

**MISSISSIPPI RIVER
AND
TRIBUTARIES
WATERWAYS ACTION
PLAN**

**ILLINOIS WATERWAY ANNEX
2017**



ILLINOIS WATERWAY ANNEX

Introduction

This appendix provides general information and target gauges to be used as a guideline for a crisis on the Illinois Waterway (ILWW). Like a crisis on the Upper Mississippi River (UMR), it is the responsibility of the United States Coast Guard, Army Corps of Engineers, and River Industry representatives to meet and discuss conditions on the ILWW and to *annually* review the actions specified in the plan. In Section 4 of this annex, the entire ILWW is broken into fourteen 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.

Section 1 – Geographic Description

The ILWW follows the channel of the Chicago Sanitary & Ship Canal from Chicago, then extends down the Des Plaines River and finally the Illinois River to its mouth at the Mississippi River near Grafton, Illinois. It also links to the Calumet region via the Calumet Sag Channel. The waterway drops from 579.5' above sea level at Lake Michigan to 419' above sea level at Grafton, Illinois. To accommodate this drop, eight locks and dam sites were constructed along the waterway at Chicago, Lockport, Brandon Road, Dresden Island, Marseilles, Starved Rock, Peoria, and La Grange.

HYDROLOGY AND IMPACT CONCERNS

Flooding on the Illinois Waterway is normally caused by high flows on the ILWW, by backwater from the Upper Mississippi River (UMR) or a combination of both. The ILWW is said to "flood from the bottom up on most occasions." Potential for damage is usually associated with extreme or prolonged high water conditions which reduce levee freeboard, saturate levees and increase seepage, while restricting access for repair. Along the middle section of the ILWW, damage to homes is of concern when the impact of high water is multiplied by the surge and suction caused by large commercial tows passing within close proximity of flooded homes. All of these issues must be taken into consideration when deciding to implement operating restrictions or cease traffic. Additionally, not all areas of concern are consistent throughout the entire length of the ILWW. In the upper reaches, safe navigating conditions for tows and locks operating restrictions are the predominant considerations. In the mid-reaches, the concerns are safe navigation and wake damage while, in the lower reaches, concern for levee conditions is paramount.

LOW WATER & ICE CONDITIONS

Waterway management concerns also occur during low water and ice conditions on the ILWW. Low water is of particular concern on the ILWW below Starved Rock Lock & Dam. This section of river is pooled by two wicket dams designed to hold the river to pool level or slightly above. These dams do not have the capability of holding more water in the pools. These pools are susceptible to rapid water level changes when a dam is placed into operation or is dropped to allow for open passage. Groundings during low water conditions delay commercial traffic, cause substantial damage to the navigation channel and can necessitate dredging. Ice condition 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 Army Corps of Engineers (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. **If the conditions and time permit the USACE, USCG, and IRCA may observe test tows transiting an area, in order to determine if a river closure is warranted.**

Section 2 – Parties and Roles

U.S. Coast Guard

The U. S. Coast Guard Sector Commander Upper Mississippi River, with its principal office in St Louis, MO and a smaller Marine Safety Detachment office in Peoria, IL, is responsible for safety of navigation, security, and law enforcement along the Illinois Waterway as far as mile marker 187; from that point, the responsibility belongs to the Coast Guard Sector Commander of Sector Lake Michigan working through the Coast Guard Marine Safety Unit Chicago.

U.S. Army Corps of Engineers (USACE)

The USACE maintains eight Lock and Dam facilities along the Illinois Waterway, under the Supervision of their Rock Island District Office on Arsenal Island in Rock Island, IL, St. Louis District Office in Downtown St. Louis and a Project Office in Peoria, IL. To the extent possible, through management of these facilities, the USACE maintains pool levels that are sufficient to accommodate commercial traffic on the river.

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.

River Industry Action Committee (RIAC)

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

Illinois River Carrier’s Association (IRCA)

IRCA plays a similar role to that of RIAC, but keyed to only the ILWW, whereas RIAC may overlap the major inland rivers.

Fleeting Facility Managers

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

State Emergency Managers

Hazardous conditions on the ILWW, 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.

Metropolitan Water Reclamation District (MWRD)

The mission of the MWRD is to protect the health and safety of the public in its service area. Water flow within the District’s waterway system and the Lake Michigan discretionary diversion flow are controlled by three inlet structures on Lake Michigan: Wilmette Pumping Station, Chicago River Controlling Works and T.J. O’Brien Lock and Dam. The single outlet control structure is the Lockport Lock and Powerhouse.

USACE POSITION St. Louis District RM 0.0-80.0	DUTIES & RESPONSIBILITIES	EQUALS	USCG POSITION	DUTIES & RESPONSIBILITIES
Chief, Water Control Operations	River Stage Forecast & Control		Sector Upper Mississippi River Waterways Division Chief	Manages daily waterway management and casualty operations
Operations Dredging Project Manager, St. Louis, MO	Channel Patrol & O&M Dredging Activities ILWW		Sector Upper Mississippi River Waterways Division Chief	Manages daily waterway management and casualty operations
Operations Manager, Rivers Project Office, Alton, IL	Project Manager of ILWW		Sector Upper Mississippi River Waterways Division Chief	Manages daily waterway management and casualty operations
REPORTS TO:				
Chief of Operations, St. Louis District	Supervises Operations Managers		Sector Upper Mississippi River Chief of Prevention	Supervises operational issues

REPORTS TO:

District Engineer, St. Louis District	Supervises Chief of Operations		Commander, Sector Upper Mississippi River	Senior USCG officer in area
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REPORTS TO:

Division Engineer, Mississippi Valley Division	Supervises District Engineer		Commander, Eighth Coast Guard District	Senior USCG officer in District
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USACE POSITION Rock Island District RM 80.0-187.0	DUTIES & RESPONSIBILITIES	EQUALS	USCG POSITION	DUTIES & RESPONSIBILITIES
Chief Maintenance Section and Chief L&D Section	Day to day O&M ILWW		Sector Upper Mississippi River Waterways Division Chief	Manages daily waterway management and casualty operations
Operations Manager, Illinois Waterway	Supervises Section Chiefs		Sector Upper Mississippi River Waterways Division Chief	Manages daily waterway management and casualty operations
REPORTS TO:				
Chief of Operations, Rock Island District	Supervises Operations Manager		Sector Upper Mississippi River Chief of Prevention	Supervises operational issues
REPORTS TO:				
District Engineer, Rock Island District	Supervises Chief of Operations		Sector Commander Upper Mississippi River	Senior USCG officer in area
REPORTS TO:				
Division Engineer, Mississippi Valley Division	Supervises District Engineer		Commander, Eighth Coast Guard District	Senior USCG officer in District for Marine Safety

USACE POSITION Rock Island District RM 187.1-327.0	DUTIES & RESPONSIBILITIES	EQUALS	USCG POSITION	DUTIES & RESPONSIBILITIES
Chief Maintenance Section and Chief L&D Section	Day to day O&M ILWW		Sector Lake Michigan Waterways Division Chief	Manages daily waterway management and casualty operations
Operations Manager, Illinois Waterway	Supervises Section Chiefs		Sector Lake Michigan Waterways Division Chief	Manages daily waterway management and casualty operations
REPORTS TO:				

Chief of Operations, Rock Island District	Supervises Operations Manager		Sector Lake Michigan Chief of Prevention	Supervises operational issues
REPORTS TO:				
District Engineer, Rock Island District	Supervises Chief of Operations		Sector Commander Lake Michigan	Senior USCG officer in area
REPORTS TO:				
Division Engineer, Mississippi Valley Division	Supervises District Engineer		Commander, Ninth Coast Guard District	Senior USCG officer in District for Marine Safety

Section 3 – Communications Plan

Initiation of Communications Plan – This section provides guidance on the methods of communicating and receiving information. The Coast Guard and maritime industry all 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 ILWW stakeholder can request a conference call by contacting the USCG Sector UMR Waterways Division Chief, USCG MSU Chicago or the Chair of IRCA. The Chair of IRCA and the USCG will discuss the concerns with the appropriate USACE contacts to decide if a phone conference is necessary. 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 IRCA chair will contact those members of their respective organizations. 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. During times when zones have reached the “action” phase, the Captain of the Port of St. Louis and the CO (or XO) of MSU Chicago shall be present during telephone conference calls. By conferring frequently with all ILWW 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 ILWW stakeholders and the public using Broadcast Notice to Mariners, Homeport, press releases if appropriate, and, if time permits, 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 ILWW are handled by the communications centers at the Sector Upper Mississippi River Command Center and Sector Lake Michigan Integrated Command Center.

