

# **MISSISSIPPI RIVER AND TRIBUTARIES WATERWAYS ACTION PLAN**

**UPPER MISSISSIPPI RIVER ANNEX  
2017**



## **Introduction**

This appendix provides general information and target gauges to be used as a guideline for a crisis on the Upper Mississippi River (UMR) between river miles 109.9 TO 857.6. In the face of such a crisis, it is the responsibility of the United States Coast Guard, United States Army Corps of Engineers (USACE), and River Industry representatives to meet and discuss conditions on the UMR and to *annually* review the actions specified in the plan, typically *the first week of November*. Section 4 of this appendix breaks down the entire UMR into 28 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.

This plan supports the Department of Transportation in its role in ESF #1 of the National Response Plan to coordinate the Emergency Management of the Transportation System (EMTS) in the prevention/mitigation, preparedness, recovery, infrastructure restoration, safety, and security of the Nation and its transportation system. It is intended to report damage to the transportation infrastructure as a result of an incident, coordinate alternate transportation services, coordinate the restoration and recovery of the transportation infrastructure, and coordinating and supporting prevention, preparedness, and mitigation among transportation stakeholders at the state and local levels.

## **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. In order to predict changes in conditions in this system, waterway managers must constantly monitor a number of 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 in order 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 Upper Mississippi River (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 nine 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:

### UMR LOW WATER & ICE CONDITIONS

Waterway management concerns also occur during low water and ice conditions on the UMR. Low water is of particular concern in the Middle Mississippi River. Groundings during low water conditions delay commercial traffic, cause substantial damage to the navigation channel and can necessitate dredging. Ice conditions not only reduces water levels but causes 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 & 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 "narrative" section of each zone. Well before water levels near or reach these levels, the Coast Guard 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, weather history & forecast, impact upon river environment and commercial traffic requirements. Furthermore, general considerations such as levee conditions, wake damage, bridge clearances and lock operating restrictions/closures shall be discussed.

### Acronym List for Upper Mississippi River Annex

USACE = ARMY CORPS OF ENGINEERS  
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  
ICP = INCIDENT COMMAND POST  
ILWW = ILLINOIS WATERWAY  
IRCA = ILLINOIS RIVER CARRIERS ASSOCIATION  
JIC = JOINT INFORMATION CENTER  
L&D = LOCK AND DAM  
LSAF = LOWER SAINT ANTHONY FALLS  
MOR = MISSOURI RIVER  
MSL = MEAN SEA LEVEL  
NGVD = NATIONAL GEODETIC VERTICAL DATUM  
NOAA = NATIONAL OCEANIC ATMOSPHERIC ADMINISTRATION  
NWS = NATIONAL WEATHER SERVICE  
RIAC = RIVER INDUSTRY ACTION COMMITTEE  
RIBB = RIVER INFORMATION BULLETIN BOARD  
RM = RIVER MILE  
SEMA = STATE EMERGENCY MANAGEMENT  
SITREP = SITUATION REPORT  
UMIB = URGENT MARINE INFORMATION BROADCAST  
UMR = UPPER MISSISSIPPI RIVER  
USAF = UPPER SAINT ANTHONY FALLS  
USCG = UNITED STATES COAST GUARD  
WAP = WATERWAYS ACTION PLAN  
WEM = WISCONSON EMERGENCY MANAGEMENT

## **Section 2 – Parties and Roles**

### **U.S. Coast Guard (USCG)**

The USCG Sector Commander Upper Mississippi River, with its principal office in St Louis, MO is responsible for safe navigation, security, and law enforcement along the UMR. The USCG Sector Upper Mississippi River Prevention Dept., Waterways Management Branch, using the cutters CHEYENNE, stationed in St. Louis, the SCIOTO stationed in Keokuk, and the WYACONDA, stationed in Dubuque, is responsible for maintaining and setting buoys and shore aids along the Upper Mississippi River. The Prevention Department also focuses on licensed mariners issues, permits, casualty investigations, and security verifications. The USCG Sector Upper Mississippi River Response Department 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, the USACE maintains pool levels that are sufficient to accommodate commercial traffic on the river. The Middle Mississippi River maintains a nine-foot navigation channel in open river conditions with river structures supplemented by dredging. During high water conditions, Emergency Operations coordinate flood fight activities

### **U.S. Coast Guard District Eight Bridge Branch (dwb)**

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.

### **RIAC**

The River Industry Action Committee (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 Coast Guard and the USACE on matters such as high and low water, ice conditions, shoaling, marine accidents, etc.

St. Louis District	Bernie Heroff	314-803-4644
Rock Island District	Randy Kirschbaum	563-505-5923
St. Paul District	Lee Nelson	651-292-9293

### **Fleeting Facility Managers**

Fleeting facility managers have a direct commercial interest in navigation conditions on the UMR, and any actions taken by the Coast Guard or Corps of Engineers 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 Coast Guard 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 Coast Guard or Corps of Engineers 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 Coast Guard 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.

<b>USACE POSITION St. Louis District RM 0 – 300.0</b>	<b>DUTIES &amp; RESPONSIBILITIES</b>	<b>EQUALS</b>	<b>USCG POSITION</b>	<b>DUTIES &amp; RESPONSIBILITIES</b>
Chief, Water Control Operations	River Stage Forecast & Control		Sector Upper Mississippi River Waterways Division	Manages daily waterway management and casualty operations
Operations Dredging Project Manager, St. Louis, MO	Channel Patrol & O&M Dredging Activities Upper Mississippi River		Sector Upper Mississippi River Waterways Division	Manages daily waterway management and casualty operations
Operations Manager, Rivers Project Office, Alton, IL	Supervises Upper Mississippi River all O&M Activities		Sector Upper Mississippi River Waterways Division	Manages daily waterway management and casualty operations
<b>REPORTS TO:</b>				
Chief of Operations, St. Louis District	Supervises Operations Managers		Sector Upper Mississippi River Chief of Prevention	Supervises operational issues
<b>REPORTS TO:</b>				
District Engineer, St. Louis District	Supervises Chief of Operations		Commander, Sector Upper Mississippi River	Senior USCG officer in area
<b>REPORTS TO:</b>				
Division Engineer, Mississippi Valley Division	Supervises District Engineer		Commander, Eighth Coast Guard District	Senior USCG officer in District

<b>USACE POSITION Rock Island District RM 300.0 - 613.9</b>	<b>DUTIES &amp; RESPONSIBILITIES</b>	<b>EQUALS</b>	<b>USCG POSITION</b>	<b>DUTIES &amp; RESPONSIBILITIES</b>
Chief, Water Control	River Stage Forecast		Sector Upper Mississippi River Waterways Division	Manages daily waterway management and casualty operations
Operations Dredging Project Manager Rock Island, IL	Channel Patrol & O&M Dredging Activities Upper Mississippi River		Sector Upper Mississippi River Waterways Division	Manages daily waterway management and casualty operations
<b>REPORTS TO:</b>				
Operations Manager, Mississippi River Project Office, Pleasant Valley, IA	Supervises Upper Mississippi River all O&M Activities		Sector Upper Mississippi River Chief of Prevention	Supervises operational issues
<b>REPORTS TO:</b>				
District Engineer, Rock Island District	Supervises Chief of Operations		Sector Commander Upper Mississippi River	Senior USCG officer in area
<b>REPORTS TO:</b>				
Division Engineer, Mississippi Valley Division	Supervises District Engineer		Commander, Eighth Coast Guard District	Senior USCG officer in District for Marine Safety

<b>USACE POSITION St. Paul District RM 614.0 - 857.6</b>	<b>DUTIES &amp; RESPONSIBILITIES</b>	<b>EQUALS</b>	<b>USCG POSITION</b>	<b>DUTIES &amp; RESPONSIBILITIES</b>
Chief, Water Control Operations	River Stage Forecast & Control		Sector Upper Mississippi River Waterways Division	Manages daily waterway management and casualty operations
Operations Dredging Project Manager, St. Paul, MN	Channel Patrol & O&M Dredging Activities Upper Mississippi River		Sector Upper Mississippi River Waterways Division	Manages daily waterway management and casualty operations
Operations Manager, Rivers Project Office	Supervises Upper Mississippi River all O&M Activities		Sector Upper Mississippi River Waterways Division	Manages daily waterway management and casualty operations
<b>REPORTS TO:</b>				
Chief of Operations, St. Paul District	Supervises Operations Managers		Sector Upper Mississippi River Chief of Prevention	Supervises operational issues
<b>REPORTS TO:</b>				
District Engineer, St. Paul District	Supervises Chief of Operations		Commander, Sector Upper Mississippi River	Senior USCG officer in area
<b>REPORTS TO:</b>				
Division Engineer, Mississippi Valley Division	Supervises District Engineer		Commander, Eighth 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 Coast Guard, 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 Chief of Waterways UMR, the USACE, or the Chair of RIAC and/or IRCA. 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. The RIAC and/or IRCA chairs will contact those members of their respective organizations. 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 make a determination. 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, posting on SUMR Homeport and Local Notice to Mariners.

### 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 Missouri River are handled by the communications center at USCG Sector Upper Mississippi River in St. Louis, MO, primary contact is made on channel 16 then; generally, you will be instructed to switch to another channel such as 22A to continue discussion.



## **NOTIFICATIONS:**

### **U.S. Coast Guard**

The U. S. Coast Guard maintains a 24 x 7 live watch at its Sector Upper Mississippi River Command Center in St. Louis, MO. Hazardous river conditions are monitored by Sector personnel at Sector Upper Mississippi River and reported as appropriate to the Sector Commander, Sector Upper Mississippi River. As conditions dictate, the Sector Commander will release Broadcast Notices to Mariners (BNM) 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 Sector Upper Mississippi River Command Center in the Robert A. Young Federal Building in St. Louis is responsible for these notifications. The Waterways Duty Officer can be reached during and after normal business hours by contacting (319) 520-8556

Sector 24 Hour Contact Number: 314-269-2332

### **U.S. Coast Guard District Eight Bridge Branch (dwb)**

During normal working hours U.S. Coast Guard District Eight Bridge Branch can be contacted at (314) 269-2378. After normal working hours contact Sector Upper Mississippi River at 314-269-2332 and they will relay information to the appropriate personnel.

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

#### **During Normal Work Hours**

During periods of hazardous river conditions the St. Paul District, Corps of Engineers (Corps) field offices work closely with river users and the basin communities. River users may 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; Operations Manager, Physical Support Branch; 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 Corps through the District Commander may make recommendations to the USCG to issue safety zone restrictions or river closures. Likewise, as river conditions improve the Corps 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 may report hazardous conditions to the nearest Lock and Dam. From there the same sequence of contacts will be made throughout the district until all of the appropriate personnel are contacted to address the situation.

Channel 14 (156.7 MHZ) and channel 12 (156.6 MHZ) are the primary and secondary working frequencies for port operations. The Upper Mississippi lock and dams monitor ch14 and ch12 in an alternating fashion up the river. For instance if lock and dam 1 is monitoring ch14 as its primary frequency with ch12 as its secondary frequency then lock and dam 2 would monitor ch12 as its primary frequency with ch14 as its secondary. The reason for alternating frequencies is to allow mariners to communicate with each lock and dam without “stepping on” other mariners communicating with other lock and dams. If for some reason the hailing vessel is unable to hail the lock and dam on ch12 or ch14 they should be able to hail that lock and dam on ch16 156.8MHZ. All lock and dams are required to monitor ch16 for emergency purposes.

**Lock and Dam 24 Hour Phone Numbers:**

Lock and Dam St. Anthony Falls Upper	612 333-5336	CH. 14
Lock and Dam St. Anthony Falls Lower	612 332-3660	CH. 12
Lock and Dam 1, Minneapolis, MN	612 724-2971	CH. 14
Locks and Dam 2, Hastings, MN	651 437-3150	CH. 12
Locks and Dam 3, Welch, MN	651 388-5794	CH. 14
Lock and Dam 4, Alma, WI	608 685-4421	CH. 14
Lock and Dam 5, Minnesota City, MN	507 689-2101	CH. 12
Lock and Dam 5A, Fountain City, WI	507 452-2789	CH. 14
Locks and Dam 6, Trempealeau, WI	608 534-6424	CH. 12
Locks and Dam 7, LaCrescent, MN	507 895-2170	CH. 14
Lock and Dam 8, Genoa, WI	608 689-2625	CH. 12
Lock and Dam 9, Eastman, WI	608 874-4311	CH. 14
Lock and Dam 10, Guttenberg, IA	563 252-1261	CH. 12

Points of contact for specific river conditions:

Channel\Dredging Issues:	(651) 788-0597	Dan Contrell
Channel\Dredging Issues:	(651) 290-5151	Steve Tapp
Lock & Dam Operations:	(608) 687-9104	Jerry Stalder
Water Control:	(651) 290-5624	Scott Bratten

**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 Corps through the District Commander will make recommendations to the USCG to issue safety zone restrictions or river closures. Likewise, as river conditions improve the Corps 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 of the appropriate personnel are contacted to address the situation.

