



Upper Mississippi River Spill Response Plan & Resource Manual

Signatory Agencies:

Illinois Environmental Protection Agency

Iowa Department of Natural Resources

Minnesota Pollution Control Agency

Missouri Department of Natural Resources

Wisconsin Department of Natural Resources

U.S. Coast Guard

U.S. Environmental Protection Agency

U.S. Fish and Wildlife Service

U.S. Army Corps of Engineers

Coordinated by: **Upper Mississippi River Basin Association**



July 2023

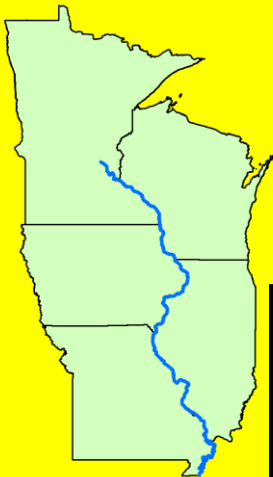
Public Distribution Version

PUBLIC ACCESS VERSION SPECIAL NOTICE

This is a Public Access Version of the Upper Mississippi River Spill Response Plan and Resource Manual and is thus suitable for broad dissemination. This version of the document includes the entire Spill Response Plan but omits certain portions of the Resource Manual due to security concerns. Omitted sections are listed in the table of contents. The Public Access Version is available for unrestricted distribution at <https://umrba.org/document/umr-spill-response-plan-resource-manual-public-version>. Questions should be directed to the Upper Mississippi River Basin Association at 651-224-2880 or mellis@umrba.org.

HOW TO REPORT A SPILL ON THE UPPER MISSISSIPPI RIVER:

An Emergency Action Field Guide for Oil, Fuel, and Hazardous Materials



**WHEN
IN
DOUBT,
NOTIFY!**

**If you see
a spill, it's
important
to report it
immediately!**

Spill Notification Basics for All River Users

If you see a spill, it's important to report it immediately! Those responsible for a spill must know and comply with all local, state, and federal reporting requirements, which can vary by jurisdiction and product spilled. However, other people may encounter evidence of a spill on the river, such as oil sheen, and not know whether the spill has been reported. When in doubt, **anyone who encounters a spill should notify the appropriate government authorities.** This is easy to do and will help ensure a successful response.

ESSENTIAL 24-HOUR NOTIFICATION NUMBERS

Federal, state, and local authorities should all be notified of a spill. This can be done with just a few short calls. To alert federal authorities, call the National Response Center (NRC). It is also very important to directly notify the state where the spill appears to have originated, or that appears to be most affected, by calling that state's "duty officer." When in doubt, please call all potentially affected states. Local authorities should also be contacted via 911, particularly if there appears to be an immediate public health or safety risk.

Federal	National Response Center	800-424-8802
State	Illinois	217-782-7860
	Iowa	515-725-8694
	Minnesota	800-422-0798
	Missouri	573-634-2436
	Wisconsin	800-943-0003
Local	All Jurisdictions	911

INFORMATION TO REPORT

Be prepared to provide the following information, if known, when reporting a spill:

- ✓ Location (river mile and/or general area)
- ✓ Apparent spill source and party responsible for spill
- ✓ Product spilled and estimated volume of product
- ✓ Any other notifications made
- ✓ Any response efforts currently underway

You may not have all of this information available. Don't worry, **just report what you know.** **Do not endanger yourself or others trying to obtain more information.**

SAFETY FIRST: PROCEED ACCORDING TO YOUR LEVEL OF TRAINING!

Spills present a variety of potential hazards. Do not endanger yourself or others by engaging in activities beyond your training. As a member of the general public, your primary duty is simply to report the spill as described above.

This document was prepared by the Upper Mississippi River Hazardous Spills Coordination Group. For additional copies, contact the Upper Mississippi River Basin Association at 651-224-2880 or visit <https://umrba.org/focus-area/hazardous-spills>



June 2022

NOTE: Responders, Industrial Facility Staff, Government Personnel, and Other Response Professionals: See the reverse side of this document for more detailed reporting instructions and requirements on the River.

Detailed Procedures for the Upper Mississippi River (UMR)

SPECIAL UMR NOTIFICATION PROTOCOL FOR STATE AND FEDERAL AGENCY STAFF

State and federal response and resource agencies have established a special notification protocol for use on the UMR. If you do not work for one of these agencies, simply calling the 24-hour notification numbers listed earlier in this document will be sufficient to trigger the protocol. However, if you do work for a state or federal agency, you should conduct your notifications in accordance with the following protocol:

1. First-aware state notifies, by phone, other potentially affected states and appropriate federal response and natural resource agencies.
2. Once notified, each state is responsible for its own intrastate notifications.
3. If a federal agency is first-aware, it notifies the state where the spill occurred or the state being impacted. That state then proceeds as the first-aware state.

Additional numbers to implement the UMR notification protocol include:

Federal	U.S. Coast Guard Sector UMR	314-269-2332
	U.S. EPA, Region 5 (IL, MN, WI)	312-353-2318
	U.S. EPA, Region 7 (IA, MO)	913-281-0991
	U.S. Dept. of the Interior (IL, MN, WI)	215-266-5155
	U.S. Dept. of the Interior (IA, MO)	303-478-3373
	U.S. Fish & Wildlife Service, Region 3	612-702-9581
State	Use the appropriate 24-hour Duty Officer phone number listed on the reverse of this page.	

ABOUT THE UMR SPILL RESPONSE PLAN

The UMR Hazardous Spill Response Plan and Resource Manual is designed to coordinate state and federal agency response to spills on the interstate UMR. It establishes several UMR-specific protocols and policies, including the UMR notification protocol outlined in this guide. It also includes appendices listing response resources, sensitive human and natural resources, and potential spill sources. Information about the UMR Plan is available from the Upper Mississippi River Basin Association at 651-224-2880 or <https://umrba.org/focus-area/hazardous-spills>.

SPECIAL CONSIDERATIONS WHEN RESPONDING TO SPILLS ON THE UMR

Responders need to be aware of the following when responding to a spill on the UMR:

- ✓ It is a **complex physical system** including locks and dams, the main channel, side channels, and backwaters. As a result, flows and spill trajectories are variable and difficult to predict.
- ✓ **High-value natural resources** are present on the UMR, including tremendous seasonal concentrations of migratory species, threatened and endangered species, and diverse habitats ranging from river bottom to floodplain forests.
- ✓ The UMR is an **important source for drinking water**, industrial water use, and power plant cooling.
- ✓ **Commercial and recreational vessels** may need to be alerted for safety reasons; also, their operations may hinder response efforts.
- ✓ **Diverse potential pollution sources exist**, including vessels, pipelines, railroads, highway crossings, fixed facilities, and storm sewers and other outfalls.
- ✓ The **UMR is a multi-jurisdictional river**, and it serves as a border for counties, states, and federal agencies.

Resulting implications for responders include:

- ✓ The need to be aware of potentially dangerous river conditions.
- ✓ Follow the UMR notification protocol to ensure all potentially affected jurisdictions are notified.
- ✓ Consult state and federal natural resource managers throughout the response.
- ✓ Physical factors, public safety considerations, and natural resource concerns may limit response options – this applies to in-situ burning and chemical countermeasures as well as mechanical removal.

HOW YOU CAN PREPARE IN ADVANCE

An actual emergency is no time to learn about spill response. Here are some things you can do in advance to maximize your effectiveness in responding to spills:

- ✓ Familiarize yourself with this emergency action guide, your own agency/company plan, and the UMR Spill Response Plan. Refresh your memory periodically. Encourage your co-workers to do the same.
- ✓ Make a list of additional local phone numbers for notification purposes — e.g., the non-911 numbers for local authorities, numbers for any nearby drinking water operators, etc. Keep those numbers with this guide.
- ✓ Customize/supplement this guide in other ways that will enhance its utility to you.
- ✓ Know the limits of your training and experience. Keep current with refresher training.

PREAMBLE

Preparation and maintenance of the Upper Mississippi River Spill Response Plan and Resource Manual, originally published in 1991, is a collaborative effort among five states and four federal agencies under the auspices of the Upper Mississippi River Basin Association (UMRBA) and through the Upper Mississippi River Hazardous Spills Coordination Group (UMR Spills Group). **The Upper Mississippi Spill Response Plan and Resource Manual is not intended to supplant any other local, state, regional, or national response or contingency plans. Rather, it is designed to address some of the unique circumstances that may arise in coordinating spill response on the Upper Mississippi River.** The Response Plan and Resource Manual is a unique, River-focused tool and information source for first responders and contingency planners. It addresses the commercially navigable mainstem of the Upper Mississippi River from Minneapolis, Minnesota to the Ohio River confluence at Cairo, Illinois.

It is the intent of the UMR Spills Group to update the Upper Mississippi River Spill Response Plan and Resource Manual on a periodic basis to ensure its currency. As such, a comprehensive review and update will be completed every five years. Routine updates will be done more frequently to address any inaccuracies and minor changes as needed.

The Public Access Version of the plan is available at <https://umrba.org/document/umr-spill-response-plan-resource-manual-public-version>. Should users of this document discover any errors or outdated information, they are asked to notify UMRBA using the corrections and updates form provided on page G-5. For further information about the plan, please contact UMRBA at:

Upper Mississippi River Basin Association
7831 East Bush Lake Rd.
Suite 302
Bloomington, Minnesota 55439
Phone: 651-224-2880
Email: mellis@umrba.org

MEMORANDUM OF AGREEMENT

For spill response on the Upper Mississippi River

WHEREAS the Upper Mississippi River is a valuable resource supporting a multitude of uses, and

WHEREAS the river is a shared resource forming the borders of Illinois, Iowa, Minnesota, Missouri, and Wisconsin, and

WHEREAS the river is a federally navigable waterway and a federal fish and wildlife refuge, and


WHEREAS a spill of oil or hazardous materials into the river could adversely affect the multiple uses of the river, and

WHEREAS spills must be prevented and environmental damage and public health risks from spills must be minimized, and


WHEREAS this Upper Mississippi River Spill Response Plan (2023) is compatible with the Regional and Area Contingency Plans in USEPA Regions 5 and 7 and is consistent with the requirements of the National Contingency Plan, the National Response Framework, and the National Incident Management System,

NOW, THEREFORE, BE IT RESOLVED, that the undersigned hereby agree to coordinate their spill response activities utilizing the protocols outlined in this Upper Mississippi River Spill Response Plan and Resource Manual.

BE IT FURTHER RESOLVED that the undersigned will update the Upper Mississippi River Spill Response Plan and Resource Manual as needed to reflect revisions to the above-referenced regional and national plans and changes in spill response methodology.



Director, Illinois Environmental Protection Agency



Digitally signed by Kayla Lyon
Date: 2022.08.31 15:26:35 -05'00'


Director, Iowa Department of Natural Resources




Commissioner, Minnesota Pollution Control Agency



Director, Missouri Department of Natural Resources

DocuSigned by:


B0C8960A794C4F8...
Secretary, Wisconsin Department of Natural Resources



R. V. TIMME APR 04 2023
RADM, U.S. COAST GUARD

Commander, U.S. Coast Guard Eighth District

DEBRA SHORE

Digitally signed by DEBRA SHORE
Date: 2023.07.13 08:20:51 -04'00'

Regional Administrator, U.S. Environmental Protection Agency, Region 5

MEGHAN MCCOLLISTER


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Regional Administrator, U.S. Environmental Protection Agency, Region 7

CHARLES TRAXLER

Digitally signed by CHARLES TRAXLER
Date: 2022.11.18 16:54:39 -08'00'

Regional Director, U.S. Fish and Wildlife Service, Midwest Region



Division Commander, U.S. Army Corps of Engineers, Mississippi Valley Division

Updated 6/15/2022

Revisions to the UMR Spill Response Plan:

- **General**
 - Hyperlinks throughout document
 - Table of contents and page numbering
 - Preamble contact information
 - Minor text edits of typos and for consistency throughout document.
- **Introduction**
 - Figure 1 updated with currently available plans
- **Spill Response Plan Section I**
 - Table 1 updated to reflect current agency responsibilities, added CAER group information
- **Spill Response Plan Section III**
 - Spill Notification Roster updated with current primary and additional contacts
 - Natural Resources and Human Uses section updated to reflect current information
 - Key Regional Planning and Response Tools updated

Revisions to the UMR Resource Manual:

- **Resource Manual Section A**
 - USACE Lock and Dam contacts
 - USACE District Hydraulics contacts
 - Added Tribal Cultural and Historic Resource contacts
 - State Cultural and Historic Resource contacts
- **Resource Manual Section B**
 - Spill equipment list
 - Boat access list updated and reformatted
- **Resource Manual Section C**
 - Water intakes
 - USFWS Refuge and non-refuge land contacts
- **Resource Manual Section D**
 - Terminals handling oil or chemicals
 - Commodity volumes table displays 2021 data
 - UMR shipping companies
 - NPDES section restructured to provide links to state programs
 - Pipeline crossings and pipeline maps
 - Railroad and highway crossings

- **Resource Manual Section E**
 - Public Hazmat Team contacts
 - County Emergency Management contacts
- **Resource Manual Section F**
 - Added text to clarify intent of the guidance and consideration of in-situ burn as an option for unified command
 - Corrected minor typos
- **Resource Manual Section G**
 - Corrections and Update Form contact information

UPPER MISSISSIPPI RIVER SPILL RESPONSE PLAN AND RESOURCE MANUAL

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INTRODUCTION

Background

The Mississippi River flows along ten states on the journey from its headwaters in northern Minnesota to the Gulf of Mexico. Activities on the river upstream can affect the quantity and quality of the river downstream. Likewise, activities on one side can affect the river uses on the other side.

The same holds true for spills of oil or other hazardous substances. Since the river is constantly flowing, any river segment adjacent to or downstream from a spill could be affected by that spill. The river is thus a shared resource, requiring dependable stewardship and coordination by the bordering states. The coordination of quick notification and response by all parties is essential to minimize the damage from hazardous substance spills.

To help prevent, prepare, and respond to spills on the Upper Mississippi River, the five states bordering the Upper Mississippi River (Illinois, Iowa, Minnesota, Missouri, and Wisconsin) and four federal agencies (U.S. Environmental Protection Agency, U.S. Coast Guard, U.S. Fish and Wildlife Service, and U.S. Army Corps of Engineers) meet periodically as the Upper Mississippi River Hazardous Spills Coordination Group (UMR Spills Group) to discuss common problems, propose solutions, reach agreements, and coordinate activities. While prevention of spills is the primary goal of these agencies, effective response to spills is an equally important and necessary goal.

Purpose of the Plan

Realizing the importance of rapid notification and a coordinated response to spills on the Upper Mississippi River, the UMR Spills Group member agencies have jointly produced this Upper Mississippi River Spill Response Plan and Resource Manual (UMR Spill Plan).

The UMR Spill Plan is designed to provide the first responder and the on-scene coordinator with the information necessary to make informed decisions. The Response Plan component sets out the procedures for notification and response by state and federal agencies in conjunction with existing plans. The Resource Manual provides reference information about the river, spill containment equipment, sensitive human and wildlife resources, and potential sources of spills.

Geographic Scope

The geographic scope of the UMR Spill Plan is the commercially navigable mainstem Upper Mississippi River (UMR), from Minneapolis, Minnesota to the Ohio River confluence at Cairo, Illinois.

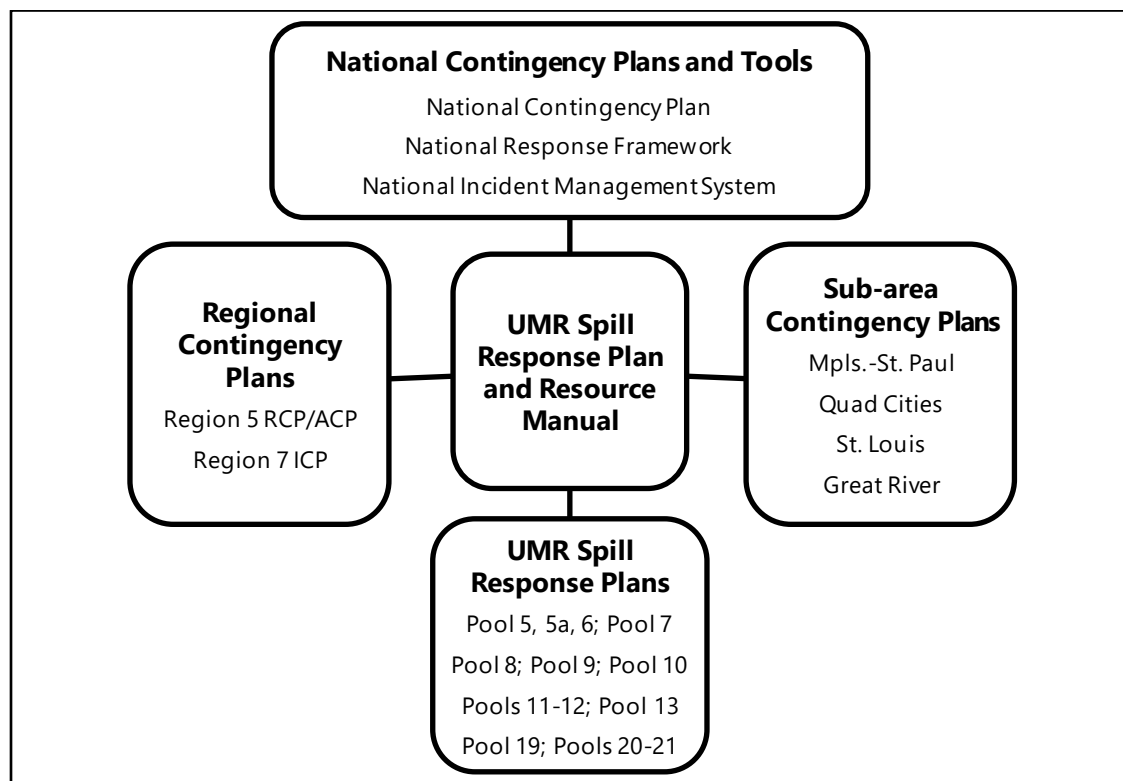
Authority

The UMR Spill Plan is a product of the interagency UMR Spills Group. The state and federal members of the UMR Spills Group have adopted the plan under a Memorandum of Agreement (MOA). Under this MOA, the signatories agree to coordinate their responses on the UMR in accordance with the protocols found in the UMR Spill Plan. Signatories also agree to participate in periodically updating the UMR Spill Plan. Additionally, the UMR Spill Plan is referenced by the [Region 5 Regional/Area Contingency Plan \(RCP/ACP\)](#) and the [Region 7 Integrated Contingency Plan \(ICP\)](#). As such, the UMR Spill Plan represents the policy of both Regions regarding the River.

Relationship to Other Plans and Protocols

The UMR Spill Plan is a working contingency plan that supplements state emergency response plans, regional/area contingency plans, and the [National Contingency Plan \(NCP\)](#). As such, the UMR Spill Plan is consistent with the [Region 5 RCP/ACP](#) and the [Region 7 ICP](#) and is in compliance with all requirements of the [NCP](#), the [National Response Framework \(NRF\)](#), and the [National Incident Management System \(NIMS\)](#). Further, the UMR Spill Plan is designed to function alongside the sub-area plans in place along the River – i.e., [Minneapolis-St. Paul](#), [Quad Cities](#), [Greater St. Louis](#), and [Great Rivers](#) sub-areas. Additionally, the UMR Spill Plan and Resource Manual links to pool-specific geographic response plans, as described in Section IV. See Figure 1 for a diagram of these relationships among contingency plans.

Figure 1: Relationship of UMR Spill Plan to Other Contingency Plans



Additionally, the Upper Mississippi River notification protocol described in Section III does not replace or override other existing notification protocols or requirements (e.g., notification of the [National Response Center](#) per the [NCP](#)). Rather, this river-specific protocol is in place to speed and enhance communication among the agencies involved in response on the Upper Mississippi River.

SPILL RESPONSE PLAN

I. ROLE OF PRIVATE AND PUBLIC ORGANIZATIONS IN UPPER MISSISSIPPI RIVER SPILL RESPONSE

The UMR Spill Plan is designed to be consistent with standard approaches to response including those outlined in the [NCP](#), [NRE](#), and [NIMS](#). There are also numerous legal and programmatic requirements that govern private entities' roles in spill planning and response. The following text describes the roles of public and private organizations in spill response in a generalized fashion that is consistent with the aforementioned plans and requirements. It is within the context of these roles that the Mississippi River-specific protocols and procedures described in the UMR Spill Plan are established.

Prevention, Preparedness, and Response Planning

The responsibility for preventing, preparing for, and responding to spills generally lies with the party storing, transporting, or using the material. Local, state, and federal entities are responsible for writing and implementing effective regulations covering storage, transport, use, and spill prevention and response plans. Some of their programs require permits or specify in detail the preventive measures and planning that is required of users, transporters, and storers. Some of these government programs also include inspections to verify adequacy of preventive measures. In the most extreme circumstances, government agencies are authorized to intervene to prevent a spill from occurring.

Most of the preventive actions, preparedness, and response planning required by governmental programs focus on protection of the public's safety and on response at the site of a potential spill. Actions related to planning environmental protection and preventing off-site impacts are also required of major facilities.

Response to Public Safety and Property Threats Caused by Spills

When a spill poses public safety and property threats via potential fires, explosions, toxic clouds, or other means, local officials are usually in command of the incident. The party responsible for the incident is required to cooperate with and aid local police and fire agencies, but typically does not direct or implement the firefighting, evacuation, or other first responses to the spill. The actions typically are taken minutes to hours from the onset of the spill. If highly specialized activities such as off-loading tank cars or repackaging hazardous chemicals are required, the responsible party may implement the actions under the general direction of the local public safety incident commander.

In most states, the role of state agencies in public safety response during the early stages of an incident is to advise and provide resources to local incident commanders to the extent possible. During major incidents state and federal authorities may be able to provide additional assistance to the incident commander at the scene by conducting sampling and analysis, providing specialized contractors or equipment, offering detailed advice, or serving other support functions. Seldom will state or federal authorities assume command from a local incident commander for short term on-site public safety related issues.

Response to Environmental and Health Threats Caused by Spills

Some state and federal statutes and regulations require responsible parties to protect human health and the environment and to clean up their spill quickly. These actions take place at the spill location and often many miles downstream. This action occurs at the same time as the public safety protection phase. Additionally, a lengthy investigation and various cleanup strategies may occur for days, weeks, or months. The actions can include things like placing containment and recovery booms and pads; sampling runoff

and rivers; excavating soil; doing hydrogeological investigations; air sampling; retrieving, cleaning, and rehabilitating affected wildlife; closing drinking water intakes and providing an alternate water supply.

In a major incident, the environmental and health protection actions that are conducted by the responsible party start early and continue long after public safety concerns are eliminated. Therefore, the local incident commander benefits from involvement of state and federal environmental agencies assisting to provide input and oversight and eventually to transition the command to an environmental agency having the appropriate authorities. Local officials may transition to a support role, as asked and appropriate.

Sometimes a responsible party is unable or unwilling to adequately or quickly undertake the environmental and health protection actions required by state or federal authorities. In those cases, state or federal authorities can assume a more active response role. Typically, this is done by using agency personnel or hiring cleanup contractors to stop the release or clean up the oil or hazardous substances. These tasks are accomplished using government funds, such as state or federal Superfunds or the federal [Oil Spill Liability Trust Fund](#). The costs of these direct government actions and damage to natural resources will usually be recovered later from the responsible party. The decision to assume governmental control of environmental and health follow-up to an incident usually hinges on the severity of the incident, the cost and duration of required actions, and the resources available to the involved state.

General Roles of Agencies and Other Entities Involved in UMR Spill Response




Table 1 summarizes the roles of government agencies and other entities most likely to be engaged in hazardous spill response on the Upper Mississippi River. However, the table does not include all potential entities nor all potential roles in response. For more information, please consult the [Region 5 Regional Contingency Plan/Area Contingency Plan \(RCP/ACP\)](#), the [Region 7 Integrated Contingency Plan](#), and individual entity's websites per the links embedded in Table 1. Those agencies labeled with an asterisk (*) are signers of the Memorandum of Agreement for Spill Response on the Upper Mississippi River.





Table 1: Description of Agency/Entity Response Roles (* = signatory to UMR Spill Response MOA)

FEDERAL GOVERNMENT	
<p><u>US Army Corps of Engineers – Mississippi Valley Division*</u></p> 	<p>US Army Corps of Engineers (USACE) staff are not trained to directly take part in spill response <i>per se</i>, aside from addressing minor spills from a Corps facility. However, USACE may be able to provide some supporting functions during a response, depending on resources and capabilities available and avoiding conflict with the Corps' responsibilities under applicable laws or regulations. The precise nature and extent of the Corps' assistance will be determined by the specifics of a particular incident. In general, the Corps' capabilities include reporting and monitoring spills, providing information about river conditions, logistics support, and technical support. In addition, under certain circumstances, Corps personnel may be able to facilitate limited control and containment of spills through its river operations, such as emergency dredging or manipulation of river flows. Locks and dams may be accessed for use by responders, pending lockmaster approval. See "Policy on Coordination with USACE" for further information.</p>
<p><u>US Coast Guard – Eighth District*</u></p> 	<p>The US Coast Guard (USCG) supplies expertise in the fields of: 1) port safety and security, 2) marine law enforcement, navigation, and construction, and 3) manning, operation, and safety of vessels and marine facilities. USCG maintains continuously manned facilities that are capable of command, control, and surveillance for oil or hazardous substances releases occurring on the waters of the United States, and may provide these services to the on-scene coordinator (OSC).</p> <p><u>OSC Role:</u> The USCG provides Federal On-Scene Coordinators (FOSC) for oil discharges when the source is either a vessel or marine transport related facility. See section on "FOSC Role and Jurisdiction" for more information.</p> <p><i>Functions outside of the Eighth District:</i></p> <p><u>National Strike Force:</u> If a spill is beyond the resources of the responsible party's contractor and the local contractors, a federal on-scene coordinator may call in the Coast Guard's <u>National Strike Force</u>. The Strike Force consists of teams that can provide communications support, advice, and assistance for oil and hazardous materials removal.</p> <p><u>National Pollution Funds Center:</u> USCG staffs the National Pollution Funds Center, which administers the <u>Oil Spill Liability Trust Fund</u>.</p> <p><u>National Response Center:</u> USCG also staffs the <u>National Response Center</u>, the centralized "one call" receiver of spill reports nationwide.</p>
<p><u>US Department of Agriculture – Animal and Plant Health Inspection Service (APHIS)</u></p> 	<p>The U.S. Department of Agriculture (USDA) APHIS has no authorities of its own that directly apply to wildlife issues in a chemical or oil spill event. It does however, because of its other wildlife expertise, have extensive operational and technical capabilities to assist with humane capture, handling, hazing, transport, and other issues that typically arise in oil spill situations. In addition, USDA APHIS Wildlife Services is an emergency response agency that operates under the National Response Framework (NRF) and participates in emergency response working closely with other federal, state, tribal and local governments, along with the private sector to provide assistance and coordination during all-hazards emergencies, including oil spills.</p>

FEDERAL GOVERNMENT

(Continued)

<p><u>US Department of Commerce- National Oceanic and Atmospheric Administration</u></p> 	<p>While National Oceanic and Atmospheric Administration (NOAA) response-related activities are primarily coastal and Great Lakes-focused, it can provide support to Mississippi River spills through the Scientific Support Coordinators (SSCs). An SSC can provide scientific advice to support operational decisions that will protect the environment effectively, mitigate collateral harm, and facilitate environmental recovery. The SSC advises on other technical issues (as requested by the OSC) after consulting with the appropriate NOAA hazardous materials resources or other federal, state, or academic networks. This includes considering advice from the trustee agencies, and any divergent opinions. Additionally, NOAA Weather Service offices provide water forecasting and hydrologic information which may be valuable in a response.</p>
<p>US Environmental Protection Agency – <u>Region 5* and Region 7*</u></p> 	<p>The US Environmental Protection Agency (US EPA) is responsible for providing expertise regarding environmental effects of pollution and environmental pollution control techniques. US EPA will also: 1) assist USCG in hazardous materials incidents, 2) advise the OSC of the degree of hazard a particular release poses to public health and safety, and 3) coordinate scientific support, including environmental assessment.</p> <p><u>OSC Role:</u> US EPA provides Federal On-Scene Coordinators (FOSC) when an incident is from a source other than a vessel or marine transportation facility. Geographically, US EPA Region 5 has jurisdiction on the Mississippi River in Minnesota, Wisconsin, and Illinois; US EPA Region 7 has jurisdiction on the Mississippi River in Iowa and Missouri. See section on “FOSC Role and Jurisdiction” for more information.</p>
<p><u>US Fish and Wildlife Service- Midwest Region*</u></p> 	<p>The US Fish and Wildlife Service (USFWS) is responsible for the conservation and management of lands and waters within the National Wildlife Refuges along the UMR, migratory birds, federally-listed threatened and endangered species, and inter jurisdictional fishes, and the supporting habitats for these species. USFWS shares with state natural resource agencies joint responsibilities for overseeing any activity that involves the handling of wildlife. USFWS is also a trustee bureau of the U.S. Department of the Interior with Natural Resource Damage Assessment and Restoration (NRDAR) authorities to restore or replace natural resources injured or lost due to spills of oil or releases of hazardous substances. USFWS fulfills these NRDAR responsibilities by working with co-trustees (e.g., states) and responsible parties as a distinct process coordinated with the emergency response itself.</p> <p>For spills that occur on a Refuge, USFWS (via the Refuge Manager, District Manager, or designee) will establish a response protocol delineating specific roles and responsibilities of Refuge or USFWS personnel. In general, Refuge personnel can provide responders with specific information on fish, wildlife, and habitat resources within the Refuge, will provide recommendations for preventing or minimizing spill impacts to Refuge resources, and will consult on the best locations for response staging areas and access points within Refuge boundaries. Ecological Services biologists support Refuge personnel as needed and requested by the Refuge.</p> <p>For spills that occur outside of a Refuge, USFWS Ecological Services biologists have spill response and NRDAR authority for the protection and restoration of trust resources. USFWS biologists will implement the USFWS Contingency Plan and the Region 3 Cross Programmatic Spill Response Plan. Ecological Services biologists can open a Pollution Removal Funding Authorization (PRFA) with the USEPA or USCG to provide funding to support the USFWS response if needed. Ecological Services biologists can also help fill Incident Command System (ICS) roles in spill response as requested by the Federal On-Scene Coordinator (FOSC) and the Refuge including Wildlife Branch operations and Environmental Unit activities.</p>

FEDERAL GOVERNMENT (Continued)	
<u>Federal Emergency Management Agency</u> 	<p>The Federal Emergency Management Agency (FEMA) requires the development, evaluation, and exercise of all-hazard contingency plans for all FEMA-funded jurisdictions at state and local levels. SARA Title III plans are often annexes of the all-hazard plan. FEMA monitors and provides technical assistance regarding public sector emergency response training and planning for incidents involving hazardous materials. In a response, FEMA provides advice and assistance to the lead agency on coordinating relocation assistance and mitigation efforts with other federal agencies, state and local governments, and the private sector. If the President declares a disaster or emergency, FEMA coordinates all federal assistance, including temporary housing. The OSC coordinates with the Federal Coordinating Officer in-situations where both authorities are active. FEMA's National Emergency Support Team and Regional Emergency Response Teams provide coordination of federal response in-situations of unique national significance, such as commercial nuclear power plant or nuclear weapons accidents and catastrophic natural disasters.</p>
STATE GOVERNMENT	
<u>Illinois Department of Natural Resources</u> 	<p>The Illinois Department of Natural Resources (IL DNR) Office of Law Enforcement supports the Department's programs designed to protect Illinois' natural and recreational resources. Conservation Police Officers (CPO) or Game Wardens are vested with full state-wide police authority and are trained as law enforcement professionals. Although CPOs have full police authority in the enforcement of all Illinois Compiled Statutes, their enforcement mission is to focus upon those laws and activities associated with natural resource protection and recreational safety.</p> <p>As a natural resource trustee, the IL DNR works with USFWS and other co-trustees to assess damages to restore natural resources (as circumstances allow) lost or injured due to spill. Data acquired are used to determine the extent of damage to natural resources, to develop restoration or replacement strategies, and to develop and submit a claim for damages to the Responsible Party to implement the most appropriate restoration actions.</p>
<u>Illinois Emergency Management Agency</u> 	<p>The Illinois Emergency Management Agency (IEMA) coordinates the state's disaster mitigation, preparedness, response and recovery programs and activities, functions as the State Emergency Response Commission, and maintains a 24-hour Communication Center and State Emergency Operations Center (SEOC). The SEOC acts as lead in crisis/consequence management response and operations to notify, activate, deploy and employ state resources in response to any threat or act of terrorism. IEMA assists local governments with multi-hazard emergency operations plans and maintains the Illinois Emergency Operations Plan.</p>
<u>Illinois Environmental Protection Agency*</u> 	<p>The Illinois Environmental Protection Agency (IL EPA) Office of Emergency Response (OER) protects the health and safety of the citizens of Illinois during emergency incidents involving the release of oil, hazardous materials or other contaminants, while stabilizing, minimizing or eliminating the environmental consequences to the land, air or waters of the state. The State On-Scene Coordinators (SOSC), within OER, coordinate IL EPA's response to environmental emergencies and ensure that any environmental contamination is cleaned up. The SOSCs provide many services to other agencies and the public in the form of: 1) technical information about identification, chemical properties, toxicity and potential dangers of a given hazardous material, 2) monitoring or testing of air, water, soil or containers, 3) advice about containment of hazardous materials; restoration of the environment, including cleanup objectives; evacuation recommendations; and disposal or treatment of hazardous materials, 4) oversight to assure completeness of cleanup actions taken by responsible parties, documenting violations of the Illinois Environmental Protection Act for possible legal action, and 5) professional personnel, technical assistance and equipment to assist public safety officials.</p>




STATE GOVERNMENT

(Continued)

<p><u>Iowa</u> <u>Department of</u> <u>Natural</u> <u>Resources*</u></p> 	<p>The Iowa Department of Natural Resources (IA DNR) Field Offices provides technical assistance to local, state, and federal response agencies, regulated industries, other responsible parties, and interested public during an incident. The Field Offices can also initiate appropriate enforcement action.</p> <p>As a natural resource trustee, the IA DNR works with USFWS and other co-trustees to assess damages to restore natural resources (as circumstances allow) lost or injured due to spill. Data acquired are used to determine the extent of damage to natural resources, to develop restoration or replacement strategies, and to develop and submit a claim for damages to the responsible party to implement the most appropriate restoration actions.</p>
<p><u>Minnesota</u> <u>Department of</u> <u>Agriculture</u></p> 	<p>The Minnesota Department of Agriculture (MDA) is the lead state agency authorized to respond to most agricultural or chemical releases in Minnesota. The MDA's agricultural chemical emergency incident response staff consists of a four-person team based in St. Paul. Additional emergency response support is provided by eleven regional MDA agricultural chemical investigation staff members located in outstate Minnesota. In response to a spill event, MDA will work in support of local responders. When the incident transitions from public safety concerns to environmental protection, MDA will then oversee the responsible party's cleanup efforts.</p>
<p><u>Minnesota</u> <u>Department of</u> <u>Natural</u> <u>Resources</u></p> 	<p>The Minnesota Department of Natural Resources (MN DNR) is co-trustee with the MPCA for the state's natural resources, and a co-trustee with the USFWS concerning the management of migratory birds and other resources. MN DNR is charged with control of all state-owned lands, parks, timber, waters, minerals, and wildlife in Minnesota. This includes the protection, preservation, and propagation of the fish and wildlife of the state. In response to a spill event, MN DNR personnel (conservation officers, biologists, and managers) may have responsibilities including: 1) notify all necessary MN DNR personnel and establish a response protocol describing the role of responders, 2) coordinate effort with other responding trustees, such as MPCA and the USFWS, 3) provide responders with specific fish and wildlife habitat information for an incident; the MN DNR will also consult with the responders as to the best locations for staging and recovery areas as well as access points, 4) provide responders with critical habitat information for state-listed threatened and endangered species as well as information on sensitive natural communities and special concern species found in the area of an incident, 5) provide responders with technical assistance and expertise on potential effects of oil and hazardous substances on fish and wildlife and their habitat, and 6) coordinate wildlife rescue and rehabilitation efforts with USFWS.</p> <p>As a natural resource trustee, MN DNR works with USFWS and other co-trustees to assess damages to restore natural resources (as circumstances allow) lost or injured due to spill. Data acquired are used to determine the extent of damage to natural resources, to develop restoration or replacement strategies, and to develop and submit a claim for damages to the responsible party to implement the most appropriate restoration actions.</p>

STATE GOVERNMENT

(Continued)

<p><u>Minnesota Department of Public Safety, Division of Homeland Security and Emergency Management</u></p> 	<p>Minnesota Department of Public Safety, Division of Homeland Security and Emergency Management (HSEM) helps to coordinate activities before, during, and after emergencies through partnerships with local, state, federal, and private agencies. The Director of HSEM serves as the state Coordinating Officer and the Governor's Authorized Representative for all presidential declared disasters and emergencies. HSEM also organizes long-term disaster recovery efforts, coordinates local government emergency planning, authorizes use of chemical assessment teams (CATs), and reviews emergency operations plans for compliance. County Emergency managers work directly with HSEM and can provide Emergency Operation Centers (EOCs) and other resources.</p>
<p><u>Minnesota Pollution Control Agency*</u></p> 	<p>In Minnesota, the Minnesota Pollution Control Agency (MPCA) is the lead state agency for responding to releases of oil and hazardous substances with the exception of agricultural chemical incidents. MPCA is a co-trustee for Minnesota's natural resources and an environmental regulatory agency with many authorities. The MPCA's emergency response program is responsible for the oversight of all environmental emergencies and has 24/7 operations. MPCA has several cleanup programs that monitor long-term investigations and cleanup. If there is not an identifiable RP or the RP is unable or unwilling to respond and clean up the spill, the MPCA will hire state contractors to perform the work.</p>
<p><u>Missouri Department of Natural Resources*</u></p> 	<p>The Missouri Department of Natural Resources (MDNR) Environmental Emergency Response Section (EER) unit may respond to the scene of an environmental emergency if requested by a local authority, the party responsible for the spill, other governmental agencies, or at the discretion of the department. A response to the scene may be warranted if the party responsible for the release has not been identified or is not addressing the situation properly. While on scene the EER unit may provide technical advice or, if necessary, hire a contractor and direct cleanup efforts. MDNR EER staff may conduct some cleanups. Cleanup costs and penalties may be recovered from those responsible for the incident.</p> <p>MDNR is capable of collecting and analyzing environmental water, air, and soil samples. The state also maintains instrumentation for conducting real-time air monitoring. MDNR EER operates specially designed emergency response vehicles throughout the state. These vehicles carry protective clothing, monitoring equipment, communications equipment, and containment and cleanup supplies for small spills. Watercraft are also available, including an environmental emergency response boat. All of this equipment and these personnel are accessible 24 hours a day by calling 573-634-2436.</p> <p>The MDNR Director is the Natural Resources Trustee for releases governed by OPA in the state of Missouri.</p>

STATE GOVERNMENT

(Continued)

**Wisconsin
Department of
Natural
Resources***



The Wisconsin Department of Natural Resources (WDNR) has Regional Spill coordinators and county/area Conservation Wardens that are also first responders. Wisconsin DNR Wardens have law enforcement authority and are the DNR agency liaison with the County Sheriff, local Fire Departments, and the County emergency managers.

During a spill response, appropriate WDNR staff will be contacted (local biologists, technicians, law enforcement officers, Wildlife Health, Regional Spill Coordinators, and Public Affairs) and a response protocol established delineating specific roles and responsibilities of each program. WDNR determines what level of response, if any, is necessary to protect and respond to potentially threatened or injured fish, wildlife, and sensitive environments. If appropriate, WDNR personnel will contact the On-Scene Coordinator (OSC) to request participation in the spill response. Local WDNR staff, along with USFWS personnel, will ensure that resources at risk are clearly identified and communicated to the OSC and will participate in the ICS command structure, as necessary. The USFWS and WDNR have joint responsibilities for overseeing any activity that involves the handling of wildlife and the WDNR's Wildlife Rehabilitation Liaison will coordinate with area wildlife rehabilitators as necessary. The WDNR's Wildlife Veterinarian will provide veterinary support and expertise as necessary.

The Department is the lead coordinating agency for Emergency Support Function 10 (Oil and Hazardous Materials) as part of the Wisconsin Response Plan. The primary responsibility of ESF 10 is to ensure that the state has a coordinated response to releases of oil and other hazardous materials that pose a threat to public health and safety and the environment. Each DNR region has a spill coordinator specifically trained to help responsible parties, response agencies and other DNR staff when a spill occurs.


If a responsible party is unable or unwilling to provide adequate response, WDNR has the authority to identify, locate, monitor, contain, remove or dispose of the hazardous substance or take any other emergency action which it deems appropriate under the circumstances. In addition, the department may enter any property, premises or place at any time for the purpose of taking removal or other emergency action if the entry is necessary to prevent increased damage to the air, land or waters of the state. Notice is not required if the delay would result in imminent risk to public health, safety or the environment. WDNR can then seek cost recovery for costs incurred to providing those services.

As a natural resource trustee, WDNR works with USFWS and other co-trustees to assess damages to restore natural resources (as circumstances allow) lost or injured due to spill. Data acquired are used to determine the extent of damage to natural resources, to develop restoration or replacement strategies, and to develop and submit a claim for damages to the responsible party to implement the most appropriate restoration actions.

**Wisconsin
Division of
Emergency
Management**



In Wisconsin, county emergency managers organize under a regional manager within the Wisconsin Division of Emergency Management (WEM), which is under the Wisconsin Department of Military Affairs.

