MISSISSIPPI RIVER AND TRIBUTARIES

WATERWAYS ACTION PLAN

UPPER MISSISSIPPI RIVER ANNEX 2026

Mississippi River in St. Louis cresting at 45.93 ft. on June 8, 2019

Table of Contents

Introduction

This appendix provides a consolidation of general information and target gauges to be used as a guideline for a crisis on the entire Upper Mississippi River (UMR) (river miles 0.0 to 857.6). In the face of such a crisis, it is the responsibility of the United States Coast Guard (USCG), United States Army Corps of Engineers (USACE), and River Industry representatives to meet and discuss conditions on the UMR. These parties will engage ***annually*** to review the actions specified in the plan, typically in ***the first week of November*** but may update more frequently.

Section 4 of this appendix breaks down the entire UMR into 33 zones. Each zone is delineated by river mile and is characterized by river stage, with three action phases (e.g., *Watch, Action, and Recovery Phases*) described in the plan. A combination of reference gauges, historical data & known impact areas were used to derive these zones. The 2020 revision combined previously separate UMR annexes for the Sector Upper Mississippi River and Sector Ohio Valley areas of responsibility into a single document for easier reference. *All previous versions of both UMR annexes are now obsolete.*

This plan is intended to report damage to the transportation infrastructure because of an incident, coordinate alternate transportation services, coordinate the restoration and recovery of the transportation infrastructure. Likewise, it prompts coordination among transportation stakeholders at the federal, state, and local levels to support prevention, preparedness, and mitigation of crisis impacts to the nationally critical inland maritime transportation system.

Acronym List for Upper Mississippi River Annex

AIS = AUTOMATIC IDENTIFICATION SYSTEM
BNM = BROADCAST NOTICE TO MARINERS
CFS = CUBIC FEET/SECOND
EMTS = EMERGENCY MANAGEMENT OF THE TRANSPORTATION SYSTEM
EOC = EMERGENCY OPERATION CENTER
ESF = EMERGENCY SUPPORT FUNCTION
HLSEM = HOMELAND SECURITY AND EMERGENCY MANAGEMENT
IEMA = IOWA EMERGENCY MANAGEMENT
ICE = ICE COMMITTEE
ICP = INCIDENT COMMAND POST
ILWW = ILLINOIS WATERWAY
IRCA = ILLINOIS RIVER CARRIERS ASSOCIATION
JIC = JOINT INFORMATION CENTER
LCP = LOWEST CONTROLLED POOL ELEVATION
L&D = LOCK AND DAM
LDB = LEFT DESCENDING BANK
LSAF = LOWER SAINT ANTHONY FALLS
MM = MILE MARKER
MOR = MISSOURI RIVER
MSIB = MARINE SAFETY INFORMATION BULLETIN
MSL = MEAN SEA LEVEL
NGVD = NATIONAL GEODETIC VERTICAL DATUM
NOAA = NATIONAL OCEANIC ATMOSPHERIC ADMINISTRATION
NWS = NATIONAL WEATHER SERVICE
RDB = RIGHT DESCENDING BANK
RIAC = RIVER INDUSTRY ACTION COMMITTEE
RIBB = RIVER INFORMATION BULLETIN BOARD
SEMA = STATE EMERGENCY MANAGEMENT
SITREP = SITUATION REPORT
UMIB = URGENT MARINE INFORMATION BROADCAST
UMR = UPPER MISSISSIPPI RIVER
USACE = UNITED STATES ARMY CORPS OF ENGINEERS
USAF = UPPER SAINT ANTHONY FALLS
USCG = UNITED STATES COAST GUARD
WAP = WATERWAYS ACTION PLAN
WEM = WISCONSIN EMERGENCY MANAGEMENT

Section 1 – Geographic Description

Hydrological and Impact Concerns

The Mississippi River and its tributaries form a complex waterway system spread out over millions of square miles. To predict changes in conditions on this system, waterway managers must constantly monitor several hydrological and meteorological factors. These include water flow, soil moisture, snow cover, precipitation, temperature, weather patterns and, most importantly, geography. Effective waterway managers must constantly monitor these factors and forecast river conditions to ensure they are adequately prepared to deal with a regional transportation emergency. The area most significantly affected by the factors mentioned above is the UMR. This portion of the river, from the confluence of the Ohio River, northward, consists principally of pooled waters created by a series of locks and dams operated by the USACE. The purpose of these structures is to maintain water levels to provide the minimum channel depth of 9 feet required by law for commercial navigation. Major tributaries to the UMR, including the Missouri River (MOR), Illinois Waterway (ILWW), Iowa River, Des Moines River, and the Ohio River, have impoundments that create reservoirs. Flows from these reservoirs impact the water levels of the UMR. Numerous variables affect how much water is in the system at any given time. Listed below are some of the key variables waterways managers must consider:

Low Water and Ice Conditions

Waterway management concerns occur not only at high water, but also during low water and ice conditions on the UMR. Low water is of particular concern in the Middle Mississippi River, an area spanning from the confluence of the Ohio River to St. Louis. Groundings during low water conditions delay commercial traffic, cause substantial damage to the navigation channel, and can necessitate dredging. Ice conditions not only reduce water levels, but cause ice to build up underneath barges causing them to "ground" without ever touching the river bottom. Ice navigation can be very difficult as the ice removes navigation buoys, causes ice gorges, and damages the hulls of towing vessels and barges.

Controlling Factors and Waterways Management Planning

Under flood conditions, controlling factors are gauge readings at specific locales and locks. These are general elevations at which water levels may cause impact upon levee conditions, damage homes, or create unsafe navigation conditions, as described in the Action Plan Tables of each zone in Section 4 of this annex. Well before water levels near or reach these levels, the USCG, in conjunction with USACE and industry, shall implement the “Watch Phase” of the plan (which vary for each zone) e.g., establish communications to discuss the current and forecasted conditions. These discussions should include an analysis of data, including weather history and forecast, and the impact upon the river environment and commercial traffic’s ability to safely navigate. Furthermore, general considerations such as levee conditions, potential impacts from wake damage, bridge clearances, and lock operating restrictions/closures shall be discussed.

Section 2 – Parties and Roles

U.S. Coast Guard (USCG)

Sector Upper Mississippi River (SUMR), with its principal office in St Louis, MO, and Sector Ohio Valley, with its principal office in Louisville, KY, are responsible for safe navigation, security, and law enforcement along the UMR. Housed within the Prevention Department of each Sector, the Waterways Management Divisions, using the cutters: CHENA, homeported in Hickman, KY; CHEYENNE and GASCONADE homeported in St. Louis, MO; SCIOTO, homeported in Keokuk, IA; and WYACONDA, homeported in Dubuque, IA; are responsible for maintaining and setting buoys and shore aids along the UMR. The Prevention Department also focuses on licensed mariner issues, permits, vessel and shore side facility safety and security inspections, and casualty investigations. The Response Department at each Sector uses small boats, other law enforcement partnerships, and first responders to patrol and respond to emergencies or incidents on the UMR.

U.S. Army Corps of Engineers (USACE)

The USACE maintains twenty-nine Lock facilities along the UMR, under the supervision of their St. Louis, MO; Rock Island, IL; and St. Paul, MN District Offices. Through management of these facilities and supplemented by dredging, the USACE maintains pool levels that are sufficient to accommodate commercial traffic on the river. The Middle Mississippi River maintains a 9-foot navigation channel in open river conditions with river structures supplemented by dredging. During high water conditions, their Emergency Operations coordinate flood fight activities.

U.S. Coast Guard District Heartland Bridge Branch (dpw)

The Bridge Administration Program has a mandated responsibility to protect the public's right of navigation. Activities include determining location of navigation channel piers and issuing bridge permits. They establish, revise, and monitor drawbridge regulations and prescribe bridge lighting. Also, Truman-Hobbs studies of unreasonable obstructive bridges are conducted on a nationwide basis. *See* Bridge Program, COMDTINST 16590.5(series) for more detail.

River Industry Action Committee (RIAC)

RIAC is an association of companies and organizations who are stakeholders in the commercial industry on the inland rivers. As the name suggests, they act in an advisory capacity on a wide range of issues affecting the activities of the industry on the rivers. They provide an industry perspective to the USCG and the USACE on matters such as high and low water, ice conditions, shoaling, marine accidents, etc.

Fleeting Facility Managers

Fleeting facility managers have a direct commercial interest in navigation conditions on the UMR, and any actions taken by the USCG or USACE in response to hazardous conditions that develop on the river. They can play a valuable role in providing feedback to other parties on both river conditions and impact of proposed actions of the USCG and USACE.

Designated Waterfront Facilities

Like the fleeting facility managers, the commercial interests of the designated waterfront facilities are directly impacted by navigation conditions on the UMR, and any actions taken by the USCG or USACE in response to hazardous conditions that develop on the river. They can play a valuable role in providing feedback to other parties on both river conditions and impact of proposed actions of the USCG and USACE.

State Emergency Managers

Hazardous conditions on the UMR, particularly high water/flooding conditions, frequently involve state emergency managers, as they become involved in responding to affected communities, and take a direct interest in conditions or activities that can affect the levee systems that protect those communities.

USACE and USCG Equivalencies

USACE POSITION St. Louis District MM 0.0 – 109.8	**DUTIES & RESPONSIBILITIES**	**EQUALS**	**USCG POSITION**	**DUTIES & RESPONSIBILITIES**
Chief, Water Control Operations (Supports Operations)	River Stage Forecast & Control		Chief, Waterways Management Division, Sector Ohio Valley	Manages daily waterway management and casualty operations
Operations Dredging Project Manager, St. Louis, MO	Channel Patrol & O&M Dredging Activities Upper Mississippi River			
Operations Manager, Rivers Project Office, Alton, IL	Supervises Upper Mississippi River all O&M Activities			
Chief, Emergency Management	Flood Fight Response Activities			
REPORTS TO:				
Chief of Operations, St. Louis District	Supervises Operations Managers		Chief, Prevention Department, Sector Ohio Valley	Supervises operational issues
REPORTS TO:				
District Engineer, St. Louis District	Supervises Chief of Operations		Commander, Sector Ohio Valley	Senior USCG officer in area
REPORTS TO:				
Division Engineer, Mississippi Valley Division	Supervises District Engineer		Commander, Heartland Coast Guard District	Senior USCG officer in District

USACE POSITION St. Louis District MM 109.9 – 300.0	DUTIES & RESPONSIBILITIES	EQUALS	USCG POSITION	DUTIES & RESPONSIBILITIES
Chief, Water Control Operations (Supports Operations)	River Stage Forecast & Control			
Operations Dredging Project Manager, St. Louis, MO	Channel Patrol & O&M Dredging Activities Upper Mississippi River		Chief, Waterways Management Division, SUMR	Manages daily waterway management and casualty operations
Operations Manager, Rivers Project Office, Alton, IL	Supervises Upper Mississippi River all O&M Activities			
Chief, Emergency Management	Flood Fight response activities			
REPORTS TO:				
Chief of Operations, St. Louis District	Supervises Operations Managers		Chief, Prevention Department, SUMR	Supervises operational issues
REPORTS TO:				
District Engineer, St. Louis District	Supervises Chief of Operations		Commander, SUMR	Senior USCG officer in area
REPORTS TO:				
Division Engineer, Mississippi Valley Division	Supervises District Engineer		Commander, Heartland Coast Guard District	Senior USCG officer in District

USACE POSITION Rock Island District MM 300.0 - 613.9	DUTIES & RESPONSIBILITIES	EQUALS	USCG POSITION	DUTIES & RESPONSIBILITIES
Chief, Water Control Operations	River Stage Forecast & Control		Chief, Waterways Management Division, SUMR	Manages daily waterway management and casualty operations
Operations Dredging Project Manager Rock Island, IL	Channel Patrol & O&M Dredging Activities Upper Mississippi River			
REPORTS TO:				
Operations Manager, Mississippi River Project Office, Pleasant Valley, IA	Supervises Upper Mississippi River all O&M Activities		Chief, Prevention Department, SUMR	Supervises operational issues
REPORTS TO:				
Chief of Operations, Rock Island District	Supervises Operations Managers		Chief, Prevention Department, SUMR	Supervises operational issues
REPORTS TO:				
District Engineer, Rock Island District	Supervises Chief of Operations		Commander, SUMR	Senior USCG officer in area
REPORTS TO:				
Division Engineer, Mississippi Valley Division	Supervises District Engineer		Commander, Heartland Coast Guard District	Senior USCG officer in District

USACE POSITION St. Paul District MM 614.0 - 857.6	DUTIES & RESPONSIBILITIES	EQUALS	USCG POSITION	DUTIES & RESPONSIBILITIES
Chief, Water Control Operations	River Stage Forecast & Control		Chief, Waterways Management Division, SUMR	Manages daily waterway management and casualty operations
Channels and Harbors Operations Manager, Fountain City WI	Channel Patrol & O&M Dredging Activities Upper Mississippi River			
Navigation Manager, Mississippi River Project Office. Fountain City, WI	Supervises Upper Mississippi River all O&M Activities			
REPORTS TO:				
Chief of Operations, St. Paul District	Supervises Operations Managers		Chief, Prevention Department, SUMR	Supervises operational issues
REPORTS TO:				
District Engineer, St. Paul District	Supervises Chief of Operations		Commander, SUMR	Senior USCG officer in area
REPORTS TO:				
Division Engineer, Mississippi Valley Division	Supervises District Engineer		Commander, Heartland Coast Guard District	Senior USCG officer in District

Section 3 – Communications Plan

Initiation of Communications Plan

This section provides guidance on the methods of communicating and receiving information. The USCG, USACE and maritime industry carefully monitor river conditions and levels. When any of the conditions warrant attention (high water, low water, high flow, ice, or any other hazardous condition), any UMR stakeholder can request a conference call by contacting either the USCG Sector Waterways Management Division Chief, the USACE, or one of the RIAC co-chairs. If further discussion is needed, the members listed on the following pages of this section, to include Industry and State personnel, will be contacted via email or phone call. RIAC Chairs will be responsible for contacting the appropriate industry members. From there, if appropriate, a teleconference will be set up to confer with all parties on possible measures to take and joint courses of action using the guidance from this annex as a basis to decide. By conferring frequently with all UMR stakeholders, a joint action plan to safely navigate during the condition that warranted initiating the communications plan will be developed. The action plan will then be communicated to all UMR stakeholders using Broadcast Notice to Mariners (BNM), posting on the USCG Sector Homeport sites, Local Notice to Mariners (LNM), and Marine Safety Information Bulletins (MSIB), as appropriate.

Phone Conference Call Agenda:

I. Roll Call by Phone Conference Host
II. Protocol for Conference Call
III. Open Statement by Chairman or Co-Chairman of RIAC on Issues
IV. Weather Forecast by NWS or USACE
V. River Stage Forecast by USACE
VI. Channel Report for Area of Concern by USACE Dredging Section
VII. Status of Dredging and Next Scheduled Locations
VIII. USCG Report on Advisories and Remarks
IX. USCG Buoy Tender Report on Channel Conditions
X. River Condition Report and Issues of Conference Call by Industry
XI. Discussion of Issues on Current Situations
XII. Assessment, Actions to Be Taken
XIII. Closing

ALL AGENCIES & ORGANIZATIONS: To ensure effective interagency cooperation during periods of coordinated response to high and low water, or other hazardous river conditions, stakeholder organizations are advised to **maintain active and ongoing communications with one another during normal river conditions and while planning together for joint response activities**. This will greatly facilitate speedy and effective communications under the pressure of responding to an event.

