Final Feasibility Report and
Integrated Environmental Assessment

Lower Pool 4 Dredged Material Management Plan

Upper Mississippi River
Wabasha County, Minnesota,
Buffalo and Pepin Counties, Wisconsin

US Army Corps
of Engineers
St. Paul District

November 2022

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Executive Summary

This Dredged Material Management Plan (DMMP) is a coordinated, long-term plan for managing dredged material from Lower Pool 4 of the Upper Mississippi River (UMR) 9-Foot Navigation Channel project near Wabasha, Minnesota, from 2022 through 2042. The DMMP describes the dredging methods, sites, transportation methods and routes the U.S. Army Corps of Engineers, St. Paul District (Corps) proposes to use to maintain the navigation channel. It explains the planning process used to create the plan, a tiered approach to implementing the plan, and the anticipated environmental effects of implementing the plan.

Planning in Lower Pool 4 was conducted in two phases. Initial work resulted in a draft plan that was published in May 2017. The 2017 draft DMMP along with the comments the Corps received about it is available on the St. Paul District website: https://www.mvp.usace.army.mil/DMMP/.

The second phase of planning reconsidered dredging methods and revised the alternatives considering the comments received on the May 2017 draft. The Corps made significant changes in the plan. The revised draft DMMP was released for public review in March 2022. The fully revised plan and supporting information are presented in this final DMMP.

This environmental analysis has been conducted to address compliance with the National Environmental Policy Act (NEPA). This document is tiering off the Final Environmental Impact Statement (FEIS) for the UMR 9-Foot Navigation Channel Project Channel Maintenance Management Plan (CMMP) published June 6, 1997, as described in Council on Environmental Quality (CEQ) guidelines 40 CFR 1502.20 and 1508.20 (1978). The NEPA process used within this report follows the original 1978 NEPA implementation regulations. The updated 2020 regulations apply to NEPA processes that began after September 14, 2020 (40 CFR § 1506.13 (2020)), and were revised April 20, 2022, with revisions effective May 20, 2022. This final report is a revision to the draft that was released for public review in 2017 and is not affected by the updated 2020 regulations or the 2022 revisions.

The Lower Pool 4 DMMP was initiated in 2014 when uncertainty of the future availability of dredged material placement sites in the area prompted an effort to identify the best strategy for long-term management of dredged material within the pool. The lack of conveniently available onshore transfer and placement sites in recent years has led to increased management costs and reduced ability to effectively manage dredged material in Lower Pool 4. Existing dredge cuts and dredged material transfer sites in the vicinity of river miles (RM) 753.0 to 764.0 on the UMR are shown on Figure ES-1.

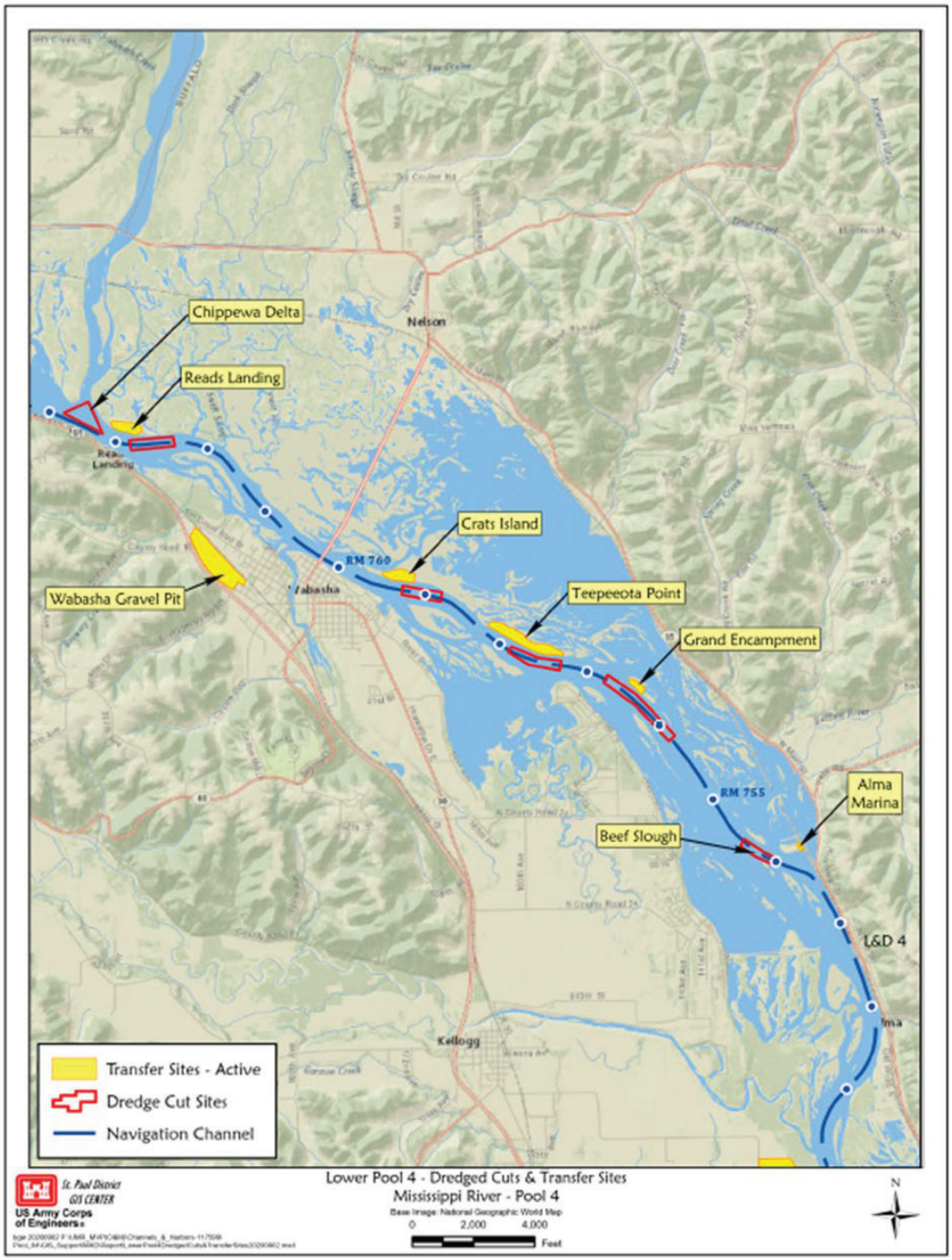

Figure ES-1. Lower Pool 4 Dredge Cuts and Transfer Sites.

The Recommended Plan described in the DMMP is the Base Plan and the Federal standard for Lower Pool 4, as defined in Engineer Regulation 1105-2-100 and the Code of Federal Regulations (C.F.R.). The Federal standard is defined as "the dredged material disposal alternative or alternatives identified by the Corps which represent the least costly alternatives consistent with sound engineering practices and meeting the environmental standards established by the 404(b)(1) evaluation process…" (33 C.F.R. § 335.7).

All features of the Recommended Plan are shown on Plate 2: Recommended Plan Sites and Transportation Routes. The Recommended Plan includes enough capacity to manage the nearly 5.3 million cubic yards of dredged material anticipated from 2022 through 2042. The Recommended Plan includes the following features:

1) **Upland Placement Sites**: Four upland placement sites.
2) **Onshore Transfer Sites**: Six upland sites with river access where dredged material would be temporarily placed for transfer to upland placement sites.
3) **Island Transfer Sites:** Four existing island transfer sites adjacent to dredge cuts.
4) **Transportation Routes:** Seven truck transportation routes, two pipeline routes, and five barge routes (including one direct placement route) to move dredged material.
5) **Use of a Section 217(d) Agreement**: The Corps and the city of Wabasha are exploring the potential to enter into an agreement under the authority of Section 217(d) of the Water Resources Development Act of 1996, as amended, 33 U.S.C § 2326a(d).
6) **Beneficial Use of Dredged Material**: The Recommended Plan would allow the public to take dredged material from certain upland placement sites for beneficial use, and the Corps will support other specific beneficial uses as opportunities arise. Material placed at the Alma Marina onshore transfer site has consistently gone to public beneficial use. The Recommended Plan assumes that use will continue.

The Recommended Plan includes sites and features that the Corps would be interested in using at some point in the future because their use would be cost-effective, environmentally acceptable and the least impactful from a social perspective. The final DMMP will recommend acquiring the right to use lands needed to manage dredged material from Lower Pool 4 for the next 20 years. The approved DMMP will support the real estate acquisition process.

The Corps sought willing sellers in the area north of the Zumbro River and south of Wabasha-Kellogg High School, where the Corps' management operations could be reasonably cost-effective. Several landowners identified potential willingness to sell, and that was considered in the site selection process. Some sites with unique value to the Corps were included in the Recommended Plan even though their owners may not be willing to sell at this time. The alternative sites and features within the Recommended Plan are tiered in order of the Corps' preference for implementation, as shown in Chapter 7. Operational cost, environmental impacts, social impacts, and landowners' willingness to consider selling were all factors in determining the order of preference for implementation. For planning and implementation purposes, the Corps will pursue the standard estate deemed necessary for the identified placement sites and/or pipeline routes. In the event a standard estate is not able to be acquired for a particular parcel through the negotiation process, the Corps will reassess the specific property as it pertains to the long-term placement needs in Pool 4.

CHAPTER 1. Introduction

1.1. Authority

The U.S. Army Corps of Engineers (Corps) is authorized to maintain a navigable channel on the Upper Mississippi River (UMR). Authority for continued operation and maintenance of the UMR 9-Foot Navigation Channel Project is provided in the Rivers and Harbors Act of 1930 (P.L. 71-520), as amended. Original authority for the Corps to work on the Mississippi River was provided in the Rivers and Harbors Act of 1878. In addition, pursuant to Section 1103(i) of the Water Resources Development Act of 1986 (33 U.S.C. § 652(i)), Congress authorized the Corps to dispose of dredged material from the system pursuant to the recommendations of the Great River Environmental Action Team (GREAT) I study, which were implemented, in part, in the Channel Maintenance Management Plan (CMMP). The proposed project is authorized by the referenced legislation and its purpose is compatible with the annual operations and maintenance appropriation.

1.2. Scope of Study

The study addresses dredged material management from 2022 through 2042 for the navigation channel in Lower Pool 4 of the UMR, between Lock and Dam 4 and the foot of Lake Pepin, river miles (RM) 753.0 to 764.0. Upper Pool 4 above Lake Pepin is significantly different in character than Lower Pool 4 below Lake Pepin, so this DMMP will focus only on Lower Pool 4.

Existing dredge cuts and transfer sites are shown on Figure 1. The study area includes the Chippewa Delta, Reads Landing, Crats Island, Teepeeota Point, Grand Encampment, and Beef Slough dredge cuts. The study area includes the communities of Lake City, Wabasha, Reads Landing and Kellogg in Wabasha County, Minnesota, and Nelson, Alma and Buffalo City in Buffalo County, Wisconsin. Most of the floodplain in the study area is located within the UMR National Wildlife and Fish Refuge. The study area includes both the plan reach in river miles defined by the dredge cut areas and the locations of the placement sites that are outside the reach in order to support projected dredging activities for the next 20 years.

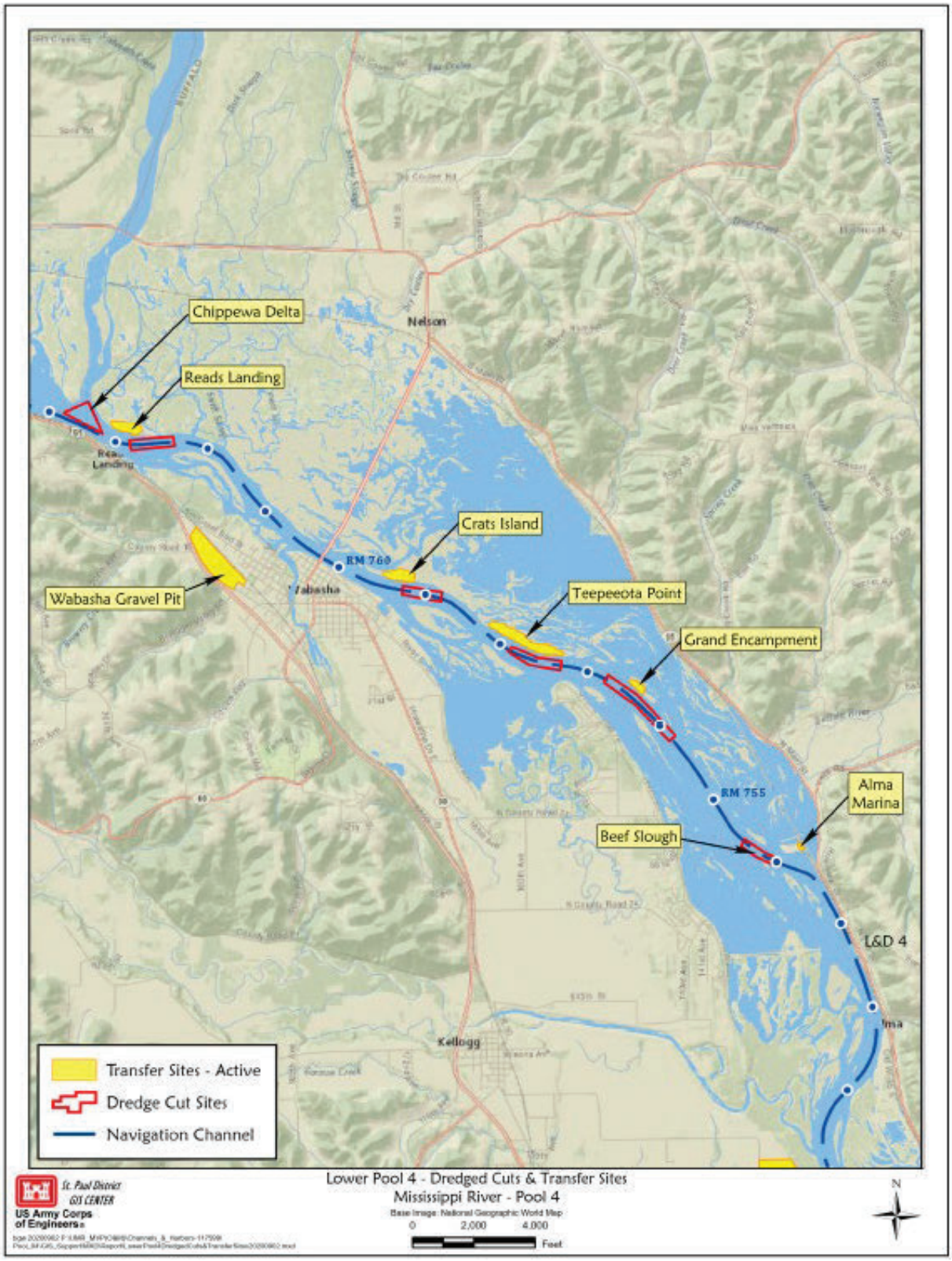

Figure 1. Lower Pool 4 Dredge Cuts and Transfer Sites.

1.3. Purpose and Need

The purpose of the Dredged Material Management Plan (DMMP) is to provide a coordinated, long-term plan for managing dredged material in Lower Pool 4 of the UMR for continued operation and maintenance of the UMR 9-Foot Navigation Channel Project over a 20-year timeframe. This plan was initiated because existing upland dredged material placement sites are nearing capacity. The lack of conveniently available onshore transfer and placement sites in recent years has led to increased management costs and reduced ability to effectively manage dredged material in Lower Pool 4.

Additional capacity is needed to manage the approximately 5.3 million cubic yards (CY) of dredged material the Corps expects to produce in Lower Pool 4 over the next 20 years. The selected plan must comply with Corps policy for managing dredged material pursuant to the Federal standard. The Federal standard (33 CFR § 335.7) for dredged material placement sites is defined as "the dredged material disposal alternative or alternatives identified by the Corps which represent the least costly alternatives consistent with sound engineering practices and meeting the environmental standards established by the 404(b)(1) evaluation process or ocean dumping criteria." The study product is a routine operations and maintenance document in the form of an integrated feasibility report and National Environmental Policy Act (NEPA) document in accordance with the Corps' Planning Guidance Notebook, Engineer Regulation (ER) 1105-2-100.

1.4. Related Studies, Reports and Projects

Numerous studies and reports are available for the UMR that include Pool 4. The following studies and projects addressing channel maintenance, resource management, land use, and recreational planning in Lower Pool 4 have the most relevance to this study. Several other actions including island transfer site offloads are not listed here for brevity.

1.4.1. UMR 9-Foot Navigation Channel Project Environmental Impact Statement (ROD 1974)

This document, completed in October1974, assesses the environmental effects of the operation and maintenance of the UMR 9-Foot Navigation Channel project within the St. Paul District.

1.4.2. Great River Environmental Action Team (GREAT) Study

This nine-volume report, completed in 1980, documents the results of the 5-year GREAT study for the St. Paul District reach of the Mississippi River (including the head of navigation in Minneapolis, Minnesota, downstream to Guttenberg, Iowa). The report contained numerous recommendations for improved management of the river, the most important of which was a 40-year plan for dredged material placement for all the historic dredging locations in the St. Paul

District. Many of the study's recommendations have been implemented. Of particular application to this study is GREAT I further study item two, which states "A plan should be developed to use the river's sediment transport capability to cause necessary dredging requirements to occur near long-term placement sites as environmentally and economically feasible."

1.4.3. Channel Maintenance Management Plan (CMMP) and Final Environmental Impact Statement (ROD 1997)

The 1997 CMMP and accompanying Final Environmental Impact Statement (FEIS), is the St. Paul District's plan for management of channel maintenance (USACE 1997). Much of the plan is devoted to the designation and design of dredged material placement sites. Included in the report is a discussion of the district's program for channel management. This DMMP for Lower Pool 4 is part of that program.

1.4.4. Dredged Material Management: Lost Island-West Newton Transfer, Upper Mississippi River Pool 5, Wabasha County Minnesota, Buffalo County, Wisconsin Environmental Assessment (FONSI 2016)

This 2016 document assessed the environmental effects of offloading the stored dredged material from the Lost Island Temporary Placement Site in Pool 5 to the West Newton Chute Placement Site for upland placement and beneficial use (USACE 2016a). The project involved transferring 1,300,000 CY of material from 2017 to 2019. The project restored capacity at the Lost Island Temporary Placement Site for dredged material.

1.4.5. Environmental Assessment. Wabasha Sand and Gravel Pit #2, Dredged Material Placement Site Establishment. St. Paul District, USACE (FONSI 2015)

This 2015 document assessed the environmental effects of placing dredged material in an existing gravel pit just northwest of Wabasha (USACE 2015). The pit is privately owned. The assessment evaluated the pit as a permanent placement site for immediate and continued future use. Some material was placed in the pit from 2016 through 2019. See section 6.2.1 for additional detail.

1.4.6. Pool 5 Dredged Material Management Plan (FONSI 2020)

The Pool 5 DMMP was finalized in February 2020 (USACE 2020). The plan will use the existing Above West Newton Island, Above Fisher Island, and Lost Island along with the federally owned West Newton Chute onshore transfer site. Additionally, the Pool 5 DMMP identified the 962-acre Rolling Prairie site east of Kellogg, Minnesota, that can provide the 4.7 million CY dredged material capacity needed for 40 years of placement from the Pool 5 project area. The Corps acquired the Rolling Prairie Site from willing sellers in 2020. The Rolling Prairie site is also identified in the Lower Pool 4 DMMP as a potential upland placement site.

1.4.7. Mississippi River Upper Pool 4 Pierce County Islands Head of Lake Pepin project

The project is located downriver of Red Wing, Minnesota, and across from Bay City, Wisconsin. It lies within the Pierce County Islands Wildlife Management Area, established by the State of Wisconsin.

Project features include four peninsulas, a water level management dike, and bankline restoration that will incorporate approximately 390,000 CY of dredged material from Lower Pool 4. The project is a pilot project under the authority of Section 1122 of the Water Resources Development Act (WRDA) of 2016 which subsidizes the use of dredged material to construct project features. The project is also authorized under Section 204 of WRDA 1992 for beneficial use of dredged material. Construction is expected to start in 2023.

CHAPTER 2. Affected Environment

A description of components of the nearby environment is discussed here to provide a measure of the current state of the project location. The goal of this chapter is to provide an understanding and context of the resources that may be affected by the alternative actions under consideration. A discussion of the effects of the alternatives under consideration can be found in Chapter 8.

2.1. Socioeconomic Conditions

The cities or communities of Wabasha, Kellogg, and Reads Landing, Minnesota and Nelson, Alma, and Buffalo City, Wisconsin, are located within the study area (Figure 1, Plate 2). Reads Landing is located across from the mouth of the Chippewa River at RM 763. Wabasha is located at RM 760. Kellogg is located at RM 753. Nelson is located on the Wisconsin mainland across from Wabasha. Nelson does not front on any open water portion of the pool. Alma is located at the downstream end of Pool 4 at Lock and Dam 4. Buffalo City is located in Pool 5 at RM 745, downstream of Lock and Dam 4. There is considerable shoreline residential development along the Minnesota shoreline from Teepeeota Point (RM 757.3) down to the Lock and Dam 4 dike. On the Minnesota side of the river, residential development outside the listed communities occurs along most of the shoreline in the project area. Away from the river, development is sparse and reflects the agricultural use of the area; many of the residences there are associated with farmsteads. On the Wisconsin side, there is much less residential and agricultural development likely due to the steep topography.

State Hwy 35 parallels the floodplain on the Wisconsin side of the river. The major highway on the Minnesota side, U.S. Trunk Highway 61 (TH 61), is set back from the river a few miles. TH 61 parallels the river north of Wabasha, whereas gravel and smaller paved roads parallel the lower end of the pool. A single interstate bridge, the Wabasha-Nelson Bridge, spans the navigation channel in Lower Pool 4 between Minnesota and Wisconsin at Wabasha, Minnesota. It carries vehicular traffic on two lanes of Minnesota State Hwy 60/Wisconsin State Hwy 25. Networks of secondary, county, and township roads connect with the primary roads to service the areas adjacent to the pools and to provide access from outlying areas.

Railroads are located along both sides of the valley. On the Wisconsin side, the Burlington Northern Santa Fe railroad tracks lie riverward of State Highway 35. A portion of the tracks run through the pool along a levee constructed across Beef Slough where it angles back towards the Wisconsin bank. On the Minnesota side, the Canadian Pacific railroad tracks are set back from the river and generally follow along TH 61.

Wabasha, and Kellogg, Minnesota, and Nelson and Alma, Wisconsin, had populations of 2559, 415, 574, and 716, respectively, in the 2020 census. Reads Landing, Minnesota, is an unincorporated community with an estimated population of 160.

2.1.1. COMMERCIAL NAVIGATION

Lower Pool 4 is a portion of the Upper Mississippi River (UMR), which is an important component of the U.S. inland navigation system. Maintaining navigability through this reach is necessary to connect traffic moving between ports upstream as far as the Minneapolis-Saint Paul, Minnesota Metro Area, downstream as far as New Orleans, Louisiana, and to points east and west on the Illinois, Ohio and Missouri Rivers. Major types of commercial cargo shipped on the UMR include grain (downstream), fertilizer (upstream), coal (both upstream and downstream), and petroleum. In 2018, over 8 million tons of commodities were transported through Lock and Dam 3 and just over 9 million tons of commodities from more than 1,400 commercial lockages were transported through Lock and Dam 4. The 10-year average tonnage through Lock and Dam 4 is nearly 8.5 million tons of commodities.