Sector UMR Command Center is located in the Robert A. Young Federal Building in St. Louis, MO. Sector UMR Command Center is responsible for receiving information on the ILR mile markers 0-187.0

Sector Lake Michigan Command Center is located in Milwaukee, WI and can be reached by phone at (414) 747-7182. Sector Lake Michigan Command Center is responsible for receiving information on the ILR mile markers 187.1-333.5.

NOTIFICATIONS:

U. S. Coast Guard:

The U. S. Coast Guard maintains a 24 x 7 live watch at its Command Centers in St. Louis, MO and Milwaukee, WI. Hazardous river conditions are monitored by Command Center personnel, as well as the Sector Duty Officers at both the St. Louis, MO and Milwaukee, WI Command Centers and reported as appropriate to the Sector Commanders. As conditions dictate, the Command Centers 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 representative of the river industry.

USCG Sector Upper Mississippi River

Command Center (24 hr.)	(314) 269-2332
Commander	(314) 269-2600
Prevention Chief	(314) 269-2568
Waterways Management Division Chief	(314) 269-2560
Waterways Management Duty (24 hr.)	(319) 520-8556
MSD Peoria Supervisor	(309) 694-7779

USCG MSU Chicago

Sector Lake Michigan Command Center (24 hr.)	(414) 747-7182
Commander	(630) 986-2126
Waterways Management Division Chief	(630) 986-2131

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.

USACE: ROCK ISLAND DISTRICT

During Normal Work Hours

During periods of hazardous river conditions the USACE field offices work closely with river users and the basin communities. The field office staff reports the river conditions and impacts to their respective District Office and Mississippi Valley Division (MVD) Point of Contact. The USACE has two district offices responsible for the ILWW; the Rock Island District and the St. Louis District. The District boundaries split at RM 80. The field staff report to district staff persons within Operations Division and Emergency Management Division. Operations Division staff will inform the District Water Control or Water Management Offices, the district leadership and the District Commander. They will also notify Division Water Management. They will then contact appropriate staff person in the Division Office, who will notify, the appropriate Division leadership and the Division Commander. The District 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 USACE through the appropriate District Commander will make recommendations to the Coast Guard to issue safety zone restrictions or river closures. Likewise as river conditions improve the USACE through the appropriate District Commander will make recommendations to remove the safety zone restrictions or reopen the river to navigation.

After Normal Work Hours, Weekends and Holidays

Any USACE staff person, field office, District or Division who becomes knowledgeable of a hazardous river condition will contact the St. Louis District or Rock Island District Emergency Management Office. Here the most up-to-date contact list with home and cell phone numbers are maintained of USACE staff responsible for emergency response to hazardous river conditions.

USACE Rock Island 24 Hour Phone Number: **(309) 794-4200**

USACE Rock Island Emergency Operations Center 24 Hour Phone Number: (309) 794-4200

USACE Rock Island Water Control Duty Forecaster (309) 738-4101

USACE Rock Island Illinois River Locks and Dams Chief (309) 645-2675

USACE Rock Island Peoria Flood Area Engineer (309) 429-0348

USACE Rock Island Dresden Flood Area Engineer (309) 373-8424

Lock and Dam 24 Hour Phone Numbers:

LaGrange (217) 225-3317

Peoria (309) 699-6111

Starved Rock (815) 667-4114

Marseilles (815) 795-2593

Dresden (815) 942-0840

Brandon Road (815) 744-1714

Lockport (815) 838-0536
T.J. O'Brien (773) 646-2183
Chicago (312) 787-4795

Rock Island District Office Contact List:

Water Control
Scott Pettis (309) 794-5851

Peoria Flood Area Engineer
Anthony Heddlesten (309) 794-5886

Dresden Flood Area Engineer
Alaena Ensey (309) 794-5507

Rock Island Channel Maintenance
Chris Reger (309) 794-5842

MVD UMR/ILWW IWW
Pat Chambers (601) 634-5930

Rock Island Operations Manager IWW
(309) 397-0585 (cell)
(309) 676-4601 x4104

Rock Island Water Control
(309) 794-5258

USACE: 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 USACE 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 USACE through the appropriate District Commander will make recommendations to remove the safety zone restrictions or reopen the river to navigation.

After Normal Work Hours, Weekends and Holidays

Any USACE staff person, field office, who becomes knowledgeable of a hazardous river condition, will contact the St. Louis District Emergency Management Office 24 hour phone number at **(314) 331-8605**. Here the most up-to-date contact list with home and cell phone numbers are maintained of USACE staff responsible for emergency response to hazardous river conditions.

St. Louis District Contact List

Water Control Contact List:

	<u>Work</u>	<u>Cell</u>
Joan Stemler	(314) 331-8330	
Russel Errett	(314) 331-8337	
Liz Behrens	(314) 331-8351	
Leonard Hopkins	(314) 331-8348	

River Project Contact List:

	<u>Work</u>	<u>Cell</u>
Andy Schimpf	(636) 899-0044	
Lou Dell'Orcoo	(314) 331-8100	

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 allows the IEMA staff time to prepare for management procedures.

IEMA Telecommunications Center	(217) 782-7860
IL DNR LE	(815) 224-1172x0
IL Region 3 EMA	(815) 433-7161
	(815) 587-4483
IL Region 6 EMA	(217) 782-0922
	(217) 836-1761
IL Region 8 EMA	(618) 394-2233

RIAC

Chair - Bernard Heroff	(314) 803-4644
	(877) 855-7266
Co-chair - Randy Kirschbaum	(563) 505-5923

IRCA

Chari - Rick Osborn	(601) 638-5921
	(601) 218-5089

INTERNET SITE PURPOSE	ADDRESS
USACE Rock Island District Division	http://www.mvr.usace.army.mil/
USACE St. Louis District Division	http://www.mvs.usace.army.mil/
USCG MSU Chicago	http://www.uscg.mil/d9/msuchicago http://homeport.uscg.mil/lakemichigan
USCG Sector Upper Mississippi River	http://www.uscg.mil/d8/sectUMR/contacts.asp http://homeport.uscg.mil/umr

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RIVER MILE	AREA NAME	INDUSTRY CONCERN	BUOYS
0.8	GRAFTON	SHOAL BY GRAFTON HARBOR	1 RED
1.5 - 2.3	MASON ISLAND-ISLAND 525	NARROW BEND	3 GREENS
5 - 6	CHEROKEE BEND	NARROW BEND	3 REDS
13.2 - 13.5	HADLEY LANDING	NARROW BEND	3-4 REDS
14.5	OTTERS CREEK	NARROW BEND	3 GREENS
25.5	DIAMOND ISLAND	NARROW AT THE HEAD OF THE ISLAND	1 RED/1 GREEN
28.5	HURRICAIN ISLAND	NARROW AT THE HEAD OF THE ISLAND	2 REDS
31.0 - 31.1	KAMPSVILLE FERRY	SHOALING BELOW KAMPSVILLE FERRY LIGHT	2 GREENS
36 - 37	PANTHER CREEK	SHOALING AND NARROW ON LDB	1 RED/1 GREEN
38.1	TWIN ISLAND	NARROW AT THE HEAD OF THE ISLAND	1 GREEN
38.9 - 39	ABOVE FISHER ISLAND	NARROW AT THE HEAD OF THE ISLAND	2 GREENS
40.1	WING ISLAND	NARROW AT THE HEAD OF THE ISLAND	1 GREEN
39.9 - 41	BELOW PEARL ISLAND LIGHT	MARKING DIKES	1 RED/ 1 GREEN
47.5	BELOW PILOT PEAK BEND	NARROW BEND	1 GREEN
48.1	PILOT PEAK	SHOALING ON RDB	1 GREEN
54	LITTLE BLUE	SHOALING ON RDB AND DIKE	2 GREEN
55.5	FLORENCE HIGHWAY BRIDGE	BEND BELOW FLORENCE HIGHWAY BRIDGE	1 RED
56.2 - 56.6	FLORENCE HIGHWAY BRIDGE	NARROW BEND ABOVE FLORENCE HWY BDG	3 GREENS
62.6 -63	VALLEY CITY / MAUVAISE TERRACE	NARROW BEND	2 REDS/ 3 GREENS
66.1 - 67	MC GEE CREEK	NARROW BEND	3 REDS/ 3 GREENS
70.2	AMEREN POWER STATION	SHOALING ON LDB	1 RED
71	MEREDOSIA	NARROW BEND	3 GREENS
74.5	CAMP CREEK	NARROW BEND	1 RED
75.7	MOORES ISLAND	NARROW BEND	3 REDS/ 1 GREEN
78.5	INDIAN CREEK	SHOALING ON RDB AND NARROW BEND	2 GREENS
84	BRIGGS LANDING	SHOALING ON LDB AND NARROW BEND	4 REDS
85.5	BAR ISLAND AND COAL CREEK	NARROW CHANNEL	1 RED
87	GRAPE ISLAND	NARROW CHANNEL	2 GREENS
88.3 - 89	BEARDSTOWN R/R BRIDGE	SHOALING ON RDB AND NARROW BEND	1 RED/ 4 GREENS
91 - 91.5	FREDRICK	SHOALING ON LDB AND NARROW BEND	4 REDS
93.4 - 94.1	BELOW SUGAR CREEK	SHOALING ON RDB AND NARROW BEND	5 GREENS
94.4 - 94.8	SUGAR CREEK ISLAND	SHOALING ON LDB AND NARROW BEND	4 REDS
97 - 97.5	BROWNING	SHARP BEND	1 RED/ 1 GREEN
98 - 98.2	SANGAMON CHUTE/ELM ISLAND	NARROW BEND	3 GREENS
100.9	HICKORY ISLAND	NARROW BEND	1 GREEN
102.6 - 103.5	SHARPS LANDING	NARROW BEND	3 REDS/ 1 GREEN
106.5 - 107	GRAND ISLAND BEND	LONG NARROW BEND SHOALING BOTH SIDES	2 REDS/ 5 GREENS
109.4 - 110.2	GRAND ISLAND BEND	LONG NARROW BEND SHOALING BOTH SIDES	3 REDS/ 5 GREENS
111.3 -	OTTER CREEK DAYBEACON	NARROW BEND/ 1ST AND 3RD RED PRIORITY	2 REDS