Vessel to Vessel and Vessel to Shore Communications

VHF communications on the UMR are handled by the communications centers at USCG Sector UMR in St. Louis, MO (river miles 857.6 to109.9), and Sector Ohio Valley in Louisville, KY (river miles 109.9 to 0.0). Primary contact is made on channel 16 then, generally, mariners will be instructed to switch to another channel such as 22A to continue discussion.

Notifications:

U.S. Coast Guard

The USCG maintains a 24/7 live watch at its Sector Command Centers in St. Louis, MO, and Louisville, KY. Hazardous river conditions are monitored by personnel at the Sectors and reported, as appropriate, to the Sector Commander. As conditions dictate, the Sector Commander will release Marine Information Broadcasts, including BNMs or Urgent Marine Information Broadcasts (UMIB) with safety advisories, safety zones, or river closures. As noted above, these waterways control measures are determined in consultation with the USACE and representatives of the river industry. The Western Rivers Command Center (WRCC) in the Robert A. Young Federal Building in St. Louis is responsible for these notifications.

The USCG District Heartland Bridge Branch manages all bridges within the Sector UMR zone. Any issues involving a bridge should be reported to the Bridge Branch or Sector UMR Command Center.

Websites:
https://www.atlanticarea.uscg.mil/Our-Organization/District-8/District-Units/Sector-Upper-Mississippi-River/

https://www.atlanticarea.uscg.mil/Our-Organization/District-8/District-Units/Sector-Ohio-Valley/

Homeport:
https://homeport.uscg.mil/port-directory/upper-mississippi-river-(st-louis)

https://homeport.uscg.mil/port-directory/ohio-valley

U.S. Army Corps of Engineers: St. Paul District

During Normal Work Hours

During periods of hazardous river conditions, the St. Paul District, USACE field offices work closely with river users and the basin communities. River users should report hazardous conditions to the nearest Lock and Dam. The Lockmaster will assess the situation and then contact the appropriate office(s) to take the necessary actions. The following offices may be contacted depending on the situation: Operations Manager, Locks & Dams; Operations Manager, Channels & Harbors; Navigation Manager; Chief, Operations Division; Chief, Water Control; Chief, Readiness Branch; Deputy District Engineer; District Commander. The District Team will coordinate with the USCG throughout the hazardous period. When river conditions become too hazardous for safe navigation, the USACE through the District Commander may make recommendations to the USCG to issue safety zone restrictions or river closures. Likewise, as river conditions improve, the USACE through the appropriate District Commander will make recommendations to remove the safety zone restrictions or reopen the river to navigation.

After Normal Working Hours, Weekends, and Holidays

As with Normal working hours, river users should report hazardous conditions to the nearest Lock and Dam. From there the same sequence of contacts will be made throughout the district until all the appropriate personnel are contacted to address the situation.

Lock Personnel monitor Channel 14 (156.7 MHZ) for lockage assistance and Channel 16 (156.8 MHZ) for hailing and distress.

Website: https://www.mvp.usace.army.mil/

U.S. Army Corps of Engineers: Rock Island District

During Normal Work Hours

During periods of hazardous river conditions, the USACE works closely with river users and the basin communities. River users may report hazardous conditions to the nearest Lock and Dam or the Mississippi River Project Office. These field offices will contact the Operations Manager who then contacts the appropriate office(s) to take the necessary actions. The following offices may be contacted depending on the situation: Chief, Lock and Dam Section; Chief, Maintenance Section; Chief, Dredging Section; Chief, Water Control; Chief, Emergency Management; Chief, Operations Division; Deputy District Commander; District Commander. The District Team will coordinate with the USCG throughout the hazardous period. When river conditions become too hazardous for safe navigation, the USACE through the District Commander will make recommendations to the USCG to issue safety zone restrictions or river closures. Likewise, as river conditions improve, the USACE through the District Commander will make recommendations to remove the safety zone restrictions or reopen the river to navigation.

After Normal Work Hours, Weekends and Holidays

As with normal working hours, river users may report hazardous conditions to the nearest Lock and Dam or the Mississippi River Project Office. From there the same sequence of contacts will be made throughout the district until all the appropriate personnel are contacted to address the situation.

Website: https://www.mvr.usace.army.mil/

U.S. Army Corps of Engineers: St. Louis District

During Normal Work Hours

During periods of hazardous river conditions, the USACE works closely with river users and the basin communities. River users may report hazardous conditions to the nearest Lock and Dam. The Lockmaster will report the hazardous river conditions and impacts to their District Office Point of Contact. Once the report of the hazardous condition is received in the District Office the following persons will be informed: District Water Control Manager; Emergency Management Manager; Operations Dredging Project Manager; Rivers Project Office Manager; the Chief of Operations; District Deputy Engineer; and the District Commander. The District Team including Water Control, Emergency Management and Operations staff will coordinate with the USCG throughout the hazardous period. When river conditions become too hazardous for safe navigation or if continuing navigation causes an unsafe condition such as causing levee erosion or interfering with flood fighting, etc., the USACE through the District Commander will make recommendations to the USCG to issue safety zone restrictions or river closures. Likewise, as river conditions improve, the USACE through the appropriate District Commander will make recommendations to remove the safety zone restrictions or reopen the river to navigation.

After Normal Work Hours, Weekends and Holidays

Below is the most up-to-date contact list with work and cell phone numbers, which are maintained by USACE staff responsible for emergency response to hazardous river conditions.

- River users may report hazardous conditions to the nearest Lock and Dam. The Lockmaster will report the hazardous conditions and possible impacts to Water Control Personnel and River Project Manager.

- USACE will report hazardous conditions to USCG.

- USACE will coordinate with USCG for issuance of safety zones.

Website: https://www.mvs.usace.army.mil/

Illinois Emergency Management Agency (IEMA)

In the event of an incident occurring on the waterways that could involve the state of Illinois, immediate notification should be made by phone to the IEMA telecommunications center. This will alert the Operations staff which enables the IEMA to monitor and pre-position resources if circumstances dictate. It is at this initial call number that the agencies equipped to provide a response, mitigation, and recovery are quickly notified. Periodic status reports to the telecommunications center (IEMA) allows the IEMA staff time to prepare for management procedures.

Website: https://www2.illinois.gov/iema

Iowa Homeland Security & Emergency Management (HLSEM)

HLSEM is responsible for coordinating emergency preparedness activities across the State of Iowa. Iowa Homeland Security supports asset protection initiatives and promotes security awareness among all citizens. When an emergency of state or regional significance occurs, HLSEM coordinates response and recovery assistance. HLSEM engages all state response capabilities and facilitate emergency aid across local and state political boundaries. When it is needed, HLSEM is responsible for requesting and coordinating assistance from partner states and the federal government.

HLSEM believes that productive information sharing relationships are critical to homeland security and emergency preparedness. When information concerning the safety and security of Iowa's citizens and communities becomes available, contact the HLSEM Duty Officer.

Website: www.homelandsecurity.iowa.gov

Minnesota Emergency Management

The Department of Public Safety Division of Homeland Security and Emergency Management (HSEM) is responsible for coordinating emergency preparedness activities within the State of Minnesota. HSEM works closely with State law enforcement officials, Sheriff's Offices, and other local law enforcement agencies in support of emergency response preparedness, critical infrastructure protection, and security awareness among all agencies and private businesses. When an emergency of state or regional significance occurs, HSEM coordinates response and recovery assistance.

Intelligence information about public safety and security or incidents involving critical infrastructure should be reported to the Minnesota Duty Officer.

Website: https://dps.mn.gov/divisions/hsem/Pages

Missouri State Emergency Management Agency

The Missouri State Emergency Management Agency (SEMA) coordinates and develops the State Emergency Operations Plan, oversees Missouri's disaster preparedness, floodplain management, hazard mitigation and public assistance programs as well as coordinates the state's response operations for all types of large-scale emergencies anywhere in the state.

SEMA and the State Emergency Operations Center (SEOC) are located at the Missouri Army National Guard Ike Skelton Training Site, east of Jefferson City. SEMA has a state-of-the-art facility and technical equipment to direct Missouri's disaster emergency response and recovery operations. The SEOC enables all state agencies to come together during emergency, gather information from local jurisdictions and quickly respond to the disaster. The EOC has fully functional workstations, access to communication resources that include radio, telephone, satellite, and wireless computer links.

The State EOC is designed to support 24/7 operations with kitchen facilities, showers, security, and lodging capability. The Missouri Information Analysis Center is located directly adjacent to SEMA offices and is an integral part of Missouri's response team.

SEMA has direct coordination and support for local emergency managers through nine area coordinators, one assigned to each region of the state. These SEMA employees have vehicles equipped with the latest in radio, satellite and mobile data terminal technology, most recently used during a dam failure in rural Missouri.

Website: www.sema.dps.mo.gov

Wisconsin Emergency Management (WEM)

Wisconsin Emergency Management (WEM) coordinates disaster response activities across the state. In the event of an incident on the Mississippi River, Wisconsin Emergency Management can be contacted through our Duty Officer System. The Duty Officer will notify WEM management staff and appropriate state agencies. The Duty Officer will make initial contact with the affected jurisdiction to obtain on the scene information related to the event and to assess the need for state assistance. WEM will also initiate contact with the appropriate federal agencies to facilitate coordination at all levels of government. If the situation requires the State EOC will be activated, and state agency personnel will be sent to the scene.

Website: https://dma.wi.gov

UMR Contact List	
RIAC	
St. Paul District - Lee Nelson	(651) 292-9293 (651) 260-0185 (cell) lee@ursi.net
Rock Island District - Casey Herschler	(217) 257-1749 cherschler@cantontowing.net
St. Louis District - Bernie Heroff	(314) 803-4644 (cell) (877) 855-7266 bernard.heroff@adm.com
USCG Sector Upper Mississippi River; St. Louis, MO	
Command Center (24/7)	1-866-360-3386 WESTERNRIVERSCC@uscg.mil
Sector Commander – CAPT Brandy Parker	(314) 269-2600 Brandy.n.parker@uscg.mil
Prevention Department Head/Waterways Management Division Chief – LCDR Nakia Bacon	(314) 704-8934 Nakia.d.bacon@uscg.mil
Waterways Management Division Watchstander (24/7)	(319) 520-8556 SUMRWaterways@uscg.mil
USCG Sector Ohio Valley; Louisville, KY	
Command Center (24/7)	1-800-253-7465
Sector Commander	(502) 779-5411
Prevention Department Chief	(502) 779-5448
Waterways Management Division Chief - Nick Frascella Assistant Waterways management Division Chief – CWO4 David Mauldin	(502) 779-5323 nick.l.frascella@uscg.mil (502) 779-5432 david.l.mauldin@uscg.mil
Marine Safety Unit Paducah	(270) 442-1621
USCG Heartland District Bridge Branch; St. Louis, MO	
During normal working hours	(314) 269-2378
After normal working hours, call USCG Sector Upper Mississippi River Command Center	
Email: STL-DG-ALL-D8-DWB@uscg.mil	
USACE St. Paul District	
Channel Issues – Dan Cottrell	(651) 290-5155 (651) 788-0597 daniel.j.cottrell@usace.army.mil
Chan. Harbors Manager – Filled by Temp Appts	(651) 290-5151
Lock and Dam Manager – Sam Mathiowetz	(651) 290-5140 (563) 559-6439 Sam.e.mathiowetz@usace.army.mil
Water Control – Dan Fasching	(651) 290-5786
Nav. Business Line Manager – Kristin Moe	(651) 290-5986

UMR Contact List	
	(612) 840-1939 kristin.m.moe@usacearmy.mil
USACE Rock Island District	
24 hour line	(309) 794-4200
Mississippi River Project/Channel Maintenance Office	
Aaron Dunlop	(309) 794-4500 (563) 209-0554 (cell) aaron.d.dunlop@USACE.army.mil
Bob Castro	(309) 794-4580 (309) 749-7214 robert.v.castro@usace.army.mil
Jarin Rudsell	(309) 794-5240 (309) 738-2257 (cell) jarin.e.rudsell@usace.army.mil
Chief, Operations Division – Tom Heinold	(309) 794-5401 (309) 573-6382 thomas.d.heinold@usace.army.mil
Deputy Chief, Operations Division – Brad Houzenga	(309) 794-5501 brad.c.houzenga@usace.army.mil

USACE St. Louis District	
Emergency Management Office John Osterhage	(314) 331-8605 (314) 331-8569 john.l.osterhage@usace.army.mil
Water Control:	
Joan Stemler	(314) 331-8330 (314) 630-6292 (cell) joan.m.stemler@usace.army.mil
Konrad Faries	(314) 331-8412 (314) 349-8757 (cell) konrad.w.faries@usace.army.mil
Russel Errett	(314) 331-8337 (314) 681-7625 (cell) russell.j.errett@usace.army.mil
Liz Norrenberns	(314) 331-8351 (314) 277-5825 (cell) elizabeth.a.norrenberns@usace.army.mil
Leonard Hopkins	(314) 331-8348 (314) 799-3458 (cell) leonard.e.hopkins@usace.army.mil
River Project:	
Andy Schimpf	(636) 899-0044 (314) 630-6280 (cell) andrew.c.schimpf@usace.army.mil
Matthew Chlibec	(636) 899-0072

UMR Contact List	
	(636) 288-8615 (cell) matthew.j.chlibec@usace.army.mil
Dredging Operations – Lance Engle	(314) 952-5197 lance.engle@usace.army.mil
Locks and Dams	
Lock and Dam St. Anthony Falls Upper	(651)-290-5936
Lock and Dam St. Anthony osborFalls Lower	(651)-290-5936
Lock and Dam 1, Minneapolis, MN	(651)-290-5919 / 5917
Locks and Dam 2, Hastings, MN	(651)-290-5828
Locks and Dam 3, Welch, MN	(651)-290-5062
Lock and Dam 4, Alma, WI	(651)-290-5951
Lock and Dam 5, Minnesota City, MN	(651)-290-5944
Lock and Dam 5A, Fountain City, WI	(651)-290-5071
Locks and Dam 6, Trempealeau, WI	(651)-290-5964
Locks and Dam 7, LaCrescent, MN	(651)-290-5186
Lock and Dam 8, Genoa, WI	(651)-290-5035
Lock and Dam 9, Eastman, WI	(651)-290-5045
Lock and Dam 10, Guttenberg, IA	(651)-290-5053
Lock and Dam 11, Dubuque, IA	(563) 582-1204
Lock and Dam 12, Bellevue, IA	(563) 872-3314
Lock and Dam 13, Fulton, IL	(815) 589-3313
Locks and Dam 14, Pleasant Valley, IA	(309) 794-4357
Locks and Dam 15, Rock Island, IL	(309) 794-5266
Lock and Dam 16, Illinois City, IL	(309) 537-3191
Lock and Dam 17, New Boston, IL	(309) 587-8125
Lock and Dam 18, Gladstone, IL	(309) 873-2246
Lock and Dam 19, Keokuk, IA	(319) 524-2631
Lock and Dam 20, Canton, MO	(573) 288-3320
Lock and Dam 21, Quincy, IL	(217) 222-0918
Lock and Dam 22, New London, MO	(573) 221-0294
Lock and Dam 24, Clarksville, MO	(573) 242-3524
Lock and Dam 25, Winfield, MO	(314)-566-8120
Lock and Dam 26, Alton, IL	(618) 462-1713
Lock and Dam 27, Granite City, IL	(618) 452-7107
Bridges (those drawbridges with determined high water closure points)	
Omaha RR Bridge (MM 841.4)	(651) 552-3707
Chicago and North Western RR Drawbridge (MM 839.2)	(651) 552-3927
Illinois Central RR Drawbridge (MM 579.9)	(563) 379-3856
Sabula RR Drawbridge (MM 535)	(563) 687-2402
Clinton RR Drawbridge (MM 518)	(563) 244-3287
Crescent RR Drawbridge (MM 481.4)	(309) 345-6348
Ft. Madison RR Drawbridge (MM 383.9)	(319) 376-4126
Keokuk RR Drawbridge (MM 364)	(319) 795-7249

UMR Contact List	
Hannibal RR Drawbridge (MM 309.9)	(573) 231-1052
Louisiana RR Drawbridge (MM 282.1)	(816) 983-2167
Illinois Emergency Management Agency (IEMA)	
IEMA Telecommunications Center	(217) 782-7860 (800) 782-7860 (inside IL)
Iowa Homeland Security & Emergency Management (HLSEM)	
Duty Officer	(515) 979-2200 (515) 281-3231
Minnesota Emergency Management	
Minnesota Duty Officer	(800) 422-0798
Twin Cities Metro Area	(651) 649-5451 (651) 215-6952 (800) 627-3529
Missouri State Emergency Management Agency	
24-hour duty officer	(573) 751-2748 (800) 298-6289
Director – on Walker	(573) 526-9100
Wisconsin Emergency Management (WEM)	
Duty Officer	(800) 943-0003

Section 4 – Action Plan Tables

The actions to be taken during High Water, Low Water, High Current, and Ice conditions are described in the following Action Plan Tables.