The US Army Corps of Engineers Institute for Water Resources (IWR) calculated a national economic development benefit of $592.7 million in 2018 for the portion of the inland navigation system located in St. Paul District. (See https://www.iwr.usace.army.mil/Missions/Value-to-the-Nation/Fast-Facts/Inland-Navigation-Fast-Facts/) The savings represent the cost difference between shipping by barge and by rail. The savings for shipping grains was estimated at $27.38 per ton (2000 pounds), or approximately $0.80 per bushel, on average.

Waterway transportation keeps our Nation's commerce on the move in the safest, most fuel-efficient, and environmentally sound way. One barge can hold 1,750 tons, 58,333 bushels, or 1,555,000 gallons; whereas one rail car can only handle up to 110 tons, 4,000 bushels, and 33,870 gallons and one large semitruck can transport up to 25 tons, 910 bushels, and 7,865 gallons. One 15-barge tow carries the equivalent of six locomotives and 216 rail cars or 1,050 large semitrucks.

Commercial navigation is ensured through the maintenance of authorized navigation channel dimensions. These dimensions vary with location and are listed in the CMMP, but in general are needed to ensure efficient and safe navigation for commercial traffic. Additional discussion is found in Section 3.3.

2.1.2. ENVIRONMENTAL JUSTICE

An evaluation of environmental justice impacts is mandated by Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (February 11, 1994). This executive order directs federal agencies to identify and address, as appropriate, disproportionately high, and adverse health or environmental effects of its programs, policies, and activities on minority and low-income populations.

The U.S. Environmental Protection Agency (USEPA) on-line EJScreen mapping tool (Version 2020, https://www.epa.gov/ejscreen) was used to characterize existing conditions for minority and low-income groups. The area used in the analysis is shown in Figure 2. This area was chosen by using an approximate project study area boundary and including a 2-mile buffer to the boundary to determine the population most affected by the project. The community of comparison for this area is the Minnesota and Wisconsin counties of Wabasha and Buffalo,

respectively (Table 1). The EJScreen tool estimated an approximate population of 6,058* in the analysis area. Neither the minority population nor the low-income population is 50% or greater in the analysis area. The area of analysis was then assessed to determine if the minority or low-income population there is meaningfully greater than that of the community of comparison. The minority and linguistically isolated populations of the area are equal to or lower than the county and national averages. The minority population for this area is 5%, indicating that the analysis area does not have an EJ-recognized minority population. Based on the EJScreen, 21% of the analysis area would be considered low income; however, this number is less than that for Buffalo County and not meaningfully greater than that for Wabasha County. The EJScreen does not indicate there is a specific low-income population within the analysis area that deviates from the community of comparison. Other population dynamics show that 7% of the population over 25 years of age have less than a high school diploma and the population under 5 years and over 64 years of age are 4% and 27%, respectively.

Table 1. Demographic data for the project area, counties, and U.S.

	Project Area	**Wabasha Co., Minnesota**	**Buffalo Co., Wisconsin**	**U.S.**
Per capita Income	32,538	33,664	29,613	33,740
Low Income	21%	19%	27%	33%
Linguistically	0%	1%	1%	4%
Minority	5%	5%	4%	39%

*Source: 2014-2018 American Community Survey 5-Year estimates.

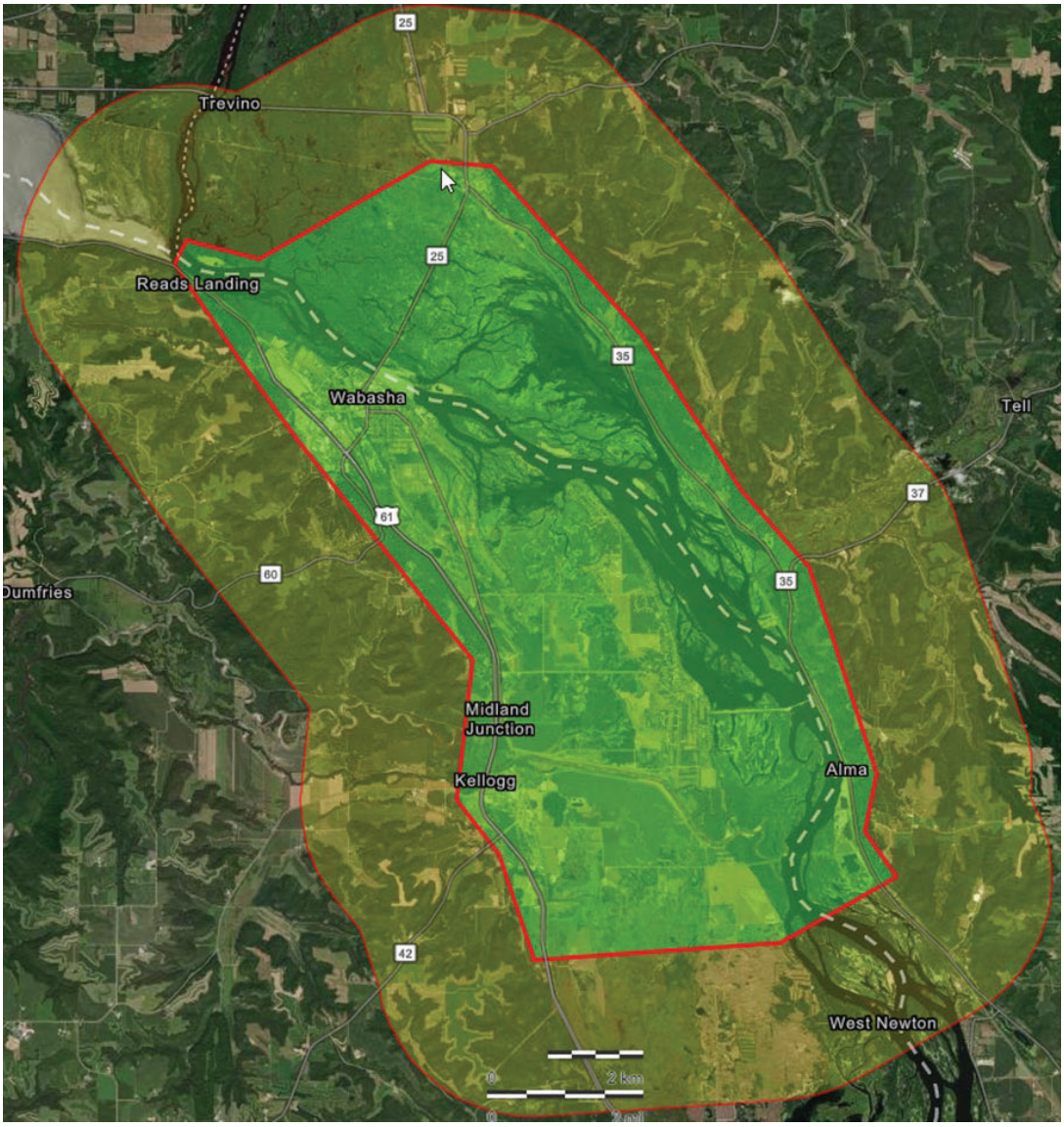

Figure 2. Pool 4 DMMP Environmental Justice Boundary (EPA 2021)

2.1.3. RECREATION

The natural character of this portion of the river, proximity to Wabasha, and the relatively good water quality in Lower Pool 4 contribute to its recreational and aesthetic desirability. Recreation activities in Lower Pool 4 include fishing, recreational boating, hunting, trapping, camping, bird watching, canoeing, island beach use, and sightseeing. Lower Pool 4 provides seven boat accesses—five in Wisconsin and two in Minnesota. The dredged material placement islands along the main channel throughout the pool are popular with recreational boaters.

The UMR National Wildlife and Fish Refuge provides high quality fish and wildlife habitat in this reach. The backwater areas of Big Lake provide good waterfowl hunting. Robinson Lake and Peterson Lake are popular areas used by recreational boaters to access the river and provide good open water as well and winter ice fishing. Clear Lake, located in upper Pool 5 immediately

downstream of the Lock and Dam 4 embankment is used by boaters to access the backwaters and main channel of the Mississippi River from a private campground and supper club. Other backwater and channel habitats in Lower Pool 4 provide for a variety of fishing, hunting, and other outdoor recreation opportunities.

Wabasha and the area above Wabasha up to the lower end of Lake Pepin is renowned for the bald eagle watching opportunities it provides during the winter. Riecks Lake, north of Alma, is a popular location for watching waterfowl during the migration season, especially swans.

Recreational use activities would mostly occur on the river and within Refuge lands. The entire area of the river is very popular and receives high levels of recreational use. The backwater area just downstream from the Lock and Dam 4 embankment including Clear Lake is popular for recreational boater use. The navigation channel also experiences high levels of recreational boating and other outdoor recreation uses. Current recreational uses on upland areas are minimal as these areas are currently farmed row crop or privately owned previously disturbed areas.

2.1.4. CULTURAL RESOURCES

The Corps has completed initial background research of the study area to include reviewing available archaeological and geomorphological investigations and consulting the Minnesota and Wisconsin historic preservation databases within Pool 4. Several investigations have been completed within the study area and several historic properties have been identified. The Lower Pool 4 locality contains numerous cultural resources indicating continual human occupation over approximately the last 13,000 years. Precontact cultural resources in the pool include precontact single artifact finds, lithic and artifact scatters, village sites, archaeological districts, petroglyphs, rock shelters, burials and burial mounds and cemeteries. Historic cultural resources include fur trade sites, townsites and farmsteads, cemeteries, historic standing structures, historic debris scatters and middens, historic districts, shipwrecks, and navigational structures (e.g. wingdams) (Madigan & Schirmer 2001).

Interest in the archaeological record of the UMR valley, including the study area, has been ongoing since the end of the 19th century (e.g., Lapham 1855; Thomas 1894, Winchell 1911). Early research in the area centered on the contents of burial mounds and who built them, although little information exists from research in this locality (e.g., Arzigian and Stevenson 2003). By the early 20th century, most practitioners rejected the popular notion that a race of non-American Indians constructed the mounds and non-scientific investigations gave way to systematic mapping and excavation (e.g., Theler and Boszhardt 2003). Despite an awareness of cultural resources in the pool, no comprehensive pre-impoundment survey was completed prior to construction and subsequent operation of Lock and Dam 4 in 1935 (e.g., Dunn 1996). Modern archaeological research within the study area began during the 1970s with highway projects and a Corps sponsored survey of dredged material placement sites (Johnson and Hudak 1975; Nystuen 1971; Penman 1984; Petterson et, al 1988). Since the last quarter of the 20th century, numerous cultural resource investigations have been completed within Pool 4. These include investigations focused on several prominent terraces (e.g., Hurley 1978); literature-based overviews (e.g., site inventories, geomorphic mapping, shipwreck locations, navigation structures); site predictive modelling (Hudak et al. 2002); shoreline surveys; shoreline

monitoring studies and project specific site identification and evaluations within the locality (Dobbs and Mooers 1991; Jalbert et al. 1996; Jensen 1992; Madigan and Shermer 2001; O'Mack 1991; Overstreet et. al. 1983; Perkl 2002; Pearson 2003).

Despite greater awareness of cultural resources situated within floodplain settings (e.g., deeply buried and submerged sites), few areas within the floodplain portions of the UMR have been subjected to deep site testing (cf. Kolb and Boszhardt 2004; Monaghan et al. 2006). Additionally, some cultural resources are experiencing profound effects from inundation, erosion and other forces associated with modern river navigation (e.g., creation of the pool, recreation activities, etc.) (Benn and Lee 2005). Cultural resource practitioners are beginning to understand these complex mechanisms and their influence on cultural resources and are formulating strategies to manage these impacts (e.g., site protection and preservation). In addition, few cultural resources within Pool 4 have undergone evaluative testing to determine their eligibility for listing on the National Register of Historic Places (NRHP). Nevertheless, investigations from several archaeological sites within and proximal to Pool 4 have contributed to our knowledge base concerning the cultural history of this UMR region (e.g., Benn 1979; Birmingham and Stoltman 1997; Theler and Boszhardt 2003).

More detailed information specific to previous investigations and known historic properties located within proposed placements sites is provided in Chapter 8. Collectively, there are two historic properties within the study area. The UMR 9-Foot Channel Navigation Project built by the WPA in the 1930s was determined eligible to the NRHP as a multiple property listing under Criteria A and C, for its association with a major federal river navigation improvement and depression relief project. This multiple property listing includes Locks and Dams 3-10. Although the NRHP nomination is specific to the locks and dams themselves, several contributing sources could also be associated with the multiple property listing including the locks, dams, other structures (e.g., boat harbors/yards, bridges, dikes, guide wall extensions, hoist towers, levees, a traveling crane), buildings (control stations, a lock operator's house, power houses, a restroom, storage houses), and objects (wall control stands, stage recorders).

As a collective entity, the surviving wing dams and closing dams have been determined potentially eligible for listing to the NRHP under Criterion A for their contributions to the broad patterns of our history in navigation and transportation and Criterion C as an engineering achievement. Over 1,300 wing dams and closing dams were constructed within the UMR between the 1870s and 1930s in support of the 4.4.5-Foot and 6-Foot Navigation Projects. Several of these wing dams are still present today; however, many of them were modified or removed as the result of channel maintenance dredging and construction of the UMR 9-Foot Navigation Channel Project (Pearson, 2003).

In general, no historic properties have been identified within the proposed placement sites or along transportation routes. In addition, each proposed placement site has had some degree of previous disturbance that would negatively impact the potential for intact buried resources. This includes the previous use of a location for quarry stone, agricultural purposes, river channelization, or previously used transportation route.

2.2. Natural Resources

2.2.1. PHYSICAL SETTING

Pool 4 of the UMR was created in 1935 by the completion of Lock and Dam 4. Pool 4 is 44.2 miles long, extending from RM 752.7 at Lock and Dam 4 to RM 796.9 at Lock and Dam 3. Lake Pepin, a large river lake, comprises most of Pool 4, separating Upper Pool 4 from Lower Pool 4 and extending over 22 miles from RM 763.5 to about RM 786.0.

The valley of Lower Pool 4 varies in width from about 1 mile at Lock and Dam 4 to about 3 miles at Wabasha and in Lake Pepin. The bluffs are steep on both sides and highly dissected, with a maximum relief of around 700 feet. The navigation channel parallels the Minnesota shoreline from Reads Landing to just south of Wabasha. From there it angles gradually across the valley through Lower Pool 4 and parallels the Wisconsin shoreline at a point just north of Lock and Dam 4.

Sediment and Substrate. The Chippewa River is the major contributor of sand-sized sediment in Lower Pool 4. Sediment quality is generally good in Pool 4. Main channel sediments are primarily medium to coarse sands with only trace amounts (generally less than 3%by weight) of silts and clays. Sand, silt, and clay sediments are found within defined sloughs, while finer silt and clay materials are found in marshy backwater areas.

To broadly assess the concentrations and location of contaminants found in Lower Pool 4 sediments, USACE staff collected 28 sediment samples from Lower Pool 4 between 2013 and 2020 (Figure 3). To specifically assess the concentrations of contaminants within the Reads Landing access cut at the head of the pipeline, two borehole sediment samples were collected in June 2021 (see Figure 3). Each sample was analyzed for polychlorinated biphenyl (PCB), polycyclic aromatic hydrocarbon (PAH), pesticides and heavy metals and compared to Minnesota Pollution Control Agency's (MPCA) sediment reference values (SRVs) and the sediment quality triad (SQTs), which refer to extent of degradation within the sediment caused by contamination. Of those 31 samples, two were collected in boat harbor at Alma, Wisconsin, three in shoreline access area (Alma Marina and Read's Landing), and 26 in the main navigation channel. Collection data can be found in the Appendix F Sediment Contaminant Datasheet.

In general, the MPCA SRVs limits are higher concentration thresholds than SQTs. Furthermore, level II SQTs are higher than level I SQTs. In terms of concentration levels from low to high, if a contaminant found in sediment is below the SQT level I threshold, it has very low levels of that contaminant and is likely safe for bottom-dwelling aquatic organisms. If the contaminant level is higher than the SQT level I threshold but below the level II threshold, it is likely moderately safe for those organisms. If the contaminant level is above the SQT level II threshold, that contaminant is likely at a level that is harmful to bottom-dwelling aquatic organisms. An exceedance of the SQT level II threshold will often still be well below the SRV threshold, as the SRV thresholds are set at levels to protect human health based on contact with the material in two upland settings. Contaminant thresholds for SRVs in the recreational/residential setting are lower than the commercial/industrial settings because it is assumed that in the former settings there would likely be more contact with the sediment, including contact by children.

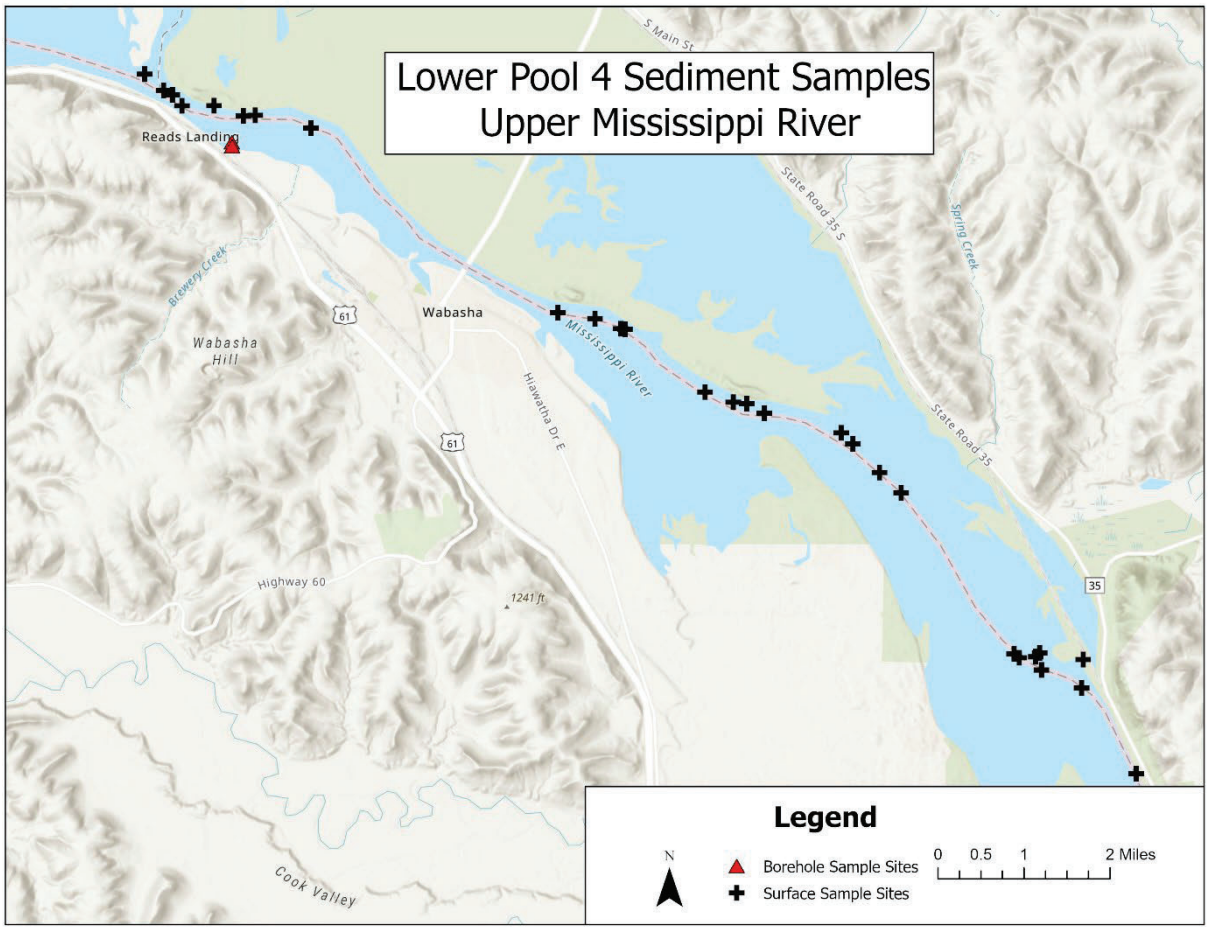

Figure 3. Lower Pool 4 Sediment Sample Locations

To summarize, in order from lowest to highest levels of contamination, are SQT level I, SQT level II, SRVs for residential/recreation, and then SRVs for commercial/industrial.

Results of the 2013-2020 Lower Pool 4 survey and the 2021 borehole samples showed that the sediments in Lower Pool 4 were fairly clean. There were no SQT or SRV exceedances observed. Additionally, there are no restrictions for upland placement due to contaminant levels.

Hydrology. The Mississippi River at Lock and Dam 4 drains an area of approximately 57,100 square miles. The drainage basin above Lock and Dam 4 includes large portions of Minnesota and Wisconsin, and small portions of South Dakota and Iowa. Approximately 40% of the watershed is agricultural use; the rest is primarily wetlands, forested lands, and urban areas. Annual precipitation in the area is about 35.5 inches per year.

Early summer (June) discharges at Lock and Dam 4 generally range from 25,000 to 50,000 cubic feet per second (cfs). By late summer, discharges usually decrease to 15,000 to 35,000 cfs. Winter low flows are generally in the range of 15,000 to 20,000 cfs.

Water Bodies

Chippewa River. The Chippewa River is the major tributary entering Lower Pool 4 at about RM 763.5. All of the sand-size sediment transported through Lower Pool 4 originates from the Chippewa River. The sand-size sediment entering Upper Pool 4 deposits at the upstream end of Lake Pepin; however, approximately 25% of the fine sediment load to Lake Pepin is transported out of Lake Pepin at its downstream end.

Buffalo River. The Buffalo River drains about 465 square miles of western Wisconsin and enters Lower Pool 4 at about RM 754.8, about 2 miles above Lock and Dam 4. The Buffalo River watershed is part of the driftless area of Wisconsin containing deeply dissected and incised valleys. Agriculture occurs on the bluff tops and in the valleys, while the steep valley walls are usually wooded. The creation of Pool 4 inundated the lower 2 miles of the Buffalo River.

Big Lake. Big Lake is a large backwater lake/shallow marsh complex lying south of the Chippewa River between the Wisconsin mainland and the main channel of the Mississippi River. This 2,500-acre backwater area is fed by sloughs from both the Chippewa and Mississippi Rivers.

Robinson Lake. Robinson Lake is a 600-acre backwater area lying on the Minnesota side of the floodplain just below Wabasha, Minnesota. Robinson Lake at one time was the outlet of the Zumbro River.

Peterson Lake. Peterson Lake is a 500-acre lake lying just above the Lock and Dam 4 dike. Though there was a small lake in this area at one time, Peterson Lake as it is known today was created by the filling of Pool 4. A unique feature of this lake is that it contains some relatively deep water (10 to 15 feet) for a backwater lake.

Zumbro River. The Zumbro River drains about 1,422 square miles of eastern Minnesota and enters Pool 5 at about RM 750, about 2 miles below Lock and Dam 4. The Zumbro River watershed lies in the driftless region of Minnesota with over 75% of the land use being cropland (56%) or rangeland (23.3%) (MPCA 2017). The Zumbro River crosses the Mississippi River floodplain at the southern end of the project area. There, its lower reach is channelized and levees were constructed as part of a flood control project in 1974.

