

# **UMRS Flood, Sediment/Channel Management, Drought PAS Report Flood Issue Area**

## **Chapter 3**

[Two to three sentence blurb on importance of issue – e.g., we know sedimentation is increasing in most of the Upper Miss, emergency response is costly and often at the expense of ecological health. Systemic, integrated planning will allow for proactively managing the channel in ways that cost-effective and ultimately increase the perception of the navigation system’s reliability to the overall freight transportation network.]

Recent flooding in the Upper Mississippi River System (UMRS) has continued to highlight existing Flood Risk Management (FRM) vulnerabilities, as well as identified a renewed interest to identify a multi-state, holistic FRM framework. Severe flood events are occurring with increasing frequency. Although managing flood risk (preparedness, response, recovery, mitigation and investment decisions) is a shared responsibility, the decentralized management structure often incentivizes local needs vice a more strategic (watershed) approach. Systemic, integrated planning will allow for proactively leveraging the various partner resources with a goal of a more predictable and resilient UMR system with fewer damages.

### **Perspectives of Today**

*What is happening and how it became this way*

[Note: This section will include 3-4 paragraphs describing the current problem statement (i.e., why is today’s situation not sustainable) and a concise summary of the policies and decision-making that resulted in today’s situation.]

Recent feedback via six Open Space sessions indicate that there are a number of Challenges related to flood management of the UMR. Among them are changing weather patterns, decentralized management (need to manage for multi purposes), lack of standardized approach to minimize flood damages (i.e.; storage, levee setbacks, buyouts, etc.), lack of standardized framework or tools to make solid risk informed decisions (i.e.; consistent use of UMR-wide hydraulic model to address “what if” scenarios), land use changes (i.e.; urban development, tiling of fields, etc.), limited funding and transportation interruptions. A common theme to the feedback received is “shared responsibility”. Although USACE and FEMA (along with other Federal agencies) provide assistance to states and communities in reducing flood damages and promoting sound flood risk management, the authority to determine how land is used in floodplains and to develop and enforce floodplain regulations is generally the responsibility of state and local governments. Identifying a common watershed FRM vision would lead to gained efficiencies, a more predictable system, and ultimately, a more resilient system.

To understand how the UMR evolved, we must look at its history. The flood damage reduction facilities (Federal and non-federal) of the UMR were not constructed in accordance with a holistic, regional plan (although portions of the UMR levee heights were determined using the same model and/or consistent hydrographs). These facilities have varying structural integrity, and provide varying levels of flood risk reduction for similar land uses. Not since 1981 (with the termination of the Upper Mississippi River Basin

Commission) has there been an overall active planning authority for Upper Mississippi River System resources management.

The Mississippi River Commission (MRC) has statutory authority for the general improvement of the river from the Head of Passes to its headwaters near Lake Itasca. The MRC started a process of listening, inspecting, and partnering in the Upper Mississippi Basin in 1997, but in its current capacity the Commission does not have the funded authority to implement plans of improvement in the basin as it does with the comprehensive Mississippi River & Tributaries (MR&T) project below Cape Girardeau, MO.<sup>1</sup>

The Upper Mississippi and Illinois River floodplains have extensive existing flood control projects consisting of levees and floodwalls and large tributary reservoirs. Many of the levee systems were originally built privately between 1880 and 1920 and upgraded later. The various systems were designed with levels of protection varying between less than 2 percent (50-year) when reducing flood risk to primarily agricultural land up to the 0.2 percent (500-year) annual chance protection when large urban areas are within the leveed area. Today, most components of UMR flood risk reduction systems were federally constructed or improved, and were planned and built incrementally (rather than systemically) under various authorities. Altogether there are currently over 140 levee systems in place in the Upper Mississippi and Illinois River floodplains protecting urban and agricultural areas (note that there are many other privately owned levees not reflected in this National Levee Database statistic). In total, these systems include over 2,200 miles of floodwalls and levees. In addition, there are a number of small communities that are directly vulnerable to overbank flooding which threaten life, property, economy and continued existence of these historic river communities. The natural environment of the Upper Mississippi River system includes 318,750 acres designated as Wetlands of International Importance in addition to side channels, sloughs, oxbows and river side and floodplain forests.

The bulk of what resulted in today’s situation occurred decades ago. Below is a partial list of various policies, planning studies and decision-making, mostly generated after the Flood of 1993, which brought the flood issues to the forefront. Note that some recommendations have been implemented, but not all.

