actions.

WHERE DO WE WANT TO GO (*Vision*)

The Regional Flood Risk Management Programs vision is to lead a collaborative, comprehensive and sustainable national flood risk management program to improve public safety and reduce flood damages to the Nation. USACE is transitioning from the concept of *flood damage reduction* to a broader focus on *flood risk management*, defined as managing both *floodwaters* to reduce the *probability of flooding* (that is, structural approaches such as levees and dams) and *floodplains* to reduce the *consequences of flooding*. Flood risk management must be collaborative because other agencies external to USACE also have roles, responsibilities, and authorities in floodwater and floodplain management. Management of the Nation’s flood risk is truly a shared responsibility.

WHAT DO WE WANT TO ACHIEVE

(Objectives)

The Primary objective of the NFRMP is to position USACE programs and activities that contribute to managing and reducing flood risk at the national, watershed, and state levels. The risk should be managed within a matrix structure to foster open and collaborative mitigation planning, response, and recovery efforts internally within USACE's programs and externally with our federal, state and local partners. The second objective is to foster open and collaborative mitigation planning, response and recovery efforts both within USACE programs, and externally with our federal, state, local and tribal partners.

Flood risk management activities cannot be considered in isolation. Effective water resources planning and management must often balance competing needs. An integrated approach to water resource planning considers flood risk management as one of many objectives needed in a watershed. Other objectives might include ecosystem restoration, water supply, hydropower, or navigation depending on the needs in the basin. A collaborative approach to water resource planning and management engages multiple competing stakeholders in the development of watershed management plans to fulfill these needs.

HOW WILL WE GET THERE?

(Challenges/Actions)

To achieve the vision, objectives and goals for NFRMP we will need to focus the talents and energy of the Corps of Engineers on delivering *enduring, comprehensive, sustainable and integrated solutions* to the Nation's water resources and related challenges through *collaboration* with stakeholders (regions, States, local entities, other Federal Entities, etc.), playing a *leadership or support role* as appropriate to meet today's and future challenges.

Across the many challenges and necessary actions, we will “*get there*” by careful attention to the following:

- Providing the public and decision makers with current and accurate flood risk information at the national, watershed, state, tribal, and local levels.
- Identifying and assessing all flood risk management infrastructure hazards.
- Improving public awareness and understanding of flood related hazards and risks.
- Implementing collaborative watershed /system risk management strategies with federal, state, local, and tribal partners.
- Improving capabilities to collaboratively deliver and sustain flood risk management services at the national, watershed, state, local, and tribal levels.
- Coordinating flood risk management policies, programs and activities with federal, state, and local partners.

HOW WILL WE MEASURE AND DEFINE SUCCESS?

(Performance metrics)

The primary objective of our RFRM program is to reduce and manage flood risks to life and property in a collaborative way with our partners and stakeholders. Current performance indicators used by the USACE to measure our RFRM programs performance are: (1) flood damages prevented from actual events by existing projects, (2) people protected in the flood plain by projects brought on line, and (3) annual benefits (estimated future flood damages that would be avoided) by projects brought on line. Additional indicators have been established that will assist in determining program progress in meeting our RFRM business line objective. These indicators include:

- Estimated annual Flood damages prevented
- Increase in benefits realized from project construction completion
- Increase in total affected population with reduced flood risk
- Condition of operating projects

These performance indicators primarily evaluate the USACE performance as it relates to the construction and operations of our FRM projects. However, because managing flood risks is the responsibility of multiple federal, state and local entities our collaborative partnerships are a contributing factor in determine our progress and success in managing and reducing flood risk. As a result, we need to develop performance indicators that allow us to measure the contributions of the collaborative partnerships being develop with our state and watershed partnerships.

WHAT WILL SUCCESS LOOK LIKE?

Program success will be achieved when there is successful integration of flood risk management initiatives into USACE practices and culture as well as transparency with other Federal, State and local partners. This will be accomplished through:

- The USACE’s culture increasingly reflecting the philosophy of the NFRMP across all organizational lines within HQ, MSCs and Districts.
- Clients, sponsors and other stakeholders increasingly recognize USACE as a leader in flood risk management activities.
- Improvements in reducing the consequences of floods from operation of our projects and implementation of flood risk management initiatives to reduce flood damages nationwide.
- Increasingly natural functioning of floodplains and flood risk management sustainability are incorporated into the planning and implementation of all USACE projects.
- Partners and stakeholders increasingly recognize the USACE, FEMA and NRCS for excellent response and recovery activities and associated flood risk management initiatives;
- Understandings with customers about the goals, priorities and evaluation of those projects and other related activities impacting levee integrity and flood control systems;
- Recognition of the importance of protecting important environmental and natural resources;
- Monitoring and tracking the latest DHS/FEMA and other Federal agency activities impacting the successful accomplishment of flood management restoration; and
- Development of future strategies for short-term and long-term flood risk management and consideration of the USACE “Silver Jacket” concept.

BRIDGING MESSAGES

Public safety is paramount.

- Floods cannot be controlled but we can manage the risks from floods.
- Residual flood risk will always exist.
- Reducing flood risk is a shared responsibility with multiple Federal, State, and local government agencies.
- Reducing flood risks is a continuous and ongoing effort.
- Levees are just one tool that can be used to reduce flood risk.