111.4			
112.3	OTTER CREEK	NARROW BEND/ MIDDLE RED PRIORITY	1 RED
113.4 - 114	HEAD OF GRAND ISLAND	NARROW BEND	2 GREENS
114.4	DEVILS ELBOW LOWER	NARROW BEND	1 RED
116.5 - 116.7	DEVILS ELBOW	NARROW BEND SHOALING ON BOTH SIDES	3 REDS
117	HAVANA DAYBEACON	NARROW BEND SHOALING ON BOTH SIDES	2 GREENS (LOWER)
120.5 - 121.1	SIEBS LAKE	NARROW BEND AROUND QUIVER ISLAND	5 REDS
121.1 - 123	QUIVER BEACH	LONG NARROW BEND SHOALING BOTH SIDES	5 GREENS
128.5 - 129.5	LIVERPOOL	SHOALING ON RDB AND NARROW BEND	3 REDS/ 4 GREENS
133.8 - 134.5	SPRING LAKE	SHOALING ON BOTH SIDES	2 GREENS
135	SENATE ISLAND	NARROW BEND SHOALING ON BOTH SIDES	2 REDS
136-137	COPPERAS CREEK	SHOALING ON RDB AND NARROW BEND	3 REDS/ 4 GREENS
139	CANTONS LANDING	SHOALING LDB	2 REDS
145.5	KINGSTON	SHOALING ON LDB AND NARROW BEND	2 REDS
147.2	MACKINAW RIVER LIGHT	SHOALING ON BOTH SIDES	1 RED/ 1 GREEN
149.5 - 150	UPPER AND LOWER PEKIN WIGGLE	LONG NARROW BEND SHOALING BOTH SIDES	4 REDS/ 4 GREENS
151	PEKIN R/R BRIDGE	SHOALING RDB	1 RED
163 - 166	PEORIA LAKE	LONG STRETCH OPEN WATER	6 REDS/ 4 GREENS
166.1 - 179	UPPER PEORIA LAKE	LONG STRETCH OPEN WATER AND NARROW BENDS	12 REDS/ 10 GREENS
180 - 181.6	CHILLICOTHE ISLAND	LONG NARROW BEND SHOALING BOTH SIDES	3 REDS/ 2 GREENS
182 - 183.1	BABBS SLOUGH/ BABBS ISLAND	SHOALING ON RDB AND NARROW BEND	2 REDS/ 2 GREENS
189.2 - 190	ABOVE LACON BRIDGE	NARROW BEND SHOALING ON BOTH SIDES	3 REDS/ 3 GREENS
193 - 195	HENRY ISLAND	LONG NARROW BEND SHOALING BOTH SIDES	4 REDS/ 1 GREEN
196.4 - 197.4	SAWMILL LAKE	NARROW BEND SHOALING ON BOTH SIDES	2 REDS/ 5 GREENS
199 - 201	SWAN LAKE/ HALLS LANDING	LONG NARROW BEND SHOALING BOTH SIDES	2 REDS/ 5 GREENS
209 - 209.5	HENNEPIN	SHOALING ON RDB AND NARROW BEND	4 GREENS
212 - 213.7	HENNEPIN POWER STATION	NARROW BEND SHOALING ON BOTH SIDES	5 REDS/ 5 GREENS
214 - 218	CLARK ISLAND TO SPRING VALLEY	LONG NARROW BEND SHOALING BOTH SIDES	8 REDS/ 6 GREENS
219.8 - 220.2	HUGHES SLOUGH	SHOALING ON RDB AND NARROW BEND	3 GREENS
225.5 - 229	LASALLE TO UTICA	LONG NARROW BEND SHOALING BOTH SIDES	7 REDS/ 7 GREENS
230 - 231	BELOW STARVED ROCK L/D	NARROW CHANNEL	2 REDS/ 3 GREENS
231.1 - 233	ABOVE STARVED ROCK L/D	NARROW CHANNEL SHOALING BOTH SIDES	4 REDS/ 5 GREENS
242 - 244	BELOW MARSEILLES L/D	LONG NARROW BEND SHOALING BOTH SIDES	6 REDS/ 6 GREENS
249 - 250	KICKAPOO	LONG NARROW BEND SHOALING BOTH SIDES	3 REDS/ 5 GREENS
258.5 - 259.5	GRIST ISLAND	NARROW CHANNEL	3 REDS/ 4 GREENS
273.5 - 274.7	CHANNAHON	SHOALING ON RDB AND NARROW BEND	4 REDS/ 5 GREENS
280.9 - 282	JOLIET	SHOALING ON LDB AND NARROW BEND	5 REDS/ 2 GREENS

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 RIAC, 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.

ILR Quick Reference Stage Data

ILLINOIS RIVER			IAW ILR WAP 2017					
ZONE	MM - MM		HIGH WATER		GAUGE LOCATION	LOW WATER		
			WATCH	ACTION			WATCH	ACTION
1	0	9.9	18'-22'	22' & ↑	GRAFTON	15.2'/419.0' & ↓	14.2'/418.0' & ↓	
2	10	49.9	25'-33'	33' & ↑	HARDIN	19.0'/419.0' & ↓	18.1'/418.1' & ↓	
3	50	80.2	14'-23'	23' & ↑	MEREDOSIA	2.0'/420.0' & ↓	1.0'/419.0' & ↓	
4	80.3	101.9	14'-22'	22' & ↑	BEARDSTOWN	9.1'/429.0'* & ↓	7.6'/427.5'* & ↓	
5	102	128.9	14'-20'	20' & ↑	HAVANA	4.8'/429.2' & ↓	3.3'/427.7' & ↓	
6	129	145.5	13'-16.4'	16.4' & ↑	COPPERAS CREEK	1.5'/429.5' & ↓	0.0'/428.0' & ↓	
7	145.6	187	18'-22'	22' & ↑	PEORIA	11.6'/440.0'* & ↓	10.0'/438.5'* & ↓	
8	187.1	199.9	23'-27.4'	27.5' & ↑	HENERY	14.0'/440.0' & ↓	12.5'/438.5' & ↓	
9	200	230	20'-22'	22.1' & ↑	LA SALLE	10.2'/440.2' & ↓	8.7'/438.7' & ↓	
10	231	244.6	20'-22'	22.1' & ↑	MARSEILLES	458.5' & ↓	456.5' & ↓	
11	244.7	271.5	13'-16'	16' & ↑	MORRIS	4.7'/483.2' & ↓	2.7'/481.2' & ↓	
12	271.6	285.9	506'-507'	508' & ↑	BRANDON RD	504.5' & ↓	502.5' & ↓	
13	286	291	540'-541'	542' & ↑	LOCKPORT LOCK	538.5' & ↓	536.5' & ↓	
14	291.1	333.4	577.5' & ↑	577.5' & ↑	ROCK ISLAND L/D 15	577.5' & ↓	575.5' & ↓	
* WATER LEVELS TYPICALLY FALL 1.5' BELOW READINGS AT ZONE 4 AND 7 DURING NORMAL OPS PRIOR TO RAISING THE WICKET DAMS								
ICE CONDITIONS - ALL ZONES								
WATCH	ICE BUILD UP IN CHANNEL AND SHEET ICE FORMATION							
ACTION	HEAVY ICE GORGES							
RECOVERY	ROTTING ICE, INCREASED FLOW, SOFTENING ICE							
								