This Information is Applicable to ALL Tables

Issue advisories (e.g., BNM, LNM, MSIB, and/or AIS-Geographic Notice) to indicate extreme low water, high water, high flow, or ice conditions. Per 33 CFR § 165.20, USCG may establish safety zones "for safety or environmental purposes, access is limited to authorized persons, vehicles, or vessels. It may be stationary and described by fixed limits or it may be described as a zone around a vessel in motion." A safety zone may be initiated by the USCG or by any person under 33 CFR § 165.5.

In the event of an unexpected river closure, the following steps should be considered prior to reopening the river as appropriate:

- Conduct test tows if necessary for potential problem areas.
- Develop and initiate recovery plan to clear the queue.
- USCG and USACE will typically reset buoys in those narrow channel locations within reach and continue an increased level of channel reconnaissance to ensure vessel traffic is able to transit safely. USCG, USACE, and RIAC will coordinate vessel navigation protocols in situations where channel widths are temporarily reduced below normal operating standards.
- USCG and USACE will coordinate the use of electronic aids to navigation (e-ATON),[1] particularly in areas of emergent shoaling.
- RIAC will create/manage a queue of vessels meeting the maximum possible safe depth for northbound and southbound traffic.
- Consider draft limits, tow sizes, and helper boats.
- Evaluate fleet dimensions.
- Be aware of shifting channels.

[1] e-ATON are digital systems that enhance traditional physical ATONs. e-ATON provide navigational information using technologies such as AIS beacons, GPS, and digital charting systems. E-ATONs can transmit real-time data on location, weather conditions, tides, and hazards directly to vessels' navigation systems, increasing navigational accuracy and safety.

- Emergency dredging may be required at some locations.

All the phases and actions listed in the tables below can be modified based on coordination between the USCG, USACE, and industry.

Vessels equipped with Azipods (“Z Drive”) may generally be considered to have 20 percent more than their actual horsepower rating for DOWN BOUND tows.

ACTION PLAN TABLE 1 – HIGH WATER

This table contains the actions to be followed as the water rises to specific levels set for each zone. As the phases change from Normal to Watch, Action, and then Recovery, the following procedures apply to ALL zones. Specific phase trigger points, unique concerns, and additional actions for specific zones are listed in Table 1a.

- **Normal Operations (Rising Water)**
  - Monitor river gauges frequently
  - As stage rises toward flood stage, consider the need to initiate communications plan (refer to Section 3)
- **High Water (Watch Phase)**
  - Initiate communications plan (refer to Section 3)
  - Issue advisory that indicates high water and drift potential
  - Issue advisory that all tow boat operators should be experienced in high water operations
  - Discuss mooring arrangements, dangers of down-streaming, and bridge clearance issues
  - Advise the use of caution and minimization of wake
  - Consider tow restrictions and HP requirements
  - Consider the use of AIS-Geographic Notices to alert mariners to areas of high water
  - Consider issuance of advisories (BNM, MSIB) for river closure and no wake thresholds
- **High Water (Action Phase) [Zone 28] / Extreme High Water (Action Phase) [Zones 2 – 27, 29 – 33]**
  - Continue watch phase requirements
  - Analyze high current reports, flood fighting reports, impacted river reaches, towboat positions, and levee conditions
  - Advise mariners to pre-identify lay-up positions in case of a river closure
  - Consider establishing Safety Zone to close river. If established, use BNM, MSIB, and/or AIS-Geographic Notices to inform mariners. Consider issuing press releases and distributing MSIBs to State/County EOC and State Boating Law Administrators to ensure awareness of recreational boaters
  - Consider issuing press release and/or establishing a Joint Information Center and consider establishing an Incident Command Post
  - Minimize speed to avoid wake and favor the center of the channel. Exercise caution in passing/meeting situations
  - Discourage or prohibit recreational vessel traffic
  - Prohibit laying up on levees
  - Allow local fleeting to continue, with tow boats attending fleets at all times
  - Advise caution due to swift current
- **High Water (Recovery Phase)**
  - Consider removing action phase requirements and analyze watch phase requirements for continued validity
  - Analyze high current reports, flood fighting reports, impacted river reaches, towboat positions, and levee conditions
  - Determine which action/advisories need to remain in place or can be removed
  - Consider the use of AIS broadcasted electronic aids to navigation and/or geographic notices in areas of emergent shoaling
  - Monitor conditions related to Safety Zone necessity

ACTION PLAN TABLE 1 – HIGH WATER

- Update / issue advisory to indicate high water and use of caution
- Report hazardous conditions to appropriate Coast Guard office (refer to Sections 2 & 3)
- Monitor river gauges frequently
- If stage rises, consider the need to initiate communications plan (refer to Section 3)

- **Normal Operations (Falling / Stable Water)**
  - Issue final advisory that indicates a return to Normal Operations

ACTION PLAN TABLE 1a – HIGH WATER					
CRITICAL AREA DESCRIPTION	**TRIGGER READING CAIRO GAUGE**	**TREND**	**DESCRIPTION**	**PHASE**	**ACTION**
UPPER MISSISSIPPI RIVER **Zone 33** **Cairo Point Vicinity Miles 0 to 0.3** Reference Gauge: Cairo (CIRI2) MM 979.5 Ohio River **CAIRO GAUGE READING OFFICE:** 901-544-3634					**Zone 33 doesn't encounter high water conditions**

ACTION PLAN TABLE 1a – HIGH WATER					
CRITICAL AREA DESCRIPTION	**TRIGGER READING CAIRO GAUGE**	**TREND**	**DESCRIPTION**	**PHASE**	**ACTION**
UPPER MISSISSIPPI RIVER **Zone 32** **Cairo (60/62) Bridge** **Miles 0.4 to 1.3** Reference Gauge: Cairo (CIRI2) MM 979.5 Ohio River Flood Stage: 40’ **BRIDGE DATA**: HORIZONTAL CHANNEL SPAN CLEARANCE - 675’ VERTICAL CLEARANCE – 114.2’ MINUS CAIRO GAUGE **OTHER USEFUL DATA:** THE CAPE GIRARDEAU GAUGE CAN BE COMPARED TO THE CAIRO GAUGE TO DETERMINE HAZARDOUS CONDTIONS / FLOWS. SIMILAR CONDITIONS EXIST FOR THE LOWER OHIO RIVER BRIDGES FOR VESSELS TRANSITING DOWNBOUND. UNDER THESE CONDTIONS MARINERS SHOULD NAVIGATE AT SLOWEST SAFE SPEED. HIGH CONSEQUENCE ALLISIONS MAY OCCUR IN THIS AREA UNDER HIGH WATER CONDITIONS RESULTING IN HIGH CONSEQUENCE MARINE CASUALTIES AND VESSEL SINKINGS.	35’0” & below	Rising	Normal Operations	n/a	Operations normal.
	35’0”	Rising & projected to continue rising rapidly	High Current	Watch	MSU Paducah contacts RIAC Committee Chairman to discuss overall river conditions and need for Safety Advisory SMIB in area.
	38’0”	Rising	High Current	Watch	SOHV CC initiates Safety Advisory SMIB. Fleet managers secure fleeting areas.
	39’0”	Rising	Very High Current	Action	Safety Advisory in effect. Hold RIAC Committee conference call w/MSU Paducah to discuss HP and tow size recommendations and/or use of assist vessel and placing red flag barges in a protected area in the tow. MSU Paducah contacts fleet managers to determine precautions taken by fleeting area managers.
	40’0” & above	Rising	Very High Current	Action	CG MSU Paducah considers implementation of Safety Zone. Hold RIAC Committee conference call w/MSU Paducah. Consider coordination of vessel traffic on a vessel-by-vessel basis and/or assist vessels. Vessels may experience delays. Fleet managers secure fleeting areas. Note: **At 49’ on Cairo gauge, consult Birds Point Floodway Plan.** At 56’ on Cairo gauge, CG requested on scene.
	39’0”	Falling	Very High Current	Recovery	MSU Paducah cancels Safety Zone, if implemented, and SOHV CC reissues Safety Advisory SMIB; indicate swift currents, report hazardous conditions to Coast Guard. Hold RIAC Committee conference call w/MSU Paducah to discuss falling river conditions and need for any vessel restrictions.

ACTION PLAN TABLE 1a – HIGH WATER					
UPPER MISSISSIPPI RIVER **Zone 32 Cont.** **Cairo (60/62) Bridge** **Miles 0.4 to 1.3** **BIRDS POINT FLOOD PLAIN OFFICE:** 901-544-3401 **CAIRO GAUGE READING OFFICE:** 901-544-3634	38’0”	Falling	Very High Current	Recovery	Safety Advisory in effect. Consider holding RIAC Committee conference call w/MSU Paducah to discuss overall river conditions and continued need for safety advisory.
	35’0”	Falling	High Current	Recovery	Cancel Safety Advisory SMIB.
	35’0” & below	Falling	Normal Operations	n/a	Operations normal.

ACTION PLAN TABLE 1a – HIGH WATER					
CRITICAL AREA DESCRIPTION	**TRIGGER READING**	**TREND**	**DESCRIPTION**	**PHASE**	**ACTION**
UPPER MISSISSIPPI RIVER **Zone 31** **Grays point & Thebes RR Bridge** **Miles 1.4 to 43.1** Reference Gauge: Cape Girardeau (CPGM7) MM 51.9 Flood Stage: 32’ HORIZONTAL CHANNEL SPAN CLEARANCE - 651’ VERTICAL CLEARANCE – 105.2’ MINUS THEBES GAUGE **OTHER USEFUL DATA:** INDUSTRY BEST PRACTICE IS 240HP PER BARGE. TRANSITS THROUGH BRIDGE ARE ONE WAY ONLY. VESSELS MAY EXPERIENCE SET WHILE NAVIGATING GRAYS POINT AND CHANNEL SPAN OF THE THEBES RAILROAD BRIDGE. DURING HIGH WATER MARINERS ARE ADVISED TO NAVIGATE THIS AREA AT SLOWEST SAFE SPEED AND EXERCISE EXTREME CAUTION DUE TO POTENTIAL OUTDRAFTS.	<12’0” – 20’0”	Rising	Normal Operations	n/a	Operations Normal.
	20’0”	Rising & projected to continue rising rapidly	Normal Operations	Watch	MSU Paducah contacts RIAC Committee Chairman to discuss overall river conditions & potential for reaching 25’0”. Discuss currents, drift, any reports of hazardous conditions & fleeting area concerns/issues and necessity for full blown call.
	25’	Rising	High Water 27’-Flood	Action	SOHV CC initiates a Safety Advisory SMIB; indicate possibility of swift currents, increased drift, report hazardous conditions and off station buoys or inoperable lights to the Coast Guard. Hold RIAC Committee conference call w/MSU Paducah to discuss buoys, lights, & relative levels at St. Louis, Cape G, & Cairo. Call SOHV WWM to determine buoy tender support if needed. Notify levee & fleeting area managers.
	29’0” & above	Rising	High Water	Action	Hold RIAC Committee conference call w/MSU Paducah. Assess need for daylight/visibility restrictions. Buoys on station, range light operable, bridge lights, drift, expected rise in 24 hours. Contact Cape G Flood Plain Office. Safety Advisory in effect.
	33’0”	Rising	Extreme High Water 35’-Moderate Flood	Action	Hold RIAC Committee conference call w/MSU Paducah & USACE. Assess need for experienced wheelmen w/successful handling in current conditions, placing red flag barges in protected area of tow, HP needs, buoys on station, range light operable, bridge lights, drift. Discuss levee concerns and possible future actions. Safety Advisory (See Enclosure) in effect at 33’ with restriction in place for night time operations limiting tows to 140’ wide.

ACTION PLAN TABLE 1a – HIGH WATER					
UPPER MISSISSIPPI RIVER **Zone 31 Cont.** **Grays point & Thebes RR Bridge** **Miles 1.4 to 43.1** **CAPE GIRARDEAU FLOOD PLAIN OFFICE:** 573-339-6351 or 573-339-6760 (information on flood walls & pump stations)	38’0” – 42’0”	Rising	Extreme High Water 40’-Major Flood	Action	USACE St. Louis EOC stands up and conducts twice daily briefs at 38’ to discuss potential for rising river stage. If river forecast predicts reaching 45’, USACE will initiate discussions w/CG for river closures at 45’. Hold RIAC conference call w/MSU Paducah & USACE to discuss reducing wake and mitigate risk, as well as address traffic management concerns. Safety Advisory (See Enclosure) in effect at 40’ with restriction in place for nighttime operations limiting tows to 140’ wide x 600’ long.
	42’0” – 48’0”	Rising	Extreme High Water	Action	USACE St. Louis EOC deploys flood fight teams at 42’ to closely monitor levee conditions and report concerns of wakes on levee design limitations. USACE expects river closure to protect levees at 45’ and rising. Hold RIAC conference call w/MSU Paducah & USACE to discuss concerns w/high water & levee integrity. Activate MTSRU to manage vessel traffic/queue. Safety Zone (See Enclosure) in effect at 45’ if river is closed. Safety Advisory (See Enclosure) remains in effect until river stages fall below 40’ if the Safety Zone is not put into place.
	40’	Falling	Extreme High Water	Action	Hold RIAC Committee conference call w/MSU Paducah & USACE. Continue discussion on traffic management as well as need for critical buoys. Safety Advisory (See Enclosure) in effect with restriction in place for nighttime operations limiting tows to 140’ wide x 600’ long until river stages fall below 40’. Once river stages fall below 40’, Safety Advisory (See Enclosure) in effect and will last until river stages fall below 33’.
	29’0”	Falling	High Water	Action	Safety Advisory in effect. Consider holding RIAC Committee conference call w/MSU Paducah. Discuss relative levels at St. Louis, Cape G, & Cairo and impact on vessels/tows.
	25’0”	Falling	High Water	Recovery	Cancel Safety Advisory SMIB. Notify RIAC.
	12’0” - 20’0”	Falling	Normal Operations	n/a	Operations Normal.