### **Lock and Dam 24 Hour Phone Numbers:**

Lock and Dam 11, Dubuque, Iowa	563 582-1204	CH. 14
Lock and Dam 12, Bellevue, Iowa	563 872-3314	CH. 14
Lock and Dam 13, Fulton, Illinois	815 589-3313	CH. 14
Locks and Dam 14, Pleasant Valley, Iowa	563 332-0907	CH. 14
Locks and Dam 15, Rock Island, Illinois	309 794-5266	CH. 14
Lock and Dam 16, Illinois City, Illinois	309 537-3191	CH. 14
Lock and Dam 17, New Boston, Illinois	309 587-8125	CH. 14
Lock and Dam 18, Gladstone, Illinois	309 873-2246	CH. 14
Lock 19, Keokuk, Iowa	319 524-2631	CH. 14
Lock and Dam 20, Canton, Missouri	573 288-3320	CH. 14
Lock and Dam 21, Quincy, Illinois	217 222-0918	CH. 14
Lock and Dam 22, New London, Missouri	573 221-0294	CH. 14

### Mississippi River Project/Channel Maintenance Office Contact List:

	Office	Cell
Arron Dunlop	309 794-4500	
Jon Klingman	309 794-5240	309 738-2257

### **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 Coast Guard 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 Corp through the District Commander will make recommendations to the Coast Guard to issue safety zone restrictions or river closures. Likewise as river conditions improve the Corps 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 Corps 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.

**Lock and Dam 24 Hour Phone Numbers:**

Lock and Dam 24, Clarksville, Missouri	573 242-3524	CH. 14
Lock and Dam 25, Winfield, Missouri	314-566-8120	CH. 12
Lock and Dam 26, Alton, Illinois	618 462-1713	CH. 14
Lock and Dam 27, Granite City, Illinois	618 452-7107	CH. 12

1. Water Control Contact List:

	<u>Work</u>	<u>Cell</u>
Joan Stemler	314-331-8330	314-630-6292
Russell Errett	314-331-8337	314-681-7625
Liz Norrenberns	314-331-8351	314-277-5825
Leonard Hopkins	314-331-8348	314-799-3458

2. River Project Contact List:

	<u>Work</u>	<u>Cell</u>
Andy Schimpf	636-899-0044	314-630-6280
Lou DellOrco	314-331-8100	314-303-2571

3. Dredging Operations

	<u>Work</u>
Lance Engle	314-952-5197

- USACE will report hazardous conditions to Coast Guard.
- USACE will coordinate with Coast Guard for issuance of safety zones.

**Illinois Emergency Management Agency (IEMA)**

In the event of an incident occurring on the waterways, which could involve the state of Illinois, you should immediately phone our telecommunications center. This will alert our 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.

IEMA Telecommunications Center: 217-782-7860 or 800-782-7860

<https://www.illinois/iema/pages>

**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. We engage 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, please contact the HLSEM Duty Officer at 515-979-2200 or 515-281-3231.  
[www.homelandsecurity.iowa.gov](http://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 at 1-800-422-0798, Twin Cities Metro Area is 651-649-5451, Fax 651-296-2300, TDD: 651/215-6952 (Metro Area) and 1-800-627-3529 in Greater MN. Additional information is available at [www.hsem.state.mn.us](http://www.hsem.state.mn.us)

## **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.

SEMA has a 24-hour duty officer who can be reached at (573) 751-2748; SEMA's agency toll-free number is (800) 298-6289.

SEMA's Director is Mr. Ron Walker (573) 526-9100.

[www.sema.dps.mo.gov](http://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 System can be accessed through the 24 hour telephone number 800-943-0003. 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.

[www.emergencymanagement.wi.gov](http://www.emergencymanagement.wi.gov)

# UPPER MISSISSIPPI RIVER ATON PRIORITIZATION 2017

RIVER MILE	AREA NAME	INDUSTRY CONCERN	REDS	GREENS
110.1-110.3	Chester Bridge Approach	Provides leadin to bridge	0	2
111-113	Chester	Shoaling @ low water	3	0
116.0 - 117.5	Fort Gage	BENDS SHOAL AT LOW WATER	0	6
120-122.3	Ste Genevieve	BENDS SHOAL AT LOW WATER	7	1
124.5-126	Little Rock Landing	Shoaling @ low water	0	3
130.0 - 132	Fort Charters Bend	Shoaling @ low water	2	6
157.3-158.4	Water's Point	Shoaling @ low water	0	1
159.6-162.5	Maramec/Fines Bluff	Chevron & Finger Dykes	6	0
163-164	Carl Bear Bend	Shoaling @ low water	0	3
166-168.6	Jefferson Barracks Bar	Shoaling @ low water	4	0
171.0 - 175.0	ST. LOUIS HARBOR	BENDS SHOAL AT LOW WATER	5	0
182.0 - 183.0	McKinley Bridge	Shoaling @ low water	1	3
222.0 - 226.0	BOULTERS BAR TO SQUAWK ISLAND	SHOALING ON BOTH SIDES, DIKES ON LDB	5	5
242.0 - 244.0	LOCK 25 UPPER REACH	LONG NARROW BEND, SHOALING ON BOTH SIDES, DIKES ON LDB	4	6
248.0 - 250.0	CHURCH CREEK	LONG NARROW BEND, SHOALING ON BOTH SIDES, DIKES ON LDB	5	5
260.0 - 263.0	DAGO POINT TO MOZIER	LONG NARROW BEND, SHOALING ON BOTH SIDES, DIKES ON LDB	5	6
289.0 - 291.0	NORTH FRITZ	LONG NARROW BEND, SHOALING ON BOTH SIDES, DIKES ON BOTH SIDES	4	6
301.0 - 303.0	LOCK 22 UPPER REACH	NARROW CHANNEL, DIKES ON BOTH SIDES	4	6
305.0 - 307.0	CAVE HOLLOW	LONG NARROW CHANNEL, SHOALING AND DIKES ON RDB	5	3
312.0 - 314.0	WHITNEY TO WALKER	LONG NARROW BEND, SHOALING ON BOTH SIDES, DIKES ON LDB	4	4
331.0 - 333.0	HOGBACK TO LONGTREE	NARROW CHANNEL SHOALING BOTH SIDES	4	4
339.0 - 345.0	LOCK 20 LOWER AND UPPER REACH	NARROW CHANNEL, SHOALING BOTH SIDES, DIKE ON RDB	5	5
348.7 - 350.0	LIFERS TO CURTIS	LONG NARROW BEND, SHOALING ON BOTH SIDES, DIKES ON BOTH SIDES	5	3
361.0 - 346.0	LOCK 19 LOWER APPROACH	LONG NARROW BEND, SHOALING ON BOTH SIDES, DIKES ON LDB	6	5
396.0 - 400.0	KEMPS TO BURLINGTON ISLAND	LONG NARROW BEND, SHOALING ON BOTH SIDES	5	5
402.0 - 403.0	BELOW BURLINGTON R/R BRIDGE	SHOALING ON RDB	2	0
413.0 - 415.0	OQWAWKA TO FURNALD	LONG NARROW CHANNEL, SHOALING AND DIKES ON BOTH SIDES	2	4
419.0 - 421.8	BUCK POINT TO BENTON ISLAND	LONG NARROW BEND, SHOALING ON BOTH SIDES, DIKES ON BOTH SIDES	4	4
423.0 - 426.0	KEITHSBURG ISLAND TO CHEROKEE	LONG NARROW CHANNEL, SHOALING AND DIKES ON BOTH SIDES	4	3
430.0 - 432.0	EDWARD ISLAND UPPER	NARROW CHANNEL SHOALING AND DIKES BOTH SIDES (ROCK CUT)	3	3
459.0 - 461.0	ILLINOIS CITY TO HERSHEY CHUTE	LONG NARROW CHANNEL, SHOALING AND DIKES ON BOTH SIDES	3	3
475.0 - 479.0	LECLAIRE TO HORSE ISLAND	NARROW CHANNEL SHOALING AND DIKES BOTH SIDES (ROCK CUT)	4	4
503.0 - 504.0	HUGGINS TO CORDOVA	NARROW CHANNEL, SHOALING BOTH SIDES, DIKE ON RDB	2	2
523.0 - 527.0	ELK RIVER TO FULTON	LONG NARROW CHANNEL, SHOALING AND DIKES ON BOTH SIDES	4	3
528.5 - 535.0	LOWER SMITH BAY TO SABULA BRIDGE	LONG NARROW CHANNEL, SHOALING AND DIKES ON BOTH SIDES	6	6
538.0 - 540.0	SAVANAH BAY TO KELLERS	LONG NARROW CHANNEL, SHOALING AND DIKES ON BOTH SIDES	5	5
543.0 - 545.0	ISLAND 259 TO UPPER ARNOLD	LONG NARROW CHANNEL, SHOALING AND DIKES ON BOTH SIDES	3	4
560.5 - 562.3	BELLVUE TO FEVER RIVER	NARROW CHANNEL, SHOALING BOTH SIDES, DIKE ON RDB	4	4
582.0 - 592.0	LOCK AND DAM 11 TO SPECHTS FERRY (10 MILES)	LONG NARROW CHANNEL, SHOALING AND DIKES ON BOTH SIDES	8	8
594.0 - 599.0	ROSEBROOK TO WAPETON	LONG NARROW CHANNEL, SHOALING AND DIKES ON BOTH SIDES	4	5
608.0 - 610.0	TURKEY RIVER	NARROW CHANNEL SHOALING AND DIKES BOTH SIDES (ROCK CUT)	5	4
615.1 - 616.5	LOCK AND DAM 10 UPPER APPROACH	NARROW CHANNEL SHOALING AND DIKES BOTH SIDES	0	2
618.4 - 619.6	MCMILLAND ISLAND	NARROW CHANNEL SHOALING AND DIKES BOTH SIDES	0	2
622.0 - 622.5	HOVIE ISLAND	NARROW CHANNEL SHOALING BOTH SIDES	0	1
625.5 - 626.5	CATFISH	NARROW CHANNEL SHOALING AND DIKES BOTH SIDES	2	2
660.0 - 661.0	ATCHAFALAYA BLUFF UPPER	NARROW CHANNEL SHOALING AND DIKES ON LDB	0	3
663.0 - 666.0	LANSING TO BIG LAKE	LONG NARROW CHANNEL, SHOALING AND DIKES ON BOTH SIDES	5	5
677.5 - 678.4	ISLAND 126	NARROW CHANNEL SHOALING AND DIKES ON RDB	2	0

