

# UPPER MISSISSIPPI RIVER POOLS 11 AND 12 OVERVIEW

## Resource Description and General Response Considerations



*The Pools 11 and 12 Spill Response Plan CD is developed to address the long-standing concerns about spills of oil and hazardous substances onto National Wildlife Refuge System lands along Upper Mississippi River. The Pools 11 and 12 Overview document provides information on project background, geographic description of Pools 11 and 12, response considerations and planning tools included in the CD.*

Due to long-standing concerns about spills of oil and hazardous substances affecting National Wildlife Refuge properties and associated sensitive resources on the Upper Mississippi River (UMR), the US Environmental Protection Agency, US Fish and Wildlife Service, Minnesota PCA, Minnesota DNR, Wisconsin DNR, US Coast Guard, US Army Corps of Engineers, other agencies, and private sector interests, with the assistance of the Upper Mississippi River Basin Association, have developed a set of planning and response tools for Upper Mississippi River National Wildlife & Fish Refuge. The goal of this effort has been to foster communications, enhance spill contingency planning and preparedness, and to develop site-specific protection strategies that assist responders in prioritizing tactics and recommending strategies and locations to protect the Refuge and the public from releases of oil or other substances.

This overview document provides a description of Pools 11 and 12 and its sensitive resources. It also provides general considerations for response. For more information, see the [Site Specific Response Strategies Maps](#) (link) and the [Pools 11 and 12 Incident Action Plan](#) (link) included on the Pools 11 and 12 Spill Response Plan CD.

## **Location of Pools 11 and 12**

Pools 11 and 12 of the Upper Mississippi River (UMR) is the area between Lock and Dam 10 at river mile 615, at Guttenberg, Iowa, and Lock and Dam 12 at river mile 557, near Bellevue, Iowa. Pools 11 and 12 includes portions of the Upper Mississippi River National Wildlife and Fish Refuge (Refuge), Nelson Dewey State Park (Wisconsin), Turkey River Mounds State Monument (Iowa), and Mines of Spain State Park (Iowa). Several populated areas along the river include the cities of Guttenberg, Iowa; Cassville, Wisconsin; Dubuque, Iowa; East Dubuque, Illinois; and Bellevue, Iowa. There are no public drinking water intakes in Pools 11 and 12. There are, however, two industrial water intakes in Pool 11 and one in Pool 12.

Most of the bottomland in the Pools is owned by the federal government and is administered by the US Fish and Wildlife Service (FWS). Much of what is not federal land is privately held. Both banks are flanked by private land through most of the Pools. Several state- or county-managed areas are also present.

## **Resource Description**

The Mississippi River valley is confined to a broad bedrock gorge in Pools 11 and 12. The interface between the river floodplain and bluffs is generally abrupt. The main channel of the river crosses the valley several times, but lies mainly along the right descending bank. The main tributaries to the Mississippi River within Pools 11 and 12 are the Turkey, Grant, Platte, and Galena Rivers. Smaller tributaries include the Little Maquoketa River, Catfish Creek, Little Menominee River, and the Sinsinawa River.

Rail lines run adjacent to the river banks along both banks for almost the entire length of these two Pools. The rail embankments may be the only land access point in some parts of the river. Road access is very limited or absent in most of Pools 11 and 12. Exceptions include the cities listed above and recreation areas. A petroleum products pipeline crosses the Mississippi River near river mile 575. It crosses several tributaries on its east-west path, as well.

The upper reach of Pool 11 has sloughs, backwater lakes, wetlands, and extensive bottomland forest. Significant mussel and turtle habitat is found in the main channel and backwaters between Guttenberg, IA and Cassville, WI. Critical habitat for endangered mussel species is found in the main channel around Cassville. The upper two-thirds of the Pool is used heavily by bald eagles. Turkey River Mounds Monument, near the confluence of the Turkey and Mississippi Rivers, is an archaeological area on the National Register of Historic Places. The Guttenberg Ponds Sanctuary, below Dam 10, is closed from October 1 until the end of duck hunting season. The 12 Mile Island Closed Area, also below Dam 10, is closed to all migratory bird hunting, hunting and trapping from March 16 to end of duck hunting season, and has voluntary avoidance from October 15 to end of duck hunting season. The Goetz No Hunting Zone lies just below the Guttenberg Marina.

The middle reach of Pool 11 has sloughs, islands, channels, backwater lakes and open wetlands. It becomes progressively more open water as one moves downstream. Several important fish overwintering areas are present in backwater lakes. Mussels are prevalent along the Iowa shore. The McCartney Lake Closed Area, on the Wisconsin side of the main channel from Jack Oak Slough to Hurricane Chute, has the same restrictions as the 12 Mile Island Closed Area. This closed area has important fish, waterfowl, and other bird habitat. In the Bertom Island Sanctuary, within the McCartney Lake complex, entry is restricted.