ACTION PLAN TABLE 1a – HIGH WATER					
CRITICAL LOCATION DESCRIPTION	**TRIGGER READING**	**TREND**	**DESCRIPTION**	**PHASE**	**ACTION**
Upper Mississippi River **Zone 30** **Chester Highway Bridge** **Miles 43.2 to 109.8** Reference Gauge: Chester (CHSI2) MM 109.6 Flood Stage: 27’ **OTHER USEFUL DATA:** DURING HIGH WATER CONDITIONS VESSELS MAY EXPERIENCE SET WHILE NAVIGATING CHANNEL SPAN OF THE CHESTER HIGHWAY BRIDGE. DURING HIGH CURRENT AND HIGH WATER MARINERS ARE ADVISED TO NAVIGATE THIS AREA AT SLOWEST SAFE SPEED AND EXERCISE EXTREME CAUTION DUE TO POTENTIAL OUTDRAFTS.	<12’0”- 18’0”	Rising	Normal Operations	n/a	Operations Normal.
	18’0”	Rising & projected to rise rapidly	Normal Operations	Watch	MSU Paducah contacts RIAC Committee Chairman to discuss overall river conditions & potential for reaching 22’5”. Discuss currents, drift, any reports of hazardous conditions & fleeting area concerns/issues and necessity for a full blown call.
	22’5	Rising	High Water	Action	SOHV CC initiates a Safety Advisory SMIB; indicate possibility of swift currents, increased drift, report hazardous conditions and off station buoys or inoperable lights to Coast Guard. Hold RIAC Committee conference call w/MSU Paducah to discuss relative levels at St. Louis, Cape G, & Cairo. Notify levee & fleeting area managers.
	25’0” & above	Rising	High Water 27’-Flood	Action	Safety Advisory in effect. Hold RIAC Committee conference call w/MSU Paducah & USACE to discuss buoys on station, range & bridge lights, drift, expected rise in 24 hours and placing red flag barges in a protected area in the tow. Discuss levee concerns and possible future actions. Safety Advisory in effect.
	33’0” - 40’0”	Rising	Extreme High Water 35’-Moderate Flood	Action	USACE St. Louis EOC stands up and conducts 2 daily briefs at 33’ to discuss potential for rising river stage. If river forecast predicts reaching 43’, USACE will initiate discussions w/CG for river closures. Hold RIAC Committee conference call w/MSU Paducah & USACE to discuss tow size restrictions to help reduce wake and mitigate risk, levee integrity as well as address traffic management concerns.
	40’0” - 46’0”	Rising	Extreme High Water 40’-Major Flood	Action	USACE St. Louis EOC deploys flood fight teams at 40’ to closely monitor levee conditions and report concerns of wakes on levee design limitations. USACE expects river closure to protect levees at 43’ and rising. Hold RIAC conference call w/MSU Paducah & USACE to discuss concerns w/high water & levee integrity. Activate MTSRU to manage vessel traffic/queue.

ACTION PLAN TABLE 1a – HIGH WATER					
Upper Mississippi River **Zone 30 Cont.** **Chester Highway Bridge** **Miles 43.2 to 109.8** **CAPE GIRARDEAU FLOOD PLAIN OFFICE:** 573-339-6351 or 573-339-6760 (information on flood walls & pump stations	25’0”	Falling	Extreme High Water	Action	Safety Advisory in effect. Consider holding RIAC phone conference call. Discuss relative levels at St. Louis, Cape G, & Cairo and impact on vessels/tows.
	22’5”	Falling	High Water	Recovery	Cancel Safety Advisory SMIB. Notify RIAC.
	12’0” – 18’0”	Falling	Normal Operations	n/a	Operations Normal

ACTION PLAN TABLE 1a – HIGH WATER					
CRITICAL LOCATION DESCRIPTION	**TRIGGER READING**	**TREND**	**DESCRIPTION**	**PHASE**	**ACTION**
Upper Mississippi River **Zone 29** **Chester to Meramec River** **Miles 109.9 to 160.0** Reference Gauge: St. Louis (EADM7) MM 179.6 Flood Stage: 30'/409.94' MSL/NGVD MSL/NGVD Gauge Zero: 379.94'	20' and below	Rising	Normal Operations		No additional actions
	20' to 25'	Rising	High Water	Watch	Down streaming operations are not recommended unless the vessel is equal to or greater than 75 feet in length and the vessel has a minimum of 1800 horsepower.
	25' to 45'	Rising	Extreme High Water	Action	No additional actions
	45' and above	Rising	Extreme High Water	Action	Consider closure until St. Louis gauge drops below 45' or conditions warrant reopening the river. Create plan for reopening river including RIAC management of vessel queue.
	45' to 25'	Stable or Falling	Extreme High Water	Recovery	Evaluate river conditions for river reopening. Initiate RIAC's plan for clearing the vessel queue.
	25' to 20'	Falling	High Water	Recovery	No additional actions
	20' and below	Falling	Normal Operations		No additional actions

ACTION PLAN TABLE 1a – HIGH WATER					
CRITICAL LOCATION DESCRIPTION	**TRIGGER READING**	**TREND**	**DESCRIPTION**	**PHASE**	**ACTION**
Upper Mississippi River **Zone 28** **Port of St. Louis Miles 160.1 to 185.4** Reference Gauge: St. Louis (EADM7) MM 179.6 Flood Stage: 30'/409.94' MSL/NGVD MSL/NGVD Gauge Zero: 379.94'	20' and below	Rising	Normal Operations		No additional actions
	20' to 25'	Rising	High Water	Watch	Down streaming operations are not recommended unless the vessel is equal to or greater than 75 feet in length and the vessel has a minimum of 1800 horsepower.
	25' to 30'	Rising	High Water	Action	For the St. Louis Harbor (between MacArthur Bridge and Chain of Rocks Canal, MM 179.0 – 184.0): • Consider establishing a Safety Zone • Southbound tows greater than 600' in length, excluding the towboat, should limit transit to daylight hours only. • All towing vessels should have a minimum of 250 horsepower for each loaded barge and should proceed at the slowest safe operating speed based on conditions. A loaded barge is considered to be a barge with up to 2,000 tons of cargo. If a towing vessel has barges in tow loaded to more than 2,000 tons it should have a minimum of 250 horsepower for every 2,000 tons of cargo.
	30' to 38'	Rising	Extreme High Water	Action	Monitor fleeting areas and mooring lines/arrangements (consider doubling up), review anchoring requirements, have towboat attend fleets at all times, coordinate with adjacent facilities/fleet boats for assistance in event of break-away. Northbound tows must have enough horsepower to maintain a minimum speed of 3 kts on approach to the St. Louis Harbor bridges. Assess bridge clearances in advance, favor center of channel and prohibit laying up on levees. It is recommended all towing vessels have a pilot onboard with recent high water experience with similar size tows through the St. Louis Harbor bridges.

					All towboats are restricted from carrying barges on the "hip."
ACTION PLAN TABLE 1a – HIGH WATER					
Upper Mississippi River **Zone 28 cont.** **Port of St. Louis Miles 160.1 to 185.4**	38' and above	Rising	Extreme High Water	Action	Consider closure of St. Louis Harbor (between MacArthur Bridge and Chain of Rocks Canal, MM 179.0 – 184.0) at 38.0'. Continue to allow monitoring of fleets and shifting of barges as needed to maintain port safety. A closure point other than 38.0' may be considered if prevailing navigation conditions, rise/fall rates of the river, forecasted crest height, and status of Lock 27 allow for continued safe navigation through the St. Louis Harbor. At 45' and above, consider closure of entire zone for levee protection. Allow fleet monitoring to continue and consider allowing crew servicing activities to continue. Create plan for reopening river including RIAC management of vessel queue.
	38' to 30'	Stable or Falling	Extreme High Water	Recovery	Consider prevailing navigation conditions, fall rate of river, forecasts, and status of Lock 27 to validate need for a safety zone. Initiate RIAC's plan for clearing the vessel queue. Continue Extreme High Water Action requirements.
	30' to 25'	Falling	High Water	Recovery	Continue High Water Action requirements.
	25' to 20'	Falling	High Water	Recovery	No additional actions
	20' and below	Falling	Normal operations		No additional actions

ACTION PLAN TABLE 1a – HIGH WATER					
CRITICAL LOCATION DESCRIPTION	**TRIGGER READING**	**TREND**	**DESCRIPTION**	**PHASE**	**ACTION**
Upper Mississippi River **Zone 27** **Pool 27** **Miles 185.5 to 200.4** Reference Gauge: St. Louis (EADM7) MM 179.6 Flood Stage: 30'/409.94' MSL/NGVD MSL/NGVD Gauge Zero: 350.0' L&D Closure: Reference 426 Stage: 38.5'/426.94' MSL	38' and below	Rising	Normal Operations		No additional actions
	38' to 40'	Rising	High Water	Watch	No additional actions
	40' and above	Rising	Extreme High Water	Action	No additional actions
	40' to 38'	Stable or Falling	High Water	Recovery	No additional actions
	38' to 25'	Falling	High Water	Recovery	No additional actions
	25' to 16'	Falling	Normal Operations	Recovery	No additional actions

ACTION PLAN TABLE 1a – HIGH WATER					
CRITICAL LOCATION DESCRIPTION	**TRIGGER READING**	**TREND**	**DESCRIPTION**	**PHASE**	**ACTION**
Upper Mississippi River **Zone 26** **Pool 26** **Miles 200.5 to 241.3** Reference Gauge: Mel Price Lock & Dam #26 Tailwater (ALN12) MM 200.5 Flood Stage: 21'/416.48' MSL/NGVD MSL/NGVD Gauge Zero: 395.48' L&D Closure: 34'/429.7' MSL	21' and below	Rising	Normal Operations		No additional actions
	21' to 36.5'	Rising	High Water	Watch	No additional actions
	36.5' and above	Rising	Extreme High Water	Action	No additional actions
	36.5' to 21'	Stable or Falling	High Water	Recovery	No additional actions
	21' and below	Falling	Normal Operations	Recovery	No additional actions

ACTION PLAN TABLE 1a – HIGH WATER					
CRITICAL LOCATION DESCRIPTION	**TRIGGER READING**	**TREND**	**DESCRIPTION**	**PHASE**	**ACTION**
Upper Mississippi River **Zone 25** **Pool 25** **Miles 241.4 to 273.3** Reference Gauge: Lock & Dam #25 Tailwater (CLKM7) MM 241.2 Flood Stage: 26'/433' MSL/NGVD MSL/NGVD Gauge Zero: 407.00' L&D Closure: 33.5'/440.49' MSL	26' and below	Rising	Normal Operations		No additional actions
	26' to 33.8'	Rising	High Water	Watch	No additional actions
	33.8' and above	Rising	Extreme High Water	Action	No additional actions
	33.8 to 26'	Stable or Falling	High Water	Recovery	No additional actions
	26' and below	Falling	Normal Operations	Recovery	No additional actions

ACTION PLAN TABLE 1a – HIGH WATER					
CRITICAL LOCATION DESCRIPTION	**TRIGGER READING**	**TREND**	**DESCRIPTION**	**PHASE**	**ACTION**
Upper Mississippi River **Zone 24** **Pool 24** **Miles 273.4 to 301.1** Reference Gauge: Lock & Dam #24 Tailwater (CLKM7) MM 273.24 Flood Stage: 25'/446.81' MSL/NGVD MSL/NGVD Gauge Zero: 421.81' L&D Closure: 32.5'/454.31' MSL Louisiana RR Drawbridge MM 282.1 Closure: 20.8'	25' and below	Rising	Normal Operations		No additional actions
	25' to 29'	Rising	High Water	Watch	No additional actions
	29' and above	Rising	Extreme High Water	Action	No additional actions
	29' to 25'	Stable or Falling	High Water	Recovery	No additional actions
	25' and below	Falling	Normal Operations	Recovery	No additional actions

High Water Zone 23 is N/A

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ACTION PLAN TABLE 1a – HIGH WATER					
CRITICAL LOCATION DESCRIPTION	**TRIGGER READING**	**TREND**	**DESCRIPTION**	**PHASE**	**ACTION**
Upper Mississippi River **Zone 22** **Pool 22** **Miles 301.2 to 324.8** Reference Gauge: Lock & Dam #22 (SVRM7) MM 301.2 Flood Stage: 16.0'/462.1' MSL MSL/NGVD Gauge Zero: 446.10' L&D Closure: 21.4'/467.5' MSL Hannibal RR Drawbridge Closure Stage: 25.5'	16' and below	Rising	Normal Operations		No additional actions
	16' to 21.4	Rising	High Water	Watch	No additional actions
	21.4' and above	Rising	Extreme High Water	Action	No additional actions
	21.4' to 16'	Stable or Falling	High Water	Recovery	No additional actions
	16' and below	Falling	Normal Operations	Recovery	No additional actions

ACTION PLAN TABLE 1a – HIGH WATER					
CRITICAL LOCATION DESCRIPTION	**TRIGGER READING**	**TREND**	**DESCRIPTION**	**PHASE**	**ACTION**
Upper Mississippi River **Zone 21** **Pool 21** **Miles 324.9 to 343.1** Reference Gauge: Lock & Dam #21 (QLD12) MM 324.9 Flood Stage: 17.0'/474.8' MSL MSL/NGVD Gauge Zero: 457.80' L&D Closure: 21.9'/479.7' MSL	17' and below	Rising	Normal Operations		No additional actions
	17' to 21.9'	Rising	High Water	Watch	No additional actions
	21.9' and above	Rising	Extreme High Water	Action	No additional actions
	21.9' to 17'	Stable or Falling	High Water	Recovery	No additional actions
	17' and below	Falling	Normal Operations	Recovery	No additional actions

ACTION PLAN TABLE 1a – HIGH WATER					
CRITICAL LOCATION DESCRIPTION	**TRIGGER READING**	**TREND**	**DESCRIPTION**	**PHASE**	**ACTION**
Upper Mississippi River **Zone 20** **Pool 20** **Miles 343.2 to 364.1** Reference Gauge: Lock & Dam #20 (CANM7) MM 343.2 Flood Stage: 14.0'/482.5' MSL MSL/NGVD Gauge Zero: 468.50' L&D Closure: 18.0'/486.5' MSL Keokuk RR Drawbridge MM 364 Closure: 21.3'	14' and below	Rising	Normal Operations		No additional actions
	14' to 16'	Rising	High Water	Watch	No additional actions
	16' and above	Rising	Extreme High Water	Action	No additional actions
	16' to 14'	Stable or Falling	High Water	Recovery	No additional actions
	14' and below	Falling	Normal Operations	Recovery	No additional actions

ACTION PLAN TABLE 1a – HIGH WATER					
CRITICAL LOCATION DESCRIPTION	**TRIGGER READING**	**TREND**	**DESCRIPTION**	**PHASE**	**ACTION**
Upper Mississippi River **Zone 19** **Pool 19** **Miles 364.2 to 410.4** Reference Gauge: Lock & Dam #19 (EOKI4) MM 364.2 Flood Stage: 16'/493.83' MSL MSL/NGVD Gauge Zero: 477.83' L&D Closure: 21.2'/499.03' MSL Ft. Madison RR Drawbridge Closure Stage: 15'	16' and below	Rising	Normal Operations		No additional actions
	16' to 18'	Rising	High Water	Watch	No additional actions
	18' and above	Rising	Extreme High Water	Action	No additional actions
	18' to 16'	Stable or Falling	High Water	Recovery	No additional actions
	16' and below	Falling	Normal Operations	Recovery	No additional actions