## UPPER MISSISSIPPI RIVER ATON PRIORITIZATION 2017

RIVER MILE	AREA NAME	INDUSTRY CONCERN	REDS	GREENS
678.7 - 679.2	LOCK AND DAM 8 LOWER APPROACH	ROCK CUT ON RDB	1	1
684.6 - 685.0	CROSBY SLOUGH	NARROW CHANNEL SHOALING BOTH SIDES	1	1
686.0 - 689.0	BENOVER TO BROWNSVILLE	LONG NARROW CHANNEL, SHOALING AND DIKES ON BOTH SIDES	4	4
689.9 - 692.0	BROWNSVILLE TO 2 MILE ISLAND	LONG NARROW CHANNEL, SHOALING AND DIKES ON BOTH SIDES	4	4
693.5 - 693.7	ROOT RIVER	SHOALING ON BOTH SIDES, DIKES ON RDB	1	1
698.6 - 698.7	LACROSSE	SHOALING ON BOTH SIDES, DIKES ON RDB	1	1
699.8 - 700.4	LACROSSE RAILROAD BRIDGE	SHOALING ON BOTH SIDES, DIKES ON RDB	1	1
702.5 - 703.7	LOCK AND DAM 7 UPPER APPROACH TO LOWER DRESBACH ISLAND	NARROW CHANNEL SHOALING BOTH SIDES	1	1
704.0 - 707.0	DRESBACH TO DAKOTA	LONG NARROW CHANNEL, SHOALING AND DIKES ON BOTH SIDES	4	4
711.4 - 712.3	RICHMOND ISLAND	SHOALING ON BOTH SIDES, DIKES ON RDB	2	1
714.0 - 715.0	LOCK AND DAM 6 APPROACHES	NARROW CHANNEL SHOALING BOTH SIDES	1	1
718.5 - 719.3	BLACKSMITH SLOUGH	DIKES N LDB	1	1
719.7 - 719.3	HOMER	NARROW CHANNEL SHOALING AND DIKES ON RDB	1	0
721.8 - 722.9	GRAVEL POINT	NARROW CHANNEL SHOALING AND DIKES ON RDB	2	0
723.0 - 723.8	LOWER WINONA RAILROAD BRIDGE	NARROW CHANNEL SHOALING AND DIKES ON RDB	1	2
730.0 - 731.0	BETSEY SLOUGH	NARROW CHANNEL SHOALING AND DIKES ON RDB	2	0
731.0 - 732.0	TITUS	SHOALING ON BOTH SIDES, DIKES ON RDB	3	3
742.7 - 743.0	MINNEISKA	NARROW CHANNEL SHOALING AND DIKES ON RDB	3	0
743.0 - 744.6	LOWER ZUMBRO	NARROW CHANNEL SHOALING AND DIKES ON LDB	0	3
744.8 - 746.8	FISHER ISLAND TO LOWER WEST NEWTON	LONG NARROW CHANNEL, SHOALING AND DIKES ON BOTH SIDES	3	3
747.2 - 749.2	WEST NEWTON TO MULE BEND	LONG NARROW CHANNEL, SHOALING AND DIKES ON BOTH SIDES	3	3
753.8 - 754.1	BEEF SLOUGH	NARROW CHANNEL SHOALING AND DIKES ON LDB	0	2
755.8 - 756.9	GRAND ENCAMPMENT	NARROW CHANNEL SHOALING AND DIKES ON BOTH SIDES	2	2
757.0 - 757.9	TEEPEOTA POINT	NARROW CHANNEL SHOALING AND DIKES ON BOTH SIDES	2	2
758.7 - 759.9	CRATS ISLAND	NARROW CHANNEL SHOALING AND DIKES ON BOTH SIDES	2	2
761.8 - 763.8	READS LANDING	LONG NARROW CHANNEL, SHOALING ON BOTH SIDES	2	4
783.0 - 786.0	WACOUTA TO PEPIN HEAD LIGHT	LONG NARROW CHANNEL, SHOALING AND DIKES ON BOTH SIDES	4	4
789.5 - 792.0	RED WING BRIDGE TO RED WING UPPER	LONG NARROW CHANNEL, SHOALING AND DIKES ON BOTH SIDES	3	3
792.1 - 793.7	CANNON RIVER	NARROW CHANNEL SHOALING ON LDB	0	3
794.0 - 794.6	TRENTON	NARROW BEND SHOALING ON LDB	0	2
798.8 - 801.9	DIAMOND BLUFF TO COULTERS ISLAND	LONG NARROW CHANNEL, SHOALING AND DIKES ON BOTH SIDES	4	4
814.9 - 816.5	LOCK AND DAM 2 APPROACHES	NARROW CHANNEL SHOALING ON BOTH SIDES	1	1
818.0 - 819.3	FREEBORN LIGHT	NARROW CHANNEL SHOALING ON BOTH SIDES	2	2
818.0 - 821.4	BOULANGER BEND	LONG NARROW CHANNEL, SHOALING ON BOTH SIDES DIKES ON LDB	3	3
822.7 - 823.7	PINE BEND	NARROW BEND, SHOALING ON BOTH SIDES, DIKES ON BOTH SIDES	2	0
825.5 - 826.5	ROBINSON ROCKS	NARROW CHANNEL SHOALING AND DIKES ON RDB	2	0
827.5 - 828.3	GREY CLOUD SLOUGH	NARROW BEND, SHOALING ON BOTH SIDES, DIKES ON LDB	0	2
836.4 - 837.8	ST PAUL BARGE TERMINAL	NARROW BEND, SHOALING ON BOTH SIDES, DIKES ON RDB	0	2



## Sector Upper Mississippi River 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 an all too 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 throughout Sector Upper Mississippi River's area of responsibility on the Mississippi, Missouri, and Illinois Rivers, including approximately eighty-one (81) fleeting areas throughout the St. Louis harbor.


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 should be clear that all fleets have different dynamics that affect them. 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 the River Industry Advisory Committee (RIAC), Illinois River Carrier's Association (IRCA), Missouri River Action Committee (MRAC), and through radio broadcast notices to mariners.

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 St. Louis area Waterways Action Plan (WAP) and advisories. Members of the Association 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 harbor, especially downriver fleets, prior to de-drifting or de-icing activities.
3. Closely monitor tows transiting the harbor 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 their fleet surveillance and mooring inspections to identify potential issues and take immediate action to correct.
7. In the event of emergency (such as a tow break-up or fleet breakaway), take immediate action to secure the breakaway; report each breakaway as soon as possible to the Captain of the Port (COTP) by telephone, radio, or other means of rapid communication.
8. For St. Louis Harbor, in the event of an emergency, the St. Louis Association should appoint one of the companies who have 24 hour dispatchers to keep the USCG Command Center apprised of the situation until the vessels involved in the emergency can talk to them directly.

# UMR QUICK REFERENCE RIVER GAGE ACTION SHEET

			HIGH WATER PHASE			
ZONES	MM	MM	NORMAL	WATCH	ACTION	GAGE LOCATION
UPPER MISSISSIPPI RIVER			IAW UMR WAP 2015			
2	815.2	847.5	Below 15'	15' - 17'	17' & Above	HASTINGS L/D 2
3	796.9	815.1	Below 672'	672' - 677'	677' & Above	RED WING L/D 3
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' - 18.9'	19' & Above	BELLEVUEE L/D 12
13	522.4	556.6	Below 16'	16' - 17.9'	18' & Above	FULTON L/D 13
14	493.3	522.3	Below 11'	11' - 12.9'	13' & Above	LE CLAIR L/D 14
15	482.9	493.2	Below 15'	15' - 16.9'	17' & Above	ROCK ISLAND L/D 15
16	457.2	482.8	Below 15'	15' - 16.9'	17' & Above	MUSCATINE L/D 16
17	437.1	457.1	Below 14'	14' - 15.9'	16' & Above	NEW BOSTON L/D 17
18	410.5	437	Below 10'	10' - 11.9'	12' & Above	GLADSTONE L/D 18
19	364.2	410.4	Below 16'	16' - 17.9'	18' & Above	KEOKUK L/D 19
20	343.2	364.1	Below 14'	14' - 15.9'	16' & Above	CANTON L/D 20
21	324.9	343.1	Below 17'	17' - 21.8'	21.9' & Above	QUINCY L/D 21
22	301.2	324.8	Below 16'	16' - 21.3'	21.4' & Above	SAVERTON L/D 22
23						
24	273.4	301.1	Below 25'	25' - 28.9'	29' & Above	CLARKSVILLE L/D 24
25	241.4	273.3	Below 26'	26' - 33.7'	38' & Above	WINFIELD L/D 25
26	200.5	241.3	Below 21'	21' - 36.4'	36.5' & Above	ALTON L/D MEL PRICE
27	185.5	200.4	Below 38'	38' - 39.9'	40' & Above	ST LOUIS GAGE
28	109.9	185.4	Below 20'	20' - 25'	25' - 29.9'	ST LOUIS GAGE
					EXTREME - 30' - 38' 38' & Above	ST LOUIS GAGE
			LOW WATER			
ZONES	MM	MM	WATCH	HIGH	EXTREME	
2 THRU 27	185.5	847.5	POOLED	POOLED	POOLED	
28	109.9	185.4	3	0		-3.5
			ICE CONDITIONS			
			WATCH	ACTION	RECOVERY	
			Ice Build-Up in Channel and Sheet Ice	Heavy Ice Gorges	Rotting Ice, Increased Flow	
					Softening Ice	

**ACTION PLAN TABLE**  
**HIGH WATER**  
**St. Paul, MN to Chester, IL**  
**RM 857.6 – 109.9**

## **This Information is Applicable to all Tables**

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.
- Issue advisory or establish safety zone if deemed necessary to indicate extreme low water, high water, high flow, or extreme ice conditions.
- Coast Guard and USACE will typically reset buoys in those narrow channel locations within reach and continue an 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.
- Continue communications. (e-mails, conference calls or others) – consider establishing notices, advisories and/or safety zones as needed using standard communication links.

## Section 4 – Action Plan

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

**ACTION PLAN TABLE – High Water Zone 28**

CRITICAL LOCATION DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
<b>Upper Mississippi River</b>  <b>Zone 28</b>  <b>Miles 109.9 to 185.4</b>  Reference Gauge: St. Louis RM 179.6  Flood Stage: 30' / 409.94' MSL/NGVD  MSL/NGVD Gauge Zero: 379.94'	20' and below	Rising	Normal Operations		As stage rises towards flood stage at a gauge or series of gauge locations consider the need to initiate communications plan with USACE, RIAC, and USCG. Monitor river gauges frequently.
	20' to 25'	Rising	High Water	Watch	Initiate communication plan. Issue advisory between UMR mile 160.0 – 201.0 that indicates high water and drift potential. Advise the use of caution and minimize wake. All tow boat operators should be experienced in high water operations. Consider tow restrictions, hp requirements, dangers of down streaming, discuss mooring arrangements, and bridge clearance issues. 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. Maintain communication between USACE, RIAC, USCG, and other agencies involved.
	25' to 30'	Rising	High Water	Action	Establish safety zone in St. Louis harbor, mile 179 to 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, and should proceed at the slowest safe operating speed based upon prevailing conditions in order to minimize wake damage to personal property. Maintain communication between USACE, RIAC, USCG, and other agencies involved. Consider press release and/or Joint Information Center, and formation of Incident Command Post if needed.
	30' to 38'	Rising	Extreme High Water	Action	Continue Safety Zone currently in effect. Use watch stage along with high current reports, impacted river reach, towboat positions and levee conditions to determine the need to establish a safety zone/river closure. Discourage/prohibit recreational vessel transit, assess bridge clearances in advance, minimize speed to avoid wake damage, favor center of channel, prohibit laying up on levees, caution in passing/meeting situations, monitor fleeting areas and mooring lines/arrangements, review anchoring requirements have towboat attend fleets at all times, coordinate with adjacent facilities/fleet boats for assistance in event of breakaway, pre-

					identify lay-up areas in event of river closure, allow fleeting to continue, advise swift current caution. Northbound tows must have enough horsepower to maintain a minimum speed of 3 MPH on approach to the St. Louis harbor bridges. 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.” Western River Flood Punts (WRFP) are placed on 6 hour standby, daily SITREPS are prepared, and contact is made with local, state, and federal emergency agencies. Maintain communication between USACE, RIAC, USCG, and other agencies involved. Consider standing up an Incident Command Post if not done already.
	38' and above	Rising	Extreme High Water	Action	River may be closed until St. Louis gauge drops below 38' or conditions warrant reopening river. Monitor levee conditions and deploy Western River Flood Punts (WRFP) if necessary. Create plan for reopening river and clearing the queue. Continue SITREPs until river falls below 30'. Maintain communication between USACE, RIAC, USCG, and other agencies involved. Consider standing up an Incident Command Post.
	38' to 30'	Stable or Falling	Extreme High Water	Recovery	Continue safety zone currently in effect between UMR miles 179 to mile 184. Evaluate river conditions for river reopening. Initiate plan for clearing the queue. Continue SITREPs until river falls below 30'. Maintain communication between USACE, RIAC, USCG, and other agencies involved.
	30' to 25'	Falling	Extreme High Water	Recovery	Continue Safety Zone currently in effect between UMR 179 to 184. Reopen river if conditions warrant. Use watch stage along with high current reports, impacted river reach, towboat positions and levee conditions to determine the need to establish a safety zone/river closure. Discourage/prohibit recreational vessel transit, assess bridge clearances in advance, minimize speed to avoid wake damage, favor center of channel, prohibit laying up on levees, caution in passing/meeting situations, monitor fleeting areas and mooring lines/arrangements, review anchoring requirements have towboat attend fleets at all times, coordinate with adjacent facilities/fleet boats for assistance in event of breakaway, pre-identify lay-up areas in event of river closure, allow fleeting to continue, advise swift current caution. Disaster Response Teams remain on 6 hour standby, daily SITREPS are prepared, and contact is made with local, state, and federal emergency agencies. Maintain communication between USACE, RIAC, USCG, and other agencies involved.