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 1

CRITICAL LOCATION DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
Illinois Waterway Zone 1 Miles 0.0 to 9.9 Reference Gauge: Grafton RM 0.0 Flood Stage: 18' / 421.8' MSL (Mean Sea Level) MSL Zero Gauge: 403.8'	18' 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, IRCA, and USCG. Monitor river gauges frequently.
	18.0' to 22'	Rising	High Water Damage begins in Grafton, IL at 18'	Watch	Initiate communication plan. Issue advisory that indicates high water and drift potential. Advise the use of caution and minimize wake. Consider tow restrictions, hp requirements, dangers of downstreaming, and discuss mooring arrangements.
	22 and above'	Rising	Extreme High Water Rte 100 closed @ 24.7', Nutwood levee overtopped @ 33.5'	Action	Use watch stage along with high current reports, flood fighting reports, impacted river reach, towboat positions/levee conditions to determine establishment of safety zones/river closure. Discourage or prohibit recreational vsl transit, prohibit laying up on levees, allow local fleeting to continue, advise swift current caution.
	Crest to 22'	Stable or Falling	Extreme High Water Stable or falling	Recovery	Use watch stage along with high current reports, flood fighting 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.
	22' 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 comms 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 2

CRITICAL LOCATION DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
<p style="text-align: center;">Illinois Waterway</p> <p style="text-align: center;">Zone 2</p> <p style="text-align: center;">Miles 10.0 to 49.9</p> <p>Reference Gauge: Hardin RM 21.5</p> <p>Flood Stage: 25' / 425.0' MSL</p> <p>MSL Zero Gauge: 400.0'</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, IRCA, and USCG. Monitor river gauges frequently.
	25' to 33'	Rising	High Water Damage begins in Hardin @ 28.6'	Watch	Initiate communication plan. Issue advisory that indicates high water and drift potential. Advise the use of caution and minimize wake. Consider tow restrictions, hp requirements, dangers of downstreaming, and discuss mooring arrangements.
	33' and above	Rising	Extreme High Water Flooding in Kampsville & Hardin, Eldred levee overtopped @ 35.4'	Action	Use watch stage along with high current reports, flood fighting reports, impacted river reach, towboat positions/levee conditions to determine establishment of safety zones/river closure. Discourage or prohibit recreational vsl transit, prohibit laying up on levees, allow local fleeting to continue, advise swift current caution.
	Crest to 33'	Stable or Falling	Extreme High Water Stable or falling	Recovery	Use watch stage along with high current reports, flood fighting 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.
	33' 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 comms plan if river level begins rising.
	25' 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 3

CRITICAL LOCATION DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
<p style="text-align: center;">Illinois Waterway</p> <p style="text-align: center;">Zone 3</p> <p style="text-align: center;">Miles 50.0 to 80.2</p> <p>Reference Gauge: Meredosia RM 70.8</p> <p>Flood Stage: 14' / 432.0' MSL</p> <p>MSL Zero Gauge: 418.0'</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, IRCA, and USCG. Monitor river gauges frequently.
	14' to 23'	Rising	High Water Main Rd in Valley City overtopped	Watch	Initiate communication plan. Issue advisory that indicates high water and drift potential. Advise the use of caution and minimize wake. Consider tow restrictions, hp requirements, dangers of downstreaming, and discuss mooring arrangements.
	23' and above	Rising	Extreme High Water Damage to buildings in Montezuma & Florence at 24'	Action	Use watch stage along with high current reports, flood fighting reports, impacted river reach, towboat positions/levee conditions to determine establishment of safety zones/river closure. Discourage or prohibit recreational vsl transit, prohibit laying up on levees, allow local fleeting to continue, advise swift current caution. Consider setup of unified command with an ICP at Meredosia including Coast Guard, USACE, IEMA, and Industry. Consider full river closure at 27'.
	Crest to 23'	Stable or Falling	Extreme High Water Stable or falling	Recovery	Use watch stage along with high current reports, flood fighting 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.
	23' to 14'	Falling	High Water	Recovery	Issue advisory that indicates high water and to exercise caution; Users to report hazardous conditions to Coast Guard. Initiate comms plan if river level begins rising.
	14' 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 4

CRITICAL LOCATION DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
<p style="text-align: center;">Illinois Waterway</p> <p style="text-align: center;">Zone 4</p> <p style="text-align: center;">Miles 80.3 to 101.9</p> <p>Reference Gauge: Beardstown RM 88.6</p> <p>Flood Stage: 14'/433.9' MSL</p> <p>MSL Zero Gauge: 419.9'</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, IRCA, and USCG. Monitor river gauges frequently.
	14' to 22'	Rising	High Water - Seepage problems initially, damage to buildings in Browning @ 22'	Watch	Initiate communication plan. Issue advisory that indicates high water and drift potential. Advise the use of caution and minimize wake. Consider tow restrictions, hp requirements, dangers of downstreaming, and discuss mooring arrangements.
	22' and above	Rising	Extreme High Water Damage in Frederick & Browning @ 27', Crane Creek Levee Design Exceeded 27.5', Overtop Crane Creek Levee 30.5'	Action	Use watch stage along with high current reports, flood fighting reports, impacted river reach, towboat positions/levee conditions to determine establishment of safety zones/river closure. Discourage or prohibit recreational vsl transit, prohibit laying up on levees, allow local fleeting to continue, advise swift current caution. Crane Creek (83.8-84.9), Design Exceeded – 27.5, Overtop 30.5 Beardstown (79.0-89.0), Design Exceeded 30.0, Overtop – 33.0 Coal Creek (84.9-91.6), Design Exceeded – 30.1, Overtop – 33.1
	Crest to 22'	Stable or Falling	Extreme High Water Stable or falling	Recovery	Use watch stage along with high current reports, flood fighting 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.
	22' to 14'	Falling	High Water	Recovery	Issue advisory that indicates high water and to exercise caution; Users to report hazardous conditions to Coast Guard. Initiate comms plan if river level begins rising. Note: At LaGrange Lock: Lower wall elevation- 432.0 If Open Pass is not allowed and the water elevation is at 18.5' (432.0 MSL) lock out of operation until river falls to 431.5 MSL and to safe operating levels.
	14' 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 5

CRITICAL LOCATION DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
<p style="text-align: center;">Illinois Waterway</p> <p style="text-align: center;">Zone 5</p> <p style="text-align: center;">Miles 102 to 128.9</p> <p>Reference Gauge: Havana RM 118.4</p> <p>Flood Stage: 14' / 438.4' MSL</p> <p>MSL Zero Gauge: 424.4'</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, IRCA, and USCG. Monitor river gauges frequently.
	14' to 20'	Rising	High Water -No data on damage conditions	Watch	Initiate communication plan. Issue advisory that indicates high water and drift potential. Advise the use of caution and minimize wake. Consider tow restrictions, hp requirements, dangers of downstreaming, and discuss mooring arrangements.
	20' and above	Rising	Extreme High Water Exceed Design at Thompson/Emiquon @ 23.1, Overtop @ 26.1	Action	Use watch stage along with high current reports, flood fighting reports, impacted river reach, towboat positions/levee conditions to determine establishment of safety zones/river closure. Discourage or prohibit recreational vsl transit, prohibit laying up on levees, allow local fleeting to continue, advise swift current caution. Big Lake (102.6-108.3), Design Exceeded – 24.2, Overtop – 27.2 Lacey, Langellier, Kerton Valley, West Matanzas (111.8-119.6), Design Exceeded – 26.3, Overtop – 29.3. Thompson/Emiquon (120.8-125.9), Design Exceeded – 23.1, Overtop – 26.1 Liverpool (126.3-128.2), Design Exceeded – 23.9, Overtop – 26.9
	Crest to 20'	Stable or Falling	Extreme High Water Stable or falling	Recovery	Use watch stage along with high current reports, flood fighting reports, site inspection, 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.
	20' to 14'	Falling	High Water	Recovery	Issue advisory that indicates high water and to exercise caution; Users to report hazardous conditions to Coast Guard. Initiate comms plan if river level begins rising.
	14' 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 6