ACTION PLAN TABLE 1a – HIGH WATER					
CRITICAL LOCATION DESCRIPTION	**TRIGGER READING**	**TREND**	**DESCRIPTION**	**PHASE**	**ACTION**
Upper Mississippi River **Zone 18** **Pool 18** **Miles 410.5 to 437.0** Reference Gauge: Lock & Dam #18 (GLDI2) MM 410.5 Flood Stage: 10'/528.52' MSL MSL/NGVD Gauge Zero: 518.52' L&D Closure: 14.9'/533.42' MSL	10' and below	Rising	Normal Operations		No additional actions
	10' to 12'	Rising	High Water	Watch	No additional actions
	12' and above	Rising	Extreme High Water	Action	No additional actions
	12' to 10'	Stable or Falling	High Water	Recovery	No additional actions
	10' and below	Falling	Normal Operations	Recovery	No additional actions

ACTION PLAN TABLE 1a – HIGH WATER					
CRITICAL LOCATION DESCRIPTION	**TRIGGER READING**	**TREND**	**DESCRIPTION**	**PHASE**	**ACTION**
Upper Mississippi River **Zone 17** **Pool 17** **Miles 437.1 to 457.1** Reference Gauge: Lock & Dam #17 (NBOI2) MM 437.1 Flood Stage: 15'/541.7' MSL MSL/NGVD Gauge Zero: 526.70' L&D Closure: 18.1'/544.8' MSL	14' and below	Rising	Normal Operations		No additional actions
	14' to 16'	Rising	High Water	Watch	No additional actions
	16' and above	Rising	Extreme High Water	Action	No additional actions
	16' to 14'	Stable or Falling	High Water	Recovery	No additional actions
	14' and below	Falling	Normal Operations	Recovery	No additional actions

ACTION PLAN TABLE 1a – HIGH WATER					
CRITICAL LOCATION DESCRIPTION	**TRIGGER READING**	**TREND**	**DESCRIPTION**	**PHASE**	**ACTION**
Upper Mississippi River **Zone 16** **Pool 16** **Miles 457.2 to 482.8** Reference Gauge: Lock & Dam #16 (ILNI2) MM 457.2 Flood Stage: 15'/548.6' MSL MSL/NGVD Gauge Zero: 533.60' L&D Closure: 17'/550.6' MSL Crescent RR Drawbridge Closure Stage: 17.8'	15' and below	Rising	Normal Operations		No additional actions
	15' to 17'	Rising	High Water	Watch	No additional actions
	17' and above	Rising	Extreme High Water	Action	No additional actions
	17' to 15'	Stable or Falling	High Water	Recovery	No additional actions
	15' and below	Falling	Normal Operations	Recovery	No additional actions

ACTION PLAN TABLE 1a – HIGH WATER					
CRITICAL LOCATION DESCRIPTION	**TRIGGER READING**	**TREND**	**DESCRIPTION**	**PHASE**	**ACTION**
Upper Mississippi River **Zone 15** **Pool 15** **Miles 482.9 to 493.2** Reference Gauge: Lock & Dam #15 (RCKI2) MM 482.9 Flood Stage: 15'/557.5' MSL MSL/NGVD Gauge Zero: 542.50' L&D Closure: 20'/562.5' MSL	15' and below	Rising	Normal Operations		No additional actions
	15' to 17'	Rising	High Water	Watch	No additional actions
	17' and above	Rising	Extreme High Water	Action	No additional actions
	17' to 15'	Stable or Falling	High Water	Recovery	No additional actions
	15' and below	Falling	Normal Operations	Recovery	No additional actions

ACTION PLAN TABLE 1a – HIGH WATER					
CRITICAL LOCATION DESCRIPTION	**TRIGGER READING**	**TREND**	**DESCRIPTION**	**PHASE**	**ACTION**
Upper Mississippi River **Zone 14** **Pool 14** **Miles 493.3 to 522.3** Reference Gauge: Lock & Dam #14 (LECI4) MM 493.3 Flood Stage: 11'/568.08' MSL MSL/NGVD Gauge Zero: 557.08' L&D Closure: 14'/571.08' MSL Clinton RR Drawbridge MM 518 Closure 20.5'	11' and below	Rising	Normal Operations		No additional actions
	11' to 13'	Rising	High Water	Watch	No additional actions
	13' and above	Rising	Extreme High Water	Action	No additional actions
	13' to 11'	Stable or Falling	High Water	Recovery	No additional actions
	11' and below	Falling	Normal Operations	Recovery	No additional actions

ACTION PLAN TABLE 1a – HIGH WATER					
CRITICAL LOCATION DESCRIPTION	**TRIGGER READING**	**TREND**	**DESCRIPTION**	**PHASE**	**ACTION**
Upper Mississippi River **Zone 13** **Pool 13** **Miles 522.4 to 556.6** Reference Gauge: Lock & Dam #13 (FLTI2) MM 522.4 Flood Stage: 16'/584.7' MSL MSL/NGVD Gauge Zero: 568.70' L&D Closure: 19.0'/587.1' MSL Sabula RR Drawbridge MM 535 Closure: 25.9'	16' and below	Rising	Normal Operations		No additional actions
	16' to 18'	Rising	High Water	Watch	No additional actions
	18' and above	Rising	Extreme High Water	Action	No additional actions
	18' to 16'	Stable or Falling	High Water	Recovery	No additional actions
	16' and below	Falling	Normal Operations	Recovery	No additional actions

ACTION PLAN TABLE 1a – HIGH WATER					
CRITICAL LOCATION DESCRIPTION	**TRIGGER READING**	**TREND**	**DESCRIPTION**	**PHASE**	**ACTION**
Upper Mississippi River **Zone 12** **Pool 12** **Miles 556.7 to 582.9** Reference Gauge: Lock & Dam #12 (BLVI4) MM 556.7 Flood Stage: 17'/597.2' MSL MSL/NGVD Gauge Zero: 580.20' L&D Closure: 18.4'/598.6' MSL Illinois Central RR Drawbridge MM 579.9 Closure: 22.4'	17' and below	Rising	Normal Operations		No additional actions
	17' to 19'	Rising	High Water	Watch	No additional actions
	19' and above	Rising	Extreme High Water	Action	No additional actions
	19' to 17'	Stable or Falling	High Water	Recovery	No additional actions
	17' and below	Falling	Normal Operations	Recovery	No additional actions

ACTION PLAN TABLE 1a – HIGH WATER					
CRITICAL LOCATION DESCRIPTION	**TRIGGER READING**	**TREND**	**DESCRIPTION**	**PHASE**	**ACTION**
Upper Mississippi River **Zone 11** **Pool 11** **Miles 583.0 to 615.0** Reference Gauge: Lock & Dam #11 (DLDI4) MM 583.0 Flood Stage: 16'/604.2' MSL MSL/NGVD Gauge Zero: 588.20' L&D Closure: 20.8'/609.01' MSL	16' and below	Rising	Normal Operations		No additional actions
	16' to 18'	Rising	High Water	Watch	No additional actions
	18' and above	Rising	Extreme High Water	Action	No additional actions
	18' to 16'	Stable or Falling	High Water	Recovery	No additional actions
	16' and below	Falling	Normal Operations	Recovery	No additional actions

ACTION PLAN TABLE 1a – HIGH WATER					
CRITICAL LOCATION DESCRIPTION	**TRIGGER READING**	**TREND**	**DESCRIPTION**	**PHASE**	**ACTION**
Upper Mississippi River **Zone 10** **Pool 10** **Miles 615.1 to 647.8** Reference Gauge: Lock & Dam #10 Tailwater (GTTI4) MM 615.0 Flood Stage: 15’ NAVD88 Gauge Zero: 600.0’ NAVD88 MSL LCP:602.5’ L&D Closure: 238KCFS	15’ and below	Rising	Normal Operations		No additional actions
	15’ to 18’	Rising	High Water	Watch	No additional actions
	18’ and above	Rising	Extreme High Water	Action	No additional actions
	18’ to 15’	Stable or Falling	High Water	Recovery	No additional actions
	15’ to below	Falling	Normal Operations	Recovery	No additional actions

ACTION PLAN TABLE 1a – HIGH WATER					
CRITICAL LOCATION DESCRIPTION	**TRIGGER READING**	**TREND**	**DESCRIPTION**	**PHASE**	**ACTION**
Upper Mississippi River **Zone 9** **Pool 9** **Miles 647.9 to 679.1** Reference Gauge: Lock & Dam #9 Tailwater (LYNW3) MM 647.72 Flood Stage: 625' NAVD88 MSL LCP: 610.5' L&D Closure: 220KCFS	625' and below	Rising	Normal Operations		No additional actions
	625' to 628'	Rising	High Water	Watch	No additional actions
	628' and above	Rising	Extreme High Water	Action	No additional actions
	628' to 625.0'	Stable or Falling	High Water	Recovery	No additional actions
	625' and below	Falling	Normal Operations	Recovery	No additional actions

ACTION PLAN TABLE 1a – HIGH WATER					
CRITICAL LOCATION DESCRIPTION	**TRIGGER READING**	**TREND**	**DESCRIPTION**	**PHASE**	**ACTION**
Upper Mississippi River **Zone 8** **Pool 8** **Miles 679.2 to 702.4** Reference Gauge: Lock & Dam #8 Tailwater (GENW3) MM 679.02 Flood Stage: 631' NAVD88 MSL LCP: 619.3' L&D Closure: 225KCFS	634' and below	Rising	Normal Operations		No additional actions
	634' to 636'	Rising	High Water	Watch	No additional actions
	636' and above	Rising	Extreme High Water	Action	No additional actions
	636' to 634'	Stable or Falling	High Water	Recovery	No additional actions
	634' and below	Falling	Normal Operations	Recovery	No additional actions

ACTION PLAN TABLE 1a – HIGH WATER					
CRITICAL LOCATION DESCRIPTION	**TRIGGER READING**	**TREND**	**DESCRIPTION**	**PHASE**	**ACTION**
Upper Mississippi River **Zone 7** **Pool 7** **Miles 702.5 to 714.2** Reference Gauge: Lock & Dam #7 Tailwater (LCRM5) MM 702.24 Flood Stage: 641' NAVD88 MSL LCP: 630.3' L&D Closure: 235KCFS	641' and below	Rising	Normal Operations		No additional actions
	641 to 643'	Rising	High Water	Watch	No additional actions
	643' and above'	Rising	Extreme High Water	Action	No additional actions
	643' to 641.0'	Stable or Falling	High Water	Recovery	No additional actions
	641' and below	Falling	Normal Operations	Recovery	No additional actions

ACTION PLAN TABLE 1a – HIGH WATER					
CRITICAL LOCATION DESCRIPTION	**TRIGGER READING**	**TREND**	**DESCRIPTION**	**PHASE**	**ACTION**
Upper Mississippi River **Zone 6** **Pool 6** **Miles 714.3 to 728.5** Reference Gauge: Lock & Dam #6 Tailwater (TREW3) MM 714.1 Flood Stage: 647’ NAVD88 MSL LCP: 638.5’ L&D Closure: 200KCFS	647’ and below	Rising	Normal Operations		No additional actions
	647’ to 649’	Rising	High Water	Watch	No additional actions
	649’ and above	Rising	Extreme High Water	Action	A No additional actions
	649’ to 647’	Stable or Falling	High Water	Recovery	No additional actions
	647’ and below	Falling	Normal Operations	Recovery	No additional actions

ACTION PLAN TABLE 1a – HIGH WATER					
CRITICAL LOCATION DESCRIPTION	**TRIGGER READING**	**TREND**	**DESCRIPTION**	**PHASE**	**ACTION**
Upper Mississippi River **Zone 5A** **Pool 5A** **Miles 728.6 to 738.0** Reference Gauge: Lock & Dam #5A Tailwater (WIDM5) MM 728.28 Flood Stage: 655’ NAVD88 MSL LCP: 645’ L&D Closure: 183KCFS	653’ and below	Rising	Normal Operations		No additional actions
	653’ to 655’	Rising	High Water	Watch	No additional actions
	655’ and above	Rising	Extreme High Water	Action	No additional actions
	655’ to 653’	Stable or Falling	High Water	Recovery	No additional actions
	653’ and below	Falling	Normal Operations	Recovery	No additional actions

ACTION PLAN TABLE 1a – HIGH WATER					
CRITICAL LOCATION DESCRIPTION	**TRIGGER READING**	**TREND**	**DESCRIPTION**	**PHASE**	**ACTION**
Upper Mississippi River **Zone 5** **Pool 5** **Miles 738.1 to 752.7** Reference Gauge: Lock & Dam #5 Tailwater (MSCM5) MM 737.90 Flood Stage: 660' NAVD88 MSL LCP: 650.6' L&D Closure: 188KCFS	665' and below	Rising	Normal Operations		No additional actions
	665' to 667'	Rising	High Water	Watch	No additional actions
	667' and above	Rising	Extreme High Water	Action	No additional actions
	667' to 665'	Stable or Falling	High Water	Recovery	No additional actions
	665'	Falling	Normal Operations	Recovery	No additional actions

ACTION PLAN TABLE 1a – HIGH WATER					
CRITICAL LOCATION DESCRIPTION	**TRIGGER READING**	**TREND**	**DESCRIPTION**	**PHASE**	**ACTION**
Upper Mississippi River **Zone 4** **Pool 4** **Miles 752.8 to 796.8** Reference Gauge: Lock & Dam #4 Tailwater (ALMW3) MM 752.58 Flood Stage: 16’ NAVD88 MSL LCP: 659.6’ NAVD88 Gauge Zero: 656’ L&D Closure: 160KCFS	16’ and below	Rising	Normal Operations		No additional actions
	16’ to 18’	Rising	High Water	Watch	No additional actions
	18’ and above	Rising	Extreme High Water	Action	No additional actions
	18’ to 16’	Stable or Falling	High Water	Recovery	No additional actions
	16’	Falling	Normal Operations	Recovery	No additional actions

ACTION PLAN TABLE 1a – HIGH WATER					
CRITICAL LOCATION DESCRIPTION	**TRIGGER READING**	**TREND**	**DESCRIPTION**	**PHASE**	**ACTION**
Upper Mississippi River **Zone 3** **Pool 3** **Miles 796.9 to 815.1** Reference Gauge: St. Paul (STPM5) MM 839.2 Flood Stage: 14’ NAVD88 MSL LCP: 666.6’ L&D Closure: 125KCFS	14’ and below	Rising	Normal Operations		No additional actions
	14’ to 17’	Rising	High Water	Watch	No additional actions
	17’ and above	Rising	Extreme High Water	Action	No additional actions
	17’ to 14’	Stable or Falling	High Water	Recovery	No additional actions
	14’ and below	Falling	Normal Operations	Recovery	No additional actions

ACTION PLAN TABLE 1a – HIGH WATER					
CRITICAL LOCATION DESCRIPTION	**TRIGGER READING**	**TREND**	**DESCRIPTION**	**PHASE**	**ACTION**
Upper Mississippi River **Zone 2** **Pool 2** **Miles 815.2 to 847.5** Reference Gauge: St. Paul (STPM5) MM 839.2 Flood Stage: 14’ L&D Closure: 116KCFS Chicago & North Western RR Drawbridge MM 839.2 Closure: 19.75’ Omaha RR Bridge MM 841.4 Closure: 19.0’	14’ and below	Rising	Normal Operations		No additional actions
	14’ to 17’	Rising	High Water	Watch	No additional actions
	17’ and above	Rising	Extreme High Water	Action	No additional actions
	17’ to 14’	Stable or Falling	High Water	Recovery	No additional actions
	14’ and below	Falling	Normal Operations	Recovery	No additional actions

High Water Zone 1 is N/A

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ACTION PLAN TABLE 2 – HIGH FLOW						
CRITICAL AREA DESCRIPTION	**TRIGGER READING**	**TREND**	**TRIGGER FLOW**	**DESCRIPTION**	**PHASE**	**ACTION**
Upper Mississippi River **Zones 33-28** **Miles 0 to 185.4**		Rising		Normal operations	Watch	Monitor flow and traffic. Continue standard communication practices to keep a good understanding of flow conditions.
		Rising		High Flows	Watch	Establish or monitor normal communications between USACE, MWRD, Industry and USCG as needed to discuss specific flow problem(s), potential impacts and possible solutions.
		Rising	504,000 CFS	Very High Flows -	Action	Continue normal communications (e-mails, conference calls or others) – consider establishing notices, advisories and/or safety zones as needed using standard communication links between USACE, MWRD, Industry (RIAC/fleeters), and USCG. Consider press release and/or Joint Information Center, and formation of Incident Command Post if needed.
		Falling		High Flows	Recovery	Continue normal communications between USACE, MWRD, Industry, and USCG.
		Falling		Normal operations	Watch	Monitor flow and traffic. Continue standard communication practices to keep a good understanding of flow conditions.