STATE GOVERNMENT (Continued)	
National Guard Civil Support Teams 	<p>The function of the civil support teams (CSTs) is to assess a suspected weapons of mass destruction (WMD) attack, advise civilian responders on appropriate actions through on-site testing and expert consultation, and facilitate the arrival of additional state and federal military forces. There are currently 55 CSTs – one per state/territory and two in California. Each CST is composed of 22 people, 7 officer and 15 enlisted, from both the Army and Air National Guard, with a variety of specialties. Assigned vehicles include a command vehicle, operations van, a communications vehicle called the Unified Command Suite, an Analytical Laboratory System van, and other general-purpose vehicles. The CST normally deploys using its assigned vehicles, but can be airlifted if required. As the CST is on standby 24/7, the advanced echelon will deploy within 90 minutes of notification and the rest of the team within three hours. This quick response gives the CST the ability to support the incident commander with critical information rapidly. The CST Commander can advise the incident commander as to the type and level of hazard present, possible courses of action, and additional National Guard assets that are available.</p>
LOCAL GOVERNMENT	
County Emergency Management Agencies	<p>During the response and recovery stages of an event, the county emergency management agency acts as a liaison between federal, state, and local units of government to promote speedy access to emergency resources and recovery funding. See Resource Manual Section E for a list of county emergency management agencies bordering the Upper Mississippi River.</p>
Police, Fire, Sheriff, and Hazmat Teams	<p>Local units of government typically have the primary role in protecting the public's safety and property from a spill through police and fire department response. During the initial stages of an incident, when life and safety issues are paramount, local officials (Fire/Police/Sheriff) will typically be in charge of the response to an incident until such time that they decide to enter into a unified command. Public hazmat teams, typically based in larger municipalities (see Resource Manual Section E) may assist with response. These teams will not perform cleanup work, but will rather stabilize public safety threats during incidents and turn incidents over to responsible parties or to the state/federal agencies for cleanup.</p>

PRIVATE SECTOR	
Responsible Party	<p>The spiller, or responsible party (RP), has the primary responsibility to conduct spill cleanup, following the procedures listed in the facility response plan. The first response action of the RP is making notification of an incident to appropriate other responders of the incident, according to law and the RP's own response plan. The RP conducts whatever response actions are necessary and for which their personnel are trained and equipped. The RP is required to have authorized and qualified individuals available 24 hours a day to respond to a spill. The RP should also have sufficient funds available to cover the cost of pollution response to the limit of liability for the vessel or facility. As the priorities of an incident evolve, they often include off-site and environmental concerns. The RP has the lead role in responding to these concerns, under the oversight of state or federal agencies. The RP is also liable for restoring or replacing natural resources which may be injured or lost due to the spill, and should coordinate with the natural resource trustees (via the NRDAR Liaison) as part of the NRDAR process. The RP will be placed at the command level of the response organization to represent their interests and to help coordinate assets and response actions. The RP should conduct inquiries into the cause of an incident. This is often done with the participation or oversight of state or federal agencies such as the Occupational Safety and Health Administration or the Department of Transportation. The RP should conduct a critique of their response to an incident and revise prevention, preparedness, and response measures accordingly. If the responsible party does not respond properly, the state or federal On-Scene Coordinator shall take appropriate response actions and should notify the responsible party of their potential liability for response costs incurred by the On-Scene Coordinator pursuant to state and federal law.</p>
Cooperatives and CAER Groups	<p>Spill response cooperatives and Community Awareness and Emergency Response (CAER) groups support spill response capacity through activities including arranging training and exercises for their members, developing shared equipment caches and mutual aid pacts, and area planning. A primary benefit of these groups is that they allow emergency planners and emergency responders to meet and network for mutual benefit in advance of an incident. On the UMR, there are at least three fully functioning CAER-type organizations: Wakota CAER, which operates on the river in the southern Twin Cities metro area and maintains member-owned response equipment caches along the river. Red Wing CAER members jointly own five equipment caches and operate around Red Wing, Minnesota. Dubuque CAER maintain several equipment caches in the Dubuque area, including more distant caches held by member BNSF Railway. The Quad Cities area has both the Bettendorf Spill Cooperative and Quad Cities CAER group.</p>

II. GENERAL RESPONSE PROTOCOL FOR SPILLS TO THE UPPER MISSISSIPPI RIVER

All spill incidents are unique in that the type of spill, location, time, and other environmental and human factors will vary for each incident. Since response procedures cannot be developed for every spill scenario, this protocol outlines the basic procedures that are to be used by state and federal personnel in responding to environmental and health threats presented by spills to the Upper Mississippi River (UMR). Due to the remoteness of most areas of the river, this protocol outlines the coordination which is deemed desirable by all in order to mitigate the effects of a spill.

As previously stated, this protocol is designed to be consistent with [the National Contingency Plan](#) (NCP), [National Response Framework](#) (NRF), and [National Incident Management System](#) (NIMS) – while providing additional information and direction to enhance the effectiveness of response on the UMR. In particular, while recognizing the federally-focused procedures and jurisdictions described in the [NCP](#), this UMR protocol also acknowledges that response on the River is most likely to be led initially at the local level, evolving to state or federal oversight dependent on the particular circumstances of the incident.

Notification

Spill notification and updates will be given to neighboring and downstream states and to federal agencies in accordance with the procedures outlined in the UMR Spill Notification Protocol. See Section III- Interstate Notification Protocol for details. This protocol does not override the need for spills to be reported to the [National Response Center](#), per the [NCP](#). Rather, the UMR protocol is intended to both accelerate initial communication among agencies and provide a method of ongoing communication during a response.

Initial Investigation

An initial spill report may be received by the local police or fire department, state or federal agencies, and/or the [National Response Center](#). Regardless of which agency receives the first call, the state where the spill occurs is responsible for determining if an investigation is warranted and, as needed, assuring it is initiated. The investigation may be led by the state where the spill occurred, a neighboring state, U.S. EPA, or U.S. Coast Guard, depending upon which agency is readily available or has the necessary resources. When a spill from an unknown source is discovered on the river, neighboring states will confer and agree on which state will determine the need for an investigation.

Determination of Necessary Spill Response Activities

In general, oversight and emergency response to a spill is encouraged at the most local level of government which has the necessary resources available. Moreover, a spiller or other responsible party is expected to provide all resources to complete an effective response and cleanup. However, certain incidents may justify the involvement of state and/or federal response agencies.

Factors to be considered in determining the appropriate level of effort of a response include:

- size of the spill
- type of material that is spilled

- location of the spill
- exposure/damage potential of vulnerable populations (human and environmental) and property
- willingness and ability of the spiller to respond
- cost of spill clean-up and containment compared to the effectiveness expected and the damage reduction anticipated
- availability of responding agencies capabilities
- media/political interest

An investigating state/federal agency will determine the extent of the spill and whether further response is necessary. This determination may be done by sending staff to the incident site or by receiving information via telephone reports from local police, fire, health, or environmental officials. The investigating agency will determine to the best of its ability the source of the spill, size of the spill, type of material spilled, the area affected, and the movement of the spill. The investigating agency will determine the necessary initial response and will expeditiously inform the designated coordinating state agency of its findings and actions to that point.

When a response justifies a continuing on-scene presence by a state or federal agency, an incident command system shall be established, and the incident commander shall confer with the appropriate state and federal on-scene coordinators. The incident command systems established pursuant to this plan shall recognize that the pre-designated federal on-scene coordinators have ultimate authority and responsibility. See the Incident Command System Implementation Protocol in Section V for further details.

If a spill warrants it, the state or federal on-scene coordinator may request activation of the Regional Response Team(s). The degree of involvement and specific activities of the Regional Response Team(s) will be decided by their respective co-chairs.

If responsible parties are not apparent, or if the scope of the needed response is beyond their ability, or if the responsible party's response is insufficient, then the use of government funds to respond should be implemented by the incident commander and on-scene coordinators, depending upon their funding authority in a specific instance. Requests for federal assistance should be made through the states or Native American tribes, unless the incident commander is the federal on-scene coordinator or his/her representative.

Federal On-Scene Coordinator (FOSC) Role and Jurisdiction

The federal on-scene coordinator (FOSC) directs federal response efforts and coordinates all other federal efforts at the scene of a discharge or release. The FOSC may monitor local, tribal, state, or private actions to remove a discharge and may provide technical assistance to local, tribal, state or responsible party personnel.

If a response action is being conducted through local, tribal, state, or responsible party efforts, the FOSC will ensure adequate oversight. If local, tribal, or state agencies, or the responsible party cannot or will not initiate action to eliminate the threat, or if the removal is not being conducted properly, the FOSC should advise the government agency or responsible party and take appropriate actions to mitigate or remove the threat or discharge.

The FOSC can also access the [Oil Spill Liability Trust Fund](#) in cases where the responsible party has not been identified or cannot/is not immediately paying response costs. These funds can be used to reimburse other government agencies (state, local, tribal) through an FOSC-authorized [Pollution Removal Funding Authorization](#).

U.S. EPA and U.S. Coast Guard share the responsibility as pre-designated federal on-scene coordinators for the Upper Mississippi River, as follows:

- Per U.S. EPA/U.S. Coast Guard memoranda of understanding, **the Coast Guard serves as the FOSC for all commercial vessel incidents and marine transportation-related facilities (MTRs), regardless of location.**
- Per the [National Contingency Plan](#), **U.S. EPA shall serve as the FOSC in all other federal responses on the UMR.** This responsibility is divided between Regions 5 and 7 as follows:
 - Region 5 will provide an FOSC for spills on the mainstem of the Upper Mississippi River when Minnesota, Wisconsin, or Illinois is the first principal responding state.
 - Region 7 will provide an FOSC for spills on the mainstem of the Upper Mississippi River when either Missouri or Iowa is the principal first responding state.

Resources permitting, the Coast Guard will investigate/respond as first federal official on-scene to all reported spills along the Upper Mississippi River. However, another federal or state agency may be the incident-specific on-scene coordinator (OSC) or first federal official on-scene.

Spill Mitigation, Containment, and Clean-up

The incident commander or on-scene coordinator will oversee spill mitigation efforts underway when he/she arrives at the scene or will initiate mitigation efforts using readily available resources. Many terminals on the river have small amounts of equipment that can be used for immediate spill containment. In addition, there are cooperative agreements among industries on several portions of the river that can provide individual facilities with access to larger quantities of spill containment and clean-up equipment. Most state and federal agencies working on the Upper Mississippi River have little or no spill containment or clean-up equipment other than the equipment of contractors under their control. See the list of available spill containment equipment on pages B-1 to B-8 of the Resource Manual for more information.

If the responsible party has assumed liability for the spill, the on-scene coordinator will work with the responsible party to mitigate the spill. If the responsible party is not known or is not willing or able to clean up the spill, the on-scene coordinator will pursue the options available to use government funds to hire a clean-up contractor. The on-scene coordinator will then direct the contractor in mitigation and clean-up efforts.

If the spill is beyond the resources of the responsible party's contractor and the local contractors, the federal on-scene coordinator may call in the Coast Guard's [National Strike Force](#). The Strike Force consists of teams that can provide communications support, advice, and assistance for oil and hazardous materials removal. The teams have expertise in ship salvage, damage control, diving, and removal techniques and methodology. They are equipped with specialized containment and removal equipment and have rapid transportation available. The Gulf Strike Team, based in Mobile, Alabama, and the Atlantic

Strike Team, based in Fort Dix, New Jersey, are the most likely Strike Force resources to be mobilized in response to a spill on the Upper Mississippi River. See the Strike Team phone numbers listed under "Additional Resources" in the notification protocol.

Spill mitigation will be conducted so as to minimize the risk to public safety and the environment. Evacuation of communities, closure of water intakes, and other public safety measures will be implemented by the appropriate local, state, or federal agency in accordance with appropriate emergency response plans. In consultation with the designated on-scene U.S. Fish and Wildlife Service or state biologist, the on-scene coordinator will attempt to protect critical fish and wildlife habitat of the river. See pages C-12 to C-13 of the Resource Manual for a list of Fish and Wildlife Service contacts for each pool of the river.

Press Releases and Public Information

During an incident, it is essential that the emergency public information organization and activity be recognized as a coherent system and emergency information be released from a single point to ensure consistency and authenticity. Spill updates will be given to the media at intervals determined by the incident commander. Press releases will be coordinated with the affected local communities, states, and federal on-scene coordinator.

To facilitate dialogue with the media in an oil or hazardous material incident, the incident commander may appoint an information officer or establish a joint information center (JIC). The JIC is the single point to co-locate representatives from agencies and organizations to handle public information needs, help control rumors, and limit multiple release points for information about the incident. The JIC structure is designed to work equally well for large or small responses and can expand or contract to meet the needs of the incident. Under the Incident Command/Unified Command systems (ICS/UCS), the JIC is led by the Information Officer (IO), named by the Incident Commander. See the [National Response Team](#) (NRT) website for more information on the JIC model.

Incident Closure

Once the incident is over, the on-scene coordinator (OSC) for the lead agency will send an incident closure notice to state and federal agencies with whom the OSC has engaged during the response. The on-scene coordinator may request incident reports from other agencies to provide a complete picture of the incident. When appropriate, enforcement action will be taken against the responsible party if known. If local, state, or federal agencies incurred costs due to the spill, cost recovery action will be considered. Any agency intending to initiate a cost recovery action should notify all other agencies on the notification roster of their intent. Interested agencies can then coordinate their activities.

Critique

OSHA regulation 1910.120 provides for including a critique of a response and follow-up in an organization's emergency response plan. A critique can be a valuable tool in assessing how well a plan met the needs of responding agencies during an actual incident and can provide the basis for making important modifications and improvements to the plan.

Following an incident that results in the implementation of the UMR Spill Plan, any responding agency can request that the lead state or federal agency for the incident arrange for a critique. The lead agency will then consult with the other organizations that responded to the incident, and if the majority agrees to

participate, will proceed to make arrangements for a critique. If local agencies were involved in the response, they will also be asked to participate in the critique.

The incident commander for the particular response, whether from a local, state, or federal agency, should chair the critique. If a unified command was used for the incident, the lead officials from each level of government will decide among themselves who should chair the critique. The lead agency for the response should provide a summary of the critique to the Upper Mississippi River Hazardous Spills Coordination Group for the evaluation of changes and improvements in the UMR Spill Plan.

III. INTERSTATE NOTIFICATION PROTOCOL FOR SPILLS TO THE UPPER MISSISSIPPI RIVER

As described in the Introduction, this River-specific protocol is in place to speed and enhance communication among the agencies involved in response on the Upper Mississippi River. It does not replace or override other existing protocols or notification requirements (e.g., notification of the [National Response Center](#) per the [NCP](#)), but rather augments these in light of the need for rapid, targeted, inter-jurisdictional coordination on the Upper Mississippi River. It also establishes a procedure for continued communication over the duration of an incident. All UMR spill response MOA signatories have agreed to utilize this notification protocol as part of their response to spills on the Upper Mississippi River.

Applicability

This spill notification protocol applies to all state and federal agencies which have signed the implementing MOA.

- 1) **Each state will be represented by only one contact or coordinating agency** who will represent and assume the "state" role for purposes of this protocol. It is assumed that this agency will be one which is responsible for environmental emergency response to a spill on the Upper Mississippi River. The coordinating agencies are listed in the spill notification roster.
- 2) **Each federal agency will be represented by only one contact point per federal region** for purposes of receiving notifications and updates. The contact points are listed in the spill notification roster.

Initial Notification

The state which first becomes aware of a spill should confirm that notification to the [National Response Center](#), via call or online form, has been completed and initiate the UMR notification protocol. Under the UMR protocol, when a spill to the Upper Mississippi River occurs, **it is the responsibility of the first-aware state to notify other potentially affected states and appropriate federal response and natural resource agencies.** A state is to consider itself as first-aware if it has not previously been notified of the spill according to this protocol. Should a federal agency become first-aware of a spill, it will notify the state where the spill occurred (if known) or the state being impacted. That state will then be responsible for notifications according to this protocol. The initial notification protocol is as follows:

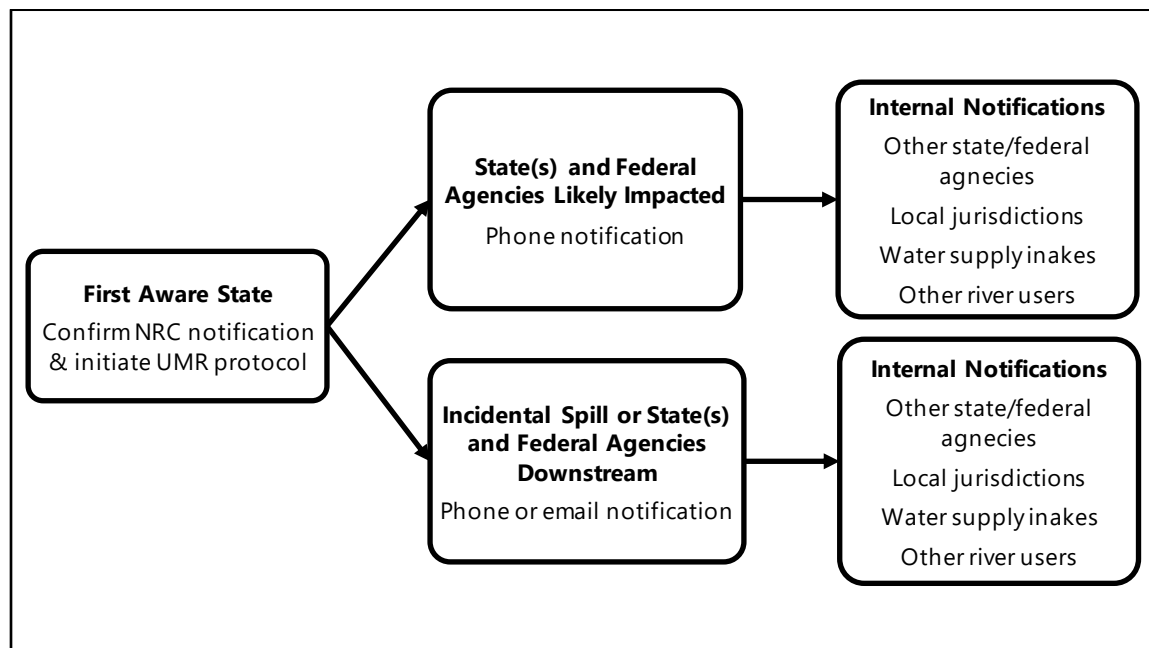
- 1) **All spills are to be reported.**
 - a. **Notification of spills likely to impact adjoining states is to be made by voice immediately.** The notification is made to the coordinating agency via the 24-hour number listed in the notification roster in this manual.
 - b. **Notification of incidental spills or spills that are far upstream of the notification recipient should be made during first available working hours by voice or email** utilizing the contact information provided in the notification roster in this manual.

The first-aware state should use its best judgment as to what is an incidental spill. Some factors that may affect this decision are i) the location of the spill relative to water intakes,

sensitive/critical fish and wildlife habitat, and major cities, and/or ii) the type and amount of material involved. In addition, news interest/coverage may make an otherwise environmentally insignificant spill into one of which other states and federal agencies should be made aware. If there is any doubt as to the significance of the spill, notification should be made.

- 2) **Each state is responsible for its own intrastate notifications**, such as those to other agencies within state government, local jurisdictions, and water supply intakes.
- 3) **When a spill originates within a state, that state will be the designated coordinating state** unless another state agrees to take over that responsibility (perhaps because of the greater involvement by the second state in the spill response). When the spill occurs in or affects the UMR at a boundary between two states, these states will decide during initial notification as to which state will be the designated coordinating state.

Figure 2: UMR Spill Notification Protocol



Updates

Informal daily updates will be made to adjacent and downstream states by the designated coordinating state if the response is state-lead or by the federal on-scene coordinator (FOSC) if the response is federally led. A federal OSC may negotiate with a state to provide daily updates if the federal OSC maintains close communications and provides the necessary information to that designated coordinating state.

- 1) It is suggested that updates be emailed daily at a regular time that will meet agency management and public information needs, although urgent information should be sent immediately.
- 2) A state or federal agency that responds in any way to a spill is to update the designated coordinating state or federal OSC on its activity and findings daily. The reports should contain a summary of all

activity by that state/agency since its last report, including lab analyses and maps if appropriate. The reports should also list what future actions that state or agency plans to undertake.

- 3) When the designated coordinating state or federal OSC determines that daily updates are no longer necessary, this should be communicated via a final update. It should be labeled prominently as "FINAL" and state why the updates are being discontinued.

Spill Notification Roster

This roster is to be used for notification and status report purposes. The list contains primary contacts, which include the five Upper Mississippi River basin states, the U.S. Environmental Protection Agency, U.S. Army Corps of Engineers, U.S. Coast Guard, and U.S. Fish and Wildlife Service. The primary contacts are those agencies that should receive first notice of a spill to the river. Additional key contacts, including downstream states and numerous federal agencies and offices are also included. Note that other river contact information can be found in the Resource Manual.

The call roster includes a business hour number for the primary response/coordinating agency, a 24-hour number for the agency that accepts the initial spill reports, and an email contact where available. The telephone number for the primary coordinating agency is used for interstate or interagency coordination during business hours. The 24-hour number is used for initial spill reporting for spills that may affect interstate waters. The email contact is used for other notifications or updates to state or federal agencies. Note that the emails are for individual UMR Spills Group members.

PRIMARY CONTACTS

Illinois

Coordinating Agency	Illinois Environmental Protection Agency Office of Emergency Response	217-782-3637
24-hour	Illinois Emergency Management Agency	217-782-7860
Email	Tony Falconio	tony.falconio@illinois.gov epa.oer@illinois.gov

Iowa

Coordinating Agency	Iowa Department of Natural Resources	515-725-8694
24-hour	Iowa Department of Natural Resources	515-725-8694
Email	Kurt Levetzow	kurt.levetzow@dnr.iowa.gov

Minnesota

Coordinating Agency	Minnesota Pollution Control Agency Emergency Response Team	651-757-2161
24-hour	Minnesota Department of Public Safety	800-422-0798 or 651-649-5451
Email	Mike Rose	mike.rose@state.mn.us

Missouri

Coordinating Agency	Missouri Department of Natural Resources	573-526-3315
24-hour	Missouri Department of Natural Resources	573-634-2436
Email	Rick Gann	rick.gann@dnr.mo.gov

Wisconsin

Coordinating Agency	Wisconsin Department of Natural Resources	800-943-0003
24-hour	Wisconsin Emergency Management	800-943-0003
Email	Jayson Schrank	jayson.schrank@wisconsin.gov

PRIMARY CONTACTS

(Continued)

National Response Center - Washington, D.C.

Business Hours	National Response Center	800-424-8802
24-hour	National Response Center	800-424-8802

U.S. Department of the Army, Army Corps of Engineers - Vicksburg, MS

Business Hours	Mississippi Valley Division, Operations Chief	601-634-5866 Patrick.A.Chambers@usace.army.mil
24-hour	Mississippi Valley Division, Regulatory Office	601-634-5821
(See pp. A-6, A-7, and A-9 for Army Corps of Engineers' district and lock and dam contacts.)		

U.S. Environmental Protection Agency - Region 5, Chicago

Coordinating Office	Emergency and Enforcement Response Branch	312-353-2318
24-hour	Emergency and Enforcement Response Branch	312-353-2318

U.S. Environmental Protection Agency - Region 7, Kansas City

Coordinating Office	Emergency Response Program	913-281-0991
24-hour	Emergency Response Program	913-281-0991

U.S. Coast Guard – Sector UMR - St. Louis, MO

Business Hours	Sector UMR	314-269-2500
24-hour	Sector UMR	866-360-3386 or 314-269-2332

U.S. Fish and Wildlife Service – Bloomington, Minnesota Midwest Region 3 Office

[Note: The Fish and Wildlife Service contact numbers listed below should be used only to report, or consult on, a spill that has already been reported to the National Response Center hotline (800-424-8802). Discussions with Fish and Wildlife Service personnel will under no circumstances constitute Natural Resource Trustee notification under OPA, CERCLA, or the NCP.]

Coordinating Office	None — use 24-hour number below in all instances	
24-hour	DOI Regional Environmental Officer for Region III (includes IL, MN, and WI)	215-266-5155
	DOI Regional Environmental Officer for Region IV (includes IA and MO)	303-478-3373

ADDITIONAL CONTACTS

National Pollution Funds Center – Washington, D.C.

Business Hours	National Pollution Funds Center	202-795-6003
24-hour	Command Duty Officer (CDO)	202-494-9118
	Team 1 (includes Iowa and Missouri)	202-795-6092
	Team 4 (includes Illinois, Minnesota, and Wisconsin)	202-795-6071

ADDITIONAL CONTACTS

(Continued)

Arkansas

Business Hours	Department of Emergency Management	800-322-4012
24-hour	Department of Emergency Management	800-322-4012

Kentucky

Business Hours	Department for Environmental Protection	502-564-2380
24-hour	Department for Environmental Protection	800-928-2380

Tennessee

Business Hours	Department of Environment & Conservation SPILS	833-247-7745
24-hour	Department of Environment & Conservation SPILS	833-247-7745

U.S. Coast Guard - Eighth District, New Orleans

Coordinating Office	Eighth District Command Center	504-589-6225
24-hour	Eighth District Command Center	855-485-3727

U.S. Coast Guard - St. Paul, MN

Business Hours	Marine Safety Detachment	952-806-0021
24-hour	Sector UMR	866-360-3386 or 314-269-2332

U.S. Coast Guard - Quad Cities

Business Hours	Marine Safety Detachment	309-782-0627
24-hour	Sector UMR	866-360-3386 or 314-269-2332

U.S. Coast Guard - Memphis, TN

Business Hours	Sector Lower Mississippi River	901-544-3912
24-hour	Sector Lower Mississippi River	901-544-3912

U.S. Coast Guard - Paducah, KY

Business Hours	Marine Safety Unit	270-442-1621
24-hour	Sector Ohio Valley	800-253-7465

U.S. Coast Guard - Louisville, KY

Business Hours	Sector Ohio Valley	502-779-5300
24-hour	Sector Ohio Valley	800-253-7465

U.S. Coast Guard, Atlantic Strike Team - Fort Dix, NJ

Business Hours	Atlantic Strike Team	609-724-0008
24-hour	Command Duty Officer	609-556-9376

U.S. Coast Guard, National Strike Force - Elizabeth City, NC

Business Hours	National Strike Force	252-331-4400
24-hour	Command Duty Officer	252-267-3458

ADDITIONAL CONTACTS

(Continued)

U.S. Department of Agriculture – Animal and Plant Health Inspection Service - Fort Collins, CO

Business Hours	Wildlife Services	970-494-7443 or 866-487-3297
24-hour	Wildlife Services	970-266-6363 or 877-303-6363

U.S. Department of the Interior - Philadelphia, PA (Regional Environmental Officer for Region III)

Business Hours	Office of Environmental Policy & Compliance	215-597-5378
24-hour	Office of Environmental Policy & Compliance	215-266-5155

U.S. Department of the Interior - Denver, CO (Regional Environmental Officer for Region IV)

Business Hours	Office of Environmental Policy & Compliance	303-445-2500
24-hour	Office of Environmental Policy & Compliance	303-478-3373
(See pp. C-13 and C-14 for Fish and Wildlife Service field-level contacts.)		

U.S. Department of Commerce, National Oceanic and Atmospheric Administration - Cleveland, OH

Business Hours	Scientific Support Coordinator	216-522-7760
24-hour	NOAA Hazmat Duty Officer (Seattle)	206-526-4911

U.S. Department of Commerce, National Weather Service

Business Hours	Regional Warning & Prep Meteorologist, Kansas City	816-540-6021
24-hour	National Weather Service Forecast Offices	
	Twin Cities, Minnesota	952-361-6670
	La Crosse, Wisconsin	608-784-7294
	Davenport, Iowa	563-386-3976
	Des Moines, Iowa	515-270-2614
	Chicago, Illinois	815-834-1435
	St. Charles, Missouri	636-441-8467
24-hour	River Forecast Center (Minnesota)	952-361-6650

U.S. Environmental Protection Agency - Region 4, Atlanta, GA

Business Hours	Emergency Response	404-562-8700
24-hour	Emergency Response	404-562-8700

U.S. Environmental Protection Agency - Region 6, Dallas, TX

Business Hours	Emergency Response	214-665-2760
24-hour	Emergency Response	866-372-7745

IV. KEY UPPER MISSISSIPPI RIVER RESPONSE CONSIDERATIONS, TECHNIQUES, AND TOOLS

Upper Mississippi River Physical Characteristics, Boundaries, and Jurisdictions

The Mississippi River flows 2,348 miles from the headwaters at Lake Itasca in northern Minnesota to the mouth at the Gulf of Mexico in Louisiana. The Mississippi River and its tributaries drain approximately 40 percent of the conterminous United States. The average discharge of the Mississippi River to the Gulf of Mexico is 420 billion gallons per day.

The Mississippi River is divided into two general hydrologic regions — the Upper Mississippi Region and the Lower Mississippi Region. The Upper Mississippi Region includes the northern 1,300 miles of the river in the states of Minnesota, Wisconsin, Iowa, Illinois, and Missouri. The Lower Mississippi Region includes the 1,000 miles of river that flow between Missouri, Kentucky, Arkansas, Tennessee, Mississippi, and Louisiana. The boundary between the two regions is the Ohio River confluence at Cairo, Illinois. The UMR Spill Plan addresses the commercially navigable mainstem of the Upper Mississippi River from Minneapolis, Minnesota to the Ohio River confluence at Cairo, Illinois.

The average discharge of the Upper Mississippi River at Cairo is about 121 billion gallons per day. This is approximately 30 percent of the total discharge of the Mississippi River into the Gulf of Mexico. The tributary contributing the greatest flow to the Upper Mississippi River is the Missouri River, with an average discharge of 48 billion gallons per day. Other major tributaries to the Upper Mississippi River include the Minnesota, St. Croix, Wisconsin, Illinois, and Kaskaskia Rivers.

Above the Quad Cities the UMR has a complex floodplain structure including the main channel, side channels, backwaters, and impounded areas. Further downstream there is less channel diversity, and levees separate much of the river from its floodplain. River flows are impacted by the degree of channel diversity.

Flow velocities also vary dependent on flow volume, which increases downstream as tributaries enter and can be dramatically impacted by precipitation events or lack of precipitation. Seasonal cycles also affect flow velocity and volume (e.g., typically higher in spring and lower in fall). Additionally, winter ice formation is also a consideration for response.

Further, the Upper Mississippi River falls within and sits at the border of variety of agency jurisdictions. This includes five states, two US EPA regions, USCG, USFWS, USACE, National Park Service, and various local jurisdictions. Multiple agencies within a single state may also be involved. As a result, any given location on the river may fall under the jurisdiction of multiple agencies at multiple levels of government.

Natural Resources and Human Uses

The commercially navigable portion of the Upper Mississippi River extends from Minneapolis, Minnesota to the Ohio River confluence — a total of approximately 856 river miles. This portion of the Upper Mississippi River is a major transportation artery linking the Midwest to U.S. and foreign markets. Industrial and agricultural commodities are shipped by barge on the waterway through a series of 29 locks and dams that maintain a 9-foot-deep channel in the river. Over 100 million tons of commodities are shipped annually on the Upper Mississippi River.

Besides being a commercial transportation corridor, the Upper Mississippi River is a major wildlife and recreational resource. In fact, the Upper Mississippi River is the only inland river in the United States serving under federal law as both a federal commercial navigation project and a major national wildlife refuge complex. Specifically, the UMR was recognized by Congress as “a nationally significant ecosystem and a nationally significant commercial navigation system” in the Water Resources Development Act of 1986. In addition, the Upper Mississippi River Floodplain Wetlands were recognized in January 2010 by the Ramsar Convention as a Wetland of International Importance.

The UMR hosts many wildlife species, including over 300 migratory birds, 150 fish, 50 mammal, and 30 mussel species. In addition, the UMR provides critical habitat for 36 federally-listed or candidate species of rare, threatened or endangered plants and animals. Approximately 300,000 floodplain acres are within the National Wildlife Refuge System, and states manage roughly 140,000 additional acres.

Its abundant natural resources help draw over 12 million people annually to fish, swim, boat and recreate on the UMR. Recreational activity on the Upper Mississippi River System, which includes the Illinois River and other navigable tributaries, has been estimated to involve direct and indirect expenditures of more than \$1.2 billion annually. Water-based recreational opportunities abound on the river and its backwaters. On the Upper Mississippi River alone there are over 380 boat harbors, access points, and marinas.

The Upper Mississippi River is also an important water supply. A total of 72 facilities including 23 municipalities, as well as numerous industries, hydropower plants, and fish and wildlife refuges take water from the river. Additionally, over 300 facilities discharge waste water to the Upper Mississippi River, including industrial facilities and municipal sewage treatment plants. Considerable ground transportation and industrial infrastructure is also present in along the river, including highways, rail lines, pipelines and fuel storage/transfer facilities.

General Response Considerations and Implications

As a result of the UMR’s physical characteristics, natural resources, human uses, and multiple jurisdictions, responders need to be aware of the following when responding to a spill on the river:

- It is a complex physical system including locks and dams, the main channel, side channels, and backwaters. As a result, flows and spill trajectories are variable and difficult to predict.
- High-value natural resources are present on the UMR, including tremendous seasonal concentrations of migratory species, threatened and endangered species, and diverse habitats ranging from river bottom to floodplain forests.
- The UMR is an important source for drinking water, industrial water use, and power plant cooling.
- Commercial and recreational vessels may need to be alerted for safety reasons; also, their operations may hinder response efforts.
- Diverse potential pollution sources exist, including vessels, pipelines, railroads, highway crossings, fixed facilities, and storm sewers and other outfalls.
- The UMR is a multi-jurisdictional river, and it serves as a border for counties, states, and federal agencies.

Further, resulting implications for responders include:

- The need to be aware of potentially dangerous river conditions.
- Follow the UMR notification protocol to ensure all potentially affected jurisdictions are notified.
- Consult state and federal natural resource managers throughout the response.
- Physical factors, public safety considerations, and natural resource concerns may limit response options – this applies to in-situ burning and chemical countermeasures as well as mechanical removal.

Response Tactics: Limitations and Opportunities

Equipment Availability/Response Time

A limited amount of response equipment is pre-positioned and readily available for use on the UMR. This results in part from an uneven distribution of population along the approximately 850 miles of navigable UMR where there are a handful of large population centers, several mid-size cities and smaller towns, and many miles of relatively remote areas. As a result, most of the pre-positioned equipment is to be found at facilities and largely in the Twin Cities and St. Louis areas. Terminals and spill response cooperatives also maintain small amounts of response equipment in some areas on the river. However, for most river miles, no equipment is present nearby and response time to these areas is likely to be substantial. This situation, coupled with significant flow velocities in the river's main channel, can make timely and effective spill response on the UMR particularly challenging.

Booming

In the river's main channel, swift currents and debris makes boom deployment and maintenance extremely challenging, particularly for containment and collection booming. If boom is deployed for these purposes, smaller diameter boom (e.g., six inch) should be employed and deployment angles reduced. Devices such as "boom vane" and "boom deflectors" may assist with fast water deployment, and secure anchoring is critical. Responders should seek to identify opportune areas for collection (e.g., slack water areas, bends in the river), while being aware of sensitive resources which may reside in such areas. In some cases, protective deflection or exclusion booming may be the only viable option on the main channel. Slower-flowing side channels and backwaters may be more amenable to containment and collection booming, though care must be taken in response as these are often areas where high value natural resources are located. See the [Inland Response Tactics Manual](#) and the US Coast Guard's [Field Guide for Oil Spill Response in Fast Water](#) for more information on boom deployment. Also, site-specific response strategies have been developed for the Twin Cities and St. Louis areas, as well as for UMR Pools 5 through 13 and 19 through 21, which include very specific recommendations for boom deployment. See the section on Geographic Response Plans and Response Strategies below.

Skimmers

In the UMR's main channel, the effectiveness of skimmers is limited due to challenges with access, rapid current, and debris. However, they may be more effective in slower water areas, including side channels and backwaters. USCG's Vessel of Opportunity Skimming System (VOSS) may provide for main channel skimming and has been successfully tested on Illinois River. Therefore, it could potentially be used on the UMR. However, the VOSS does require fairly significant time for deployment, both to be brought to the region and then to be affixed to an appropriate vessel. See the [Inland Response Tactics Manual](#) and the US Coast Guard's [Field Guide for Oil Spill Response in Fast Water](#) for more information on the use of skimmers.

Use of Barges in Response

A unique consideration for commercially navigable waterways such as the UMR is the potential for barges to be deployed in the containment, collection, and/or deflection of spilled product, essentially using barges as boom. This approach may provide for a rapidly-deployable and effective approach on some areas of the UMR. Generally, bow and stern anchors are required to maintain the desired position. Vessels can be cascaded similar to boom in order to move oil in the desired direction. Similar to boom deployment, the vessel should be anchored at an angle to the current to be effective. Barges can also be used as work platforms for spill response equipment. Of course, communication and coordination with individual operators offering to supply barges is necessary to confirm conditions and duration of use. See Section D for a list of shippers operating on the UMR.

Lock and Dam Operations

There are 29 navigation lock and dam structures on the UMR. Except for Upper St. Anthony Falls and Lock & Dam 19, these are low-head structures with minimal storage and are not designed for flood control. Rather, the intent of these dams is to maintain the 9-foot navigation channel within a relatively narrow band of pool elevation. Therefore, the ability of UMR locks & dams to hold back water and spilled product during an incident is quite limited. Most UMR dams utilize a combination of roller and Tainter gates, allowing for limited manipulation of flow across the dam, particularly in light of potential scouring issues. While recognizing these limitations, USACE has offered to assist where possible in response (see "Policy on Coordination with the U.S. Army Corps of Engineers" on page 36 and contact information on pages A-6, A-7, and A-9) and may be able to aid response in some cases by providing limited modifications of lock and dam settings/operations. Examples of these limited actions may include small drawdowns to pull product out of off-channel areas and changing gate settings to reduce velocity in a particular area to facilitate recovery.

In-situ Burning and Chemical Oil Spill Treating Agents

The use of in-situ burning (ISB) and chemical oil spill treating agents (COSTAs) is expected to be very limited on the Upper Mississippi River. All five states, local authorities, and federal agencies with jurisdiction on the Upper Mississippi River advocate the use of mechanical cleanup (e.g., containment boom, skimmers, sorbent pads) as primary spill response methods. Use of ISB and COSTAs should only be considered when mechanical methods are not feasible or have not been successful. Even then, certain restrictions and approval process apply. See "Policy on In-situ Burning and Chemical Oil Spill Treating Agents" and Resource Manual Section F for more information.

Key Regional Planning and Response Tools

Upper Mississippi River Mapping Project

USEPA Region 7 has developed a web mapping project for use in spill response and planning. The map viewer provides extensive data for the UMR corridor and several analysis tools that can be used for planning or during a response. Permission is needed to access the project, see instructions on the Greater Saint Louis Sub-Area page: [Site Profile - St. Louis Subarea - EPA OSC Response](#).

Region 5 Regional Response Team (RRT Website)

The Region 5 RRT website brings together many of the resources described here in an interactive, linked format. The site serves as a clearinghouse of information and resources. See <https://www.rtt5.org/>.

UMR Pool Geographic Response Plans and Site-Specific Response Strategies

Geographic response plans (GRPs), including site-specific response strategies and initial incident action plan (IAP) templates, have been created for UMR Pools 5-13 and 19-21. These GRPs are available to download from RRT5 and also include contact lists, pool descriptions and Inland Sensitivity Atlas Maps.

Additionally, site-specific response strategies have been developed for the Mississippi River in the Twin Cities, the greater St. Louis area, and the Great Rivers sub-area from St. Louis to the confluence of the Ohio River. The site-specific response strategies are available within the Inland Sensitivity Atlas or can be downloaded from [Region 5 RRT website](#). Copies can also be obtained by contacting UMRBA at 651-224-2880.

Habitat-Specific Response Fact Sheets and NEBA Fact Sheets

Fact sheets specific to riverine and riparian vegetated habitats have been developed to aid responders in selection of response techniques. Also available are fact sheets originally developed to accompany net environmental benefit analysis (NEBA) workshops. These NEBA fact sheets provide a summary of response considerations for general types of inland waterway habitats (e.g., vegetated shoreline) and species (e.g., freshwater mussels). All fact sheets are available on the [Region 5 RRT website](#).

Inland Response Tactics Manual

This manual of response tactics for inland waterways includes text and visual illustrations of numerous response tactics. It was originally adapted from the Alaska Clean Seas manual in order to be applicable in more moderate climates and has now been augmented with additional inland response tactics. The manual is available on the [UMRBA website](#) and from the [Region 5 RRT website](#).

US EPA Region 5 Inland Sensitivity Atlas

This GIS-based mapping product covers the entire inland area of the Region 5 states (Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin) and was designed specifically for use by regional spill planners and responders. Map viewers contain both potential spills sources (e.g., oil storage facilities, pipelines) and sensitive features/areas (e.g., water intakes, sensitive species, parks and other managed lands). Data extend one county into bordering states and include the bordering counties of the UMR. Atlases are available on the RRT5 website in the [Inland Sensitivity Atlas](#) map viewer and the individual state viewers under [Interactive Mapping](#). Users must register to access the ISA or state viewers, instructions are provided on the website. Contact Barbi Lee of US EPA Region 5 at 312-886-5296 or lee.barbi@epa.gov for more information. Also see information on the UMRBA website at <https://umrba.org/inland-sensitivity-atlas>.

USFWS Planning and Consultation (IPaC) web tool

The USFWS Information for Planning and Consultation (IPaC) is a project planning tool that streamlines the USFWS environmental review process. IPaC is available to everyone, whether private citizens or public employees, who needs information to assist in determining how activities being proposed may impact sensitive natural resources, and who would like to obtain suggestions for ways to address these impacts. IPaC can be used during spill planning or response to identify sensitive resources in an area. IPaC is available via the following website: <https://ipac.ecosphere.fws.gov/>.

UMR Early Warning Monitoring Network

UMR-based public water suppliers, industries, and other partners have supported efforts to establish an "early warning monitoring network" on the UMR which would serve to provide advanced warning of a spill event via continuous monitoring installations. Currently, data from the installation just upstream of the Quad Cities is available at <http://wqdatalive.com/public/269>.

V. UPPER MISSISSIPPI RIVER RESPONSE POLICIES

Incident Command System Implementation Protocol Addressing State and Federal Responders

Federal law requires implementation of a site-specific incident command system at all emergencies involving hazardous substances by the senior emergency response official responding (29 CFR 1910.120 and 40 CFR 311). The specific regulatory language suggests a seniority hierarchy increasing from local, to state, to federal. Yet, often it makes more sense for senior local or state officials to command because they have committed, effectively command, and are most familiar with the resources immediately available. Flexibility was the basis of past practice and has worked well. To maintain that flexibility and comply with current law, contingency plans must reflect this in writing. At the same time, it must be recognized that federal and state responders are charged by law with specific authorities and responsibilities in certain emergency situations that cannot be subsumed. The following is suggested language for Regional and Area Contingency Plans; interregional contingency plans such as the Upper Mississippi River Spill Response Plan; state contingency plans; and, potentially, for local plans that, if incorporated, allows for more flexibility in compliance with 29 CFR 1910.120 (q)(3) than if this issue is not specifically addressed in such documents. This protocol does not commit any parties adopting it to do anything not already required by federal law.

AN INCIDENT COMMAND SYSTEM (ICS) SHALL BE ESTABLISHED AT ALL INCIDENTS INVOLVING HAZARDOUS SUBSTANCES BY THE SENIOR ON-SCENE OFFICIAL OF THE FIRST RESPONSE ORGANIZATION TO ARRIVE AT AN INCIDENT. The ICS should be based on the organization, terminology, and procedures recommended by the National Fire Academy¹ and applied in a broad sense to include all hazard control and mitigation response organizations including responsible parties; private responders; and local, state, and federal agencies. All such entities participating in a response are required by federal law to implement an intra-organizational ICS and integrate it with the overall ICS (29 CFR 1910.120 or 40 CFR 311).

The ICS established will have as the Incident Commander (IC) the most senior on-scene official with the expertise, capability, and determination to be the commander. The IC can be from a local unit of government or from a county, state, or federal agency, as long as he/she has the expertise, capability, determination, and authority. This protocol recognizes that typically, but not necessarily, the IC will change as the incident progresses from being primarily a public safety problem, with the local fire chief as IC, to an environmental incident, with a state or federal person as the IC. The following procedures specify a determinate yet flexible means of establishing the role of federal and state responders in an ICS.

Single Jurisdictional Area Affected

When the incident involves and affects only a single local geographical jurisdiction, the organizational structure of the ICS will be determined by the established local contingency plan. This may involve single or multiple agency involvement. In all situations, one person shall act as either an Incident Commander in sole charge or, when functioning as an Operations Chief, will implement the action plan of a Unified Command.

In such instances, responding state and federal officials, who might otherwise be considered the senior competent emergency response official at the site, shall either:

1. Identify themselves to the Incident Commander and integrate themselves into the established ICS per the Incident Commander's direction, usually as a technical specialist to an operations group supervisor or as an operations group supervisor; or
2. Join an existing Unified Command or request that the Incident Commander establish a Unified Command; or
3. Assume the Incident Command role when required by federal or state law, or when an existing Incident Commander agrees to such a transition, or when no ICS has been established.

The ICS transfer of command or initial assumption of command protocols shall be used.

Multiple Jurisdictional Areas Affected

When the incident involves and affects multiple local geographical jurisdictions or areas not covered by local emergency response organizations, the state or federal competent senior official at the site shall:

1. Preferably join an existing Incident Command or Unified Command as described above; or
2. Establish a Unified Command for an encompassing ICS if none exists; or
3. Assume Incident Command and establish an ICS incorporating existing local efforts as operations section branches or otherwise as appropriate.

Local, State, Federal Interaction

When not specifically prescribed, a Unified Command consisting of local, state, and federal senior competent emergency response officials at the site shall be the preferred approach to integrating several levels of government into an ICS. Where state law specifies incident command assignment, it shall take precedence over this protocol with respect to those state and local organizations to which it applies. Federal jurisdiction specified in CERCLA, OPA, or the RCP² shall take precedence over this protocol.