CRITICAL LOCATION DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
<p style="text-align: center;">Illinois Waterway</p> <p style="text-align: center;">Zone 6</p> <p style="text-align: center;">Miles 129 to 145.5</p> <p>Reference Gauge: Copperas Creek RM 136.8</p> <p>Flood Stage: N/A</p> <p>Normal Pool: 1.5'/429.5 MSL</p> <p>MSL Zero Gauge: 428.0'</p>	13' and below		Normal Operations		
	13'to 16.4'	Rising	High Water -@16.4' Tow wave action may affect houses at Copperas Creek	Watch	Initiate communication plan. Issue advisory that indicates high water and drift potential. Advise the use of caution and minimize wake b/w MM 136-138 (Copperas Creek). Consider tow restrictions, hp requirements, dangers of downstreaming, and discuss mooring arrangements.
	16.4' and above	Rising	Extreme High Water @ 18.2' Four houses surrounded by water. @ 20' 1 st floor of houses impacted by tow wake Spring Lake exceed design at 23.1, Overtop Levee @ 26.1'	Action	Use watch stage along with high current reports, flood fighting reports, impacted river reach, towboat positions/levee conditions to determine establishment of safety zones/river closure. Discourage or prohibit recreational vsl transit, prohibit laying up on levees, allow local fleeing to continue, advise swift current caution. East Liverpool (128.4-131.7), Design Exceeded – 23.9, Overtop –26.9 Spring Lake (133.9-147.8), Design Exceeded – 23.1, Overtop –26.1 Banner Special (143.9-145.5), Design Exceeded – 23.9, Overtop – 26.9
	Crest to 16.4'	Stable or Falling	Extreme High Water Stable or falling	Recovery	Use watch stage along with high current reports, flood fighting 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.
	16.4' to 13'	Falling	High Water	Recovery	Issue advisory that indicates high water and to exercise caution; Users to report hazardous conditions to Coast Guard. Initiate comms plan if river level begins rising.
	13' 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 7

CRITICAL LOCATION DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
<p style="text-align: center;">Illinois Waterway</p> <p style="text-align: center;">Zone 7</p> <p style="text-align: center;">Miles 145.6 to 187.0</p> <p>Reference Gauge: Peoria RM 164.6</p> <p>Flood Stage: 18' / 446.4' MSL</p> <p>MSL Zero Gauge: 428.39'</p>	18' and below		Normal Operations		As stage rises towards flood stage at a gauge or series of gauges consider the need to initiate communications plan with USACE, RIAC, IRCA, and USCG. Monitor river gauges frequently.
	18' to 22'	Rising	High Water	Watch	Initiate communication plan. Issue advisory that indicates high water and drift potential. Advise the use of caution and minimize wake. Consider tow restrictions, hp requirements, dangers of downstreaming, and discuss mooring arrangements.
	22' and above	Rising	Extreme High Water Damage begins in buildings in Rome at 23'. Pekin LaMarsh Exceed Design @ 25.7, Overtop @ 28.7	Action	Use watch stage along with high current reports, flood fighting reports, impacted river reach, towboat positions/levee conditions to determine establishment of safety zones/river closure. Discourage or prohibit recreational vsl transit, prohibit laying up on levees, allow local fleeting to continue, advise swift current caution. @ 22' minimize wake b/w MM 166.5-178. @ 24.1' minimize wake b/w MM 162-179. Spring Lake (133.9-147.8), Design Exceeded – 27.0, Overtop – 30.0 Pekin LaMarsh (149.6-155.2), Design Exceeded – 25.7, Overtop – 28.7 North Pekin (156.4-156.8), Design Exceeded – XX.X, Overtop – YY.Y East Peoria (159.3-161.9), Design Exceeded – 30.8, Overtop – 33.8 Greater Peoria Sanitary District (159.8-160.3), Design Exceeded – 28.3, Overtop 31.3)
	Crest to 22'	Stable or Falling	High Water Stable or falling	Recovery	Use watch stage along with high current reports, flood fighting 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.
	22' 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 comms 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. Note: At Peoria Lock: Lower wall elevation- 440.0 If Open Pass is not allowed and the water elevation is at 11.6' (440.0 MSL) lock out of operation until water falls to 439.5 MSL and safe operating levels.

High Water Zone 8

CRITICAL LOCATION DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
<p>Illinois Waterway</p> <p>Zone 8</p> <p>Miles 187.1 to 199.9</p> <p>Reference Gauge: Henry RM 196.1</p> <p>Flood Stage: 23' / 448.9' MSL</p> <p>MSL Zero Gauge: 425.88'</p>	5' Below Flood Stage	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, IRCA, and USCG. Monitor river gauges frequently.
	23' to 24.5'	Rising	High Water - Damage begins to buildings in Sparland @ 28'	Watch 23' to 27.4'	Initiate communication plan. Issue advisory that indicates high water and drift potential. Advise the use of caution and minimize wake. Consider tow restrictions, hp requirements, dangers of downstreaming, and discuss mooring arrangements.
	27.5'	Rising	Extreme High Water Homes in Henry begin to flood at 29.6'	Action 27.5' and up	Use watch stage along with high current reports, flood fighting reports, impacted river reach, towboat positions/levee conditions to determine establishment of safety zones/river closure. Discourage or prohibit recreational vsl transit, prohibit laying up on levees, allow local fleeting to continue, advise swift current caution.
	Crest	Stable or Falling	High Water Stable or falling	Recovery	Use watch stage along with high current reports, flood fighting 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.
	23' Flood Stage	Falling	High Water	Recovery	Issue advisory that indicates high water and to exercise caution; Users to report hazardous conditions to Coast Guard. Initiate comms plan if river level begins rising.
	5' Below Flood Stage	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 9

CRITICAL LOCATION DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
<p style="text-align: center;">Illinois Waterway</p> <p style="text-align: center;">Zone 9</p> <p style="text-align: center;">Miles 200.0-230.9</p> <p>Reference Gauge: La Salle RM 224.7</p> <p>Flood Stage: 20' / 450.0' MSL</p> <p>MSL Zero Gauge: 430.0'</p>	5' Below Flood Stage	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, IRCA, and USCG. Monitor river gauges frequently.
	20' Flood Stage	Rising	High Water - Damage begins due to agricultural flooding at 20'	Watch 20' to 22'	Initiate communication plan. Issue advisory that indicates high water and drift potential. Advise the use of caution and minimize wake. Consider tow restrictions, hp requirements, dangers of downstreaming, and discuss mooring arrangements.
	22.1'	Rising	Extreme High Water Hennepin Levee overtops at 27.4'	Action 22.1' and up	Use watch stage along with high current reports, flood fighting reports, impacted river reach, towboat positions/levee conditions to determine establishment of safety zones/river closure. Discourage or prohibit recreational vsl transit, prohibit laying up on levees, allow local fleeting to continue, advise swift current caution. At Starved Rock Lock: Ref: Lock Gauges Outdraft sign out at 15.5' gate opening Upper wall elevation – 463.5 Lower wall elevation – 458.5 Restriction on doubles at 458.0 Water in bull gear pit at 461.5 Lock out of operation at 461.5 Dam out of operation at 240' gate Hydro plant out of operation at 455.0 Hennepin (202.5-207.0), Design Exceeded – XX.X, Overtop – YY.Y
	Crest	Stable or Falling	High Water Stable or falling	Recovery	Use watch stage along with high current reports, flood fighting 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.
	20' Flood Stage	Falling	High Water	Recovery	Issue advisory that indicates high water and to exercise caution; Users to report hazardous conditions to Coast Guard. Initiate comms plan if river level begins rising.
	5' Below Flood Stage	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 10