Study Name	Date	Summary
FEMA Unified National Program for Floodplain Management	1986	Conceptual framework for floodplain management that includes: - Avoiding actions that affect adversely the floodplain whenever there is a practicable alternative; - Minimizing the adverse impacts of actions that affect the floodplain; - Restoring previously degraded floodplains to serve their natural functions; and - Preserving those floodplains whose natural functions are relatively undisturbed.
Interagency Floodplain Management Review Committee (also known as the Galloway Report)	1994	Recommend permanent evacuation of floodprone areas, increase state role in floodplain management; restrict support for floodfighting (i.e.; restrict increased LOP)
A Balanced Management for the Upper Mississippi, Illinois and	1997	Report developed by team from the Netherlands to look into the way the resources of the UMRS are presently being managed, and provided an

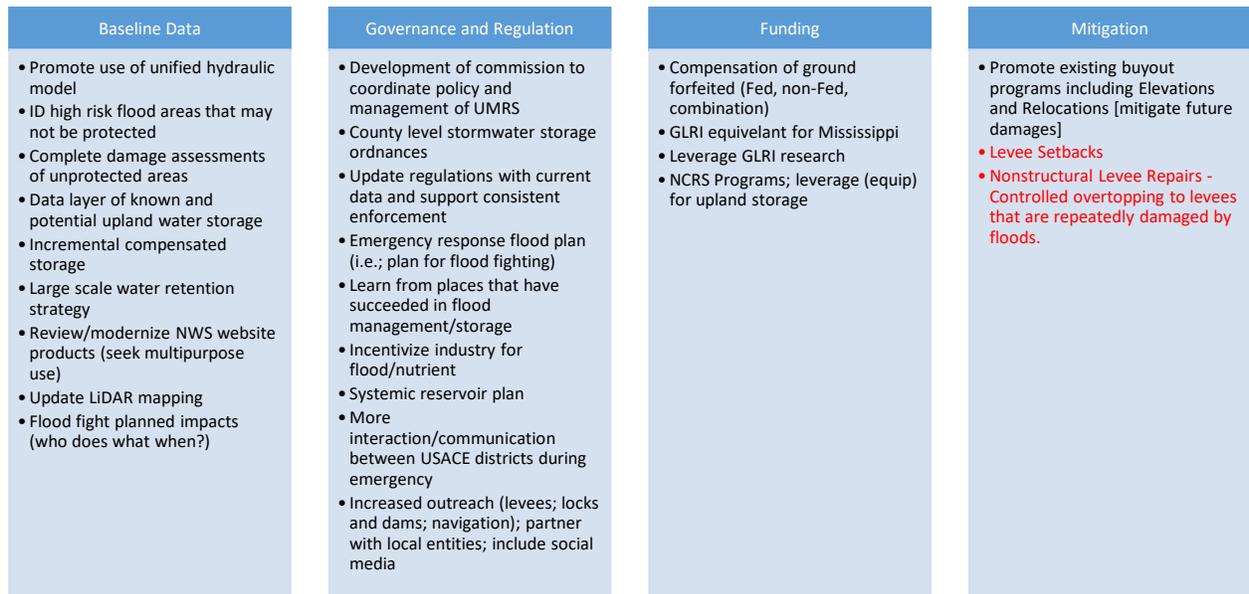
Missouri Rivers (also known as the Delft Report)		outsider's view on river basin and river management. Main conclusions included: <ol style="list-style-type: none"> <li>1. Leadership in river management</li> <li>2. Role of USACE</li> <li>3. River Resources</li> <li>4. Economic Development and BCA</li> <li>5. Farming Concerns</li> <li>6. River Basin Development Plan</li> <li>7. Decision Support and Information Dissemination</li> <li>8. Navigation</li> <li>9. Flood Management</li> <li>10. Environment</li> </ol>
FEMA the National Levee Challenge: Levees and the FEMA Flood Map Modernization Initiative	2006	Identifies awareness and outreach challenges
National Flood Policy Challenges: Levees - The Double-edged Sword. ASFPM	2007	Recommendations include: <ul style="list-style-type: none"> <li>• Levees should be used as a structure of last resort and only after other measures, especially nonstructural ones, have been fully considered. Levees should not be used as a means to facilitate the development of currently undeveloped floodprone lands.</li> </ul>
Upper Mississippi River Comprehensive Plan	2008	Identified the need for collaborative partnership between federal, state and local floodplain managers. The study also developed assessment tools for comparing flood damage reduction alternatives, issued specific conclusions based on several hydraulic analyses, and recommended follow-on studies.
Floodplain Management 2050: A Report of the 2007 Assembly of the Gilbert F. White National Flood Policy Forum. ASFPM	2008	Recommendations from the forum included: <ul style="list-style-type: none"> <li>• Make room for rivers, oceans, and adjacent lands.</li> <li>• Remove infrastructure from floodplain.</li> <li>• Adhere to EO 11988.</li> </ul>
UMRBA State Floodplain Management Comparison	Feb 2013	Highlights the significant approaches to each state's floodplain management
UMRBA Flood Risk and Sediment Management Summit	July 2017	Identifies five perspectives of challenges and four solutions/actions for improving flood and sediment management on the UMR.
UMRBA/USACE Flood, Sediment, Drought IWRM Pilot	Oct 2018	Establishes systematic development of informed consent process to conduct civic engagement with potentially affected interests.
UMRBA PAS Planning Meeting	Aug 2019	