Seniority

Seniority, as discussed in 29 CFR 1910.120 (q)(3)(i)³, is ranked according to competency and breadth of responsibility for purposes of this plan.

Competency will be determined by meeting the requirements of 29 CFR 1910.120 (q)(6)(v).⁴ All officials meeting the competency criteria are senior to those who do not, unless specifically charged with overriding authority applicable to the specific incident situation by state or federal law.

Breadth of responsibility will be considered to increase from most local to state to federal. However, this protocol encourages the establishment of the ICS at the most local level practicable to assure the earliest implementation of a unified response strategy.

Post-Emergency Operations

This protocol is intended only to apply during the emergency phase of a response to which 29 CFR 1910.120 (q) applies. However, use of an incident command system throughout a response and cleanup is encouraged.

-
- 1 One set of common terminology and procedures is vital to the efficient functioning of an ICS in an emergency. While no widely accepted ICS is specifically designed for hazardous materials response, the National Fire Academy (NFA) system is workable, widely accepted, and recommended by the Federal Emergency Management Agency. The NFA ICS is designated as the preferred ICS for purposes of this protocol until a more widely accepted system is available.
 - 2 CERCLA is the Comprehensive Environmental Response, Compensation, and Liability Act, commonly known as Superfund; OPA is the Oil Pollution Act of 1990; and the RCP is the Regional Contingency Plan adopted pursuant to 40 CFR 300.210.
 - 3 29 CFR 1910.120 (q)(3)(i) "The senior emergency response official responding to an emergency shall become the individual in charge of a site-specific Incident Command System (ICS). All emergency responders and their communications shall be coordinated and controlled through the individual in charge of the ICS assisted by the senior official present for each employer."
 - 4 29 CFR 1910.120 (q)(6)(v) "On scene incident commander. Incident commanders, who will assume control of the incident scene beyond the first responder awareness level, shall receive at least 24 hours of training equal to the first responder awareness level and in addition have competency in the following areas and the employer shall so certify:
 - (A) Know and be able to implement the employer's incident command system.
 - (B) Know how to implement the employer's emergency response plan.
 - (C) Know and understand the hazards and risks associated with employees working in chemical protective clothing.
 - (D) Know how to implement the local emergency response plan.
 - (E) Know of the state emergency response plan and of the Federal Regional Response Team.
 - (F) Know and understand the importance of decontamination procedures."

Policy on In-Situ Burning and Chemical Oil Spill Treating Agents

This policy is applicable to the commercially navigable waters of the Upper Mississippi River, including backwaters, except for those areas that are covered by a Sub-Area Contingency Plan (SACP). Sub-Area Planning Committees may develop specific policies for in-situ burning and other countermeasures, as long as they are consistent with local, state, and federal regulations.

Oil spill responders have a limited number of techniques available to them that will minimize environmental impacts and facilitate effective cleanup. These include mechanical methods, the use of certain chemical oil spill treating agents, and in-situ burning. *All five states, local authorities, and federal agencies with jurisdiction over the Upper Mississippi River advocate the use of mechanical containment and cleanup as primary spill response methods.* These methods include the use of absorbent pads, containment boom, skimmers, and similar equipment. In general, the use of dispersants is not promoted within the boundaries of the Region 5 or Region 7 Regional Response Teams (RRTs).

General Policy

The Federal On-scene Coordinator (FOSC) has the authority to utilize, or approve, any actions necessary to prevent, or substantially reduce, the threat to human life. This includes, but is not limited to, the use of chemical and oil spill treating agents (COSTAs) and in-situ burning (ISB) (see 40 CFR 300.910(d)). The FOSC will inform the affected RRTs as well as the RRT representatives of any affected states of these actions. Other interested parties such as natural resource trustees should be informed as appropriate.

When there is no longer an immediate threat to human health and welfare, the use of COSTAs and/or ISB will be evaluated on a case-by-case basis, and is to be conducted in accordance with the remainder of this policy.

COSTA Procedure

For COSTAs the approving authority is the Federal On-Scene Coordinator (FOSC) when the FOSC has obtained the concurrence of both the Regional Response Team EPA co-chair and the affected state representative, and, to the maximum extent practicable, consulted with the federal natural resource trustees' representatives on the RRT (40 CFR 300.305(e) and 40 CFR 300.910(b)).

ISB Procedure

In-situ burning, for the purposes of this guidance, is defined as the ignition of spilled oil that will burn due to its intrinsic properties and does not include the adding of a separate burning agent to initiate or sustain the burn. The addition of burning agents requires the COSTA procedure approval because such agents are considered to be in the same category as COSTAs. In-situ burning can be performed on the open water and near or on shore.

The use of in-situ burning in these guidelines is not for disposal purposes; rather, it is a response technique to be employed when an oil slick has the potential to spread and contaminate additional areas. It is also considered as a cleanup technique for oiled shoreline habitats such as wetlands, where it is used in conjunction with other cleanup methods.

For in-situ burns (ISB) on the Upper Mississippi River, the approving authority designated by this policy is the local Incident Commander (or Unified Command as applicable) and the State On-Scene Coordinator (SOSC), who may need to obtain internal permission.

- A. If the proposed burn is on a local, state, tribal, or federally owned or managed natural resource area, the concurrence of the land owner/manager must be obtained.
- B. Because state or federally listed threatened or endangered species, migratory birds, managed natural resource areas, or other natural resources could be affected, all responders and trustees share interest in timely and effective removal of spilled oil in ways that protect natural resources and the public's safety. Local incident commanders and state and federal on-scene coordinators shall consider the size, nature, and location of a spill, and the type and proximity of resources, and shall, to the maximum extent practicable, consult with state and federal, and, as appropriate, tribal, trustees before deciding to conduct in-situ burning. It is the expectation of the members of the Region 5 and Region 7 RRTs that, except in extraordinary cases, a local incident commander or state or federal on-scene coordinator shall contact appropriate trustees before proceeding with any proposed in-situ burn.

In addition, whenever the time available permits, the views of the FOSC should be sought and considered.

Because the time frame for making decisions regarding ISB is often very short, guidelines are included in Section F of the Resource Manual to assure that the most significant issues are considered. This decision-making methodology for burning is approved by the Upper Mississippi River Hazardous Spills Coordination Group, Region 5 Regional Response Team, and Region 7 Regional Response Team.

Special Policy for FOSC-Directed Burns

In-situ burns overseen by a Region 5 FOSC follow the COSTA procedure (above) as a matter of RRT policy. The Region 5 RRT has established ISB Guidelines to facilitate the approval process. Region 5 federal burns are governed by the Region 5 ISB Guidelines, the NCP, and state and local regulations. Burns overseen by an SOSC or other parties in Region 5 must be in compliance with state and local regulations. Note that the Region 5 ISB Guidelines do not grant pre-approval to conduct an in-situ burn. Rather, they are intended to provide consistent guidance throughout the region to facilitate decision-making on whether or not to conduct a burn during a spill incident.

Region 7 has also developed policy and guidelines for in-situ burning, as well as COSTAs. Region 7 burns are governed by the Region 7 ISB Guidelines, the NCP and state and local regulations. It is Region 7 policy that all burns in Region 7 must comply with local, state, and federal regulations.

Consistent with both the Region 5 and Region 7 ISB policies, it is the Upper Mississippi River policy that all burns on the Upper Mississippi River must comply with local, state, and federal regulations.

The FOSC is authorized to use any countermeasure without requesting permission if he or she believes its use is necessary to prevent or substantially reduce a hazard to human life (40 CFR 300.910 (d)). SOSCs may have similar authority under applicable state laws and regulations.

Policy on Bioremediation

Because the Upper Mississippi River Spill Response Plan and Resource Manual is designed to provide the first responder and on-scene coordinator with information necessary to make informed decisions in the initial phases of response, bioremediation guidelines are not included in this plan. Bioremediation takes extended periods of time to reduce contaminant mass. It is usually applied to terrestrial environments, including, potentially, riverine shoreline. It is unlikely that oversight of such a project would involve a first responder or on-scene coordinator during the first phase of a response. In the unlikely event that a first responder, on-scene coordinator, or responsible party proposes to use bioremediation measures on or in the navigable waters of the Mississippi River, the [National Contingency Plan](#), subpart J, and state officials should be consulted for authorities, restrictions, and approvals.

Policy on Vessel Detainment

In the course of investigating and responding to spills of oil or hazardous substances, it may be necessary to detain vessels. Federal authority to detain vessels for pollution response investigations in ports subject to the jurisdiction of the United States and on the navigable waters of the United States rests with the U.S. Coast Guard Captain of the Port (COTP).

The COTP is authorized to:

- a. order a vessel to operate or anchor in a particular manner if the COTP has reasonable cause to believe that the vessel does not comply with any regulation or applicable law (33 USC 1223, Ports and Waterways Safety Act);
- b. investigate any incident which affects or may affect the safety or environmental quality of the ports, harbors, or navigable waters of the United States (33 USC 1227, Ports and Waterways Safety Act); and
- c. board and inspect any vessel, except public vessels, to enforce the oil and hazardous substance liability provisions of the Federal Water Pollution Control Act (33 USC 1321, Oil Pollution Act).

Known or suspected violations of federal pollution prevention requirements by vessels should be reported to the appropriate COTP. For incidents on the Upper Mississippi River from mile 0.0 up to mile 109.9, notify the Sector Ohio Valley in Louisville, Kentucky. For incidents on the Upper Mississippi River at mile 109.9 and above, notify the Sector Upper Mississippi River in St. Louis, Missouri. See Spill Notification Call Roster pages 20-21 for USCG contact information.

Policy on Coordination with the U.S. Army Corps of Engineers

The U.S. Army Corps of Engineers has a wide range of responsibilities on the Upper Mississippi River, including operation and maintenance of the commercial navigation system, management of Corps-owned lands, and flood damage reduction and flood response. Given its diverse river-related missions, the Corps has a variety of resources, capabilities, and expertise that could facilitate spill response on the Upper Mississippi River. This policy outlines the types of assistance that may be available from the Corps and the appropriate procedures for requesting that assistance.

The Corps administers its Upper Mississippi River projects and programs through the St. Paul, Rock Island, and St. Louis Districts, all of which are under the command of the Mississippi Valley Division in Vicksburg, Mississippi. (See p. A-8 for a map showing boundaries among the three districts.) In letters dated between November 2001 and February 2002, the Commanders of the three UMR districts each indicated that the Corps “stands ready to respond and assist the federally designated on-scene incident commander” in the event of a major spill on the Upper Mississippi River. However, that assistance is limited by the Corps’ resources and capabilities and must not conflict with the Corps’ responsibilities under applicable laws or regulations.

The precise nature and extent of the Corps’ assistance will, of course, be determined by the specifics of a particular incident. In general, the Corps’ capabilities include reporting and monitoring spills, providing information about river conditions, logistics support (including communications and other site resources), and contracting and technical support. In addition, under certain circumstances, Corps personnel may be able to facilitate control and containment of spills through its river operations, such as emergency dredging or manipulation of river flows. However, spill responders should be aware of the following limitations:

- The Corps’ ability to modify river flows to facilitate spill response is generally quite limited. For example, there is very little storage capacity in the UMR pools; thus, the Corps cannot typically hold water behind the navigation dams.
- All assistance rendered by the Corps must not conflict with the Corps’ responsibilities under applicable laws or regulations. Top priorities include the protection of public health and safety and public infrastructure.
- Corps personnel are trained only to the level necessary to respond to a spill from a Corps facility and thus do not have the training needed to respond directly to a major spill event.
- If the Corps provides assistance in response to the request of a federally designated on-scene incident commander, the Corps will compile all costs of providing that assistance and will seek reimbursement from the responsible party.

Corps Coordination Contacts

- **Contact the appropriate lockmaster (pp. A-6 and A-7) for site-specific assistance and information.**
- **Contact the appropriate District Hydraulics Branch (p. A-9) for requests for changes to dam gate settings, and river level and flow projections.**

Oiled Wildlife Response

The purpose of this section is to guide the organization and coordination of government agencies, responsible party, and oil spill removal organizations' response to reports of oiled wildlife on the Upper Mississippi River. Upon discovery of oiled wildlife or significant threat of oiling, emergency response personnel should notify the Regional Environmental Officer for the U.S. Department of the Interior, state wildlife resource agencies, the U.S. Fish and Wildlife Service, and the U.S. Department of Agriculture Wildlife Services. See Spill Notification roster, pages 19 to 22. The Incident Commander should request the services of these agencies to assist the response in addressing oiled wildlife needs identified below which may be applicable for the incident. The responsible party for the spill is obligated to provide for the wildlife response. Wildlife resource agencies are obligated to track and document their expenses during a spill incident and may apply for funding from the U.S. Coast Guard's [Oil Spill Trust Liability Fund](#). Information resulting from Wildlife Branch operations should be coordinated with natural resource damage assessment (NRDA) efforts, if NRDA has been initiated by the natural resource trustees. The NRDA process is separate from response actions, including wildlife recovery; however, coordination of response planning and field observations with NRDA allows for an overall more effective and efficient resolution of natural resource issues at spill sites.

ICS - Wildlife Branch with the Operations Section

A scalable Wildlife Branch within the Operations Section should be established as part of an incident-specific ICS structure. As soon as feasible and necessary, state and federal wildlife resource agencies should designate a Branch Director and Group Supervisors to direct the operational activities for the Wildlife Branch. These operational activities are outlined below. The Wildlife Branch will follow standard ICS rules and forms and the Incident Command is responsible for addressing all resource needs identified by the Branch Director necessary to implement approved wildlife response operations. All wildlife branch operations must be covered by a spill-specific health and safety plan to protect the responders. Animal welfare and animal ethics apply to emergency spill response. It is important to establish direct communication and coordination protocols between the Wildlife Branch and the Environmental and Situation Units of the Planning Section to ensure proper documentation and reporting of field observations (e.g., numbers, species, and locations of impacted wildlife) to continually inform planning decisions for subsequent operational periods. Similar protocols should be established to get the same information on a timely basis to the natural resource trustees if NRDA has been initiated. Request for interviews from the media should be coordinated through an incident-specific public information officer.

Reconnaissance

Tasks for reconnaissance operations are to identify and determine the locations of oiled wildlife, along with the movement patterns of other wildlife that may become oiled. This may include the use of aircraft, watercraft, and vehicles. Predetermined search areas and routes plus the use of GIS will aid in the efficiency of the reconnaissance crews. Information and data gathered by this activity and associated forms may be used by the Environmental and Situation Units in the Planning Section and/or integrated into the Wildlife Branch to help plan wildlife avoidance and/or recovery operations. A Reconnaissance and Recovery Group may be established by the Wildlife Branch Director to fulfill these responsibilities.

Hazing and Deterrents

Hazing or deterrent operations are designed to mitigate the threat posed by wildlife use patterns that may cause oiling. Commercial vendors retained by the responsible party or the U.S. Department of

Agriculture Wildlife Services may carry out hazing or deterrent operations, as determined by the Wildlife Branch Director. The U.S. Department of Agriculture Wildlife Services maintains readiness to use advanced methods to haze and deter wildlife. It may be advisable to establish a separate Wildlife Hazing Group to carry out these specialized operations in close coordination with oil collection and recovery operations.

Recovery

The tasks for the recovery operations are to capture oiled wildlife for transport back to the rehabilitation facility. Recovery operations may include capture with hand nets or other techniques such as pharmaceuticals, rocket nets, traps, and other advanced methods. Recovery operational tasks may be assigned and accomplished by contractors working for the responsible party or by state and/or federal wildlife resource agencies. In particular, the U.S. Department of Agriculture Wildlife Services maintains readiness to use advanced methods to capture wildlife. All captures should be documented on approved forms using an agreed upon coordinate system along with tagging the cages or carriers.

Decontamination procedures should be used on the capture tools, cages, and carriers for re-use. All recovery operations must be closely coordinated with Law Enforcement agents from state and federal wildlife resource agencies to ensure compliance with applicable laws and regulations. A Reconnaissance and Recovery Group may be established by the Wildlife Branch Director to fulfill these responsibilities.

Transport

The tasks for transport operations are to safely and humanely move the captured wildlife from the recovery crews in approved carriers and vehicles to the rehabilitation facility. This may require stabilization of captured wildlife and triage to move the highest priority animals into care. This may also include euthanasia procedures as supervised by a qualifying professional. The transport operations may include tasks suitable for the use of volunteers. Wildlife transport operations may be implemented by the Reconnaissance and Recovery Group established by the Wildlife Branch Director.

Rehabilitation

Oiled wildlife rehabilitation expertise may be available from local, regional, or national vendors. If oiled wildlife rehabilitation is required, the Wildlife Branch Director may establish a Rehabilitation Group to assist the responsible party in obtaining wildlife rehabilitation services. The Group Supervisor will be responsible for ensuring all rehabilitation operations follow applicable State and Federal regulations. Permits and special rules are required from state and federal officials for wildlife care, and may vary by state. It may be necessary for the rehabilitation facility to construct or provide extended holding cages for after the initial emergency treatment until the animal is healthy for release back into the wild.

The rehabilitation facility operations may include tasks suitable for the use of volunteers. USFWS's [Best Practices for Migratory Bird Care During Oil Spill Response](#) should be consulted for additional information regarding rehabilitation operations, including techniques for the prevention of oiling of birds, as well as good practices for cleaning, caring for, and releasing recovered birds.

Release Back Into the Wild

The release operation requires planning to avoid wildlife from returning to the oiled environment and to meet all applicable state and federal permits and rules. The release operations should be designed as not to promote disease transmission into wild populations. Released animals may be tagged for tracking. Release operations are typically implemented through the Rehabilitation Group.

Salvage and Morgue

It is unlawful to pick up and transport dead migratory birds according to state and federal laws. Other state rules may apply to picking up dead wildlife. Accordingly, all salvaging operations must be closely coordinated with Law Enforcement agents from state and federal wildlife resource agencies, as well as any natural resource damage assessment representatives coordinating with the response. All dead wildlife should be documented on forms with chain of custody forms, photographs and coordinates for the location. Dead wildlife specimens need to be properly wrapped and tagged to preserve the evidence and for potential chemical testing. Dead wildlife specimens are to be transported to a facility that can properly store them in a freezer or refrigerator for later custody by wildlife resource agency Law Enforcement personnel. Wildlife salvage operations may be completed by the Reconnaissance and Recovery Group, or through a specifically-assigned Wildlife Salvage Group, as established by the Wildlife Branch Director.

Policy on Volunteers

The use of volunteers is not anticipated to be a frequent component of spill response on the UMR. However, situations may arise that are large enough in scope, unique enough in impact, and/or draw in public involvement such that the use of volunteers will need to be considered. As such, this policy addresses major considerations related to the potential use of volunteers in UMR spill response. Please also see the [National Response Team's Use of Volunteers: Guidelines for Oil Spills](#) and the [National Contingency Plan](#) for more information regarding the use of volunteers.

Limitations; Benefit-Risk Tradeoff

The willingness of volunteers, both technically trained and from the public at large, to assist in response is both recognized and appreciated. However, in most oil or hazardous substance incidents on the UMR, the possible roles for volunteers are likely quite limited due to factors including the following: 1) most UMR spills have been small enough in scale such that they have not required resources and staff beyond that of professional private sector and government agency responders, 2) the river's physical characteristics (large water volume, fast flow, challenging access, etc.) present significant safety hazards, and 3) much of the river is distant from population centers which might supply volunteers. Additionally, federal agencies are generally prohibited from accepting volunteer services per 31 USC §1342, except in emergencies involving the safety of human life or the protection of property.

Therefore, the decision to employ volunteers must take into account the benefits that might be gained against safety and liability considerations, as well as legal restrictions on the use of volunteers. The Incident Commander must make the decision regarding the use of volunteers on a case-by-case basis, weighing the interests of the local volunteer community and the benefits of volunteer efforts against health and safety concerns, resources needed for volunteer supervision and training, liability concerns, and other relevant issues. As stated above, it is expected that in the large majority of UMR incidents, this will likely result in a decision not to use volunteers. *However, should the Incident Commander choose to employ volunteers, the considerations described in the following sections must be addressed.*

Integration of Volunteers Within ICS

The use of volunteers must be integrated into the incident command structure. When the Incident Commander approves the use of volunteers, he/she should establish either: 1) a volunteer coordinator within the Resource Unit of the Planning Section (smaller scale volunteer efforts), or 2) a full Volunteer Unit in the Planning Section (larger scale volunteer efforts). Volunteers should only be deployed through direct written tasking from the Incident Commander via the incident action plan (IAP) process. The Incident Commander must also consider coordination with local government units and how local emergency operation plans affect the participation of volunteers (see list of county emergency management agencies in Resource Manual Section E).

Affiliated vs. Unaffiliated Volunteers

When use of volunteers is determined to be appropriate, the use of affiliated volunteers (i.e., those having a pre-existing relationship with a non-governmental organization or community-based organization engaged in response/relief) is preferred to the use of unaffiliated volunteers. Additionally, per [MOU](#), the Corporation for National and Community Service (CNCS) can assist USCG and USEPA in developing and supporting an unaffiliated volunteer management program.

Scope of Volunteer Activities

As noted in the [NCP](#), volunteers generally should not be used for physical removal of oil contaminated materials. Typically, volunteers should be used for minimal risk activities (e.g., data entry, assisting with lodging, distributing information, etc.). However, there may be circumstances under which volunteers may be used for higher risk activities such as certain oiled wildlife cleaning activities but only if they have received proper training and personal protective equipment.

Training

Volunteers must be trained to perform the tasks they are asked to do. An inexperienced or untrained volunteer must not be assigned to perform a task requiring training and/or experience. Moreover, federal and state laws require employees (including volunteers) working on sites exposed to hazardous substances, health hazards, or safety hazards to receive training meeting state and federal requirements before they are permitted to engage in hazardous waste operations that could expose them to hazardous substances, safety, or health hazards.

While volunteers may have received training and certifications at previous spills, they must have current certifications requisite to the desired volunteer position and may need to undergo new, or refresher training. This may cause delays in assignment if the volunteer has to be trained at the spill site, but it will avoid needless injuries.

VI. EXERCISING, DRILLS, AND TRAINING

The Upper Mississippi River Hazardous Spills Coordination Group strongly supports exercises, drills, and trainings to maintain and enhance spill response effectiveness on the Upper Mississippi River. The Group has, and will continue to, organize and participate in such activities along the river. In particular, the Group emphasizes broad participation in the planning and execution of these events, in order to build partnerships and enhance communication among various levels of government and the private sector. The Group also seeks to address emerging issues and response resource constraints in designing training and exercises.

RESOURCE MANUAL

RESOURCE MANUAL

The Resource Manual contains reference information on the river and information on spill response and clean-up resources, sensitive human and wildlife resources, potential sources of spills, and public hazardous materials teams. Where possible, information in the manual is referenced by river mile. River mile 0 of the Upper Mississippi River is located at the confluence of the Ohio and Mississippi Rivers. River miles increase upstream to Minneapolis, Minnesota where the commercially navigable portion of the river ends at river mile 856. References to right and left bank are from the descending perspective. Some portions of the Resource Manual also refer to river pools. Pools are named for the lock and dam at their downstream end. Thus, for example, Pool 2 is the impounded area immediately above Lock and Dam 2. Information in the Resource Manual is generally presented in geographic order, beginning at the head of navigation in Minneapolis, Minnesota and ending at the confluence with the Ohio River in Cairo, Illinois.

River mile locations for facilities in this manual were derived from a multitude of sources. Some of the river miles are accurate to within a tenth of a mile. Other river miles are accurate to within one or two miles depending on the source. The river mile locations are provided so that the spill responders can get an idea of the facilities and resources in their area. This manual is not meant to be the definitive source of facility location information on the river.

RESOURCE MANUAL

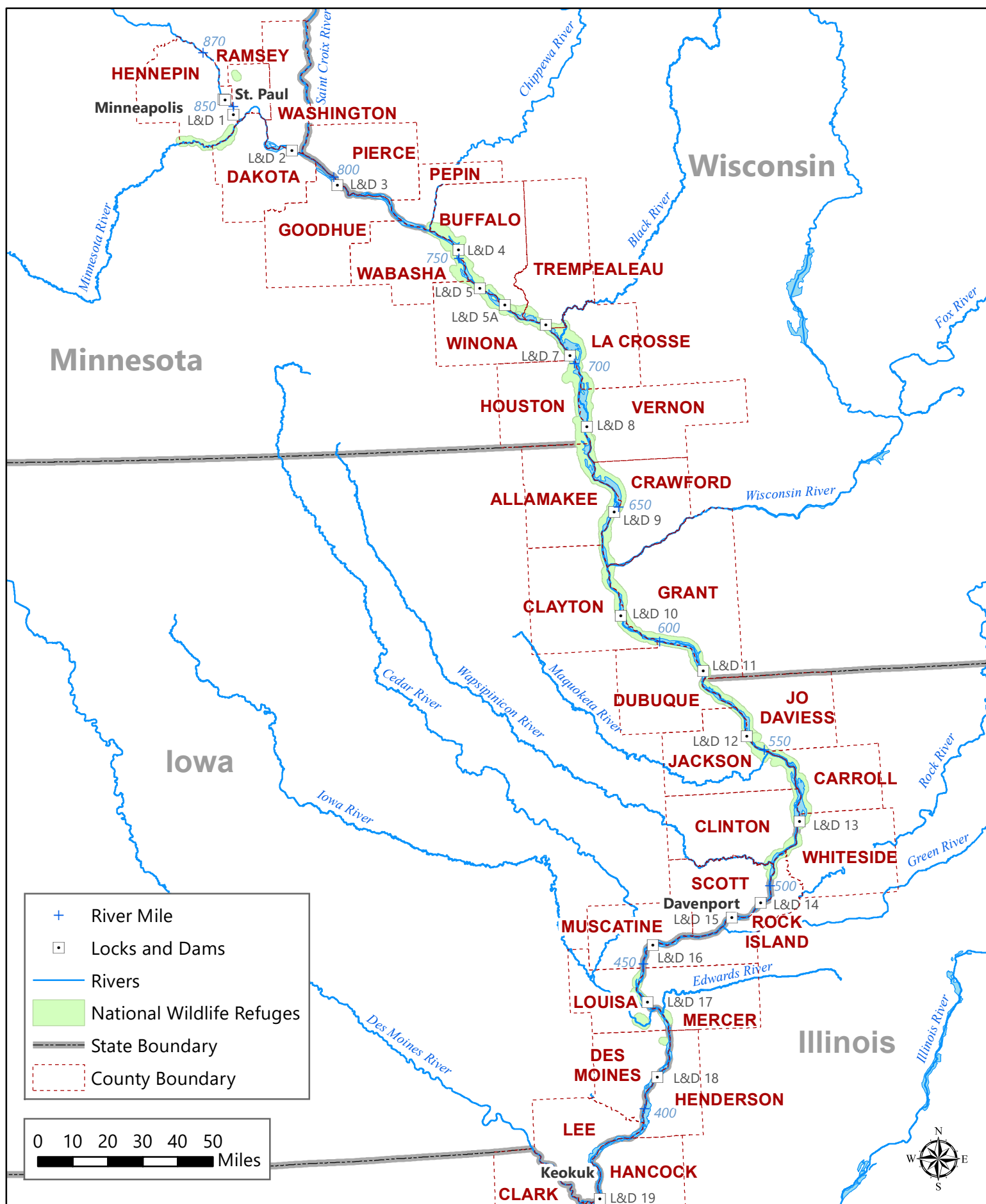
Section A: River Information and Locational References

Upper Mississippi River by 50-Mile Segments



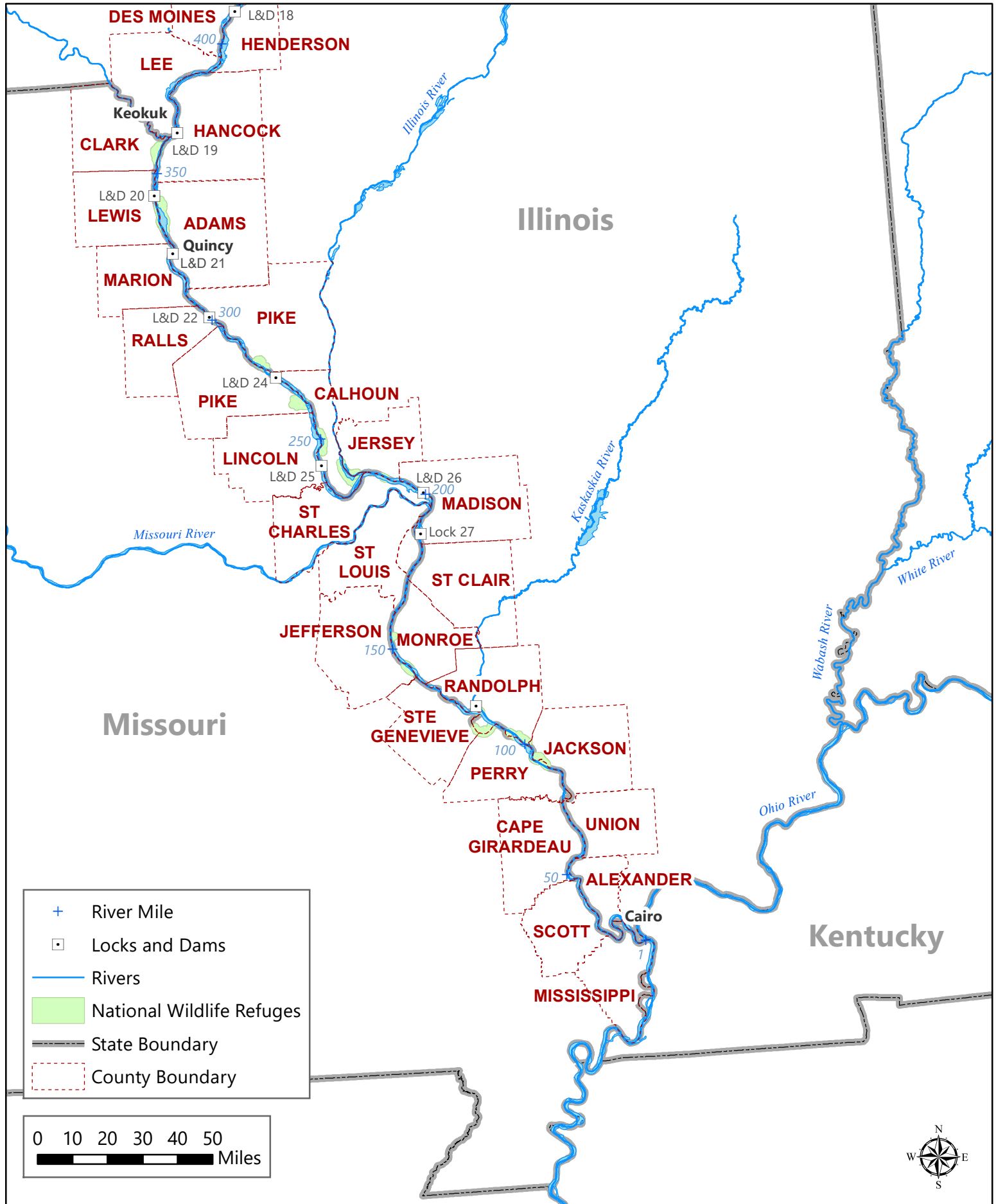
Counties Along the Upper Mississippi River

(Minneapolis, MN to Keokuk, IA)



Counties Along the Upper Mississippi River

(Keokuk, IA to Cairo, IL)



<u>River Mile*</u>	<u>State</u>	<u>County/County</u>
857.9 LDB	MN	Anoka/Hennepin
850.5 LDB	MN	Hennepin/Ramsey
845.3 RDB	MN	Hennepin/Dakota
841.9 RDB	MN	Dakota/Ramsey
835.7 RDB	MN	Ramsey/Dakota
833.1 LDB	MN	Ramsey/Washington
811.6 LDB	MN/WI	Washington/Pierce
807.1 RDB	MN	Dakota/Goodhue
779.3 LDB	WI	Pierce/Pepin
773.2 RDB	MN	Goodhue/Wabasha
763.4 LDB	WI	Pepin/Buffalo
741.9 RDB	MN	Wabasha/Winona
721.8 LDB	WI	Buffalo/Trempealeau
713.0 LDB	WI	Trempealeau/La Crosse
701.0 RDB	MN	Winona/Houston
691.3 LDB	WI	La Crosse/Vernon
673.8 RDB	MN / IA	Houston/Allamakee
667.6 LDB	WI	Vernon/Crawford
637.3 RDB	IA	Allamakee/Clayton
630.7 LDB	WI	Crawford/Grant
600.6 RDB	IA	Clayton/Dubuque
580.6 LDB	WI / IL	Grant/Jo Daviess
567.0 RDB	IA	Dubuque/Jackson
548.9 LDB	IL	Jo Daviess/Carroll
532.8 RDB	IA	Jackson/Clinton
524.7 LDB	IL	Carroll/Whiteside
511.5 LDB	IL	Whiteside/Rock Island
506.6 RDB	IA	Clinton/Scott
469.5 RDB	IA	Scott/Muscatine
448.8 RDB	IA	Muscatine/Louisa
448.8 LDB	IL	Rock Island/Mercer
425.6 RDB	IA	Louisa/Des Moines
425.5 LDB	IL	Mercer/Henderson
395.9 RDB	IA	Des Moines/Lee
390.6 LDB	IL	Henderson/Hancock

Upper Mississippi River Mile Points of County Lines

(Continued)

<u>River Mile*</u>	<u>State</u>	<u>County/County</u>
361.5 RDB	IA / MO	Lee/Clark
351.0 RDB	MO	Clark/Lewis
347.3 LDB	IL	Hancock/Adams
328.5 RDB	MO	Lewis/Marion
312.4 LDB	IL	Adams/Pike
306.1 RDB	MO	Marion/Ralls
297.4 RDB	MO	Ralls/Pike
275.4 LDB	IL	Pike/Calhoun
258.1 RDB	MO	Pike/Lincoln
236.4 RDB	MO	Lincoln/St. Charles
217.9 LDB	IL	Calhoun/Jersey
208.5 LDB	IL	Jersey/Madison
195.5 RDB	MO	St. Charles/St. Louis
182.3 LDB	IL	Madison/St. Clair
171.2 LDB	IL	St. Clair/Monroe
79.4 LDB	IL	Jackson/Union
75.2 RDB	MO	Perry/Cape Girardeau
55.4 LDB	IL	Union/Alexander
47.8 RDB	MO	Cape Girardeau/Scott
25.9 RDB	MO	Mississippi/Scott

* LDB = Left Descending Bank
RDB = Right Descending Bank

Upper Mississippi River Locks and Dams
(Operated by the U.S. Army Corps of Engineers)

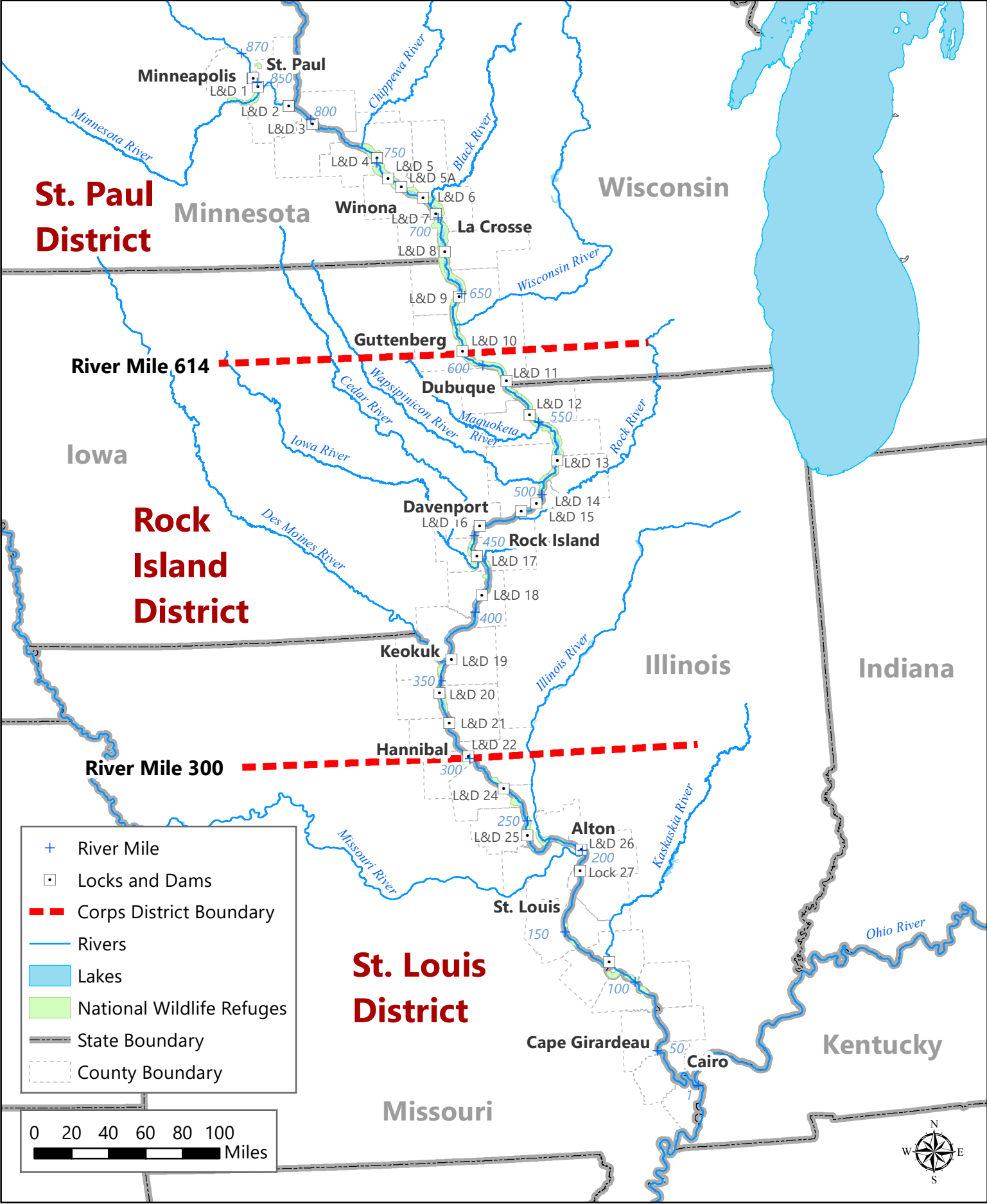
Lock Name	River Mile	Address	Waterbody	Emergency Phone	Contact Phone
Upper St. Anthony Falls	853.7 RDB	1 Portland Ave. Minneapolis, MN 55401-2528	Mississippi River	612-333-5336	612-333-5336
Lower St. Anthony Falls	853.4 RDB	1 Portland Ave. Minneapolis, MN 55401-2528	Mississippi River	612-332-6864	612-332-3660
Lock & Dam 1	847.6 RDB	5000 W River Pkwy. Minneapolis, MN 55417-1681	Mississippi River	612-724-2971	612-724-2971
Lock & Dam 2	815.2 RDB	1350 Dam Rd. Hastings, MN 55033-1145	Mississippi River	651-437-3150	651-437-3150
Lock & Dam 3	796.9 RDB	4330 Lock & Dam Rd. Welch, MN 55089-9644	Mississippi River	651-388-5794	651-388-5794
Lock & Dam 4	752.8 LDB	Main St. Alma, WI 54610-0325	Mississippi River	608-685-4421	608-685-4421
Lock & Dam 5	738.1 RDB	12554 Hwy 61 Minnesota City, MN 55959-9756	Mississippi River	507-689-2101	507-689-2101
Lock & Dam 5A	728.5 LDB	W679 State Hwy 35 Fountain City, WI 54629-7214	Mississippi River	507-452-2789	507-452-2789
Lock & Dam 6	714.1 LDB	W24055 Lock and Dam Rd. Trempealeau, WI 54661-0406	Mississippi River	651-290-5964	651-290-5964
Lock & Dam 7	702.5 RDB	33018 US Hwy 61 La Crescent, MN 55947-3404	Mississippi River	651-290-5186	651-290-5186
Lock & Dam 8	679.2 LDB	Near WI Hwys 35 & 56 Genoa, WI 54632-0265	Mississippi River	651-290-5035	651-290-5035
Lock & Dam 9	647.9 LDB	24545 State Hwy 35 Eastman, WI 54626-9723	Mississippi River	608-874-4311	608-874-4311
Lock & Dam 10	615 RDB	5 Lock and Dam Ln. Guttenberg, IA 52052-0849	Mississippi River	563-252-1261	563-252-1261
Lock & Dam 11	583 RDB	2772 Lock and Dam Dr. Dubuque, IA 52001-1400	Mississippi River	563-582-1204	563-582-1204
Lock & Dam 12	556.7 RDB	401 N Riverview St. Bellevue, IA 52031-1243	Mississippi River	319-872-3314	563-872-3314; 563-872-4919
Lock & Dam 13	522.5 LDB	4999 Lock Rd. Fulton, IL 61252	Mississippi River	815-589-3313	815-589-3313; 815-589-2144
Lock & Dam 14	493.3 RDB	25549 182nd St. Pleasant Valley, IA 52767	Mississippi River	309-794-4357; 309-794-0907	309-794-4357; 309-794-0907
Lock & Dam 15	482.9 LDB	1575 Rodman Ave., Rock Island Arsenal Building 328 Rock Island, IL 61204-2004	Mississippi River	309-794-5266	309-794-5266; 309-794-5810
Lock & Dam 16	457.2 LDB	33109 102nd Ave. W Illinois City, IL 61259-9261	Mississippi River	309-537-3191	309-537-3191; 309-537-3412
Lock & Dam 17	437.1 LDB	173 Lock and Dam Rd. New Boston, IL 61272	Mississippi River	309-587-8125	309-587-8125; 309-587-8579
Lock & Dam 18	410.5 LDB	2044 Township Road 900 E Gladstone, IL 61437	Mississippi River	309-873-2246	309-873-2246

Upper Mississippi River Locks and Dams
 (Operated by the U.S. Army Corps of Engineers)
 (Continued)

Lock Name	River Mile	Address	Waterbody	Emergency Phone	Contact Phone
Lock & Dam 19	364.3 RDB	525 N Water St. Keokuk, IA 52632	Mississippi River	319-524-2631	319-524-2631; 319-524-0691
Lock & Dam 20	343.2 RDB	17234 N Front St. Canton, MO 63435	Mississippi River	573-288-3320	573-288-3320; 573-288-2100
Lock & Dam 21	324.9 LDB	909 W Lock and Dam Rd. Quincy, IL 62305	Mississippi River	217-222-0918	217-222-0918; 217-222-0352
Lock & Dam 22	301.2 RDB	13556 Highway E New London, MO 63459	Mississippi River	573-221-0294	573-221-0294; 573-221-6463
Lock & Dam 24	273.4 RDB	350 N First St. Clarksville, MO 63336-0038	Mississippi River	573-242-3524	573-242-3524
Lock & Dam 25	241.4 RDB	10 Sandy Slough Rd. Winfield, MO 63389	Mississippi River	636-566-8120; 636-630-5803	636-566-8120
Melvin Price Locks & Dam 26	200.5 RDB	1 Lock and Dam Way East Alton, IL 62024-2400	Mississippi River	608-874-4311	636-899-1543; 618-462-1713
Locks 27 (Chain of Rocks)	185.5 LDB	3291 W 20th St. Granite City, IL 62040-1227	Mississippi River, Chain of Rocks Canal	563-252-1261	618-452-7107

Each Lock and Dam has a detailed SPCC plan that describes the type and location of spill equipment and response materials. Each Lock and Dam has spill equipment to handle spills based on the functions and duties performed at that particular lock and dam.