CRITICAL LOCATION DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
<p style="text-align: center;">Illinois Waterway</p> <p style="text-align: center;">Zone 10</p> <p style="text-align: center;">Miles 231.0-244.6</p> <p style="text-align: center;">Starved Rock Pool</p> <p>Reference Gauge: Marseilles RM 246.5</p> <p>Flood Stage: 20' / 472.9' MSL</p> <p>MSL Zero Gauge: 452.9'</p>	5' Below Flood Stage	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, IRCA, and USCG. Monitor river gauges frequently.
	20.0'	Rising	High Water	Watch	Initiate communication plan. Issue advisory that indicates high water and drift potential. Advise the use of caution and minimize wake. Consider tow restrictions, hp requirements, dangers of downstreaming, and discuss mooring arrangements.
	22.1'	Rising	<p style="text-align: center;">Extreme High Water</p> <p>Ottawa HS Levee overtopped at 474.1 NGVD 1929, Design Exceeded, 471.1.</p>	Action	<p>Use watch stage along with high current reports, flood fighting reports, impacted river reach, towboat positions/levee conditions to determine establishment of safety zones/river closure. Discourage or prohibit recreational vsl transit, prohibit laying up on levees, allow local fleeting to continue, advise swift current caution.</p> <p>At Marseilles Lock: (Ref Lock Gauges)</p> <p>Outdraft sign out at 15' gate opening</p> <p>Upper wall elevation – 486.0</p> <p>Lower wall elevation – 466.7</p> <p>Restriction on doubles at 466.7 (45' gate opening)</p> <p>Water in bull gear pit at 483.5</p> <p>Lock out of operation at 483.5</p> <p>Dam out of operation at 72' gate</p> <p>*NOTE: For the area in the immediate vicinity of Marseilles Dam and the entrance to Marseilles Canal, RM 247.0:</p> <p>When the dam gate opening reaches 20-25 feet, there is a very strong out draft and mariners need to use extreme caution when transiting the area. Some larger tows consider options to approaching this area, such as holding transit until flows reduce or changing pilots.</p> <p>When the dam gate opening reaches higher than 25 feet there is an extremely strong out draft and mariners need to use extreme caution when transiting the area, ensuring adequate expertise and resources are available to safely accomplish transit.</p> <p>Ottawa WWTP (239.0-239.4), Design Exceeded – XX.X, Overtop – YY.Y</p> <p>Ottawa Township HS (239.7-240.5), Design Exceeded – 471.1, Overtop – 474.1</p>
	Crest	Stable or Falling	High Water Stable or falling	Recovery	Use watch stage along with high current reports, flood fighting 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.
	20' Flood Stage	Falling	High Water	Recovery	Issue advisory that indicates high water and to exercise caution; Users to report hazardous conditions to Coast Guard. Initiate comms plan if river level begins rising.
	5' Below Flood Stage	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 11

CRITICAL LOCATION DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
<p style="text-align: center;">Illinois Waterway</p> <p style="text-align: center;">Zone 11</p> <p style="text-align: center;">Miles 244.7-271.5</p> <p style="text-align: center;">Marseilles Pool</p> <p>Reference Gauge: Morris RM 263.1</p> <p>Flood Stage: 16'/ 494.5MSL</p> <p>MSL Zero Gauge: 478.5'</p>	5' Below Flood Stage	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, IRCA, and USCG. Monitor river gauges frequently. NOTE: See footnote regarding Marseilles Canal under High Flows, Zones 1-12."
	13.0'	Rising	High Water	Watch 13.0'-16.0'	Initiate communication plan. Issue advisory that indicates high water and drift potential. Advise the use of caution and minimize wake. Consider tow restrictions, hp requirements, dangers of downstreaming, and discuss mooring arrangements.
	16.0'	Rising	Extreme High Water Roads flood at 16'. Damage to homes at 20' at RM 263	Action 16.0' and up	Use watch stage along with high current reports, flood fighting reports, impacted river reach, towboat positions/levee conditions to determine establishment of safety zones/river closure. Discourage or prohibit recreational vsl transit, prohibit laying up on levees, allow local fleeting to continue, advise swift current caution. At Dresden Island Lock: (Ref lock Gauges) Out draft sign out at 14' gate opening Upper wall elevation – 509.44 Lower wall elevation – 496.53 Restriction on doubles at 496.53 Water in bull gear pit at 505.44 Lock out of operation at 505.44 Dam out of operation at 99' gate Marseilles (247.1-247.7) Design Exceeded – XX.X, Overtop – YY.Y
	Crest	Stable or Falling	High Water Stable or falling	Recovery	Use watch stage along with high current reports, flood fighting 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.
	16.0'	Falling	High Water	Recovery	Issue advisory that indicates high water and to exercise caution; Users to report hazardous conditions to Coast Guard. Initiate comms plan if river level begins rising.
	5' Below Flood Stage	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 12

CRITICAL LOCATION DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
<p style="text-align: center;">Illinois Waterway</p> <p style="text-align: center;">Zone 12</p> <p style="text-align: center;">Miles 271.6 to 285.9</p> <p style="text-align: center;">Dresden Pool</p> <p>Reference Gauge: Brandon Rd Lower MM 286</p> <p>Flood Stage: 507'</p> <p>MSL Zero Gauge: 0</p>	2' Below Flood Stage	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, IRCA, and USCG. Monitor river gauges frequently.
	1' Below Flood Stage	Rising	High Water	Watch	Initiate communication plan. Issue advisory that indicates high water and drift potential. Advise the use of caution and minimize wake. Consider tow restrictions, hp requirements, dangers of downstreaming, and discuss mooring arrangements.
	Above Flood Stage	Rising	Extreme High Water	Action	Use watch stage along with high current reports, flood fighting reports, impacted river reach, towboat positions/levee conditions to determine establishment of safety zones/river closure. Discourage or prohibit recreational vsl transit, prohibit laying up on levees, allow local fleeting to continue, advise swift current caution. At Brandon Road Lock: No out draft sign used at Brandon Road Upper wall elevation – 542.7 Lower wall elevation – 513.5 Lock out of operation at 513.5 Dam out of operation at 60,750 cfs
	At or Below Flood Stage	Stable or Falling	High Water stable or falling	Recovery	Use watch stage along with high current reports, flood fighting 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.
	Below Flood Stage	Falling	High Water	Recovery	Issue advisory that indicates high water and to exercise caution; Users to report hazardous conditions to Coast Guard. Initiate comms plan if river level begins rising.
	1.5' Below Flood Stage	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 13

CRITICAL LOCATION DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
<p style="text-align: center;">Illinois Waterway</p> <p style="text-align: center;">Zone 13</p> <p style="text-align: center;">Miles 286.0 to 291.0</p> <p style="text-align: center;">Brandon Road Pool</p> <p>Reference Gauge: Lockport Lock Lower RM 291.0</p> <p>Flood Stage: 541.0</p> <p>MSL Zero Gauge: 0</p>	2' Below Flood Stage	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, IRCA, and USCG. Monitor river gauges frequently.
	1' Below Flood Stage	Rising	High Water	Watch	Initiate communication plan. Issue advisory that indicates high water and drift potential. Advise the use of caution and minimize wake. Consider tow restrictions, hp requirements, dangers of downstreaming, and discuss mooring arrangements.
	Above Flood Stage	Rising	Extreme High Water	Action	Use watch stage along with high current reports, flood fighting reports, impacted river reach, towboat positions/levee conditions to determine establishment of safety zones/river closure. Discourage or prohibit recreational vsl transit, prohibit laying up on levees, allow local fleeing to continue, advise swift current caution. At Lockport Lock: Out draft sign out at 7,000 cfs Upper wall elevation – 584.5 Lower wall elevation – 546.6 Restriction on doubles at (lower wall elevation) Lock out of operation at 565.0 (not enough depth over upper gate sill)
	At or Below Flood Stage	Stable or Falling	High Water stable or falling	Recovery	Use watch stage along with high current reports, flood fighting 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.
	Below Flood Stage	Falling	High Water	Recovery	Issue advisory that indicates high water and to exercise caution; Users to report hazardous conditions to Coast Guard. Initiate comms plan if river level begins rising.
	2' Below Flood Stage	Stable or 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 14