	25' to 20'	Falling	High Water	Recovery	Cancel current safety zone in St. Louis harbor and issue advisory between miles 160 to mile 201. Advisory should indicate high water and drift potential. Advise the use of caution and minimize wake. Consider tow restrictions, hp requirements, dangers of down streaming, and discuss mooring arrangements. 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. Maintain communication between USACE, RIAC, USCG, and other agencies involved.
	20' to 18'	Falling	High Water	Recovery	Issue advisory that indicates high water and to exercise caution; Users to report hazardous conditions to Coast Guard. Initiate communications plan if river level begins rising.
	18' and below	Falling	Normal operations		Issue final advisory that indicates return to normal operations. Users to report hazardous conditions to the Coast Guard. Cease all advisories if conditions allow.

## High Water Zone 27

CRITICAL LOCATION DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
<p style="text-align: center;"><b>Upper Mississippi River</b></p> <p style="text-align: center;"><b>Zone 27</b></p> <p><b>Miles 185.5 to 200.4</b></p> <p>Flood Stage: Reference St. Louis Flood Stage: 30'/409.94' MSL/NGVD</p> <p>MSL/NGVD Gauge Zero: 350.0'</p> <p>L&amp;D Closure: Reference St. Louis Stage: 47'/426.94' MSL</p>	38' and below	Rising	Normal Operations		As stage rises towards flood stage at a gauge or series of gauge locations consider the need to initiate communications plan with USACE, RIAC, and USCG. Monitor river gauges frequently.
	38' to 40'	Rising	High Water	Watch	Initiate communication plan. Issue advisory that indicates high water and drift potential. All tow boat operators should be experienced in high water operations. Advise the use of caution and minimize wake. Consider tow restrictions, hp requirements, dangers of down streaming, discuss mooring arrangements, and bridge clearance issues.
	40' and above	Rising	Extreme High Water	Action	Use watch stage along with high current reports, impacted river reach, towboat positions and levee conditions to determine the need to establish a safety zone/river closure. Discourage/prohibit recreational vessel transit, assess bridge clearances in advance, minimize speed to avoid wake damage, favor center of channel, prohibit laying up on levees, caution in passing/meeting situations, monitor fleeting areas and mooring lines/arrangements, review anchoring requirements have towboat attend fleets at all times, coordinate with adjacent facilities/fleet boats for assistance in event of breakaway, pre-identify lay-up areas in event of river closure, allow fleeting to continue, advise swift current caution. Consider press release and/or Joint Information Center, and formation of Incident Command Post if needed.
	40' to 38'	Stable or Falling	High Water	Recovery	Use watch stage along with high current reports, impacted river reach, towboat positions and levee conditions if and when to reopen the river (if a safety zone or closure was established). Determine what action advisories need to be removed or remain depending on river conditions. Use of test tows should be considered prior to opening the river.
	38' to 25'	Falling	High Water	Recovery	Issue advisory that indicates high water and to exercise caution; Users to report hazardous conditions to Coast Guard. Initiate communications plan if river level begins rising.
	25' to 16'	Falling	Normal Operations	Recovery	Issue final advisory that indicates return to normal operations. Users to report hazardous conditions to the Coast Guard. Cease all advisories if conditions allow.



## High Water Zone 26

CRITICAL LOCATION DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
<p style="text-align: center;"><b>Upper Mississippi River</b></p> <p style="text-align: center;"><b>Zone 26</b></p> <p><b>Miles 200.5 to 241.3</b></p> <p>Reference Gauge: Mel Price Lock &amp; Dam #26 Tail water Gauge: RM 200.5</p> <p>Flood Stage: 21’/416.48 MSL/NGVD</p> <p>MSL/NGVD Gauge Zero: 395.48’</p> <p>L&amp;D Closure: 36.5’/432.0’ MSL</p>	21’ and below	Rising	Normal Operations		As stage rises towards flood stage at a gauge or series of gauge locations consider the need to initiate communications plan with USACE, RIAC, and USCG. Monitor river gauges frequently.
	21’ to 36.5’	Rising	High Water	Watch	Initiate communication plan. Issue advisory that indicates high water and drift potential. All tow boat operators should be experienced in high water operations. Advise the use of caution and minimize wake. Consider tow restrictions, hp requirements, dangers of down streaming, discuss mooring arrangements, and bridge clearance issues.
	36.5’ and above	Rising	Extreme High Water	Action	Use watch stage along with high current reports, impacted river reach, towboat positions and levee conditions to determine the need to establish a safety zone/river closure. Discourage/prohibit recreational vessel transit, assess bridge clearances in advance, minimize speed to avoid wake damage, favor center of channel, prohibit laying up on levees, caution in passing/meeting situations, monitor fleeting areas and mooring lines/arrangements, review anchoring requirements have towboat attend fleets at all times, coordinate with adjacent facilities/fleet boats for assistance in event of breakaway, pre-identify lay-up areas in event of river closure, allow fleeting to continue, advise swift current caution. Consider press release and/or Joint Information Center, and formation of Incident Command Post if needed.
	36.5’ to 21’	Stable or Falling	High Water	Recovery	Use watch stage along with high current reports, impacted river reach, towboat positions and levee conditions if and when to reopen the river (if a safety zone or closure was established). Determine what action advisories need to be removed or remain depending on river conditions. Issue advisory that indicates high water and to exercise caution; Users to report hazardous conditions to Coast Guard. Initiate communications plan if river level begins rising.
	21’ and below	Falling	Normal Operations	Recovery	Issue final advisory that indicates return to normal operations. Users to report hazardous conditions to the Coast Guard. Cease all advisories if conditions allow.

## High Water Zone 25

CRITICAL LOCATION DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
<p style="text-align: center;"><b>Upper Mississippi River</b></p> <p style="text-align: center;"><b>Zone 25</b></p> <p style="text-align: center;"><b>Miles 241.4 to 273.3</b></p> <p>Reference Gauge: Lock &amp; Dam #25 Tail water Gauge: RM 241.2</p> <p>Flood Stage: 26'/433' MSL/NGVD</p> <p>MSL/NGVD Gauge Zero: 407.00</p> <p>L&amp;D Closure: 33.75'/440.75' MSL</p>	26' and below	Rising	Normal Operations		As stage rises towards flood stage at a gauge or series of gauge locations consider the need to initiate communications plan with USACE, RIAC, and USCG. Monitor river gauges frequently.
	26' to 33.8'	Rising	High Water	Watch	Initiate communication plan. Issue advisory that indicates high water and drift potential. All tow boat operators should be experienced in high water operations. Advise the use of caution and minimize wake. Consider tow restrictions, hp requirements, dangers of down streaming, discuss mooring arrangements, and bridge clearance issues.
	33.8' and above	Rising	Extreme High Water	Action	Use watch stage along with high current reports, impacted river reach, towboat positions and levee conditions to determine the need to establish a safety zone/river closure. Discourage/prohibit recreational vessel transit, assess bridge clearances in advance, minimize speed to avoid wake damage, favor center of channel, prohibit laying up on levees, caution in passing/meeting situations, monitor fleeting areas and mooring lines/arrangements, review anchoring requirements have towboat attend fleets at all times, coordinate with adjacent facilities/fleet boats for assistance in event of breakaway, pre-identify lay-up areas in event of river closure, allow fleeting to continue, advise swift current caution. Consider press release and/or Joint Information Center, and formation of Incident Command Post if needed.
	33.8 to 26'	Stable or Falling	High Water	Recovery	Use watch stage along with high current reports, impacted river reach, towboat positions and levee conditions if and when to reopen the river (if a safety zone or closure was established). Determine what action advisories need to be removed or remain depending on river conditions. Issue advisory that indicates high water and to exercise caution; Users to report hazardous conditions to Coast Guard. Initiate communications plan if river level begins rising.
	26' and below	Falling	Normal Operations	Recovery	Issue final advisory that indicates return to normal operations. Users to report hazardous conditions to the Coast Guard. Cease all advisories if conditions allow.

## High Water Zone 24

CRITICAL LOCATION DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
<p style="text-align: center;"><b>Upper Mississippi River</b></p> <p style="text-align: center;"><b>Zone 24</b></p> <p><b>Miles 273.4 to 301.1</b></p> <p>Reference Gauge: Lock &amp; Dam #24 Tail water Gauge RM 273.24</p> <p>Flood Stage: 25' / 446.81' MSL/NGVD</p> <p>MSL/NGVD Gauge Zero: 421.81</p> <p>L&amp;D Closure: 32.5'/454.75' MSL</p> <p>Louisiana HWY Drawbridge at RM 282.1</p>	25' and below	Rising	Normal Operations		As stage rises towards flood stage at a gauge or series of gauge locations consider the need to initiate communications plan with USACE, RIAC, and USCG. Monitor river gauges frequently.
	25' to 29'	Rising	High Water	Watch	Initiate communication plan. Issue advisory that indicates high water and drift potential. All tow boat operators should be experienced in high water operations. Advise the use of caution and minimize wake. Consider tow restrictions, hp requirements, dangers of down streaming, discuss mooring arrangements, and bridge clearance issues.
	29' and above	Rising	Extreme High Water	Action	Use watch stage along with high current reports, impacted river reach, towboat positions and levee conditions to determine the need to establish a safety zone/river closure. Discourage/prohibit recreational vessel transit, assess bridge clearances in advance, minimize speed to avoid wake damage, favor center of channel, prohibit laying up on levees, caution in passing/meeting situations, monitor fleeting areas and mooring lines/arrangements, review anchoring requirements have towboat attend fleets at all times, coordinate with adjacent facilities/fleet boats for assistance in event of breakaway, pre-identify lay-up areas in event of river closure, allow fleeting to continue, advise swift current caution. Consider press release and/or Joint Information Center, and formation of Incident Command Post if needed.
	29' to 25'	Stable or Falling	High Water	Recovery	Use watch stage along with high current reports, impacted river reach, towboat positions and levee conditions if and when to reopen the river (if a safety zone or closure was established). Determine what action advisories need to be removed or remain depending on river conditions. Issue advisory that indicates high water and to exercise caution; Users to report hazardous conditions to Coast Guard. Initiate communications plan if river level begins rising.
	25' and below	Falling	Normal Operations	Recovery	Issue final advisory that indicates return to normal operations. Users to report hazardous conditions to the Coast Guard. Cease all advisories if conditions allow.

**High Water Zone 23 is N/A**

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## High Water Zone 22

CRITICAL LOCATION DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
<p style="text-align: center;"><b>Upper Mississippi River</b></p> <p style="text-align: center;"><b>Zone 22</b></p> <p style="text-align: center;"><b>Miles 301.2 to 324.8</b></p> <p>Reference Gauge: Lock &amp; Dam #22 RM 301.2</p> <p>Flood Stage: 16.0' / 462.1' MSL</p> <p>MSL/NGVD Gauge Zero: 446.10</p> <p>L&amp;D Closure: 21.9' / 467.5' MSL</p>	16' and below	Rising	Normal Operations		As stage rises towards flood stage at a gauge or series of gauge locations consider the need to initiate communications plan with USACE, RIAC, and USCG. Monitor river gauges frequently.
	16' to 21.4	Rising	High Water	Watch	Initiate communication plan. Issue advisory that indicates high water and drift potential. All tow boat operators should be experienced in high water operations. Advise the use of caution and minimize wake. Consider tow restrictions, hp requirements, dangers of down streaming, discuss mooring arrangements, and bridge clearance issues.
	21.4' and above	Rising	Extreme High Water	Action	Use watch stage along with high current reports, impacted river reach, towboat positions and levee conditions to determine the need to establish a safety zone/river closure. Discourage/prohibit recreational vessel transit, assess bridge clearances in advance, minimize speed to avoid wake damage, favor center of channel, prohibit laying up on levees, caution in passing/meeting situations, monitor fleeting areas and mooring lines/arrangements, review anchoring requirements have towboat attend fleets at all times, coordinate with adjacent facilities/fleet boats for assistance in event of breakaway, pre-identify lay-up areas in event of river closure, allow fleeting to continue, advise swift current caution. Consider press release and/or Joint Information Center, and formation of Incident Command Post if needed.
	21.4' to 16'	Stable or Falling	High Water	Recovery	Use watch stage along with high current reports, impacted river reach, towboat positions and levee conditions if and when to reopen the river (if a safety zone or closure was established). Determine what action advisories need to be removed or remain depending on river conditions. Issue advisory that indicates high water and to exercise caution; Users to report hazardous conditions to Coast Guard. Initiate communications plan if river level begins rising.
	16' and below	Falling	Normal Operations	Recovery	Issue final advisory that indicates return to normal operations. Users to report hazardous conditions to the Coast Guard. Cease all advisories if conditions allow.