Water Quality. Lower Pool 4 of the Mississippi River has good water quality with low levels of suspended solids, reflecting the influences of Lake Pepin and the Chippewa River. Except for isolated sloughs and backwater lakes, the dissolved oxygen content of the water remains high year-round and above levels required to sustain a quality fishery. Because of its turbulent nature, the river is well aerated and it can assimilate a considerable biochemical oxygen demand loading. Fertility levels (nitrogen, phosphorus, potassium, calcium, etc.) are ample to support luxuriant growth of rooted aquatic plants and algae. Mead (1995) found in their investigations of contaminants in the Mississippi River from 1987 to 1992 water quality to be generally better in this reach of the river than above Lake Pepin and in the reach downstream where tributaries that drain the Corn Belt begin to enter the Mississippi River.

Even though water quality is better in this section of the Mississippi River, there are a few Clean Water Act, Section (CWA) 303(d) listings in the Lower Pool 4 project area. The Minnesota Pollution Control Agency (MPCA) and the Wisconsin Department of Natural Resources (WDNR) has listed the project reach as impaired for fish consumption due to both mercury and PCB levels. The WDNR also includes perfluorooctane sulfonic acid (PFOS) in fish as an impairment for consumption. In 2020, MPCA listed the reach as impaired for aluminum as an impairment for aquatic life. Finally, the WDNR has also listed the reach as impaired for total phosphorus levels. There is an approved Total Maximum Daily Load (TMDL) plan for mercury.

The lower reach of the Zumbro River is also a 303(d)-listed impaired water. Fish consumption is impaired by elevated mercury and PCB levels. Recreational use is impaired by high bacteria levels. Aquatic life is impaired by high turbidity in the water. There are approved TMDL plans for mercury, fecal coliform and turbidity.

2.2.2. BIOLOGICAL RESOURCES – AQUATIC HABITAT

Lower Pool 4 has good, diverse habitat for both fish and wildlife. The most prevalent aquatic habitats in Lower Pool 4 include the main channel, the main channel borders, secondary channels, and contiguous backwaters (Wilcox 1993). Tailwater habitat is absent in Lower Pool 4. The important characteristics of these habitat types, relative to fish and wildlife uses are described below.

Main Channel. The main channel usually conveys the majority of the river discharge and in most reaches includes the navigation channel. The navigation channel is typically maintained to a minimum depth of 12 feet and a minimum width of 300 feet. A current always exists, varying in velocity with water stages. The navigation channel in Lower Pool 4 generally has a sand bottom. Patches of gravel are present in a few areas. No rooted vegetation is present.

Main Channel Borders. Main channel borders are the areas between the navigation channel and the riverbank. Channel borders contain the channel training structures (wing dams, closing dams, revetted banks) and thus a diversity of depths, substrates, and velocities can be found in this habitat type. The bottom is sand in the upper section of the pool and silt in the lower. Definable plant beds are frequently absent, but single species submersed plant clusters are sparsely scattered in areas of reduced current.

Secondary Channels. Secondary channels are large channels that carry less flow than the main channel. Undercut or eroded banks are common where secondary channels depart from the main channel. The bottom type usually varies from sand in the upper reaches to silt in the lower. In the swifter current areas, there is no rooted vegetation, but vegetation is common in the shallower areas having silty bottoms and moderate to slight current.

Contiguous Backwaters. River lakes and ponds are distinct lakes formed by fluvial processes or are artificial (excavated or impounded). They may or may not have a slight current, depending on their location. Most of the bottoms are mud or silt, often consisting of a layer 2 feet or thicker.

Aquatic vegetation in these bodies of water can be highly variable. Emergent vegetation is generally restricted to the perimeter of these water bodies.

Fish. The continuum of aquatic habitats in Lower Pool 4 range from fast flowing main channel to lotic backwaters that provide for a great diversity and abundance of fish. The Upper Mississippi River Conservation Committee (UMRCC) (1995) lists approximately 90 recorded species of fish in Lower Pool 4. Common sport fish include walleye, sauger, yellow perch, white bass, bluegill, black crappie, smallmouth bass, largemouth bass, northern pike, and channel catfish. The most common non-game fish include common carp, shorthead redhorse, spotted sucker and freshwater drum. The most common non-game forage fish include gizzard shad and spottail shiner.

Aquatic Invertebrates. There is a large assemblage of invertebrate species within the pool. The varied invertebrate fauna is due to the wide variety of habitats in the area. Invertebrates adapted more for standing water find suitable habitat in the lentic portions of the pools. Organisms that require running water find a wide range of water velocities in the main channel, along the wing dams, and in secondary channels. Rocks associated with wing dams and shoreline protection provide a suitable habitat for specialized invertebrates.

Mussels. Mussel surveys have periodically been performed in Pool 4, often in support of channel maintenance activities. Historically, as many as 43 mussel species were present in all of Pool 4 (Kelner 2021). Threeridge, Wabash pigtoe, and threehorn wartyback are common in the pool. The zebra mussel is present in Pool 4; its numbers have generally fluctuated since its first reported occurrence in 1991. According to the U. S. Fish and Wildlife Service (USFWS), the Higgins eye pearlymussel, spectaclecase, and sheepnose are federally listed endangered mussel species that may be present in Pool 4. However, only sheepnose is known to occur in Lower Pool 4. Within Pool 4, Higgins eye and spectaclecase are only known to occur in Upper Pool 4 from the head of Lake Pepin to Lock and Dam 3.

Insects. Burrowing mayflies are abundant along much of the Mississippi River, including Lower Pool 4. They are efficient detritivores and an important food organism for many species of fish.

2.2.3. TERRESTRIAL HABITAT

Terrestrial habitats within the floodplain of Lower Pool 4 include areas of forest, brush and shrub areas, wet and upland meadows, areas disturbed by commercial, agricultural, and residential development and areas previously disturbed by past dredged material placement. Each of these areas can support a diversity of species and are important parts of the overall ecosystem. Lower Pool 4 contains approximately 5,400 acres of terrestrial habitat.

Proposed alternative upland permanent placement sites are primarily in agricultural row crop production and mostly void of trees and natural vegetation with the exception of one area that contains approximately 50% of a combination of forested upland and wetland habitat. Upland forested, brush, and shrub areas within the proposed alternative sites will generally be avoided from disturbance when preparing and using the sites. Terrestrial habitat along a proposed pipeline route from the Lock and Dam 4 embankment to the upland placement sites would be

located on the Minnesota shore near Clear Lake inland to the placement sites. The area is part of the USFWS Upper Mississippi River National Wildlife and Fish Refuge and contains a mixture of floodplain forest and open sand prairie. This area has also been identified as a Minnesota Biological Survey Site of Outstanding Biodiversity Significance. Tree clearing within the floodplain forest and crossing the prairie would likely be required for pipeline use. The prairie site was previously used by the Corps for dredged material placement in 1998 and since has been restored to native prairie (Wabasha County Recommended Site #2 described in Section 5.7.17). An onshore proposed alternative onshore transfer site contains a combination of open terrestrial habitat previously disturbed by placement of dredged material and an undisturbed area containing trees and shrubs in a proposed expansion area of the property. For expanded use of the site, trees and shrubs would need to be cleared at this site.

Wildlife. Proposed alternative upland dredged material permanent placement site areas are predominantly in agricultural row crop production or previously disturbed and do not offer high quality habitat for wildlife. The upland area where a proposed pipeline would cross contains floodplain forest and restored native prairie and does provide valuable habitat for wildlife. The terrestrial habitat in the area proposed for use as an onshore transfer site consists of open disturbed field previously used for dredged material placement and an undisturbed area with trees and shrubs which does provide terrestrial habitat for wildlife.

The numerous backwaters interspersed with forested islands provide good habitat for a variety of wildlife species. Relatively abundant species include white-tailed deer, red fox, gray fox, raccoon, river otters, beaver, muskrat, mink, and cottontail rabbit. Shrews, moles, bats, rabbits, and squirrels and numerous varieties of mice are common in the area. The UMR National Wildlife and Fish Refuge provides high quality wildlife habitat in this reach.

Backwater areas and lake-type habitats provide important habitats for bald eagles and significant numbers of waterfowl each year. The study area remains an important breeding area for waterfowl such as wood duck, blue-winged teal, mallard, hooded merganser, and Canada goose.

The great variety of bird species that use the Lower Pool 4 area can be attributed to its location within the Mississippi Flyway. At least 300 species of birds, about 60% of the total number of species in the conterminous United States, are known to use the UMR. The UMR valley is a major bird migration corridor for the mid-continental United States through which an estimated 40% of the continent’s waterfowl migrate. The Mississippi Flyway also provides migration habitat for songbirds, colonial nesting birds, secretive marsh birds, and raptors. Notable species include the bald eagle, red-shouldered hawks, prothonotary warblers, black terns, great blue heron, egret, osprey, double-crested cormorant, and pileated woodpecker.

The floodplain of Lower Pool 4 provides habitat for a wide variety of amphibians and reptiles. Species found in the floodplain and adjacent sand prairies include the snapping turtle, map turtle, false map turtle, Blanding's turtle, painted turtle, smooth softshell, spiny softshell, northern water snake, eastern garter snake, bull snake, fox snake, eastern tiger salamander, American toad, gray tree frog, western chorus frog, green frog, and leopard frog.

2.2.4. WETLANDS

Wetlands are areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas, and are frequently found within the floodplain of the Mississippi River. However, wetlands occur less frequently in the main channel and main channel border habitats because high flows, elevated suspended sediment concentrations, and deeper water often inhibit vegetative growth.

2.2.5. THREATENED AND ENDANGERED SPECIES

Federally Listed Threatened and Endangered Species. The USFWS Information for Planning and Consultation (IPaC) website was used to identify federally listed threatened or endangered species that could potentially occur in the study area (online search conducted September 2, 2021). Four federally listed endangered species could potentially occur in the study area. Three endangered freshwater mussels are listed—the Higgins eye pearlymussel (*Lampsilis higginsii*), spectaclecase mussel (*Cumberlandia monodanta*), and sheepnose mussel (*Plethobasus cyphyus*). The rusty patched bumble bee (*Bombus affinis*) was listed as endangered on January 10, 2017. Two species, the northern long-eared bat (*Myotis septentrionalis*) (NLEB) and the eastern massasauga rattlesnake (*Sistrurus catenatus*) are federally listed as threatened. The whooping crane (*Grus americana*) is listed as an experimental population and nonessential within the project area. The monarch butterfly (*Danaus plexippus*) was identified as a candidate species in December of 2020, but it is not yet listed or proposed for listing. While no Endangered Species Act Section (ESA) 7 requirements apply to candidate species, agencies are encouraged to take advantage of any opportunity they may have to conserve such species. These species and their federal listing status as of September 2021 are listed in Table 2.

Table 2. Federally listed Species Identified in the Pool 4 Study Area.

Common Name	Scientific Name	Federal Status
Higgins Eye Pearlymussel	*Lampsilis higginsii*	END
Sheepnose Mussel	*Plethobasus cyphyus*	END
Spectaclecase Mussel	*Cumberlandia monodonta*	END
Rusty Patched Bumble Bee	*Bombus affinis*	END
Monarch Butterfly	*Danaus plexippus*	CAND
Northern Long-Eared Bat (NLEB)	*Myotis seprentrionalis*	THR
Eastern Massasauga Rattlesnake	*Sistrurus catenatus*	THR
Whooping Crane	*Grus americana*	EXPN

END = Endangered; THR = Threatened; EXPN = Experimental Population, Nonessential; CAND = Candidate

Suitable habitat for the Higgins eye pearlymussel includes areas of various stable substrates in large streams and rivers (USFWS 2004). Within Pool 4, Higgins eye pearlymussel is absent from Lower Pool 4 and has only been found in Upper Pool 4 from the head of Lake Pepin to Lock and Dam 3 (Kelner 2021). Higgins eye are most commonly associated with high density and diverse

mussel beds. Suitable habitat for the sheepnose is similar to that for the Higgins eye (Ohio River Valley Ecosystem Team 2002). Spectaclecase is typically found in large rivers in a variety of substrates, but particularly within microhabitats sheltered from strong currents (Butler 2002). Live spectaclecase have been recently found live in Upper Pool 4 upstream of Lake Pepin but have not been found live in many decades in Lower Pool 4 (Kelner 2021). Sheepnose are extremely rare in Pool 4 with only one live mussel collected in 2008 in Lower Pool 4 within Indian Slough (Kelner 2021).

As described by USFWS (2021b): "Rusty patched bumble bees once occupied grasslands and tallgrass prairies of the Upper Midwest and Northeast, but most grasslands and prairies have been lost, degraded, or fragmented by conversion to other uses. Bumble bees need areas that provide nectar and pollen from flowers, nesting sites (underground and abandoned rodent cavities or clumps of grasses), and overwintering sites for hibernating queens (undisturbed soil)." Even though much of the project area is in crops and does not provide ideal habitat for the bee, there are large portions that have been identified as high potential zones by the USFWS (Figure 4).

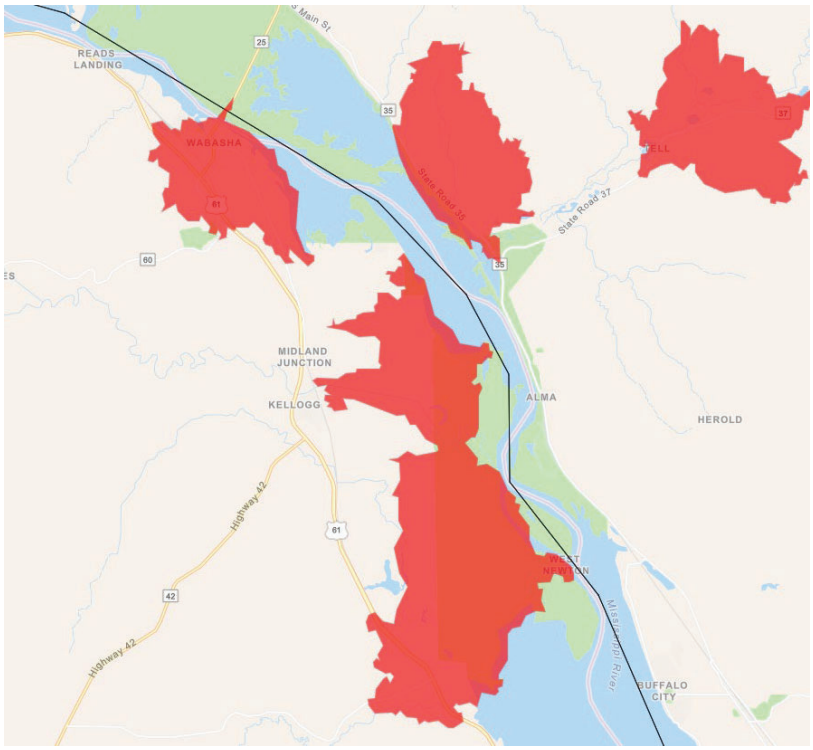

Figure 4. Rusty Patched Bumble Bee High-Potential Areas (USFWS 2021c).

Adult monarch butterflies are large and conspicuous, with bright orange wings surrounded by a black border and covered with black veins. The bright coloring of a monarch serves as a warning to predators that eating them can be toxic. During the breeding season, monarchs lay their eggs on their obligate milkweed host plant, and larvae emerge after two to five days. Larvae develop over a period of nine to 18 days, feeding on milkweed and sequestering toxic chemicals as a

defense against predators. The larva then pupates into a chrysalis before emerging six to 14 days later as an adult butterfly. There are multiple generations of monarchs produced during the breeding season, with most adult butterflies living approximately two to five weeks (USFWS 2021a).

Suitable habitat for NLEB is variable depending on the season and the life stage of the individual. In the summer, these bats often roost under the bark of tree species such as maples and ashes within diverse mixed-age and mixed-species tree stands, commonly close to wetlands. They are also known to occupy areas under bridges during the roost season. In the winter, the northern long-eared bat hibernates in caves and abandoned mines. During periods of migration and foraging, these bats tend to use the 'edge habitat' where a transition between two types of vegetation occurs (Wisconsin DNR 2013b). As of June 2021, no hibernacula nor roost trees have been identified in Wabasha County, Minnesota (MNDNR 2021).

The eastern massasauga rattlesnake is federally listed as threatened. It is typically found in open canopy and forested wetlands, and adjacent uplands. They are particularly associated with emergent wetlands, shrub wetlands, and lowland hardwood habitats, and tend to avoid disturbed areas (Wisconsin DNR 2013a).

The whooping crane (*Grus americana*) is federally listed as endangered; however, in our project area they are listed as an experimental population, nonessential species. As described by USFWS (FWS ECOS September 2020): "The July 2010 total wild population was estimated at 383. There is only one self-sustaining wild population, the Aransas-Wood Buffalo National Park population, which nests in Wood Buffalo National Park and adjacent areas in Canada, and winters in coastal marshes in Texas at Aransas. In addition, there is a small captive-raised, non-migratory population in central Florida, and a small migratory population of individuals introduced beginning in 2001 that migrate between Wisconsin and Florida in an eastern migratory population. The last remaining wild bird in the reintroduced Rocky Mountain Population died in the spring of 2002. The captive population contained 152 birds in July 2010, with annual production from the Calgary Zoo, International Crane Foundation, Patuxent Wildlife Research Center, Audubon Species Survival Center, and the San Antonio Zoo. The total population of wild and captive whooping cranes in July 2010, was 535."

While the bald eagle (*Haliaeetus leucocephalus*) is no longer federally listed as threatened or endangered, it remains protected under the Bald and Golden Eagle Protection Act and is known to occur in Lower Pool 4, especially during the winter. The open water area maintained at the confluence of the Chippewa River with the Mississippi River attracts large numbers of bald eagles during the winter.

State Listed Rare Species.
Because the new proposed placement sites are terrestrial with the exception of one site (Carrels Placement Site), the discussion of state listed species will focus on similar species (e.g., terrestrial and wetland species) except for Carrels Placement Site where aquatic species in Minnesota will be discussed.

Potential State of Minnesota-listed species were identified from information available in the Minnesota Natural Heritage Database (MNHD) June 2021. Locations of the new proposed placement sites were compared to available MNHD data within ArcView Geographic Information System (GIS) to identify the presence of potential state listed species. This list was filtered to those species that could potentially be present at the proposed new placement areas. Minnesota threatened, endangered, and species of special concern are listed in Table 3.

Table 3. Minnesota Terrestrial State Protected Species with Records that could be within the Project Area of the Recommended Plan's New Dredge Material Placement Sites*.

Common Name	Scientific Name	Status in Minnesota**
Plants		
American ginseng	*Panax quinquefolius*	SC
Beach Heather	*Hudsonia tomentosa*	THR
Canada Frostweed	*Crocanthemum canadense*	SC
Catchfly Grass	*Leersia lenticularis*	THR
Cattail Sedge	*Carex typhina*	SC
Clasping Milkweed	*Asclepias amplexicaulis*	THR
Goat's Rue	*Tephrosia virginiana*	SC
Davis' Sedge	*Carex davisii*	THR
Gray's Sedge	*Carex grayi*	SC
Green Dragon	*Arisaema dracontium*	SC
Muskingum Sedge	*Carex muskingumensis*	SC
Old Field Toadflax	*Nuttallanthus canadensis*	SC
Plains Wild Indigo	*Baptisia bracteata*	SC
Rhombic Evening Primrose	*Oenothera rhombipetala*	SC
Seaside Three-Awn	*Aristida tuberculosa*	SC
Swamp White Oak	*Quercus bicolor*	SC
Sweet-Smelling Indian Plantain	*Hasteola suaveolens*	END
White Wild Indigo	*Baptisia lactea*	SC
Yellow-Fruit Sedge	*Carex annectens*	SC
Reptiles/Amphibians		
Blanding's Turtle	*Emydoidea blandingii*	THR
Gophersnake	*Pituophis catenifer*	SC
North American Racer	*Coluber constrictor*	SC
Smooth Softshell	*Apalone mutica*	SC
Timber Rattlesnake	*Crotalus horridus*	THR
Wood Turtle	*Glyptemys insculpta*	THR
Birds		
Bell's Vireo	*Vireo bellii*	SC
Lark Sparrow	*Chondestes grammacus*	SC
Peregrine Falcon	*Falco peregrinus*	SC
Red-Shouldered Hawk	*Buteo lineatus*	SC
Fish		
Blue Sucker	*Cycleptus elongatus*	SC

Common Name	Scientific Name	Status in Minnesota**
Mississippi Silvery Minnow	*Hybognathus nuchalis*	SC
Paddlefish	*Polyodon spathula*	THR
Mussels		
Butterfly	*Ellipsaria lineolata*	THR
Elephant-ear	*Elliptio crassidens*	END
Spike	*Eurynia dilatata*	SC

*Copyright 2019, State of Minnesota, Department of Natural Resources (DNR). Rare Features Data included here were provided by the Division of Ecological and Water Resources, Minnesota DNR, and were current as of June 2021. This data is not based on an exhaustive inventory of the state. The lack of data for any geographic area shall not be construed to mean that no significant features are present.
**(END = Endangered; THR = Threatened; SC = Special Concern).

Potential State of Wisconsin-listed species were identified from information available in the Wisconsin Natural Heritage Information Portal (WINHIP) 22 September 2020 (Table 4). New proposed placement sites along with trucking and pipeline routes all occur within Minnesota, but border Wisconsin along the Mississippi river. A search of the WINHIP within approximately 1 mile of the Minnesota/Wisconsin boundary and extending from Alma, Wisconsin, to the Chippewa River was conducted to identify the presence of potential state-listed species.

Table 4. Wisconsin Terrestrial State Protected Species with Records that are near the Project Area of the Recommended Plan's New Dredge Material Placement Sites*.

Common Name	Scientific Name	Status in Wisconsin**
Plants		
Golden-seal	*Hydrastis canadensis*	SC
White Camas	*Anticlea elegans ssp. glaucus*	SC
Small Skullcap	*Scutellaria parvula var. parvula*	END
Small-flowered Woolly Bean	*Strophostyles leiosperma*	SC
Dragon Wormwood	*Artemisia dracunculus*	SC
Silky Prairie-clover	*Dalea villosa var. villosa*	SC
Dotted Blazing Star	*Liatris punctata var. nebraskana*	END
Slender Bulrush	*Schoenoplectus heterochaetus*	SC
Reptiles/Amphibians		
Timber Rattlesnake	*Crotalus horridus*	SC
Eastern Massasauga	*Sistrurus catenatus*	END
Prairie Skink	*Plestiodon septentrionalis*	SC
Wood Turtle	*Glyptemys inscuplta*	SC
Birds		
Worm-eating Warbler	*Helmitheros vermivorum*	END
Peregrine Falcon	*Falco peregrinus*	END
Kentucky Warbler	*Geothlypis formosa*	THR
Cerulean Warbler	*Setophaga cerulea*	THR

Common Name	Scientific Name	Status in Wisconsin**
Hooded Warbler	*Setophaga citrina*	THR
Henslow's Sparrow	*Centronyx henslowii*	THR
Acadian Flycatcher	*Empidonax virescens*	THR
Prothonotary Warbler	*Protonotaria citrea*	SC
Red-shouldered Hawk	*Buteo lineatus*	THR
Mammals		
Big Brown Bat	*Eptesicus fuscus*	THR
Little Brown Bat	*Myotis lucifugus*	THR

*Copyright 2020, State of Wisconsin, Department of Natural Resources (DNR). Element Occurrence Data included here were provided by accessing the Natural Heritage Inventory Portal database 22 September, 2020.
**(END = Endangered; THR = Threatened; SC = Special Concern).