CRITICAL LOCATION DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
<p style="text-align: center;">Illinois Waterway</p> <p style="text-align: center;">Zone 14</p> <p style="text-align: center;">Miles 291.1 to 333.4</p> <p style="text-align: center;">Lockport Pool & above</p> <p>Reference Gauge: Lockport Lock <u>Upper</u> RM 291.1</p> <p>Flood Stage: None Normal Pool: 577.5</p> <p>Canal Wall Elevation: 584.5</p> <p>MSL Zero Gauge: 0</p>	Rising above normal pool	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, IRCA, and USCG. Monitor river gauges frequently.
	Rising above normal pool	Rising	High Water Heavy Rainfall in Chicago	Watch	Initiate communication plan. Issue advisory that indicates 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.
	Rising above normal pool	Rising	Extreme High Water Extremely Heavy Rainfall in Chicago	Action	Use watch stage along with high current reports, flood fighting reports, impacted river reach, towboat positions/levee conditions to determine establishment of safety zones/river closure. Discourage or prohibit recreational vsl transit, prohibit laying up on levees, allow local fleeting to continue, advise swift current caution. MWRD regulates dam opening for storm water storage and release. O'Brien Lock (River Mile 326.5) will shut down operations when the canal water level rises to near lake levels (the canal level must be maintained no higher than one-half foot below lake levels in order to eliminate potential of drinking water contamination).
	Falling to normal pool	Stable or Falling	High Water stable or falling	Recovery	Use watch stage along with high flow reports to determine what action advisories need to be removed or remain depending on river conditions.
	Normal Pool	Stable	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 Flow Zones 1-12

CRITICAL AREA DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
<p style="text-align: center;">Illinois Waterway</p> <p style="text-align: center;">Zones 1 - 12</p> <p style="text-align: center;">Miles 0.0 to 285.9</p>			<p>High Flow conditions are not applicable to zones 1-12 along the Illinois Waterway.</p> <p>High flow conditions are dealt with under normal operating conditions regarding out draft signs at lock approaches and different operating conditions and approach methods at bridges and bend ways. Erosion/scour conditions along flood control levees during high flows are very site specific and are integrated into High Water conditions.</p>		<p>Some locks display out draft warning signs during certain dam gate openings; this is performed as part of normal operations at the navigation locks and dams</p> <p>* NOTE: The out draft warning sign for Marseilles Lock is located at the entrance to Marseilles Canal at RM 247.0.</p> <p>When the dam gate opening reaches 20-25 feet, there is a very strong out draft and mariners need to use extreme caution when transiting the area. Some larger tows typically consider options to approaching this area, such as holding transit until flows reduce or changing pilots. USCG will issue Broadcast Notice to Mariners (BNM) when Marseilles Dam gate opening reaches 20 feet to warn of strong outdraft – Marseilles Lock personnel will notify USCG of dam gate conditions.</p> <p>When the dam gate reaches 25 feet or higher, there is an extremely strong out draft and mariners need to use extreme caution when transiting the area, ensuring adequate expertise and resources are available to accomplish transit. USCG will issue BNM when Marseilles Dam gate opening reaches 25 feet to warn mariners of extremely strong out draft conditions – Marseilles Lock personnel will notify USCG of dam gate conditions.</p>

High Flow Zones 13 & 14

CRITICAL AREA DESCRIPTION	TRIGGER READING	TREND	TRIGGER FLOW	DESCRIPTION	PHASE	ACTION
Illinois Waterway Zones 13 & 14 Miles 286.0-333.4		Rising	below 1,000 cfs	Normal operations	Watch	Monitor flow and traffic. Continue standard communication practices to keep a good understanding of flow conditions.
		Rising	below 5,000 cfs	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. All tows entering Joliet harbor should call MWRD at 312-751-5133 for the current flow and/or anticipated changes.
		Rising	7200 cfs	Very High Flows - Traffic stops at 10,000 cfs in portions of the canal system	Watch / 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 (IRCA/RIAC/fleeters), and USCG. Coast Guard will release broadcast at 7,000 cfs and again at 10,000 cfs to alert mariners. When flows reach 7200 cfs a helper boat is recommended for vessels transiting southbound through Joliet bridges.
		Falling	below 5,000 cfs	High Flows	Recovery	Continue normal communications between USACE, MWRD, Industry (IRCA) and USCG.
		Falling	below 1,000 cfs	Normal operations	Watch	Monitor flow and traffic. Continue standard communication practices to keep a good understanding of flow conditions.

ACTION PLAN TABLE – LOW WATER CONDITIONS ILLINOIS WATERWAY, ALL ZONES

CRITICAL REACH DESCRIPTION		TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION					
ALL ZONES ILLINOIS WATERWAY		Normal pool	Stable	Normal Operations		If stage lowers towards normal pool at a gauge or series of gauge locations consider the need to initiate communications plan with USACE, RIAC, IRCA, and USCG. Monitor river gauges frequently.					
<u>Normal Pool</u>	<u>Minimum Pool</u>										
Zone 1: 15.2' / 419.0' Zone 2: 19.0' / 419.0' Zone 3: 2.0' / 420.0' Zone 4: 9.1' / 429.0'* Zone 5: 4.8' / 429.2' Zone 6: 1.5' / 429.5' Zone 7: 11.6' / 440.0* Zone 8: 14.0' / 440.0' Zone 9: 10.2' / 440.2' Zone 10: 458.5' Zone 11: 4.7' / 483.2' Zone 12: 504.5' Zone 13: 538.5' Zone 14: 577.5	Zone 1: 14.2' / 418.0' Zone 2: 18.1' / 418.1' Zone 3: 1.0' / 419.0' Zone 4: 7.6' / 427.5'* Zone 5: 3.3' / 427.7' Zone 6: 0.0' / 428.0' Zone 7: 10.0' / 438.5* Zone 8: 12.5' / 438.5' Zone 9: 8.7' / 438.7' Zone 10: 456.5' Zone 11: 2.7' / 481.2' Zone 12: 502.5' Zone 13: 536.5' Zone 14: 575.5'						Normal pool	Falling	Low Water Channel narrows in various conditions	Watch	Initiate communication plan. Issue advisory that indicates low water. Advise the use of caution. Corps initiates increased channel reconnaissance surveys. Identify and monitor potential problem areas and reason for pool dropping. 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 due to narrow channel width. Place heavy barges in middle of tow. Establish normal communications between USACE, USCG and Industry as needed to discuss specific problem areas, potential impacts and possible solutions. Notify water intake stations down river in anticipated affected zones. Mariners should identify fleeting areas in the event of river closure.
							Minimum Pool	Falling	Extreme Low Water Channel problems, both width and depth, increase	Action	Issue advisory that indicates extreme low water. Coast Guard will reset buoys in those narrow channel locations within reach. Corps will continue increased level of channel reconnaissance. Establish draft limits, limit barge widths, req. helper tugs, determine if fleeting can continue, pre-identify areas to lay up in event of closure, Emergency Dredging may be required at some locations. Be aware of shifting channels. Develop recovery plan 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, USCG and Industry (IRCA and others as needed).
Footnote: Normal Pool levels based on USGS data and not from USACE River Charts.		Below minimum pool	Rising	Channel returning to normal	Recovery	Continue advisory that indicates extreme water. Coast Guard will monitor buoys in those narrow channel locations within reach. Corps will continue increased level of channel reconnaissance. Emergency dredging may be required at some locations. Continue normal communications conditions as needed. Cancel any notices, advisories and safety zones as channel conditions improve. Conduct casualty assessments, clearing of channel, and assess rail bedding.					

* Water levels typically fall 1 ½ feet below these readings at LaGrange Lock and Dam (Zone 4) and Peoria Lock and Dam (Zone 7) during normal operations prior to raising the wicket dams.