## High Water Zone 21

CRITICAL LOCATION DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
<p style="text-align: center;"><b>Upper Mississippi River</b></p> <p style="text-align: center;"><b>Zone 21</b></p> <p><b>Miles 324.9 to 343.1</b></p> <p>Reference Gauge: Lock &amp; Dam #21 RM 324.9</p> <p>Flood Stage: 17.0' / 474.8' MSL</p> <p>MSL/NGVD Gauge Zero: 457.80</p> <p>L&amp;D Closure: 21.9' / 479.7' MSL</p>	17' and below	Rising	Normal Operations		As stage rises towards flood stage at a gauge or series of gauge locations consider the need to initiate communications plan with USACE, RIAC, and USCG. Monitor river gauges frequently.
	17' to 21.9'	Rising	High Water	Watch	Initiate communication plan. Issue advisory that indicates high water and drift potential. All tow boat operators should be experienced in high water operations. Advise the use of caution and minimize wake. Consider tow restrictions, hp requirements, dangers of down streaming, discuss mooring arrangements, and bridge clearance issues.
	21.9' and above	Rising	Extreme High Water	Action	Use watch stage along with high current reports, impacted river reach, towboat positions and levee conditions to determine the need to establish a safety zone/river closure. Discourage/prohibit recreational vessel transit, assess bridge clearances in advance, minimize speed to avoid wake damage, favor center of channel, prohibit laying up on levees, caution in passing/meeting situations, monitor fleeting areas and mooring lines/arrangements, review anchoring requirements have towboat attend fleets at all times, coordinate with adjacent facilities/fleet boats for assistance in event of breakaway, pre-identify lay-up areas in event of river closure, allow fleeting to continue, advise swift current caution. Consider press release and/or Joint Information Center, and formation of Incident Command Post if needed.
	21.9' to 17'	Stable or Falling	High Water	Recovery	Use watch stage along with high current reports, impacted river reach, towboat positions and levee conditions if and when to reopen the river (if a safety zone or closure was established). Determine what action advisories need to be removed or remain depending on river conditions. Issue advisory that indicates high water and to exercise caution; Users to report hazardous conditions to Coast Guard. Initiate communications plan if river level begins rising.
	17' and below	Falling	Normal Operations	Recovery	Issue final advisory that indicates return to normal operations. Users to report hazardous conditions to the Coast Guard. Cease all advisories if conditions allow.

## High Water Zone 20

CRITICAL LOCATION DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
<p style="text-align: center;"><b>Upper Mississippi River</b></p> <p style="text-align: center;"><b>Zone 20</b></p> <p><b>Miles 343.2 to 364.1</b></p> <p>Reference Gauge: Lock &amp; Dam #20 RM 343.2</p> <p>Flood Stage: 14.0' / 482.5' MSL</p> <p>MSL/NGVD Gauge Zero: 468.50</p> <p>L&amp;D Closure: 18.0' / 486.5' MSL</p>	14' and below	Rising	Normal Operations		As stage rises towards flood stage at a gauge or series of gauge locations consider the need to initiate communications plan with USACE, RIAC, and USCG. Monitor river gauges frequently.
	14' to 16'	Rising	High Water	Watch	Initiate communication plan. Issue advisory that indicates high water and drift potential. All tow boat operators should be experienced in high water operations. Advise the use of caution and minimize wake. Consider tow restrictions, hp requirements, dangers of down streaming, discuss mooring arrangements, and bridge clearance issues.
	16' and above	Rising	Extreme High Water	Action	Use watch stage along with high current reports, impacted river reach, towboat positions and levee conditions to determine the need to establish a safety zone/river closure. Discourage/prohibit recreational vessel transit, assess bridge clearances in advance, minimize speed to avoid wake damage, favor center of channel, prohibit laying up on levees, caution in passing/meeting situations, monitor fleeting areas and mooring lines/arrangements, review anchoring requirements have towboat attend fleets at all times, coordinate with adjacent facilities/fleet boats for assistance in event of breakaway, pre-identify lay-up areas in event of river closure, allow fleeting to continue, advise swift current caution. Consider press release and/or Joint Information Center, and formation of Incident Command Post if needed.
	16' to 14'	Stable or Falling	High Water	Recovery	Use watch stage along with high current reports, impacted river reach, towboat positions and levee conditions if and when to reopen the river (if a safety zone or closure was established). Determine what action advisories need to be removed or remain depending on river conditions.
	14' and below	Falling	Normal Operations	Recovery	Issue final advisory that indicates return to normal operations. Users to report hazardous conditions to the Coast Guard. Cease all advisories if conditions allow.

## High Water Zone 19

CRITICAL LOCATION DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
<p style="text-align: center;"><b>Upper Mississippi River</b></p> <p style="text-align: center;"><b>Zone 19</b></p> <p><b>Miles 364.2 to 410.4</b></p> <p>Reference Gauge: Lock &amp; Dam #19 RM 364.2</p> <p>Flood Stage: 16' / 493.83' MSL</p> <p>MSL/NGVD Gauge Zero: 477.83</p> <p>L&amp;D Closure: 21.2' / 499.03' MSL</p>	16' and below	Rising	Normal Operations		As stage rises towards flood stage at a gauge or series of gauge locations consider the need to initiate communications plan with USACE, RIAC, and USCG. Monitor river gauges frequently.
	16' to 18'	Rising	High Water	Watch	Initiate communication plan. Issue advisory that indicates high water and drift potential. All tow boat operators should be experienced in high water operations. Advise the use of caution and minimize wake. Consider tow restrictions, hp requirements, dangers of down streaming, discuss mooring arrangements, and bridge clearance issues.
	18' and above	Rising	Extreme High Water	Action	Use watch stage along with high current reports, impacted river reach, towboat positions and levee conditions to determine the need to establish a safety zone/river closure. Discourage/prohibit recreational vessel transit, assess bridge clearances in advance, minimize speed to avoid wake damage, favor center of channel, prohibit laying up on levees, caution in passing/meeting situations, monitor fleeting areas and mooring lines/arrangements, review anchoring requirements have towboat attend fleets at all times, coordinate with adjacent facilities/fleet boats for assistance in event of breakaway, pre-identify lay-up areas in event of river closure, allow fleeting to continue, advise swift current caution. Consider press release and/or Joint Information Center, and formation of Incident Command Post if needed.
	18' to 16'	Stable or Falling	High Water	Recovery	Use watch stage along with high current reports, impacted river reach, towboat positions and levee conditions if and when to reopen the river (if a safety zone or closure was established). Determine what action advisories need to be removed or remain depending on river conditions.
	16' and below	Falling	Normal Operations	Recovery	Issue final advisory that indicates return to normal operations. Users to report hazardous conditions to the Coast Guard. Cease all advisories if conditions allow.



## High Water Zone 18

CRITICAL LOCATION DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
<p style="text-align: center;"><b>Upper Mississippi River</b></p> <p style="text-align: center;"><b>Zone 18</b></p> <p><b>Miles 410.5 to 437.0</b></p> <p>Reference Gauge: Lock &amp; Dam #18 RM 410.5</p> <p>Flood Stage: 10' / 528.52' MSL</p> <p>MSL/NGVD Gauge Zero: 518.52</p> <p>L&amp;D Closure: 15' / 533.52' MSL</p>	10' and below	Rising	Normal Operations		As stage rises towards flood stage at a gauge or series of gauge locations consider the need to initiate communications plan with USACE, RIAC, and USCG. Monitor river gauges frequently.
	10' to 12'	Rising	High Water	Watch	Initiate communication plan. Issue advisory that indicates high water and drift potential. All tow boat operators should be experienced in high water operations. Advise the use of caution and minimize wake. Consider tow restrictions, hp requirements, dangers of down streaming, discuss mooring arrangements, and bridge clearance issues.
	12' and above	Rising	Extreme High Water	Action	Use watch stage along with high current reports, impacted river reach, towboat positions and levee conditions to determine the need to establish a safety zone/river closure. Discourage/prohibit recreational vessel transit, assess bridge clearances in advance, minimize speed to avoid wake damage, favor center of channel, prohibit laying up on levees, caution in passing/meeting situations, monitor fleeting areas and mooring lines/arrangements, review anchoring requirements have towboat attend fleets at all times, coordinate with adjacent facilities/fleet boats for assistance in event of breakaway, pre-identify lay-up areas in event of river closure, allow fleeting to continue, advise swift current caution. Consider press release and/or Joint Information Center, and formation of Incident Command Post if needed.
	12' to 10'	Stable or Falling	High Water	Recovery	Use watch stage along with high current reports, impacted river reach, towboat positions and levee conditions if and when to reopen the river (if a safety zone or closure was established). Determine what action advisories need to be removed or remain depending on river conditions.
	10' and below	Falling	Normal Operations	Recovery	Issue final advisory that indicates return to normal operations. Users to report hazardous conditions to the Coast Guard. Cease all advisories if conditions allow.

## High Water Zone 17

CRITICAL LOCATION DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
<p style="text-align: center;"><b>Upper Mississippi River</b></p> <p style="text-align: center;"><b>Zone 17</b></p> <p><b>Miles 437.1 to 457.1</b></p> <p>Reference Gauge: Lock &amp; Dam #17 RM 437.1</p> <p>Flood Stage: 14' / 540.7' MSL</p> <p>MSL/NGVD Gauge Zero: 526.70</p> <p>L&amp;D Closure: 18.2' / 544.9' MSL</p>	14' and below	Rising	Normal Operations		As stage rises towards flood stage at a gauge or series of gauge locations consider the need to initiate communications plan with USACE, RIAC, and USCG. Monitor river gauges frequently.
	14' to 16'	Rising	High Water	Watch	Initiate communication plan. Issue advisory that indicates high water and drift potential. All tow boat operators should be experienced in high water operations. Advise the use of caution and minimize wake. Consider tow restrictions, hp requirements, dangers of down streaming, discuss mooring arrangements, and bridge clearance issues.
	16' and above	Rising	Extreme High Water	Action	Use watch stage along with high current reports, impacted river reach, towboat positions and levee conditions to determine the need to establish a safety zone/river closure. Discourage/prohibit recreational vessel transit, assess bridge clearances in advance, minimize speed to avoid wake damage, favor center of channel, prohibit laying up on levees, caution in passing/meeting situations, monitor fleeting areas and mooring lines/arrangements, review anchoring requirements have towboat attend fleets at all times, coordinate with adjacent facilities/fleet boats for assistance in event of breakaway, pre-identify lay-up areas in event of river closure, allow fleeting to continue, advise swift current caution. Consider press release and/or Joint Information Center, and formation of Incident Command Post if needed.
	16' to 14'	Stable or Falling	High Water	Recovery	Use watch stage along with high current reports, impacted river reach, towboat positions and levee conditions if and when to reopen the river (if a safety zone or closure was established). Determine what action advisories need to be removed or remain depending on river conditions.
	14' and below	Falling	Normal Operations	Recovery	Issue final advisory that indicates return to normal operations. Users to report hazardous conditions to the Coast Guard. Cease all advisories if conditions allow.