The lower reach Pool 11 is mostly open water except for three habitat restoration areas. Significant mussel, waterfowl, and fish spawning habitat is found throughout the lower pool. The John Deere Marsh Closed Area, around the Little Maquoketa River mouth, also has the same restrictions as the 12 Mile Island Closed Area. The Pool 11 No Open Water Hunting Area runs from the Grant River Recreation Area to the bluffs across from the Little Maquoketa River mouth.

The upper five miles of Pool 12 are primarily the developed area of the City of Dubuque. Although this landscape is wholly altered, it does provide extensive overwintering habitat for fish. Mussels are also prevalent along the Iowa banks. The left descending bank has a small area of floodplain forest above the US Hwy 61 bridge. Below East Dubuque, the river corridor has more typical characteristics of upper pools, with sloughs, islands, backwater lakes, and bottomland forest. Important fish spawning areas, overwintering areas, and mussel habitat are found here.

The lower two-thirds of Pool 12 have sloughs, islands, side channels, backwater lakes, and open wetlands. There is significant waterfowl use throughout this part of the Pool. The side channels get larger in the lower Pool, but no large areas of open water are present until just above Dam 12. Fish spawning and overwintering areas are scattered throughout; many diverse mussel beds are found in the lower Pool, mainly along the Iowa banks. The Kehough Slough Closed Area, off Deadman's Slough on the Wisconsin side, has the same restrictions as the 12 Mile Island Closed Area. Molo Slough, Hires Lake, and Harris Slough have been identified as priority areas for protection in a spill response.

## **Response Considerations**

### *Primary Response Goals*

The following are primary goals for response in Pools 11 and 12:

- In general, any spilled oil product should be excluded from backwaters and kept in the main channel of the Mississippi River. Then, if possible, the oil should be diverted with boom and collected on the main shore. Few natural collection sites exist in this part of the Refuge, particularly below the

pipeline crossing. Incident Command should prioritize identifying potential collection sites early in the response.

- The main channel around Cassville, Wisconsin is designated as critical mussel habitat by the US FWS. Consult with resource managers to keep spilled product or response actions from affecting the substrate in this area.
- Keeping product out of the refuge closed areas is a top priority in any spill event. Due to seasonal high waterfowl use, deflection and exclusion booming of multiple openings and channels should be prioritized as a response tactic.

#### *Likely Spill Sources*

The most likely potential for spills in this pool is the transportation corridors; railroad, highway, and vessels, tugs and barges on the river. Though less likely to occur, a pipeline break in Pool 12 would potentially present the gravest danger to the Refuge due to the large volume of oil that could be released. The BNSF Railroad track runs on the Wisconsin and Illinois side, just above the bottomlands. CP Rail track runs along the river on the Iowa side, mainly along the shore or above the bottomlands. Both lie directly adjacent to the river or backwaters for almost the entire length of Pools 11 and 12. US Highway 61 crosses the river from Dubuque, Iowa to Wisconsin. US Highway 20 crosses between Dubuque, Iowa and East Dubuque, Illinois. US Highway 52 runs near the river in Guttenberg and Bellevue, Iowa. Local roads run along the river in the area population centers. On both banks, access to the Pool from roads is limited, or potentially restricted by the railroad tracks.

#### *Limited Availability of Local Response Resources*

Timely response to spills in Pools 11 and 12 will require pre-planning and cooperative agreements with local industry and responders, as local response resources and equipment are limited. The closest oil spill response organizations are 1-2 hours' drive from the Dubuque area. The Iowa regional HazMat team for the area is based in Cedar Rapids, in Linn County.

The Red Wing CAER group (MN) maintains US Coast Guard spill response equipment at the Canadian Pacific rail yard in Marquette, IA. A trailer on site contains 1000' of 6" and 12" skirt containment boom, 6 blue/white anchor floats, 5 orange marker buoys, rolls of rope in 25', 50', and 100' lengths, 8 anchors, tow bridles, and small tools. Contact CP Railroad response group at (612) 904-6132. BNSF Railroad maintains an equipment trailer in Prairie du Chien, WI, with 700' of containment boom, sorbents, anchors, and other equipment. Contact Red Wing CAER (612) 670-8978. Sorbent boom may also be found at Locks 10, 11, and 12, contact the appropriate Lockmaster. Local equipment is currently adequate for a small or medium spill, but is not sufficient for a large spill. The development of and renewed interest in agreements with a local spill cooperative, such as Dubuque CAER, and procurement of additional response equipment that may be pre-staged are essential in protecting the natural resources and the public in this area. In addition, consideration of the placement of permanent anchor points for the recommended protection strategies should be evaluated.