U.S. Army Corps of Engineers District Boundaries



U.S. Army Corps of Engineers District Hydraulics Contacts

District

Telephone Number

St. Paul District (Headwaters to river mile 614)
Hydraulics Branch – Water Control Section

Elizabeth.A.Nelson@usace.army.mil

(651) 290-5306 (business hours)

Call individual Lockmaster (see page A-6) (24-hour)

Rock Island District (river mile 614 to 300)
Hydraulics Branch

Christopher.M.Trefry@usace.army.mil

(309) 794-5849 (business hours)

(309) 738-4101 (24-hour)

St. Louis District (river mile 300 to 0)
Hydraulics Branch – Water Control Management
Unit

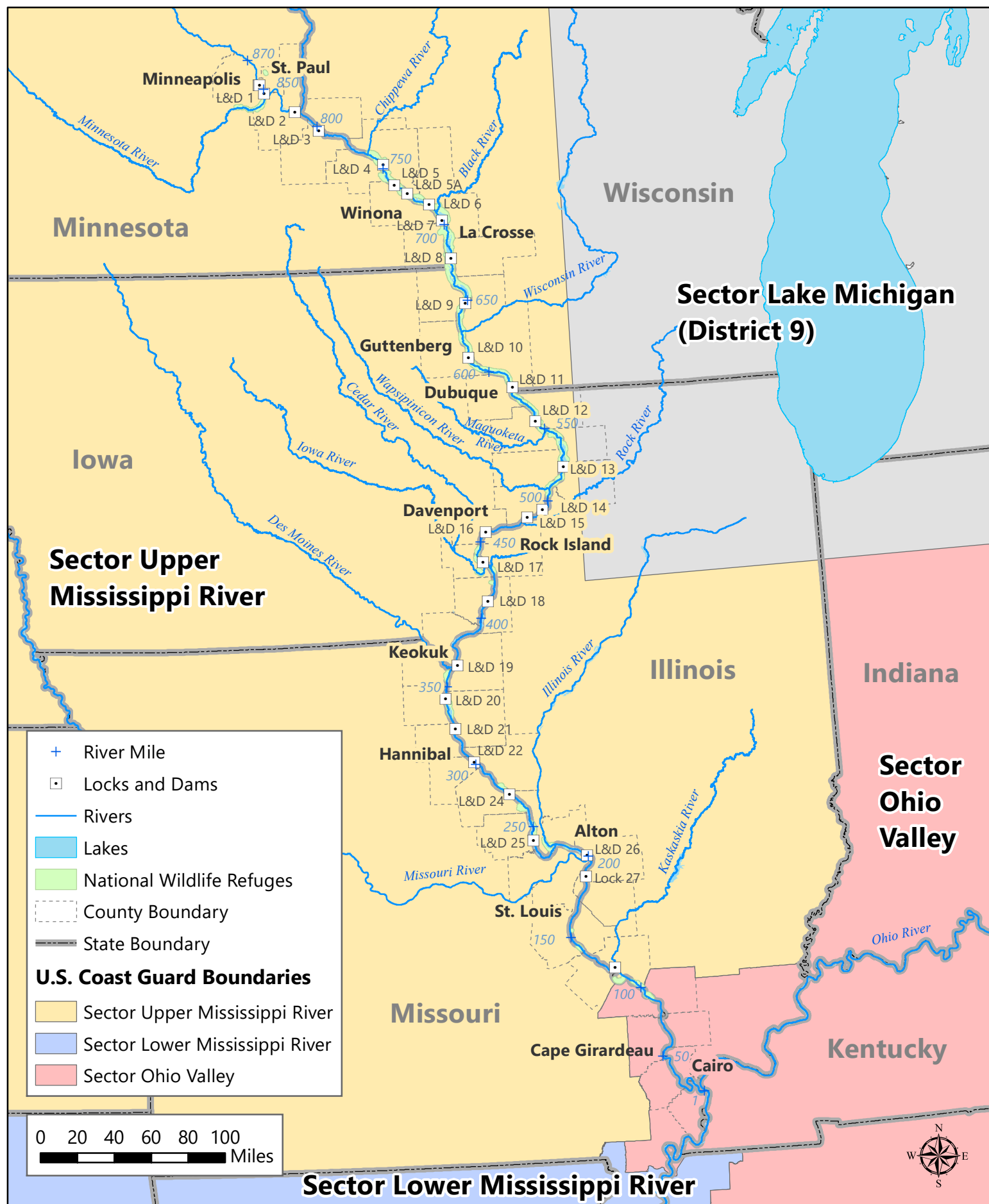
Joan.M.Stemler@usace.army.mil

(314) 331-8330 (business hours)

(800) 432-1208 (business hours 7 days a week)

(314) 630-6292 (24-hour)

U.S. Coast Guard District 8 Marine Inspection Zone Boundaries



U.S. EPA Regional Boundaries



**Upper Mississippi River Hazardous Spills Coordination Group
Cultural and Historic Resource Contacts**

Tribal Contacts

Ho-Chunk Nation

Ho-Chunk Nation Heritage Preservation

Primary Contact Information	Other Key Contacts
Bill Quackenbush, THPO Ho-Chunk Nation Cultural Resources Division 16250 Helmet Road Tomah, WI 54660 Phone: 715-284-7181 x1121 Email: Bill.Quackenbush@Ho-Chunk.com	Researcher/Projects Coordinator: Ira Anderson Phone: 715-284-7181 x1056 Email: Ira.Anderson@Ho-Chunk.com Website: https://ho-chunknation.com/government/executive-branch/heritage-preservation/
Resources: Website: https://ho-chunknation.com/government/executive-branch/heritage-preservation/	

Prairie Island Indian Community

Prairie Island Tribal Historic Preservation Office

Primary Contact Information	Other Key Contacts
Noah White, THPO Prairie Island THPO Office 5636 Sturgeon Lake Road Welch, MN 55089 Phone: 651-385-4175 Email: noah.white@piic.org	Sec. 106 Consultation: Franky Jackson Phone: 651-385-4175 Email: fjackson005@yahoo.com
Resources: Website: http://www.pithpo.org/	

Shakopee Mdewakanton Sioux Community

Shakopee Mdewakanton Sioux Community Cultural Resources

Primary Contact Information	Other Key Contacts
Leonard Wabasha, Director SMSC Cultural Resources 2330 Sioux Trail NW Prior Lake, MN 55372 Phone: 952-496-6120 Email: leonard.wabasha@shakopeedakota.org	
Resources: Website: https://shakopeedakota.org/contact-us/?dept=Cultural-Resources	

State Contacts

ILLINOIS

Illinois Historic Preservation Agency

Primary Contact Information	Other Key Contacts
Carey Mayer, Division Mgr./Deputy SHPO Illinois Historic Preservation Agency 1 Old State Capitol Plaza Springfield, IL 62701-1512 Phone: 217-785-9045 Email: Carey.Mayer2@Illinois.gov Website: www.state.il.us/hpa/ps/	Deputy: C.J. Wallace Phone: 217-785-5027 Email: Carol.Wallace@illinois.gov Archaeologist: Jeffrey Kruchten Phone: 217-785-1279 Email: jeffery.kruchten@illinois.gov
Resources: Historic and Architectural Resources Geographic Information System (HARGIS) http://gis.hpa.state.il.us/hargis/	

IOWA

State Historical Society of Iowa

Primary Contact Information	Other Key Contacts
Heather Gibb, Deputy SHPO State Historical Society of Iowa Iowa Department of Cultural Affairs 600 East Locust Street Des Moines, IA 50319 Phone: 515-281-4137 Email: heather.gibb@iowa.gov	(None identified)
Resources: Website: https://iowaculture.gov/history/preservation	

Office of the State Archaeologist

Primary Contact Information	Other Key Contacts
Dr. John F. Doershuk, State Archaeologist Office of the State Archaeologist 700 South Clinton Street Building The University of Iowa Iowa City, IA 52242 Phone: 319-384-0751 Email: john-doershuk@uiowa.edu	Geographic Information: Colleen Randolph Phone: 319-384-0735 Email: colleen-randolph@uiowa.edu Bioarchaeology Program: Lara Noldner Phone: 319-384-0740 Email: lara-noldner@uiowa.edu
Resources: Website: https://iowaculture.gov/history/preservation	

State Contacts
(Continued)

MINNESOTA

Minnesota Historical Society

Primary Contact Information	Other Key Contacts
Amy Spong, Deputy SHPO Minnesota Historical Society 345 Kellogg Boulevard West St. Paul, MN 55102-1906 Phone: 651-201-3288 Email: amy.spong@state.mn.us	Sarah Beimers, Environmental Review Program Manager Phone: 651-201-3290 Email: sarah.beimers@state.mn.us
Resources: Website: https://www.mnhs.org/preservation	

Office of the State Archaeologist

Primary Contact Information	Other Key Contacts
Amanda Gronhøvd, State Archaeologist Office of the State Archaeologist 328 W Kellogg Blvd. St. Paul, MN 55102 Phone: 651-201-2263 Email: Amanda.Gronhøvd@state.mn.us Responsibilities: authenticating unrecorded burial sites	Bruce Koenen, Assistant State Archaeologist Phone: 651-201-2264 Email: bruce.koenen@state.mn.us
Resources: Website: https://mn.gov/admin/archaeologist/	

MISSOURI

Missouri DNR-State Historic Preservation Office

Primary Contact Information	Other Key Contacts
Dr. Toni Prawl, SHPO State Department of Natural Resources State Historic Preservation Office P.O. Box 176 Jefferson City, MO 65102 Phone: 573-751-7858 Email: toni.prawl@dnr.mo.gov	Deputy: Mike Sutherland Phone: 573-751-2123 Email: mike.sutherland@dnr.mo.gov Cultural Resource Inventory Coordinator: Phone: 573-751-7861
Resources: Website: https://mostateparks.com/page/84371/state-historic-preservation-office	

State Contacts
(Continued)

WISCONSIN

Wisconsin Historical Society

Primary Contact Information	Other Key Contacts
Dr. Michael E. Stevens, SHPO Wisconsin Historical Society 816 State Street Madison WI 53706 Phone: 608-264-6464 Fax: 608-264-6504 Email: michael.stevens@wisconsinhistory.org	Deputy: Jim Draeger Phone: 608-264-6511 Email: jim.draeger@wisconsinhistory.org Archaeologist: John Broihahn Phone: 608-264-6496 Email: John.broihahn@wisconsinhistory.org
Resources: Website: www.wisconsinhistory.org/hp/	

Sources: Region 5 RCP/ACP; individual State SHPO Websites; individual Tribal THPO websites

RESOURCE MANUAL

Section B: Spill Response, Clean-Up, and Related Resources

Boat Accesses on the Upper Mississippi River

River Mile*	Facility Name and Address	Phone	Waterbody	Ramp	Dock	Fuel	Lift
871 RDB	Mississippi River - Point Park E River Park Champlin, MN	763-421-2820	Mississippi River	X			
866.3 LDB	Mississippi River - Coon Rapids 9750 Egret Blvd NW Coon Rapids, MN	763-324-3320	Mississippi River	X			
863.1 RDB	Brooklyn Park 83rd Ave N, at River Park Brooklyn Park, MN	763-493-8333	Mississippi River	X			
860.3 LDB	Mississippi River - I-694 E River Rd, S of I-694 Fridley, MN	763-324-3320	Mississippi River	X			
857.7 RDB	Camden Park Boat Ramp Soo Ave N, S of 37th Ave NE Minneapolis, MN	612-370-4844	Mississippi River	X			
Upper St. Anthony Falls Pool (river mile 857.6 to 853.4)							
855 LDB	Boom Island Park Public Access 724 Sibley St. NE Minneapolis, MN	612-230-6400	Mississippi River	X			
Pool 1 (river mile 853.4 to 847.6) (No Boat Accesses)							
Pool 2 (river mile 847.6 to 815.2)							
846.6 LDB	Hidden Falls Regional Park 1313 Hidden Falls Dr. St. Paul, MN	651-632-5111	Mississippi River	X			
845 RDB	Fort Snelling State Park 101 Snelling Lake Rd. St. Paul, MN	612-279-3550	Mississippi River	X			
844.8 LDB	Watergate Marina 2500 Crosby Farm Rd. St. Paul, MN	651-695-3780	Mississippi River	X	X	X	X
843.1 RDB	Pool & Yacht Club (Marina) 1600 Lilydale Rd. Lilydale, MN	651-455-3900	Mississippi River		X		
842.1 RDB	Lilydale Park 950 Lilydale Rd. St. Paul, MN	651-632-5111	Mississippi River	X			
840.3 RDB	Saint Paul Yacht Club, Upper Harbor (Marina) 100 Yacht Club Rd. W B-1 St. Paul, MN	651-292-8964	Mississippi River		X	X	X
832.5 RDB	South St. Paul Access Verderosa Ave. South Saint Paul, MN	651-306-3690	Mississippi River	X			
830.6 RDB	Twin City Marina 4455 E 66th St. Inver Grove Heights, MN	651-455-9110	Mississippi River	X	X		X
830.3 RDB	River Heights Marina, Inc. 4455 E 66th St. Inver Grove Heights, MN	651-455-4974	Mississippi River	X	X	X	X
829.5 LDB	Lion's Levee Park W 7th Ave. St. Paul Park, MN	651-459-9785	Mississippi River	X			

River Mile*	Facility Name and Address	Phone	Waterbody	Ramp	Dock	Fuel	Lift
829.3 LDB	Willie's Hidden Harbor (Marina) 388 9th Ave. W St. Paul Park, MN	651-321-3862	Mississippi River	X	X	X	X
826 RDB	River Grove Harbor (Marina) 3985 E 102nd St. Inver Grove Heights, MN	651-455-6273	Mississippi River	X	X		
820.2 RDB	Spring Lake Park 13005 Hilary Path Hastings, MN	952-891-7000	Spring Lake, Mississippi River	X			

Pool 3 (river mile 815.2 to 796.9)

814.3 RDB	Jaycee Park Access 420 Lock and Dam Rd. Hastings, MN	651-480-6175	Mississippi River	X			
814.2 LDB	Hub's Landing and Marina 6 Spiral View Loop Rd. Hastings, MN	651-755-6540	Mississippi River	X	X		
812.6 LDB	King's Cove Marina 1 King's Cove Dr. Hastings, MN	651-480-8900	Mississippi River, Conley Lake	X	X	X	X
813.3 RDB	Hastings Marina 1111 1 st St. E Hastings, MN	612-437-9621	Mississippi River; Vermillion River	X	X	X	X
811.5 LDB	Leo's Landing (Marina) 137 Front St. Prescott, WI	715-262-5998	Mississippi River		X	X	
811.4 LDB	Point St. Croix Marina 101 S Front St. Prescott, WI	715-262-3161	Mississippi River		X	X	
811.2 LDB	Prescott Public Boat Launch 2nd St. Prescott, WI	715-262-5544	Mississippi River	X			
811 LDB	Miss-Croix Yacht Harbor (Marina) 451 S 2nd St. Prescott, WI	715-262-5202	Mississippi River		X	X	X
804 RDB	North Lake Public Access On North Lake, 190th St. Way Welch, MN	651-296-1151	North Lake; Twin Lakes	X			
800 RDB	Treasure Island Marina On Sturgeon Lake, 5734 Sturgeon Blvd, Welch, MN	651-385-2575	Sturgeon Lake	X	X	X	
800 LDB	Diamond Bluff Landing 4th St. Diamond Bluff, WI		Mississippi River	X			
798.5 RDB	Sturgeon Lake Public Access Sturgeon Lake Rd. Welch, MN	507-695-6341	Sturgeon Lake	X			

Pool 4 (river mile 796.9 to 752.8)

792.8 LDB	Mr. Sippi N1415 830th St. Hager City, WI	715-792-2992	Wisconsin Channel	X			
792.7 LDB	Trenton Township Boat Landing 825th St. Prescott, WI	262-675-6009	Wisconsin Channel	x	x		
791.4 RDB	Ole Miss Marina at Bay Point Park (Marina) 1429 Levee Rd.	651-388-5839	Mississippi River		x	x	x

<u>River Mile*</u>	<u>Facility Name and Address</u>	<u>Phone</u>	<u>Waterbody</u>	<u>Ramp</u>	<u>Dock</u>	<u>Fuel</u>	<u>Lift</u>
	Red Wing, MN						
791.2 RDB	Red Wing Marina 918 Levee Rd. Red Wing, MN	651-388-8995	Mississippi River		x	x	
790.9 LDB	Harbor Bar Docks, Inc. (Marina) N673 825th St. Hager City, WI	715-792-2417	Mississippi River		x		
790.8 LDB	Trenton Island Yacht Club (Marina) N671 825th St. Hager City, WI	715-792-2035	Mississippi River		X		
790.6 LDB	Island Campground and Marina N650 825th St. Hager City, WI	715-222-1808	Mississippi River	X	X		
791.4 RDB	Bay Point Municipal Park At Bay Point Dr and Levee Rd. Red Wing, MN	651-385-3674	Mississippi River	X			
788.8 RDB	River Valley Marina and Boat Rental 430 Nymphara Ln. Red Wing, MN	651-388-0481	Mississippi River		X	X	
788.8 RDB	Colville Municipal Park Boat Launch 515 Nymphara Red Wing, MN	651-385-3674	Mississippi River	X			
786.7 LDB	Bay City Campground Boat Ramp Lake Pepin Blvd. Bay City, WI	715-594-3229, 715-594-3168	Lake Pepin, Mississippi River	X			
779.7 LDB	Maiden Rock Park Boat Launch Chestnut St., Maiden Rock, WI	715-448-2205	Lake Pepin, Mississippi River	X			
779.2 RDB	Mississippi River Beach Access Lake Ave Way, NE of Frontenac, MN	651 345-3401	Lake Pepin, Mississippi River	X			
776.8 RDB	Hansen's Harbor (Marina) 35853 Hwy 61 Blvd. Lake City, MN	651-345-3022	Lake Pepin, Mississippi River	X	X	X	X
775.2 RDB	Hok-Si-La Park 33240-33398 US Hwy 61, Lake City, MN 55041	651-345-3855	Lake Pepin, Mississippi River	X			
774.4 LDB	Stockholm Municipal Park N2030 Spring St, Stockholm, WI	651-380-8654	Lake Pepin, Mississippi River	X			
773.1 RDB	Ohuta Municipal Park 219 Park St. Lake City, MN	651-525-3248	Lake Pepin, Mississippi River	X			
772.8 RDB	Lake City Marina 201 S Franklin St. Lake City, MN	651-345-4211	Lake Pepin, Mississippi River	X	X	X	X
772 RDB	Roschen Park Access 1205 S Lakeshore Dr., Lake City, MN 55041	651-345-5383	Lake Pepin, Mississippi River	X			
770.5 LDB	Deer Island Boat Landing W11003 W Lake Dr. Pepin, WI	715-442-3171	Lake Pepin, Mississippi River	X			
770.9 RDB	Lake City Sportsman's Club 2200 S Oak St, Lake City, MN	651-345-5383	Mississippi River				
767.2 RDB	Maple Springs Access 70845 - 70899 27th Ave, Lake City, MN	507-206-2847	Lake Pepin, Mississippi River	X			
767 LDB	Pepin Marina, LLC 303 1st St. Pepin, WI	715-442-4900	Lake Pepin, Mississippi River	X	X	X	

River Mile*	Facility Name and Address	Phone	Waterbody	Ramp	Dock	Fuel	Lift
766.9 LDB	Sportsmans Landing 103 1st St. Pepin, WI	715-442-2133	Lake Pepin, Mississippi River	X			
765 RDB	Camp Lacupolis Resort (Marina) 71000 US-61, Lake City, MN	651-565-4318	Lake Pepin, Mississippi River	X	X	X	
763.5 LDB	Chippewa River Landing [RM 2.0 of Chippewa River] WI-35, Alma, WI 54756	608-685-6222	Chippewa River, Mississippi River	X			
760.6 RDB	Mississippi Parkside Marina 829 W 3rd St. Wabasha, MN	651-565-3809	Mississippi River	X	X	X	X
760.6 RDB	Izaak Walton Park 301 Maiden Ave, Wabasha, MN 55981	651-565-4568	Mississippi River	X			
760.3 LDB	US FWS Indian Slough Landing State Rd 25 Nelson, WI	507-454-7351 UMR Refuge Winona Dist.	Indian Slough, Mississippi River	X			
760.3 LDB	US FWS Pontoon Slough Landing State Rd 25 Nelson, WI	507-454-7351 UMR Refuge Winona Dist.	Pontoon Slough, Mississippi River	X			
760.3 LDB	US FWS Beef Slough Landing State Rd 25 Nelson, WI	507-454-7351 UMR Refuge Winona Dist.	Beef Slough, Mississippi River	X			
760.3 LDB	US FWS Mississippi River Access State Rd 25 Nelson, WI	507-454-7351 UMR Refuge Winona Dist.	Big Lake, Mississippi River	X			
759.4 RDB	Wabasha Marina & Boatyard 1009 E Main St. Wabasha, MN	651-565-4747	Mississippi River	X	X	X	X
757.3 RDB	Wilcox Landing Public Access 15876 N Co. Rd. 24 Wabasha, MN 55981	507-206-2847	Robinson Lake	X			
755.3 LDB	Buffalo River Landing Rieck Lake Park, Alma, WI	507-454-7351 UMR Refuge Winona Dist.	Buffalo River, Buffalo Slough, Mississippi River	X			
755.1 LDB	Rieck's Lakeside Park Great River Rd. Alma, WI 54610	888-936-7463	Buffalo Slough, Buffalo River, Rieck's Lake, Mississippi River	X			
754.6 RDB	Peterson Lake Landing 14366 N Co. Rd. 24 Wabasha, MN 55981	507-454-7351 UMR Refuge Winona Dist.	Peterson Lake, Mississippi River	X			
754 LDB	Alma Marina 125 Beach Harbor Rd. Alma, WI	608-685-3333	Mississippi River	X	X	X	
753.7 LDB	Tank Pond Landing 106 – 164 Beach Harbor Rd. Alma, WI	608-685-3330	Beef Slough, Mississippi River	X			
752.9 RDB	Pioneer Campsite Resort (Marina) 64739 140th Ave. Wabasha, MN 55981	507-421-6514	Peterson Lake, Mississippi River	X	X		
Pool 5 (river mile 752.8 to 738.1)							
752.7 RDB	Finger Lake Pioneer Access 64746 140 th St. Wabasha, MN	507-206-2847	Clear Lake, Mississippi River	X			
751.8 LDB	Dairyland Power Landing 500 Old State Hwy 35 Alma, WI	608-785-9994	Mississippi River	X			

<u>River Mile*</u>	<u>Facility Name and Address</u>	<u>Phone</u>	<u>Waterbody</u>	<u>Ramp</u>	<u>Dock</u>	<u>Fuel</u>	<u>Lift</u>
749.8 RDB	Upper West Newton Landing 12978 622nd St. Kellogg, MN 55945	507-206-2847	Mississippi River, West Newton Chute	X			
748 LDB	Great River Harbor (Marina) S2221 Hwy 35 Alma, WI	608-248-2454	Belvedere Slough, Mississippi River	X	X	X	
747.6 RDB	Half Moon Public Access 11800 622nd St. Kellogg, MN 55945	507-454-7351 UMR Refuge Winona Dist.	Half Moon Lake, Mississippi River	X			
746.6 RDB	Prichard Lake Public Access 59750 125th St. Kellogg, MN	507-206-2847	Prichard Lake, Mississippi River	X			
747 LDB	Belvedere Slough Landing S2299 Co. Rd. OO Cochrane, WI	608-785-9994	Belvedere Slough, Mississippi River	X			
744.8 RDB	Weaver Landing 57604 US Hwy 61 Weaver, MN	507-454-7351 UMR Refuge Winona Dist.	Weaver Bottoms, Mississippi River	X			
744.3 LDB	Buffalo City 10th Street Landing 241 W 10th St. Buffalo City, WI	608-248-2262	Belvedere Slough, Mississippi River	X			
743 LDB	Upper Spring Lake Landing 1200 – 1226 S River Rd. Buffalo City, WI	608-685-6222	Spring Lake, Mississippi River	X			
742 RDB	Minneiska Public Landing 306 Bennett Ave. Minneiska, MN	507-206-2847	Spring Lake, Mississippi River	X			
741.1 LDB	Lower Spring Lake Landing S2672 S River Rd. Cochrane, WI	608-785-9994	Spring Lake, Mississippi River	X			
738.2 LDB	Whitman Dam Wildlife Area Kamrowski Rd. Fountain City, WI Downstream of Lock & Dam 5	608-685-6222	Truedale Lake, Mississippi River	X			

Pool 5A (river mile 738.1 to 728.5)

737.8 RDB	Bass Camp Resort (Marina) 12859 Rolbiecki St. Township of Rollingstone, MN	507-689-9257	Mississippi River	X	X	X	
735.7 LDB	Merrick State Park Access Park St. / S 2954 State Hwy 35 Milton, WI	608-687-4936	Fountain City Bay, Mississippi River	X			
735.3 LDB	Merrick State Park South Access Park St. / S 2965 State Hwy 35 Milton, WI	608-687-4936	Fountain City Bay - Mississippi River	X			
732.9 LDB	Fountain City Upper Boat Landing 1 N Shore Dr. Fountain City, WI	608-687-7481	Mississippi River	X			
732.1 LDB	Fountain City Lower Boat Landing Mill St. Fountain City, WI	608-687-7481	Mississippi River	X			
730.5 RDB	Minnesota City Boat Club (Marina) 5 Dike Rd. Minnesota City, MN	507-689-2412	Crooked Slough, Mississippi River	X	X	X	
730.4 RDB	US FWS Verchota Landing 27988 Prairie Island Rd. Winona, MN	507-454-7351 UMR Refuge Winona Dist.	Polander Lake, Mississippi River	X			

River Mile*	Facility Name and Address	Phone	Waterbody	Ramp	Dock	Fuel	Lift
728.7 RDB	Upper McNally Landing 1340 Prairie Island Rd. Winona, MN	507-454-7351 UMR Refuge Winona Dist.	Polander Lake, Mississippi River	X			
Pool 6 (river mile 728.5 to 714.3)							
728.4 RDB	Prairie Island Park Access 1120 Prairie Island Rd. Winona, MN 55987	507-457-8258	Straight Slough, Mississippi River	X			
728.1 LDB	Breezy Point Marina W 656 Breezy Point Ln. Fountain City, WI	608-687-4774	Mississippi River	X	X		
726 LDB	Latsch Island East WI-54 Fountain City, WI	608-687-7481	Mississippi River	X			
726 LDB	Dick's Marina / Winona Municipal Harbor 1 Latsch Island Winona, MN	507-452-3809	Mississippi River	X	X	X	
725.7 LDB	Latsch Island Park and Landing Old Duke Rd. Latsch Island Winona, MN	507-457-8258	Mississippi River	X			
724.9 RDB	Winona Yacht Club (Marina) 24 Laird St. Winona, MN	507-454-5590	Mississippi River		X	X	X
724.7 RDB	St. Charles St. Public Access 704 E Front St. Winona, MN 55987	507-457-8258	Mississippi River	X			
723.7 RDB	E 5th St. Boat Landing 1220 E Wabasha St. Winona, MN 55987	507-457-8258	Mississippi River	X			
720.9 RDB	Homer Boat Ramp 36229 Homer Landing Ln. Winona, MN 55987	507-452-8603	Mississippi River	X			
719.7 LDB	Trempealeau National Wildlife Refuge Access Refuge Rd. Trempealeau, WI	608-539-2311	Trempealeau River, Mississippi River	X			
718 RDB	KOA/Forest River Campground Ramp Hwy 61 County of Winona, MN	507-454-2851	Mississippi River	X			
717.5 LDB	Perrot State Park Boat Access S Park Rd. Trempealeau, WI	608-534-6409	Trempealeau River, Mississippi River	X			
715 RDB	Trout Creek River Access 41084 Big Trout Ln. Winona, MN 55987	507-206-2847	Trout Creek, Mississippi River	X			
714.3 LDB	Sunset Bay Marina 24056 Lock and Dam Rd. Trempealeau, WI	608-534-6033	Mississippi River	X	X	X	
Pool 7 (river mile 714.3 to 702.5)							
714 LDB	WI DNR Trempealeau Public Landing 24056 Lock and Dam Rd. Trempealeau, WI	608-534-6434	Mississippi River	X			
713.4 LDB	Second Lake Access Lake Rd. Trempealeau, WI	608-685-6222	Second Lake, Mississippi River	X			
713.4 LDB	Third Lake Access North Lake Rd.	608-685-6222	Third Lake, Round Lake, Big Marsh	X			

River Mile*	Facility Name and Address	Phone	Waterbody	Ramp	Dock	Fuel	Lift
	Trempealeau, WI		Lake, Mississippi River				
713.4 LDB	Third Lake Access South Lake Rd. Trempealeau, WI	608-685-6222	Third Lake, Round Lake, Big Marsh Lake, Mississippi River	X			
713 LDB	US FWS Long Lake Landing Lake Rd. Trempealeau, WI	608-779-2399 UMR Refuge La Crosse Dist.	Long Lake, Big Marsh Lake, Mississippi River	X			
713 LDB	US FWS Round Lake Landing Birch Ln. Trempealeau, WI	608-779-2399 UMR Refuge La Crosse Dist.	Round Lake, Big Marsh Lake, Mississippi River	X			
707.1 RDB	Dakota Public Access 380 River St. Dakota, MN 55925	507-643-6663	Mississippi River	X			
706.5 LDB	US FWS Brice Prairie Landing W8023 Co. Rd. ZB Onalaska, WI 54650	507-452-4232	Lake Onalaska, Mississippi River	X			
705.1 RDB	Dresbach Park 1709 Park Rd. La Crescent, MN 55947	608-361-8157	Mississippi River	X			
704.5 LDB	Lake Onalaska Ramp/Mosey's Landing W7207 N. Shore Ln. Onalaska, WI 54650	608-781-3100	Black River, Lake Onalaska, Mississippi River	X			
703.8 LDB	La Crosse Sailing Club (Marina) 3600 Lakeshore Dr. La Crosse, WI	608-781-2226	Lake Onalaska, Mississippi River	X	X		
703.8 LDB	Nelson Park Landing 3600 Lake Shore Dr. La Crosse, WI 54603	608-789-2489	Lake Onalaska, Black River, Mississippi River	X			
703.4 LDB	Fishermans Road West Fishermans Rd. La Crosse, WI	608-789-2489	Black River, Mississippi River	X			
703.2 LDB	Fishermans Road East Fishermans Rd. La Crosse, WI	608-789-2489	Black River, Mississippi River	X			
702.5 LDB	Black River – Fishermans Road Landing 543 – 609 Fishermans Rd. La Crosse, WI	608-789-2489	Black River, Mississippi River	X			
702.5 LDB	Upper French Island Spillaway Landing Spillway Dr. La Crosse, WI 54603	608-785-9770	Mississippi River	X			
Pool 8 (river mile 702.5 to 679.2)							
702.4 LDB	Lower French Island Spillaway Landing Spillway Dr. La Crosse, WI 54603	608-785-9770	Mississippi River	X			
702.1 RDB	Upper I-90 Access La Crescent, MN 55947	507-206-2847	Mississippi River	X			
701.8 RDB	Lower I-90 Landing 33492 Aerie Heights Ln. La Crescent, MN 55947	608-779-2399	Mississippi River	X			
700.5 LDB	Black's Cove Marina 2003 Rose St. (Hwy 53) La Crosse, WI	608-781-1212	Black River, Mississippi River	X	X		
699.7 LDB	Northside Beach Boat Ramps 1 & 2 501 Logan St. La Crosse, WI 54603	608-789-7557	Black River, Mississippi River	X			

River Mile*	Facility Name and Address	Phone	Waterbody	Ramp	Dock	Fuel	Lift
699.6 LDB	Veterans Freedom Park Boat Ramp 120 Clinton St, La Crosse, WI	608-789-7557	Black River, Mississippi River	X			
699.5 LDB	French Island Yacht Club (Marina) 132 Marina Dr. La Crosse, WI	608-782-4092	Black River, Mississippi River	X	X		
699.5 LDB	North Bay Marina 127 Marina Dr. La Crosse, WI	608-784-5110	Black River, Mississippi River	X	X	X	X
698.7 RDB	Sportsmen's Landing 1570 US Hwy 14 La Crescent, MN 55947	507-206-2847	Mississippi River, West Channel	X			
696.7 LDB	La Crosse Municipal Boat Harbor, Inc. (Marina) 1500 Houska Dr. La Crosse, WI	608-782-7077	Mississippi River	X	X	X	
695.8 LDB	Green Island Park Boat Ramp 2312 S 7th St. La Crosse, WI	608-789-7557	Swift Creek, Mississippi River	X			
695 LDB	Chut's Landing (Marina) 2700 S 15th St. La Crosse, WI	608-788-1588	Bluff Slough, Mississippi River	X	X		
690.3 RDB	Lawrence Lake Marina 8995 Lawrence Lake Ln, Brownsville, MN	507-482-6615	Lawrence Lake, Mississippi River	X	X		
692.8 LDB	Upper Goose Island Landing Co. Hwy GI Stoddard, WI 54658	608-785-9770	Wigwam Slough, Mississippi River	X			
692.4 LDB	Goose Island Landing Co. Hwy GI Stoddard, WI 54658	715-785-9770	Wigwam Slough, Mississippi River	X			
690.5 LDB	Upper Hunters Point Landing Co. Hwy GI Stoddard, WI 54658	715-785-9770	Wigwam Slough, Mississippi River	X			
690.5 LDB	Hunters Point Landing Co. Hwy GI Stoddard, WI 54658	715-785-9770	Wigwam Slough, Mississippi River	X			
688.3 RDB	Wildcat Park Landing 11011 MN 26 Brownsville, MN 55919	507-482-6250	Mississippi River	X			
688.2 RDB	Lower Wildcat Park Landing 11011 MN Hwy 26 Brownsville, MN 55919	507-482-6250	Mississippi River	X			
686 LDB	Water's Edge Dock & Motel (Marina) 201 N Pearl St. Stoddard, WI	608-457-2126	Mississippi River	X	X	X	
685.5 LDB	Stoddard Park Landing 489 – 499 Lane Elm St. Stoddard, WI	608-457-2136	Mississippi River	X			
681.3 RDB	Renno Public Access MN Hwy 26 Brownsville, MN 55919	507-206-2847	Mississippi River	X			

<u>River Mile*</u>	<u>Facility Name and Address</u>	<u>Phone</u>	<u>Waterbody</u>	<u>Ramp</u>	<u>Dock</u>	<u>Fuel</u>	<u>Lift</u>
679.6 LDB	Engh's Boat Livery (Marina) N 165 WI Hwy 35 Genoa, WI	608-689-2394	Mississippi River	X	X		
679.5 LDB	Genoa Harbor Otter St. Genoa, WI 54632	262-279-6472	Mississippi River	X			
Pool 9 (river mile 679.2 to 647.9)							
677.8 LDB	Dairyland Power Plant Access WI-35, Genoa WI 54632	608-788-4000	Thief Slough, Mississippi River	X			
677 RDB	Millstone Landing MN Hwy 26 Caledonia, MN	608-326-0515	Reno Bottoms, Minnesota Slough, Hayshore Lake, Mississippi River	X			
676 RDB	Visgers Landing 21300-23694 MN Hwy 26 Caledonia, MN 55921	608-326-0515	Visgers Lake, Ice Haul Slough, Minnesota Slough, Mississippi River	X			
675.2 LDB	Bad Axe Landing WI-35 De Soto, WI 54624	608-648-2700	Bad Axe River, Mississippi River	X			
673.3 RDB	New Albin Landing Army Rd. Lansing, IA 52151	505-725-8200	Mississippi River	X			
672.6 LDB	Victory Boat Landing Gatenbien Rd. De Soto, WI 54624	608-648-3583 Town of Wheatland clerk	Mississippi River	X			
671.2 LDB	Blackhawk County Park Boat Ramp Blacktop Rd. De Soto, WI 54624	608-648-3314	Mississippi River	X			
670.9 LDB	Blackhawk Upper Access Blacktop Rd. De Soto, WI 54624	608-648-3314	Mississippi River, Battle Slough	X			
670.4 LDB	Blackhawk Park Access Blacktop Rd. De Soto, WI	608-648-3314	Mississippi River, Peck Lake	X			
670.4 LDB	Blackhawk Park South – Green Lake Blacktop Rd. De Soto, WI	608-648-3314	Green Lake, Mississippi River	X			
669.7 LDB	Earl's Boat Landing S7743 – S7751 WI-35 De Soto, WI	608-648-2700	De Soto Bay, Mississippi River	X			
667.3 LDB	De Soto Landing 10153 WI-35 De Soto, WI	608-648-2700	Mississippi River	X			
665.4 LDB	Winneshiek Slough Landing WI-82 De Soto, WI	608-326-0515	Winneshiek Slough, Mississippi River	X			
663.4 LDB	Big Slough Landing WI-82 De Soto, WI	608-326-0515	Mississippi River, Lafayette Slough	X			

River Mile*	Facility Name and Address	Phone	Waterbody	Ramp	Dock	Fuel	Lift
662.4 RDB	S&S Houseboat Rentals (Marina) 990 S Front St. Lansing, IA	563-358-4454	Mississippi River	X	X	X	X
662 RDB	Village Creek Area Access 69 – 81 Lansing Harpers Rd. Lansing, IA	563-538-9229	Mississippi River, Village Creek	X			
660 RDB	Power Plant Access Great River Rd. Lansing, IA	563-538-9229	Mississippi River	X			
657.9 LDB	Ferryville Landing 312 Market St. Ferryville, WI	608-734-9406	Lake Winneshiek, Mississippi River	X			
656 RDB	Lansing Township Access River View Rd. Township of Lansing, IA	563-538-4757	Mississippi River	X			
654.2 RDB	Heytman's Station Landing 2685 – 2699 Heytman Dr. Lansing, IA	563-538-4757	Mississippi River	X			
653 LDB	Cold Springs Landing WI-35 Eastman, WI 54626	608-326-0515	Winneshiek Lake, Mississippi River	X			
651.2 LDB	Lynxville Public Landing River Rd. Lynxville, WI	608-326-0235	Mississippi River	X			
651 LDB	Harbor Boat Ramp 309 Spring St. Lynxville, WI	608-326-0235	Mississippi River	X			
649.5 LDB	Mississippi River Access 25098 – 25624 WI-35 Eastman, WI	608-326-0235	Mississippi River	X			
Pool 10 (river mile 647.9 to 615.1)							
647 LDB	Vard Landing Gordon's Bay Rd., WI-35 Eastman, WI	608-785-9994	Mississippi River	X			
647 LDB	Gordon's Bay Landing Gordon's Bay Rd., WI-35 Eastman, WI	608-785-9994	Mississippi River	X			
646.2 RDB	Harpers Ferry Public Launch 427 N 1st St. Harpers Ferry, IA	563-586-2777	Mississippi River, Harpers Slough	X			
646.2 RDB	Babe's Boat Landing (Marina) 317 N 1st St. Harpers Ferry, IA	563-586-2261	Harpers Slough, Mississippi River	X	X	X	
645.8 RDB	Brown's Riverside Court & Marina 137 N 1st. Harpers Ferry, IA	563-586-2607	Harpers Slough, Mississippi River	X	X		
645.8 RDB	Delphey Brothers Marina 133 N First St. Harpers Ferry, IA	563-586-2382	Harpers Slough, Mississippi River	X	X	X	

River Mile*	Facility Name and Address	Phone	Waterbody	Ramp	Dock	Fuel	Lift
645.6 RDB	End of the Line Boat Marina 241 S First St. Harpers Ferry, IA	563-586-2475	Harpers Slough, Mississippi River	X	X		
644.3 LDB	Sioux Coulee Wayside WI-35 Eastman, WI	608-874-4345	Mississippi River	X			
644 RDB	Lund's Landing (Marina) 751 Hwy 364 Harpers Ferry, IA	563-586-2187	Harpers Slough, Mississippi River		X	X	
643.1 LDB	Frenchman's Landing 28741 Frenchman's Landing Dr. Prairie Du Chien, WI 53821	608-874-4345	Mississippi River	X			
642.6 RDB	Nobels Island Launch Paint Rock Rd, Harpers Ferry, IA	515-281-6158	Harpers Slough, Mississippi River	X			
639.2 LDB	Ambrough Slough Landing 31849 N. Ambro Rd. Prairie Du Chien, WI	608-326-0515	Ambrough Slough, Mississippi River	X			
638.7 LDB	Greymore Lake / Ambrough Landing Ambro Rd. Prairie Du Chien, WI 53821	608-326-8818	Ambrough Slough, Mississippi River	X			
638.2 LDB	Winneshiek Marina 32785 Co. Rd. K Prairie du Chien, WI	608-326-2888	Grenmore Lake, Mississippi River	X	X	X	X
638.7 LDB	Lakeview Resort (Marina) 32398 Lakeview Ct. Prairie du Chien, WI	608-326-8182	Mississippi River	X			
635.6 LDB	North Water St. Landing N Water St. Prairie Du Chien, WI	608-326-7207	Mississippi River	X			
635.7 LDB	Marina Ramp N St. Feriole St. Prairie Du Chien, WI 53821	608-326-7207	Mississippi River	X			
635.7 LDB	West Cedar St. Landing 626 N Main St. Prairie Du Chien, WI 53821	608-326-7207	Mississippi River	X			
635.3 LDB	Lawler Park Access 287 – 299 N Water St. Prairie Du Chien, WI	608-326-7207	Mississippi River	X			
637.4 RDB	Yellow River Access 107 IA-76 McGregor, IA	515-281-6158	Mississippi River	X			
634.7 RDB	Water St. Marina 98 Waters St. Marquette, IA	563-873-3735	Mississippi River	X	X	X	
633.5 RDB	McGregor Marina 125 Main St. McGregor, IA	563-873-3795	Mississippi River	X	X	X	
633.5 LDB	Lockwood Access 405 West Lockwood St. Prairie Du Chien, WI	608-326-7207	Mississippi River	X			

<u>River Mile*</u>	<u>Facility Name and Address</u>	<u>Phone</u>	<u>Waterbody</u>	<u>Ramp</u>	<u>Dock</u>	<u>Fuel</u>	<u>Lift</u>
633.2 LDB	Big River Campground 106 W Paquette St. Prairie Du Chien, WI	608-326-2712	Mississippi River	X			
629.5 LDB	Wyalusing State Park Boat Launch Long Valley Rd. Bagley, WI	608-996-2261	Wyalusing Lake, Mississippi River	X			
627.9 LDB	Wyalusing Public Access 12025 Co. Hwy X Wyalusing, WI	608-723-2711	Mississippi River	X			
627.1 RDB	Sny-McGill Access Great River Rd. McGregor, IA	563-873-2341	Wyalusing Slough, Mississippi River	X			
624.7 RDB	Clayton Municipal Ramp 101 S Front St. Clayton, IA	563-964-2875	Mississippi River	X			
624 LDB	Bagley Bottoms Boat Landing Bohringer Ln. Bagley, WI	608-326-0515	Glass Lake, Mississippi River	X			
622.4 LDB	River of Lakes Resort 132 Packer Dr. Bagley, WI	608-996-2275	Jay's Lake, Mississippi River	X	X	X	
622 LDB	Jay's Lake Landing Pine Ln. Bagley, WI	608-326-0515	Jay's Lake, Mississippi River	X			
621.2 RDB	Willies Landing 274 Mallard Ln. Garnavillo, IA	563-964-2331	Mississippi River	X			
618.2 LDB	Glen Haven Public Landing 13299 Main St. Glen Haven, WI	608-794-2640	Mississippi River	X			
616.4 RDB	Bussey Lake Landing Marina Rd. Guttenberg, IA	563-252-1161	Mississippi River	X			
616.3 RDB	Guttenberg Marina Marina Rd. Guttenberg, IA	563-252-2563	Mississippi River	X	X	X	X
Pool 11 (river mile 615.1 to 583.0)							
613 LDB	Schleicher's Landing 7110 Closing Dam Rd. Cassville, WI	608-725-5216	Cassville Slough, Mississippi River	X			
612.2 RDB	Camp Hide-A-Way Ramp 314 Hideaway Ln. Guttenberg, WI	563-252-1305	Mississippi River	X			
607.7 RDB	Turkey River Boat Landing Oak Rd. Holy Cross, IA	563-873-2341	Mississippi River / Turkey River	X			
607.7 LDB	Power and Light Landing 11999 Co. Rd. W Cassville, WI	608-725-5180	Mississippi River	X			