## High Water Zone 16

CRITICAL LOCATION DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
<p style="text-align: center;"><b>Upper Mississippi River</b></p> <p style="text-align: center;"><b>Zone 16</b></p> <p><b>Miles 457.2 to 482.8</b></p> <p>Reference Gauge: Lock &amp; Dam #16 RM 457.2</p> <p>Flood Stage: 15' / 548.6' MSL</p> <p>MSL/NGVD Gauge Zero: 533.60</p> <p>L&amp;D Closure: 17' / 550.6' MSL</p>	15' and below	Rising	Normal Operations		As stage rises towards flood stage at a gauge or series of gauge locations consider the need to initiate communications plan with USACE, RIAC, and USCG. Monitor river gauges frequently.
	15' to 17'	Rising	High Water	Watch	Initiate communication plan. Issue advisory that indicates high water and drift potential. All tow boat operators should be experienced in high water operations. Advise the use of caution and minimize wake. Consider tow restrictions, hp requirements, dangers of down streaming, discuss mooring arrangements, and bridge clearance issues.
	17' and above	Rising	Extreme High Water	Action	Use watch stage along with high current reports, impacted river reach, towboat positions and levee conditions to determine the need to establish a safety zone/river closure. Discourage/prohibit recreational vessel transit, assess bridge clearances in advance, minimize speed to avoid wake damage, favor center of channel, prohibit laying up on levees, caution in passing/meeting situations, monitor fleeting areas and mooring lines/arrangements, review anchoring requirements have towboat attend fleets at all times, coordinate with adjacent facilities/fleet boats for assistance in event of breakaway, pre-identify lay-up areas in event of river closure, allow fleeting to continue, advise swift current caution. Consider press release and/or Joint Information Center, and formation of Incident Command Post if needed.
	17' to 15'	Stable or Falling	High Water	Recovery	Use watch stage along with high current reports, impacted river reach, towboat positions and levee conditions if and when to reopen the river (if a safety zone or closure was established). Determine what action advisories need to be removed or remain depending on river conditions.
	15' and below	Falling	Normal Operations	Recovery	Issue final advisory that indicates return to normal operations. Users to report hazardous conditions to the Coast Guard. Cease all advisories if conditions allow.

## High Water Zone 15

CRITICAL LOCATION DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
<p style="text-align: center;"><b>Upper Mississippi River</b></p> <p style="text-align: center;"><b>Zone 15</b></p> <p><b>Miles 482.9 to 493.2</b></p> <p>Reference Gauge: Lock &amp; Dam #15 RM 482.9</p> <p>Flood Stage: 15' / 557.5' MSL</p> <p>MSL/NGVD Gauge Zero: 542.50</p> <p>L&amp;D Closure: 20' / 562.5' MSL</p>	15' and below	Rising	Normal Operations		As stage rises towards flood stage at a gauge or series of gauge locations consider the need to initiate communications plan with USACE, RIAC, and USCG. Monitor river gauges frequently.
	15' to 17'	Rising	High Water	Watch	Initiate communication plan. Issue advisory that indicates high water and drift potential. All tow boat operators should be experienced in high water operations. Advise the use of caution and minimize wake. Consider tow restrictions, hp requirements, dangers of down streaming, discuss mooring arrangements, and bridge clearance issues.
	17' and above	Rising	Extreme High Water	Action	Use watch stage along with high current reports, impacted river reach, towboat positions and levee conditions to determine the need to establish a safety zone/river closure. Discourage/prohibit recreational vessel transit, assess bridge clearances in advance, minimize speed to avoid wake damage, favor center of channel, prohibit laying up on levees, caution in passing/meeting situations, monitor fleeting areas and mooring lines/arrangements, review anchoring requirements have towboat attend fleets at all times, coordinate with adjacent facilities/fleet boats for assistance in event of breakaway, pre-identify lay-up areas in event of river closure, allow fleeting to continue, advise swift current caution. Consider press release and/or Joint Information Center, and formation of Incident Command Post if needed.
	17' to 15'	Stable or Falling	High Water	Recovery	Use watch stage along with high current reports, impacted river reach, towboat positions and levee conditions if and when to reopen the river (if a safety zone or closure was established). Determine what action advisories need to be removed or remain depending on river conditions.
	15' and below	Falling	Normal Operations	Recovery	Issue final advisory that indicates return to normal operations. Users to report hazardous conditions to the Coast Guard. Cease all advisories if conditions allow.

## High Water Zone 14

CRITICAL LOCATION DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
<p style="text-align: center;"><b>Upper Mississippi River</b></p> <p style="text-align: center;"><b>Zone 14</b></p> <p><b>Miles 493.3 to 522.3</b></p> <p>Reference Gauge: Lock &amp; Dam #14 RM 493.3</p> <p>Flood Stage: 11' / 568.08' MSL</p> <p>MSL/NGVD Gauge Zero: 557.08</p> <p>L&amp;D Closure: 14' / 571.08' MSL</p>	11' and below	Rising	Normal Operations		As stage rises towards flood stage at a gauge or series of gauge locations consider the need to initiate communications plan with USACE, RIAC, and USCG. Monitor river gauges frequently.
	11' to 13'	Rising	High Water	Watch	Initiate communication plan. Issue advisory that indicates high water and drift potential. All tow boat operators should be experienced in high water operations. Advise the use of caution and minimize wake. Consider tow restrictions, hp requirements, dangers of down streaming, discuss mooring arrangements, and bridge clearance issues.
	13' and above	Rising	Extreme High Water	Action	Use watch stage along with high current reports, impacted river reach, towboat positions and levee conditions to determine the need to establish a safety zone/river closure. Discourage/prohibit recreational vessel transit, assess bridge clearances in advance, minimize speed to avoid wake damage, favor center of channel, prohibit laying up on levees, caution in passing/meeting situations, monitor fleeting areas and mooring lines/arrangements, review anchoring requirements have towboat attend fleets at all times, coordinate with adjacent facilities/fleet boats for assistance in event of breakaway, pre-identify lay-up areas in event of river closure, allow fleeting to continue, advise swift current caution. Consider press release and/or Joint Information Center, and formation of Incident Command Post if needed.
	13' to 11'	Stable or Falling	High Water	Recovery	Use watch stage along with high current reports, impacted river reach, towboat positions and levee conditions if and when to reopen the river (if a safety zone or closure was established). Determine what action advisories need to be removed or remain depending on river conditions.
	11' and below	Falling	Normal Operations	Recovery	Issue final advisory that indicates return to normal operations. Users to report hazardous conditions to the Coast Guard. Cease all advisories if conditions allow.

## High Water Zone 13

CRITICAL LOCATION DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
<p style="text-align: center;"><b>Upper Mississippi River</b></p> <p style="text-align: center;"><b>Zone 13</b></p> <p><b>Miles 522.4 to 556.6</b></p> <p>Reference Gauge: Lock &amp; Dam #13 RM 522.4</p> <p>Flood Stage: 16' / 584.7' MSL</p> <p>MSL/NGVD Gauge Zero: 568.70</p> <p>L&amp;D Closure: 18' / 586.7' MSL</p>	16' and below	Rising	Normal Operations		As stage rises towards flood stage at a gauge or series of gauge locations consider the need to initiate communications plan with USACE, RIAC, and USCG. Monitor river gauges frequently.
	16' to 18'	Rising	High Water	Watch	Initiate communication plan. Issue advisory that indicates high water and drift potential. All tow boat operators should be experienced in high water operations. Advise the use of caution and minimize wake. Consider tow restrictions, hp requirements, dangers of down streaming, discuss mooring arrangements, and bridge clearance issues.
	18' and above	Rising	Extreme High Water	Action	Use watch stage along with high current reports, impacted river reach, towboat positions and levee conditions to determine the need to establish a safety zone/river closure. Discourage/prohibit recreational vessel transit, assess bridge clearances in advance, minimize speed to avoid wake damage, favor center of channel, prohibit laying up on levees, caution in passing/meeting situations, monitor fleeting areas and mooring lines/arrangements, review anchoring requirements have towboat attend fleets at all times, coordinate with adjacent facilities/fleet boats for assistance in event of breakaway, pre-identify lay-up areas in event of river closure, allow fleeting to continue, advise swift current caution. Consider press release and/or Joint Information Center, and formation of Incident Command Post if needed.
	18' to 16'	Stable or Falling	High Water	Recovery	Use watch stage along with high current reports, impacted river reach, towboat positions and levee conditions if and when to reopen the river (if a safety zone or closure was established). Determine what action advisories need to be removed or remain depending on river conditions.
	16' and below	Falling	Normal Operations	Recovery	Issue final advisory that indicates return to normal operations. Users to report hazardous conditions to the Coast Guard. Cease all advisories if conditions allow.

## High Water Zone 12

CRITICAL LOCATION DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
<p style="text-align: center;"><b>Upper Mississippi River</b></p> <p style="text-align: center;"><b>Zone 12</b></p> <p><b>Miles 556.7 to 582.9</b></p> <p>Reference Gauge: Lock &amp; Dam #12 RM 556.7</p> <p>Flood Stage: 17' / 597.2' MSL</p> <p>MSL/NGVD Gauge Zero: 580.20</p> <p>L&amp;D Closure: 18.4' / 598.6' MSL</p>	17' and below	Rising	Normal Operations		As stage rises towards flood stage at a gauge or series of gauge locations consider the need to initiate communications plan with USACE, RIAC, and USCG. Monitor river gauges frequently.
	17' to 19'	Rising	High Water	Watch	Initiate communication plan. Issue advisory that indicates high water and drift potential. All tow boat operators should be experienced in high water operations. Advise the use of caution and minimize wake. Consider tow restrictions, hp requirements, dangers of down streaming, discuss mooring arrangements, and bridge clearance issues.
	19' and above	Rising	Extreme High Water	Action	Use watch stage along with high current reports, impacted river reach, towboat positions and levee conditions to determine the need to establish a safety zone/river closure. Discourage/prohibit recreational vessel transit, assess bridge clearances in advance, minimize speed to avoid wake damage, favor center of channel, prohibit laying up on levees, caution in passing/meeting situations, monitor fleeting areas and mooring lines/arrangements, review anchoring requirements have towboat attend fleets at all times, coordinate with adjacent facilities/fleet boats for assistance in event of breakaway, pre-identify lay-up areas in event of river closure, allow fleeting to continue, advise swift current caution. Consider press release and/or Joint Information Center, and formation of Incident Command Post if needed.
	19' to 17'	Stable or Falling	High Water	Recovery	Use watch stage along with high current reports, impacted river reach, towboat positions and levee conditions if and when to reopen the river (if a safety zone or closure was established). Determine what action advisories need to be removed or remain depending on river conditions.
	17' and below	Falling	Normal Operations	Recovery	Issue final advisory that indicates return to normal operations. Users to report hazardous conditions to the Coast Guard. Cease all advisories if conditions allow.

## High Water Zone 11

CRITICAL LOCATION DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
<p style="text-align: center;"><b>Upper Mississippi River</b></p> <p style="text-align: center;"><b>Zone 11</b></p> <p><b>Miles 583.0 to 615.0</b></p> <p>Reference Gauge: Lock &amp; Dam #11 RM 583.0</p> <p>Flood Stage: 16' / 604.2' MSL</p> <p>MSL/NGVD Gauge Zero: 588.20</p> <p>L&amp;D Closure: 19.5' / 607.2' MSL</p>	16' and below	Rising	Normal Operations		As stage rises towards flood stage at a gauge or series of gauge locations consider the need to initiate communications plan with USACE, RIAC, and USCG. Monitor river gauges frequently.
	16' to 18'	Rising	High Water	Watch	Initiate communication plan. Issue advisory that indicates high water and drift potential. All tow boat operators should be experienced in high water operations. Advise the use of caution and minimize wake. Consider tow restrictions, hp requirements, dangers of down streaming, discuss mooring arrangements, and bridge clearance issues.
	18' and above	Rising	Extreme High Water	Action	Use watch stage along with high current reports, impacted river reach, towboat positions and levee conditions to determine the need to establish a safety zone/river closure. Discourage/prohibit recreational vessel transit, assess bridge clearances in advance, minimize speed to avoid wake damage, favor center of channel, prohibit laying up on levees, caution in passing/meeting situations, monitor fleeting areas and mooring lines/arrangements, review anchoring requirements have towboat attend fleets at all times, coordinate with adjacent facilities/fleet boats for assistance in event of breakaway, pre-identify lay-up areas in event of river closure, allow fleeting to continue, advise swift current caution. Consider press release and/or Joint Information Center, and formation of Incident Command Post if needed.
	18' to 16'	Stable or Falling	High Water	Recovery	Use watch stage along with high current reports, impacted river reach, towboat positions and levee conditions if and when to reopen the river (if a safety zone or closure was established). Determine what action advisories need to be removed or remain depending on river conditions.
	16' and below	Falling	Normal Operations	Recovery	Issue final advisory that indicates return to normal operations. Users to report hazardous conditions to the Coast Guard. Cease all advisories if conditions allow.