#### *Use of Locks & Dams/Coordination with USACE*

While limited in its potential impact and duration, modification of hydraulic control at Lock and Dam 11 or 12 to help slow, stop or divert flow of a spilled product to a collection area could be part of a response operation in some situations. The Lock and Dams may also be natural collection points for spilled product or these structures may be used to alter the flow of the spilled product and facilitate

collection. Additionally, the room to stage equipment and command posts at the Locks and Dams should be considered.

Responders must contact the Lockmaster of the appropriate lock for site-specific assistance and information. The Rock Island District Hydraulics Branch must be contacted to request changes to dam gate settings or for river level/flow projections. See the [Emergency Contact](#) (link) list for these numbers.

#### *In-Situ Burning*

The uses of these tactics are discussed in the [Upper Mississippi River Spill Response Plan and Resource Manual](#) (link). If in-situ burning is being considered as a response tactic, the in-situ burn checklist found in the UMR Response Plan should be used to evaluate this tactic. In-situ burning will require close coordination with the Federal and State resource trustees. Some of the response tactics that have been developed in this document may recommend collection and burning of the product if appropriate. This does not constitute a pre-approval for in-situ burning; consulting the checklist and close coordination with Federal and State Responders and Resource Trustees remains necessary.

#### *Chemical Oil Spill Treating Agents (COSTAs)*

The use of COSTAs requires approval of the Regional Response Team. If the use of a COSTA was considered it must be registered on the National Product Schedule and the Incident Commander, FOSC, SOSC and State and Federal Trustees would have to be in agreement to utilize the registered product. The use of dispersants is not allowed within the boundaries of USEPA Regions 5 and 7 or by the Regional Response Teams. This is primarily because the dispersants solubilize or drive the product into the water column and the river is utilized as a drinking water resource. Driving the spilled product into the water column can have adverse affects on the aquatic life and vegetation. First Responders should also take into account that firefighting foams or dispersants such as “biosolve” or other products can also solubilize the spilled product and release with the firefighting water or storm water and then discharge to the river.

#### *Air Boats*

Due to the vast backwater areas and changing seasonal water levels, response efforts should consider the use of air boats for reconnaissance and boom deployment. The river contains many wing dams, underwater structures, sunken logs and the like which can impede standard boat response. In addition, cold-weather seasonal response may be limited by ice.

#### *Use of Barges or Vessels to Divert or Exclude Spilled Product*

The effectiveness of using barges in response has been demonstrated in nearby areas of the UMR. Barges can be utilized to divert, exclude and collect spilled product. Barges and other vessels could be employed by grounding or anchoring at the designated slough, harbor, or inlet to facilitate the required response tactic.

#### *Communication and Command*

Immediate response by local responders, industry and contractors to collect and contain product prior to its release to the main channel or back waters will be essential in protecting Pools 11 and 12. If spilled material does reach the main channel, quick notifications and communications and the deployment of a Unified Command and implementation of an Incident Action Plan will be essential to success. An [Initial Incident Action Plan](#) (link) for use in the first response period has been prepared to

outline the roles of the agencies, local responders and industry and includes some recommended organizational structures and response tactics. Quick response with deployment of local resources will be essential in the first hours and days of the response until additional resources can be mobilized.

#### *Cold Weather Conditions and Ice Spill Response*

Cold weather response and working on ice can create a number of safety concerns. Safety plans will need to take into account such variables as ice thickness variability, under-ice currents, and water depth. Winter weather can also cause equipment failures. Vortex and drum skimmers can be problematic and inefficient in extreme cold weather conditions as properties such as viscosity changes and equipment doesn't work properly. Recovery hoses can freeze and render vacuum-truck recovery difficult.

For on-ice recovery some of the following practices have been found to be very useful:

Partial-depth ice slotting in the surface of the ice to create recovery trenches and catchment sumps for oil; contaminated snow and ice harvesting for later melting and recovery; the creation of snow-berms and ice-berms (water-spraying of snow berms) also helps limit the spread of spills.

For in-water recovery during ice and partial ice conditions, cutting recovery holes in the ice is the simplest method. Surface basins can be created in the ice and then opened with ice-auger boreholes for oil collection areas. Ice augers can also be useful for assessment of under-ice oil. Full-cut ice slots can be cut through the ice to allow for oil collection and recovery. This can be especially useful in flowing river conditions to capture oil traveling under the ice. Plywood diversion barriers can also be placed through a slot so that the barrier freezes in place and diverts under-ice oil to a recovery point. Recovery of contaminated ice for later melting and oil separation is also a good method of oil recovery in extreme cold conditions where new ice is entraining a lot of oil.

Stagnant water may require alternative methods to capture oil under ice such as mop-rope recovery between slots. For small frozen ditches and/or melting runoff, underflow dams and straw-bale dams are often preferred for oil collection and recovery.