<u>River Mile*</u>	<u>Facility Name and Address</u>	<u>Phone</u>	<u>Waterbody</u>	<u>Ramp</u>	<u>Dock</u>	<u>Fuel</u>	<u>Lift</u>
606.3 LDB	Riverside Park Boat Ramp 90 E Crawford St. Cassville, WI 53806	608-725-5855	Mississippi River	X			
605.8 LDB	Jack Oak Road Boat Ramp 1034 Jack Oak Rd. Cassville, WI	608-725-5855	Jack Oak Slough, Mississippi River	X	X		
603.5 RDB	Lowell's Landing (Marina) 112 Clark St. North Buena Vista, IA	563-245-2422	Mississippi River	X	X	X	
601.5 LDB	Bertom Lake Public Access Far Nuff Rd. Cassville, WI	608-326-0515	Coalpit Slough, Mississippi River	X			
598.7 LDB	McCartney Landing 2705 Co. Rd. N Potosi, WI 53820	608-822-3501	McCartney Lake, Mississippi River	X			
596.7 LDB	Lynn Hollow Access 4801 Lynn Hollow Ln. Potosi, WI	608-822-3501	Spring Lake, Mississippi River	X			
596 RDB	Finley's Landing 24500 Finley's Landing Rd. Sherrill, IA	319-552-1571	Mississippi River	X			
592.3 LDB	Potosi Public Access Point Rd. Potosi, WI	608-763-2261	Mississippi River	X			
591 LDB	Grant River Recreation Area Park Ln. Potosi, WI	608-822-3501	Mississippi River	X			
589.5 RDB	Mud Lake Park Access Mud Lake Rd. Dubuque, IA	563-552-2746	Mississippi River	X			
589.5 RDB	Hawkeye Boat Marina 22500 Gold Lake Rd. Dubuque, IA	563-557-0313	Mississippi River	X	X	X	
583.1 LDB	Pool 11 Access Eagle Point Rd. Jamestown, WI	608-822-3501	Mississippi River	X			
583 LDB	Sunfish Lake Landing Eagle Point Rd. Jamestown, WI	608-822-3501	Mississippi River	X			
Pool 12 (river mile 583.0 to 556.7)							
582 RDB	A.Y. McDonald Park Landing Hawthorne St. Dubuque, IA	563-589-4100	Mississippi River	X			
580.9 RDB	Schmitt Harbor Marina Ramp 1801 Admiral Sheehy Dr. Dubuque, IA	563-589-4100	Mississippi River	X			
580.7 RDB	Dubuque Yacht Basin Marina 1630 E 6th St. Dubuque, IA	563-588-9564	Mississippi River	X	X	X	X

<u>River Mile*</u>	<u>Facility Name and Address</u>	<u>Phone</u>	<u>Waterbody</u>	<u>Ramp</u>	<u>Dock</u>	<u>Fuel</u>	<u>Lift</u>
579.5 LDB	East Dubuque Municipal Ramp Boat Ramp Rd. East Dubuque, IL	815-747-3416	Mississippi River	X			
578.8 LDB	Mid-Town Marina 285 5th St. East Dubuque, IL	815-747-3310	Mississippi River	X	X	X	X
577.9 LDB	Snyder Bent Prop Marina 780 Harbor Dr. East Dubuque, IL	815-554-6196	Mississippi River	X			
576.1 LDB	Frentress Lake Marine Center Marina 830 W Gill Rd. East Dubuque, IL	815-747-3155	Frentress Lake, Mississippi River	X	X	X	X
573.8 RDB	Massey Marina 9526 Massey Marina Ln. Dubuque, IA	563-556-3416	Molo Slough, Mississippi River	X	X	X	
566.5 LDB	North Ferry Landing (Marina) 299 Ferry Landing Rd. Galena, IL	815-777-1050	Harris Slough, Mississippi River	X			
561 LDB	Chestnut Mountain Resort (Marina) 8700 W Chestnut Rd. Galena, IL	815-777-1320	Yonkers Lake, Mississippi River	X	X		
559.6 RDB	Spruce Creek Harbor and Marina 30711 396th Ave. Bellevue, IA	563-652-3783	Mississippi River	X	X		
558.4 LDB	Blanding Landing Recreation Area 5720 S River Rd. Hanover, IL	815-591-2326	Mississippi River	X			
Pool 13 (river mile 556.7 to 522.5)							
556.5 RDB	Bellevue Municipal Landing 101 S Riverview Dr. Bellevue, IA 52031	563-872-4456	Mississippi River	X			
556 RDB	Point Pleasant Boat Landing 907 Riverview St. Bellevue, IA	563-872-4456	Mississippi River	X	X	X	
555.7 RDB	Bellevue State Park 24245 N Riverview Dr. Bellevue, IA 52031	563-872-4019	Mississippi River	X			
552.9 RDB	Pleasant Creek Public Use Area 19995 US Hwy 52 Bellevue, IA	563-582-0881	Mississippi River	X			
551.3 LDB	Savanna Army Depot Access 18935 B Street Savanna, IL	815-273-8312	Crooked slough, Mississippi River	X			
540 LDB	Lazy River Marina 6850 Marina Rd. Savanna, IL	815-273-2251	Mississippi River, Miller's Lake	X	X		
537.4 LDB	Marquette Park Municipal Landing Wayne Kind Dr. Savanna, IL	866-367-6505	Mississippi River	X			

<u>River Mile*</u>	<u>Facility Name and Address</u>	<u>Phone</u>	<u>Waterbody</u>	<u>Ramp</u>	<u>Dock</u>	<u>Fuel</u>	<u>Lift</u>
536.9 LDB	Savanna Marina 1 Main St. Savanna, IL	815-273-2955	Mississippi River	X	X	X	
536 RDB	Bard's Lake Access 5050 607th Ave. Sabula, IA 52070	563-687-2772	Mississippi River, Town Lake	X			
535.7 RDB	North Sabula Access 301 47th St. Sabula, IA, 52070	563-687-2420	Mississippi River	X			
535.5 RDB	Sycamore St. Landing 202 River St. Sabula, IA 52070	563-687-2420	Mississippi River	X			
534.7 RDB	Island City Harbor (Marina) 305 South Ave. Sabula, IA	563-687-2825	Mississippi River	X	X	X	X
534.4 RDB	South Sabula Access 1516 South Ave. Sabula, IA	563-652-3783	Lower Sabula Lake; Mississippi River	X			
532.5 LDB	Winter's Spring Lake Resort 8050 IL-84 Savanna, IL 61074	815-273-4595	Mississippi River	X			
531.2 LDB	Big Slough Access 5999 Riverview Rd. Thomson, IL 61285	815-259-3628	Mississippi River	X			
526.6 LDB	Thomson Causeway Landing Potter Rd. Thomson, IL	815-259-2353	Potters Slough, Mississippi River	X			
525.5 RDB	Bulger's Hollow Public Use Area Bulgars Hollow Rd. Clinton, IA 52732	815-259-3628	Mississippi River	X			
524 LDB	Mickelson's Landing 23001 Railroad Ln. Fulton, IL 61252	815-273-2732	Potters Slough, Mississippi River	X			
522.7 LDB	Lock & Dam 13 Public Use Area 6568 Lock Rd. Fulton, IL 61252	815-259-3628	Mississippi River	X			
Pool 14 (river mile 522.5 to 493.3)							
521 RDB	30th Avenue Ramp 1 30th Ave. N Clinton, IA 52732	563-242-2144	Mississippi River	X			
520.6 RDB	25th Avenue Ramp 2593 Grant St. Clinton, IA 52732	563-242-2144	Mississippi River	X			
519.8 LDB	Fulton Marina 1800 4th St. Fulton, IL 61252	319-243-1111	Mississippi River	X			
519 RDB	Clinton Marina, 9th Ave Ramp 935 Roosevelt St. Clinton, IA	563-242-3600	Mississippi River	X	X	X	X

River Mile*	Facility Name and Address	Phone	Waterbody	Ramp	Dock	Fuel	Lift
517.7 LDB	Cattail Slough Public Use Area 17220 Diamond Rd. Fulton, IL 61252	815-273-2732	Sunfish Slough, Mississippi River	X			
517 RDB	Clinton Municipal Ramp 1801 S 4th St. Clinton, IA 52732	563-242-2144	Beaver Slough, Mississippi River	X			
513.6 LDB	Albany Public Access Ramp 202 N Water St. Albany, IL	309-887-4308	Mississippi River	X			
512.1 RDB	Comanche Marina 115 4th Ave. Camanche, IA	563-259-1514	Mississippi River	X	X		
512 RDB	Comanche 5th Ave. Ramp 116 5th Ave. Camanche, IA 52730	563-259-8342	Mississippi River	X			
511.9 RDB	Camanche 6th Ave. Ramp 100 6th Ave. Camanche, IA 52730	563-259-8342	Mississippi River	X			
511.8 RDB	Comanche 8th Ave. Ramp 100 8th Ave. Camanche, IA 52730	563-259-8342	Mississippi River	X			
510.8 RDB	Comanche Municipal Ramp Park Dr. Camanche, IA 52730	563-259-8342	Mississippi River	X			
507.9 RDB	Rock Creek Marina and Campground 3942 291st St. Camanche, IA	563-259-1876	Rock Creek, Mississippi River	X	X	X	
503.5 LDB	Cordova Public Ramp, 10th St. 10th St. N Cordova, IL 61242	309-654-2646	Mississippi River	X			
503.4 RDB	Princeton WMA – Mississippi River 29298 266th St. Princeton, IA 52768	563-652-3132	Steamboat Slough, Mississippi River	X			
503.2 LDB	The Boathouse 501 Main Ave. Cordova, IL 61242	309-654-2515	Mississippi River	X	X		
502.8 LDB	Mississippi River (Cordova) 101 2nd Ave. S Cordova, IL 61242	309-654-2646	Mississippi River	X			
502.5 RDB	Princeton Beach Marina 203 River Dr. Princeton, IA	563-289-5024	Mississippi River	X	X		
502.3 RDB	Clemens Park Landing 562 288th Ave. Princeton, IA 52768	563-289-5315	Mississippi River	X	X		
500.3 LDB	Camp Hauberg Boat Access 12928 Route 84 N Port Byron, IL 61275	309-523-2168	Mississippi River	X			
497.7 LDB	Port Byron Landing 120 N Main St. Port Byron, IL	309-523-3705	Mississippi River	X			

<u>River Mile*</u>	<u>Facility Name and Address</u>	<u>Phone</u>	<u>Waterbody</u>	<u>Ramp</u>	<u>Dock</u>	<u>Fuel</u>	<u>Lift</u>
497.2 RDB	LeClaire Municipal Ramp / Buffalo Bill Museum 200 N Cody Rd. Le Claire, IA 52753	536-289-5580, 563-289-4242	Mississippi River	X			
496.3 LDB	Shuler's Shady Grove Park 1128 1st Ave. Port Byron, IL 61275	309-496-2321	Mississippi River	X			
495.7 RDB	Captain's Quarters Marina 1211 Canal Shore Dr. SW LeClaire, IA	563-289-5050	Mississippi River	X	X	X	
494.9 RDB	Green Gables Marina 2315 Canal Shore Dr. SW LeClaire, IA	563-289-5652	Mississippi River	X	X	X	X

Pool 15 (river mile 493.3 to 482.9)

492.9 RDB	Lock and Dam 14 Landing 25199 SE 182nd St. Bettendorf, IA 52722	309-794-4357	Mississippi River	X			
493 LDB	Illinewek Campground Ramp 1st. Ave. Hampton, IL 61256	309-496-2620	Mississippi River	X			
491.8 LDB	Hampton 6th St. Ramp 529 N 1st Ave Hampton, IL	309-755-7165	Mississippi River	X			
489.8 LDB	Island Marina 400 Island Ave. East Moline, IL 61244	308-755-0492	Mississippi River		X		X
488.3 LDB	Moline Municipal Ramp (East) 5453 Old River Dr. Moline, IL 61265	309-524-2000	Mississippi River	X			
486.5 LDB	Moline Municipal Ramp (West) 2859 River Dr. Moline, IL 61265	309-524-2000	Mississippi River	X			
485.6 RDB	Leach Park Landing 100 12th St. Bettendorf, IA 52722	563-344-4113	Mississippi River	X			
484.1 RDB	Lindsay Park Yacht Club (Marina) Mound St. Davenport, IA	563-324-1317	Mississippi River	X	X	X	X
483.1 LDB	Rock Island Arsenal Landing Davenport Dr. Rock Island, IL	309-732-2000	Mississippi River	X			
483 LDB	Lock & Dam 15 Access 201 – 299 W River Dr. Davenport, IA	563-326-7711	Mississippi River	X			

Pool 16 (river mile 482.9 to 457.2)

481.6 RDB	Veterans Memorial Park Access 374 S Marquette St. Davenport, IA 52802	615-793-3224	Mississippi River	X			
480.5 RDB	Credit Island Park Landing Credit Island Rd.	563-326-7711	Mississippi River	X			

<u>River Mile*</u>	<u>Facility Name and Address</u>	<u>Phone</u>	<u>Waterbody</u>	<u>Ramp</u>	<u>Dock</u>	<u>Fuel</u>	<u>Lift</u>
	Davenport, IA 52802						
480 LDB	Rock Island Boat Club (Marina) (East) 1706 Mill St. Rock Island, IL	309-732-2282	Mississippi River	X			
480 LDB	Rock Island Boat Club (Marina) (West) 1706 Mill St. Rock Island, IL	309-732-2282	Mississippi River	X			
479.9 LDB	Sunset Park Ramps Sunset Ln. Rock Island, IL 61201	309-732-2282	Mississippi River	X			
479.6 LDB	Rock island Sunset Marina 1309 Mill St. Rock Island, IL	309-732-2282	Lake Potter, Mississippi River	X			
479.2 RDB	Buese Boat Launch 2444 S Concord St. Davenport, IA 52802	563-326-7711	Mississippi River	X			
473 RDB	Buffalo Municipal Ramp 514 W Front St. Buffalo, IA 52728	563-381-2226	Mississippi River	X			
473 LDB	Kelly's Landing (Andalusia Harbor) (Marina) 102 2nd St. W Milan, IL 61264	309-236-3006	Andalusia Slough, Mississippi River	X	X	X	
471.9 RDB	Buffalo Shores Park Access 1433 W Front St. Buffalo, IL	563-328-3281	Mississippi River	X			
471.5 LDB	Ducky's Lagoon (Marina) 13515 W 78th Ave. Taylor Ridge, IL	309-798-2423	Andalusia Slough, Mississippi River	X	X	X	
470.1 LDB	Andalusia Slough Public Use Area 15061 78th Ave. W Taylor Ridge, IL 61284	563-263-7913	Mississippi River	X			
469 LDB	Public Use Area 16928 78th Ave. W Taylor Ridge, IL 61284	309-795-1040	Mississippi River	X			
468.4 RDB	Clark's Ferry Federal Recreation Area 1961 Tombstone Trl. Montpelier, IA 52759	563-263-7913	Mississippi River	X			
467 LDB	Loud Thunder Forest Preserve Access Pub Boat Ramp Illinois City, IL 61259	309-795-1040	Andalusia Slough, Mississippi River	X			
464.7 RDB	Shady Creek Recreation Area 3550 IA-22 Muscatine, IA 52761	563-262-8090	Mississippi River	X			
463.3 RDB	Fairport Landing Marina 2142 Water St. Muscatine, IA 52761	563-264-8660	Mississippi River	X	X	X	
462.8 RDB	Izaak Walton League Ramp 2380 IA-22 Muscatine, IA 52761	563-649-2288	Mississippi River	X			
461.9 RDB	Fairport Recreation Area (E) 3279 IA-22 Muscatine, IA 52761	563-263-4337	Mississippi River	X			
461.8 RDB	Fairport Recreation Area (W) 3279 IA-22 Muscatine, IA 52761	563-263-4337	Mississippi River	X			

<u>River Mile*</u>	<u>Facility Name and Address</u>	<u>Phone</u>	<u>Waterbody</u>	<u>Ramp</u>	<u>Dock</u>	<u>Fuel</u>	<u>Lift</u>
Pool 17 (river mile 457.2 to 437.1)							
455.7 RDB	Riverside Park (Muscatine E) 694 – 698 O'Brian Pkwy Muscatine, IA	563-263-0241	Mississippi River	X	X		
455.2 RDB	Riverside Park (Muscatine W) 51 Harbor Dr. Muscatine, IA 52761	563-263-0241	Mississippi River	X			
454.2 RDB	Mississippi River 102nd Ave. W Illinois City, IL 61259	309-558-3510	Mississippi River	X			
449.8 LDB	Blanchard Island Recreation Area 34785 176th Ave W New Boston, IL	563-263-7913	Blanchard Chute, Mississippi River	X			
446.8 LDB	Mississippi River (Eliza) 1674 15th St. New Boston, IL 61272	309-582-7021	Mississippi River	X			
446.7 RDB	Kilpeck Landing Recreation Area 8413 172nd St. Muscatine, IA 52761	563-263-7913	Mississippi River	X			
443.6 RDB	Big Timber Access 14858 Co. Rd. X61 Muscatine, IA 52761	563-264-1550	Mississippi River	X			
442.8 RDB	Flaming Prairie Campground Access 14624 Co. Rd. X61 Muscatine, IA 52761	319-523-8381	Mississippi River	X			
441 RDB	Port Louisa NWR (N) 9800 120th St. Wapello, IA 52653	319-523-6982	Mississippi River	X			
Pool 18 (river mile 437.1 to 410.5)							
435 RDB	Toolesboro Access Prairie St. Wapello, IA 52653	319-523-4091	Mississippi River	X			
433.7 RDB	Ferry Landing Recreation Area 6998 Co. Rd. X71 Oakville, IA 52646	309-794-4523	Mississippi River	X			
433.1 LDB	New Boston Public Access Oak St. New Boston, IL 61272	309-587-8181	Mississippi River	X			
433 LDB	New Boston Ramp 1st St. New Boston, IL 61272	309-587-8181	Mississippi River	X			
428.1 LDB	Mark Twain NWR (Keithsburg) 4th St. Keithsburg, IL 61442	217-224-8580	Mississippi River	X			
427.3 LDB	Keithsburg Riverside Campground Ramp (N) 400 3rd St. Keithsburg, IL 61442	319-457-3555	Mississippi River	X			
427.2 LDB	Keithsburg Riverside Campground Ramp (S) 400 3rd St. Keithsburg, IL 61442	319-457-3555	Mississippi River	X			
424.1 LDB	Riverview Access Area Road 1325E Keithsburg, IL 61442	309-374-2311	Mississippi River	X			
422.7 LDB	Putney's Landing Access Putney's Landing Access Rd. Bald Bluff Township, IL	309-374-2496	Campbell Slough, Mississippi River	X			

<u>River Mile*</u>	<u>Facility Name and Address</u>	<u>Phone</u>	<u>Waterbody</u>	<u>Ramp</u>	<u>Dock</u>	<u>Fuel</u>	<u>Lift</u>
422 RDB	Hawkeye Dolbee Access 235th St. Oakville, IA 52646	319-766-2981	Huron Chute, Mississippi River	X			
417.4 LDB	Delabar State Park Access Oquawka, IL 61469	309-374-2496	Mississippi River	X			
416 RDB	Casey Barrow Landing 1803 180th St. Burlington, IA 52601	319-753-8260	Mississippi River	X			
415.8 LDB	Oquawka Municipal Ramp Schuyler St. Oquawka, IL	309-867-3481	Mississippi River	X	X		
415.7 LDB	Oquawka Municipal Ramp (S) 205 Marina Dr. Oquawka, IL	309-867-3481	Mississippi River	X			
415.2 LDB	Pier 415 Marina 216 Marina Dr. Oquawka, IL 61469	309-867-3481	Mississippi River	X	X	X	
Pool 19 (river mile 410.5 to 364.2)							
410.1 LDB	Henderson Creek Access 1675N Gladstone, IL 61437	309-867-3291	Mississippi River	X			
409 RDB	Tama Beach Public Access 13980 Tama Rd. Burlington, IA 52601	515-725-8200	Otter Slough, Mississippi River	X			
404.6 RDB	Bluff Harbor Marina 800 N Front St. Burlington, IA 52601	319-753-2590	Mississippi River	X	X	X	
404.1 RDB	Burlington Public Access 400 N Front St. Burlington, IA 52601	319-753-8124	Mississippi River	X			
403.8 RDB	Burlington Public Access (S) 100 N Front St. Burlington, IA 52601	319-753-8124	Mississippi River	X			
401.8 RDB	Cascade Boat Club 1 Cascades Roadway Burlington, IA 52601	319-754-7144	Mississippi River	X			
400.3 LDB	Shokokon Access Water St. N Carman, IL 61425	309-867-3291	Shokokon Slough, Mississippi River	X			
397.9 RDB	Sullivan Slough Access Sullivan Slough Rd. Burlington, IA 52601	319-753-8124	Mississippi River	X			
390 LDB	Dallas City Public Access W 1st St. Dallas City, IL 62330	319-572-6134	Mississippi River	X			
390.2 RDB	Green Bay Access 2112 Green Bay Rd. Wever, IA 52658	319-463-7673	Mississippi River	X			
388.6 LDB	Pontoosuc Public Access Warren St. Pontoosuc, IL 62330	319-572-6134	Mississippi River	X			
383.9 RDB	Willow Patch Access 2 Ave. G Fort Madison, IA 52627	319-372-7700 x 201	Mississippi River	X			
383.5 RDB	Riverview Marina 844-850 Riverview Dr. Fort Madison, IA	319-372-7700 x 201	Mississippi River	X	X	X	

River Mile*	Facility Name and Address	Phone	Waterbody	Ramp	Dock	Fuel	Lift
379.3 RDB	53rd St. Public Access 53rd St. Fort Madison, IA 52627	319-372-7700 x 201	Mississippi River	X			
376.8 LDB	Nauvoo Boat Access 2419 N Sycamore Haven Dr. Nauvoo, IL 62354	217-453-2587	Mississippi River	X			
376.4 RDB	Lee County Conservation Board Access 2652 US Hwy 61 Montrose, IA 52639	319-463-7673	Mississippi River	X			
375 RDB	Riverview Park Access 111 N First St. Montrose, IA	319-463-5533	Mississippi River	X	X		
369.2 LDB	Larry Creek Access N Co. Rd. 0 Nauvoo, IL 62354	217-453-6648	Mississippi River	X			
366.1 RDB	Keokuk Yacht Club 2029 River Rd. Keokuk, IA	319-524-9469	Mississippi River	X			
365 LDB	Chaney Creek Access 1413 N Co. Rd. 0 Hamilton, IL 62341	217-847-2936	Mississippi River	X			

Pool 20 (river mile 364.2 to 343.2)

364 LDB	Montebello State Park Access 223 US Hwy 136 Hamilton, IL 62341	217-817-2936	Mississippi River	X			
363 RDB	Keokuk Public Access Mississippi Dr. Keokuk, IA 52632	319-524-2050	Mississippi River	X			
359.2 RDB	Alexandria Landing Sycamore St. Alexandria, MO 63430	660-727-3283	Mississippi River	X			
359.1 LDB	Warsaw Boat Landing 425 Water St. Warsaw, IL	217-256-3214	Mississippi River	X	X		
347.7 RDB	Fenway Landing 130th St. Canton, MO 63435	573-288-4413	Mississippi River	X			

Pool 21 (river mile 343.2 to 324.9)

342.4 RDB	Canton Public Access Ramp Front St. Canton, MO 63435	573-288-4413	Mississippi River	X			
342.6 LDB	Canton Ferry Landing 2600 – 2696 E 30th St. Warsaw, IL	217-256-3214	Mississippi River	X			
340.7 LDB	Bear Creek Recreation Area Co. Rd. 2400N Ursa, IL 62376	563-263-7913	Canton Chute, Mississippi River	X			
331.5 LDB	Knapheide Landing S Knapheide Landing Rd. Quincy, IL 62305	217-228-4500	Canton Chute, Mississippi River	X			
329 LDB	Twin Oaks Club 2707 Bonansinga Dr. Quincy, IL 62301	217-222-0662	Mississippi River	X			
328.7 LDB	Quincy Bay Boat Access – Bob Bangert Park Bonansinga Dr. Quincy, IL 62305	217-223-7703	Quincy Bay, Mississippi River	X			

<u>River Mile*</u>	<u>Facility Name and Address</u>	<u>Phone</u>	<u>Waterbody</u>	<u>Ramp</u>	<u>Dock</u>	<u>Fuel</u>	<u>Lift</u>
327 LDB	Hampshire St. Ramp 117 Hampshire St. Quincy, IL 62301	217-228-4500	Mississippi river	X			
326.4 LDB	South Side Boat Club 640 S Front St. Quincy, IL	217-222-1187	Mississippi River	X			
Pool 22 (river mile 324.9 to 301.2)							
324.6 LDB	Lock & Dam 21 Public Access 99 Martindale Rd. Quincy, IL 62305	563-263-7913	Mississippi River	X			
321.5 RDB	Fabius Chute Access Co. Rd. 342 Taylor, MO 63471	573-248-2530	Mississippi River, Fabius River	X			
320 RDB	Northeast Missouri Power Access 2800 Co. Rd. 359 Palmyra, MO 63461	573-769-2223	Mississippi River	X			
309.2 LDB	John Hay Recreation Area 315th Ave. Hull, IL 62343	563-263-7913	Mississippi River	X			
308.9 RDB	Nipper Marina 101 Broadway Hannibal, MO	573-406-1272	Mississippi River	X			
Pool 24 (river mile 301.2 to 273.4)							
301 RDB	Lock and Dam 22 Public Access 13575 Riverview Dr. New London, MO 63459	563-263-7913	Mississippi River	X			
296.2 LDB	Cincinnati Landing Access 245th Ave. New Canton, IL 62356	217-285-7000	Mississippi River	X			
294 RDB	DuPont Reservation Conservation Area Pike 165 Ashburn, MO 63433	573-248-2530	Mississippi River	X			
288 LDB	Kiser Creek Public Access (N) Kiser Creek Rd. Rockport, IL 62370	217-285-7000	Mississippi River	X			
288 LDB	Kiser Creek Access (S) Kiser Creek Rd. Rockport, IL 62370	217-285-7000	Mississippi River	X			
284.2 LDB	Ralph's Landing Ralphs Landing Rd. Rockport, IL 62370	573-242-3524	Mississippi River	X			
283.2 LDB	Two Rivers Marina US Hwy 54 Rockport, IL 62370	217-437-2321	Mississippi River	X	X	X	X
282.9 RDB	Louisiana Public Access 105 S Carolina St. Louisiana, MO 63353	573-754-4132	Mississippi River	X			
280.6 LDB	Gosline Public Access Ralphs Landing Rd. Rockport, IL 62370	573-242-3524	Mississippi River	X			
277.1 RDB	Calumet Creek Access 14738 MO-79 Clarksville, MO 63336	573-248-2530	Mississippi River	X			
276 RDB	Clarksville State Game Refuge Access MO-79 Clarksville, MO 63336	573-242-3336	Mississippi River	X			

<u>River Mile*</u>	<u>Facility Name and Address</u>	<u>Phone</u>	<u>Waterbody</u>	<u>Ramp</u>	<u>Dock</u>	<u>Fuel</u>	<u>Lift</u>
273.6 LDB	Lock and Dam 24 Access Clarksville Rd. Pleasant Hill, IL 62366	573-242-3524	Mississippi River	X			
Pool 25 (river mile 273.4 to 241.4)							
273 LDB	Pleasant Hill Pump Station Access Pump Station Rd. Pleasant Hill, IL	573-242-3524	Clarksville slough	X			
273.2 RDB	Clarksville Riverfront Park Access 101 Main Cross Clarksville, MO 63336	573-242-3336	Mississippi River	X			
265.3 LDB	Rip Rap Road Ramp Rip Rap Rd. Nebo, IL 62355	618-232-1467	Mississippi River	X			
260.4 LDB	Mozier Landing Access 130 Co. Rd. 2 Hamburg, IL	618-232-1467	Mississippi River	X			
258.5 LDB	Hamburg Public Access 400 – 424 Co. Rd. 2 Hamburg, IL	618-232-1467	Mississippi River	X			
258.5 RDB	Hamburg Ferry Access State Hwy P Annada, MO 63330	573-248-2530	Mississippi River	X			
257.7 RDB	Timberlake Marina 40 N River Rd. Elsberry, MO	573-898-2077	Mississippi River, Westport Chute	X	X	X	
254.2 LDB	Reds Landing State Fish and Waterfowl Management Area Ramp Co. Rd. 200N Hamburg, IL 62045	618-232-1467	Mississippi River	X			
252 RDB	Leach Memorial Conservation Area S Harbor Rd. Elsberry, MO 63343	573-898-5588	Mississippi River	X			
251 RDB	Hurricane Public Access Sterling Harbor Rd. Elsberry, MO 63343	573-898-5588	Mississippi River	X			
246.2 LDB	Turner Hollow Road Landing Turner Hollow Rd. Batchtown, IL 62006	618-576-9700	Mississippi River	X			
245 RDB	Foley Public Access Boat Launch 199 Harmony Harbor Rd. Foley, MO 63347	636-538-6300	Mississippi River	X			
243 LDB	Cockrell Hollow Access Area Cockrell Hollow Rd. Batchtown, IL 62006	618-576-9700	Batchtown Lake, Mississippi River	X			
241.5 RDB	Lock & Dam 25 Landing 502 Pillsbury Rd. Winfield, MO	636-566-8120	Mississippi River	X			
Pool 26 (river mile 241.4 to 200.5)							
236.4 RDB	Dalbow Boat Ramp 610 Dalbow Rd. O'Fallon, MO 63366	314-877-6014	Cuivre River, Mississippi River	X			
231.6 RDB	Riverbend Marina 2407 Hwy C St. Charles, MO	636-946-2073	Mississippi River	X	X	X	X
231.5 RDB	Two Branch Marina 2021 Hwy C	636-946-2628	Mississippi River	X	X	X	

River Mile*	Facility Name and Address	Phone	Waterbody	Ramp	Dock	Fuel	Lift
	St. Charles, MO						
227.2 RDB	Riverside Harbor Ramp 1598 Kampsville Dr. St. Charles, MO 63301	636-946-5535	Mississippi River, Dardenne Slough	X			
226.8 RDB	South Shore Marina 1014 Urna St. Charles, MO 63301	636-250-4344	Dardenne Slough, Mississippi River	X	X		
225.3 RDB	Yacht Club of St. Louis (Private) 105 Lake Village Dr. St. Charles, MO 63301	636-250-4435	Dardenne Slough, Mississippi River	X			
224.5 RDB	Lake Center Marina 498 Lake Center St. Charles, MO	636-250-7500	Dardenne Slough, Mississippi River	X	X		
223.5 RDB	River Island Marina 800 Wilson Rd. St. Charles, MO 63301	636-250-4480	Dardenne Slough, Mississippi River	X	X		
223 LDB	Deer Plain Landing Quarry Rd. Golden Eagle, IL 62036	618-576-9700	Mississippi River	X			
222.8 RDB	Woodland Marina 125 Harbor Dr. St. Charles, MO	636-250-3446	Dardenne Slough, Mississippi River	X	X	X	
222.4 RDB	North Shore Yacht Club (Marina) 601 N Shore Dr. St. Charles, MO	516-883-9823	Mississippi River, Dardenne Slough	X	X		
222 RDB	Polestar Harbor (Marina) 6171 Hwy V St. Charles, MO	636-250-3008	Mississippi River, Dardenne Slough	X	X	X	X
221.7 RDB	Port Charles Marine (Marina) 6247 Hwy V St. Charles, MO	636-250-2628	Mississippi River, Dardenne Slough	X	X	X	X
219 RDB	Sherwood Harbor Marina 29 Sherwood Harbor Dr. Portage Des Sioux, MO	636-250-4400	Mississippi River	X			
218.3 LDB	Grafton Public Boat Ramp Vine St. Grafton, IL 62037	618-786-3344	Mississippi River	X			
213.8 RDB	Hide-A-Way Harbor 1550 Hideaway Harbor Dr. Portage Des Sioux, MO 63373	636-949-7900	Mississippi River	X			
212.9 RDB	Longshot Marina 1545 Riverview Dr. Portage Des Sioux, MO	636-899-0904	Mississippi River	X	X	X	X
212.5 RDB	Palisades Yacht Club (Marina) 1670 River View Dr. Portage Des Sioux, MO	636-899-1093	Mississippi River	X	X	X	X
209.4 LDB	Piasa Harbor Marina 10815 Lockhaven Rd. Godfrey, IL 62035	618-467-2265	Piasa Chute, Mississippi River	X	X	X	X
209.4 LDB	Piasa Creek Public Access Hazelnut Ln. Godfrey, IL 62035	618-466-3324	Mississippi River	X			
207.8 RDB	Dresser Island Drive Ramp Dresser Island Dr. West Alton, 63386	800-725-2966	Brick House Slough, Mississippi River	X			
205.4 RDB	Alta Villa Public Access 21 Alta Vista Rd. West Alton, MO 63386	800-725-2966	Mississippi River, Brick House Slough	X			

<u>River Mile*</u>	<u>Facility Name and Address</u>	<u>Phone</u>	<u>Waterbody</u>	<u>Ramp</u>	<u>Dock</u>	<u>Fuel</u>	<u>Lift</u>
204.4 RDB	Harbor Point Yacht Club 280 Jamie Circle West Afton, MO	636-899-1513	Mississippi River	X			
202.9 RDB	Lincoln Shields Recreation Area Ramp Lock and Dam Rd. West Alton, MO 63386	636-899-1734	Mississippi River	X			
202.3 LDB	Alton Riverside Ramp 1 Hentry St. Alton, IL	618-463-3500	Mississippi River	X	X	X	

Lock and Dam 26 to Lock 27 (river mile 200.5 to 185.0)

200.4 RDB	Melvin Price Lock and Dam Boat Access Riverlands Dr. West Alton, MO 63386	618-462-1713	Mississippi River	X			
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Lock 27 to Cairo, IL (river mile 185.0 to 0.0)

158.4 RDB	Hoppie's Marina 6024 Windsor Harbor Ln. Kimmswick, MO	636-467-6154	Mississippi River	X	X	X	
149.7 RDB	Hugs Landing 275 Hugs Landing Rd. Crystal City, MO	636-937-6029	Mississippi River	X			
140.5 RDB	Truman Access Bloomsdale, MO 63627	573-483-2660	Mississippi River	X			
125.4 RDB	Ste. Genevieve-Modac Ferry Landing Little Rock Rd. Ste. Genevieve, MO 63670	573-883-5400	Mississippi River	X			
122.5 RDB	Ste. Genevieve Landing Marina Dr. Ste. Genevieve, MO 63670	573-883-5400	Mississippi River	X			
109.4 LDB	Chester Public Ramp Water St. Chester, IL 62233	618-826-2326	Mississippi River	X			
79.8 LDB	Grand Tower Boat Ramp 600 Front St. Grand Tower, IL 62942	618-687-7240	Mississippi River	X			
66.6 RDB	Trail of Tears Mississippi River Boat Launch 2165 Moccasin Springs Rd. Jackson, MO 63755	573-243-3568	Mississippi River	X			
52.8 RDB	Red Star Access Ramp 1200 N Water St. Cape Girardeau, MO	573-290-5730	Mississippi River	X			
43.9 LDB	Thebes Municipal Boat Landing 2nd St. Thebes, IL 62990	618-734-7000	Mississippi River	X			
39.7 RDB	Commerce Access 463 N Water St. Scott City, MO 63780	563-326-8643	Mississippi River	X			

* LDB = Left Descending Bank
RDB = Right Descending Bank

Source: Upper Mississippi River Basin Association, unpublished data prepared for the U.S. Environmental Protection Agency's Region 5 Inland Sensitivity Mapping Project, March 2022.

State Hazardous Materials Disposal Requirements

	Non-RCRA Regulated Debris and Soil (See also following pages for additional disposal regulations/options)	RCRA Hazardous Debris and Soil	List of Emergency Response Contractors
Illinois	<ul style="list-style-type: none"> - Debris and soil above cleanup objectives are special waste and must go to special waste landfill (permit, manifesting, and licensed waste hauler required) - Clean debris and soil can go to sanitary landfill - Permits expedited through IEPA Emergency Response 	<ul style="list-style-type: none"> - Illinois has one RCRA landfill, several incinerators and other RCRA treatment facilities - Permits expedited through IEPA Emergency Response 	<ul style="list-style-type: none"> - Available verbally from IEPA
Iowa	<ul style="list-style-type: none"> - Must go to permitted sanitary landfill - IDNR prior approval required 	<ul style="list-style-type: none"> - Iowa does not have a RCRA program - No RCRA disposal facilities in Iowa 	<ul style="list-style-type: none"> - Available from IDNR
Minnesota	<ul style="list-style-type: none"> - Expedite through MPCA spills and emergency response team 	<ul style="list-style-type: none"> - Expedite through MPCA spills and emergency response team 	<ul style="list-style-type: none"> - Available from MPCA
Missouri	<ul style="list-style-type: none"> - Go to sanitary landfill - Special waste permits required 	<ul style="list-style-type: none"> - Must go to RCRA facility - Spiller must determine if RCRA hazardous 	<ul style="list-style-type: none"> - Duty officer will assist on request
Wisconsin	<ul style="list-style-type: none"> - May go to engineered solid waste landfill - On site containment may be considered 	<ul style="list-style-type: none"> - In state treatment or disposal preferred - No RCRA disposal site - RCRA treatment, storage available 	<ul style="list-style-type: none"> - Available from WDNR

State Hazardous Materials Disposal Requirements
(Continued)

	Petroleum Contaminated Water	Land Farming	Pesticides and Fertilizers
Illinois	<ul style="list-style-type: none"> - NPDES permit required for all direct discharges including storm sewers - Local approval required for discharge to sanitary sewer 	<ul style="list-style-type: none"> - Possible, demonstration permit necessary, significant containment and monitoring required 	<ul style="list-style-type: none"> - Recovered liquids and solids may be applied to agricultural land according to label application rates. Permission needed of IEPA or IL Dept. of Agriculture
Iowa	<ul style="list-style-type: none"> - Can discharge to storm or sanitary sewer with approval from IDNR and POTW 	<ul style="list-style-type: none"> - Allowed if IDNR criteria followed 	<ul style="list-style-type: none"> - Recovered liquids and solids may be applied to agricultural land at normal rates, with approval by IDNR
Minnesota	<ul style="list-style-type: none"> - MPCA spills staff may authorize emergency discharges, may require treatment before discharge 	<ul style="list-style-type: none"> - Guidance available for petroleum contaminated soil - Permit needed for more than 10 cubic yards 	<ul style="list-style-type: none"> - Regulated by MN Dept. of Agriculture
Missouri	<ul style="list-style-type: none"> - Emergency discharge authorization may be granted for decanting, may go to POTW with their approval 	<ul style="list-style-type: none"> - Various remedial technologies considered on a site-specific basis - NPDES permit required - Contact the Water Pollution Control Program at 573-751-1300 	<ul style="list-style-type: none"> - Recovered materials may be used as product in accord with MO Department of Agriculture - Waste disposed as a RCRA or special waste - Contact the Hazardous Waste Program at 573-751-3176
Wisconsin	<ul style="list-style-type: none"> - WPDES permit probably required - Emergency discharge may be authorized to prevent an emergency condition threatening public health, safety, or welfare 	<ul style="list-style-type: none"> - Guidance available for petroleum contaminated soil 	<ul style="list-style-type: none"> - Recovered materials may be applied to agricultural lands per label instructions. Guidance available from WI Dept. of Agriculture

State Hazardous Materials Disposal Requirements

(Continued)

	Petroleum Contaminated Soils	Open Burning
Illinois	<ul style="list-style-type: none"> - Generic permits available at some landfills - See debris and soil and land farming discussions 	<ul style="list-style-type: none"> - Allowed with permission for oil production spill residues when weather threatens environmental damage - Considerations are proximity to residences, visibility on roads, and atmospheric dispersion conditions
Iowa	<ul style="list-style-type: none"> - Excavated soil may be incinerated at an approved incinerator, land-applied at a permitted sanitary landfill, or land-farmed on property with the approval of the owner as long as IDNR criteria are followed 	<ul style="list-style-type: none"> - Generally prohibited - Variance possible through IDNR
Minnesota	<ul style="list-style-type: none"> - May be incinerated at approved incinerator - May be land-farmed following guidelines and permit rules 	MPCA spills and emergency response team authorized to approve oil spill burning after consultation with local officials and DNR approval.
Missouri	<ul style="list-style-type: none"> - Virgin material spill debris can go to sanitary landfill if not RCRA waste - May be treated by alternate technologies on a site-specific basis - NPDES permits and generic permits available - Debris must not contain any free liquids - Contact the Solid Waste Management Program at 573-751-5401 	<ul style="list-style-type: none"> - Permission of Air Pollution Control Program (573-751-4817) and local fire officials required - Considerations are proximity to populated areas and ozone exclusion zones - Overseen by SOSOC
Wisconsin	Guidance available for spills, see RCRA hazardous waste. Land farming, bio piles, and asphalt incorporation are options.	<ul style="list-style-type: none"> - Generally prohibited - Variance/exemption includes: burning of explosive or dangerous material with no other safe means of disposal, burning at rural or isolated solid waste disposal sites outside the SE Wisconsin Intrastate AQCR which may have a written exemption under s. NR 506, burning of special waste where permits are obtained from WDNR, burning of gaseous or liquid waste in a manner approved by WDNR. Must comply with all local and state fire protection regulations.

IDNR Iowa Department of Natural Resources
 IEPA Illinois Environmental Protection Agency
 MPCA Minnesota Pollution Control Agency
 NPDES National Pollutant Discharge Elimination System

POTW Publicly Owned Treatment Works
 RCRA Resource Conservation and Recovery Act
 WDNR Wisconsin Department of Natural Resources

Oil Spill Liability Trust Fund

The following text is adapted from information found on the United States Coast Guard's National Pollution Funds Center (NPFC) website at www.uscg.mil/npfc/. For more information regarding the Oil Spill Liability Trust Fund (OSLTF), including forms and claims instructions, please visit the website or contact the NPFC at 703-872-6000.

Funding of Oil Spills Under the Oil Spill Liability Trust Fund

The Oil Spill Liability Trust Fund (OSLTF) is a billion-dollar fund established to help pay removal costs and damages resulting from oil spills or substantial threats of oil spills to navigable waters of the United States. *The OSLTF is used only for costs not directly paid by the polluter*, also referred to as the responsible party (RP). Additionally, the fund can be used to pay costs to respond to "mystery spills," for which the source has not been identified.

The OSLTF has two major components:

- The *Emergency Fund* is available for Federal On-Scene Coordinators (FOSCs) to respond to oil discharges and for Federal natural resource trustees to initiate natural resource damage assessments. The Emergency Fund is capitalized by an annual \$50 million apportionment from the OSLTF.
- The remaining *Principal Fund* balance is used to pay claims and to fund appropriations by Congress to Federal agencies to administer the provisions of OPA and support research and development.

The United States Coast Guard's National Pollution Funds Center (NPFC), in Arlington, Virginia, manages use of the OSLTF.

Who Can Access the Fund?

Federal On-Scene Coordinators (FOSCs) can obtain immediate access to a funding account and ceiling for incident response through a web application managed by the NPFC.

Other Federal, State, Local, and Indian tribal government agencies assisting the FOSC can get reimbursable funding authority via an FOSC-approved Pollution Removal Funding Authorization (PRFA). NPFC works with the FOSCs and the agencies to put PRFAs in place.

Natural resource trustees (as designated by the President of the United States, state, territorial governor, or Indian tribal governing authority) have several tools for accessing the OSLTF to pay for natural resource assessments and restoration.

Other claimants (individuals, corporations, and government entities) can submit claims for uncompensated removal costs and OPA damages (listed below) caused by the oil spill to the NPFC if the RP does not satisfy their claims. NPFC adjudicates the claims and pays those with merit.