2.2.6. AIR QUALITY

The U.S. Environmental Protection Agency (USEPA) is required by the Clean Air Act to establish air quality standards that primarily protect human health. These National Ambient Air Quality Standards (NAAQS) regulate six major air contaminants across the United States. When an area meets criteria for each of the six contaminants, it is called an 'attainment area' for that contaminant; those areas that do not meet the criteria are called 'nonattainment areas.' Wabasha, Pepin, and Buffalo Counties are classified as attainment areas for each of the six contaminants and are therefore not regions of impaired ambient air quality (USEPA 2021a). This designation means that the study area has relatively few air pollution sources of concern.

CHAPTER 3. Historic Changes

This section summarizes changes to Lower Pool 4 brought about by various navigation projects and other federal activities. The purpose is to provide a background for the current conditions. It is not intended as a detailed description of all the changes that have occurred to the Mississippi River and its basin since European settlement. The information in this section is also a part of the affected environment described in the preceding chapter.

3.1. Early Navigation Projects

The first navigation modifications and maintenance on the UMR were made legislative by Congress in 1824, when the Corps was authorized to remove snags, shoals, and sandbars, and to close sloughs and backwaters so that flows were confined to the main channel to maintain depths for navigation.

The first comprehensive modification of the river for navigation was authorized by the Rivers and Harbors Act of 1878. This legislation authorized a 4.5-foot channel from the mouth of the Missouri River to St. Paul, Minnesota. The 4.5-foot channel was maintained by constructing dams at the headwaters of the Mississippi River to impound water for low flow supplementation, bank revetments, closing dams, and longitudinal dikes. The 6-foot navigation project was authorized by the River and Harbor Act of 1907. The additional depth for the 6-foot channel was obtained by increased construction of wing dams supplemented by limited dredging. Usually, the banks opposite a wing dam field were protected with rock revetments to prevent erosion.

3.2. National Wildlife Refuge

The UMR National Wildlife and Fish Refuge was established in 1924 as a refuge for fish, wildlife and plants and a breeding place for migratory birds. The refuge encompasses one of the largest blocks of floodplain habitat in the lower 48 states and stretches through four states along the Mississippi River: Minnesota, Wisconsin, Iowa, and Illinois. Bordered by steep wooded bluffs that rise 100 to 600 feet above the river valley, the Mississippi River corridor and refuge offer scenic beauty, productive fish and wildlife habitat unmatched in the heart of America. The refuge covers over 240,000 acres and extends 261 river miles from north to south at the confluence of the Chippewa River in Wisconsin to near Rock Island, Illinois.

3.3. UMR 9-Foot Navigation Channel Project

The Rivers and Harbors Act of 1930 (P.L. 71-520), as amended, authorized the UMR 9-Foot Navigation Channel project and led to the construction of a series of locks and dams to provide the necessary water depths for vessels drafting 9 feet. Land that would be affected by the increased water levels in Pool 4 was purchased by the Corps. Much of that land is managed as part of the UMR National Wildlife and Fish Refuge under a cooperative agreement between the Corps and the USFWS.

The authorized navigation channel was created by both constructing the system of locks and dams and by dredging locations where water depths are less than 10.5 feet. In Lower Pool 4, the navigation channel is typically dredged to a width of 300 feet (up to 600 feet in the bends or corners) and a depth of 12 feet in order to maintain adequate dimensions for commercial traffic between dredging events.

The effects of creation of the navigation pools have been described in many other studies. They can be synopsized as follows. Creation of the navigation pools created thousands of acres of new aquatic habitat, benefiting those forms of fish and wildlife adapted to this habitat. Major beneficiaries were lentic fish species, waterfowl, marsh and other water birds, and small mammals. Adversely affected were terrestrial wildlife and lotic fish species. The period from creation of the locks and dams through the late 1950s saw an increased abundance of fish and waterfowl resources generated by the newly created aquatic habitats.

As soon as the navigation pools were created, natural processes began to transform them. These transformations either were not noticed or were not given much concern by the public. In the 1960s, resource managers and the public began to take more notice of these changes, most specifically the filling of backwater habitats with sediments. Sedimentation was probably the most significant resource concern in the 1960s and 1970s and it remains an important concern.

3.4. Other Projects in Lower Pool 4

Railroads. While railroads parallel Lower Pool 4 on both sides of the river, there are no railroad bridge crossings of the Mississippi River in Lower Pool 4. On the Wisconsin side, a pair of Burlington Northern Santa Fe railroad tracks lie riverward of State Highway 35. A portion of the line runs through the pool along a levee constructed across Beef Slough where it angles back towards the Wisconsin bank. On the Minnesota side, a pair of Canadian Pacific railroad tracks are set back from the river and generally follow along Trunk Highway (TH) 61. Both rail lines were constructed prior to 1890 and have been operational to this day.

Construction of the Commercial and Recreational Harbors. The Wabasha Marina and Boatyard was constructed in 1958. Other marinas in the study area were started at some time between 1954 and 1972 and include the Parkside Marina at Wabasha and the Alma Marina at Alma. The Alma Marina is adjacent to an active dredged material placement and beneficial use site in Lower Pool 4.

Interstate Bridge. The Wabasha-Nelson Bridge is a steel, high truss structure that connects Wabasha, Minnesota, with Nelson, Wisconsin. It carries vehicular traffic on two lanes of Minnesota State Highway 60 and Wisconsin 25 in either direction. The main river span is 470 feet long, and the entire structure is 2,462 feet long. The current bridge was opened in 1988, replacing a similar, narrower bridge that was built in 1931.

CHAPTER 4. Planning Considerations

4.1. Forecasting Future Conditions

Planning for the future requires projecting future conditions under various scenarios, including the no action scenario. The Corps' planning regulation, Engineer Regulation (ER) 1105-2-100, describes the future without project, or no action, conditions as the most probable conditions based on:

a) Existing conditions and trend information.

b) Available related forecasts (e.g., land use plans, population projections).

c) Established institutional objectives and constraints and local customs and traditions (e.g., authorized projects, refuge master plans, local recreational preferences).

d) Reasonably foreseeable actions of people in the absence of any proposed action.

e) Reasonably foreseeable natural occurrences (e.g., annual high water, natural succession,).

ER 1105-2-100 requires the Corps to develop dredged material management plans to meet dredging needs for a minimum of 20 years.

4.1.1. Historic and Future Dredging Operations

Dredged Material Management History in Lower Pool 4. There are six dredge cuts in Lower Pool 4 with recorded maintenance dredging since 1970. The dredge cuts and adjacent island transfer sites are shown in Table 5. Figure 5 shows the Corps' hydraulic dredging operation at Chippewa Delta in 2016. The Chippewa Delta and the Crats Island cuts have required the most attention and have produced over 50% of the 10.9 million CYs of material dredged in Lower Pool 4 between 1981 and 2021.

The basis for projecting future dredging quantities in Lower Pool 4 over the next 20 years is the dredging record from 1981-2021. Dredging practices changed in the mid-1970s as a result of the GREAT study, and the long-term average annual dredging volume has been relatively constant since 1981. The primary source of sediment to Pool 4 is from the Chippewa River. Although qualitative climate change analysis suggests higher Mississippi River discharge in the future, trend analysis done on annual dredging volumes in Lower Pool 4 and average annual discharge on the Mississippi River at Lock and Dam 4 and the Chippewa River at the U.S. Geological Survey (USGS) gage at Durand, Wisconsin, for the period 1981 to the present do not indicate upward trends. The qualitative climate change analysis indicates a statistically significant increasing trend for average annual discharge over the period of record (1928-2018); however, there is nonconsensus in the scientific literature regarding future hydrology. USGS studies in the

Chippewa River since 2017 indicate that sediment loads at Durand, Wisconsin, are lower than they were in the late 1970s and early 1980s. Since the long-term average actual dredged volumes have remained relatively stable, and the sediment load from the Chippewa River appears to be decreasing, it is reasonable to assume that dredging volumes will remain consistent with recent history. The Corps estimates that nearly 5.3 million CYs of dredged material will be generated over the 20-year period of analysis, as shown in Table 5.

Table 5. Lower Pool 4 Historic Dredging 1981-2021 and Projected Quantity[1].

Dredge Cut	River Mile (RM)	Total CYs Dredged (1981-2021)	Avg. Volume Per Year (CY)	Avg. Volume Per Job (CY)	Frequency	Projected 20-Year Quantity (CY)
Chippewa Delta	763.2	3,989,000	97,000	210,000	46%	1,946,000
Reads Landing	761.8-	1,278,000	31,000	53,000	59%	624,000
Crats Island	759	2,144,000	52,000	63,000	83%	1,046,000
Teepeeota Point	757.0-	1,337,000	33,000	43,000	76%	652,000
Grand	755.8-	1,512,000	37,000	47,000	78%	738,000
Beef Slough	753.8-	596,000	15,000	24,000	61%	291,000
TOTAL		**10,856,000**	**265,000**			**5,297,000**
TOTAL (Minus Beef Slough[1])						**5,006,000**

[1] Material from Beef Slough has historically been placed at Alma Marina for public beneficial use, which reduces the quantity needing upland placement. Quantities shown are in cubic yards. Source: CMMP Tab 4 - 2 Dredging Records

Figure 5. Dredging operations at the Chippewa Delta Cut in Lower Pool 4, July 22, 2016

The dredge cuts in Lower Pool 4 need to be dredged on a frequent basis, generally once every 1 to 3 years. Dredging in Lower Pool 4 has historically been done hydraulically in a two-step process. Material from the routine dredging events is placed temporarily on island transfer sites adjacent to the dredge cuts. Four containment areas are used as temporary sites when dredging occurs at the adjacent dredge cuts with the same names: Reads Landing, Crats Island, Teepeeota Point, and Grand Encampment (Table 6). Placement at these sites is generally limited to the existing boundaries and elevations established in the 1996 Channel Maintenance Management Plan (CMMP). Material will be placed directly at Wabasha Gravel Pit from the Chippewa Delta and Reads Landing dredge cuts once Pipeline A is constructed.

Table 6. Sites Currently Used for Temporary Placement of Dredged Material in Lower Pool 4.

Site Name	Location/Approx. River Mile (RM)	Maximum Capacity Estimate (CY)	Estimated Remaining Capacity (CY) as of Dec 2021	Remaining Years as of Dec 2021
Wabasha Gravel Pit		NA		
Reads Landing	762.9	1,300,000	175,000	1.3
Crats Island	759.3	1,427,000	800,000	15.2
Teepeeota Point	757.3	972,000	180,000	5.6
Grand Encampment	756.2	550,000	100,000	2.8

Note: Maximum and remaining capacities were determined using historical Channels & Harbors estimates for each placement site.

Dredging in Lower Pool 4 generates approximately 270,000 CY of material each year (on average). Note that the 265,000 CY per year average shown in Table 5 is lower because Chippewa Delta has not been dredged since 2018 due to lack of capacity on the Reads Landing Island transfer site. The DMMP uses 270,000 CY per year to better reflect the long-term expected average volume. The goal of the Lower Pool 4 DMMP study is to identify the Federal standard for managing dredged material from Lower Pool 4 for the next 20 years.

Dredging Operation Options. Figure 6 shows the primary methods and pathways for transporting dredged material from the river dredge cut to a suitable placement site. Hydraulic dredges pump a slurry of dredged material and water from the navigation channel through a temporary pipeline to a placement site where the dredged material settles out and the water returns to the river. Mechanical dredging uses a hydraulic excavator or crane on a barge to dig material from the channel and place it on a material barge for transportation to shore. The material barge is unloaded on shore, and the dredged material is stockpiled for transfer to a suitable location.

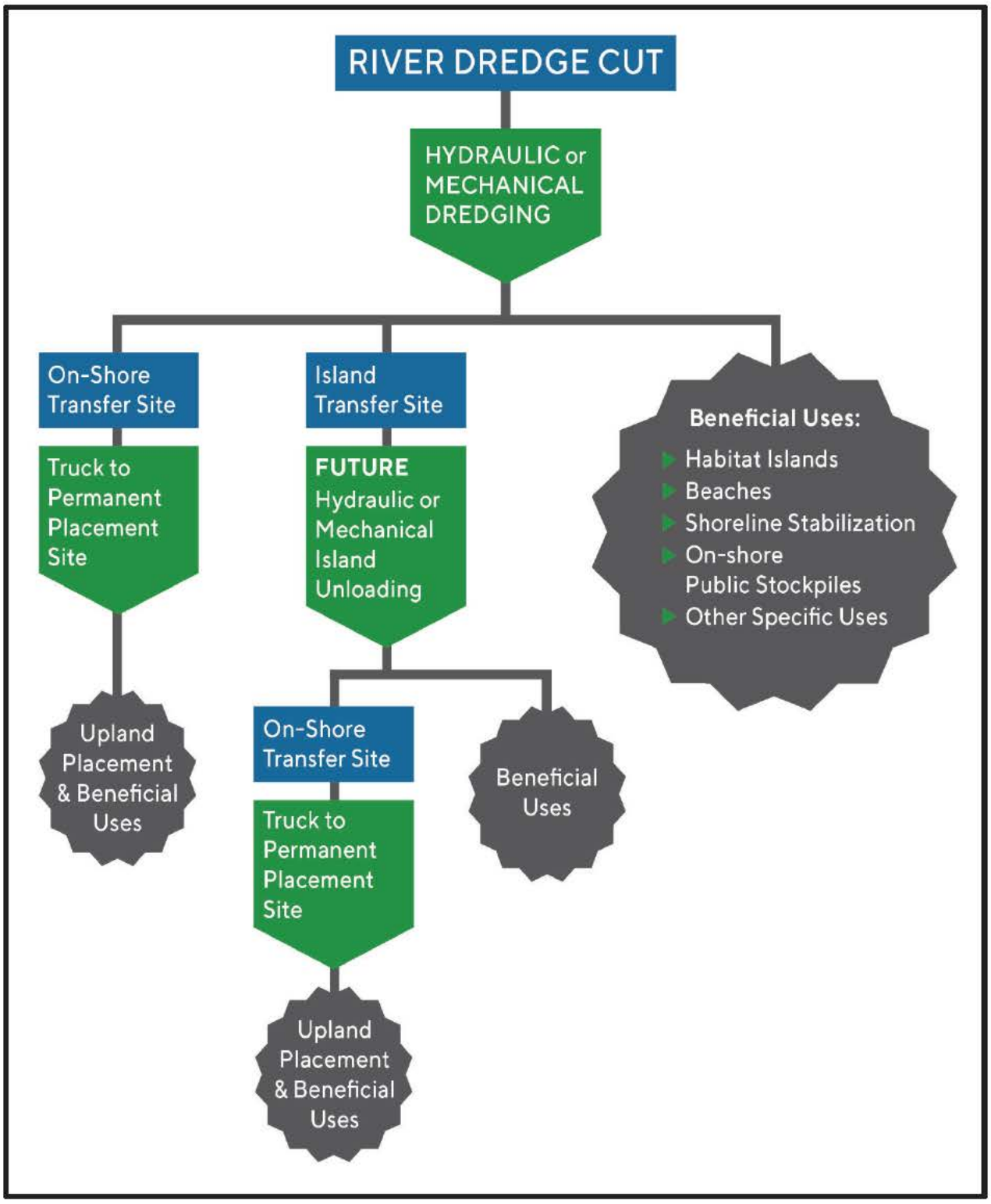

Figure 6. Primary Movement of Dredged Material.

The current practice for the Lower Pool 4 dredge cuts uses both hydraulic and mechanical methods. Hydraulic dredging is cost-effective and faster than mechanical for dredge cuts larger

than about 30,000 CY. For smaller jobs, mechanical dredging is more cost-effective and still fast enough to keep the navigation channel clear.

Historically in Lower Pool 4, only Beef Slough cut is routinely dredged mechanically. Material from the Beef Slough cut has usually been brought to Alma Marina and stockpiled there for beneficial use.

About 75% of the dredging events in the other cuts have used hydraulic methods, and hydraulic dredging has generated 95% of the dredged material from those cuts. Material from the other dredge cuts has been placed on island transfer sites adjacent to each cut. This material is offloaded to upland sites when the island sites are full, typically once every 10 to 50 years, depending on the site.

Upland Placement Sites and Beneficial Uses. In the past, the Corps has been successful in finding upland placement sites and beneficial uses for dredged material. Some of these sites were close enough to the river and large enough to accept very large volumes of material so that large-scale hydraulic offloading of island transfer sites was possible and cost-effective. Most of the placement sites listed below were privately owned and the Corps obtained permission from the landowners to place material on them. Current Corps real estate policy requires a fee interest in placement sites.

In 1982, 61,000 CY was placed at Carrels Pit for partial pit reclamation.

The Corps acquired the Wabasha Gravel Pit site and placed five million CY of material there in 1984-85, 1995, 2006, 2011-12, and 2016-2017. The material filled the gravel pit.

In 1985, 43,000 CY was placed at the Wabasha City Front to support residential development of about ten homes in the City of Wabasha.

In 1987, 1.4 million CY was placed at the Wabasha Industrial Park, and the AmericInn hotel was built on the dredged material.

In 1998, the Corps coordinated with USFWS to place 474,000 CY at the Wabasha Prairie site to develop and restore native prairie within UMR National Fish and Wildlife Refuge lands.

In 2008, 300,000 CY was placed at the Wabasha County Justice Center to support development of the center and a solar farm.

Also in 2008, 100,000 CY was placed at the upstream toe of the Dam 4 embankment for erosion protection and habitat improvement.

From 2014 to 2016, material from the Grand Encampment Island transfer site was offloaded through the Alma Marina onshore transfer site to multiple privately owned upland sites in Wisconsin.

In 2016 and 2019, a total of 500,000 CY was moved from Wabasha Gravel Pit to the privately owned Wabasha Sand and Gravel #2 pit across TH 61 to create additional space in Wabasha Gravel Pit.

Between 2016 and 2017, the Crats Island site was offloaded. A total of 800,000 CY was hydraulically moved to the Wabasha Gravel Pit via a 5-mile-long pipeline and three sets of booster pumps. The Wabasha Gravel Pit was the only upland placement site available to the Corps for the Crats Island unload.

Island Transfer Sites. The use of island transfer sites allows dredgers to work quickly with minimal setup time, since the sites are very close to the dredge cuts. This is particularly important at times when the navigation channel is impeded with sediment and removal time is critical to maintain and restore barge traffic within the UMR.

When capacity is reached at the island transfer sites, the material is excavated and transferred to an upland placement site. The islands are not accessible by land, so hydraulic dredging equipment with a long discharge line and additional pumping plant has typically been used to unload up to 1.4 million CYs at one time. At least five different one-time upland placement sites in Lower Pool 4 have accepted material from these island transfer sites. The dredged material was used for commercial and residential development and infrastructure in Wabasha, gravel pit reclamation, prairie creation, and embankment enhancement at Dam 4.

Temporarily storing the material on islands saves initial cost because the cost of moving the material to a final placement site is deferred to the future. However, managing dredged material in this manner is very costly long term because placing dredged material on an island site and later moving it to an upland site ("double handling") significantly increases the life-cycle cost of the operation. Placement of dredged material on these temporary island sites is permitted by Wisconsin Department of Natural Resources (WDNR) and Minnesota Department of Natural Resources (MNDNR). These permits currently authorize the temporary placement and storage of dredged material, not permanent placement.

Onshore Transfer Sites. Onshore transfer sites are needed to remove dredged material from the river and put it onto trucks for hauling to an upland placement site. Dredged material could arrive at onshore transfer sites from either mechanical or hydraulic dredging from dredge cuts or the island transfer sites.

Alma Marina is currently the only site in Lower Pool 4 where the Corps has transferred dredged material from a barge to shore for further handling. Alma Marina also serves as a public beneficial use stockpile site.

The Wabasha Gravel Pit is a federally owned upland placement and public beneficial use stockpile site that currently serves as a transfer site for material that has been hydraulically placed there. The Wabasha Gravel Pit does not have direct access to the river except by a hydraulic dredge pipeline. Wabasha Gravel Pit has been filled nearly to its capacity, and the Corps must continually truck material away to other placement sites to restore capacity for hydraulic placement.

4.1.2. CLIMATE CHANGE

The Corps performed a qualitative climate change analysis in accordance with Engineering and Construction Bulletin, 2018-14 Guidance for Incorporating Climate Change Impacts to Inland Hydrology in Civil Work Studies, Designs, and Projects (USACE 2018). The full analysis is presented in Appendix C: Climate Change. Relevant components of river discharge that affect sediment transport and engineering resilience include its magnitude, frequency, and duration. Average annual discharge was evaluated to explain the potential for increased sediment loading in Lower Pool 4. This data is available for the Mississippi River at Winona, Minnesota, and the Chippewa River at Durand, Wisconsin. The gage located at Durand represents hydrologic conditions on a typical tributary source of sediment to Pool 4. The gage at Winona is located near RM 726 at the upstream end of Pool 6 and 27 miles downstream of Pool 4. It adequately represents flow conditions in Lower Pool 4.

The evaluation did not find any statistically significant trends at the Winona gage for annual peak flow (see Appendix C). From a longer-term perspective when analyzing data from 1928 to 2018 at Winona, there is a statistically significant increasing trend for annual discharge and number of days flow exceeded a bank full event (see Appendix C). Additionally, there was a statistically significant positive trend in annual discharge observed at the Durand gage on the Chippewa River over a similar time frame (See Appendix C). Higher annual discharges year over year may indicate greater capacity to carry sediment and cause erosion. However, at the project scale level it's most important to consider more recent flow data to evaluate discharges on sediment transport and lessons learned from projects constructed from 1981 to 2019.

4.2. Problems and Opportunities

Problem statements describe the issues in the study area that drive the need for action. Opportunities can be directly related to solving the problems but can also be ancillary to the identified problem. From the list of problems and opportunities, objectives for the project are drafted.

4.2.1. PROBLEMS

Sedimentation in the navigation channel creates the necessity for dredging and subsequent placement of the dredged material. The costs of managing material in this pool have risen considerably due to the increasing distance to long-term placement sites and the associated transportation and handling costs. The Corps needs cost-effective access to sufficient placement capacity for the material expected to be dredged from Lower Pool 4 over the next 20 years. The majority of sediments entering Lower Pool 4 are those carried by the Chippewa River. Some of these sediments deposit within the designated navigation channel of Lower Pool 4, reducing the available clearance for commercial vessels such as barges. Periodic removal of this material (dredging) and placement of the material elsewhere is used to maintain the channel to dimensions suitable for commercial vessels drafting 9 feet, typically a depth of 12 feet and minimum width of 300 feet in Lower Pool 4.

4.2.2. OPPORTUNITIES

Beneficial use of dredged material for productive purposes is a primary opportunity associated with dredged material management. The dredged material from Lower Pool 4 consists of medium to coarse sand and is suitable for a number of applications such as construction fill material and winter road maintenance. Because it meets all applicable sediment quality criteria, it can also be placed in the water for such purposes as island construction or other ecosystem restoration projects. The material is also highly suitable for beach nourishment and/or other recreational uses.

Placement sites owned by the Corps can be made available for public utilization of the material. The St. Paul District has several dredged material placement sites where members of the public can remove material from the site for their use. This benefits the Corps because it creates additional capacity at placement sites.