## Known Opportunities

*High leverage actions that enjoy regional consent*

[Note: This section will include a bulleted listed of high leverage actions (i.e., the most important of those the issue teams' identified) that do not need further study or consent-building among stakeholders.]

A summary of the Flood Issue Area Team topics discussed at the Sep 30/Oct 1 meeting is delineated in the below figure. Note that this meeting took place shortly after the last of six Open Sessions.



Below is a list of high leverage actions (i.e., the most important of those the Flood Issue Area Team identified) that do not need further study or consent-building among stakeholders. Also in this list is the name of the agency/organization who has committed in leading the effort and under what authority/funding mechanism.

Priority	Subject	Agency/Organization	Authority/funding
1	UMR Hydraulic Modeling (see below table)	USACE	FPMS
2	Flood Damage Assessment outreach to communities (show inundation mapping, explain courses of action, explain/	States	
3	Summarize changing weather patterns and define assumptions for future planning efforts	NWS	
4	Floodplain Prioritization Tool	TNC	

**UMRS Hydraulic Model:**

- Phase 1	MR L/D 19 to Thebes	Complete
- Phase II	MR L/D 10 to L/D 19	Funded in FY20
- Phase III	IWW Lockport to Grafton	Potential to be funded in FY21 via USACE PAS program
- Phase IV	MR from Anoka to L/D 10	Funded in FY20

Notes:

- A few of the action items span the four main topic areas. For example, funding sources are instrumental to policy development, establishment of local funding sources (maybe trust fund), and implementation of any mitigation measures
- Flood Issue Area Team discussion on the pros/cons of buyouts (general consensus at the regional level, but opposition at the local property owner level)

**Defining The Future**

*Questions re watershed and floodplain inputs and long term management actions driving the future of the Upper Mississippi’s navigation system*

[Note: This section will include a bulleted list or brief summary of questions and issues needing further exploration. This will include questions to inform management as well as questions about the right approach to management – e.g., what is the right design of structural and nonstructural measures to provide for a predictable, desired approach for floods?]

**Questions/Issues Needing Further Exploration:**

<b>Baseline Data</b>	<b>Lead Agency/Organization</b>
Once the UMR hydraulic model is implemented, will each state commit to using it for risk informed decision-making (i.e.; if any state chooses not to use the model, there will still not be a regional framework)?	
Does each state have an inventory of high-risk, floodprone structures that it uses to make informed decisions? (or will each state commit to developing inventory?)	
What academic body is best served to be involved in watershed planning (i.e.; academic representation from each state to develop/refine various solution scenarios/alternatives) and where should this 5-state (neutral) team focus their “what if” scenarios? (i.e.; Iowa Watershed Approach)	
Identifying mainline and tributary optimal flood storage locations and flood storage elevations, optimal conveyance floodways, etc. Once regional framework is established, will update be performed to flow frequency study along the updated floodways and mapping?	
<b>Governance and Regulation</b>	<b>Lead Agency/Organization</b>
Need to identify UMR oversight entity (with the authority to make planning and funding decisions at the watershed level)	
Is there interest among the five states to support consistent floodplain enforcement?	

In order to gain a predictable system, will each state agree to a common set of emergency response (i.e.; flood fight response)?	
<b>Funding</b>	<b>Lead Agency/Organization</b>
Is there support in establishing funding mechanism to compensate property owners taking flood waters (i.e.; establishment of a Trust Fund or effort to advocate for legislative change to allow for Federal funds)?	
Is there support to research whether the GRLI model is appropriate funding mechanism for the UMRS?	
<b>Mitigation</b>	<b>Lead Agency/Organization</b>
In order to minimize future damages, are the five states willing to assertively pursue acquisition programs of floodprone areas?	

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<sup>i</sup> Upper Mississippi River Comprehensive Plan – Executive Summary