What Can the Fund be Used for?

Federal Removal Costs, which include payment to cleanup contractors (Oil Spill Response Organizations [OSROs]), overtime for government personnel, equipment used in removal operations (generally at

established standard rates or lease costs), testing to identify the type and source of oil, disposal of recovered oil and oily debris, and preparation of associated cost documentation.

Other Claims for costs and damages as specified in OPA:

- Uncompensated removal costs,
- Natural resource damages (NRD),
- Real/personal property,
- Loss of profits,
- Loss of subsistence use of natural resources,
- Loss of government revenues,
- Increased costs of government services, and
- Claims from RPs asserting a defense to liability.

Limitations to Accessing the OSLTF

The following conditions must be met in order for OSLTF funds to be used:

- The discharge (or substantial threat of discharge) must be into or on the navigable waters of the United States or adjoining shorelines or the Exclusive Economic Zone (EEZ).
- The discharge (or substantial threat of discharge) must be *oil*, which can include petroleum, fuel oil, sludge, oil refuse, and oil mixed with wastes other than dredged spoil; however, it cannot include any substance which is specifically listed or designated as a hazardous substance under Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).
- In general, the maximum amount available from the OSLTF per incident is \$1 billion or the balance in the OSLTF, whichever is less, and:
 - Funding for Federal removal (including response to a substantial threat) and natural resource damage pre-assessment activities is limited to the funds available in the OSLTF Emergency Fund, which receives an apportionment of \$50 million on October 1st of each fiscal year (another \$100 million can also be advanced from the OSLTF Principal Fund if necessary).
 - Natural resource damage claims are limited to a maximum of \$500 million per incident.

RESOURCE MANUAL

Section C: Sensitive Human and Wildlife Resources

Sensitive/Critical Fish and Wildlife Habitat of the Upper Mississippi River

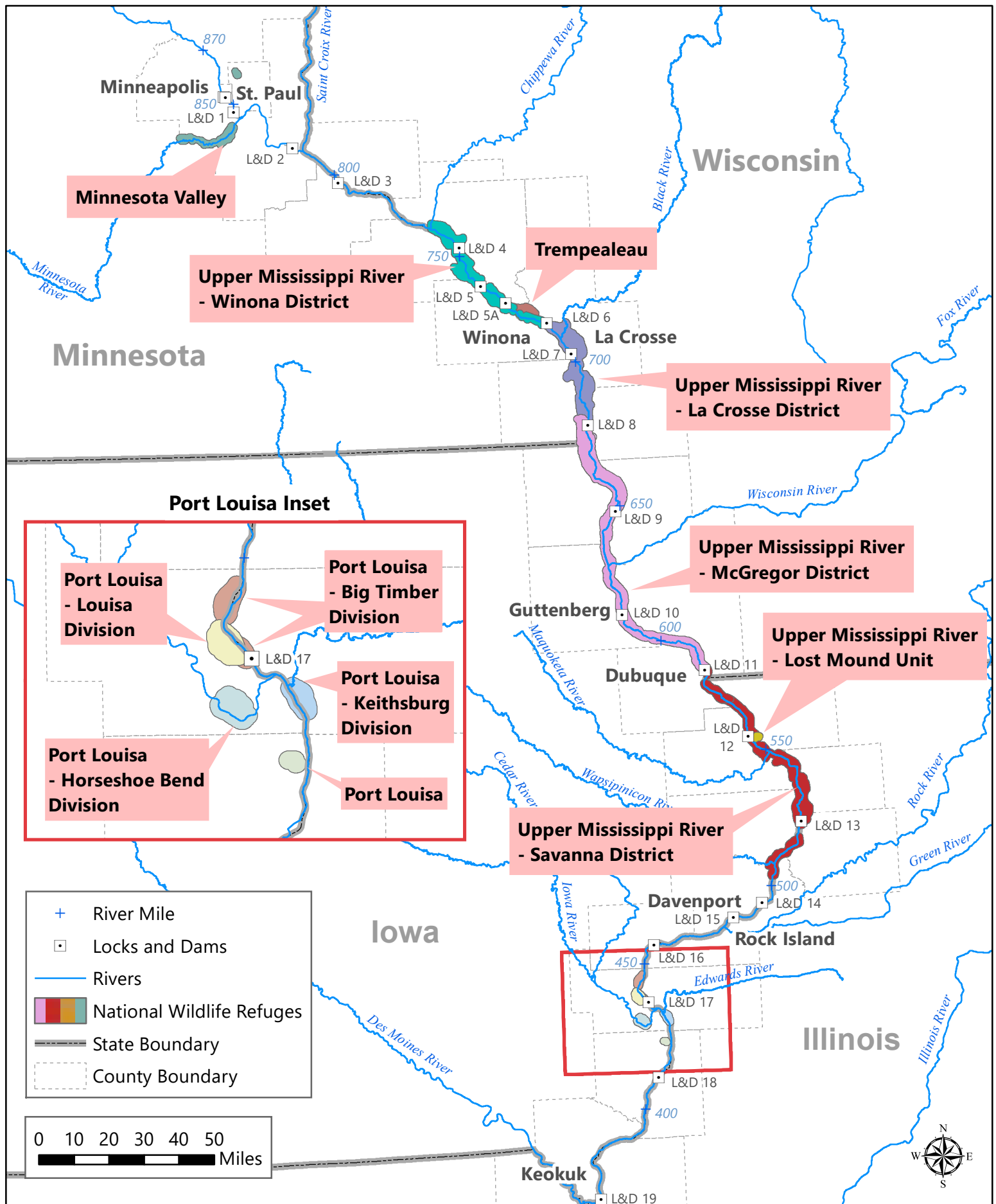
The Upper Mississippi River and its floodplain constitute a complex, ever-changing ecosystem. An extensive network of river lakes, backwater wetlands, ponds, sloughs and floodplain forest combine with main and side channels to provide valuable habitat for fish and wildlife, including numerous state and federally listed endangered and threatened species. State and federal agencies have long recognized the unique and irreplaceable habitat the Upper Mississippi River and its floodplain provide. Many state-owned Scientific Natural Areas, Preserves, and Wildlife Management Areas are located along the river. Also bordering and encompassing portions of the river are several National Wildlife Refuges (see maps on pages C-10 and C-11). One of these - the Upper Mississippi River National Wildlife and Fish Refuge (UMR NWFR) - consists of some 200,000 acres of aquatic, floodplain, and island habitat. The UMR NWFR's non-contiguous holdings extend from Wabasha, Minnesota to Rock Island, Illinois, a distance of more than 280 miles. The Upper Mississippi Refuge receives approximately 3.5 million visits annually, making it the most frequently visited National Wildlife Refuge in the United States.

Shallow backwater areas, which provide essential habitat for fish, furbearers, waterfowl, shorebirds, and raptors, are generally regarded as the most valuable habitat. However, the relative importance of **all** Upper Mississippi River habitat types varies seasonally or even daily due to the changing life history needs - and resulting distribution patterns - of fish and wildlife species, as well as to the variable nature of the river itself. Waterfowl and shorebirds concentrate by the tens of thousands at numerous locations along the river in spring and fall migrations, during which time they may be particularly vulnerable from a population standpoint to oil or hazardous substances spills. Eagles and other raptors forage extensively along the river year-round and may themselves be adversely affected by feeding on prey which have been affected by a spilled substance. The use of deep, shallow, flowing, and calm water habitats by fish species varies with their wintering, spawning, and nursery needs. The concentrating effects of locks and dams and wing dams may put large numbers of fish at risk as spilled materials move downriver. Mussel beds, many consisting of threatened or endangered species, and other aquatic invertebrate populations are particularly vulnerable to spills due to their relative immobility and sensitivity to toxic agents. The most dramatic, readily observable spill effect - i.e., oiling and/or toxicity-related mortality to fish and wildlife - is often short-lived. However, similar, more subtle effects on aquatic invertebrate communities and emergent and submerged aquatic vegetation beds may result in the reduction of an area's habitat value and foodchain productivity for months or years following a spill event.

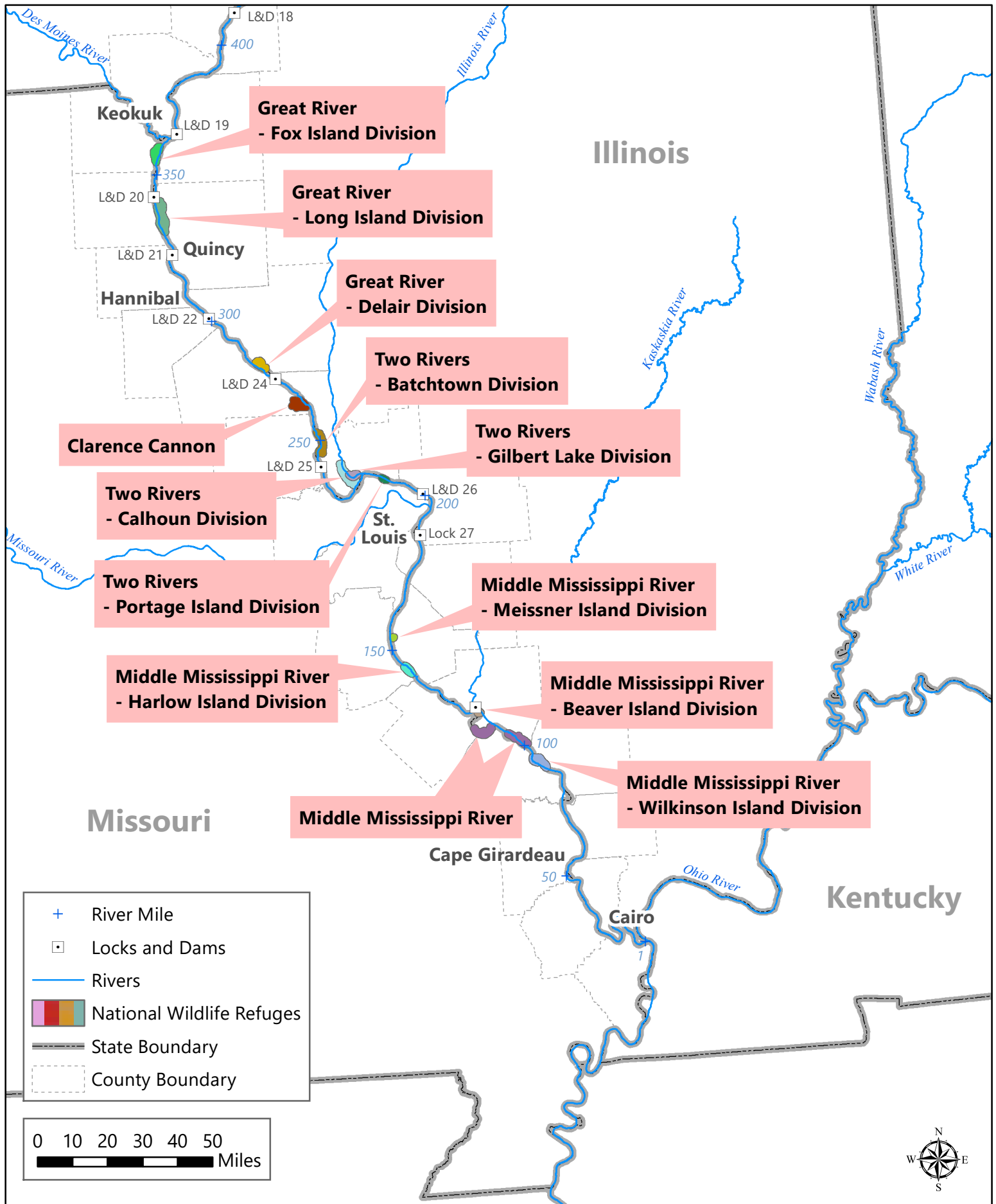
Both state and federal biologists and conservation officers have responsibilities for fish and wildlife management and conservation throughout the Upper Mississippi River region. Pages C-12 and C-13 list U.S. Fish and Wildlife Service personnel who can assist spill response coordinators in identifying and protecting critical fish and wildlife resources in the event of a spill on the river. Due to the continually changing nature of the Upper Mississippi and its resources, it is imperative that natural resource personnel be notified early in the spill response process in order to provide the best possible assistance.

National Wildlife Refuges Along the Upper Mississippi River

(Minneapolis, MN to Keokuk, IA)



National Wildlife Refuges Along the Upper Mississippi River (Keokuk, IA to Cairo, IL)



Divisions of the **U.S. Fish and Wildlife Service** (Service) with natural resource responsibilities along the Upper Mississippi River include Ecological Services, Refuges, Fisheries, Migratory Birds, and Law Enforcement. Personnel from each of these divisions are located in a variety of field stations along the river and are available to assist an On-Scene Coordinator in identifying and protecting fish and wildlife resources during spill response.

Contacts are provided for Refuge and Non-Refuge lands along the Upper Mississippi River. Additionally, contacts are indicated for specific Refuges with the river pools. (See maps on pp. C-10 and C-11.)

NOTE: During business hours, U.S. Fish and Wildlife field-level contacts may be reached at the office phone numbers listed below. After hours, they may be contacted using home or cell numbers, or through the following 24-hour numbers for the Department of the Interior Regional Environmental Officers:

215-266-5155 for spills in Illinois, Minnesota, and Wisconsin

303-478-3373 for spills in Iowa and Missouri.

Location	Primary Contact	Alternate Contact
National Wildlife Refuge Lands in IL, IA, MN, MO, and WI	Sabrina Chandler, Area Supervisor / Refuge Manager Upper Mississippi River NWFR 102 Walnut Street, Suite 204 Winona, MN 55987 507-494-6218 – office 507-458-0144 – cell 608-534-5266 – home	
Non-Refuge Lands in MN and WI	Reena Bowman, Ecological Services Biologist Twin Cities Ecological Services Field Office 4101 American Blvd. East Bloomington, MN 55420 952-252-0092 x208 – office 920-634-5435 – cell	Trina Soyk, Ecological Services Biologist Green Bay Ecological Services Field Office 2661 Scott Tower Drive New Franken, WI 54229 920-866-3650 – office 612-590-6662 – cell
Non-Refuge Lands in IL, IA, and MO	Aleshia Kenney, Ecological Services Biologist Illinois-Iowa Ecological Services Field Office 1511 47th Avenue Moline, IL 61265 309-757-5800 x218 – office 309-737-9128 – cell	Kraig McPeck, Field Office Project Leader Illinois-Iowa Ecological Services Field Office 1511 47th Avenue Moline, IL 61265 309-757-5800 x202 – office 309-429-0362 – cell
Pools 4–6	Mary Stefanski, Winona District Manager Upper Mississippi River National Wildlife and Fish Refuge Winona District 102 Walnut Street, Suite 205 Winona, MN 55987 507-494-6229 – office 507-450-4649 – cell 507-864-3758 – home	VACANT, Winona District Assistant Manager Upper Mississippi River National Wildlife and Fish Refuge 507-494-6213 – office 507-450-1253 – cell
Pools 7–8 AND Trempealeau National Wildlife Refuge	Tim Miller, La Crosse District Manager Upper Mississippi River National Wildlife and Fish Refuge La Crosse District N5727 County Road Z Onalaska, WI 54650	Cheryl Groom, La Crosse District Assistant Manager Upper Mississippi River National Wildlife and Fish Refuge 608-779-2386 – office 608-780-7302 – cell 612-790-1190 – home

	608-779-2385 – office 608-779-2399 - general 608-304-5854 – cell 608-788-0525 – home	Casey Bryan, Refuge Manager, Trempealeau NWR 608-539-2311 x6 – office 608-780-7301 – cell 608-780-7301 - home
Location	Primary Contact	Alternate Contact
Pools 9–11	Kendra Pednault, McGregor District Manager Upper Mississippi River National Wildlife and Fish Refuge McGregor District 470 Cliffhaven Rd. Prairie du Chien, WI 53821 608-326-0515 x112 – office 608-306-2202 – cell 239-560-4866 – home	Wendy Woyczik, McGregor District Assistant Manager Upper Mississippi River National Wildlife and Fish Refuge 608-326-0515 x101 – office 608-780-8306 – cell
Pools 12–14	Ed Britton, Savanna District Manager Upper Mississippi River National Wildlife and Fish Refuge Savanna District 7071 Riverview Road Thomson, IL 61285 815-273-2732 – office 815-541-4598 – cell	Nathan Williams, Wildlife Refuge Specialist Upper Mississippi River National Wildlife and Fish Refuge 815-273-2732 – office 815-541-1385 – cell
Pools 17–19	Marcie Kapsch, Refuge Manager Port Louisa National Wildlife Refuge 10728 County Road X61 Wapello, IA 52653 319-523-6982 – office 309-791-9790 – cell 319-791-1619 – home	Ron Knopik, Assistant Refuge Manager Port Louisa National Wildlife Refuge 319-523-6982 – office 309-791-2863 – cell 563-519-2132 – home
Pools 20–25	Floyd Truetken, Refuge Manager Great River and Clarence Cannon National Wildlife Refuges 37599 County Road 206 Annada, MO 63330 573-847-2333 – office 573-253-9279 – cell	Jared Nance, Refuge Manager Middle Mississippi River National Wildlife Refuge 339 St. Mary's Road Ste. Genevieve, MO 63670 573-754-2431 – cell 270-703-0530 – home
Pools 25–27	Charles Deutsch, Refuge Manager Two Rivers National Wildlife Refuge HC 82, Box 107 Brussels, IL 62013 618-883-2524 – office 217-742-2313 – cell	Floyd Truetken, Refuge Manager Great River and Clarence Cannon National Wildlife Refuges 37599 County Road 206 Annada, MO 63330 573-847-2333 – office 573-253-9279 – cell
Open River to Cairo, IL	Jared Nance, Refuge Manager Middle Mississippi River National Wildlife Refuge 37599 County Road 206 Annada, MO 63330 573-754-2431 – cell 270-703-0530 – home	Floyd Truetken, Refuge Manager Great River and Clarence Cannon National Wildlife Refuges 37599 County Road 206 Annada, MO 63330 573-847-2333 – office 573-253-9279 – cell

RESOURCE MANUAL









Section D: Potential Sources of Spills and Related Resources

Commodities Transported by Barge on the Upper Mississippi River (Calendar Year 2021)

Lock	Coal	Petroleum	Chemicals	Crude Materials	Primary Manufactured Goods	Farm Products	Manufacturing Equipment	Waste Material	Other
L&D 1				•	•	•			
L&D 2	•	●	●	●	•	●	•		
L&D 3	•	●	●	●	•	●	•		
L&D 4	•	●	●	●	•	●	•		•
L&D 5	•	●	●	●	•	●	•		•
L&D 5A	•	●	●	●	•	●	•		•
L&D 6	•	●	●	●	•	●	•		•
L&D 7	•	●	●	●	•	●	•		
L&D 8	•	●	●	●	•	●	•		•
L&D 9	•	●	●	●	•	●	•		
L&D 10	•	●	●	●	•	●	•	•	
L&D 11	•	●	●	●	•	●	•	•	
L&D 12	•	●	●	●	•	●	•		
L&D 13	•	•	●	●	•	●	•		
L&D 14	•	•	●	●	•	●	•		
L&D 15	•	•	●	●	•	●	•		
L&D 16	•	•	●	●	•	●	•	•	
L&D 17	•	•	●	●	•	●	•	•	

Commodities Transported by Barge on the Upper Mississippi River (Calendar Year 2021)
(Continued)

Lock	Coal	Petroleum	Chemicals	Crude Materials	Primary Manufactured Goods	Farm Products	Manufacturing Equipment	Waste Material	Other
L&D 18	●	●	●	●	●	●	●		
L&D 19	●	●	●	●	●	●	●		
L&D 20	●	●	●	●	●	●	●		
L&D 21	●	●	●	●	●	●	●		
L&D 22	●	●	●	●	●	●	●		
L&D 24	●	●	●	●	●	●	●		
L&D 25	●	●	●	●	●	●	●		
L&D 26/ Melvin Price	●	●	●	●	●	●	●	●	●
L&D 27	●	●	●	●	●	●	●	●	●

Tonnage Key							
<100,000	<500,000	<1,000,000	<5,000,000	<10,000,000	<15,000,000	<20,000,000	<30,000,000
							

Source:

U.S. Army Corps of Engineers. 2021 Lock Performance Monitoring System Summary of Lock Statistics by River Basin. Navigation Data Center. Online. Available.
<http://www.navigationdatacenter.us/lpms/lpms.htm>

Upper Mississippi River Shipping Companies

Name	Phone #	Address	Web	River Mile
ADM / ARTCO	314-481-8828	3854 S 1 st St. St. Louis, MO 63111	https://www.adm.com/products-services/adm-logistics	176 RDB
American Commercial Barge Line	314-544-7648	750 E Davis St. St. Louis, MO 63111	https://bargeacbl.com/	171 RDB
Apex Towing Co.	314-889-9600	8235 Forsyth Blvd., Suite 400 St. Louis, MO 63105	https://apexoil.com/	
Brennan Marine, Inc.	608-784-7173	820 Bainbridge St. LaCrosse, WI 54603	https://www.jfbrennan.com/	698-699 (French Island)
Budrovich Marine	314-892-3030	10328 Lake Bluff Dr. St. Louis, MO 63123	https://www.budrovich.com/companies/marine/	
Cargo Carriers, A Business of Cargill, Inc.	952-742-6763 651-341-9865	15407 McGinty Rd. W Wayzata, MN 55391	www.ccibarge.com	
Ceres Consulting, LLC	618-271-7903	3804 Cookson Road East St. Louis, IL 62201	www.ceresbarge.com	
Eagle Marine Industries, Inc.	618-875-1153	1 Riverview Ave. Sauget, IL 62201	N/A	177 LDB
East Side River Transportation	618-277-4481	15 Bronze Pointe Swansea, IL 62226	http://eastsiderivertransportation.com/	
Gateway Dredging & Contracting, LLC	636-665-5180	1777 Hwy 79 S Old Monroe, MO 63369	www.gdcstl.com	
Hall Towing, Inc.	319-372-3078	1618 20 th St. Fort Madison, IA 52627	www.halltowing.com	382 RDB
Heartland Barge Management, LLC	618-281-4515	1007 N Main St. Columbia, IL 62236	www.heartlandbarge.com	
Ingram Marine Group	618-286-1500	1 Davis St. Ferry Rd. East Carondelet, IL 62240	https://www.ingrambarge.com/home.php	171 LDB
Luhr Bros., Inc.	618-281-4106	250 W Sand Bank Rd. Columbia, IL 62236	www.luhr.com	
Newt Marine Service	563-557-1855	5 Jones St., #2 Dubuque, IA 52001	www.newtmarine.com	579 RDB
Osage Marine Services, Inc.	314-421-3575	750 E Davis St. St. Louis, MO 63111	https://osagemarineservices.com/	160-185, 44-80
SCF Marine / SEACOR	618-876-0200	2801 Rock Rd. Granite City, IL 62040	www.scf.us	185 (on canal)
Upper River Services	651-292-9293	40 State St. St. Paul, MN 55107	www.ursi.net	839 RDB

Source:

Individual company websites

Facilities Discharging to the Upper Mississippi River

The National Pollutant Discharge Elimination System (NPDES) is a program under the Clean Water Act (CWA), which prohibits the discharge of pollutants through a point source into a water of the United States without a permit. Under the CWA, USEPA authorizes the NPDES permit program to state, tribal, and territorial governments, enabling them to perform many of the permitting, administrative, and enforcement aspects of the NPDES program. USEPA retains oversight responsibilities in states authorized to implement CWA programs.

USEPA issues NPDES permits for tribes, which can be found with links to state programs at:

<https://www.epa.gov/npdes-permits>

Additionally, states provide permits for facilities discharging to surface or ground water. Individual state pages are found at the following links:

Illinois:

<https://www2.illinois.gov/epa/topics/forms/water-permits/Pages/default.aspx>

Iowa:

<https://www.iowadnr.gov/Environmental-Protection/Water-Quality/NPDES-Wastewater-Permitting>

Minnesota:

<https://www.pca.state.mn.us/water/wastewater-permits>

Missouri:

<https://dnr.mo.gov/water/business-industry-other-entities/permits-certification-engineering-fees/wastewater>

Wisconsin:

<https://dnr.wisconsin.gov/topic/Wastewater/Permits.html>

Railroad Tracks Along the Upper Mississippi River

Railroads cross the Upper Mississippi River or run within one mile of the river for approximately 475 miles on the left descending bank and 625 miles on the right descending bank. Thus for the 856 mile river reach from Minneapolis, Minnesota to the Ohio River confluence, 55 percent of the left bank and 73 percent of the right bank contain railroad tracks. The river stretches that do not have nearby railroad tracks are primarily located downstream of Davenport, Iowa as shown on the accompanying maps.

Two major railroad companies — BNSF Railway and Canadian Pacific Railway — own over 82 percent of the tracks near the river. BNSF owns approximately 550 miles of track and Canadian Pacific owns approximately 360 miles of track. Several other railroad companies own the remaining 18 percent of the tracks. Various products, including hazardous materials, are transported on these railroad tracks.

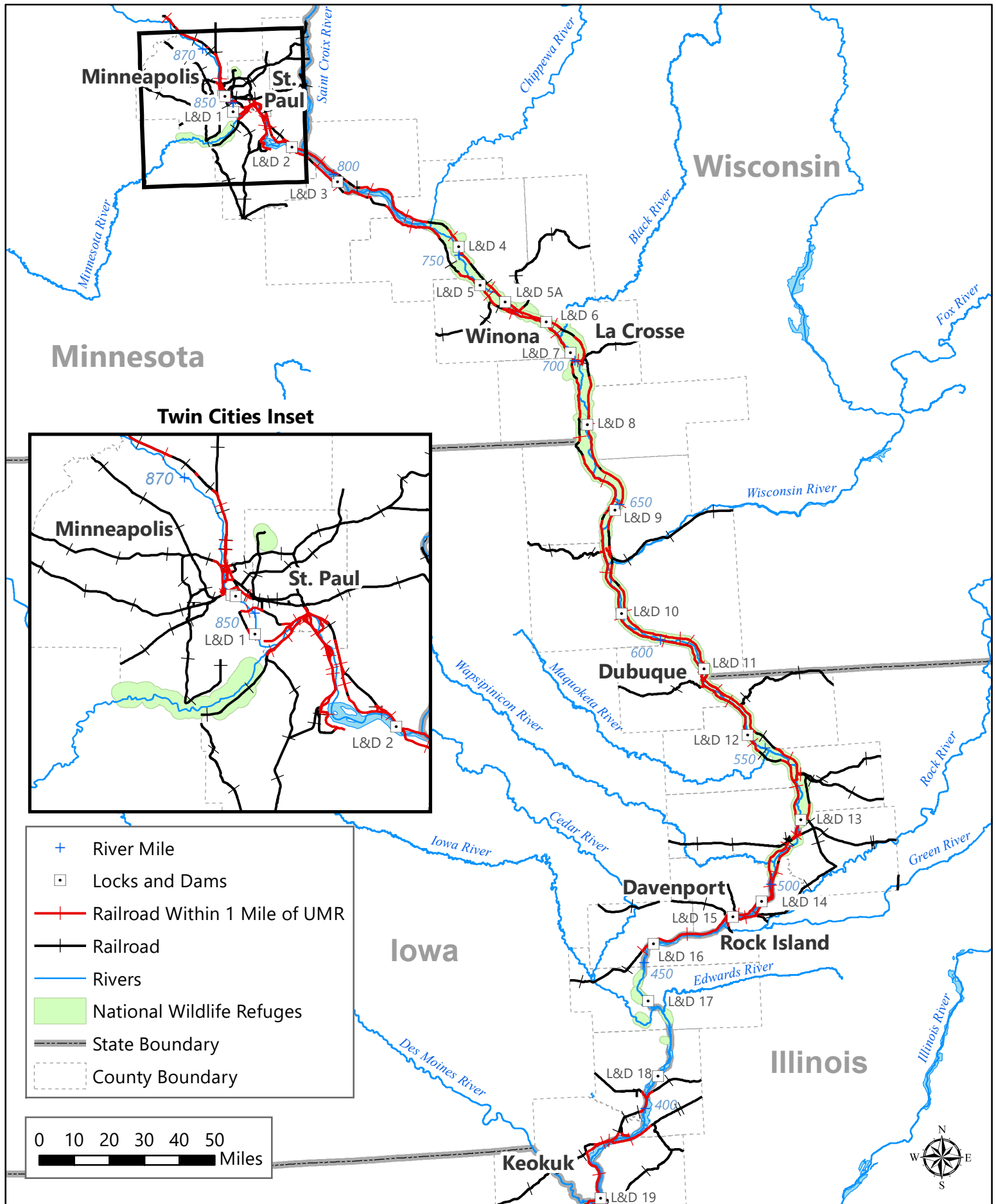
Both BNSF Railway and Canadian Pacific have spill contingency plans and store spill containment equipment at many of their facilities along the river. In the event of a spill emergency, the following telephone numbers should be used to reach railroad officials:

BNSF Railway, Command Center for Emergency Response **800-832-5452**

Canadian Pacific Railway Police..... **800-716-9132**

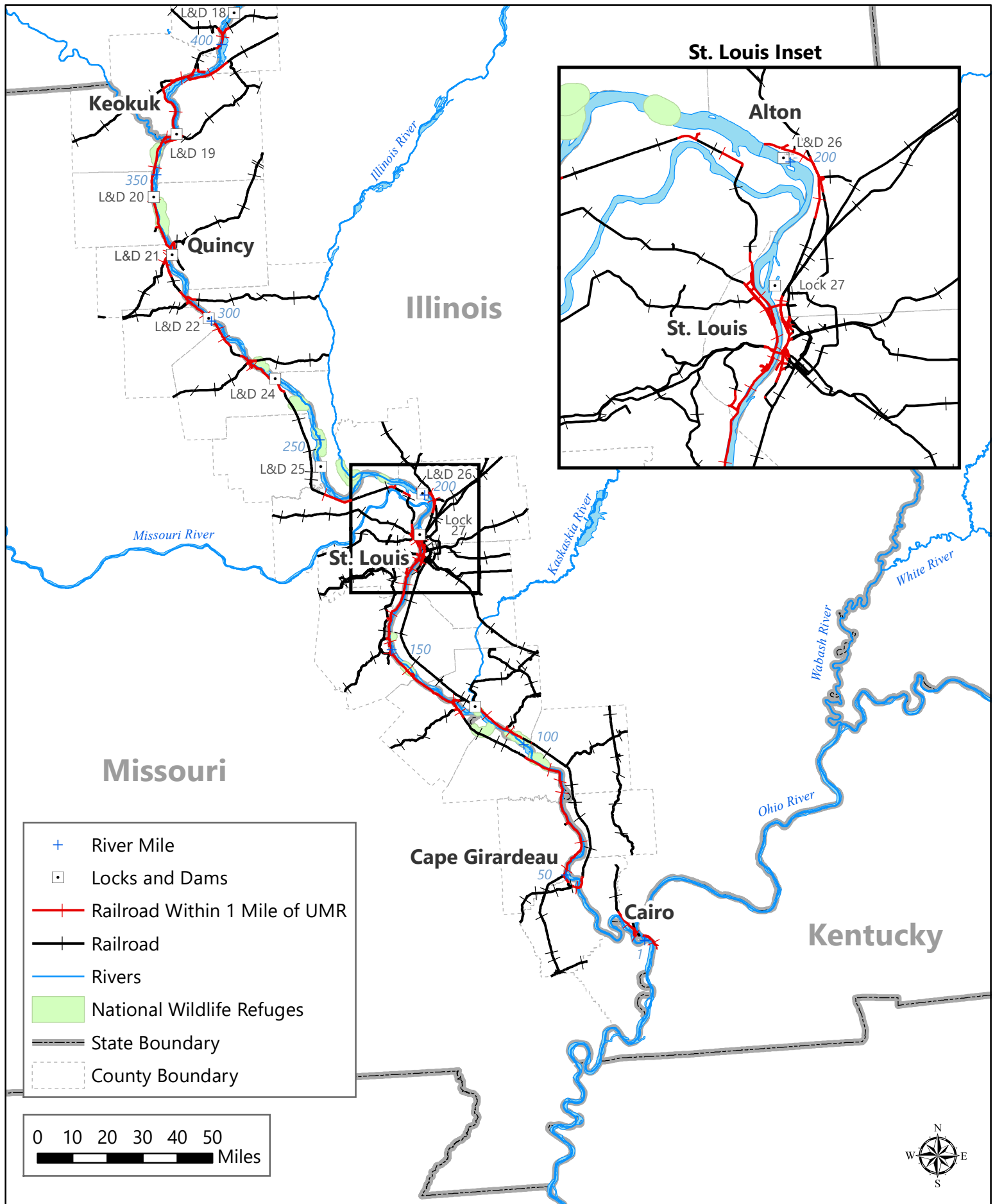
Railroad Tracks Along the Upper Mississippi River

(Minneapolis, MN to Keokuk, IA)



Railroad Tracks Along the Upper Mississippi River

(Keokuk, IA to Cairo, IL)



Highway and Railroad Crossings on the Upper Mississippi River

There are eighty highway and railway crossings on the Upper Mississippi River. Fifty-five are highway crossings, 22 are railway, and three are combined highway and rail.

River Mile	Highway Crossing	Railroad Crossing
865.1	MN Hwy 610/252	
860.4	Interstate 694	
857.7	42 nd Ave.	
857.6		Canadian Pacific Railway
856.4	Lowry Ave.	
855.8		BNSF Railway
855.4	Broadway Ave.	
855.0	Plymouth Ave.	
854.5		BNSF Railway & Northstar Commuter Rail- Met Council
854.3	Hennepin Ave.	
854.1	Third Ave.	
853.7		BNSF Railway
853.2	I-35W	
853.1	10 th Ave/19 th Ave.	
852.6	Washington Ave.	
851.7	I-94	
851.5	Franklin Ave.	
850.7		Canadian Pacific Railway
849.9	Lake St./Marshall Ave.	
847.6	46 th St./Ford Pkwy.	
845.6	MN 5	
843.3	I-35E	
841.4		Union Pacific RR
840.5	MN 149	
839.5	Wabasha St.	
839.3		Union Pacific RR
839.2	Robert St.	
838.8	US 52	
835.6		Union Pacific RR
832.4	I-494	
813.9	US 61	
813.7		Canadian Pacific Railway
790.6	US 63	
760.2	MN 60/WI 25	
725.8	MN 43/WI 54	
701.8	I-90	
699.8		Canadian Pacific Railway
697.5	US 14/US 61/MN 16/WI 16	
663.4	IA 9/WI 82	
634.7	US 18/WI 60	
581.3	US 61/US 151	
579.9		Canadian National Railway

Highway and Railroad Crossings on the Upper Mississippi River (Continued)

River Mile	Highway Crossing	Railroad Crossing
579.3	US 20	
535.5	US 52/IA 64/IL 64	
535.0		Canadian Pacific Railway
520.0	IA 136/IL 136	
518.1	US 30	
518.0		Union Pacific RR
495.5	I-80	
485.8	I-74/US 6	
482.9	US Gov't.	US Gov't.
482.1	US 67	
481.4		BNSF Railway
478.3	I-280	
455.9	IA 92/IL 92	
404.2	US 34	
403.1		BNSF Railway
383.9	IA 2/IL 9	BNSF Railway
363.9		Keokuk Junction Railway
363.8	US 136	
328.0		BNSF Railway
327.2	US 24	
327.0	US 24	
309.9		Norfolk Southern Railway
309.2	I-72/US 36	
283.2	US 54	
282.1		Kansas City Southern Railway
202.7	US 67	
190.8	I-270	
183.2		Terminal Railroad Association of St. Louis
181.2	I-70	
180.2	Route 799	
180.0	Eads Bridge	St. Louis Metrolink
179.2	I-55/I-64/I-70/US 40	
179.0		Terminal Railroad Association of St. Louis
168.6	I-255/US 50	
109.9	MO 51/IL Route 150	
51.6	MO 34/MO 74/IL 146	
43.7		Southern Illinois and Missouri Bridge Company
7.5	I-57	
1.4	US 60/US 62	

Sources:

List of Crossings of the Upper Mississippi River. Wikipedia. Online February 2014.

http://en.wikipedia.org/wiki/List_of_crossings_of_the_Upper_Mississippi_River

Navigation Charts of the Upper Mississippi River. 2021. U.S. Army Engineers, Mississippi Valley Division.

Selected Tributaries to the Upper Mississippi River

Tributary Name	Enters UMR at River Mile*	Stream Length** (Miles)	Drainage Area*** (Square Miles)
Rice Creek, MN	861.8 LDB	28.7	111
Shingle Creek, MN	857.8 RDB	11.2	29
Minnesota River, MN	844.0 RDB	359.4	1,183
St. Croix River, WI	811.5 LDB	173.1	680
Big River, WI	804.9 LDB	12.8	21
Vermillion River, MN	795.6 RDB	59.2	147
Cannon River, MN	794.6 RDB	118.6	393
Rush River, WI	780.6 LDB	50.9	167
Wells Creek, MN	777.7 RDB	28.4	41
Chippewa River, WI	763.4 LDB	196.1	723
Buffalo (Beef) River, WI	754.5 LDB	70.0	228
Zumbro River, MN	750.2 RDB	64.7	154
East Indian Creek, MN	745.0 RDB	16.3	20
Whitewater River, MN	743.0 RDB	18.2	36
Pleasant Valley Creek, MN	722.0 RDB	10.5	45
Trempealeau River, WI	717.0 LDB	82.6	360
Tank Creek, WI	711.8 LDB	4.9	34
Shingle Creek, WI	710.2 LDB	5.5	34
Black River, WI	708.4 LDB	192.1	528
La Crosse River, WI	698.2 LDB	61.5	169
Root River, MN	693.7 RDB	81.8	253
Bad Axe River, WI	675.2 LDB	4.0	11
Upper Iowa River, IA	671.1 RDB	156.2	368
Village Creek, IA	662.0 RDB	23.7	73
Rush Creek, WI	659.5 LDB	15.7	53
Copper Creek, WI	655.6 LDB	4.1	27
Du Charme Creek, WI	644.4 LDB	7.2	58
Paint Creek, IA	640.7 RDB	33.2	85
Yellow River, IA	637.6 RDB	53.5	195
Wisconsin River, WI	631.7 LDB	435.6	1,671
Sny Magill Creek, IA	627.1 RDB	10.3	36
Turkey River, IA	608.2 RDB	153.2	426
Grant River, WI	593.0 LDB	44.9	98
Platte River, WI	588.3 LDB	48.2	159
Little Maquoketa River, IA	586.4 RDB	30.3	86
Catfish Creek, IA	577.7 RDB	3.4	54
Menominee River, IL	574.5 LDB	11.6	31
Little Menominee River, IL	570.7 LDB	13.6	44
Sinsinawa River, IL	569.1 LDB	21.2	49
Tetes Des Morts Creek, IA	567.4 RDB	17.6	48

Selected Tributaries to the Upper Mississippi River
(Continued)

Tributary Name	Enters UMR at River Mile*	Stream Length** (Miles)	Drainage Area*** (Square Miles)
Galena River, IL	565.1 LDB	50.1	123
Smallpox Creek, IL	563.1 LDB	16.1	32
Maquoketa River, IA	548.7 RDB	150.0	412
Apple River, IL	545.3 LDB	55.0	123
Plum River, IL	536.6 LDB	46.6	118
Elk River, IA	528.3 RDB	21.7	77
Silver Creek, IA	526.4 RDB	5.2	44
Johnson Creek Diversion Ditch, IL	522.1 LDB	26.5	66
Otter Creek, IL	522.1 LDB	11.9	23
Rock Creek, IA	507.0 RDB	14.2	26
Sodus Creek, IA	507.0 RDB	4.0	26
Wapsipinicon River, IA	506.7 RDB	299.7	903
Duck Creek, IA	487.7 RDB	21.3	64
Rock River, IL	479.1 LDB	215.1	769
Copperas Creek, IL	450.8 LDB	32.2	73
Iowa River, IA	434.0 RDB	323.7	904
Edwards River, IL	431.4 LDB	73.9	253
Pope Creek, IL	427.7 LDB	58.3	162
Hawkeye-Dolbee Diversion Channel, IA	422.1 RDB	4.2	26
Yellow Spring Creek, IA	410.4 RDB	1.8	27
Henderson Creek, IL	409.9 LDB	64.8	190
Flint Creek, IA	405.3 RDB	35.4	117
Skunk River, IA	396.0 RDB	93.2	217
Devils Creek, IA	377.6 RDB	14.1	23
Sheridan Creek, IL	372.4 LDB	10.6	19
Larry Creek, IL	369.3 LDB	4.0	24
Chaney Creek, IL	364.9 LDB	11.7	22
Des Moines River, IA / MO	361.5 RDB	429.7	1,461
Fox River, MO	353.5 RDB	105.9	295
Bear Creek, IL	341.0 LDB	44.1	162
Wyaconda River, MO	337.3 RDB	50.7	113
Rock and Ursa Creek Diversion Ditch, IL	336.3 LDB	24.4	37
Durgens Creek, MO	331.5 RDB	22.6	43
Fabius River Diversion, MO	321.0 RDB	6.4	21
North River, MO	320.9 RDB	81.4	235
South River, MO	320.7 RDB	18.4	49
Mill Creek, IL	318.2 LDB	23.8	51
Hadley-McCraney Diversion Channel, IL	296.7 LDB	4.7	54
Salt River, MO	284.3 RDB	75.0	325

Selected Tributaries to the Upper Mississippi River

(Continued)

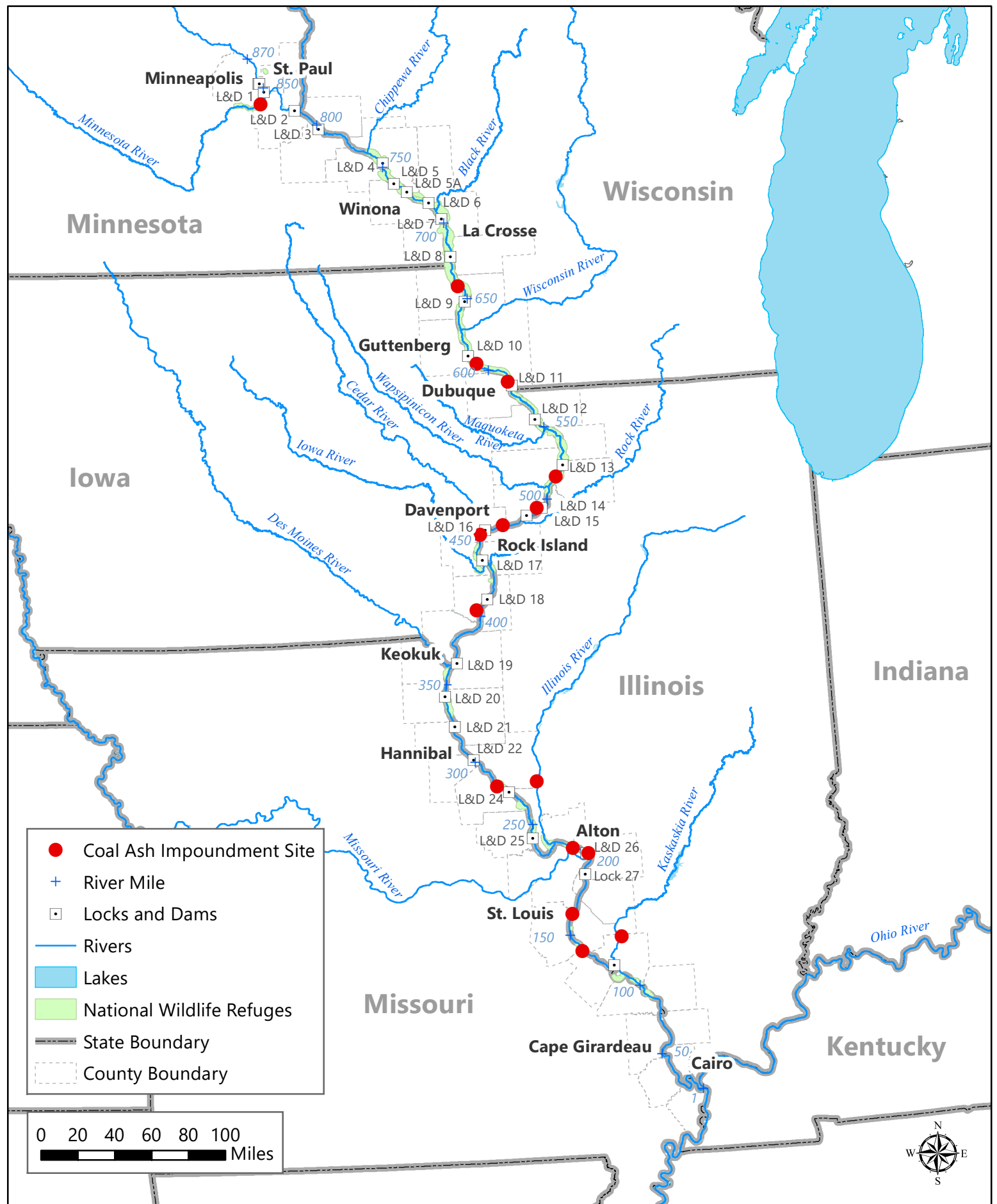
Tributary Name	Enters UMR at River Mile[*]	Stream Length^{**} (Miles)	Drainage Area^{***} (Square Miles)
Noix Creek, MO	282.3 RDB	13.4	45
Buffalo Creek, MO	280.9 RDB	14.1	48
Ramsey Creek, MO	265.1 RDB	17.7	74
Bryants Creek Diversion Channel, MO	260.7 RDB	18.1	84
Bobs Creek, MO	238.1 RDB	24.3	42
Peruque Creek, MO	233.5 RDB	44.0	81
Dardenne Creek, MO	227.4 RDB	40.2	164
Illinois River, IL	220.0 LDB	273.6	1,416
Piasa Creek, IL	209.4 LDB	29.7	99
Wood River, IL	199.3 LDB	2.6	27
Missouri River, MO	195.5 RDB	594.4	2,835
Cahokia Creek Diversion Channel, IL	195.0 LDB	4.9	21
Chain of Rocks Canal, IL	184.1 LDB	8.7	94
Prairie duPont Creek, IL	174.3 LDB	20.4	67
River Des Peres Drainage Channel, MO	172.1 RDB	6.2	27
Meramec River, MO	160.8 RDB	229.1	892
Fountain Creek, IL	156.4 LDB	30.1	91
Joachim Creek, MO	151.5 RDB	36.9	133
Kaskaskia River, IL	117.7 LDB	304.9	818
Marys River, IL	106.6 LDB	42.3	121
Apple Creek, MO	75.2 RDB	47.3	180
Indian Creek, MO	69.0 RDB	12.0	42
Castor River Diversion Channel, MO	48.8 RDB	35.0	118
Cache River, IL	12.9 LDB	92.1	181

* LDB = Left Descending Bank
RDB = Right Descending Bank

** Estimated stream length using National Hydrography Dataset (NHD) and including only the named main branch of the stream within the UMR states.