## High Water Zone 10

CRITICAL LOCATION DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
<p style="text-align: center;"><b>Upper Mississippi River</b></p> <p style="text-align: center;"><b>Zone 10</b></p> <p><b>Miles 615.1 to 647.8</b></p> <p>Reference Gauge: Lock &amp; Dam #10 RM 615.1</p> <p>Flood Stage: 15' / 615.0 MSL/NGVD</p> <p>MSL/NGVD Gauge Zero: 600.0</p> <p>L&amp;D Closure: 21' / 621.0' MSL</p>	15' and below	Rising	Normal Operations		As stage rises towards flood stage at a gauge or series of gauge locations consider the need to initiate communications plan with USACE, RIAC, and USCG. Monitor river gauges frequently.
	15' to 18'	Rising	High Water	Watch	Initiate communication plan. Issue advisory that indicates high water and drift potential. All tow boat operators should be experienced in high water operations. Advise the use of caution and minimize wake. Consider tow restrictions, hp requirements, dangers of down streaming, discuss mooring arrangements, and bridge clearance issues.
	18' and above	Rising	Extreme High Water	Action	Use watch stage along with high current reports, impacted river reach, towboat positions and levee conditions to determine the need to establish a safety zone/river closure. Discourage/prohibit recreational vessel transit, assess bridge clearances in advance, minimize speed to avoid wake damage, favor center of channel, prohibit laying up on levees, caution in passing/meeting situations, monitor fleeting areas and mooring lines/arrangements, review anchoring requirements have towboat attend fleets at all times, coordinate with adjacent facilities/fleet boats for assistance in event of breakaway, pre-identify lay-up areas in event of river closure, allow fleeting to continue, advise swift current caution. Consider press release and/or Joint Information Center, and formation of Incident Command Post if needed.
	18' to 15'	Stable or Falling	High Water	Recovery	Use watch stage along with high current reports, impacted river reach, towboat positions and levee conditions if and when to reopen the river (if a safety zone or closure was established). Determine what action advisories need to be removed or remain depending on river conditions.
	15' to below	Falling	Normal Operations	Recovery	Issue final advisory that indicates return to normal operations. Users to report hazardous conditions to the Coast Guard. Cease all advisories if conditions allow.

## High Water Zone 9

CRITICAL LOCATION DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
<p style="text-align: center;"><b>Upper Mississippi River</b></p> <p style="text-align: center;"><b>Zone 9</b></p> <p><b>Miles 647.9 to 679.1</b></p> <p>Reference Gauge: Lock &amp; Dam #9 RM 647.9</p> <p>Flood Stage: 25' / 625' MSL</p> <p>MSL/NGVD Gauge Zero: 600.0</p> <p>L&amp;D Closure: 31' / 631' MSL</p>	625' and below	Rising	Normal Operations		As stage rises towards flood stage at a gauge or series of gauge locations consider the need to initiate communications plan with USACE, RIAC, and USCG. Monitor river gauges frequently.
	625' to 628'	Rising	High Water	Watch	Initiate communication plan. Issue advisory that indicates high water and drift potential. All tow boat operators should be experienced in high water operations. Advise the use of caution and minimize wake. Consider tow restrictions, hp requirements, dangers of down streaming, discuss mooring arrangements, and bridge clearance issues.
	628' and above	Rising	Extreme High Water	Action	Use watch stage along with high current reports, impacted river reach, towboat positions and levee conditions to determine the need to establish a safety zone/river closure. Discourage/prohibit recreational vessel transit, assess bridge clearances in advance, minimize speed to avoid wake damage, favor center of channel, prohibit laying up on levees, caution in passing/meeting situations, monitor fleeting areas and mooring lines/arrangements, review anchoring requirements have towboat attend fleets at all times, coordinate with adjacent facilities/fleet boats for assistance in event of breakaway, pre-identify lay-up areas in event of river closure, allow fleeting to continue, advise swift current caution. Consider press release and/or Joint Information Center, and formation of Incident Command Post if needed.
	628' to 625.0'	Stable or Falling	High Water	Recovery	Use watch stage along with high current reports, impacted river reach, towboat positions and levee conditions if and when to reopen the river (if a safety zone or closure was established). Determine what action advisories need to be removed or remain depending on river conditions.
	625' and below	Falling	Normal Operations	Recovery	Issue final advisory that indicates return to normal operations. Users to report hazardous conditions to the Coast Guard. Cease all advisories if conditions allow.

## High Water Zone 8

CRITICAL LOCATION DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
<p style="text-align: center;"><b>Upper Mississippi River</b></p> <p style="text-align: center;"><b>Zone 8</b></p> <p><b>Miles 679.2 to 702.4</b></p> <p>Reference Gauge: Lock &amp; Dam #8 RM 679.2</p> <p>Flood Stage: 34' / 634' MSL</p> <p>MSL/NGVD Gauge Zero: 600.0</p> <p>L&amp;D Closure: 36' / 636' MSL</p>	634' and below	Rising	Normal Operations		As stage rises towards flood stage at a gauge or series of gauge locations consider the need to initiate communications plan with USACE, RIAC, and USCG. Monitor river gauges frequently.
	634' to 636'	Rising	High Water	Watch	Initiate communication plan. Issue advisory that indicates high water and drift potential. All tow boat operators should be experienced in high water operations. Advise the use of caution and minimize wake. Consider tow restrictions, hp requirements, dangers of down streaming, discuss mooring arrangements, and bridge clearance issues.
	636' and above	Rising	Extreme High Water	Action	Use watch stage along with high current reports, impacted river reach, towboat positions and levee conditions to determine the need to establish a safety zone/river closure. Discourage/prohibit recreational vessel transit, assess bridge clearances in advance, minimize speed to avoid wake damage, favor center of channel, prohibit laying up on levees, caution in passing/meeting situations, monitor fleeting areas and mooring lines/arrangements, review anchoring requirements have towboat attend fleets at all times, coordinate with adjacent facilities/fleet boats for assistance in event of breakaway, pre-identify lay-up areas in event of river closure, allow fleeting to continue, advise swift current caution. Consider press release and/or Joint Information Center, and formation of Incident Command Post if needed.
	636' to 634'	Stable or Falling	High Water	Recovery	Use watch stage along with high current reports, impacted river reach, towboat positions and levee conditions if and when to reopen the river (if a safety zone or closure was established). Determine what action advisories need to be removed or remain depending on river conditions.
	634' and below	Falling	Normal Operations	Recovery	Issue final advisory that indicates return to normal operations. Users to report hazardous conditions to the Coast Guard. Cease all advisories if conditions allow.

## High Water Zone 7

CRITICAL LOCATION DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
<p style="text-align: center;"><b>Upper Mississippi River</b></p> <p style="text-align: center;"><b>Zone 7</b></p> <p><b>Miles 702.5 to 714.2</b></p> <p>Reference Gauge: Lock &amp; Dam #7 RM 702.5</p> <p>Flood Stage: 41' / 641' MSL</p> <p>MSL/NGVD Gauge Zero: 600.0</p> <p>L&amp;D Closure: 46.5' / 646.5' MSL</p>	641' and below	Rising	Normal Operations		As stage rises towards flood stage at a gauge or series of gauge locations consider the need to initiate communications plan with USACE, RIAC, and USCG. Monitor river gauges frequently.
	641 to 643'	Rising	High Water	Watch	Initiate communication plan. Issue advisory that indicates high water and drift potential. All tow boat operators should be experienced in high water operations. Advise the use of caution and minimize wake. Consider tow restrictions, hp requirements, dangers of down streaming, discuss mooring arrangements, and bridge clearance issues.
	643' and above'	Rising	Extreme High Water	Action	Use watch stage along with high current reports, impacted river reach, towboat positions and levee conditions to determine the need to establish a safety zone/river closure. Discourage/prohibit recreational vessel transit, assess bridge clearances in advance, minimize speed to avoid wake damage, favor center of channel, prohibit laying up on levees, caution in passing/meeting situations, monitor fleeting areas and mooring lines/arrangements, review anchoring requirements have towboat attend fleets at all times, coordinate with adjacent facilities/fleet boats for assistance in event of breakaway, pre-identify lay-up areas in event of river closure, allow fleeting to continue, advise swift current caution. Consider press release and/or Joint Information Center, and formation of Incident Command Post if needed.
	643' to 641.0'	Stable or Falling	High Water	Recovery	Use watch stage along with high current reports, impacted river reach, towboat positions and levee conditions if and when to reopen the river (if a safety zone or closure was established). Determine what action advisories need to be removed or remain depending on river conditions.
	641' and below	Falling	Normal Operations	Recovery	Issue final advisory that indicates return to normal operations. Users to report hazardous conditions to the Coast Guard. Cease all advisories if conditions allow.

## High Water Zone 6

CRITICAL LOCATION DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
<p style="text-align: center;"><b>Upper Mississippi River</b></p> <p style="text-align: center;"><b>Zone 6</b></p> <p><b>Miles 714.3 to 728.5</b></p> <p>Reference Gauge: Lock &amp; Dam #6 RM 714.3</p> <p>Flood Stage: 47' / 647' MSL</p> <p>MSL/NGVD Gauge Zero: 644.5</p> <p>L&amp;D Closure: 51.5' / 651.5' MSL</p>	647' and below	Rising	Normal Operations		As stage rises towards flood stage at a gauge or series of gauge locations consider the need to initiate communications plan with USACE, RIAC, and USCG. Monitor river gauges frequently.
	647' to 649'	Rising	High Water	Watch	Initiate communication plan. Issue advisory that indicates high water and drift potential. All tow boat operators should be experienced in high water operations. Advise the use of caution and minimize wake. Consider tow restrictions, hp requirements, dangers of down streaming, discuss mooring arrangements, and bridge clearance issues.
	649' and above	Rising	Extreme High Water	Action	Use watch stage along with high current reports, impacted river reach, towboat positions and levee conditions to determine the need to establish a safety zone/river closure. Discourage/prohibit recreational vessel transit, assess bridge clearances in advance, minimize speed to avoid wake damage, favor center of channel, prohibit laying up on levees, caution in passing/meeting situations, monitor fleeting areas and mooring lines/arrangements, review anchoring requirements, have towboat attend fleets at all times, coordinate with adjacent facilities/fleet boats for assistance in event of breakaway, pre-identify lay-up areas in event of river closure, allow fleeting to continue, advise swift current caution. Consider press release and/or Joint Information Center, and formation of Incident Command Post if needed.
	649' to 647'	Stable or Falling	High Water	Recovery	Use watch stage along with high current reports, impacted river reach, towboat positions and levee conditions if and when to reopen the river (if a safety zone or closure was established). Determine what action advisories need to be removed or remain depending on river conditions.
	647' and below	Falling	Normal Operations	Recovery	Issue final advisory that indicates return to normal operations. Users to report hazardous conditions to the Coast Guard. Cease all advisories if conditions allow.

## High Water Zone 5A

CRITICAL LOCATION DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
<p style="text-align: center;"><b>Upper Mississippi River</b></p> <p style="text-align: center;"><b>Zone 5A</b></p> <p><b>Miles 728.6 to 738.0</b></p> <p>Reference Gauge: Lock &amp; Dam #5A RM 728.5</p> <p>Flood Stage: 53' / 653' MSL'</p> <p>MSL/NGVD Gauge Zero: 600.0</p> <p>L&amp;D Closure: 60' / 660' MSL</p>	653' and below	Rising	Normal Operations		As stage rises towards flood stage at a gauge or series of gauge locations consider the need to initiate communications plan with USACE, RIAC, and USCG. Monitor river gauges frequently.
	653' to 655'	Rising	High Water	Watch	Initiate communication plan. Issue advisory that indicates high water and drift potential. All tow boat operators should be experienced in high water operations. Advise the use of caution and minimize wake. Consider tow restrictions, hp requirements, dangers of down streaming, discuss mooring arrangements, and bridge clearance issues.
	655' and above	Rising	Extreme High Water	Action	Use watch stage along with high current reports, impacted river reach, towboat positions and levee conditions to determine the need to establish a safety zone/river closure. Discourage/prohibit recreational vessel transit, assess bridge clearances in advance, minimize speed to avoid wake damage, favor center of channel, prohibit laying up on levees, caution in passing/meeting situations, monitor fleeting areas and mooring lines/arrangements, review anchoring requirements, have towboat attend fleets at all times, coordinate with adjacent facilities/fleet boats for assistance in event of breakaway, pre-identify lay-up areas in event of river closure, allow fleeting to continue, advise swift current caution. Consider press release and/or Joint Information Center, and formation of Incident Command Post if needed.
	655' to 653'	Stable or Falling	High Water	Recovery	Use watch stage along with high current reports, impacted river reach, towboat positions and levee conditions if and when to reopen the river (if a safety zone or closure was established). Determine what action advisories need to be removed or remain depending on river conditions.
	653' and below	Falling	Normal Operations	Recovery	Issue final advisory that indicates return to normal operations. Users to report hazardous conditions to the Coast Guard. Cease all advisories if conditions allow.