4.3. Goals, Objectives, and Constraints

4.3.1. GOALS

Planning goals are broad, conceptual statements that describe the ultimate and overarching purposes for the study. The overarching national goal of water resources planning is to contribute to national economic development while protecting the nation's environment. The Corps' mission includes maintaining a commercially navigable channel in the UMR. The goal of this study is to identify the least costly, environmentally acceptable method of managing the estimated 5.3 million CYs of material that will be dredged from Lower Pool 4 during the 20-year planning period from 2022 through 2042.

4.3.2. OBJECTIVES

Based on the project's problems and opportunities, specific objectives were established and are listed below. For this DMMP, the timing or duration of the objectives is assumed to be a 20-year period of analysis from 2022 to 2042. References throughout the text to the "next 20 years" or similar statements mean through the year 2042.

The objectives for the proposed project are:

- Secure sufficient dredged material capacity for a minimum of 20 years of maintenance dredging estimated to be at least 5.3 million CY.
- Secure river access to support the transfer of dredged material to upland placement sites.
- Maximize beneficial use of dredged material consistent with the Federal standard for general public use, for gravel pit or mine reclamation and other specific upland uses, and for the construction or enhancement of authorized in-river projects.

4.3.3. CONSTRAINTS AND CONSIDERATIONS

Constraints present hard limits on the measures and alternatives that can be implemented. Constraints often come through federal laws or regulations. Considerations are factors that do not carry the same weight as constraints but still inform the evaluation and comparison of alternatives.

The following constraints and considerations were identified and considered during planning:

Cost. Federal regulations require the Corps to manage dredged material in a cost-effective manner. Engineering Regulation 1105-2-100 and 33 C.F.R. 335.7 direct the Corps to define a Base Plan, or Federal standard, that is the least costly alternative consistent with sound engineering practices and meeting the environmental standards established by the Clean Water Act (CWA), Section 404(b)(1) evaluation process.

Social Impacts. Avoid or minimize, to the extent practicable, any sites that would materially have a significant negative impact on people in the surrounding community. The district's Channel Maintenance Management Plan (CMMP) lists the following categories of socioeconomic factors to consider:

- Business and industrial activity and employment
- Community cohesion
- Public services and facilities
- Property values and tax revenues
- Life, health, and safety
- Aesthetic values and noise levels

Cultural Resources. Avoid or minimize, to the extent practicable, any impacts to historic properties.

Environmental Impacts. Actions must comply with the CWA, Endangered Species Act (ESA), and other applicable federal laws and regulations. Projects must minimize impacts to wetlands, meet state water quality standards, and avoid impacts to high value habitat and threatened and endangered species.

The plan must avoid and minimize to the extent practicable any impacts to the 1% Annual Exceedance Probability (AEP) ("100 year") flood stage. Floodplain management guidelines require a flood stage analysis (or no-rise analysis) for any project involving construction of features within the existing 1/100 AEP event floodplain. 44 CFR 60.3(d) (3) describes that a hydraulic and hydrologic evaluation is required for proposed work within a regulatory floodway. Also, Corps regulations require that flood stage impacts be addressed (ER 1110-2-1150, Engineering and Design for Civil Works Projects). For potential placement sites located within a "flood fringe" area, per coordination with the MNDNR, no additional flood stage analysis is needed.

The use of the existing island transfer sites as permanent placement sites would not be consistent with the conditions of the use permits from the MNDNR and WDNR.

CHAPTER 5. Formulation and Screening of Alternatives

Chapter 5 describes the Corps' planning process and screening criteria and the range of sites, transportation modes and routes that were considered in the DMMP. The Corps developed a list of potential dredged material placement sites based on publicly available aerial imagery and property records. Consideration was given to the full range of measures for dredged material management including federally owned islands and upland placement sites, new sites, and potential future placement sites that could be made available for both mechanical and hydraulic placement. An alternative plan is a set of one or more management measures functioning together to address one or more objectives. Management measures are features or activities that can be implemented at a specific location to address one or more planning objectives. For this DMMP, these measures can be the use of upland placement sites, transfer sites, barge routes, pipeline routes, trucking routes, or various dredging methods. Different plans consist of different measures, or they combine the same measures in significantly different ways to meet the objectives of the project.

5.1. Planning Process and Criteria

5.1.1. GENERAL

The DMMP and integrated EA describes a proposed federal action and its environmental effects. The Corps' planning process meets the requirements of the NEPA. The Corps must consider public input prior to making a final decision to implement a proposed action.

The plans identified in the May 2017 and March 2022 draft versions of the DMMP were "tentatively selected" plans (TSP). After public review, the Corps considered public comments on the TSP before deciding whether or not to modify or adopt, recommend, and implement the plan. This final DMMP presents the Recommended Plan.

Planning in Lower Pool 4 was conducted in two phases. Initial work resulted in a draft plan that was published in May 2017. The 2017 draft DMMP along with the comments the Corps received about it is available on the St. Paul District website: https://www.mvp.usace.army.mil/DMMP/.

The second phase of planning reconsidered dredging methods and revised the alternatives considering the comments received on the May 2017 draft. The revised analysis is presented in this final DMMP.

Federal Standard and Base Plan

The Corps' dredged material management planning follows federal regulations. Engineering Regulation 1105-2-100 directs the Corps to define a "Base Plan." 33 C.F.R. 335.7 defines the "Federal standard" (which is the same as the Base Plan) as follows: "Federal standard means the dredged material disposal alternative or alternatives identified by the Corps which represent the least costly alternatives consistent with sound engineering practices and meeting the environmental standards established by the 404(b)(1) evaluation process or ocean dumping criteria."

ER 1105-2-100 requires that all federally maintained navigation projects must demonstrate that there is sufficient dredged material disposal capacity for a minimum of 20 years. Management plans must identify specific measures necessary to manage the volume of material likely to be dredged over a 20-year period. It is the Corps' policy to accomplish the disposal of dredged material associated with the construction or maintenance dredging of navigation projects in the least costly manner. Disposal is to be consistent with sound engineering practice and meet all federal environmental standards including the environmental standards established by Section 404 of the CWA of 1972, as amended. This constitutes the base disposal plan for the navigation purpose. Each management plan study must establish this "Base Plan."

Section 404 of the CWA of 1972, as amended, governs the placement of fill or dredged material into a water of the U.S. Under Section 404, the Corps cannot place dredged material in wetlands or other special aquatic sites if an upland placement site is available as a practicable alternative. Furthermore, if no upland site is available, placement in a water must be the least environmentally damaging practicable alternative that satisfies the Corps' mission needs.

The Corps must also comply with Section 401 of the CWA, which requires the St. Paul District to obtain a water quality certification from the State of Minnesota or the State of Wisconsin for fill activities in a water of the U.S. that may be proposed under this DMMP.

The Corps works closely with other federal and state natural resource agencies to identify and implement ecosystem restoration projects that sometimes include beneficial use of dredged material placed in waters of the U.S. These projects are permitted under the CWA when they are determined to be environmentally beneficial.

St. Paul District Channel Maintenance Management Plan (CMMP)

The CMMP defines criteria to be used to evaluate and compare the various sites and alternatives in dredged material management plans. The Corps considered all of these criteria when evaluating sites for this plan. The criteria are as follows:

- Cost
- Natural Resources
- Beneficial Use
- Cultural Resources
- Social Impacts
- Recreation

The social impacts criterion includes the following categories of socioeconomic factors to consider:

- Business and industrial activity and employment
- Community cohesion: proximity to residential development, landowner willingness to sell, public opposition, and adjacent land use
- Public services and facilities
- Property values and tax revenues
- Life, health, and safety
- Aesthetic values and noise levels

Evaluation Criteria in the Principles and Guidelines

ER 1105-2-100 requires the Corps to consider four evaluation criteria listed in the Water Resources Council's Economic and Environmental Principles for Water and Related Land Resources Implementation Studies (1983): completeness, effectiveness, efficiency and acceptability. Completeness is the extent to which the alternative plans provide and account for all necessary investments or other actions to ensure the realization of the planning objectives, including actions by other federal and non-federal entities. Effectiveness is the extent to which the alternative plans contribute to achieve the planning objectives. Efficiency is the extent to which an alternative plan is the most cost-effective means of achieving the objectives. Acceptability is the extent to which the alternative plans are acceptable in terms of applicable laws, regulations and public policies.

Completeness: Each of the features included in the Recommended Plan, and the Recommended Plan collectively, is complete. If the Corps is able to acquire the rights to use the sites or implement a Section 217(d) agreement, the Corps can manage dredged material in accordance with the plan without action from any other entities. Completeness was not a significant factor in differentiating sites for the Recommended Plan, and multiple sites must be used to form a complete alternative.

Effectiveness: Individual transfer and placement sites and transportation routes were evaluated for their ability to support dredging operations as described in this DMMP. It was critical for the

Corps to identify enough capacity for the estimated 5.3 million CY of dredged material while avoiding the constraints discussed in Section 4.3.3.

Efficiency: The Corps estimated the costs per CY of dredged material to implement each alternative, considering its associated sites, dredging methods, transportation options, acquisition costs, and economic impacts. The Corps then compared the costs of the alternatives to determine which were the most cost-effective.

Acceptability: Acceptability is primarily measured by compliance with law and regulation. The Corps evaluated each alternative to assess its compliance with federal environmental laws and regulations governing dredged material management. Alternatives that did not comply were screened out.

5.1.2. COST ESTIMATES

A parametric cost estimate was prepared for acquiring and using the sites that were considered. The same basic assumptions were applied to each site, and the estimates were intended only for purposes of making comparisons. The cost/CY includes all costs incurred from the initial dredging to final placement. Depending upon the specific dredge cut, and the methods and sites used, costs may include the physical handling of the dredged material by means of hydraulically or mechanically dredging the material out of the river, barging the material to a transfer site, unloading the material from the barge, temporary stockpiling, loading and trucking the material, if required, and placing the material in a placement site. The estimate also includes indirect costs such as real estate and development costs for the placement sites.

Trucking. The cost of trucking is primarily a function of the travel distance and the number of trucks needed to achieve an efficient production rate. With a constant production rate for each alternative, travel distance is the main factor. Therefore, the greater distance the placement site is from the transfer site, the higher the trucking cost.

Dredging. The cost of dredging varies depending on the type of dredging operations used, e.g., mechanical or hydraulic methods, mobilization and demobilization of equipment, distance the material will travel to a suitable placement site, and the convenience of access from the dredge cut to onshore placement sites.

Placement. This cost includes the work of a dozer to spread the dredged material after it is placed by a truck.

Acquisition. Acquisition costs include costs to obtain real estate interests needed to place material on the site.

Development. Development costs includes access improvements, site clearing, stripping and re-spreading topsoil, erosion control and visual berms.

5.1.3. SUMMARY OF PLANNING EFFORTS

First Iteration – 2017 Draft DMMP

The 2017 draft DMMP attempted to plan for a 40-year timeframe instead of the minimum 20-year timeframe required in Corps regulations. The longer planning horizon was intended to provide more certainty regarding the Corps' operations, knowing that additional development in the study area will affect the options available for dredged material management sites and complicate future planning efforts.

Planning in Lower Pool 4 began with an evaluation of the current dredging practices, as described above. Current practice involves primarily hydraulic dredging, use of the island transfer sites, and the need to find beneficial uses and upland placement sites suitable for large-scale island offloads.

Discussion with state and federal natural resource agencies identified that in-river alternatives, including expanding the existing island transfer sites, were less desirable and had increased likelihood of adverse impacts to wetlands relative to upland alternatives. Mitigation for wetland impacts would likely have increased the cost of these options. The agencies preferred not to build islands or otherwise make beneficial use of the dredged material at a scale needed for the DMMP to make it a viable part of a solution in Lower Pool 4 at that time..

The Corps began looking for sites to meet the variety of needs within Lower Pool 4. Sites were initially identified based on their operational feasibility, including access to the river and highway network, the acreage and site dimensions needed to support dredging operations, and the potential for public or specific beneficial use of the material. Sites were evaluated and compared using the general criteria in the CMMP plus additional factors including flood stage impacts, the potential to encounter hazardous, toxic, or radioactive wastes, and the potential to affect eligible or listed historic properties already known to exist.

The Corps looked for suitable sites for future large-scale hydraulic offloads from the island transfer sites. The large cost of setting up miles of hydraulic dredge pipeline is only cost-effective if the pipeline can be used to move very large volumes of material. For that reason, island offloads typically move at least 500,000 CY, which requires a placement site 20 acres or more near the river and the island sites and compatible with existing adjacent land use. The Corps-owned Wabasha Gravel Pit was nearing its capacity. Due to development in and near Wabasha on the Minnesota shoreline and the relative inaccessibility of upland sites on the Wisconsin shoreline, no new sites were found to be of adequate size and location.

In an effort to reduce the need for large-scale island offloads and reduce the cost of double handling the dredged material, the Corps developed a plan to switch from primarily hydraulic dredging methods to using mechanical methods. Dredging methods are described in Section

4.1.1. above. The plan identified several parcels of land needed to support onshore handling, transfer and upland placement of mechanically dredged material for a 40-year planning horizon.

Next, the Corps looked for suitable onshore locations to support mechanical and hydraulic dredging operations. Onshore transfer sites must be located relatively near the dredge cuts and support a variety of activities, depending on the type of dredging:

- Unloading barges
- Stockpiling dredged material
- Loading onto trucks
- Containing and dewatering hydraulically dredged material

Once the onshore transfer sites were located, the Corps looked for suitable upland placement sites. Sites smaller than 20 acres were not considered suitable unless a specific beneficial use was identified, such as mine reclamation or raising a site's elevation for development. In general, Corps Real Estate policy requires obtaining a fee simple interest in dredged material placement sites. That requirement contributed to the Corps' preference for sites with larger capacities to reduce the number of parcels needed. It also led to avoiding parcels within developed areas where the potential for private development is not compatible with federal ownership of the sites.

The Corps took the following steps to determine the least-costly environmentally acceptable sites:

- Estimate the cost to haul material to each site from the identified onshore transfer sites.
- Estimate cost per cubic yard to use each site, including real estate, site development and hauling cost.
- Rank the sites in order of cost from least to greatest.
- Assess environmental acceptability of each site using criteria in the CWA, ESA, and other federal laws and regulations.
- Eliminate sites that were not environmentally acceptable.
- Identify the least-cost, environmentally acceptable sites necessary to provide the required capacity.

The draft DMMP was released in May 2017 for public and agency review. The TSP in the May 2017 draft report, intended to provide 40 years of disposal capacity, consisted of five permanent placement sites in the vicinity of Kellogg, Nelson, and Buffalo City (Drysdale, Drysdale Farms, Weisenbach West, Wabasha Sand and Gravel 2, and Flury East), along with four onshore placement and transfer sites (Wabasha Gravel Pit, Carrells East and West, Alma Marina, and Southside Fitzgerald). The plan also provided that four historically used island transfer sites in the Mississippi River, Reads Landing, Crats, Teepeeota, and Grand Encampment would remain available for use when necessary. In general, natural resource agencies supported the Corps' efforts to avoid placing fill in sensitive natural resource areas. However, the plan met significant opposition from landowners, state and local governmental units, and political representatives

from all levels of government. Reviewers expressed concerns about taking farmland out of production and reducing the local tax base, social impacts of acquiring land from unwilling sellers and multi-generational farmers, noise and aesthetic impacts to residential properties, impacts to property values near DMMP sites, impacts to the viewshed from designated scenic highways and neighboring residences, and impacts of hauling material through the developed areas of Wabasha, Nelson, and Alma, Minnesota. Reviewers also suggested that the Corps consider actions to reduce the sediment load coming from the Chippewa River.

Second Iteration

The Corps' second planning effort differed from the first effort in three important ways:

- First, it considered the public comments from 2017 and worked with stakeholders to develop solutions with smaller impacts to the community.
- Second, the period of analysis was reduced from 40 years to the minimum 20 years required by Corps regulation. That reduced the amount of placement capacity required in the plan.
- Third, the Corps reevaluated the proposed dredging methods and determined that switching to primarily mechanical dredging would not be reliable in most years, because the volume that needs to be dredged is often too high for mechanical methods to handle quickly.

The second planning effort was more sensitive to social impacts, a factor that was overshadowed by cost-effectiveness and environmental acceptability during the first iteration. As part of the reconsideration, the Corps screened out some sites previously proposed in the May 2017 draft report, while retaining others and identifying additional sites. The Corps worked directly with the City of Wabasha to develop a plan that reduced impacts to the community. The Corps issued public notices and sent letters to individuals to find landowners willing to consider selling their property in areas likely to be cost-effective for the Corps. Several landowners came forward and were considered for inclusion in the plan. The Southside Fitzgerald onshore transfer site was screened out due to its high impacts to local traffic congestion, noise and aesthetic impacts to adjacent residential properties. Upland placement sites that required hauling through the developed areas of Wabasha, Nelson and Alma were screened out, because other cost-effective sites had lower impacts to traffic and affected fewer people along the haul routes.

The Recommended Plan still includes taking some farmland out of production and off local tax rolls; no cost-effective alternatives were found that could avoid those issues entirely. Impacts to viewsheds in the vicinity of upland placement sites are also unavoidable, and the Corps will design the sites to minimize impacts as much as practicable during implementation.

The revised version of the Lower Pool 4 DMMP includes a variety of sites in the Recommended Plan, including federally owned sites, new sites identified by potentially willing sellers, and sites that would serve the federal interest but with owners who are not currently interested in selling. All the identified sites within the plan could be used at any given time to handle dredged material, but they are not all required immediately. Identifying these sites in the Recommended

Plan gives the Corps flexibility to cost-effectively manage the dredged material, minimize social impacts, and acquire sites in the future as needed to meet operational needs.

The second iteration of planning followed the same regulations as the first iteration. It considered an array of features, including potential sites, activities, and modes of transportation useful for managing dredged material in Lower Pool 4. It evaluated the potential costs, environmental impacts, and social impacts associated with each feature. It compared the qualities of the features with each other to determine the least costly alternatives consistent with sound engineering practices and meeting required environmental standards. The Recommended Plan presented in this DMMP constitutes the "Base Plan" and the "Federal standard" for managing dredged material in Lower Pool 4 through the year 2042.

5.2. No Action Alternative

The no action alternative for this DMMP is no change in the current management plan. Under a normal feasibility study seeking authorization for a new project, the no action Alternative would mean that no action is to be taken. However, in the instance of an ongoing program, the no action Alternative refers to no change in program direction. According to Council on Environmental Quality (CEQ) guidance (1981):

> "*There are two distinct interpretations of "no action" that must be considered, depending on the nature of the proposal being evaluated. The first situation might involve an action where ongoing programs initiated under existing legislation and regulations will continue, even as new plans are developed. In these cases "no action" is "no change" from current management direction or level of management intensity. To construct an alternative that is based on no management at all would be impractical. Therefore, the "no action" alternative may be thought of in terms of continuing with the present course of action until that action is changed."*

The no action alternative here considers what would happen in the absence of preparing and implementing a new plan for the management of dredged material in Lower Pool 4 of the UMR. Under the no action alternative, the UMR 9-Foot Navigation Channel Project and congressional authorization for the Corps to maintain a commercial navigation channel in Lower Pool 4 would remain in place. The no action alternative does not imply that maintenance of the UMR 9-Foot Navigation Channel within Lower Pool 4 would cease. However, there is uncertainty in how dredged material would be managed under this scenario where the existing placement sites begin reaching full capacity, so several potential outcomes follow.

The current plan for managing dredged material is the Channel Maintenance Management Plan (CMMP). The CMMP has identified the following order of priority for selecting placement sites for dredged material:

(1) CMMP-Identified Upland or Transfer Placement Sites.
(2) CMMP-Identified Emergency Placement Sites (none exist in Lower Pool 4).

(3) Non-CMMP-Designated Placement Sites.

The use of CMMP-identified sites that would continue under the no action alternative would be the placement in the Reads Landing, Crats Island, Teepeeota Point, and Grand Encampment transfer sites, and in the Wabasha Gravel Pit and Alma Marina upland transfer sites. Material would be moved to the Alma site directly by barge as occurs now. Also, as happens now, material would be moved to the Wabasha Gravel Pit hydraulically. The use of the Carrels site, which is identified in the CMMP, is possible but would require acquisition of a real estate interest in the site because it is privately owned. Similarly, the Wabasha Sand and Gravel Pit was evaluated and approved for use in 2015 but is also privately owned. Because these sites are in private ownership, their use is uncertain and cannot be relied upon. The Rolling Prairie placement site was acquired in 2020 and would be available for placement. This site was evaluated in a 2020 EA (USACE 2020), but that assessment did not address the transportation of material from Pool 4 to the site. Details of all these existing sites can be found in Chapter 6.

There are no CMMP-Identified Emergency Placement Sites within Lower Pool 4.

The need to use non-designated placement sites would occur under scenarios where dredging must occur to maintain navigation, but designated placement sites are not available. The following critical channel conditions are defined in the CMMP:

> ***"Imminent Closure"*** is defined as a scenario when the actual water depth is projected by the District Engineer to be 10 feet or less within 14 days or less, or the channel width is less than 85% of the normally maintained width. The Corps typically dredges a depth of at least 12 feet in most locations (some even greater than 12 feet), but typical dredging operations begin where normally maintained channel widths are restricted by 10.5 feet or less water depths projected within 14 days.
>
> ***"Emergency Dredging"*** is defined as dredging required to free a grounded vessel, remove shoals (submerged bars) in the channel as a result of a vessel freeing itself, or to remove unanticipated shoals in the channel arising from extreme weather-related events and that prevent safe vessel passage. The emergency will continue only until a pilot channel is established to an adequate channel depth and width, as determined by the Corps, to allow vessel passage. A pilot channel is defined as a temporary channel of lesser width and/or depth than the authorized, or typically maintained channel. Pilot channels dredged under emergency conditions will be limited to the minimum width and depth needed to efficiently and effectively keep navigation safely moving as determined by the Corps through consultation with the navigation industry and the USCG. Once emergency dredging conditions are reached, the Corps would need to dredge the channel, regardless of placement site availability. Under this scenario, dredged material may need to be placed at non-designated placement sites where environmental review has not been completed. These may include in-water or shoreline placement sites, or other practicable alternatives as identified. For example, in 2014, the Corps found it necessary to place dredged material directly into the river during a channel closure at the Grand Encampment dredge cuts in Lower Pool 4. Other placement sites were not readily available, and the navigation channel was closed. The material was temporarily placed in

> the river and removed later in 2014. Any material that is placed in water, under the No-Action alternative, would need to be removed to another site as soon as practicable, unless another mutually agreeable plan of action is reached with the appropriate regulatory agencies.

Currently, most dredging activity is conducted proactively to prevent closures. Channel conditions are monitored by the Corps to identify areas that are or will soon become problematic for navigation traffic. This allows the Corps to better prioritize efforts and most efficiently maintain the channel when equipment is mobilized in the area. Material is dredged from the navigation channel and temporarily placed on island transfer sites adjacent to the dredge cuts. When island sites are nearly full, the Corps moves the dredged material to upland placement sites to restore island capacity. The Wabasha Gravel Pit is currently the only available site in Pool 4 for upland placement, and it is nearing capacity. The recently acquired Rolling Prairie site in Pool 5 could be used for upland placement, as it has ample capacity, but it's distance would make it costly and difficult to use in a timely manner.