*** Estimated drainage area using NHD 12-digit hydrologic unit code (HUC) watersheds intersecting the streams along the above defined lengths.

Coal Ash Impoundment Sites Near the Upper Mississippi River



Coal Ash Impoundment Sites Along the Upper Mississippi River

River Mile*	Facility Name, Address, and Phone Number	Parent Company Address
8.0 RDB Minnesota River	Black Dog Power Station 1400 E Black Dog Rd. Burnsville, MN 55337 800-895-4999	Xcel Energy 414 Nicollet Mall Minneapolis, MN 55401
607.7 LDB	Nelson Dewey Generating Station 11999 Co. Rd. VV Cassville, WI 53806 800-255-4268	Alliant Energy 4902 N Biltmore Ln., Ste 1000 Madison, WI 53718-2148
660.0 RDB	Lansing Power Station 2320 Power Plant Dr. Lansing, IA 52151 800-255-4268	Alliant Energy 4902 N Biltmore Ln., Ste 1000 Madison, WI 53718-2148
586.0 RDB	John Deere Dubuque 18600 S John Deere Rd. Dubuque, IA 52001 563-589-5151	Deere & Company World Headquarters 1 John Deere Pl. Moline, IL 61265
513.4 RDB	ADM Clinton Power Plant 1251 Beaver Channel Pkwy. Clinton, IA 52732 563-242-6073	Archer Daniels Midland Co. 4666 Faries Pkwy. Decatur, IL 62526
492.3 RDB	Riverside Generating Station 6001 State St. Bettendorf, IA 52722 888-427-5632	MidAmerican Energy Co. PO Box 657 Des Moines, IA 50306-0657
467.6 RDB	Fair Station 3800 Hwy. 22 W Montpelier, IA 52759 319-366-8011	Central Iowa Power Cooperative PO Box 2517 Cedar Rapids, IA 52406-2517
453.0 RDB	Muscatine Generating Station 1700 Industrial Connector Rd. Muscatine, IA 52761 563-263-2752	City of Muscatine 215 Sycamore St. Muscatine, IA 52761
403.6 RDB	Burlington Generating Station 4282 Sullivan Slough Rd. Burlington, IA 52601 800-255-4268	Alliant Energy 4902 N Biltmore Ln., Ste 1000 Madison, WI 53718-2148
281.0 RDB	Hercules Missouri Power Plant 11083 Hwy. D Louisiana, MO 63353 859-815-3333	Ashland Inc. 50 E. RiverCenter Blvd. - PO Box 391 Covington, KY 41012-0391
42.7 RDB Illinois River	Pearl Station Rt. 100 S Pearl, IL 62361 217-829-4291	Illinois Rural Electric Cooperative 2 S. Main St. - PO Box 80 Winchester, IL 62694

Coal Ash Impoundment Sites Along the Upper Mississippi River

(Continued)

River Mile*	Facility Name, Address, and Phone Number	Parent Company Address
209.5 RDB	Sioux Power Station 8501 N State Rt. 94 West Alton, MO 63386 800-552-7583	Ameren Missouri PO Box 790352 St. Louis, MO 63179-0352
199.9 LDB	Wood River Power Station 3200 East Broadway Alton, IL 62002 618-433-0115	Homefield Energy Office 1500 Eastport Plaza Dr. Collinsville, IL 62234
161.9 RDB	Meramec Power Station 8200 Fine Rd. St. Louis, MO 63129 800-552-7583	Ameren Missouri PO Box 790352 St. Louis, MO 63179-0352
138.8 RDB	Rush Island Power Station 100 Big Hollow Rd. Festus, MO 63028 800-552-7583	Ameren Missouri PO Box 790352 St. Louis, MO 63179-0352
19.5 LDB Kaskaskia River	Baldwin Energy Complex 10901 Baldwin Rd. Baldwin, IL 62217 618-785-2294	Homefield Energy Office 1500 Eastport Plaza Dr. Collinsville, IL 62234

* All river miles are for the Upper Mississippi River, unless otherwise indicated.

RESOURCE MANUAL

Section E: Regional and Local Resources

Public Hazardous Materials Response Teams

(Note: Listed below are Level A public sector hazardous materials response teams that include some portion of the Upper Mississippi River within their response area. No Illinois-based teams are included in this list. Requests for hazmat team assistance in Illinois should be directed to Illinois Mutual Aid Box Alarm System (MABAS) at 847-724-5700.

Name	Location	Upper Mississippi River Response Area*	24-hour Telephone
St. Paul Fire Department	St. Paul, MN	Ramsey, Washington, and Dakota Counties, MN	651-649-5451 800-422-0798 (Minnesota State Duty Office)
Chippewa Falls/ Eau Claire Fire Departments	Chippewa Falls and Eau Claire, WI	Pierce, Pepin, Buffalo, Trempealeau Counties, WI	800-943-0003 (Wisconsin Emergency Management)
Winona Fire Department	Winona, MN	Winona County, MN	507-454-6100 (Winona County Sheriff's Department)
La Crosse Fire Department	La Crosse, WI	La Crosse, Vernon, and Crawford Counties, WI; Allamakee County, IA	800-943-0003 (Wisconsin Emergency Management)
Rochester Fire Department	Rochester, MN	Goodhue, Wabasha, Winona, and Houston Counties, MN	651-649-5451 800-422-0798 (Minnesota State Duty Office)
Madison Fire Department	Madison, WI	Grant County, WI	800-943-0003 (Wisconsin Emergency Management)
Northeast Iowa Response Group	Waterloo, IA	Allamakee County, IA	800-291-4682
Linn County Hazmat Team	Cedar Rapids, IA	Clayton County, IA	319-892-6100
Dubuque Fire Department	Dubuque, IA	Dubuque County, IA	563-589-4415

Public Hazardous Materials Response Teams
(Continued)

Name	Location	Upper Mississippi River Response Area*	24-hour Telephone
Davenport Fire Department	Davenport, IA	Jackson, Clinton, and Scott Counties, IA	563-326-7979
Bettendorf Fire and Rescue	Bettendorf, IA	City of Bettendorf; portion of Scott County, IA (east of Hwy 61)	563-484-3000
Muscatine Fire Department	Muscatine, IA	Muscatine and Louisiana Counties, IA	563-263-9922
Burlington Fire Department	Burlington, IA	City of Burlington, IA and Des Moines County	319-671-7001
Fort Madison Fire Department	Fort Madison, IA	Lee County, IA	319-372-7700
Keokuk Fire Department	Keokuk, IA	Lee County, IA	319-372-1310
St. Charles, Lincoln, and Warren Counties HazMat Response Teams	St. Charles, MO	St. Charles County, MO	636-949-3010
St. Louis County Hazardous Materials Team	St. Louis, MO	St. Louis County, MO	636-529-8210
St. Louis City Fire Department	St. Louis, MO	City of St. Louis, MO Mouth of Missouri River to Mouth of Meramec River on the UMR	314-533-3810 314-231-1212
Jefferson County Emergency Management Agency	Hillsboro, MO	Jefferson County, MO	636-797-9999

* Includes entire city or county unless listed otherwise noted.

County Emergency Management Agencies along the Upper Mississippi River
(Listed by State Upstream to Downstream)

State	County Name	Phone	Address
MN	Anoka County	Dispatch: (763) 427-1212 Main: (763) 421-4761	2100 3rd Avenue Anoka, MN 55303
MN	Hennepin County	Dispatch: (952) 258-5321 Main: (612) 596-0250	1600 Prairie Drive Medina, MN 55340-5421
MN	Ramsey County	Dispatch: (651) 767-0640 Main: (651) 266-1020	90 W Plato Blvd., Suite 220 St Paul, MN 55107
MN	Washington County	Dispatch: (651) 439-9381 Main: (651) 430-7682	15015 62 nd St. N Stillwater, MN 55082
MN	Dakota County Emergency Preparedness	Dispatch (651) 322-2323 Main: (651) 438-4703	1560 Highway 55 Hastings, MN 55055
MN	Goodhue County	Main: (651) 267-2639	430 W 6th St. Red Wing, MN 55066
MN	Prairie Island Indian Community	Main: (651) 385-4178	1960 Island Blvd. Welch, MN 55089
MN	Wabasha County	Main: (651) 565-3069	625 Jefferson Ave. Wabasha, MN 55981
MN	Winona County	Main: (507) 457-6598	201 W 3rd St Winona, MN 55987
MN	Houston County	Main: (507) 725-3379	306 S Marshall St., Suite 2008 Caledonia, MN 55921
WI	Pierce County	Main: (715) 273-6751 Emergency: (715) 273-5051	Law Enforcement Center 555 Overlook Dr. Ellsworth, WI 54011
WI	Pepin County	Main: (715) 672-8897 Dispatch: (715) 672-5944	740 7th Ave W Durand, WI 54736
WI	Buffalo County	Main: (608) 685-6298	407 S 2 nd St. Alma, WI 54610-0494
WI	Trempealeau County	Main: (715) 538-2311 Dispatch: (715) 538-4351	36245 Main St. Whitehall, WI 54773
WI	La Crosse County	Main: (608) 789-4811 Dispatch: (608) 785-9858	Law Enforcement Ctr., Room 800 333 Vine St. La Crosse, WI 54601
WI	Vernon County	Main: (608) 637-5266	400 Courthouse Square Viroqua, WI 54665
WI	Crawford County	Main: (608) 326-0203	224 N Beaumont Rd. Prairie du Chien, WI 53821
WI	Grant County	Main: (608) 723-7171 Dispatch: (608) 723-2157	8820 Hwy 35/61/81 Lancaster, WI 53813
IA	Allamakee County	Main: (563) 568-4233 Dispatch: (563) 568-4521	877 Hwy 9 Waukon, IA 52172
IA	Clayton County	Main: (563) 245-3004 Dispatch: (563) 245-2422	600 Gunder Rd. NE, Suite 13 Elkader, IA 52043-0464

County Emergency Management Agencies along the Upper Mississippi River
(Continued)

State	County Name	Phone	Address
IA	Dubuque County	Main: (563) 589-4170 Dispatch: (563) 589-4415	14928 Public Safety Way Dubuque, IA 52002
IA	Jackson County	Main: (563) 542-3911	201 W Platt Maquoketa, Iowa 52060
IA	Clinton County	Main: (563) 242-5712	Clinton County Law Center 241 7 th Ave. N Clinton, IA 52733-2957
IA	Scott County	Main: (563) 484-3050 Dispatch: (563) 388-3904	1100 E 46 th St. Davenport, IA 52807
IA	Muscatine County	Main: (563) 264-7142	312 E 5 th St. Muscatine, Iowa 52761
IA	Louisa County	Main: (319) 750-1128	503 Franklin St. #3 Wapello, Iowa 52653
IA	Des Moines County	Main: (319) 753-8206 Dispatch: (319) 671-7001	512 N Main St., Suite 1 Burlington, IA 52601
IA	Lee County	Main: (319) 372-4124	811 Avenue E Fort Madison, IA 52627
IL	Jo Daviess County	Main: (815) 281-2600	1 Commercial Dr., Suite 4 Hanover, IL 61041
IL	Carroll County	Main: (815) 864-2142	301 N Main St. Mt. Carroll, IL 61053
IL	Whiteside County ETSB	Main: (815) 772-5262 Dispatch: (815) 772-4044	200 E Knox St. Morrison, IL 61270
IL	Rock Island County	Main: (309) 799-5166 Dispatch: (309) 732-2677	6120 78 th Ave Milan, IL 61264
IL	Mercer County	Main: (309) 582-3759	305 NW 7 th St. Aledo, IL 61231
IL	Henderson County	Main: (309) 867-2780	Henderson County Courthouse 307 Warren St. Oquawka, IL 61469
IL	Hancock County ESDA	Main: (217) 221-0240	1006 Wabash Carthage, IL 62321
IL	Adams County	Main: (217) 277-2005 Dispatch: (217) 222-9360	222 N 52 nd St. Quincy, IL 62035
IL	Pike County	Director: (217) 285-5550	204 E Adams St. Pittsfield, IL 62363
IL	Calhoun County ESDA	Main: (618) 576-9663	19465 Illinois River Rd. Hardin, IL 62047
IL	Jersey County ESDA	Main: (618) 639-2233	115 E Prairie St. Jerseyville, IL 62052
IL	Madison County	Main: (618) 692-0537	101 E Edwardsville Rd., Suite 260 Wood River, IL 62095

County Emergency Management Agencies along the Upper Mississippi River
(Continued)

State	County Name	Phone	Address
IL	St. Clair County	Main: (618) 825-2683	110 W Washington Belleville, IL 62220
IL	Monroe County	Main: (618) 939-8681 ext. 534	100 S Main St. Waterloo, IL 62298
IL	Randolph County	Main: (618) 826-5007 ext. 630	2515 State St. Chester, IL 62233
IL	Jackson County	Main: (618) 684-3137	1001 Walnut St. Murphysboro, IL 62966
IL	Union County ESDA	Main: (618) 833-7200	155 Wright's Crossing Rd. Cobden, IL 62952
IL	Alexander County	Main: (618) 306-3282	12992 Kessler Rd. Cairo, IL 62914
MO	Clark County	Main: (660) 342-3962	282 W Exchange St. Kahoka, MO 63445
MO	Lewis County	Main: (573) 248-4789	200 N Highland St. Ewing, MO 63440
MO	Marion County Emergency Services	Main: (573) 231-2650 Dispatch: (573) 221-6400	3310 Arapaho Hannibal, MO 63401
MO	Ralls County	Main: (217) 779-0370	304 W 6 th St. New London, MO 6346259
MO	Pike County	Main: (573) 754-0151 Dispatch: (573) 324-3202	13055 Pike 133 Louisiana, MO 63353
MO	Lincoln County	Main: (636) 528-6182 Dispatch: (636) 528-6100	250 W College St. Troy, MO 63379
MO	St. Charles County	Main: (636) 949-3023 Dispatch: (636) 949-3042	1400 T.R. Hughes Blvd. O'Fallon, MO 63366
MO	St. Louis County	Main: (314) 615-9500 Dispatch: (636) 529-8210	1150 Hanna Rd. Ballwin, MO 63021
MO	St. Louis City	Main: (314) 444-5466 Dispatch: (636) 797-9999	1915 Olive St., 6 th Floor St. Louis, MO 63103
MO	Jefferson County	Main: (636) 797-5381	1409 Herculaneum Industrial Dr. Herculaneum, MO 63048
MO	Ste. Genevieve	Main: (573) 883-0263	295 Brooks Dr. Ste. Genevieve, MO 63670
MO	Perry County	Main: (573) 547-4000	406 N Spring St. Perryville, MO 63775
MO	Cape Girardeau	Main: (573) 204-0911	#1 Barton Square Jackson, MO 63755
MO	Scott County	Main: (573) 545-3549	131 S Winchester St. Benton, MO 63736
MO	Mississippi County	Daytime: (573) 683-2111 Evening: (573) 683-1782	PO Box 369 Charleston, MO 63834

RESOURCE MANUAL

Section F: In-situ Burning and Chemical Oil Spill Treating Agents

In-situ Burn Checklist

The following checklist will assist OSCs at any level to ensure that reasonable decisions are made on the use of ISB on the Upper Mississippi River. It is understood that this guidance is not intended to encourage use of ISB in early phases of a response; ISB should only be considered as a response option in consultation with unified command and under supervision of a federal or state on-scene coordinator.

ISB Decision Tree

Step 1: Site Conditions and Desirability

- Access routes to the scene?
- Locational information to include: River mile or latitude/longitude or other precise geographical description?
- Material, amount, size, age, phase, condition of spill?
- Environmental conditions: air temperature, wind speed, lake/river current speed, wave heights, water temperature, ice conditions?
- Will the use of ISB prevent or reduce further damage by the spill?
- Is mechanical containment and recovery adequate? If so, explain why burning is being considered.
- Ecological factors such as environmentally sensitive areas? See page F-30 for Ecological Considerations.

Step 2: Feasibility

- Can worker safety be reasonably assured?
- Can the fire be contained? If not, should not burn.
- Are environmental conditions favorable? Wind speeds less than 20 knots (23 mph, 34 feet/sec), currents less than 3/4 of a knot (0.9 mph, 1.3 feet/sec), and waves less than 3 feet? If not, then probably should not conduct the burn.
- Will the smoke plume lower the visibility enough to adversely impact transportation via air, water, or land?
- Are atmospheric conditions very stable (e.g., winds are light and fog or low stratus clouds are present)? Then, the smoke plume will likely be more difficult to disperse and you might not want to burn unless there will be no human impact.
- Is the oil burnable? Recommended thicknesses are 2 to 3 mm for fresh crude oil, 3 to 5 mm for diesel and weathered crude, and 5 to 10 mm for emulsions and bunker C. Water-in-oil emulsions containing more than 30 to 50% water are difficult to ignite or support combustion. Most oils readily burn if the water content is less than 25%. Most crude oils require an evaporative loss of less than 30% to burn.
- Residues: The removal of burn residues should be considered since the potential exists for undefined levels of environmental impacts even with a successful burn. See pages F-34 through F-36 for additional information.
- Is the product ignitable without adding a burning agent? COSTA procedure approval is required for use of burning agents.

The term "burning agents" means those additives that, through physical or chemical means, improve the combustibility of the materials to which they are applied. It is recommended that, when addition of a burning agent is being evaluated, first consideration be given to the more environmentally friendly

products such as kerosene or jet fuel "A" before considering the more environmentally hostile products such as gasoline or diesel.

- Is the product gasoline or other light petroleum product? If so, both mechanical techniques and ISB are still viable options. However, due to the greater risk of flammable hazard, uncontrolled sources of ignition should be removed from the area, only intrinsically safe equipment should be used on the site, and combustible gas indicators should be used to monitor for flammable vapors.
- Is the area forested or are conditions very dry? If so, then it may not be safe to burn.
- If in a marsh or wetlands area see pages F-15 to F-16.
- Are adequate fire boom, towboats, and igniters available?
- Is adequate helicopter/monitoring equipment available?
- Can notices to mariners, aircraft, and populations be issued in time?
- Can personnel and equipment be mobilized in time?
- Can authorization be secured in time?

See pages F-34 to F-36 for information about operational considerations: open water burning, inland environment burning, ice conditions, fire boom, ignition, oil thickness, weathering, emulsification, and burn residues.

Step 3: Acceptability

- Distance between burn and human population?
- Will ambient PM-10, averaged over 1 hour, near humans, be above 150 micrograms per cubic meter? If so, evacuate or shield them, or do not conduct the burn.

Generally, burning should not be conducted if human population centers exist within 6 miles downwind of the burn or 3 miles in other directions (or a longer or shorter distance depending on circumstances). In general, a safety margin of 45 degrees of arc on either side of the wind vector should be allowed to account for wind shifts. This means that burning is not recommended if there is a human population center within 6 miles from the burn measured along the wind direction and expanded 45 degrees on either side of the wind direction. A 3-mile safety margin is recommended in other directions.

Other considerations include:

- Does the landowner concur with the decision to burn?
- Are there cultural, historical, or archaeological resources that could be affected by the burn? If so, probably should not burn.
- Does the proposed burn area contain state or federal threatened or endangered species populations or their critical habitats? If so, and the proposed burn appears likely to result in greater overall injury to those species or habitats than other response actions, including "no action", the state and federal natural resource trustees will likely object to it.

Step 4: Authorization and Conditions

- Are forecasted weather conditions favorable?
- The Site Safety Plan should be reviewed to ensure that ISB is adequately addressed.
- Unified Command authority to start, proceed, limit, or halt the burn must be recognized.
- Conduct trial burn to evaluate smoke plume drift and dispersion.
- Burn extinguishing measures are available?
- Public notification. See page F-29 for guidelines on Public Notification.

- A written description of the incident and burn plan should be provided to the OSC and other pertinent players.

Step 5: Monitoring

The primary operational purpose in monitoring the burning of spilled oil is to determine if burning requirements and objectives are met. Although the current body of knowledge about burning is limited, each operational use provides an opportunity to gather further information. Operational monitoring should occur during a response involving the use of in-situ burning and should be accompanied by a detailed monitoring plan.

Operational monitoring should include such parameters as:

- type and amount of oil spilled;
- weather and water conditions;
- trajectory of the slick and smoke plume;
- estimated volume of oil to be burned;
- estimated volume of oil actually burned and remaining;
- observation of the effectiveness of residual material collection;
- observations of adverse affects to natural resources both pre- and post-burn (e.g., number of dead organisms)
- effects on human health (see pages F-17 to F-28 for Air Monitoring Guidelines)

In an effort to gather more data about in-situ burning, spill-of-opportunity research possibilities involving a broad range of physical, biological, and chemical issues, is encouraged. Research monitoring might involve:

- collection of oil sample prior to burning for analysis;
- observations of residual material behavior and fate;
- collection of residual material for analysis;
- upwind and downwind air sampling;
- number and location of sampling stations;
- determination of compounds (PAHs, particulates) to be monitored;
- species and numbers of biota (e.g., waterfowl, aquatic organisms, vegetation) in the area.

Step 6: Reports

- A lessons learned report should be submitted by the Unified Command to the FOSC (and thence to the RRT), SOSC, state and federal natural resource trustees, and local incident commander. The feedback from these reports will help in evaluating policies and procedures and improving them as needed, especially since burning is a relatively new countermeasure on the Upper Mississippi River and these guidelines are untested.
- Post burn monitoring of the site should be considered.

ISB Reference Sources

National Contingency Plan, 40 CFR Parts 300 to 399.

API/NOAA manual "[Options for Minimizing Environmental Impacts of Freshwater Spill Response](#)", September 1994, also known as the Freshwater Manual.

[Region 5 In-situ Burn Guidelines](#) adopted in June 1996.

[Alternative Response Tool Evaluation System \(ARTES\)](#) adopted by RRT-5 in June 1996.

NOAA HAZMAT In-situ Burning Planning Guidelines, 11 June 1996.
Alaska Regional Response Team In-situ Burn Guidelines for Alaska, May 1994.
S.L. Ross Environmental Research Ltd., Alaska Clean Seas, Alaska Department of Environmental
Conservation, In-situ Burning: A Valuable Tool for Oil Spill Response, April 1995
Regional Response Team 2, In-situ Burning Decision Flow Chart, DRAFT 11/12/96.
Regional Response Team 6, In-situ Burn Decision Tree.

Chemical Oil Spill Treating Agents (COSTAs)

Except for specific circumstances (i.e. to prevent or substantially reduce a hazard to human life in accordance with 40 CFR 300.910 (c)) the use of chemical oil spill treating agents (COSTAs) will be considered on a case-by-case basis. Chemical oil spill treating agents include dispersants, herding agents, emulsion treating agents, solidifiers, elasticity modifiers, shoreline cleaning agents, shoreline pre-treatment agents, oxidation agents, and bioremediation agents.

In general, the use of dispersants is not promoted within the boundaries of the Region 5 or Region 7 Regional Response Teams (RRTs).

Regarding other non-dispersant COSTA, Region 7 has no pre-approvals in place. Region 5 has a pre-approval in place for the test use of the elasticity modifier product, ELASTOL. Additionally, the use of the NOCHAR A610 solidifier product contained in booms, sock, and pillows is also approved for use in Region 5. No approval is in place for use of uncontained solidifier products. Note that both ELASTOL and NOCHAR were removed from the National Product Schedule in 1996, and, therefore, neither may be used except as provided for in the National Contingency Plan (40 CFR 300.910 9 paragraph (c)).

Consistent with the National Contingency Plan (NCP), in situations when a human hazard is not present, the federal on-scene coordinator (FOSC) must receive the concurrence of the U.S. Environmental Protection Agency (USEPA) Regional Response Team (RRT) representative(s), and the RRT representative of the affected state(s) to use any chemical product. The FOSC must also consult with the Department of Interior (DOI) and Department of Commerce (DOC) natural resource trustees, where practicable, before authorizing the use of a chemical product. Any on-scene coordinator (OSC) or responder must comply with applicable local, state, and federal regulations.

Note that the FOSC is authorized to use any chemical product without requesting permission if he or she believes its use is necessary to prevent or substantially reduce a hazard to human life (40 CFR 300.910 (c)). If a chemical product is used under these circumstances, the FOSC must notify the USEPA RRT representative and the state(s) RRT representative of its use as soon as possible. This policy should be applicable to any OSC whether local, state, or federal.

General COSTA show-stoppers:

- Is the product on the National Product Schedule? If not, then it should not be used except as noted in 40 CFR 300.910 (c).
- Are all players in agreement on its use? If not, then it should not be used. These players shall include the Local Incident Commander, FOSC, SOSC, and the State, Federal, and Tribal natural resource trustees.
- COSTAs require RRT approval.

COSTA Decision Tree

The following information is excerpted from the API/NOAA manual "Options for Minimizing Environmental Impacts of Freshwater Spill Response", 1994.

Dispersants

Objective:

To remove floating oil from the water surface and disperse it into the water column, to reduce impacts to sensitive shoreline habitats and animals that use the water surface.

Description:

Specially formulated products that contain surface-active agents are sprayed at concentrations of about 5 percent of the oil onto the slicks by aircraft or from boats. The products can be applied undiluted or mixed with water. The dispersants reduce the oil/water surficial tension and decrease the energy needed for the slick to break into small particles and mix into the water column. Some physical energy is needed to mix the dispersant into the oil and treated oil into the water.

Applicable Habitat Types:

Open water and large rivers with sufficient depth and volume for mixing.

When to Use:

When the impact of the floating oil has been determined to be greater than impacts resulting from mixing of oil into the water column.

Biological Constraints:

Not suitable in shallow water depths where the dispersed oil could affect benthic resources. The dispersed oil must not affect water intakes.

Environmental Effects:

May increase effects on water-column organisms, particularly plankton and larval fish. Dispersion will only be partially effective, so some water surface impacts will still occur.

Other Limitations:

Effective application needs enough wind, but not too much (generally less than 25 knots). Dispersants are not too effective after approximately 12 hours due to weathering of oil and increased viscosity. In general, lighter petroleum products are more dispersible than heavier products. Dispersants should not be used if water intakes are nearby. For aerial application of dispersants the visibility should be 3 miles or better, the ceiling should be 1,000 feet or higher, and the wind speed should be 25 knots or lower.

Emulsion treating agents

Objective:

To break or destabilize emulsified oil into separate oil and water phases. Can also be used to prevent emulsion formation.

Description:

Emulsion treating agents are water-soluble surfactants that are applied to emulsified oil at low concentrations (0.1-2 percent). They can be injected into skimmer reservoirs to break the emulsion so that excess water can be separated from recovered oil. They also can be sprayed (similar to dispersants) directly onto slicks to break or prevent emulsions.

Applicable Habitat Types:

On all water environments where emulsified oil is present.

When to Use:

For recovered oil, where storage capacities are very limited, to separate the oil and water so that the water can be treated and discharged. On floating slicks, when formation of emulsified oil has or could reduce skimmer efficiency.

Biological Constraints:

Unknown at this time.

Environmental Effects:

Because this is a new application approach, there are very little data available on which to evaluate environmental effects. Effective dosages are 1-2 orders of magnitude lower than dispersants. There are concerns about application to slicks on how treatment might change the physical or chemical properties of the oil, whether the oil will be more readily dispersed, and how the treated oil will behave upon contact with birds, mammals, and shorelines.

Elasticity Modifiers (visco-elastic agents, elastimers, viscosity modifying agents)

Objective:

To impart visco-elastic properties to treated oil and increase skimming rates.

Description:

Chemical agent is applied as a liquid spray or a slurry onto the oil in the proper dosage. Treated oil is rendered visco-elastic, but still fluid, gelatinous, or semisolid; there is no chemical change in the oil. The primary purpose is to increase the efficiency in removal rates by skimmers. Increases the recovery by drum skimmers but can clog weir-type skimmers.

Applicable Habitat Types:

On all water environments where oil can be contained for recovery with skimmers. Not for use adjacent to wetlands or debris because of an increase in adhesive behavior of the treated oil.

When to Use:

When recovery efficiency of skimmers needs to be increased. Must be used in conjunction with booming or other physical containment. Not for use on heavy oils which are already highly viscous.

Biological Constraints:

Not suitable for vegetated shores or where there is extensive debris mixed in the oil. Should be avoided when birds or other wildlife that may be more adversely impacted by the treated oil can not be kept away from the treated oil.

Environmental Effects:

May enhance the smothering effect of oil on organisms. Thus, the treatment should be considered only where recovery of the treated oil is likely.

Herding Agents

Objective:

To collect or herd oil into a smaller area and thicker slick, thus increasing recovery. Also can be used to herd oil away from sensitive areas.

Description:

Chemical agents which are insoluble surfactants and have a high spreading pressure are applied in small quantities (1-2 gallons per lineal mile) to the clean water surrounding the edge of a fresh oil slick. They contain the oil, prevent spreading, but do not hold the spill in place. Hand-held, vessel-mounted, or aircraft systems can be used. Must be applied early in spill, when oil is still fluid.

Applicable Habitat Types:

On all water environments.

When to Use:

Potential use for collection and protection. For collection, use to push slicks out from under docks and piers where it has become trapped, or in harbors, where the equipment is readily accessible for use early in the spill. For protection, in low-current areas, use to push slicks away from sensitive resources, such as wetlands. Not effective in fast currents, rough seas, or rainfall.

Biological Constraints:

Not suitable for use in very shallow water or fish spawning areas.

Environmental Effects:

Direct acute toxicity to surface layer organisms, though available products vary greatly in their aquatic toxicity.

Solidifiers

Objective:

To change the physical state of spilled oil from a liquid to a solid.

Description:

Chemical agents (polymers) are applied to oil at rates of 10-45 percent, solidifying the oil in minutes to hours. Various broadcast systems, such as leaf blowers, water cannons, or fire suppression systems, can be modified to apply the product over large areas. Can be applied to both floating and stranded oil.

Applicable Habitat Types:

All water environments, bedrock, sediments, and man-made structures.

When to Use:

When immobilization of the oil is desired, to prevent re-floating, penetration into the substrate, or further spreading. However, full solidification may not occur unless the product is mixed well with the oil and may result in a mix of solid and untreated oil. Generally not used on spills of heavy oil because the product cannot be readily mixed into viscous oils.

Biological Constraints:

Must be able to recover all treated material.

Environmental Effects:

Available products are insoluble and have very low aquatic toxicity. Unrecovered solidified oil may have longer impacts because of slow weathering rates. Physical disturbance likely during application and recovery.

Chemical Shoreline Pre-Treatment

Objective:

To prevent oil from adhering to or penetrating the substrate.

Description:

Various types of chemicals, either solidifiers, surfactants, or film-forming agents, are applied to habitats in advance of the oil to prevent oil adhesion and penetration. Application must occur just prior to stranding of the oil, thus it is time critical.

Applicable Habitat Types:

For solidifiers, bedrock, sand and gravel habitats, and man-made structures. For surfactant-type products and film-forming agents, sand to gravel habitats.

When to Use:

When oil is projected to impact an applicable shoreline, particularly those which have high recreational or aesthetic value. However, lack of information on the availability, effects, and effectiveness of most products greatly limits their use.

Biological Constraints:

The toxicity of currently available products varies over three orders of magnitude, thus each product should be evaluated prior to consideration for use. Solidifiers should not be applied where smothering of organisms is of concern.

Environmental Effects:

Product-specific. Solidified oil will have higher smothering effects. Products which disperse oil will affect nearshore resources. See discussion for dispersants and solidifiers.

Shoreline Cleaning Agents

Objective:

To increase the efficiency of oil removal from contaminated substrates.

Description:

Special formulations are applied to the substrate, as a presoak and/or flushing solution, to soften weathered or heavy oils to aid in the efficiency of flushing methods. The intent is to be able to lower the water temperature and pressure required to mobilize the oil from the substrate during flushing.

Applicable Habitat Types:

On any habitat where water flooding and flushing procedures are applicable.

When to Use:

When the oil has weathered to the point where it will not flow using warm to hot water. This approach may be most applicable where flushing decreases in effectiveness as the oil weathers.

Biological Constraints:

The released oil should be recoverable rather than dispersed into the water column. Use may be restricted where suspended sediment concentrations are high, adjacent to wetlands, and near sensitive nearshore resources.

Environmental Effects:

If more oil is dispersed into the water column, there could be more oil sorbed onto suspended sediments and transferred to nearshore habitats, particularly along sheltered shorelines.

Nutrient Enrichment

Objective:

To speed the rates of natural microbial degradation of oil by addition of nutrients (generally nitrogen and phosphorus).

Description:

Nutrients are applied to the habitat in one of several methods: soluble inorganic formulations which are dissolved in water and applied as a spray, requiring frequent applications; slow-release formulations which are applied as a solid and designed to slowly dissolve; and oleophilic formulations which adhere to the oil itself, thus they are sprayed directly on the oiled areas.

Applicable Habitat Types:

Could be used on any habitat type where safe access is allowed.

When to Use:

On moderately to heavily oiled substrates, after other techniques have been used to remove as much oil as possible; on lightly oiled shorelines where other techniques are destructive or not effective; and where nutrients are a limiting factor in natural degradation. Most effective on diesel-type and medium oils that do not have large amounts of high-molecular weight, slowly degrading components. Less effective where oil residues are thick. Not considered for gasoline spills which will be completely removed by evaporation at faster time frames than microbial degradation.

Biological Constraints:

Not suitable in shallow water or restricted waterbodies where nutrient overloading may lead to eutrophication, or where toxicity of nutrients, particularly ammonia, is of concern. Contact toxicity of oleophilic formulations may restrict areas of direct application. Toxicity tests should be evaluated carefully, as other chemicals in the product could be toxic to aquatic organisms.

Environmental Effects:

Very little information available on effects in freshwater.

Natural Microbe Seeding

Objective:

To speed the rates of microbial degradation of oil by addition of nutrients and microbial products.

Description:

Formulations containing hydrocarbon-degrading microbes and fertilizers are added to the oiled area. The argument is made that indigenous organisms will be killed by the oil or not able to degrade the oil, so new microbial species need to be added to speed the process of biodegradation.

Applicable Habitat Types:

Could be used on any habitat type where safe access is allowed.

Biological Constraints:

Not suitable in shallow water or restricted waterbodies where nutrient overloading may lead to eutrophication, or where toxicity of nutrients, particularly ammonia, is of concern. Toxicity tests should be evaluated carefully, as other chemicals in the product could be toxic to aquatic organisms.

Environmental Effects:

Very little information available on effects in freshwater.

When to Use:

On moderately to heavily oiled substrates, after other techniques have been used to remove as much oil as possible; on lightly oiled shorelines where other techniques are destructive or not effective; and where nutrients are a limiting factor in natural degradation. Most effective on diesel-type and medium oils that do not have large amounts of high-molecular weight, slowly degrading components. Less effective where oil residues are thick. Not considered for gasoline spills which will be completely removed by evaporation at faster time frames than degradation.

Potential Effectiveness of ISB

Although in-situ burning is a relatively simple technique, its effectiveness can be limited by spill circumstances. Whether and how oil burns is the result of the interplay among a number of physical factors related to the oil itself and the extent to which the oil has been exposed to the environment. Critical factors—such as oil thickness, degree of weathering, and extent of emulsification—generally change with the passage of time, and the changes that occur make it more difficult to burn the oil. As a consequence, in-situ burning is most easily and effectively implemented during the early stages of a spill.

The efficiency of in-situ burning is highly dependent on a number of physical factors. Test burns and actual spill situations suggest it can be very effective in removing large quantities of oil from the water. Burn efficiencies of 50 to 90 percent can be expected making this response method more efficient than other methods. In comparison, mechanical removal (such as skimming) typically has an efficiency of 10-20 percent.

In-situ burning has most often been considered and tested with crude oil spills. However, its feasibility with other types of refined oil products (e.g., diesel and Bunker C fuel oil) has been demonstrated. Difficulties with establishing and maintaining necessary slick thicknesses (in the case of lighter oils) and ignition (for heavier oils) make in-situ burning a slightly less viable alternative for those materials than for crude oils.

ISB Relationship to Other Countermeasures and Potential Environmental Tradeoffs

Relationship to Mechanical and Other Response Methods

Spill prevention is the first line of defense in spill response planning, however, acceptance of the probability that a spill can and will occur is essential to successful preparedness. Burning will be considered as a possible response option only when mechanical containment and recovery response methods are incapable of controlling the spill alone.

While physical containment and mechanical removal of spilled oil is the primary objective of any response, prudent planning dictates the consideration of alternative countermeasures.

Summary of Potential Tradeoffs Relevant to ISB

As is the case with all response methods, the environmental tradeoffs associated with in-situ burning are situation dependent and cannot be considered independently from operational tradeoffs. In-situ burning can offer important advantages over other response methods in specific cases and may not be advisable in others depending on the overall mix of circumstances.

Advantages

- In certain areas where other techniques may not be possible or advisable due to the physical environment (e.g., ice conditions or wetlands) or the remoteness of the region, burning may represent one of the few viable response choices besides no action.
- In-situ burning may prevent or significantly reduce the extent of shoreline impacts, including exposure of sensitive biological resources, wildlife habitats, and the oiling of high value recreational or commercial beaches.
- The magnitude of a spill may overwhelm the containment and storage equipment deployed or available for a region, necessitating the consideration of other methods in a response strategy.
- Burning can rapidly remove a large volume of oil from the surface of the water, reducing the magnitude of subsequent environmental impacts of stranded oil.

Disadvantages

- Large quantities of highly visible black smoke is generated that may adversely affect human and other exposed populations downwind.
- There may be the potential for mortalities and other adverse biological impacts from localized temperature elevations at the water surface. Although this would be expected to occur in a relatively small area, in specific bodies of water at specific times of the year, affected populations may be large enough or important enough to represent reasons for not considering burning as a cleanup technique. Adverse impacts from temperature elevation should be considered relative to the toxic effects of the spill if burning is not employed.
- The longer-term effects of burn residues on exposed biological populations has not been investigated. It is not known whether these materials represent a significant source of toxicity.
- In-situ burning must be carefully controlled in order to maintain worker safety and to prevent unintended environmental impacts.
- There is a relatively short window of opportunity to use burning after a spill occurs prior to the oil weathering and losing its flammable characteristics.

Proposed Guidelines for ISB in Marshes

Based on the available data on effectiveness and effects of burning on oiled marshes, the following guidelines are proposed:

- Make sure that it is possible to contain and control the fire; it is not as easy to put out a fire in vegetation as it is with oil contained in a fireproof boom.
- Impacts to below ground vegetation are likely to be lower if there is a water layer between the oil and the substrate.
- A standing water layer of just a few inches may get hot enough to kill shallow roots anyway, however, little information is available regarding this effect.
- Burning of oiled woody wetland vegetation should not be considered.
- Not enough is known about seasonal effects on the ability of burned, oiled vegetation to recover, yet burning in late fall to early spring, when the vegetation is dormant and before production of new growth seems to be the best time.
- If it can be done with minimal impacts, heavy accumulations of oil should be removed using other methods, to reduce the amount of burn residues which may cause long-term impacts to both vegetation and animals returning to the habitat.
- Light fuel oils and crudes burn more efficiently and generate less residue, which should reduce the potential for long-term impacts.
- Burning of oil trapped in ice appears to have the least environmental impacts because the burn area is contained, the plants are dormant, and the above-ground vegetation is dead.
- There is some concern that burning of muddy substrates could alter their physical properties (i.e., make them hard) thus degrading their biological productivity.
- Every wetland is different in terms of the type of wetland, the species growing there, the condition, and the known or estimated tolerances of that type of system to physical and chemical disturbances. Biologists or botanists should be consulted prior to the use of burning as a cleanup technique in a wetland.
- Mechanical or manual alternatives to in-situ burning may compact oil into sediments, where it persists longer. Therefore, the relative damages from different response options should be weighed carefully.

ISB in Wetland Habitats

There are few studies on the relative effects of burning oiled wetlands compared to other techniques or natural recovery and most of the experience is derived from estuarine habitats. However, in-situ burning in wetlands can be effective since it can remove a large quantity of oil with a minimum of physical disturbance. The type of wetland vegetation and the season of the year along with many other factors will dictate whether burning is feasible in a particular wetland.

Refuge managers have historically conducted prescribed burns of wetlands to rejuvenate wetlands that have accumulated high litter loads, generate green vegetation or open spaces to attract wildlife, release nutrients for re-cycling, and to restore habitats in areas that were historically subject to frequent wildfires to their natural conditions. The presence of oil in a wetland may have two important effects: the high BTU of the oil may increase the temperature and heat penetration of the burn, and there is often an oil residue which can cause toxicity. However, the experiences of fire ecologists and practitioners can greatly contribute to the development of guidelines for burning wetlands as a spill-response strategy.