ACTION PLAN TABLE 2 – HIGH FLOW						
CRITICAL AREA DESCRIPTION	**TRIGGER READING**	**TREND**	**TRIGGER FLOW**	**DESCRIPTION**	**PHASE**	**ACTION**
Upper Mississippi River **Zones 27 - 2** **Miles 185.5 to 847.5**				High flow conditions are dealt with under normal operating conditions regarding out draft signs (refer to specific information for zone 1 on p36) at lock approaches and different operating conditions and approach methods at bridges and bend ways. Erosion/scour conditions along flood control levees during high flows are very site specific and are integrated into High Water conditions.		Consider use of assist boats when out draft conditions exist Some locks display out draft warning signs during certain flow conditions; this is performed as part of normal operations at the navigation locks and dams

ACTION PLAN TABLE 2 – HIGH FLOW						
CRITICAL AREA DESCRIPTION	**TRIGGER READING**	**TREND**	**TRIGGER FLOW**	**DESCRIPTION**	**PHASE**	**ACTION**
Upper Mississippi River **Zone 1** **Miles 847.6 to 857.6**		Rising	18,000 CFS measured at Upper St. Anthony Falls	Normal Operations		Monitor flow and traffic. Continue standard communication practices to keep a good understanding of flow conditions.
		Rising	20,000 CFS measured at Upper St. Anthony Falls	High Flows Out draft indicators are placed out at Lower St. Anthony Falls.	Watch	Establish or monitor normal communications between USACE, Industry and USCG as needed to discuss specific flow problem(s), potential impacts and possible solutions. At Lock and Dam #1, the out draft indicator will be turned on with 0.2 foot of flow over the rubber dam whether it is inflated or deflated.
		Rising	30,000 CFS measured at Upper St. Anthony Falls Lock closed at 40,000 CFS	Very High Flows Recreational traffic is halted through lock and Dams at 30,000 CFS	Action	Continue normal communications (e-mails, conference calls or others) – consider establishing notices, advisories and/or safety zones as needed using standard communication links between USACE, Industry (IRCA/RIAC/fleeters), and USCG. Consider press release and/or Joint Information Center and formation of Incident Command Post if needed.
		Falling	Below 30,000 CFS measured at Upper St. Anthony Falls	High Flows	Recovery	Consider reopening the lock to recreational traffic. Continue normal communications between USACE, MWRD, Industry (IRCA) and USCG.
		Falling	Below 20,000 CFS measured at Upper St. Anthony Falls	Normal Operations		Monitor flow and traffic. Continue standard communication practices to keep a good understanding of flow conditions.

ACTION PLAN TABLE 3 – LOW WATER					
CRITICAL AREA DESCRIPTION	**TRIGGER READING CAIRO GAUGE**	**TREND**	**DESCRIPTION**	**PHASE**	**ACTION**
UPPER MISSISSIPPI RIVER **Zone 33** **Cairo Point Vicinity Miles 0 to 0.3** Reference Gauge: Cairo (CIRI2) MM 979.5 Ohio River **OTHER USEFUL DATA:** THIS AREA EXPERIENCES EXCESSIVE SHOALING RESULTING IN VESSEL GROUNDINGS WITHIN THE CHANNEL TYPICALLY ALONG THE RIGHT DESCENDING BANK. DURING LOW WATER GROUNDINGS MAY INCREASE SIGNIFICANTLY. VESSEL DRAFTS SHOULD BE CAREFULLY WATCHED WHEN TRANSITING THIS AREA DURING LOW WATER CONDITIONS. MARINERS ARE ADVISED TO NAVIGATE THIS AREA WHILE ADHEREING TO THE CENTER OF THE CHANNEL DURING LOW WATER. EMERGENCY CONDITIONS EXIST WHEN THE CAIRO GAUGE FALLS BELOW 9'0" FOR AN EXTENDED PERIOD OF TIME. **CAIRO GAUGE READING OFFICE:** 901-544-3634	11'0" and above	Falling	Normal Operations	Watch	Operations Normal. USACE, ICE Committee Chairman & MSU Paducah monitor Cairo Gauge. Mariners report all missing ATON to SOHV CC.
	10'0"	Falling	Low Water	Watch	SOHV CC issues Safety Advisory SMIB.
	9'5"	Falling	Low Water	Watch	Consider ICE Committee conference call w/USACE, MSU Paducah & CGC Chippewa. Evaluate the need for draft and/or tow sizes restrictions and placing red flag barges in a protected area in the tow under falling river condition, surveys & dredging and ATON in area. Safety Advisory SMIB in effect.
	9'0"	Falling	Extreme Low Water	Action	Hold ICE Committee conference call w/USACE, MSU Paducah & CGC Chippewa to discuss buoy tender on scene and USACE potential dredging plan.
	8'8"	Falling	Extreme Low Water	Action	Hold ICE Committee conference call w/USACE, MSU Paducah & CGC Chippewa as needed to identify specific critical low water areas and review survey results. Assess need for potential Safety Zone.
	8'3" and below	Falling	Restrict Navigation	Action	Hold ICE Committee conference call w/ MSU Paducah to further discuss need for a Safety Zone due to extreme low water. Vessels will experience delays; activate MTSRU.
	8'3" and below	Rising	Restrict Navigation	Recovery	Safety Zone may be in effect. Hold ICE Committee conference call w/ MSU Paducah to discuss conditions that need to be met to cancel Safety Zone. Vessels will experience delays.
	8'8"	Rising	Extreme Low Water	Recovery	MSU Paducah cancels Safety Zone if implemented. SOHV CC reissues Safety Advisory SMIB. Hold ICE Committee conference call w/ MSU Paducah to evaluate need for draft and/or tow size restrictions.
	9'0"	Rising	Extreme Low Water	Recovery	CG, Industry chairman, & USACE monitor Cairo gauge. Hold ICE Committee conference call. Discuss draft and tow size recommendations if any under rising river conditions. Safety Advisory in effect.

ACTION PLAN TABLE 3 – LOW WATER					
UPPER MISSISSIPPI RIVER **Zone 33 Cont.** **Cairo Point Vicinity Miles 0 to 0.3**	9’5”	Rising	Low Water	Recovery	Hold ICE Committee conference call w/USACE, MSU Paducah & CGC Chippewa. Evaluate the need for draft and/or tow sizes restrictions under rising river condition, surveys & dredging and ATON in area. Safety Advisory SMIB in effect.
	10’0”	Rising	Low Water	Recovery	Hold ICE Committee conference call w/ MSU Paducah &USACE to discuss need for continued restrictions if implemented and any survey results supporting decision.
	11’0” and above	Rising	Normal Operations	Recovery	Operations Normal. USACE, ICE Committee Chairman & MSU Paducah monitor Cairo Gauge. Mariners report all missing ATON to SOHV CC.

ACTION PLAN TABLE 3 – LOW WATER						
CRITICAL REACH DESCRIPTION	**THEBES TRIGGER READING**	**TREND**	**DEPTH OVER PINNACLES IN THEBES 300' CHANNEL**	**DESCRIPTION**	**PHASE**	**ACTION**
UPPER MISSISSIPPI RIVER	10'	Falling	18.5'	Normal Operations	Watch	Monitor channel conditions and traffic. Consider initiating communications plan. USACE to plan additional channel surveys and obtain river forecasts. Prioritize dredging, aids to navigation (buoys), and data collection. Realign buoys at Thebes and Grand Tower as a precautionary measure, if necessary.
Zone 32-30 Miles 0.4 to 109.8 Reference Gauge: Thebes (THBI2) MM 44 Low Water Reference Plane for Thebes Bridge: 4.8'	5'	Falling	13.5'	Low Water Channel narrows in various conditions	Action	Communications between USACE, USCG and RIAC as needed to discuss problem areas, potential impacts and possible solutions. Issue advisories to indicate low water between UMR miles 0 to 109.9. Consider tow size and draft recommendations and placing red flag barges in a protected area in the tow in coordination with RIAC USACE initiates increased channel surveys, monitors potential problem areas, and provides updates on dredging actions. USACE assesses boat ramp availability for survey vessel access. Additional rock encroaches on the channel at multiple locations between MM 38.5 and 46 as well as between MM 79.0and 81.0 as the river continues to fall. USACE provides most recent survey data to USCG and industry for buoy placement and operational decision making. Industry considers moving deep draft barges out of lower reaches of UMR. Based on river forecast, evaluate need for press release, Joint Information Center, MTSRU, Unified Command/Incident Command Post, vessel reporting scheme, and/or vessel management system. Request inorganic resources if necessary.

ACTION PLAN TABLE 3 – LOW WATER						
UPPER MISSISSIPPI RIVER **Zone 32-30 Cont. Miles 0.4 to 109.8**	2’	Falling	10.5’	Extreme Low Water Channel continues to narrow and channel depth decreases	Action	Issue advisories or establish safety zones, if necessary, to indicate extreme low water between UMR miles 0 and 109.9. Consult with RIAC for one way traffic, draft limits, tow size restrictions, and industry desire for marking channel. Reiterate for mariners to be mindful of speed and wake near fleeting areas. Reset buoys as needed throughout UMR. USACE will continue increased channel reconnaissance. Emergency dredging may be required at some locations. Consider press release, Joint Information Center, MTSRU, Unified Command/Incident Command Post, vessel reporting scheme, and/or vessel management system. Continue to assess boat ramps. Industry confirms fuel/water and fleet area/space logistics in the event of prolonged closures/restrictions. ***Note: At Thebes gauge 1.5’, and Grand Tower gauge 1.0’, there is 10’ of water over the rocks in the minimum navigation channel within the respective reach. This would allow a 9’ draft w/1’ buffer
	0’	Falling	8.5’	Minimum Navigation In many areas of zone, channel is at best 300-ft wide by 9-ft deep	Action	Establish safety zones between UMR miles 0 and 109.9 with restrictions if conditions warrant. Fleeting may continue if conditions warrant. Survey, dredge (if possible) and re-buoy critical areas. Monitoring channel conditions and communication between USACE, USCG, RIAC and other affected agencies likely occurs on a daily basis. Consider USCG/USACE/Industry Joint Information Center, Incident Command Post, Marine Transportation System Recovery Unit, and Vessel Management System. Continue to assess boat ramps. Consider ice effects on drafts. Consider any combination of these actions: • draft restrictions (Industry should be prepared for a 1-foot under keel safety factor at discretion of COTP with consultation of RIAC, e.g. 8-ft draft restriction in 9-ft channel depth) • restrictions on tow size (equate to dry cargo barge dimensions) • helper boat requirements • daylight only operations Discuss with industry for feedback from mariners that have transited the route recently.

ACTION PLAN TABLE 3 – LOW WATER						
UPPER MISSISSIPPI RIVER **Zone 32-30 Cont.** **Miles 0.4 to 109.8**	0’	Rising	8.5’	Minimum Navigation Channel improves and channel depth increases	Recovery	Issue advisories to indicate extreme low water between UMR mile 0 and 109.9. USACE continues channel reconnaissance surveys and identifies/monitors potential problem areas. Continue communications between USACE, USCG and RIAC as needed to discuss specific problem areas, potential impacts and possible solutions.
	5’	Rising	13.5’	Low Water Channel returning to normal	Recovery	Continue advisories to indicate low water. Continue to monitor channel conditions for possible repeat of extreme low water. USCG will monitor buoys in narrow channel locations within reach. USACE will continue increased level of channel reconnaissance. Lift advisories as river conditions warrant. Continue communications as needed. Cancel any notices, advisories and safety zones as channel conditions improve. Adjust buoys as possible to provide wider channel.
	8’	Rising	16.5’	Normal Operations	Recovery	Cancel all advisories and commence normal operations. Report any hazardous conditions to USCG.

ACTION PLAN TABLE 3 – LOW WATER					
CRITICAL REACH DESCRIPTION	**TRIGGER READING**	**TREND**	**DESCRIPTION**	**PHASE**	**ACTION**
UPPER MISSISSIPPI RIVER **Zone 29/28** **Miles 109.9 to 185.4**	0’ and above	Falling	Normal Operations		As discharge falls consider the need to initiate communications plan. Corps to plan additional channel reconnaissance surveys. Obtain accurate USACE river forecasts. Monitor channel conditions and traffic. Continue standard methods of survey and communication practices to keep a good understanding of channel conditions and known buoy locations. Prioritize tasks: dredging, ATON, Data collection.
Reference Gauge: St. Louis (EADM7) MM 179.6 Low Water Reference plane for St. Louis Harbor: -3.5/9’ channel	0’ to -2’	Falling	Low Water Channel narrows in various conditions	Watch	Initiate communication plan. Issue advisory that indicates low water between UMR mile 109.9 and 185.4. Advise the use of caution. USACE initiates increased channel reconnaissance surveys. Identify and monitor potential problem areas. Advise deep draft vessels to depart the area of low water. Vessels need to transit at a slow speed near fleeting areas to minimize impact. Place heavy barges in middle of tow. Be aware of shifting channels. Continue communications between USACE, USCG and Industry as needed to discuss specific problem areas, potential impacts and possible solutions.

ACTION PLAN TABLE 3 – LOW WATER					
UPPER MISSISSIPPI RIVER **Zone 29/28 Cont.** **Miles 109.9 to 185.4**	-2’ to -3.25’	Falling	Low Water Channel continues to narrow and channel depth decreases	Action	Issue advisory or establish safety zone if deemed necessary that indicates extreme low water between UMR mile 109.9 and 185.4. Consider issuing joint MSIB from SUMR and SOHV to cover MM 185.4 to MM 0. Coast Guard will reset buoys in those narrow channel locations within reach. Consider use of AIS-ATON and Geographic Notices. USACE will continue increased level of channel reconnaissance. Consider draft limits, tow sizes, and helper boats. Evaluate fleet dimensions. Be aware of shifting channels, emergency dredging may be required at some locations. Consider restrictions on single skin barge movement. (e-mails, conference calls or others) – consider establishing notices, advisories and/or safety zones as needed using standard communication links between USACE, USCG and Industry. Consider press release and/or Joint Information Center, starting CART event, and formation of Incident Command Post if needed.
	-3.25’ and below	Falling	Extreme Low Water	Action	Establish safety zone between UMR mile 109.9 and 185.4. Severe restriction of navigation if conditions warrant. Fleeting may continue if conditions warrant. Communication should continue between USACE, USCG, RIAC, and other affected agencies. Monitor dredging ops and channel conditions. Consider press release, CART event, and formation of Incident Command Post if needed.