In the best case where placement sites are full, dredging could be temporarily deferred and the navigation channel would remain functional for some period of time. This scenario has potential to occur for short periods of time (e.g., one dredging season at a minimum), but is extremely unlikely to persist based on the history of dredging requirements in this stretch of river. For instance, dredging has been conducted in Lower Pool 4 to facilitate navigation traffic every year since 1981. The navigation channel is typically dredged to 12-feet deep and 300-feet wide (up to 600-feet wide in the bends and corners) to support commercial traffic. Over time, the dredging program has evolved to dredge the minimum required amount to prevent closures, as described in Section 5.11. However, switching to a scenario of dredging only when absolutely necessary would also increase the likelihood of experiencing imminent closer or emergency dredging conditions as described above, as was experienced at Grand Encampment in 2014.

Under the no action alternative, the Corps would work to utilize the existing sites and to secure other short-term solutions, but in the long term, it would be likely that the need would arise to utilize non-designate placement areas without adequate time to fully evaluate the consequences of site use or search for other viable alternatives. This would likely lead to greater environmental or social impacts than those experienced under the current plan. As shown in Table 6, the Grand Encampment Island transfer site is expected to reach its capacity in 2024.

WDNR and MNDNR permit temporary placement of dredged material on the island transfer sites. The sites are defined as interim holding locations to be used until the material can be economically removed and transferred to designated upland sites. Under these permits, when island sites are no longer being used the material needs to be removed and the island restored to an appropriate condition. Thus, relying on these sites as permanent storage sites would be problematic under this arrangement. Finding suitable placement sites near the river is optimal for placement due to the reduced transportation costs; however, land near the river is seldom available so when there is an opportunity to pursue land that is for sale it is necessary for the Corps to explore the acquisition of the property.

In summary, under the No-Action Alternative, currently approved and available placement sites in Lower Pool 4 project area would not be expected to accommodate material placement needs for the next 20 years. The Grand Encampment Island Transfer Site is expected to be at capacity in 2025. If approved, CMMP sites are not available when dredging is required in Lower Pool 4 due to navigation emergency situations, dredged material may need to be placed at non-CMMP designated placement sites. Non-designated placement sites would likely include temporarily placing dredged material in the aquatic main channel border areas (in-water placement). The use of non-designated placement sites may result in higher costs and greater environmental or social impacts. Presumably though, these instances would be short-term, and a new planning effort would occur to identify the most acceptable dredged material management methods for the pool.

5.3. Habitat Restoration through the use of Dredged Material

Dredged material has periodically been used for habitat improvement on the UMR. Locally, dredged material has been used to create islands as well as raise floodplain elevations to create topographic diversity and conditions favorable for floodplain forest (i.e. Lock and Dam 4 Embankment). Indirect benefits also occur as other construction materials, such as fine material used to cap dredged sand, can be obtained from the river. This benefits aquatic backwater habitats by increasing water depth in backwater areas.

The Corps' operations and maintenance program can provide dredged material directly for habitat purposes if the project costs are not higher than the established Federal standard. Section 204 of the WRDA of 1992, as amended, allows the Corps to work cooperatively with non-federal sponsors to build flood control and environmental protection or restoration projects using dredged material. Sponsors are responsible for 35% of all costs in excess of the Federal standard. Other Corps programs, such as the Upper Mississippi River Restoration – Habitat Restoration and Enhancement Program (UMRR-HREP) can also make use of dredged material in cooperation with other federal and non-federal cost-sharing partners.

Currently, dredged material is available at numerous beneficial use facilities up and down the river if there is an immediate need to use material to build and improve habitat. The potential to improve habitat in Lower Pool 4 using dredged material is always being considered; however, at best, this is a partial solution, because the volume of dredged material far exceeds the need for environmental purposes. A more comprehensive long-term solution is needed.

Island Construction in Lower Lake Pepin. The Corps often builds islands and other earthen structures in the Mississippi River as features of HREP projects. The bases of the islands are typically constructed using granular fill obtained from main channel dredging. In addition to the sand island base, a typical island also requires topsoil (fines), rock stabilization, and vegetation. The islands are topped with fine fill material obtained from access dredging and/or habitat dredging. Rock obtained from off-site quarries or pits is used to stabilize the shorelines. The islands are usually vegetated with grasses and trees native to the floodplain. Previous island construction projects have typically cost $35 to $50 per cubic yard of sand placed. These costs make island construction less cost-effective than other practicable upland placement alternatives

in Lower Pool 4. The Base Plan includes only the least cost environmentally acceptable alternatives, and island construction costs in excess of the Base Plan need to be shared with a non-federal partner under other authorities than operation and maintenance.

The Corps briefly looked at hydraulic placement of dredged material from the Chippewa Delta to construct islands in lower Lake Pepin near the town of Pepin, Wisconsin. This action would face many challenges. In addition to the high placement costs, concerns were expressed regarding impacts to an existing high quality habitat area for fish and effects to the floodplain. For these reasons, island construction in lower Lake Pepin was not carried forward in the DMMP.

The Lake Pepin island construction option was not included as part of the plan going forward; however, if future interests in island construction in Lake Pepin change, funding from other programs or outside sources, or in-kind work to construct these additional features, can make island construction a viable alternative. The Corps is willing to work with interested parties to utilize dredged material for these types of projects if such opportunities and interests arise.

Mississippi River Upper Pool 4 Pierce County Islands Head of Lake Pepin Project. As described in Section 1.4.7 above, the Corps is implementing a cost-shared ecosystem restoration project near the head of Lake Pepin that will incorporate approximately 390,000 CY of dredged material from Lower Pool 4.

Lower Pool 4 Big Lake, Robinson Lake, and Tank Pond HREP Study. The Corps, WDNR, MNDNR, and the USFWS are studying the feasibility of building cost-shared ecosystem restoration features in portions of Lower Pool 4. This study began in October 2021. The study area encompasses approximately 9,382 acres of open backwater, meandered side channel, main channel border, and island formations from state Highway 25 (Nelson Dike) at Wabasha, Minnesota, to Lock and Dam 4 near Alma, Wisconsin. The study area extends from approximate RM 760.2 to 752.8 (7.4 miles) and includes the main stem of the Mississippi River (8,276 acres) and portions of the Buffalo River (1,106 acres). The overall goal is to maintain, enhance, and create quality habitat for native and desirable plant, animal, and fish species. Some potential project features include island construction/enhancement, mudflat creation/enhancement, and backwater and secondary channel dredging. There is a potential for the beneficial use of material dredged from the navigation channel. Because planning has just started, project construction would likely start no sooner than 2026.

5.4. Island Transfer Sites

The Corps has historically used four federally owned island transfer sites: Reads Landing, Crats, Teepeeota Point, and Grand Encampment. These sites are located adjacent to the dredge cuts bearing the same names. These sites will continue to be used for both mechanical and hydraulic dredging. The sites are described in Section 6.1.3 with details in Section 6.4.1 through 6.4.4. The sites must be continually offloaded to restore capacity for ongoing placement

Expanding these sites was screened out for several reasons. First, expansion would require additional in-water fill and would likely impact wetlands. Also, expanding the island sites would likely have an adverse impact to flood stages. Finally, the placement of fill in the Mississippi River floodplain and loss of aquatic or forest habitats would not be acceptable to the USFWS or the state resource agencies.

5.5. Onshore Transfer Sites

Typical dredging operations in Lower Pool 4 are either done by a mechanical or hydraulic dredge. The suitability of sites to handle material via a mechanical dredge is based on the capacity to manage the material on site, barge access to the site from the river, truck access to the site from the highway system, and compatibility with the surrounding area. Sites capable of handling dredged material hydraulically must be in reasonably close proximity to the river (accessible via a dredge discharge pipeline) and be large enough to support an efficient dredging and dewatering operation, typically 10 acres or more for material coming directly from a dredge cut in the navigation channel.

Table 7 lists existing river access points in Lower Pool 4 that were considered as potential onshore transfer sites but not carried forward for further evaluation due to operational concerns (primarily barge access and site size), adverse effects to natural resources, public safety, impacts to recreation, land use and aesthetic concerns. Sites that are located far from the navigation channel would not be cost-effective or least environmentally damaging due to the need for extensive access dredging.

The Southside Fitzgerald site at RM 759.3 was part of the Tentatively Selected Plan in the 2017 draft DMMP. After considering public comments and coordinating with the City of Wabasha, the Corps determined that using the site for annual dredging operations would impact the many adjacent residences with 24-hour noise and substantially increased truck traffic on local streets. Therefore, the Southside Fitzgerald site was screened from further consideration.

Table 7. Lower Pool 4 Onshore Sites Considered but Not Carried Forward.

Onshore Site	Location (River Mile & Bank)	Current Land Use	Comments/Status
Roschen Park and Access, Lake City	772 R	Public Access	Urban recreational access in Lake City. Barge offloading would cause impacts to recreation.
Chippewa River Landing	763.5 L	Public Access	Too far up Chippewa River for barges; would require extensive access dredging.
Izaak Walton Park	760.6 R	Public Access	Urban recreational access in Wabasha. No barge access under Church Avenue.
Mississippi Parkside Marina	760.6 R	Private Access	Urban recreational access in Wabasha. Barge offloading would cause impacts to recreation.
Wabasha Boat Works	760.6 R	Private Access	Urban docks in Wabasha. Location not compatible with major hauling operation.
Indian Slough & Pontoon Slough Landings	760.2 L	Public Access	Sites are remote from the navigation channel.
Wabasha Municipal Dock	760.1 R	Public Access	Urban recreational access in Wabasha. Site is too small for barge offloading.
Wabasha Marina	759.4 R	Private Access	Urban recreational access in Wabasha. Barge offloading would cause impacts to recreation.
Southside Fitzgerald	759.3	Private/Agriculture	Hydraulic dredging placement would cause impacts to many adjacent residences from 24-hour per day operations and trucking over an extended timeframe.
Cedar Ridge Resort	758.5 L	Private Access	Site is remote from the navigation channel.
Wilcox Landing	756.4 R	Public Access	Site is remote from the navigation channel.
Buffalo Landing/Rieck's Lakeside Park	755.0 L	Public Access	Trumpeter swans have used this area; no storage space for hydraulic dredging; no access under railroad for barges.
Peterson Lake Landing	754.7 R	Public Access	Site is remote from the navigation channel.

Table 8 lists sites that were evaluated in detail and carried forward for further evaluation for use as onshore transfer sites.

Table 8. Onshore Transfer Sites Evaluated in Detail and Retained.

Onshore Transfer Site Name	Location/Approximate River Mile (RM)	Maximum Capacity (1,000 CY)	State	Past Use
Carrels	Section 30, T111N, R10W; RM 761.2	700	MN	Y
Bean Field	Section 30, T111N; R10W	125	MN	N
Wabasha Gravel Pit	Section 30, T111N; R10W	Varies	MN	Y
G-1	Section 25, T110N; R10W	600	MN	N
Alma Marina	RM 754.0	50	WI	Y
West Newton Chute	Section 31, T110N, R09W; RM 750.0	100	MN	Y

5.6. Upland Placement Sites

The Corps considered the following to determine the most suitable sites for dredged material placement:

- The life-cycle cost to use each site, including real estate acquisition, site development and hauling cost from the identified onshore transfer sites.
- Operational considerations and site capacity, including proximity to the dredge cuts and potential to use the site for hydraulic dredging, as well as proximity to potential onshore transfer sites for mechanical dredging, and highways for hauling and beneficial use.
- The environmental acceptability of each site using established criteria in the CWA, ESA, and other federal laws and regulations, including endangered species present, water quality, wetland impacts, flood stage impacts, potential for the presence of hazardous, toxic and radioactive waste (HTRW), and other natural resources as appropriate.
- The social impacts associated with the use of each site were also considered when determining which sites should be included in the plan. Criteria included the social impacts associated with hauling, handling, and placing dredged material as defined in the CMMP. (See Section 4.3.3.) The Corps sought willing sellers in the area north of the Zumbro River and south of Wabasha-Kellogg High School, where the Corps'

management operations could be reasonably cost-effective. Several landowners identified potential willingness to sell, and that was considered in the site selection process. Some sites with unique value to the Corps were included in the Recommended Plan even though their owners may not be willing to sell at this time.

Estimated Site Capacities. The rough order of magnitude capacities of potential placement sites were estimated so that sites could be compared for screening and site selection. Capacity estimates were based on the useable acreage and assumptions about the average height of placement at each site. In general, an average of 15-feet placement height on useable acres was assumed (unless otherwise noted). The average height takes into account setback distances from lot lines and wetlands, side slopes and top slope to allow drainage without causing erosion. The average placement height will be approximately 15 feet, with some areas higher and some lower. The intent will be to blend in with adjacent elevations to minimize visual impacts to the landscape as much as practicable. No detailed site layout was developed as part of the screening and site selection in this DMMP. The actual placement height and details will be determined during implementation of the management plan.

Upland placement sites that were screened and the reasons for screening them are presented in Section 5.7 and shown on Plate 1.

Upland placement sites that were retained in the Recommended Plan are described briefly in Section 6.1.1 and in more detail in Section 6.2. The retained sites are shown on Plate 2. The upland placement sites that were retained include:

- Zumbro River Flats (ZRF) North
- Zumbro River Flats (ZRF) South
- Wabasha Sand and Gravel Pit (WS&G)
- Rolling Prairie

5.7. Upland Placement Sites Screened From Current Consideration

The following paragraphs briefly describe each of the upland placement sites that were screened from consideration at this time. This DMMP identifies and prioritizes sites for use through 2042 based on assumptions about future conditions. Sites that are screened out in this report may be reconsidered in the future if needs and actual conditions change.

All of the upland placement sites identified in this section of the report were considered and screened out at this time. Site location, capacity, costs, environmental impacts, social impacts, or other circumstances made using them less desirable than the sites that were retained. Locations of the sites that were considered and screened out can be found in Plate 1. The specific reasons for screening are described for each site in this section. Sites that were retained are described in Chapter 6 and shown on Plate 2.

5.7.1. SITES IN THE 2017 DRAFT DMMP

The Tentatively Selected Plan (TSP) described in the 2017 draft report included the Weisenbeck West site north of Nelson, Wisconsin; the Flury East site in Buffalo City, Wisconsin (south of Alma, Wisconsin); and the Drysdale and Drysdale Farms sites north of Kellogg, Minnesota. All of those sites and all other sites involving hauling through Nelson and Alma were screened from consideration at this time. Public comments about the 2017 DMMP identified impacts to residents of Wabasha, Nelson, and Alma from trucking dredged material through developed areas for up to 75 days per year. Impacts included additional noise, traffic congestion, and dust that would be generated. The Corps determined that hauling the proposed volumes of dredged material through the developed areas of Wabasha, Nelson and Alma was not preferable when there were reasonably cost-effective sites available that could avoid those impacts.

The Corps reexamined other sites screened in 2017. Where the screening rationale and conclusion did not change, the discussion of those sites is not repeated in this report and can be found in the 2017 report.

Buffalo County, Wisconsin, expressed interest in using dredged material to fill ravines that were eroding. Two ravine sites, Secrist and Hagnoll, were described in the 2017 draft DMMP and screened from consideration at that time. During further coordination with Buffalo County, Corps staff reiterated the concerns stated in the 2017 draft DMMP: ravine sites have high potential for erosion, and they are likely to contain wetlands that could not be avoided if they were filled. The individual ravine sites have relatively low capacity compared to other available sites. The Corps could reconsider placing material in sites furnished by the county after the county conducts necessary environmental analyses, defines design parameters and obtains necessary permits. If the land would not be available for the Corps to purchase in fee, additional real estate coordination would be required as discussed in Section 6.1. For use by the Corps, these placement sites would need to be cost-effective compared to other options available to the Corps.

The public was also concerned about the fact that the owners of the identified parcels did not want to sell their land. The Corps issued public notices and sent letters to individuals to find potentially willing landowners in areas likely to be cost-effective for the Corps. Several landowners came forward with parcels located between the Wabasha-Kellogg High School and the Zumbro River, which alleviated the need to consider sites with unwilling sellers at this time in that general area.

5.7.2. LAKE CITY PIT

The Lake City Pit, located near the southwest edge of Lake City, Minnesota, is an inactive gravel mine with an estimated capacity of 1.2 million CY at mine closure. The haul distance from Wabasha Gravel Pit is 13 miles, which is significantly longer and more costly than other alternatives which have haul distances of 10 miles or less. Use of this site has the potential to cause aesthetic and noise impacts along the last 2 miles of the haul route located within the Lake City urban area. The site is being redeveloped, and conceptual plans include the pit as a water feature within the development. The Corps screened this site from further consideration based on

its higher costs and impacts than other alternatives and due to the potential for urban development on the site that is not compatible with dredged material placement.

5.7.3. BREMER PIT

This gravel pit is located south of Lake City, Minnesota, along County Road 9. The estimated capacity is 890,000 CY at closure. The haul distance from Wabasha Gravel Pit is 14 miles, which is significantly longer and more costly than other alternatives which have haul distances of 10 miles or less. Use of this site has the potential to cause aesthetic and noise impacts along 2 miles of the haul route located within the Lake City urban area. The Corps screened this site due to its higher costs and potential impacts to residences than the alternatives that were retained.

5.7.4. WABASHA COUNTY RECOMMENDED SITE #1

This 77-acre site including three parcels is located on the Mississippi River bluff between Lake City and Maple Springs and immediately west of the Lake Pepin Golf Course. Wabasha County recommended consideration of this site in its comments on the 2017 draft DMMP. The County's comments indicated that the land was owned by the city of Lake City, but according to the Beacon™ website for Wabasha County shows the parcels as privately owned at this time. The site is 11.6 miles from the Corps' Wabasha Gravel Pit site via CR10 and 13.7 miles via TH 61 and CR 4. Both routes use steep winding roads to get up the bluff. Costs of hauling material to this site would be significantly higher than other alternatives due to its longer and steeper haul route. There are dozens of residences located along the shorter haul route via CR 10. The site is bisected by two driveways serving at least five residences north of the site. The Corps screened this site due to its higher costs and potential for residential impact than the alternatives that were retained.

5.7.5. KELLOGG SITE 1 PIT (MATHY PIT)

The Kellogg Site 1 Pit, located approximately 2.5 miles north of Kellogg, Minnesota, is a gravel pit in the floodplain and on a terrace of the Zumbro River. Material could be trucked to the site. The site is 14 acres in size with a capacity of 150,000 CY. The site contains a significant amount of bituminous debris. It is Corps' policy to avoid using properties with high potential for contamination, and the presence of the bituminous materials precluded it from further consideration at this time.

5.7.6. KELLOGG SITE 2 PIT (WABASHA COUNTY PIT)

The Kellogg Site 2 Pit is a small inactive gravel pit located immediately east of Kellogg, Minnesota, on farmland immediately east of the railroad tracks. The site is 9 acres in size with a capacity of 75,000 CY. The haul distance to this site is comparable to other feasible alternatives that were considered. The site is heavily vegetated, forested, and may contain wetlands. Use of this site has the potential to cause aesthetic and noise impacts along the 0.6-mile portion of the access route that passes directly through urban portions of Kellogg. The Corps screened this site due to its high potential for environmental and social impacts.

5.7.7. KELLOGG SITE 3 PIT (BENNETT & MATHY PIT)

The Kellogg Site 3 Pit, located immediately southeast of Kellogg, Minnesota, is a gravel pit located approximately 600 feet southeast of the Kellogg Site 2 Pit. The entire 22-acre site is or has been disturbed, and the actively mined portion is sparsely vegetated. The site has an estimated capacity of 650,000 CY. The haul distance to this site is comparable to other feasible alternatives that were considered. Placement of dredged material at this site could facilitate mine reclamation when mining ceases. Currently, the owner of the pit is not a willing seller. Continued mining will increase the capacity available for dredged material placement in the future. There is a potential that the site could serve as habitat for the rusty patched bumblebee because there is grassland present, though it is not located within the currently defined high potential zone (USFWS 2021c). The site could be reconsidered in the future after mining is complete.

5.7.8. KELLOGG SITE 4 PIT (BENNETT PIT)

The Kellogg Site 4 Pit is a small active gravel pit located southeast of Kellogg near 159th Avenue. Farmland and gravel roads border the site to the west and north, a residence with outbuildings borders the site to the south, and a wetland complex borders the site to the east. The site is 12 acres in size with a capacity of 250,000 CY. The haul distance to this site is comparable to other feasible alternatives that were considered. While the placement of dredged material could be used for mine reclamation, wetlands on the site would need to be delineated and possibly avoided. Continued mining will increase the capacity available for dredged material placement in the future. The site could be reconsidered in the future after mining is complete.

5.7.9. H1

The H1 site, located south of Wabasha, Minnesota, on North County Road 24, consists of two parcels with a combined size of approximately 60 acres. The parcels are currently being farmed but also contain several acres of wetlands. Estimated capacity of the two parcels is approximately 1,300,000 CY. The property owners expressed potential interest in selling the property and later withdrew their interest. The haul distance to this site is longer than other sites available from potentially willing sellers, which would make its use relatively less cost-effective. The site was removed from consideration due to wetland concerns and lower cost-effectiveness than other sites that were retained.

5.7.10. F1

The F1 site, located within the city of Wabasha directly east of the Wabasha County Sheriff's office, is approximately 13 acres in size. The site is currently an agricultural field close to many residential properties. Currently, the land is privately owned, and the landowner approached the Corps about the possibility of acquiring the parcel. Due to its location near residential properties, use of the site is likely to cause aesthetic and noise impacts to neighbors. The Corps eliminated the site from further consideration at this time.

5.7.11. STROOT

The Stroot site is located south of Hiawatha Drive and north of Prospect Avenue in Wabasha, Minnesota. Of the 12 acres in this site, only about 9 acres would be useable due to the presence of wetlands. The site could hold up to approximately 188,000 CY of dredged material. Currently, the land is privately owned but the landowner has previously discussed the desire to sell. Although the site could be used as a hydraulic placement site, it is too small to be cost-effective for island offloads, and it would require a long dredging pipeline crossing multiple private properties. The site has no direct access to the river for mechanical dredging operations. Due to its relatively low cost-effectiveness, potential issues associated with the necessary pipeline, and proximity to developed areas in Wabasha, the site has been screened from consideration at this time.

5.7.12. WABASHA SAND & GRAVEL HIGH SCHOOL (UPLAND/TRANSFER SITE) AND PIPELINE B

This 180-acre site is located directly west of the Wabasha-Kellogg High School. A dredging pipeline easement (Pipeline B) north of the High School from Robinson Lake to the placement site would also be needed to transport material to this site. The city of Wabasha recommended consideration of this site in its comments on the 2017 draft DMMP. The site is on a terrace of the Zumbro River south of Wabasha, Minnesota, and contains a combination of wetlands, farmed areas and open field or fallow agricultural land. The current landowner plans to mine the property for aggregate. If mined in the future, the resulting post-mining pit could hold an estimated 3,000,000 CY or more. In its current un-mined condition, approximately 100 acres would be useable due to the presence of wetlands on the other acres, and it could store approximately 2,400,000 CY.

This site would be useful for large-scale offloads of the island placement sites using hydraulic dredging methods. This site could receive, dewater and store the material offloaded from the islands via a temporary dredging pipeline (Pipeline B). Island offloading would occur about once every five years. Once capacity at this site was reached, offloaded material would be trucked from the transfer site to another placement site between offloading events to restore capacity at the transfer site.