Guidance is being developed for specific types of wetlands such as:

- Wooded swamps
- Fresh-to-brackish impoundment marshes
- Great Lakes coastal marshes
- Upper Mississippi River marshes (lock and dam pools)
- Riparian wetlands
- Inland freshwater marshes
- Potholes

For now, based on discussions with refuge staff with fire management duties, the following general considerations for use were developed:

Pros

- Where access is limited or mechanical/manual removal has the potential to cause more damage by equipment and trampling, burning can rapidly remove oil from sensitive areas.
- It provides a response option when no others are acceptable, or where likely oil residues will be unacceptably high with other options, including natural recovery.
- It rapidly removes oil from the habitat when there is a time-critical element, such as a short-term change in the physical conditions which will likely cause loss of containment and further spreading, or a seasonal increase in wildlife use, such as arrival of large numbers of migratory waterfowl.

Cons

- Burning can cause substantial initial plant damage because the above-ground vegetation is removed.
- Burning can cause long-term impacts to vegetation, especially if the fire is so hot that the below-ground plant parts are killed.
- There is a potential for burning to increase oil penetration into the substrate, when there is no standing water.
- Any animals present and unable to escape (such as gastropods on clean vegetation above the oiled area) will be killed.

Air Monitoring Guidelines for Human Health Impacts of ISB

In-situ burning may affect two groups of people: the workers conducting the burn (the responders), a fairly homogeneous group of young, healthy adults, and the general public, which is much more heterogeneous and includes individuals who are more susceptible to toxic agents. The basic premises and possible monitoring options for each group are discussed below.

Monitoring for Responders

The responders, i.e., the workers assigned to conduct the in-situ burn, are likely to be healthy and physically fit adults. Responders' locations will vary with the nature of the burn and the stage at which it is conducted. Most of the time they are expected to be upwind of the slick and the smoke plume. However, at times they may be downwind of the evaporating slick and therefore be exposed to volatile organic compound (VOCs). Responding crews may also be downwind and near the burning oil where they can be exposed to combustion products.

Responders may be exposed to VOCs from the evaporating slick, similar to what is expected during skimming operations, and to combustion by-products from the burning oil: carbon dioxide, carbon monoxide, nitrogen dioxide, sulfur dioxide, particulates, and other combustion products. Air concentration of those substances depends on many variables, and we can expect substantial variability. Responders may be exposed to levels of gases and particulates above the permissible occupational exposure limits and should therefore be provided with personal protective equipment and be trained in its proper use. Responders' exposure is likely to be intermittent, and will vary greatly depending on location, weather conditions, and assigned tasks. Overall exposure duration is expected to vary from minutes to several hours.

Sampling Purpose

Sampling the responders' exposure level should serve several purposes, among them:

- Characterize exposures and hazards associated with the operation to provide better protection
- Compliance with OSHA requirements, per 29 CFR 1910.134 b.(8)¹ and 29 CFR 1910.120.q.3.(ii)²
- Data collection for scientific purposes

Air sampling should not substitute for workers' protection and safe work practices. Responders should be protected from overexposure regardless of monitoring and air sampling.

Exposure Limit

Exposure limits for responding personnel should be based on occupational exposure guidelines (see Table 1) such as OSHA's Permissible Exposure Limits (PEL) or applicable State standards. Exposure to the general public should not exceed the National Ambient Air Quality Standards (NAAQS).

¹ Regulations concerning respiratory protection

² Regulations concerning Hazardous Waste Operations and Emergency Response (HAZWOPER)

Table 1. Occupational Exposure Limits and the National Ambient Air Quality Standard for the Most Significant Products of ISB

COMPOUND	OSHA PEL ¹	ACGIH TLV ²	NAAQS ³
benzene (in VOC)	1 ppm (5 ppm)*	10 ppm (32 ppm)	N/A
nitrogen dioxide	(1 ppm)	3 ppm (5 ppm)	0.053 ppm annual average
sulfur dioxide	2 ppm (5 ppm)	2 ppm (5 ppm)	0.03 ppm annual average (0.14 ppm 24-hour average)
carbon monoxide	35 ppm (200 ppm)	25 ppm	9 ppm
PAHs	0.2 mg/m ³	0.2 mg/m ³	N/A
particulates PM-10	5 mg/m ³	5 mg/m ³	0.05 mg/m ³ annual average (0.15 mg/m ³ 24-hour average)

1. U.S. GPO, 1993. 29 CFR 1910.1000, Table 2.

2. American Conference of Government Industrial Hygienists, 1993. Threshold Limit Values for Chemical Substances and Physical Agents, 1993-1994. Cincinnati, OH.

3. U.S. GPO, 1993. 40 CFR 50.4 to 50.11.

* Numbers in parentheses indicate short-term exposure limits (STEL)

When To Sample

Sampling should be done as long as there is a potential for exposure.

Sampling Method

Industrial hygiene equipment and methods may be used. This may include personal sampling pumps, passive dosimeters, and real-time instruments. In general, the sampling should:

- follow sound industrial hygiene practices and procedures, including taking blank samples, proper sample packaging, etc.
- be a combination of area samples (e.g., instruments placed on the boom towing boats), and personal sampling on the workers themselves
- include both short-term peak exposure and time-weighted average, taken over the total length of exposure
- be done for all substances of concern, making VOCs and particulates the top priority
- determine background levels before and after the burn
- avoid erroneous readings caused by sources of smoke or fuel on the vessels, e.g., exhaust fumes or fuel vapors

Protection

Responders should use safe operating procedures such as staying upwind of the burn and the slick as much as possible and keeping safe distances from the fire. Responders should use respiratory protection and protective clothing as needed. It should be emphasized that safety risks such as heat and cold stress, falling overboard, or vessel collisions are just as real as chemical exposure, and more acutely dangerous. Responders should receive safety training that should include description of the hazards involved, precautions to be taken, and proper use of the safety equipment.

Monitoring for General Public

The general public usually includes people of all ages. It also includes individuals with allergies and with respiratory, cardiovascular, and other diseases. The vulnerability of these individuals to combustion by-products may be much greater than that of the responders. The distance between the general public and the burning site may vary greatly, depending on the specifics of the burn. The operational guidelines suggest six miles when the wind blows toward shore. However, burns may be conducted closer than six miles if conditions permit. Similarly, a burn may be inappropriate at six miles or a greater distance, if conditions are unfavorable.

Several miles downwind of the burn, levels of vapors evaporating from the slick and gaseous by-products from the fire are expected to be near background levels. Particulate level is the main concern. Based on data from experimental burns and from computer models, the level of particulates in the center of the plume three miles downwind of the burn is expected to be around $150 \mu\text{g}/\text{m}^3$ (McGrattan et al. 1993). If the burning is conducted according to the operational guidelines suggested above, PM-10 levels six miles away from the burn should be significantly lower than $150 \mu\text{g}/\text{m}^3$ in the center of the plume, and much lower than that at ground level. Concentrations at any one location will depend on specific atmospheric conditions at the time of the burn.

Visual Observations

Visual observations should be conducted to track plume direction and height, and to verify that the smoke behaves as predicted by the weather reports. Observations from ships and aircraft should continue as long as the burning takes place.

Monitoring Considerations

In-situ burn is a relatively new response technique. There are legitimate concerns about exposure to the smoke plume by the general public and environment. In order to make decisions concerning the continuation of an in-situ burn, it is advisable to collect information concerning concentrations of smoke particulates of $10 \mu\text{m}$ (PM-10) or less. Monitoring should be established when there is reason to believe that the weather conditions and/or location of the burn could produce a situation in which the general public or sensitive environments could be affected by fallout from the smoke plume. Depending on circumstances, the burn may be monitored by qualitative assessment (i.e., visual observation) and/or by quantitative methods that employ air sampling.

Exposure Limits

Exposure limits for the general public should be based on the National Ambient Air Quality Standards, which is used by EPA for air quality control. The standard for respirable particulates 10 μm in diameter and smaller (PM-10) is shown in Table 1. To err on the side of safety, this Upper Mississippi River policy adopts an action level of a 150 $\mu\text{g}/\text{m}^3$ average over one hour. Concentrations above this level should result in operational measures to control the rate of burn/smoke formation.

Sampling Limitations

In general, air sampling should not be regarded as a requirement for conducting in-situ burning but as an option if the situation warrants. Sampling should not be used as the means to determine whether the public is adequately protected: the public should be protected regardless of air sampling. We believe that such protection may be achieved by adhering to operational guidelines. Sampling, however, may be valuable by providing feedback information to the OSC, by increasing the comfort level of both those conducting the burn and those potentially exposed to it, and by collecting data that may be of value for future in-situ burning. Trends are more important than a single number. The readings of a real time particulate monitor may fluctuate widely, depending on nearby activity such as passing cars or smoke from fireplaces in nearby houses. A single reading may be misleading. Averaging the concentration readings over a period of time (e.g., 15 minutes) should provide an indication of the trend, that is, whether particulates concentration goes up or remains steady. Visual observations coupled with sampling that could provide the general trend of particulate concentration should be useful in ascertaining the effect of the burn on exposure of the general population to particulates.

It is also important to state clearly the limitations and shortcomings of sampling data. These data should be interpreted correctly, and the numbers should be presented with the associated uncertainty and possible interferences and inaccuracies. Otherwise, the numbers may not mean much or, worse yet, be misleading.

Sampling

Sampling may be conducted for several reasons:

1. To assess exposure levels at different points, in order to provide immediate feed back to the OSC, and to verify visual observations of plume behavior
2. Validation of air dispersion models
3. To satisfy other scientific or historical data collection needs

Based on previous experience, the concentration of gases in the plume would drop to below the exposure limit within several hundred yards of the burn. Particulate concentration in the center of the plume may remain above the level of concern for several miles downwind. Sampling of particulates should therefore be the main effort.

When To Sample

Sampling is an option that may be exercised anytime during the burn. It may be desirable when there is a potential for exposure (even if it is expected to be below the limit). Therefore, sampling may be done

when the plume drifts over a populated area, over natural resources, or for scientific data collection, at various locations downwind of the burning site. Since the purpose of this sampling is to monitor in-situ burning effects on sensitive populations, there is no need to require it when there is no reason to believe that a sensitive population will be affected. If the smoke plume is expected to be carried away from population centers or sensitive areas, sampling should not be required.

Sampling Equipment

Sampling equipment should be:

- Portable, easily deployable, and available when needed
- Sensitive, accurate, and precise enough to provide meaningful data
- If possible, provide real-time readings for immediate feedback and, in addition, have the capability to log readings over several hours to get the average concentration over an extended period

Real-time particulate samplers are commercially available from several manufacturers.

In addition, sampling pumps using filter media may be deployed at various locations. Their data, which is not real time, may be used for exposure assessment, model validation, and to provide information for future in-situ burning.

Recommended Air Monitoring Equipment for ISB

The primary health concern for in-situ burning is the evolution of particulates from the burning of crude oil, fuel products or other hydrocarbons. Secondly, within the first several hours of the burn, the generation of volatile organic compounds (VOCs) and polynuclear aromatic hydrocarbon's (PAHs) vapors could be additional health and safety concerns in the immediate area. Air monitoring is an important tool in communicating risks involved to the public at an emergency response. If it is determined that a burn will be conducted and there is risk of exposure to a human population center, then air monitoring should be completed (see pages F-16 to F-18). The Responsible Party (RP) may conduct air monitoring in conjunction with a burn, either independently or with government oversight. The air monitoring results should be immediately reviewed and assessed to determine the effectiveness of the burn and to address any public health concerns.

The U.S. EPA Region 5 and Region 7 Emergency Response Branches and their contractors, along with the U.S. EPA Environmental Response Team (ERT) and United States Coast Guard Strike Teams, are often called in emergencies to conduct perimeter and on-site air monitoring. The U.S. EPA regional offices maintain a 24-hour readiness along with contractor support to provide air monitoring equipment at an emergency response. Equipment arrival time would depend on the mobilization time to the scene from the Regional Office. For a spill on the upper Mississippi this would translate to 3 to 10 hours. The Federal On-Scene Coordinator (FOSC) can mobilize additional air monitoring resources from the ERT or from the USCG Strike Teams. The State Emergency Response Coordinator, or local HAZMAT team, can also mobilize air monitoring resources during an emergency.

The ERT in Edison, New Jersey, is on call 24 hours and is equipped and specialized in supporting OSC's in conducting air monitoring. The ERT can mobilize to the site within 12 to 24 hours after being notified

by a FOSC to support air monitoring activities. The United States Coast Guard maintains the Strike Teams to provide assistance to the OSC during an emergency. The Strike Teams are equipped and trained to provide air monitoring, safety monitoring, and other assistance to the OSC as needed. The Strike Teams can mobilize to the site in 12- 24 hours to provide air monitoring assistance.

During an incident when in-situ burning is being evaluated, and humans could be exposed to the smoke plume, it is recommended that the Incident Commanders plan to have air monitoring set up prior to and during the burn event. The U.S. EPA and its contractors would immediately mobilize staff and equipment to monitor for particulates using Real-Time Aerosol Monitors (RAMs). In addition, carbon monoxide, carbon dioxide, and VOCs can be monitored directly at the burn location. The U.S. EPA Region 5 and 7 offices and their contractors maintain air monitoring equipment to support these operations.

It is recommended that direct reading instrumentation be used to monitor the effectiveness and potential health concerns during a burn. The data should be evaluated, assessed and communicated to the workers and to the public as soon as the results become available. The Real-Time Aerosol Monitors (RAMs), Mini Real-Time Aerosol Monitors (Mini-RAMs), or equivalents, serve as valuable tools to access the particulates in a plume which could impact humans during an in-situ burn. The current guidelines for safe levels of particulates are a PM-10 (particulate matter less than 10 microns) concentration of less than 150 micrograms per cubic meter. The proposed Clean Air Act Amendments may change the PM -10 standard. The RAM and Mini-RAM instruments will directly read a measure of the total particulate in milligrams per cubic meter and give real time data for monitoring the particulates in air. The instruments can be used to screen residential areas during an in-situ burn so that particulate concentrations can be monitored and the risk to the public and on-site workers may be assessed. The RAMs and Mini-RAMs have been used successfully at tire fires, train derailments involving flaring of hydrocarbons, and other chemical fires where an observable plume is seen.

In addition to the above instruments, the U.S. EPA would mobilize a photo ionization detector, explosimeter, and a portable gas chromatograph to monitor volatile emissions directly at the source of the burn. The U.S. EPA maintains portable gas chromatographs, colorimetric tubes, and fixed sampling pumps, to monitor volatile emissions, PAHs, particulates, carbon monoxide and carbon dioxide during an in-situ burn.

The air monitoring equipment described in the following table can be mobilized to an emergency by calling the U.S. EPA Regional Office or the National Response Center.

U.S. EPA Region 5 (24-hour Spill line) (Minnesota, Wisconsin, Illinois)	312-353-2318
U.S. EPA Region 7 (24-hour Spill Line) (Iowa and Missouri)	913-281-0991
National Response Center (Manned by USCG can tie into USEPA regional Office or USCG Office)	800-424-8802

The State Emergency Response Section or Local HAZMAT team can also mobilize air monitoring equipment to the scene. Both can be contacted through the State Emergency Response telephone numbers found in the Notification Section of the UMR Spill Plan (see page 19).

Another resource for air monitoring equipment can be vendors, such as industrial hygiene subcontractors, who rent air monitoring equipment. These vendors can make equipment available within 24 hours of an incident.

The NOAA Scientific Support Team can also provide air monitoring resources from its field office at Louisiana State University. This resource can be activated through the NOAA Scientific Support Coordinator for the Great Lakes and Inland Rivers in Cleveland, Ohio.

The purchase price of the mini-RAM is \$1,400 and the RAM is \$6,700.

Table 2 shows the current inventory of air monitoring capabilities for in-situ burning in U.S. EPA Regions 5 and 7.

Table 2. USEPA Regions 5 and 7 Air-Monitoring Capabilities For ISB

EPA Region 5 (resources located in Chicago, IL, unless otherwise noted)

INSTRUMENT OR TECHNIQUE	TARGET COMPOUND(S)	SAMPLING PERIOD OR TURNAROUND TIME	COMMENTS\ LIMITATIONS
Real-Time Aerosol Monitors	Will yield measure of total particulates, with continuous digital display, concentration ranges in mg/m ³ , with option for respirable size selection	Portable particulate monitor. Can provide immediate results once calibrated and in operation; battery operated.	3 units located in Chicago, Illinois; mobilization time determined by distance to site.
Mini Real-time Aerosol Monitors (Mini-RAMs)	Will yield measure of total particulates in mg/m ³ .	Once calibrated, they will give reading 36 seconds after turned on and then a reading every 10 seconds for 500 minutes; can provide time-weighted avg.	2 Units located in Chicago, Illinois, mobilization time determined by distance to site.

EPA Region 7 (resources located in Kansas City, KS, unless otherwise noted)

Combustible Gas and Oxygen Alarm Model 261	Measures levels of oxygen and flammables	Real-time monitoring	Indicates whether it is safe to enter an area; won't measure mists of some oils.
Minirams (Total particulate Miniature Real-time Aerosol) Model PDM-3	Will yield measure of total particulates in mg/m ³ .	Once calibrated, they will give reading 36 seconds after turned on and then a reading every 10 seconds for 500 minutes.	Three available at START KC office. Could be zeroed out before ignition of spill. No analysis of components of particles measured.

(Table 2 continued)

INSTRUMENT OR TECHNIQUE	TARGET COMPOUND(S)	SAMPLING PERIOD OR TURNAROUND TIME	COMMENTS\ LIMITATIONS
Gilian Personal Sampling Pumps HFS Air Sampling Systems	Capable of sampling for wide range of compounds, including PAHs.	Sample duration of at least 4 hours necessary, longer for some compounds.	START has access to 15 in EPA Region 7. A realistic startup is 48 hours after notice. There is a need for charging and calibration, as well as purchase of unique sampling trains, which include absorbent tubes, cassettes, filters and microimpinger traps.
Draeger Tubes	Region has tubes for H ₂ S, CO, CO ₂ , TPHs, SO ₂ , benzene, toluene and xylenes. No PAH tube on market.	Real-time results that are quasi-quantitative.	Almost instantaneous results. EPA also has Sensidyne kits, which will give similar results.
OVA's	Provides concentrations of unidentified total volatiles.	Gives real-time results of total volatiles.	3 OVA's in KC START office, 2 in St. Louis; it does not provide chemical-specific results
HNu	Provides analysis of total volatiles present; some limitations in reading, compounds depending on span in photo-ionization detection (PID) lamp.	Gives real-time results of total volatiles.	3 HNu's in KC START office, 2 in St. Louis; use limited in wet conditions; soot during burn would likely coat lamp, making it unusable. No chemical-specific results.

(Table 2 continued)

INSTRUMENT OR TECHNIQUE	TARGET COMPOUND(S)	SAMPLING PERIOD OR TURNAROUND TIME	COMMENTS\ LIMITATIONS
TVA-1000	Analysis of total volatiles, with both flame ionization detector and photo-ionization detector.	Gives real-time results of total volatiles. Can be set for 8-hour exposure mode.	2 Available in KC START office; lamp of PID less exposed to moisture and soot, so of a little more use than HNu.
Monitox	Designed for confined space, rather than ambient sampling. Only H ₂ S and HCN available.	Designed to show whether threshold levels of gases exist.	2 of each in KC START office.
Polyurethane Foam (PUF) Samplers	Could be used to collect volatile and semivolatile samples; use on PAHs in region has been very limited.	Sampling durations of several hours - up to 3 days - are standard.	8 are regularly available in Kansas City, but more are available from other regions. Require power source.
PM-10 Air Samplers	Will measure particles of <10 microns.	Sampling durations of several hours are required.	Require power source; radioactive element involved.
Single Point Monitor from MDA Scientific	Inorganics, including ammonia, hydrogen cyanide and sulphuric acid	The SPM is designed to work with specific key and cassette, which must be kept frozen. They are not kept on hand by START. Acquisition time would be 48 hours.	The setup time and limitation of sampling to such analytes as cyanides, acids and amines makes its use during any in-situ burn response unlikely.

(Table 2 continued)

INSTRUMENT OR TECHNIQUE	TARGET COMPOUND(S)	SAMPLING PERIOD OR TURNAROUND TIME	COMMENTS\ LIMITATIONS
Summa Canisters	Summas can be used to collect a wide range of volatile compounds, but they do not lend themselves to collection of semi-volatiles, particularly PAHs, which stick to the inside of the canister.	Sampling periods vary from minutes to several hours. 24-hour analytical turnarounds are possible.	Real-time applications must be tied to presence of Mobile Laboratory or use of portable GC, such as Photovac. Not applicable to nonvolatiles.
Portable Gas Chromatograph, Photovac	Volatile Compounds	Estimated 2-3 hours after arrival at spill.	The Photovac has been used primarily to analyze head space samples from soil in the region. It has the potential to analyze air samples collected in Summa canisters, but it is necessary to extract samples collected from Summas. It does not lend itself to analysis of semi-VOCs.
EPA Mobile Lab	Can measure volatiles from samples collected from air, water or soil.	Will ultimately be capable of prompt turn-around of field samples collected in Summas or soil-gas bottles. The Lab is currently being retrofitted and updated.	Mobile Lab must be driven to spill site; it will require four additional hours to calibrate equipment. Some extractions will require 24-48 hours. Could be used for samples containing VOCs, semi-VOCs, PCBs and PAHs.

Sampling Location

Sampling location should be based on priority concerns, with the first priority given to population centers downwind of the burn. For scientific data collection, (e.g., model validation) we recommend that samplers be placed at different distances from the burn to collect particulate concentration data at ground level. Data collected would be extremely valuable for future burns.

If it is determined that sampling is needed, real-time particulate samplers (PM-10) should be positioned on 7 1) the shoreline, at the expected centerline of the plume; 2) at the population center of concern; and 3) in several locations in the vicinity of the population downwind of the burn. PM-10 samplers can operate for more than eight hours. They can collect PM-10 readings before the burn commences and gather background data during the burn to assess the burn effect. If possible, the samplers can be used after the burn is over to collect post-burn readings. Sampling results should be relayed to the FOSC. If it is established that the readings exceed the level of concern, the FOSC will be so advised.

Other Sampling Considerations

1. Area background readings should be taken before and after the burn to determine baseline levels.
2. EPA and regional air monitoring stations may be able to assist by providing historical data, and by conducting air sampling during the burn itself.

Public Notification for ISB

Notification of the public of an impending burn is critical to the overall success of an in-situ burn effort. The notification, coordinated through the joint information center, should focus on conveying the following messages:

- Burning is a simple, well understood, and controlled practice.
- Strict health and environmental criteria are being used in deciding whether or not to burn.
- Burning is being conducted because it presents the opportunity for greater health and environmental protection than could be achieved by other spill response methods or no response.
- Health and environmental precautions will accompany burning.
- The burns will be carried out by specially trained personnel and will be closely monitored.
- The public will be notified of each burn before or as it begins.

Public notification can be initiated through radio/TV broadcasts, and broadcasts to mariners. If necessary, local government and state emergency service personnel with access to established public warning systems and authority to use them can facilitate this notification.

Materials to educate the public and media about burning, its risks, tradeoffs with other countermeasures should be developed ahead of time and available for dissemination during the burn. This material would cover the trade-offs involved in choosing response countermeasures, and relate the risks of in-situ burning to better known risks (i.e. forest fires). Distribution of this information can be through the agencies' public affairs offices prior to a spill and through a joint information center established during a spill.

Suggested Public Notice for ISB

At (time) on (date), a release of oil occurred at (location). Following an evaluation of the situation, local, state, and federal officials have determined that burning the oil in place is the safest and most effective way to protect the public health and environment. The burn will be conducted under controlled conditions to ensure that the fire will not threaten the public, property, or environment.

The decision to burn was made after considering strict health and environmental criteria. Officials have determined that the burning will present an opportunity for greater health and environmental protection than can be achieved by using other spill response methods, including not responding. Health and environmental precautions will accompany the burning.

The burns will be carried out by specially trained personnel and will be closely monitored. The burn will begin at approximately (time), and the public will be advised when the burn is complete. Questions should be directed to (person or organization) at (telephone number).

Ecological Considerations for ISB

Open Water ISB

Potential ecological impacts of open water in-situ burning have not been extensively discussed or studied. Conclusions are based on documented physical effects observed in the laboratory and at limited test burns.

The surface area affected by in-situ burning is likely to be small relative to the total surface area and depth of a given body of water. This does not necessarily preclude adverse ecological impacts, particularly if rare or sensitive species use the waters in question. Organisms that may be affected by in-situ burning include those that use the uppermost layers of the water column, those that might come into contact with residual material, and possibly some benthic (bottom-dwelling) plants and animals.

Direct Temperature Effects

Burning oil on the surface of the water could adversely affect those organisms at or near the interface between oil and water, although the area affected would presumably be relatively small. Observations during large-scale burns using towed containment boom did not indicate a temperature impact on surface waters. Thermocouple probes known to be in the water during the Newfoundland burn showed no increase in water temperatures during the burn (NOBE Facts, January 1994). It appears that the length of time the burning layer resides over a given water surface may be too brief to change the temperature due to the fact the ambient temperature water is continually being supplied below the oil layer as the boom is towed.

Surface Microlayer

Role and importance of the surface microlayer - The surface of the water represents a unique ecological niche called the "surface microlayer," which has been the subject of many recent biological and chemical studies. Although most studies of the microlayer have been conducted in the marine environment, the results can also be applied to the freshwater environment. The microlayer, variously defined but often considered to be the upper millimeter or less of the water surface, is a habitat for many sensitive life stages of aquatic organisms, including eggs and larval stages of fish and crustaceans, and reproductive stages of other plants and animals. The microlayer is also a substrate for microorganisms and, as such, is often an area of elevated microbial population levels and metabolic activity.

Potential effects of burning on the surface microlayer - The ecological importance of the surface microlayer and the potential impacts to it from burning activities have been discussed in the different, but related, context of ocean incineration. The Office of Technology Assessment (1986) noted in an evaluation of the technique,

...given the intermittent nature of ocean incineration, the relatively small size of the affected area, and the high renewal rate of the surface microlayer resulting from new growth and replenishment from adjacent areas, the long-term net loss of biomass would probably be small or non-existent.

Despite the obvious differences between shipboard incineration of hazardous wastes and surface burning of spilled oil, the above rationale is applicable to in-situ burning. Accordingly, potential impacts to the

ecologically important surface microlayer are, to some extent, offset by the presumably short-lived nature of the burn and its associated residual material.

Environmental Toxicological Considerations

Although many studies to define the physical and chemical characteristics that result from in-situ burning have been performed, there has been little research on potential ecological effects. To address some of these information shortfalls, Environment Canada coordinated a series of studies to determine if in-situ burning resulted in water column toxicity beyond that attributable to allowing the slick to remain on the surface of the water. While these studies centered on the Newfoundland in-situ burn field trials conducted in August 1993, they also included laboratory tests to investigate potential effects in a more controlled environment.

Toxic effects were evaluated using three standard marine test organisms: sand dollar, oyster, and fish. In both the laboratory and the field experiments, sensitive toxic endpoints in these organisms were studied in the three situations of no oil, no burning; oil on water, no burning; and oil on water, burned. Results from the laboratory and field studies indicated that although toxicity increased in water samples collected below burning oil on water, this increase was generally no greater than that caused by the presence of an unburned oil slick on water. Chemical analyses performed in conjunction with the biological tests reflected low hydrocarbon levels in the water samples. In addition to water column samples, the residues remaining after the laboratory and Newfoundland field burns will be subjected to aquatic toxicity testing.

Beyond the direct impacts caused by high temperatures, the by-products of in-situ burning may be toxicologically significant. Although analysis of water samples collected from the upper 20 cm of the water column immediately following a burn of crude oil yielded relatively low concentrations of total petroleum hydrocarbons (1.5 ppm), compounds that have low water solubility or that associate with floatable particulate material tend to concentrate at the air-water interface (U.S. EPA 1986). Strand and Andren (1980) noted that aromatic hydrocarbons in aerosols originate from combustion associated with human activities, and that these compounds accumulate in the surface microlayer until absorption and sedimentation remove them.

Burn residues could be ingested by fish, birds, mammals, and other organisms, and may also be a source for fouling of gills, feathers, and fur. However, these impacts would be expected to be much less severe than those manifested through exposure to a large, uncontained oil spill.

Contamination is likely to be local in scale affecting certain unique populations and organisms that use surface layers of the water column at certain times to spawn or feed. In crafting an effective and protective response strategy, these effects should be weighed against effects resulting from alternative actions.

Safety and Health Considerations and By-Products of ISB

The safety of personnel during both ignition and burn phases of large amounts of combustible liquids on the surface of the water presents some unique safety concerns for workers and response personnel. Many of these concerns are addressed in greater detail in operationally oriented references and include, but are not limited to the following:

Fire Hazard - Care must be taken to control the burn at all times to ensure the safety of personnel and property. This precludes burning at sources such as tankers, ships, or tank farms unless means are taken to ensure that the flame cannot propagate from the burn location to the source.

Ignition Hazard - Personnel and equipment involved in ignition of the oil slick must be well coordinated. Weather and sea conditions need to be kept in mind and adequate safety distances be kept at all times. Specialized ignition equipment, unknown fire behavior and uncertain flash points introduce safety risks.

Vessel Safety - Burning at sea may involve the use of several vessels operating in close proximity, perhaps at night or in conditions of poor visibility. These conditions are hazardous by nature and generally require training and close coordination. Maneuverability while towing boom or positioning other containment equipment will require skilled personnel.

Training - Training of personnel to operate equipment for in-situ burning should be developed to minimize the risk of injury and accident. Training should meet all applicable OSHA regulations and guidelines.

Response personnel working in close proximity to the burn may be exposed to levels of gases and particulates that may require the use of personal protective equipment. Training for burn personnel should include proper use of use of personal protective equipment which may be used to minimize inhalation of, and skin contact with, combustion by-products. Exposure limits such as OSHA's PELs (Permissible Exposure Limits) are applicable to this group of typically healthy adults.

Other hazards can include the exposure of personnel to extreme heat conditions, smoke and fumes; working under time constraints or extended periods of time. Personnel involved with burning operations must be well briefed on the plan of operations, with safety stressed, and must be notified of all changes from the approved burn plan. The need for burning must be constantly evaluated and should be reconsidered if conditions (e.g., weather, operations, equipment) pose a threat or danger to human health and safety, or facilities. As more knowledge is gained from burning, it is most likely that additional safety concerns will be identified.

General Public Health Considerations

Burning oil produces a visible smoke plume containing smoke particulates, combustion gases, unburned hydrocarbons, residue left at the burn site and other products of combustion. It also results in the evaporation and release of volatile compounds from the oil. Public health concerns relate to the chemical content of the smoke plume and the downwind deposition of particulates. It should be noted that not burning an oil spill also introduces its own air quality concerns. Analysis of the physical behavior of

spilled oil has shown that 50 percent of a light crude oil spill can evaporate fairly readily, and it is the acutely toxic lighter fractions of a crude oil mix that quickly move into the atmosphere.

Results of recent burn tests indicate that in-situ burning does not yield significant emissions above that expected for similar types of combustion such as forest fires. Many human health experts feel that the most significant human health risk resulting from in-situ burning is inhalation of the fine particulate material that is a major constituent of the smoke produced. An early assessment of health concerns attributable to the Kuwaiti oil fires identified the less than 10-micron particulate matter as representing the greatest health hazard in that situation. The extent to which these particles present a health risk during an in-situ burn depends on the concentration and duration of exposure. It is important to remember that particulates in these concentrations are so small that they do not settle readily. They will be carried by the prevailing wind over large distances, over which their concentrations will rapidly decline.

Polynuclear aromatic hydrocarbons (PAHs) are a group of hydrocarbons produced during in-situ burning. They are found in oil and oil smoke, where their relative concentration in the latter tend to be higher than in the oil itself. Possible carcinogenicity of some members makes this group a serious health concern, although it is generally long-term exposure to the higher molecular-weight PAHs that is the basis for concern. Sulfur dioxide (SO₂) and nitrogen dioxide (NO₂) are eye- and respiratory tract irritants that are produced by oil combustion. Concentrations of PAHs decline downwind as smoke from the fire is diluted by clean air. The concentrations of other by-products of burning oil (i.e., combustible gases) also decline downwind.

Burning should not be allowed if downwind human populations are at risk. The downwind extent of human risk has not been empirically determined although it is an area of very active research. There are no exposure standards for respirable particles generated by a burn that could be applied directly to determine safe downwind distances. Atmospheric dispersion models, if available for the specific area, could be utilized to help refine potential downwind exposures. If models are not available, whenever possible, a small pilot burn could be conducted before a larger burn in order to gauge the effectiveness of the ambient conditions to disperse the smoke and gasses resultant from the burned material. Because wind direction meanders under most circumstances, no population should be within a 45° arc to either side of the wind direction. Local wind and weather events (e.g., air stability class, lake breezes, and frontal passages) must be considered when determining downwind directions.

By-products

By-products of in-situ burning exist because no combustion process is completely efficient in oxidizing a given source material. Besides the normal results of burning, CO₂, H₂O, and an assortment of other sulfur and nitrogen residues, a wide range of intermediate combustion products are generated. Although the exact mix of burn residues varies, by-products can be categorized into three groups: unburned oil, airborne components, and combustion residues.

Operational Considerations for Conducting ISB

Open Water Burning

An open-water in-situ burning technique most likely to be used would involve the use of boats towing fire resistant booms used to contain the spilled oil and keep it from spreading. The boom, attached to the boats by towing lines, would be towed such that it forms a U shape. The open end of the U is maneuvered through the oil slick, and a "boomfull" of oil is collected. The boom is towed away from the main slick and the oil is ignited. During the burning the boom is pulled in such a way as to slowly advance ahead to ensure that the oil is concentrated at the back end of the boom and to maintain maximum thickness. A burn can be terminated by letting the oil layer thin out by releasing one end of the boom. After the oil is consumed the process is repeated. Other techniques may include containing the oil continuously spilling from a burning oil rig, or placing fire boom around a tanker that caught fire.

Burning in Other Inland Environments

Although it is widely held that in-situ burning does take place in the inland zone, little technical information exists on techniques and impacts of burning in environments other than open water. In most cases these involve burning in ice conditions and in wetlands and the results are varied and anecdotal.

Burning in Ice/Winter Conditions - Containment is almost always required to maintain the minimum 2-3 mm thickness necessary to burn oil. Ice edges can act as natural barriers, and as long as the oil is of sufficient thickness, combustion is possible. However, wind and/or low currents may be necessary to herd the oil into sufficient thickness along the edge. Oil trapped under the ice may also accumulate in sufficient thicknesses along leads in broken ice resulting in favorable conditions for burning. Test burns in a 1986 Esso wave basin showed burning efficiencies of up to 90% where moderate winds herded the oil into long narrow leads. Burning in other lead geometries and along brash ice resulted in less efficient burns. Arctic studies have also shown it is possible to ignite and burn fresh, weathered, and emulsified oil at temperatures as low as -35°C. It is important to note that an in-situ burn in broken ice is not easily extinguished once ignited

Burning oil in snow conditions is similar to burning oil on water since as the snow melts during the burn it can form a meltwater pool upon which the oil continues to burn. Certain conditions such as wind, snow properties, and concentration of the oil in the snow all can impact the success of the burn. Burn efficiencies of 90-99% have been shown during field studies and actual spills. Oil/snow mixtures of up to 75% can be ignited with a diesel or gasoline-soaked rag. [This section was from *Detection of Oil in Ice and Burning Oil Spills in Winter Conditions*, PROSCARAC, Inc., March 1992]

Fire Resistant Boom

The application of in-situ burning requires the physical collection and containment of oil to maximize the efficiency of the burning process and to provide a means to control the burn. Generally, this is accomplished by use of a fire boom or some type of fire-resistant containment. If fire boom or other fire containment device is not available and/or the equipment to deploy the boom is unavailable or inadequate, approval for use of in-situ burning may be denied.

Ignition

Heavy oils require longer heating times and a hotter flame to ignite compared to lighter oils. Many ignition sources can supply sufficient heat. These include pyrotechnic igniters, laser ignition systems, and aerial ignition systems. Pyrotechnic devices have been successfully used to ignite floating oil slicks under a range of environmental conditions. Disadvantages to their use are associated with safety, shelf life, availability, speed of deployment, and cost (Spiltec, 1987). Laser ignition, while a promising technique, remains experimental in nature with drawbacks associated with difficulties in beam focusing from the air, wind effects during oil preheating, energy requirements, and cost. Aerial ignition systems using gelled gasoline dropped from helicopters appear to be a more viable technique applicable in a range of environmental conditions. Whichever method is used, considerations of safety and efficiency must enter into the decision process.

Oil Thickness

In general, oil slicks can be effectively burned if they are consistently 2 to 3 mm thick. This number can vary with oil viscosity and degree of weathering, with more viscous and more weathered oils requiring a considerably thicker layer of oil (estimated to be nearly 10 mm). Also, burn efficiencies increase as thickness of the slick increases. This consideration, therefore, implies that spilled oil must be contained by some means (fire resistant boom, ice, etc.) in order to prevent oil spreading and the resultant thinning of surface layers.

Effects of Weathering

Weathered oil requires a longer ignition time and higher ignition temperatures. However, igniting weathered oil is generally not a problem with most ignition sources because they have sufficient temperature and burn time to ignite most oils. Weathering, as it affects the ability to burn oil, is currently under study in laboratory and field experiments.

Effects of Emulsification

The effect of water content on oil ignition is thought to be similar to that of weathering, in that it decreases ignitability and combustibility. However, oil containing some water can be ignited and burned. The controlling factor in the combustion of emulsions is the removal of water, which is accomplished either through the boiling of the water out of the emulsion, or by breaking the emulsion thermally or chemically. The effect of emulsions on the ability to burn oil is currently under study in laboratory and field experiments.

Unburned Oil and Solid Burn Residues

Although in-situ burning has the potential for removing a large proportion of the mass of an oil spill from the water surface, some of the source material will not be consumed and will remain as a concern. Similarly, combustion residues, described as stiff, taffy-like material will remain after the burn. Provisions for the removal of these materials must be made as the potential exists for undefined levels of shoreline impacts even with a successful burn.

Although sinking of burn residues has seldom been observed in test burns, a slight increase in density relative to the original oil has been observed. In the 1991 explosion and burning of the tanker *Haven* off Genoa, Italy, burn residues were thought to have sunk. Reliable estimates of the amount of oil burned were not possible, but the tanker was laden with 141,000 tons of Iranian heavy crude, and very little remained in the wreck following the accident and fire. It was reported that several surveys during 1991 confirmed that there was sunken oil offshore and along the coast. The sunken oil is now thought to have resulted from the extraordinary heating of the contained product inside the cargo holds of the vessel. This oil basically underwent a crude distillation, in which lighter components were driven off and a denser - and in this case, heavier than sea water - material remained.

It should be emphasized that the circumstances specific to this situation should not be used as the basis for generalization in all burning scenarios.

RESOURCE MANUAL

Section G: Other Resources

Acronyms

ACP	Area Contingency Plan
AST	Atlantic Strike Team
ATSDR	Agency for Toxic Substances and Disease Registry
CAA	Clean Air Act
CAER	Community Awareness and Emergency Response
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COPT	Captain of the Port
CWA	Clean Water Act
DHS	Department of Homeland Security
DNR	Department of Natural Resources
DO	Dissolved Oxygen
DOA	Department of Agriculture
DOC	Department of Conservation
DOT	Department of Transportation
DPS	Department of Public Safety
DRAT	(USCG) District Response Advisory Team
EHS	Extremely Hazardous Substance
EIS	Environmental Impact Statement
EMAC	Emergency Management Assistance Compact
EMC	Emergency Management Committee
EO	Executive Order
EOC	Emergency Operations Center
EOP	Emergency Operation Plan
EPA	Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act of 1986 (SARA Title III)
ESA	Endangered Species Act
ESF	Emergency Support Function (annex to the Federal Response Plan)
EWMN	(Upper Mississippi River) Early Warning Monitoring Network
FD	Fire Department
FEMA	Federal Emergency Management Agency
FOSC	Federal On-Scene Coordinator
FRP	Facility Response Plan
FRP	Federal Response Plan
FY	Fiscal Year
GAO	Government Accountability Office
GIS	Geographic Information System
GLC	Great Lakes Commission
GPS	Global Positioning System
GRP	Geographic Response Plan
GSA	U.S. General Services Administration

Acronyms

(Continued)

HAZWOPER	Hazardous Waste Operations and Emergency Response Standard
HHS	U.S. Department of Health and Human Services
H.R.	House of Representatives
HSEM	Homeland Security and Emergency Management
HUC	Hydrologic Unit Code
IC	Incident Commander
ICS	Incident Command System
IO	Information Officer
ISA	Inland Sensitivity Atlas
JIC	Joint Information Center
L&D	Lock(s) and Dam
LDB	Left Descending Bank
MARAD	U.S. Maritime Administration
MMS	Minerals Management Service
MNRG	Midwest Natural Resources Group
MRC	Mississippi River Commission
MVD	(USACE) Mississippi Valley Division
MVP	(USACE) St. Paul District
MVR	(USACE) Rock Island District
MVS	(USACE) St. Louis District
NAS	National Academies of Science
NCP	National Contingency Plan
NEBA	Net Environmental Benefit Analysis
NEPA	National Environmental Policy Act
NGRREC	National Great Rivers Research and Education Center
NGO	Non-Governmental Organization
NIMS	National Incident Management System
NIOSH	National Institute for Occupational Safety and Health
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NPFC	National Pollution Fund Center
NPS	National Park Service
NRC	National Response Center
NRCS	Natural Resources Conservation Service
NRDA	Natural Resources Damage Assessment
NRT	National Response Team
NSF	National Strike Force
NWR	National Wildlife Refuge
OMB	Office of Management and Budget
OPA	Oil Pollution Act of 1990

Acronyms

(Continued)

ORSANCO	Ohio River Valley Water Sanitation Commission
OSC	On-Scene Coordinator
OSHA	Occupational Health and Safety Administration
OSLTF	Oil Spill Liability Trust Fund
OSRO	Oil Spill Removal Organization
PCA	Pollution Control Agency
PHMSA	Pipeline and Hazardous Materials Safety Administration
PL	Public Law
PPE	Personal Protective Equipment
PREP	National Preparedness for Response Exercises Program
PRFA	Pollution Removal Funding Authorization
QA/QC	Quality Assurance/Quality Control
RCP	Regional Contingency Plan
RCRA	Resource Conservation and Recovery Act
RDB	Right Descending Bank
RIFO	(USFWS) Rock Island Field Office
RM	River Mile
RMP	Risk Management Plan
RP	Responsible Party
RRT	Regional Response Team
SARA	Superfund Amendments and Reauthorization Act
SAV	Submersed Aquatic Vegetation
SCAT	Shoreline Cleanup Assessment Technique
SDWA	Safe Drinking Water Act
SEMA	State Emergency Management Agency
SERC	State Emergency Response Commission
SHPO	State Historic Preservation Officer
SONS	Spill of National Significance
SOSC	State On-Scene Coordinator
SPCC	Spill Prevention Control and Countermeasure
SSC	Scientific Support Coordinator
T&E	Threatened and Endangered
TMDL	Total Maximum Daily Load
TRANSCAER	Transportation Community Awareness and Emergency Response
TSS	Total Suspended Solids
UCS	Unified Command System
UMR	Upper Mississippi River
UMRBA	Upper Mississippi River Basin Association
UMRCC	Upper Mississippi River Conservation Committee
UMRNWFR	Upper Mississippi River National Wildlife and Fish Refuge

Acronyms
(Continued)

USACE	U.S. Army Corps of Engineers
USCG	U.S. Coast Guard
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WQ	Water Quality
WQEC	(UMRBA) Water Quality Executive Committee
WQTF	(UMRBA) Water Quality Task Force
WQS	Water Quality Standard

Upper Mississippi River Spill Response Plan and Resource Manual Corrections and Updates Form

Information contained in The Upper Mississippi River Response Plan and Resource Manual reflects currently available information that has been verified when possible. Because information contained within the Plan and Manual will change over time, the document will be updated periodically to reflect these changes. If you are aware of changes or errors, or if you can provide additional information, please take the opportunity to inform us. Your information will be incorporated into the next version of the Response Plan and Resource Manual. Thank you for your assistance.

Correction ☐ Additional Information ☐ *(Please check one)*

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