ACTION PLAN TABLE 3 – LOW WATER					
UPPER MISSISSIPPI RIVER **Zone 29/28 Cont.** **Miles 109.9 to 185.4**	-3.25 to -2	Rising	Extreme Low Water Channel continues to improve and channel depth increases	Recovery	Issue advisory that indicates low water between UMR mile 109.9 and 185.4. Advise the use of caution. Corps continues channel reconnaissance surveys. Identify and monitor potential problem areas. Vessels need to transit at a slow speed near fleeting areas to minimize impact. Place heavy barges in middle of tow. Be aware of shifting channels. Continue communications between USACE, USCG and Industry as needed to discuss specific problem areas, potential impacts and possible solutions.
	-2 to 0’	Rising	Low Water Channel returning to normal	Recovery	Continue advisory that indicates low water. Continue to monitor river channel conditions for possible repeat of low water. Coast Guard will monitor buoys in those narrow channel locations within reach. Corps will continue increased level of channel reconnaissance. Lift advisories as river conditions warrant. Continue communications conditions as needed. Cancel any notices, advisories and safety zones as channel conditions improve.
	0’ and above	Rising	Normal Operations	Recovery	Cancel all advisories and continue operations. Report any hazardous conditions to the Coast Guard.

Low Water Zones 2-27 is N/A due to Pooled River

ACTION PLAN TABLE 4 – ICE CONDITIONS					
CRITICAL REACH DESCRIPTION	**TRIGGER READING**	**TREND**	**DESCRIPTION**	**PHASE**	**ACTION**
ALL ZONES Upper Mississippi River	No Ice		Normal Operations		
	Ice Build-Up in Channel and Sheet Ice Formation	Predicted weather forecast indicates extreme temperatures. Ice buildup begins in the creeks and tributaries.	Mariners consulting with lock masters for indications of ice buildup. Ice Interferes with Normal Navigation.	Watch	Consider advisories on missing buoys and safety zone restriction for tow width and length. Ice couplings for entering locks. Single-file traffic in ice-narrowed channels. Navigators are cautioned to exercise extreme care when entering or departing the lock chamber to avoid damage to the lock gates. When ice builds up to the extent that full usage of the lock chamber is prohibited, length and/or width restrictions may be imposed on locks.
	Heavy Ice Gorges	Prolonged extreme temp.	Channel blocked in some locations. Rivers reach impassable. Gorged ice becomes a particular hazard when attempts are made to drive barges through the formation. Barges could be damaged when forced through or over gorged ice.	Action	Consider river closure if ice conditions prevent vessel transit or allow single lane traffic in open areas only. Navigators are advised to exercise due caution to avoid sinking barges and unusual currents and high localized flow or out draft conditions due to water bypassing the temporary dam formed by the gorge. Navigators approaching a known ice gorge should make an assessment of conditions prior to attempting to transit through ice and consider the limitations of the vessel and tow. Consider press release and/or Joint Information Center, and formation of Incident Command Post if needed.
	Rotting ice, increased flow softening ice	Rising temperatures And rain flushing ice out.	Ice softening, water noticeable on top of the ice flow, channel conditions improving, and ice receding from channel.	Recovery	ATON checks, locks and dams flush ice; lock personnel will notify USCG to release a broadcast prior to prolong flushing at the locks. Consideration should be taken that the lead barges of the first tow through. First vessel through Lake Pepin should be non-petroleum, non-hazardous cargo.

Appendix A – Lock and Dam Information Table

ZONE	LOCK	FLOOD STAGE			OUTDRAFT INDICATORS			LOCK CLOSURE			NOTES
		Stage	Elev.	Flow (CFS)	Stage	Elev.	Flow (CFS)	Stage	Elev.	Flow (CFS)	
Zone 1	USAF	See #1	See #1 below		See #1 below	See #1 below	20,000	NA	NA	40,000	1,2,4,5
Zone 1	LSAF						20,000	NA	NA	40,000	1,2,4,5
Zone 1	L/D 1	29	729	37,000	n/a	n/a	See # 3 below	NA	NA	40,000	1,2,3,4,5
Zone 2	L/D 2	89	689	84,500	87.2	687.2	31,000	92	692	116,000	5,6
Zone 3	L/D 3	77	677	56,000	74	674	21,000	83	683	125,000	5,6
Zone 4	L/D 4	68	668	110,000	66.5	666.5	60,000	71.5	671.5	160,000	5
Zone 5	L/D 5	65	665	202,000	59.5	659.5	70,000	64.5	664.5	188,000	5
Zone 5A	L/D 5A	53	653	90,000	50	650	32,000	60	660	183,000	5,6
Zone 6	L/D 6	47	647	114,000	44.5	644.5	44,600	61.5	651.5	200,000	5,6
Zone 7	L/D 7	42	642	146,000	39	639	44,000	46.5	646.5	235,000	5
Zone 8	L/D 8	34	634	166,000	30	630	40,200	36	636	225,000	5,6
Zone 9	L/D 9	22	622	105,000	19	619	55,000	31	631	220,000	5,6
Zone 10	L/D 10	14	614	140,000	10.5	610.5	47,000	21	621	238,000	5,6
Zone 11	L/D 11	16	604.2	152,900	9	597.2	N/A	20.8	609.0	197,200	
Zone 12	L/D 12	17	597.2	174,500	7	587.2	N/A	18.4	598.6	196,900	
Zone 13	L/D 13	16	584.7	153,700	7	575.7	N/A	19	587.7	182,100	
Zone 14	L/D 14	11	568.08	162,300	7	564.08	N/A	14	571.1	221,300	
Zone 15	L/D 15	15	557.5	N/A	9	551.5	N/A	20	562.5	N/A	
Zone 16	L/D 16	15	548.6	160,000	8	541.6	91,400	17	550.6	186,800	
Zone 17	L/D 17	15	541.7	142,900	6	532.7	N/A	18.1	544.8	212,400	
Zone 18	L/D 18	10	528.52	172,300	6	524.52	104,500	14.9	533.4	271,600	
Zone 19	L/D 19	16	493.83	N/A	N/A	N/A	N/A	21.2	499	N/A	
Zone 20	L/D 20	14	482.5	194,600	6	474.5	N/A	18	486.5	274,600	
Zone 21	L/D 21	17	474.8	212,100	6	463.8	N/A	21.9	479.7	294,600	
Zone 22	L/D 22	16	462.1	210,500	8	454.1	N/A	21.4	467.5	310,800	
Zone 23	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Zone 24	L/D 24	25	446.81	175,000	16.4	438.2	86,000	32.5	454.3	365,000	
Zone 25	L/D 25	26	433	180,000	17.5	424.5	90,000	33.75	440.75	320,000	
Zone 26	L/D 26	21	416.48	VARIABLE	N/A	N/A	N/A	36.5	432	VARIABLE	
Zone 27	L/D 27	30	409.94	504,000	N/A	N/A	N/A	47	426.94	990,000	
Zone 28	N/A	30	409.94	504,000							

Notes

#1.) Stage/elevation at USAF flow rates depend upon status of boards on Xcel dam.
#2.) Flow rates are at USAF.
#3.) LD1 out draft indicators turned on with 0.2 ft of flow over the rubber dam whether it's inflated or deflated.
#4.) USAF, LSAF & LD1 close to pleasure craft at 30,000 cfs.
#5.) Lock closure elevations shown are for a "slow rise". For a "fast rise" the lock closure is 0.5 ft lower.

Appendix B – UMR Quick Reference River Gauge Action Sheet

			HIGH WATER PHASE			
Zones/Pools	MM	MM	NORMAL	WATCH	ACTION	GAUGE LOCATION
2	815.2	847.5	Below 14'	14' - 17'	17' & Above	ST PAUL
3	796.9	815.1	Below 14'	14' - 17'	17' & Above	ST PAUL
4	752.8	796.8	Below 16'	16' - 18'	18' & Above	ALMA L/D 4
5	738.1	752.7	Below 665'	665' - 667'	667' & Above	MINNESOTA CITY L/D 5
5A	728.6	738	Below 653'	653' - 655'	655' & Above	WINONA L/D 5A
6	714.3	728.5	Below 647'	647' - 649'	649' & Above	TREMPEALEAU L/D 6
7	702.5	714.2	Below 641'	641' - 643'	643' & Above	LA CRECENT L/D 7
8	679.2	702.4	Below 634'	634' - 636'	636' & Above	GENOA L/D 8
9	647.9	679.1	Below 625'	625' - 628'	628' & Above	LYNXVILLE L/D 9
10	615.1	647.8	Below 15'	15' - 18'	18' & Above	GUTTENBURG L/D 10
11	583	615	Below 16'	16' - 18'	18' & Above	DUBUQUE L/D 11
12	556.7	582.9	Below 17'	17' - 19'	19' & Above	BELLEVUEE L/D 12
13	522.4	556.6	Below 16'	16' - 18'	18' & Above	FULTON L/D 13
14	493.3	522.3	Below 11'	11' - 13'	13' & Above	LE CLAIR L/D 14
15	482.9	493.2	Below 15'	15' - 17'	17' & Above	ROCK ISLAND L/D 15
16	457.2	482.8	Below 15'	15' - 17'	17' & Above	MUSCATINE L/D 16
17	437.1	457.1	Below 14'	14 ' - 16'	16' & Above	NEW BOSTON L/D 17
18	410.5	437	Below 10'	10' - 12'	12' & Above	GLADSTONE L/D 18
19	364.2	410.4	Below 16'	16' - 18'	18' & Above	KEOKUK L/D 19
20	343.2	364.1	Below 14'	14' - 16'	16' & Above	CANTON L/D 20
21	324.9	343.1	Below 17'	17' - 21.9'	21.9' & Above	QUINCY L/D 21
22	301.2	324.8	Below 16'	16' - 21.4'	21.4' & Above	SAVERTON L/D 22
23						
24	273.4	301.1	Below 25'	25' - 29'	29' & Above	CLARKSVILLE L/D 24
25	241.4	273.3	Below 26'	26' - 33.8'	33.8' & Above	WINFIELD L/D 25
26	200.5	241.3	Below 21'	21' - 36.5'	36.5' & Above	ALTON L/D MEL PRICE
27	185.5	200.4	Below 38'	38' - 40'	40' & Above	GRANITE CITY L27
28	160.1	185.4	Below 20'	20' - 25'	25' - 29.9'	ST LOUIS
28 Cont.					EXTREME - 30' - 38'	ST LOUIS
29	109.9	160	Below 20'	20'-25'	25'- 29.9'	ST LOUIS
30	43.2	109.8	Below 18'	18'-22.5'	22.5' & Above	CHESTER HIGHWAY BRIDGE
31	1.4	43.1	Below 20'	20'-25'	25' & Above	GRAYS POINT & THEBES RR BRIDGE
32	0.4	1.3	Below 35'	35'-39'	39' & Above	CAIRO (60/62) BRIDGE
33	0	0.3	N/A	N/A	N/A	CAIRO POINT VICINITY
LOW WATER						
2 THRU 27	185.5	847.5	POOLED	POOLED	POOLED	
28 THRU 29	109.9	185.4	3	0	-3.5	
30 THRU 32	0.4	109.8	10'1" & Above	10' - 5'1"	5' & Below	
33	0	0.3	11' & Above	10'9" - 9'1"	9' & Below	

ICE CONDITIONS		
WATCH	ACTION	RECOVERY
ICE CONDITIONS		
Ice Build-Up in Channel and Sheet Ice Formation	Heavy Ice and Gorges	Increased Flow and Softening Ice

RIAC

Appendix C – UMR ATON Prioritization (2026)

Electronic ATON – Automatic Identification System (AIS) ATON.
Navigational and/or Marine Safety Information can be transmitted via VHF-radio broadcast from base stations located throughout the Western Rivers. Two networks exist to transmit this information, the National Automatic Identification System (NAIS) owned by the Coast Guard, and the Lock Operations Management Application (LOMA) owned by the Army Corps of Engineers. Currently, only the LOMA system has the capability to broadcast AIS-ATON throughout the Western Rivers. A list of these base stations is contained in the USCG Light List, these stations are limited by antenna range and signal capacity. Therefore, AIS-ATON are customarily employed as a temporary substitute for insufficient physical ATON to address emergent hazardous river conditions. **To request the establishment and/or discontinuance of AIS-ATON, contact the respective Coast Guard Sector Waterways Management Office or the respective Army Corps District Channel Maintenance Office.**

Physical ATON – Fixed Day beacons and Lights.
The Fixed ATON system on the Western Rivers is comprised of day beacons and lights in the form of Crossing Marks and Passing Marks. These marks are non-lateral, indicate changes in the channel, and are typically found at bends in the river. A list of these ATON is contained in the USCG Light List; these aids are considered permanent. The Coast Guard Heartland District is responsible for the establishment of these ATON and the Cutters employed within the Western Rivers Sectors are responsible for maintaining these ATON**. To request changes to fixed ATON, contact the respective Coast Guard Sector Waterways Management Office. To report discrepancies, contact the Coast Guard Western Rivers Command Center.**

Physical ATON – Buoys.
Red Nun and Green Can Buoys are lateral aids used to mark the left and right edge of the navigation channel. They are normally set at the designated project depth and adjusted to account for forecasted fluctuation in river stage, however, in some cases the depths may be adjusted to accommodate industry loading concerns. The buoys are considered expendable, typically suffer a high loss rate, and therefore are not numbered or cataloged in the USCG Light List. The Cutters employed within the Western Rivers Sectors are responsible for the establishment and maintenance of these ATON. **To report discrepancies, contact the Coast Guard Western Rivers Command Center.**

Appendix D – UMR Fleet Area Management Guidelines

Environmental compliance, safety, and security are integral parts of the day-to-day operations as a standard in the river industry. Barge breakaways are a common event on the Western Rivers, and frequently occur in high water, high winds, or icing conditions. Breakaways pose significant safety and environmental risks and cause economic disruption for third parties who must avoid or help retrieve adrift barges. There are numerous fleeting areas located along the UMR, including approximately 81 in the St. Louis harbor alone.

The purpose of this document is to reduce the frequency of barge breakaways through the incorporation of best marine practices of fleet management during extreme river conditions. It is the responsibility of each company to know how their fleets react to these conditions and make all reasonable efforts to maintain them accordingly. The USCG and USACE will communicate and coordinate any actions that should be implemented when river conditions change through RIAC.

The following best practices should be considered when operating fleets during extreme river conditions. Examples of extreme river conditions are:

- Rapid rise or fall of the river level
- Heavy drift or ice flows
- Violent weather conditions
- Extreme high or low river levels

1. Be familiar with and adhere to the UMR Waterways Action Plan (WAP) and advisories. Industry members should make all reasonable efforts to participate in meetings/conference calls when extreme conditions are experienced.

2. Take action to minimize the effects of drift and ice accumulations on the fleets. Good communication should be made throughout the ports, especially downriver fleets, prior to de-drifting or deicing activities.