## High Water Zone 5

CRITICAL LOCATION DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
<p style="text-align: center;"><b>Upper Mississippi River</b></p> <p style="text-align: center;"><b>Zone 5</b></p> <p><b>Miles 738.1 to 752.7</b></p> <p>Reference Gauge: Lock &amp; Dam #5 RM 738.1</p> <p>Flood Stage: 65' / 665' MSL</p> <p>MSL/NGVD Gauge Zero: 600.0</p> <p>L&amp;D Closure: 64.5' / 664.5' MSL</p>	665' and below	Rising	Normal Operations		As stage rises towards flood stage at a gauge or series of gauge locations consider the need to initiate communications plan with USACE, RIAC, and USCG. Monitor river gauges frequently.
	665' to 667'	Rising	High Water	Watch	Initiate communication plan. Issue advisory that indicates high water and drift potential. All tow boat operators should be experienced in high water operations. Advise the use of caution and minimize wake. Consider tow restrictions, hp requirements, dangers of down streaming, discuss mooring arrangements, and bridge clearance issues.
	667' and above	Rising	Extreme High Water	Action	Use watch stage along with high current reports, impacted river reach, towboat positions and levee conditions to determine the need to establish a safety zone/river closure. Discourage/prohibit recreational vessel transit, assess bridge clearances in advance, minimize speed to avoid wake damage, favor center of channel, prohibit laying up on levees, caution in passing/meeting situations, monitor fleeting areas and mooring lines/arrangements, review anchoring requirements have towboat attend fleets at all times, coordinate with adjacent facilities/fleet boats for assistance in event of breakaway, pre-identify lay-up areas in event of river closure, allow fleeting to continue, advise swift current caution. Consider press release and/or Joint Information Center, and formation of Incident Command Post if needed.
	667' to 665'	Stable or Falling	High Water	Recovery	Use watch stage along with high current reports, impacted river reach, towboat positions and levee conditions if and when to reopen the river (if a safety zone or closure was established). Determine what action advisories need to be removed or remain depending on river conditions.
	665'	Falling	Normal Operations	Recovery	Issue final advisory that indicates return to normal operations. Users to report hazardous conditions to the Coast Guard. Cease all advisories if conditions allow.

## High Water Zone 4

CRITICAL LOCATION DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
<p style="text-align: center;"><b>Upper Mississippi River</b></p> <p style="text-align: center;"><b>Zone 4</b></p> <p><b>Miles 752.8 to 796.8</b></p> <p>Reference Gauge: Lock &amp; Dam #4 RM 752.8</p> <p>Flood Stage: 68.0' / 668' MSL</p> <p>MSL/NGVD Gauge Zero: 600.0</p> <p>L&amp;D Closure: 71.5' / 671.5' MSL</p>	16' and below	Rising	Normal Operations		As stage rises towards flood stage at a gauge or series of gauge locations consider the need to initiate communications plan with USACE, RIAC, and USCG. Monitor river gauges frequently.
	16' to 18'	Rising	High Water	Watch	Initiate communication plan. Issue advisory that indicates high water and drift potential. All tow boat operators should be experienced in high water operations. Advise the use of caution and minimize wake. Consider tow restrictions, hp requirements, dangers of down streaming, discuss mooring arrangements, and bridge clearance issues.
	18' and above	Rising	Extreme High Water	Action	Use watch stage along with high current reports, impacted river reach, towboat positions and levee conditions to determine the need to establish a safety zone/river closure. Discourage/prohibit recreational vessel transit, assess bridge clearances in advance, minimize speed to avoid wake damage, favor center of channel, prohibit laying up on levees, caution in passing/meeting situations, monitor fleeting areas and mooring lines/arrangements, review anchoring requirements have towboat attend fleets at all times, coordinate with adjacent facilities/fleet boats for assistance in event of breakaway, pre-identify lay-up areas in event of river closure, allow fleeting to continue, advise swift current caution. Consider press release and/or Joint Information Center, and formation of Incident Command Post if needed.
	18' to 16'	Stable or Falling	High Water	Recovery	Use watch stage along with high current reports, impacted river reach, towboat positions and levee conditions if and when to reopen the river (if a safety zone or closure was established). Determine what action advisories need to be removed or remain depending on river conditions.
	16'	Falling	Normal Operations	Recovery	Issue final advisory that indicates return to normal operations. Users to report hazardous conditions to the Coast Guard. Cease all advisories if conditions allow.



### High Water Zone 3

CRITICAL LOCATION DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
<p style="text-align: center;"><b>Upper Mississippi River</b></p> <p style="text-align: center;"><b>Zone 3</b></p> <p><b>Miles 796.9 to 815.1</b></p> <p>Reference Gauge: Lock &amp; Dam #3 RM 796.9</p> <p>Flood Stage: 77' / 677' MSL</p> <p>MSL/NGVD Gauge Zero: 600.0</p> <p>L&amp;D Closure: 83' / 683' MSL</p>	672' and below	Rising	Normal Operations		As stage rises towards flood stage at a gauge or series of gauge locations consider the need to initiate communications plan with USACE, RIAC, and USCG. Monitor river gauges frequently.
	672' to 677'	Rising	High Water	Watch	Initiate communication plan. Issue advisory that indicates high water and drift potential. All tow boat operators should be experienced in high water operations. Advise the use of caution and minimize wake. Consider tow restrictions, hp requirements, dangers of down streaming, discuss mooring arrangements, and bridge clearance issues.
	677' and above	Rising	Extreme High Water	Action	Use watch stage along with high current reports, impacted river reach, towboat positions and levee conditions to determine the need to establish a safety zone/river closure. Discourage/prohibit recreational vessel transit, assess bridge clearances in advance, minimize speed to avoid wake damage, favor center of channel, prohibit laying up on levees, caution in passing/meeting situations, monitor fleeting areas and mooring lines/arrangements, review anchoring requirements have towboat attend fleets at all times, coordinate with adjacent facilities/fleet boats for assistance in event of breakaway, pre-identify lay-up areas in event of river closure, allow fleeting to continue, advise swift current caution. Consider press release and/or Joint Information Center, and formation of Incident Command Post if needed.
	677' to 672'	Stable or Falling	High Water	Recovery	Use watch stage along with high current reports, impacted river reach, towboat positions and levee conditions if and when to reopen the river (if a safety zone or closure was established). Determine what action advisories need to be removed or remain depending on river conditions.
	672' and below	Falling	Normal Operations	Recovery	Issue final advisory that indicates return to normal operations. Users to report hazardous conditions to the Coast Guard. Cease all advisories if conditions allow.

## High Water Zone 2

CRITICAL LOCATION DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
<p style="text-align: center;"><b>Upper Mississippi River</b></p> <p style="text-align: center;"><b>Zone 2</b></p> <p><b>Miles 815.2 to 847.5</b></p> <p>Reference Gauge: Lock &amp; Dam #2 RM 815.2</p> <p>Flood Stage: 89' / 689' MSL</p> <p>MSL/NGVD Gauge Zero: 600.0</p> <p>L&amp;D Closure: 92' / 692' MSL</p>	15' and below	Rising	Normal Operations		As stage rises towards flood stage at a gauge or series of gauge locations consider the need to initiate communications plan with USACE, RIAC, and USCG. Monitor river gauges frequently.
	15' to 17'	Rising	High Water	Watch	Initiate communication plan. Issue advisory that indicates high water and drift potential. All tow boat operators should be experienced in high water operations. Advise the use of caution and minimize wake. Consider tow restrictions, hp requirements, dangers of down streaming, discuss mooring arrangements, and bridge clearance issues.
	17' and above	Rising	Extreme High Water	Action	Use watch stage along with high current reports, impacted river reach, towboat positions and levee conditions to determine the need to establish a safety zone/river closure. Discourage/prohibit recreational vessel transit, assess bridge clearances in advance, minimize speed to avoid wake damage, favor center of channel, prohibit laying up on levees, caution in passing/meeting situations, monitor fleeting areas and mooring lines/arrangements, review anchoring requirements have towboat attend fleets at all times, coordinate with adjacent facilities/fleet boats for assistance in event of breakaway, pre-identify lay-up areas in event of river closure, allow fleeting to continue, advise swift current caution. Consider press release and/or Joint Information Center, and formation of Incident Command Post if needed.
	17' to 15'	Stable or Falling	High Water	Recovery	Use watch stage along with high current reports, impacted river reach, towboat positions and levee conditions if and when to reopen the river (if a safety zone or closure was established). Determine what action advisories need to be removed or remain depending on river conditions.
	15' and below	Falling	Normal Operations	Recovery	Issue final advisory that indicates return to normal operations. Users to report hazardous conditions to the Coast Guard. Cease all advisories if conditions allow.

**High Water Zone 1 is N/A**

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# **ACTION PLAN TABLE**

## **HIGH FLOW**

**St. Paul, MN to Chester, IL**

**RM 857.6 – 109.9**

## High Flow Zone 28

CRITICAL AREA DESCRIPTION	TRIGGER READING	TREND	TRIGGER FLOW	DESCRIPTION	PHASE	ACTION
<b>Upper Mississippi River</b>  <b>Zone 28</b>  <b>Miles 109.9 to 185.4</b>		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.

## High Flow Zones 27 - 2

CRITICAL AREA DESCRIPTION	TRIGGER READING	TREND	TRIGGER FLOW	DESCRIPTION	PHASE	ACTION
<p><b>Upper Mississippi River</b></p> <p><b>Zones 27 - 2</b></p> <p><b>Miles 847.6 to 185.5</b></p>				<p>High flow conditions are dealt with under normal operating conditions regarding out draft signs (refer to specific information for zone 1 on p55) at lock approaches and different operating conditions and approach methods at bridges and bend ways.</p> <p>Erosion/scour conditions along flood control levees during high flows are very site specific and are integrated into High Water conditions.</p>		<p>Consider use of assist boats when out draft conditions exist</p> <p>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</p>

### High Flow Zone 1

CRITICAL AREA DESCRIPTION	TRIGGER READING	TREND	TRIGGER FLOW	DESCRIPTION	PHASE	ACTION
<b>Upper Mississippi River Zone 1 Miles 847.6 to 857.6</b>		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 Upper St. Anthony Falls and 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**  
**LOW WATER**  
**St. Louis, MO to Chester, IL**  
**RM 185.4 – 109.9**



**ACTION PLAN TABLE – LOW WATER CONDITIONS UPPER MISSISSIPPI RIVER,  
Low Water Zone 28**

CRITICAL REACH DESCRIPTION	TRIGGER READING	TREND	TRIGGER FLOW	DESCRIPTION	PHASE	ACTION
<p align="center"><b>UPPER MISSISSIPPI RIVER</b></p> <p align="center"><b>Zone 28</b></p> <p align="center"><b>Miles 109.9 to 185.4</b></p> <p>Reference Gauge: St. Louis RM 179.6</p> <p>Low Water Reference plane for St. Louis Harbor: -3.5/9 ft. channel</p>	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.
	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 185.0. Advise the use of caution. Corps 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.
	-2' to -3.5'	Falling		Extreme 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 185.0. Coast Guard will reset buoys in those narrow channel locations within reach. Corps 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, and formation of Incident Command Post if needed.
	-3.5' and below	Falling		Extreme Low Water	Action	Establish safety zone between UMR mile 109.9 and 185.0. 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 and formation of Incident Command Post if needed.

	-3.5 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 185.0. 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**  
**ICE CONDITIONS**  
**St. Paul, MN to Chester, IL**  
**RM 857.6 – 109.9**

## ACTION PLAN TABLE – ICE CONDITIONS UPPER MISSISSIPPI RIVER, ALL ZONES

CRITICAL REACH DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
<b>ALL ZONES Upper Mississippi River</b>	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.

## Lock and Dam Information Table

ZONE	LOCK	FLOOD STAGE			OUTDRAFT INDICATORS			LOCK CLOSURE			NOTES (p. 56)
		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	19.5	607.2	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	18	586.7	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	14	540.7	142,900	6	532.7	N/A	18.2	544.9	212,400	
Zone 18	L/D 18	10	528.52	172,300	6	524.52	104,500	15	533.5	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	L/D 23	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/St. Louis	409.94	504,000	N/A	N/A	N/A	47/St. Louis	426.94	990,000	
Zone 28	N/A	30/St. Louis	409.94	504,000							

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**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.) Stages/elevations are upstream readings.
- #6.) Lock closure elevations shown are for a "slow rise". For a "fast rise" the lock closure is 0.5 ft lower.