The Corps evaluated the impacts of using this site and its associated pipeline easement. Dredging activities at the site would increase truck traffic, noise, and dust near the high school during and after dredging events. Neither the current landowner nor any landowners along potential pipeline easement routes expressed interest in selling their land for these purposes. The city of Wabasha no longer supports the use of this site. Due to all of these concerns, the Corps screened this site from consideration at this time. If conditions change in the future, the Corps could reconsider its use.

5.7.13. MOSQUITO FIELD

The approximately 4-acre site is a small vacant lot located south of Hiawatha Drive W and west of Allegheny Avenue. The site is too small for on-going operations but has the potential to

accept up to 29,000 CYs for permanent placement and development. The Corps screened this site from consideration at this time due to its location within the Wabasha urban area and potential traffic, aesthetic and noise impacts associated with hauling. The Corps could reconsider use of this site in the future if the landowner is interested in pursuing a beneficial use of dredged material.

5.7.14. BALL FIELD

The Wabasha Ball Field site is an existing 18-acre recreational site with dedicated outdoor areas for volleyball, baseball, ice hockey, parking, and a skateboard park located immediately north of Hiawatha Drive W and south of 4th Grant Boulevard W. The site has been previously identified as a railroad dump yard and there is significant potential for HTRW concerns. The city has expressed interest in raising the elevation of the site, which has a potential capacity of up to 145,000 CY. The Corps screened this site from consideration at this time due to its location within the Wabasha urban area, the high potential for HTRW issues, and the fact that the current recreational uses of the site are not compatible with dredged material placement. The Corps could reconsider use of this site in the future if the city is interested in pursuing a beneficial use of dredged material.

5.7.15. D1

The D1 site is a 25-acre parcel located approximately 1 mile east of TH 61 north and south of Township Road T-85. The owner of the parcel expressed potential willingness to sell a portion of the parcel south of T-85. Only 7 acres of the site are useable for dredged material management due to the presence of wetlands and the federal levee on the north side of the Zumbro River. Due to the very small portion of the site that is useable, it is not cost-effective to acquire the site, and it was screened from consideration.

5.7.16. S1

The S1 site is an 80-acre parcel located immediately east of the intersection of township roads T-85 and T-86 and 2.5 miles east of TH 61. T-85 bisects the parcel. The site is currently a tree farm with several areas of differing vegetation types. The site is adjacent to the Zumbro River Flats South site described in Chapter 6. The alignment of Pipeline C (also described in Chapter 6) crosses the S1 site along T-85. Although the S1 parcel could be a valuable addition to the Zumbro River Flats South site, there is a high likelihood that its use would cause environmental impacts. This property falls within a high potential zone for the presence of the federally listed endangered rusty patched bumblebee. This species prefers grasslands and prairies, which are habitat types that appear on much of this site. Further investigation would be needed to ensure the bee is not present on this site, though it is probable that the species exists here, likely precluding the use of the site for dredged material placement. The site is not currently for sale.

5.7.17. WABASHA COUNTY RECOMMENDED SITE #2

This approximately 86-acre site is located between township road T-85 and the Mississippi River, approximately 3 miles east of TH 61. The site is part of the USFWS Upper Mississippi River National Wildlife and Fish Refuge. Wabasha County recommended consideration of this site in its comments on the 2017 draft DMMP primarily because it is already government property. The site contains a variety of habitats including floodplain forest and sand prairie. The Corps placed 474,000 CY of material at this site in 1998 as the upland placement site for the Grand Encampment Island unload. The intent of material placement here was to create the sand prairie that exists there now. Placement of additional dredged material would destroy the existing sand prairie habitat and would not be compatible with the purpose of the wildlife refuge.

5.7.18. WABASHA COUNTY RECOMMENDED SITE #3

This 355-acre site is part of the MNDNR Kellogg Weaver Dunes Scientific and Natural Area (SNA) and McCarthy Lake State Wildlife Management Area (WMA). Wabasha County recommended consideration of this site in its comments on the 2017 draft DMMP primarily because it is already government property. The site is located approximately 3.5 miles southeast of Kellogg, Minnesota, east and west of CR 84. Information on the Minnesota DNR website (https://www.dnr.state.mn.us/snas/detail.html?id=sna00979) states that the Kellogg Weaver Dunes SNA is the primary nesting site for one of the most significant populations of the state-threatened Blanding's turtle. Placement of dredged material on this site would not be compatible with its current designation as a WMA and SNA. The Corps screened the site based on its very high potential for environmental impacts.

5.8. Other Suggestions from Public Comments

Use Material for Fracking. Hydraulic fracturing, commonly known as "fracking," is a drilling technique used for extracting oil or natural gas deep underground. As part of the fracking process, proppants, such as sand or ceramic, are used to open the fractures that form under pressure, thereby ensuring that gas and oil can continue to flow freely out of the rock fracture. The Corps reached out to the local fracking companies regarding the use of the Lower Pool 4 dredged material in the fracking industry. Samples were collected and sent to a laboratory for analysis to see if they were suitable. Results of this analysis deemed that the material was not suitable in the fracking industry due to the high percentage of magnetic iron and acid solubility levels being greater than 3%. If technology improves, this material could be reevaluated for potential use as a way to increase the life of the Recommended Plan.

Use of Railroad and Barge to Move Material. The Corps' Wabasha Gravel Pit (WGP) site, where nearly half of the dredged material from Lower Pool 4 will be initially placed, is located adjacent to one rail line owned by Canadian Pacific Railway (CPR). The Corps contacted CPR to evaluate the potential to move dredged material by rail. The estimated cost of moving material by rail was approximately $5 per mile per 100-ton train carload (not including loading, unloading, and renting rolling stock). At that rate, the total cost of transportation alone is at least

$0.06 per CY per mile. The Corps estimates that transporting material by truck for distances less than 15 miles costs at least $0.75 per CY per mile, for a trucking cost of $7.50 per CY for a 10-mile haul. The existing Rolling Prairie site is 10 miles from WGP so it would not be cost effective to truck material more than 10 miles from WGP. Using the assumptions presented here, material could possibly be moved by rail up to 125 miles for a similar price if a suitable destination was found. To date, no other destination accessible by rail and willing to accept the material has been found. A more complete analysis will be prepared if a cost-effective destination on a rail line is identified in the future or if a non-federal entity proposes to partner with the Corps on a beneficial use involving rail transport.

Transporting material by barge to someplace far from Pool 4 was also considered. Barging material from the island transfer sites to West Newton Chute in Pool 5 and then moving it to Rolling Prairie site are discussed in Chapter 7. That alternative is less cost-effective than other alternatives that were considered. Moving the material farther by barge would not be economical, and there are no suitable destinations within the St. Paul District that have capacity to accept material from Lower Pool 4. If a demand for sand is identified that makes long-distance barging a cost-effective alternative, the Corps will consider the opportunity.

Reducing Sediment Loads from the Chippewa River. The Corps has studied the Chippewa River to determine if there is a cost-effective way to reduce its sediment load to the Mississippi River. In the early 1980s, the Corps and research experts in sediment transport investigated potential stream bank stabilization measures and the geomorphic response time for reducing sediment loads originating from the Chippewa River. The study identified nearly 5 miles of eroding streambanks as priority areas. The results of the study indicated that there were no low-cost bank stabilization measures that would be effective. The estimated cost to stabilize only the highest priority 5 miles would be nearly $9.5 million at a 2021 price level. The extensive sediment transport modeling and field assessment also indicated that the geomorphic response would not effectively reduce sediment until many years after construction. It was estimated that if only the prioritized 5 miles of streambanks were armored, a 10% reduction in the sediment supply would be seen 50 years from the construction date. If cost was not a factor, and **all** (not just 5 miles) of the eroding banks assessed at the time of the study were armored, it was estimated that dredging in Lower Pool 4 would be gradually decreased by about 30% by year 50. However, armoring the banks might increase the energy and transport capacity of the river system causing a switch from erosion of the stream banks to degradation of the stream bed. At some point in time, equilibrium could be achieved, but most likely on a long timeframe.

Following the sediment transport study for the Chippewa River, the Corps held a conference with international experts in this field to specifically examine means to reduce sediment loads originating from the Chippewa River. The attendees concluded that bank protection would not substantially reduce the river's material load and a less expensive alternative was not found.

The Corps and U.S. Geological Survey (USGS) have monitored sediment load in the Chippewa River since 2017. Bed material (sand) load estimates indicate a decrease in the total sand load compared to data that was collected in the late 1970s to early 1980s at Durand, Wisconsin.

Acting to stabilize the Chippewa River streambanks and riverbed would require a substantial capital investment that is not economically warranted by the anticipated results. In addition, the extensive streambank stabilization needed would cause substantial impacts to terrestrial and aquatic ecosystems.

Filling Backwaters and Wetlands. The CWA precludes the placement of fill in wetlands when other practicable alternatives are available. When placing fill in wetlands is the only practicable alternative, USACE is responsible for minimizing impacts and compensating for unavoidable impacts to wetlands. Ultimately compensation would significantly increase the cost of the plan. Additionally, most of these backwaters and wetlands are within the UMR National Wildlife and Fish Refuge. Placing fill in the refuge for the purpose of maintaining the navigation channel alone would be incompatible with the purpose of the refuge. Due to these constraints, filling in sites that consist primarily of backwaters and wetlands was not considered. Small areas of wetlands may exist within upland sites that were considered, and impacts to those wetlands would be avoided, minimized or mitigated in accordance with the CWA.

Other suggestions from public comments. Other specific suggestions in public comments were considered and screened out for the reasons stated below:

- Misha Mokwa Sand Pit: 11-mile haul through Wabasha and Nelson is more expensive and has higher impacts associated with trucking through developed areas than other available options.
- MNDNR land along Wabasha CR 29: 15-mile (or more) haul is more expensive than other available options.
- Nelson farm along the bank of the Whitewater River: More than 15-mile haul is more expensive than other available options.
- Hawley & Hager farms (Section 2 of Watopa Township): Land is part of the MNDNR McCarthy Lake State Wildlife Area and is not available for dredged material placement.
- Raise State Highway 74 between Weaver and Elba, Minnesota: 15 to 26-mile haul is more expensive than other available options and would require extensive coordination to implement.
- Maple Springs valley: The valley is heavily vegetated with a meandering stream between high bluffs. The valley has high potential for erosion, and it is likely to contain wetlands that could not be avoided. Hauling would impact at least 12 residential properties in Maple Springs.
- Raise the elevation at Wabasha Gravel Pit: The site is currently at the maximum elevation that is acceptable to the city of Wabasha.
- Use a bed load collector on the Chippewa River: There are no locations adjacent to the last 5-10 miles of the Chippewa River that are suitable for managing material from a bed load collector. The river is at an elevation about 100 feet lower than and 0.5 to 0.75 miles away from most of the adjacent bluffs to the west. One site south of State Highway 35 is at an elevation about 15 feet higher than the river, but it is 1.2 miles west of the Chippewa River. The river is about 60 feet lower and 2 miles away from the bluffs to the

east. All of the area between the bluffs is roadless, wet, and not suitable for a dredged material placement site or for installing and maintaining a bed load collector.

Fill Pits, Abandoned Frack Holes, and Mines. The use and/or filling of additional pits and mines was considered. Many of the specific pits and mines identified in the 2017 draft DMMP and in public comments were not feasible because of the cost of transportation to get to these sites. Sites that were potentially close enough to be cost-effective are described in Section 5.7. Sites located more than about 10 miles from potential onshore transfer sites were not considered due to the substantial cost of transporting the material when closer alternatives are available. It is desirable to allow active mining operations to continue creating larger pits that could eventually be filled, so active pits were generally screened out at this time. The Corps will reconsider potentially cost-effective sites after mining ceases.

Beneficial Use of Material. Dredged material is available free of charge to the public at the Wabasha Gravel Pit and Alma Marina sites in lower Pool 4. There are beneficial use sites with material available in the adjacent pools as well. The Corps stands committed to finding beneficial ways to use dredged material throughout the project area. The material dredged from Lower Pool 4 is considered clean and can be utilized for a variety of purposes. Of the approximately 270,000 CY that is dredged annually, the current beneficial use accounts for roughly 40,000 CY between all beneficial use sites in the project area. Due to the large volume of material that is dredged annually, beneficial use alone does not provide sufficient capacity.

5.9. Transportation Modes and Routes

Transporting dredged material from the dredge cuts in the navigation channel to the various management sites is performed in a variety of ways. Material can be moved through pipelines, on barges, or in trucks on roadways. All of these methods were considered.

Pipelines. Hydraulic dredging mixes solid dredged materials (sand, silt, etc.) with water to make a slurry. The slurry is pumped through a pipeline to a destination where the solid material is separated from the water. Three pipelines were considered for use in Lower Pool 4.

- Pipeline A begins at Reads Landing and ends at Wabasha Gravel Pit, as described in Section 6.5.1. It would be used to move material from the Chippewa Delta and Reads Landing dredge cuts directly to Wabasha Gravel Pit. It could also handle material delivered by barge to the beginning of the pipeline and mixed with water there to be pumped to Wabasha Gravel Pit. Pipeline A was evaluated and retained as part of the Recommended Plan.

- Pipeline B was proposed to move dredged material from the Crats, Teepeeota, and Grand Encampment island transfer sites to the Wabasha Sand and Gravel High School Site. This pipeline was screened from consideration, as discussed in Section 5.7.12.

- Pipeline C begins near Dam 4 and ends at the Zumbro River Flats South and G-1 sites, as described in Section 6.5.2. It would be used to move material delivered by barge to the beginning of the pipeline, mixed with water, and pumped to Zumbro River Flats South or G-1. Pipeline C could be extended to reach the Rolling Prairie placement site. Pipeline C was evaluated and retained as part of the Recommended Plan.

Barges. Material dredged mechanically or excavated from island transfer sites can be moved on barges along the Mississippi River navigation channel. Five barging routes were considered and are described in Section 6.5.4. All of the routes were retained as part of the Recommended Plan.

Trucks. Material placed at onshore transfer sites can be loaded onto trucks and hauled over roadways to placement sites. Haul routes connect onshore transfer sites to upland placement sites, and their details depend on the location of each site and the roads available between the locations. Trucking costs are directly related to the hauling distance, so the route with the shortest distance is usually the least expensive route. The social impacts of hauling material through developed areas were also considered when evaluating haul routes. As discussed in Section 5.6 and its subsections, several potential upland placement sites and their associated haul routes were screened out partly because hauling the proposed volumes of dredged material through developed areas would not be socially acceptable when such routes could be avoided by using different sites.

Truck routes retained in the Recommended Plan are described in Section 6.5.3. The primary roads that would be used include U.S. Trunk Highway 61 (TH 61); Wabasha County Roads (CR) 18, 24, 30, 59, 81, and 84; and Township Road T-85. The portions of these roads used in the Recommended Plan are described as legs that would be combined to create complete routes between management sites. Seven potential truck legs are included in the Recommended Plan; all legs would be used as round-trip routes between the transfer sites and placement sites.

5.10. Section 217(d) Agreement

The Corps and city of Wabasha entered into a memorandum of understanding in 2017 in which they agreed to work together in good faith to develop mutually acceptable dredged material management alternatives for Lower Pool 4. Section 217(d) of the Water Resources Development Act (WRDA) of 1996, as amended, 33 U.S.C § 2326a(d), authorizes the Corps to enter into agreements with a non-federal interest with respect to a project, a private entity, or both for the acquisition, design, construction, management, or operation and maintenance of a dredged material processing, treatment, contaminant reduction, or disposal facility (including any facility used to demonstrate potential beneficial uses of dredged material) using funds provided in whole or in part by the private entity. The city of Wabasha and the Corps are exploring a potential Section 217(d) agreement, which would be negotiated and approved separately from this DMMP. Details of the potential Section 217(d) Agreement are presented in Section 6.6.

5.11. Channel Modifications

The Corps considered ways to use the river's sediment transport capability to reduce dredging quantities and costs. Dredging methods in Lower Pool 4 changed in the mid-1970s, and dredge cuts have been relatively stable since then. The existing dredge cuts in Lower Pool 4 are relatively stationary - they occur in the same approximate location every year, and placement sites are located in close proximity to these dredge cuts, so there is no need to adjust the river's sediment transport capacity.

The Corps also considered reducing the channel dimensions maintained in Lower Pool 4. Consideration of measures to reduce dredging requirements, including reduced dimensions is an ongoing action. One of the GREAT study recommendations (Action Item 4) was to minimize annual dredging quantities. Since that time, structural and non-structural techniques have been used to reduce dredging. Dredging depths of 11, 12, or 13 feet are now used versus the standard historic depth of 13 feet. In addition, the minimum depth criterion for initiating a dredging action was changed from 11 feet to 10.5 feet. General site-specific channel width guidelines developed during the GREAT study are followed as well as previous channel maintenance experience and hydraulic analysis and recommendations. Closer monitoring of channel conditions has been a significant factor in reducing overall dredging requirements. Increased monitoring improves reliability for determining when conditions have stabilized and are acceptable to navigation, or when poor conditions may be temporary and will improve with future flow conditions. All of these measures have been used in the past and will continue. As a result, the channel is currently maintained at minimum acceptable dimensions and any further reductions would lead to an unacceptable risk of tow boat groundings and channel closures. Further reductions to the maintained channel dimensions were screened out.

CHAPTER 6. Sites and Features Retained in the Recommended Plan

6.1.Overview

Chapter 6 describes the individual sites and transportation methods that constitute the Recommended Plan to manage dredged material in Lower Pool 4. Chapter 7 describes how the individual sites and transportation methods would be combined and presents the Corps' order of preference in acquiring the rights to use the identified sites.

The Recommended Plan includes sites and features that the Corps would be interested in using at some point in the future because their use would be cost-effective, environmentally acceptable and the least impactful from a social perspective. The Recommended Plan makes use of the various sites and transportation methods described in this section of the DMMP.

The final DMMP will recommend acquiring the right to use lands needed to manage dredged material from Lower Pool 4 for the next 20 years. The approved DMMP will support the real estate acquisition process.

Not all of the sites in the Recommended Plan are available from willing sellers at this time. The alternative sites and features within the Recommended Plan are tiered in order of the Corps' preference for implementation. Operational cost, environmental impacts, social impacts, and landowners' willingness to consider selling were all factors in determining the order of preference for implementation.

The standard estate for upland placement and/or transfer sites is fee simple, per ER 405-1-12, Chapter 12. The standard estate for a pipeline route is an easement. The standard estates are described in Appendix E, Real Estate Plan. For planning and implementation purposes, the Corps will pursue the standard estate deemed necessary for the identified placement sites and/or pipeline routes. In the event a standard estate is not able to be acquired for a particular parcel through the negotiation process, the Corps will reassess the specific property as it pertains to the long-term placement needs in Pool 4. The Corps will have several options to consider, to include a) continue negotiations with the respective landowner(s) for the standard estate, b) eliminate the site from future planning, c) seek higher headquarter guidance as it relates to the site-specific acquisition.

The Recommended Plan would be capable of managing the estimated 5.3 million CYs of material that would be dredged from Lower Pool 4 during the 20-year period of analysis (Table 5). The Recommended Plan consists of upland placement sites, transfer sites, and various

transportation methods (Plate 2) that support operational needs to meet the Lower Pool 4 dredged material management objectives. The Recommended Plan also includes the potential for a dredged material management agreement with the city of Wabasha, Minnesota.

Features in the plan are:

- **Upland Placement Sites**: Four upland placement sites.
- **Onshore Transfer Sites**: Six upland sites with river access where dredged material would be temporarily placed for transfer to upland placement sites.
- **Island Transfer Sites:** Four island transfer sites that have been historically used by the Corps.
- **Transportation Routes:** Seven truck transportation routes, two pipeline routes, and five barge routes (including one direct placement route) are potential options to move dredged material.
- **Use of a Section 217(d) Agreement**: The Corps and the city of Wabasha are exploring the potential to enter into an agreement for managing dredged material from Lower Pool 4. Details of this feature are described below.
- **Beneficial Use of Dredged Material**: Material placed at the Alma Marina onshore transfer site has consistently gone to public beneficial use. The Recommended Plan assumes that use will continue.

6.1.1. UPLAND PLACEMENT SITES

Table 9. Upland Placement Sites

Site	***Estimated Long-Term Capacity (CY)***	***Access***
Zumbro River Flats (ZRF) North	1,840,000	Truck
Zumbro River Flats South	4,990,000	Truck, Pipeline
Wabasha Sand and Gravel Pit (WS&G)	3,200,000 +	Truck
Rolling Prairie	18,500,000	Truck

Upland placement sites are needed as destinations for the dredged material where it can be perpetually managed. Portions of all government-owned upland placement sites would be made available to the public as stockpiles for beneficial use. The sites would be acquired as soon as practicable to secure the required 20-year capacity and then gradually filled over time. Detailed site plans will be developed during the implementation phase. The Corps anticipates that portions of the sites would be filled to capacity, covered with topsoil, and revegetated before other portions are used. The unused portions would be maintained appropriately until needed for placement.

6.1.2. ONSHORE TRANSFER SITES

Six onshore transfer sites with river access were selected for the Recommended Plan and are listed below. The sites allow for placement of material directly from the dredge cuts or from island transfer sites.

Table 10. Onshore Transfer Sites

Site	***Estimated Capacity***	***Access***
Bean Field	125,000 CY	Pipeline A, Truck
Wabasha Gravel Pit (WGP)[1]	NA	Pipeline A, Truck
Carrels Site	700,000 CY	Barge, Hyd. Dredge, Truck
G-1	600,000 CY	Pipeline C, Truck
West Newton Chute[1]	100,000 CY	Barge, Hyd. Dredge, Truck
Alma Marina[1]	50,000 CY	Barge, Hyd. Dredge, Truck

[1] Sites currently used for dredging operations.

Estimated capacities reflect the maximum volume of material that could be stored at each site. The volume of material at each site will vary over time, as the sites would routinely be filled and then emptied to restore their capacity. The purpose of these sites in the plan is to provide for on-land temporary placement of dredged material where it can be loaded onto trucks and hauled away for beneficial use or placement elsewhere. Details about these sites are presented in Section 6.3.

6.1.3. ISLAND TRANSFER SITES.

The four federally owned island transfer sites that the Corps has used previously will continue to be used for both mechanical and hydraulic dredging. There is no land access to any of these sites, so they do not support public beneficial use of the dredged material. At times, recreational boaters make use of the sites as beaches or temporary landings. Shoreline stabilization measures were implemented in the mid-2000s at each island.

These sites are identified in the approved CMMP with potential environmental impacts discussed in the associated 1997 USACE FEIS. The sites are located in the floodplain and floodway of the Mississippi River within the UMR National Wildlife and Fish Refuge.

Maximum capacities of the island transfer sites are listed below for the offloaded condition, and available capacities were estimated as of October 2021. The estimated available capacities on these sites are not included in the 20-year target capacity for upland placement.

Table 11. Island Transfer Sites

Site	*Maximum Capacity (CY)*	*Available Capacity (CY)* [1]	*Most Recent Offload Year: Volume (CY)*
Reads Landing	1,300,000	175,000	2011/2012: 900,000
Crats Island	1,400,000	800,000	2016/2017: 800,000
Teepeeota Island	970,000	180,000	2008: 400,000
Grand Encampment	550,000	100,000	2014/2015: 500,000

[1] As of Oct 2021

6.1.4. TRANSPORTATION ROUTES.

Moving dredged material from dredge cuts to onshore transfer sites and then to placement sites requires the use of barges, trucks, pipelines, and direct placement. These different routes are described in Section 6.5 below.