3. Closely monitor tows transiting the area during extreme conditions to avoid excessive wake and/or turbulence issues.

4. Ensure crews meet at crew change to discuss the river conditions and the condition of each fleet.

5. Apply extra rigging or if necessary “narrow” the fleets.

6. Increase fleet surveillance and mooring inspections to identify potential issues and take immediate action to correct.

7. In the event of an emergency (such as tow break-up or fleet breakaway), take immediate action to secure the breakaway; report each breakaway as soon as possible to the USCG Sector Command Center by telephone, radio, or other means of rapid communication.

8. In the event of an emergency, consider appointing a local company with 24-hour dispatchers to keep the USCG Sector Command Center appraised of the situation until the vessels involved in the emergency can talk to them directly.

Appendix E – BNM Templates

Sector Ohio Valley

HIGH WATER Example 1
THE U. S. COAST GUARD COTP OHIO VALLEY HAS ISSUED THIS SAFETY ADVISORY DUE TO EXTREME HIGH WATER ON THE UPPER MISSISSIPPI RIVER FROM MM 43.5 TO 46 BEGINNING AT (TIME/DATE). THIS ADVISORY WILL REMAIN IN EFFECT UNTIL EXTREME HIGH RIVER STAGES SUBSIDE BY FALLING BELOW 33 FEET. IT IS RECOMMENDED THAT VESSELS DO NOT MEET, PASS OR OVERTAKE IN THIS LOCATION AND DOWN BOUND TOWS SHOULD NOT EXCEED 140 FEET WIDE DURING THE NIGHT TME HOURS OF (HOURS DECIDED BY CG AND INDUSTRY) AND RED FLAG BARGES SHOULB BE PLACED IN A PROTECTED LOCATION IN THE TOW. IT IS RECOMMEDED THAT ALL VESSELS AVOID LAYING UP ON LEVEES AND ASSESS BRIDGE CLEARANCES IN ADVANCE. USE EXTREME CAUTION, KEEP A SHARP LOOKOUT AND REPORT NAVIGATIONAL HAZARDS TO THE COAST GUARD IMMEDIATELY VIA VHF-FM CHANNEL 16.

HIGH WATER Example 2
THE COTP OHIO VALLEY HAS ISSUED THIS SAFETY ADVISORY DUE TO RAPIDLY RISING RIVER STAGES ON THE UPPER MISSISSIPPI RIVER FROM MM 43.5 – 46 BEGINNING AT (TIME/DATE). THIS ADVISORY WILL REMAIN IN EFFECT UNTIL EXTREME HIGH RIVER STAGES SUBSIDE BY FALLING BELOW 40 FEET. IT IS RECOMMENDED THAT VESSELS DO NOT MEET, PASS OR OVERTAKE IN THIS LOCATION AND DOWN BOUND TOWS SHOULD NOT EXCEED 140 FEET WIDE AND 600 FEET LONG DURING THE NIGHT TIME HOURS OF (HOURS DECIDED BY CG AND INDUSTRY) AND RED FLAG BARGES SHOULB BE PLACED IN A PROTECTED LOCATION IN THE TOW . MARINERS SHOULD USE EXTREME CAUTION WHEN TRANSITING THIS AREA WHILE RIVER STAGES REMAIN HIGH AND CURRENTS ARE SWIFT. MARINERS ARE ADVISED TO TRANSIT WITH CAUTION.

HIGH WATER Example 3
THE U.S. ARMY CORPS OF ENGINEERS HAS EXPRESSED LIFE-SAFETY CONCERNS ASSOCIATED WITH HIGH RIVER STAGES THAT THREATEN THE STABILITY, INTEGRITY, OVERTOPPING, AND BREACH OF CRITICAL FEDERAL LEVEE SYSTEMS. EFFECTIVE (DATE/TIME), THE U.S. COAST GUARD COTP OHIO VALLEY HAS ESTABLISHED A SAFETY ZONE ON THE UPPER MISSISSIPPI RIVER FROM MM 33 TO MM 109.9. MARINERS SHALL STAY CLEAR OF THE RESTRICTED AREA UNLESS THEY ARE CURRENTLY WITHIN A FLEETING AREA. FLEET OPERATORS WILL BE ABLE TO MOVE AROUND TO MAINTAIN SAFETY AND SECURITY OF THEIR FLEETS. VESSELS CURRENTLY WITHIN THE RESTRICTED AREA AND NOT IN A FLEETING AREA MAY REQUEST TO CONTINUE/FINISH THEIR TRANSIT. REQUESTS WILL BE HANDLED ON A CASE BY CASE BASIS. ALL VESSELS MUST MAKE REQUESTS THROUGH MSU PADUCAH MTSRU AT (PHONE NUMBER).

HIGH WATER Example 4
THE U. S. COAST GUARD COTP OHIO VALLEY HAS ISSUED THIS SAFETY ADVISORY DUE TO EXTREME HIGH WATER ON THE UPPER MISSISSIPPI RIVER FROM MM 43.5 TO 46 BEGINNING AT (TIME/DATE). THIS ADVISORY WILL REMAIN IN EFFECT UNTIL EXTREME HIGH RIVER STAGES SUBSIDE BY FALLING BELOW 33 FEET. IT IS RECOMMENDED THAT VESSELS DO NOT MEET, PASS OR OVERTAKE IN THIS LOCATION AND DOWN BOUND TOWS SHOULD NOT EXCEED 140 FEET WIDE DURING THE HOURS OF (NIGHT TIME HOURS DECIDED BY CG AND INDUSTRY) AND RED FLAG BARGES SHOULB BE PLACED IN A PROTECTED LOCATION IN THE TOW. WHILE THE OVERALL RIVER STAGE IS DECREASING BE ADVISED THAT DRIFT AND DEBRIS MAY BE A HAZARD TO NAVIGATION AND MAY DRAG BUOYS OFF STATION. IT IS RECOMMEDED THAT ALL VESSELS AVOID LAYING UP ON LEVEES AND ASSESS BRIDGE CLEARANCES IN ADVANCE. USE EXTREME CAUTION, KEEP A SHARP LOOKOUT AND REPORT NAVIGATIONAL HAZARDS TO THE COAST GUARD IMMEDIATELY VIA VHF-FM CHANNEL 16.

Sector Upper Mississippi

Zone 28: Port of St. Louis

HIGH WATER WATCH
A. THE FOLLOWING ZONE IS IN HIGH WATER WATCH PHASE IN ACCORDANCE WITH THE WESTERN RIVERS WAP ANNEX.
1. UMR: ZONE 28 (MM 160.1-185.4 UMR)

B. DOWN STREAMING OPERATIONS ARE NOT RECOMMENDED UNLESS THE VESSEL IS EQUAL TO OR GREATER THAN 75’ IN LENGTH AND THE VESSEL HAS A MINIMUM OF 1800 HORSEPOWER.

C. TOWBOAT OPERATORS SHOULD USE CAUTION, MINIMIZE WAKE WHERE POSSIBLE, AND BE EXPERIENCED IN HIGH WATER OPERATIONS. MARINERS SHOULD REMAIN VIGILANT TO AN INCREASE IN DEBRIS IN THE WATER AND MANEUVER APPROPRIATELY. BE AWARE THAT A BUILDUP OF DEBRIS IN FLEETING AREAS MAY HAVE OCCURRED AND TAKE APPROPRIATE ACTION TO PREVENT ANY BREAKAWAYS FROM OCCURRING. USE CAUTION IN ALL PASSING AND MEETING SITUATIONS AND BE MINDFULL OF ALL CHARTED BRIDGE NAVIGATIONAL CLEARANCES. BUOYS MAY HAVE BEEN DRAGGED OFF STATION SO REMAIN CAUTIOUS WHILE TRANSITING.

HIGH WATER ACTION
A. THE FOLLOWING ZONE IS IN HIGH WATER ACTION PHASE IN ACCORDANCE WITH THE WESTERN RIVERS WAP ANNEX.
1. UMR: ZONE 28 (MM 160.1-185.4 UMR)

B. DOWN STREAMING OPERATIONS ARE NOT RECOMMENDED UNLESS THE VESSEL IS EQUAL TO OR GREATER THAN 75’ IN LENGTH AND THE VESSEL HAS A MINIMUM OF 1800 HORSEPOWER.

C. TOWBOAT OPERATORS SHOULD USE CAUTION, MINIMIZE WAKE WHERE POSSIBLE, AND BE EXPERIENCED IN HIGH WATER OPERATIONS. MARINERS SHOULD REMAIN VIGILANT TO AN INCREASE IN DEBRIS IN THE WATER AND MANEUVER APPROPRIATELY. BE AWARE THAT A BUILDUP OF DEBRIS IN FLEETING AREAS MAY HAVE OCCURRED AND TAKE APPROPRIATE ACTION TO PREVENT ANY BREAKAWAYS FROM OCCURRING. USE CAUTION IN ALL PASSING AND MEETING SITUATIONS AND BE MINDFULL OF ALL CHARTED BRIDGE NAVIGATIONAL CLEARANCES. BUOYS MAY HAVE BEEN DRAGGED OFF STATION SO REMAIN CAUTIOUS WHILE TRANSITING.

D. WITHIN THE ST. LOUIS HARBOR (MM 179-184), SOUTHBOUND TOWS GREATER THAN 600' IN LENGTH, EXCLUDING THE TOWBOAT, SHOULD LIMIT TRANSIT TO DAYLIGHT HOURS ONLY. ALL TOWING VESSELS SHOULD HAVE A MINIMUM OF 250 HORSEPOWER FOR EACH LOADED BARGE. A LOADED BARGE IS CONSIDERED TO BE A BARGE WITH UP TO 2,000 TONS OF CARGO. IF A TOWING VESSEL HAS BARGES IN TOW LOADED TO MORE THAN 2,000 TONS IT SHOULD HAVE A MINIMUM OF 250 HORSEPOWER FOR EVERY 2,000 TONS OF CARGO.

EXTREME HIGH WATER ACTION
A. THE FOLLOWING ZONE IS IN THE EXTREME HIGH WATER ACTION PHASE IN ACCORDANCE WITH THE WESTERN RIVERS WAP ANNEX.
1. UMR: ZONE 28 (MM 160.1-185.4 UMR)

B. IN ACCORDANCE WITH THE WATERWAYS ACTION PLAN, ALL TOWBOATS TRANSITING THE ST. LOUIS HARBOR BETWEEN MM 179 AND 184 SHALL AVOID CARRYING BARGES ON THE HIP AND HAVE A MINIMUM OF 250 HORSEPOWER FOR EACH LOADED BARGE. A LOADED BARGE IS CONSIDERED TO BE A BARGE WITH UP TO 2,000 TONS OF CARGO. IF A TOWING VESSEL HAS BARGES IN TOW LOADED TO MORE THAN 2,000 TONS IT SHOULD HAVE A MINIMUM OF 250 HORSEPOWER FOR EVERY 2,000 TONS OF CARGO. SOUTHBOUND TOWS GREATER THAN 600FT IN LENGTH, EXCLUDING THE TOWBOAT, SHALL LIMIT TRANSIT TO DAYLIGHT HOURS ONLY, AND NORTHBOUND TOWS SHALL HAVE ENOUGH HORSEPOWER TO MAINTAIN A MINIMUM SPEED OF 3 MPH ON APPROACH TO THE ST LOUIS HARBOR BRIDGES.

C. ALL VESSELS ARE ADVISED TO FAVOR THE CENTER OF THE CHANNEL AND PROCEED AT THE SLOWEST SAFE OPERATING SPEED BASED UPON PREVAILING CONDITIONS IN ORDER TO MINIMIZE WAKE DAMAGE TO PERSONAL PROPERTY. IT IS RECOMMEDED THAT ALL VESSELS AVOID LAYING UP ON LEVEES, ASSESS BRIDGE CLEARANCES IN ADVANCE, AND FLEETS BE ATTENDED BY A TOWBOAT AT ALL TIMES. MARINERS ARE REQUESTED TO REVIEW ANCHORING REQUIREMENTS AND PRE-IDENTIFY LAY UP AREAS IN THE EVENT OF A RIVER CLOSURE OR BARGE BREAK AWAY. MARINERS ARE ENCOURAGED TO ENSURE THAT MOORED VESSELS AND BARGES ARE ADEQUATELY SECURED WITH THE ANTICIPATION OF INCREASED VELOCITY AND HIGH WATER. RECREATIONAL TRAFFIC IS DISCOURAGED WITHIN THE ZONE. DRIFT AND DEBRIS MAY BE A HAZARD TO NAVIGATION AND MAY DRAG BUOYS OFF STATION.

All other zones

HIGH WATER WATCH

A. THE FOLLOWING ZONES ARE IN THE HIGH WATER WATCH PHASE IN ACCORDANCE WITH THE WESTERN RIVERS WAP ANNEX.
1. UMR: ZONE 15 (MM 482.9-493.2 UMR)
2. UMR: ZONE 19 (MM 364.2-410.4 UMR)

B. ALL TOWING VESSELS ARE ADVISED TO FAVOR THE CENTER OF THE CHANNEL AND PROCEED AT THE SLOWEST SAFE OPERATING SPEED BASED UPON PREVAILING CONDITIONS IN ORDER TO MINIMIZE WAKE DAMAGE TO PERSONAL PROPERTY. TOWBOAT OPERATORS SHOULD BE EXPERIENCED IN HIGH WATER OPERATION, USE CAUTION IN ALL PASSING AND MEETING SITUATIONS AND BE MINDFUL OF ALL CHARTED BRIDGE NAVIGATIONAL CLEARANCES. DOWNSTREAMING OPERATIONS ARE NOT RECOMMENDED. DRIFT AND DEBRIS MAY BE A HAZARD TO NAVIGATION AND MAY DRAG BUOYS OFF STATION SO REMAIN CAUTIOUS WHILE TRANSITING.

HIGH WATER ACTION

A. THE FOLLOWING ZONES ARE IN HIGH WATER ACTION PHASE IN ACCORDANCE WITH THE WESTERN RIVERS WAP ANNEX.
1. UMR: ZONE 16 (MM 457.2-482.8 UMR)
2. UMR: ZONE 19 (MM 364.2-410.4 UMR)

B. VESSELS ARE ADVISED TO FAVOR THE CENTER OF THE CHANNEL AND PROCEED AT THE SLOWEST SAFE OPERATING SPEED BASED UPON PREVAILING CONDITIONS IN ORDER TO MINIMIZE WAKE DAMAGE TO PERSONAL PROPERTY. IT IS RECOMMEDED THAT ALL VESSELS AVOID LAYING UP ON LEVEES, ASSESS BRIDGE CLEARANCES IN ADVANCE, AND ENSURE FLEETS ARE MONITORED AT ALL TIMES. MARINERS ARE REQUESTED TO REVIEW ANCHORING REQUIREMENTS AND PRE-IDENTIFY LAY UP AREAS IN THE EVENT OF A RIVER CLOSURE OR BARGE BREAK AWAY. MARINERS ARE ENCOURAGED TO ENSURE THAT MOORED VESSELS AND BARGES ARE ADEQUATELY SECURED WITH THE ANTICIPATION OF INCREASED VELOCITY AND

HIGH WATER. RECREATIONAL TRAFFIC IS DISCOURAGED WITHIN THE ZONE. DRIFT AND DEBRIS MAY BE A HAZARD TO NAVIGATION AND MAY DRAG BUOYS OFF STATION.