ACTION PLAN TABLE – ICE CONDITIONS ILLINOIS WATERWAY, ALL ZONES

CRITICAL REACH DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
ALL ZONES ILLINOIS WATERWAY	No Ice		Normal Operations		Corps distributes informational navigation notice in early winter, prior to ice season.
	Ice Build-Up in Channel and Sheet Ice Formation	Predicted weather forecast indicates extreme temperature. Ice buildup begins in the creeks and tributaries.	Mariners consulting with lock masters for indications of ice buildup. Ice Interferes with Normal Navigation. Sheet ice will at times prevent opening of the upper and lower lock gates and Thomas J. O'Brien, Dresden Island, Marseilles, Starved Rock, Peoria, and LaGrange Locks. When the lock gates cannot be fully opened into recesses, they are highly vulnerable to extensive damage from tows entering or departing the lock chamber. Sheet ice may be expected throughout the length of the waterway downstream from about mile 280.0 and in the Marseilles Canal and that reach of the waterway between mile 321.0 and Thomas J. O'Brien Lock, mile 326.5 on the Calumet River.	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. Recommend grouping tow boats prior to transiting. 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 lockages.
	Heavy Ice Gorges	Prolonged extreme temp.	Channel blocked in some locations. River reaches impassable. Gorged ice becomes a particular hazard when attempts are made to drive barges through the formation. Barges forced through or over gorged ice may be damaged. Ice gorges can most frequently be expected to form between miles 86.5 and 95.5 (Grape Island to Sugar Creek), between miles 127.0 and 137.0 (Liverpool to Copperas Creek), between miles 213.8 and 216.9 (Penn Central, Marquette Bar and Clark Island area), at mile 237.2 (Mayo Island), between miles 240.6 and 241.5 (Bulls Island), at mile 242.5 (Milliken Creek Light and Day mark) and at mile 243.7 (Marseilles Lock Light and Day mark).	Action	Consider river closure, restriction of types of traffic, or allow single lane traffic in open areas only. Navigators are advised to exercise due caution to avoid damaging 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 an ice gorge should make certain that the towboat has sufficient power to properly control the number of barges in tow under such unusual conditions of flow.
	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 prolonged flushing at the locks.

Section 5 – Risk Assessment

Sector Upper Mississippi River

Marine Casualty Risk Assessment Tool Assumptions for Data

1. In the WAP process Marine Casualty Data is the starting point for discussion.
2. The data is not a complete record.
3. Since 1990 there are over 5,000 Coast Guard investigation data records for Sector Upper Mississippi River's area of responsibility. These records were screened and 370 met the following criteria:
 - a. From May 1998 to May 2005
 - b. A risk factor as identified in the WAP process (High water, low water, high flow, and Ice) was a contributing factor to the marine casualty.
4. It is important to note that the WAP guidelines did not provide any definition for the risk factors.
5. Five individuals conducted a review of the data and made decisions concerning each record.
6. As data was reviewed, individuals conducting the reviews noted several important issues:
 - a. Shoaling could occur at any stage. In light of this, grounding occurring during a low river level condition were sought to populate the low water risk assessment.
 - b. Low Water Reference Plane is the position relative point at which the USACE maintained its mandated channel depth. Vessel drafts were not considered, nor are they included in the records.
 - c. High flow could have several different affects on vessels (i.e. Eddy's may push vessels up stream. L&D outfalls may push vessels toward a bank.)
 - d. Cubic Foot/Second (CFS) is a shaky at best determination of high flow rate. As water flows down river, the differentiating depths and widths of the river are constantly affecting current flow rates. Furthermore, some CFS readings are proportionally based on the river stage at the same gauge and are not a separate reading. Also, CFS readings were limited mainly to gauges located at Lock and Dams.
7. Initial review of records relied on the incident narrative to make a determination risk factor contribution.
8. Where information was incomplete, a review of river stage, current, other casualties at the same time were viewed for clues to determine if one of four risk factors contributed to casualty.
9. Once data was screened, Risk Assessment Tools were populated.
10. For WAP uniformity, High, Medium, Low definitions for each of the five formula elements (obstructions to navigation, channel width, bend radius, congestion, and casualty history count) and their corresponding point value could not be changed. Also, the format of the tool could not be altered.
11. Variables that could be changed in the Risk Assessment Tool are:
 - a. The length of river sections
 - b. The Acceptable Risk Score
12. Although narrowing the casualty data record may have eliminated some pertinent casualty data **REMEMBER ITEM NUMBER 1:** The casualty data is the starting point. The natural working group is not bound to the tool when determining appropriate operational protocols.
13. Dissection of data may have masked problem areas which could be more visible by looking at geographic points with all casualty data available. If parties are interested in further casualty data analysis or discussions apart from the WAP forum they may contact LCDR Kristine Neeley of Sector Upper Mississippi River's Waterways Management Division.

Footnote: Gauge readings used for risk assessment were from the RCAP and not from USACE River Charts.

How Sector Upper Mississippi River obtained Data for the Risk Assessment

	Action Description	Approximate Incident Count /Personnel Hours
1	USCG HQ provided a download of every investigation from 1990 till present filed by Sector Upper Mississippi River.	5000/9 Hours
2	Data was refined to included only marine casualties for the last seven years ending May 2005.	N/A
3	Review of each record and eliminated all marine casualties that were plainly not the result of ice, high water, low water, or high flow (i.e. fire, mechanical failure, pollution, etc...) and did not occur on one of the three rivers included in the Waterway's Action Plan.	N/A
4	Every narrative was read to determine if the incidents were plainly stated as being the result of ice, high water, low water, or high flow.	N/A
5	<p>River levels and flow rates (when and where available from USACE and NOAA records) were assigned to each remaining record. Then, a common sense approach was made with regard to river characteristics in place at the time of the incident in order to either eliminate or include each record in a particular assessment:</p> <ul style="list-style-type: none"> • If the river level was not relatively low for the locality then the record was eliminated from the low water assessment. Groundings that occurred during high water or out of the channel (i.e. pushed in to allow other vessel to transit) were eliminated from the low water assessment. This included a thoughtful look at groundings due to shoaling (which is capable of occurring regardless of river stage). • Allisions occurring during low water were eliminated from high water or high flow assessments. • Groundings on submerged objects (dikes, timbers, unknown items) were eliminated. <p>A close look at each casualty to ensure that ice, high water, low water, or high flow was a direct contributor to the casualty. (I.e. a bridge allision during high water may have been caused by high winds and had nothing to do with river stage.)</p> <p>* Steps 1-5 completed for zones 1-8, raw data without screening used for zones 9-14</p>	400/200 Hours
6	The risk assessment was completed and validated with extensive participation from all members of industry, Coast Guard Sector Upper Mississippi River, and MSU Chicago. In addition to the data described above, the Midland (April 2001) document for the Illinois Waterway, as well as a review of Coast Guard Cutter Officer in Charge summaries based on buoy placement, and a compilation of pilot data from several industries were extensively used.	NA/22 Hours

Legend

	Risk Factors				
Need for Precise Control	Navigational Complexity			Congestion	Casualty History (7 yr period)
	Obstructions to Nav	Channel Width (Full Banks)	Bend Radius		
High	Multiple Obstructions	Narrow (single passage)	sharp bend(>180 deg)	Traffic always present	>10
Medium	Single Obstruction	Medium (dual passage possible/likely)	gradual bend (btn 90 and 180 or	Traffic sometimes present	6>x>10
Low	No Obstructions	Wide (more than 2 vsl passage possible)	no bend (>90 deg) or no river crossing	Traffic rarely present	<6

Risk Assessment

Calculate Risk Score	Factors to Increase Likelihood of Casualty					Risk Score	High	Score
	Obs to Nav	Channel Width	Bend Radius	Congestion	Casualty History			
MM 291.1 – 333.4 Zone 14 Lockport Pool & above								
MM 286.0 – 327.0 Zone 13 Brandon Road Pool	Low	Low	Low	Low	Low	6		
MM 271.6 – 285.9 Zone 12 Dresden Pool	Low	Low	Low	Low	Low	6		
MM 244.7-271.5 Zone 11: Marseilles Pool	Medium	Medium	Medium	Medium	Low	42	Medium	10
MM 231-244.6 Zone 10: Starved Rock Pool	Medium	Medium	Medium	Medium	Low	42	Low	1
MM 200-230.9 Zone 9: La Salle	Medium	Medium	Medium	Medium	Low	42		
MM 181-199.9 Zone 8: Henry	Medium	Medium	Medium	Medium	Low	42		
MM 145.6-180.9 Zone 7: Peoria	Medium	Medium	Medium	Medium	Low	42		
MM 129-145.5 Zone 6: Copperas Creek	Medium	Medium	Medium	Medium	Low	42		
MM 102-128.9 Zone 5: Havana	Medium	Medium	Medium	Medium	Low	42		
MM 80.3-101.9 Zone 4: Beardstown	Medium	Medium	Medium	Medium	Low	42		
MM 50-80.5 Zone 3: Meredosia	Medium	Medium	Medium	Medium	Low	42		
MM 10-49.9 Zone 2: Hardin	Medium	Medium	Medium	Medium	Low	42		
MM 0-9.9 Zone 1: Grafton	Medium	Medium	Medium	Medium	Low	42		