6.1.5. SECTION 217(D) AGREEMENT.

The city of Wabasha and the Corps are exploring a potential Section 217(d) agreement to manage dredged material in Lower Pool 4. The agreement would be negotiated and approved separately from this DMMP. Section 217(d) of the Water Resources Development Act (WRDA) of 1996, as amended, 33 U.S.C § 2326a(d), authorizes the Corps to enter into agreements with a non-federal interest with respect to a project, a private entity, or both for the acquisition, design, construction, management, or operation and maintenance of a dredged material processing, treatment, contaminant reduction, or disposal facility (including any facility used to demonstrate potential beneficial uses of dredged material) using funds provided in whole or in part by the private entity. Details of the potential Section 217(d) Agreement are presented in Section 6.6 below.

6.1.6. BENEFICIAL USE OF DREDGED MATERIAL.

ER 1130-2-520 requires the Corps to obtain the maximum practicable benefits from dredged material after taking into consideration economics, engineering, and environmental requirements. Dredged material is available free of charge to the public at the Wabasha Gravel Pit and Alma Marina sites in Lower Pool 4. There are beneficial use sites with material available in the adjacent pools as well. The material dredged from Lower Pool 4 is considered clean and can be utilized for a variety of purposes. Of the approximately 270,000 CY that is dredged annually, the current beneficial use accounts for roughly 25,000 CY from Wabasha Gravel Pit and 15,000 CY from Alma Marina. Due to the large volume of material that is dredged annually, beneficial use alone does not provide sufficient capacity. The beneficial use at Alma Marina is assumed to continue as part of the Recommended Plan, and no additional capacity is identified in the plan for that material.

6.2. Upland Placement Site Details

6.2.1. Wabasha Sand and Gravel (WS&G) Pit (Upland Placement Site and Proposed Section 217(d) Facility)

General Description. The site, located on the west side of Wabasha, Minnesota, is an active gravel mine. The landowner is not currently willing to sell. The Corps placed 520,000 CY of material in the eastern portion of the pit from 2016 through 2019 under a real estate agreement with the landowner. That placement activity was coordinated with the On-Site Inspection Team (OSIT) in accordance with the CMMP and then added to the MNDNR Memorandum of Understanding (MOU) and Public Waters General Work Permit in 2016. The current capacity of the entire pit is approximately 3,200,000 CY and additional capacity could be realized if the owner continues to expand the mine. The environmental impacts associated with the long-term continued placement of material at this location were discussed in an EA and associated Finding of No Significant Impact (FONSI USACE 2015). Continued mining will increase the capacity available for dredged material placement in the future. The site is retained as a potential future placement site for when the Corps could place material without adversely affecting the mining operations and when additional capacity is needed.

The city of Wabasha has tentatively identified this site as a facility to be used under a potential Section 217(d) agreement whereby the city could receive and manage dredged material for the Corps. If a Section 217(d) agreement is executed, the agreement would take precedence over other interests the Corps may pursue at this site.

Ownership. Private

Size and Capacity. Site Area: 80 Acres
Long-Term Capacity: 3,200,000 CY + (varies based on mining)
Beneficial Use Removal: Private: Yes / Public: No

Operational Feasibility and Beneficial Use. The site could receive material delivered by truck. It does not have direct river access. Mine reclamation would be a beneficial use of dredged material placed here. Material at this site would not likely be available to the public for beneficial use.

Site Layout and Preparation. No site preparation is required.

Access Improvements. Existing accesses to the site would continue to be used. The existing intersections of CR 30 and Shields Avenue with TH 61 were improved in 2019, and no additional changes are needed to support the use of this site.

6.2.2. ZUMBRO RIVER FLATS SOUTH (UPLAND PLACEMENT AND ONSHORE TRANSFER SITE)

General Description. This approximately 270-acre area, located northeast of Kellogg, Minnesota and north of the Zumbro River, is a multi-parcel site that is primarily used for agriculture. A federal levee along the Zumbro River is located on several of the parcels, and Township Road T-85 is adjacent to and crosses through the area. Of the 270 acres, approximately 215 acres are considered usable with an estimated capacity of 4,990,000 CY, or approximately 20 years of placement from Lower Pool 4. Landowners making up the Zumbro River Flats area have identified themselves as potentially willing sellers.

Ownership. Private

Size and Capacity. Site Area: 270 Acres
Estimated Long-Term Capacity: 4,990,000 CY
Beneficial Use Removal: Yes

Operational Feasibility and Beneficial Use. This site would receive material multiple ways. Material would be trucked from the Wabasha Gravel Pit to the site via TH 61, CR 81, CR 30, and T-85 west of the intersection with T-86. Material from island transfer site offloads would hydraulically arrive via Pipeline C which is not anticipated to occur before 2025. To place material on site hydraulically via Pipeline C, containment berms would be constructed with existing material on site to create an approximately 5-acre holding cell into which the hydraulic sand/water slurry would be pumped. The excess water would be allowed to either percolate through the existing soils or be released into the Zumbro River through a gated sluiceway once the water reached return water standards. The Corps would allow the public to remove river sand material from this site for beneficial use.

Approximately two farm sites north of the Zumbro River Flats South area use T-85 for primary access. Four residences east of this site are served by T-85, but the residences are all east of the intersection with T-86 where hauling would not occur. The site's elevation would be raised above the surrounding area to a level higher than the existing Zumbro River levee.

Most of the site is a non-effective flow area located within the Mississippi River 1% annual exceedance probability (100-year) floodplain and filling the area would have no effect on Mississippi River flood elevations in Wabasha. The existing federal Zumbro River levee top elevation is approximately 10 feet higher than adjacent ground. Dredged material would be placed in a manner compatible with the levee and not increase Zumbro River flood stages or the levee overtopping frequency on either side of the river.

Site Layout and Preparation. Some site preparation would be necessary to maximize dredged material capacity. Until the land is used for placement, it would remain in its current state (i.e agricultural row crop and wetland). Some minor clearing of vegetated and forested areas might be required later. Within the project area, it is anticipated that smaller sub areas (20-40 acres) would be filled incrementally until desired capacity is reached. Upon filling sub areas to

capacity, the dredged material would be covered with topsoil and planted with native prairie grasses.

Access Improvements. Minimal improvements such as signage and shoulder work would be necessary to open the site for public removal of dredged material. A small access road and culvert would need to be added off T-85.

6.2.3. ZUMBRO RIVER FLATS NORTH (UPLAND PLACEMENT SITE)

General Description. The Zumbro River Flats North site is an 80-acre site located 6.5 miles south of Wabasha, 1 mile east of CR 30, and immediately south of CR 24. The site is currently being used to grow agricultural row crops. Approximately 72 acres are useable for placement; the site contains approximately 8 acres of wetlands. Estimated capacity at this site is approximately 1,840,000 CY. The wetlands on the site would be avoided. The landowners have identified themselves as potentially willing sellers.

Ownership. Private

Size and Capacity.
Site Area: 80 Acres
Estimated Long-Term Capacity: 1,840,000 CY
Beneficial Use Removal: Yes

Operational Feasibility and Beneficial Use. This site would receive material trucked from Wabasha Gravel Pit via TH 61, CR 81, CR 30 and CR 24. There are five farmsteads or residences located along the portions of CR 30 and CR24 included in the haul route to this site.

The Corps would allow the public to remove material from this site for beneficial use.

The site is a non-effective flow area located within the Mississippi River 1% annual exceedance probability (100-year) floodplain and filling the area would have no effect on Mississippi River flood elevations in Wabasha.

The site's elevation would be raised above the surrounding area, which would change the viewshed in the vicinity of the site.

Site Layout and Preparation. Some site preparations would be necessary to maximize dredged material capacity. No clearing of vegetated and forested areas would be anticipated. Initial placement and site design would be determined during implementation. It is anticipated that smaller sub areas (20-40 acres) would be filled incrementally until desired capacity is reached.

Access Improvements. Minimal improvements such as signage and shoulder work would be necessary to open the site for public removal of dredged material. A small access road and culvert would likely need to be added just off CR 24.

6.2.4. ROLLING PRAIRIE SITE (UPLAND PLACEMENT SITE)

General Description. The Rolling Prairie Site is an existing federal upland placement site located in Section 26, T110N, R10W in Wabasha County, Minnesota. The 962-acre site is located approximately 1.5 miles east of Kellogg, Minnesota, 1.5 miles west of West Newton Chute, and includes land both north and south of County Road 84. The site is a multi-parcel mixed agricultural, wetland, and upland area located on a sandy terrace of the Mississippi River Valley. The site provides approximately 18,500,000 CY capacity for dredged material placement. The Corps acquired the site in 2020 from a willing seller.

The environmental impacts associated with the development and use of this location for material from Pool 5 were described in the Pool 5 Dredged Material Management Plan Feasibility Report and EA (Pool 5 DMMP) (USACE 2020). The impacts of trucking dredged material from sites in Lower Pool 4 that are located north and west of the Rolling Prairie are described in Chapter 8. The impacts of placing Pool 4 material on the site are the same as those described in the Pool 5 DMMP with the possible exception that with Pool 4 material the site would fill slightly faster. However, even if all of the Pool 4 material was hauled to Rolling Prairie Site, the impact on the site's capacity would be minimal. The Pool 5 DMMP identified a need to place 4,700,000 CY over 40 years. The volume of Pool 4 material that could be placed at this site over the same timeframe would be about 10,200,000 CY. Therefore, at the end of 40 years, the site would still have about 4,000,000 CY of capacity remaining.

The site was adopted by the River Resources Forum to be a part of the approved CMMP through endorsement of the Pool 5 DMMP in April 2020. The Pool 5 DMMP described the hauling operation between the West Newton Chute onshore transfer site and Rolling Prairie.

Ownership. Corps of Engineers

Size and Capacity.

Site Area:	962 acres
Estimated Long-Term Capacity:	18,500,000 CY
Beneficial Use Removal:	Yes

Operational Feasibility and Beneficial Use. Of the approximately 962 acres, approximately 830 acres can be used for upland placement of dredged material to avoid filling of wetlands on the property. The site has been used for agricultural purposes on the northern and southern portions with most of the wetlands located on the very southern portion.

A portion of the site will be deemed a "beneficial use area" where material is made available to the public.

Material would be delivered to this site on trucks from the Wabasha Gravel Pit via TH 61, CR 18, and CR 84. Approximately seven residences and two businesses are located along the haul route east of Kellogg, Minnesota.

Material could also be delivered to this site hydraulically using an extension to Pipeline C or another pipeline from the West Newton Chute onshore transfer site. Note that the initial use of this site would be for material delivered by truck. This DMMP and integrated EA does not address hydraulic placement, which will be evaluated in a separate EA prior to any hydraulic placement at this site.

6.3. Onshore Transfer Site Details

6.3.1. Wabasha Gravel Pit (Onshore Transfer Site)

General Description. The 86-acre site, located on the northwest edge of the city of Wabasha, Minnesota, is a federally owned former sand and gravel pit. The site has been used as a primary existing upland placement site and transfer site for the Reads Island and Crats Island hydraulic offloads via a temporary pipeline installed on an existing pipeline easement. The site is identified in the approved CMMP with potential environmental impacts discussed in the associated 1997 USACE FEIS. The site is also open to the public for beneficial use.

The Corps has used the site several times and it currently holds approximately five million CY of dredged material. The site is nearing capacity, and material must be continually removed to create space for additional placement.

The site is a hydraulic placement site with no direct access to the river for mechanical dredging operations. A 20-year temporary pipeline from Reads Landing, Pipeline A described in Section 6.5.1, will be installed on the existing pipeline easement to facilitate hydraulic dredging operations at Chippewa Delta and Reads Landing cuts. For most future dredging events, material will be piped directly from those cuts to Wabasha Gravel Pit instead of being placed on the Reads Landing Island transfer site.

6.3.2. Bean Field (Onshore Transfer Site)

The approximately 4-acre site, located on the northwest edge of the city of Wabasha, Minnesota, is a small agricultural field immediately northwest of and adjacent to the federally owned Wabasha Gravel Pit. The land is privately owned, and the landowner has previously discussed the desire to sell after it has been mined for sand and gravel. The route of Pipeline A currently includes sharp bends to avoid passing over this property to get to Wabasha Gravel Pit. The Corps would like to acquire this parcel to expand the Wabasha Gravel Pit and reduce the length of Pipeline A, which could eliminate the need for a booster pump and its associated operational costs. This parcel combined with the northwest portion of the existing Wabasha Gravel Pit would provide sufficient capacity to manage the material from Chippewa Delta and Reads Landing cuts that would be placed there each year and trucked away to upland placement sites prior to the next dredging season. Use of the Bean Field site would reduce the Corps' dredging costs and increase efficiency of ongoing management of the Wabasha Gravel Pit.

6.3.3. Carrels Site (Onshore Transfer Site and Proposed Section 217(d) Facility)

General Description. The Carrels site is an inactive gravel pit located on the northwest end of the city of Wabasha, Minnesota, between 5th Grant Boulevard West and the Mississippi River. The site is a potential onshore transfer site for material dredged hydraulically or mechanically. Carrels is the only feasible location to offload barges on the Minnesota shore of the Mississippi River in Lower Pool 4.

A portion of the site (approximately 18 acres) is identified in the approved CMMP with potential environmental impacts discussed in the associated FEIS (USACE 1997). The CMMP identifies use of the site for both mechanical and hydraulic placement. The site would be expanded from what is described in the CMMP to include an additional 9 acres to facilitate use of the site for offloading barges (CMMP and USACE 1997). The approximately 27-acre combined site could potentially hold about 700,000 CY of dredged material. Hydraulic access from the Carrels site to Wabasha Gravel Pit is feasible in the future.

The landowner is currently not willing to sell. The landowner and the Wabasha Port Authority are evaluating the potential to build a commercial port at this site, and that effort is separate and independent of any use the Corps is considering in this DMMP.

The city of Wabasha has tentatively identified this site as a facility to be used under a potential Section 217(d) agreement whereby the city could receive, process and manage dredged material for the Corps. If a Section 217(d) agreement is executed, the agreement would take precedence over other interests the Corps may pursue at this site.

The Corps would use the Carrels site primarily as an onshore transfer site for mechanically dredged material directly from dredge cuts. Material could also be placed hydraulically at the site or brought by barge from the island transfer sites. Bringing dredged material directly to shore instead of placing it on an island transfer site would significantly reduce the total cost of managing that material. Historically, in Lower Pool 4, with the exception of the Beef Slough dredge cut, mechanical dredging methods have been used for 25% of dredging events and produced approximately 5% of the dredged volume.

When implemented, temporary features would be constructed on site to accommodate barge unloading, stockpiling, and loading onto trucks for transport to upland sites. Access dredging would be needed before barges could reach the site as described in Section 8.10 Barge Transportation Routes (Legs 2, 3, and 4). The anticipated dredge cut route is shown on Figure 7. A temporary work platform similar to the one shown in Figure 8 would be constructed on the shoreline to support the material offloading operation.

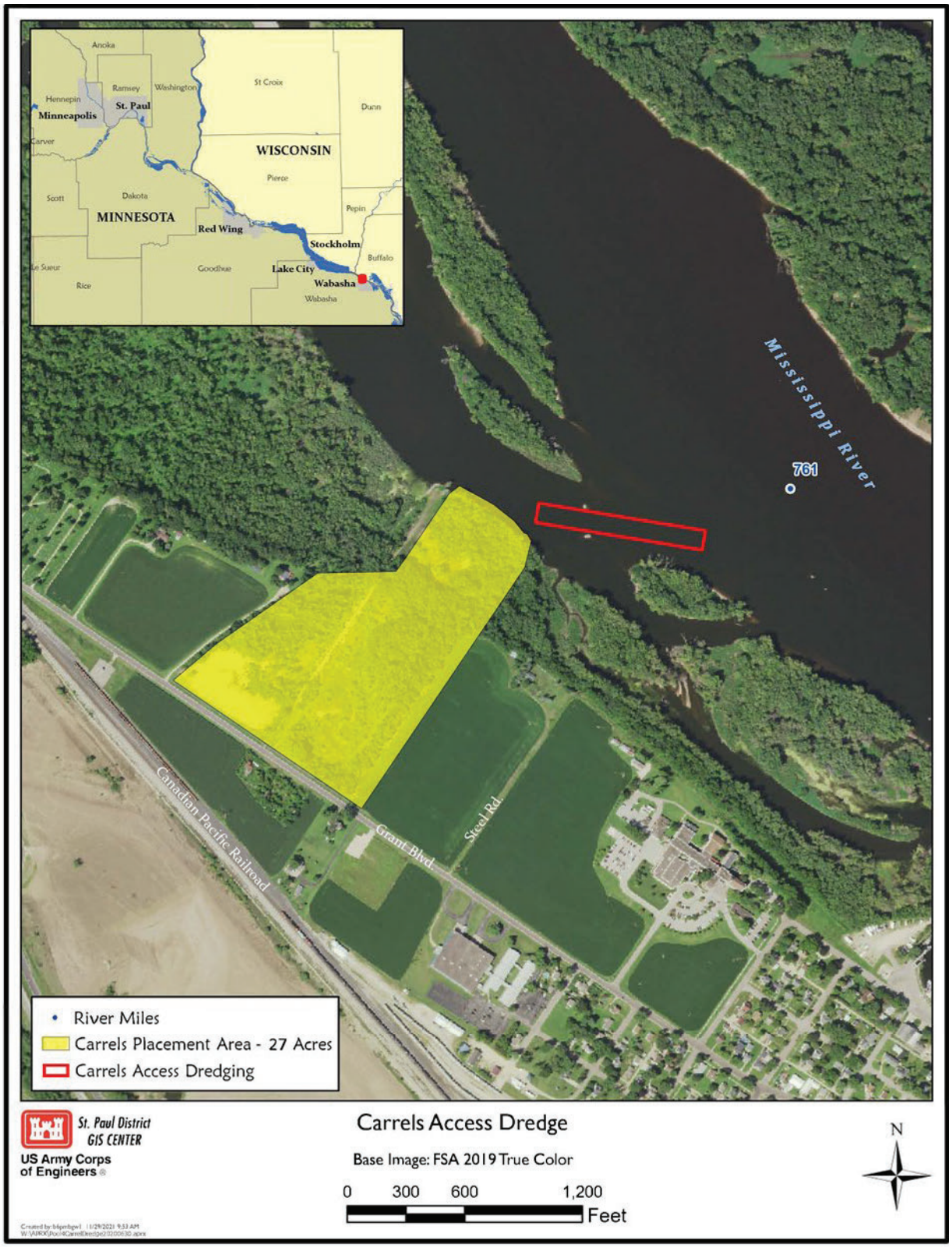

Figure 7. Carrels Site and Associated Barge Access Cut.

Figure 8. Example of a temporary work platform (trench box) that could be installed at Carrels.

6.3.4. G-1 (ONSHORE TRANSFER SITE)

The G-1 site is a 52-acre site located on the northeast bank of the Zumbro River south and west of Township Road T-85 and approximately 2.5 miles east of TH 61 at Kellogg, Minnesota. After the 2017 draft DMMP was published, the landowner expressed willingness to sell the site and considered an offer from the Corps before selling the site to another buyer. About 25 acres are useable for dredged material placement due to the presence of forest and wetlands on the other 27 acres, but the site is valuable as a potential endpoint for Pipeline C and it is located directly across the Zumbro River from the Rolling Prairie Site. The site could hold approximately 600,000 CY of dredged material. The Corps would place material on this site hydraulically through Pipeline C. In order to do so, containment berms would be constructed with existing material on site to create an approximately 5-acre holding cell into which the hydraulic sand/water slurry would be pumped. The excess water would be allowed to either percolate through the existing soils or be released into the Zumbro River through a gated sluiceway once the water reached return water standards. Material could stay on G-1 or be transferred to a different upland placement site to create space for future hydraulic placement at G-1.

6.3.5. WEST NEWTON CHUTE (ONSHORE TRANSFER SITE)

General Description. West Newton Chute is an existing Corps placement site capable of accepting dredged material hydraulically and mechanically placed. The 158-acre site holds more than 3,000,000 CY of dredged material from prior dredging and island offload events in Pool 5. The majority of the site supports restored prairie habitat planted on the dredged material.

Approximately 100,000 CY of capacity is available for ongoing use as an onshore transfer site. It provides mechanical and hydraulic access with return water management through USFWS property. The site is identified in the approved Pool 5 DMMP with potential environmental impacts discussed in the integrated EA (USACE 2020).

The Upper West Newton Landing public access to the Mississippi River is located at the southeastern corner of the site. The public access was built by MNDNR on Corps property, and the public access is closed when necessary for dredging operations.

West Newton Chute is a federally owned onshore transfer site for channel maintenance dredging and an upland placement site for the storage of dredged material offloaded from the three island transfer sites in Pool 5. Dredged material is available for beneficial use at this site. The West Newton Chute landing area provides access for mechanical dredging operations at the dredge cuts in Pool 5. Under the proposed Recommended Plan, dredged material could be barged from locations in Pool 4 through Lock 4, temporarily placed at West Newton Chute, and trucked approximately 1.5 miles to the Rolling Prairie upland placement site. The trucks would use the rural County Road 84 route. The impacts of trucking along this route were described in the Pool 5 DMMP and integrated EA (USACE 2020).

6.3.6. ALMA MARINA (ONSHORE TRANSFER AND BENEFICIAL USE SITE)

General Description. This onshore transfer and beneficial use site is located on the north side of the city of Alma and is bound by the Mississippi River, the Burlington Northern Santa Fe Railroad, and the Alma Small Boat Harbor. The 3-acre site is owned by USFWS and has a capacity of approximately 50,000 CY. The site is identified in the approved CMMP with potential environmental impacts discussed in the associated 1997 USACE FEIS. The site has been actively used for dredged material placement and public beneficial use removal.

The site is suitable for both mechanical and hydraulic placement of material from Lower Pool 4. Beneficial use removal at the site averages approximately 15,000 CY per year (300,000 CYs for the 20-year period of the DMMP). Periodic dredging of the access channel to the site is needed to maintain access for barges. Hydraulic placement at Alma Marina is possible, but it is better suited for lower volume dredging and mechanical placement operations. There is good access for trucks and other land-based transportation at the site.

6.4. Island Transfer Site Details

6.4.1. READS LANDING (ISLAND TRANSFER SITE)

General Description. Reads Landing, located north of, and across the Mississippi River from, Reads Landing, Minnesota, is an existing 22-acre island transfer site at RM 762.7. The site is

owned by USFWS. Maximum capacity of the site is approximately 1,300,000 CY. Once Pipeline A is constructed, dredged material from the Chippewa Delta and Reads Landing cuts will usually be pumped directly to Wabasha Gravel pit resulting in significantly less use of the Reads Landing Island site.

6.4.2. CRATS ISLAND (ISLAND TRANSFER SITE)

General Description. Crats Island is located east of, and across the river from, Wabasha, Minnesota, at RM 759.3. Portions of the site are owned by the Corps and the USFWS. The site includes approximately 22 acres and holds a maximum of approximately 1,400,000 CY of dredged material.

6.4.3. TEEPEEOTA POINT (ISLAND TRANSFER SITE)

General Description. The site is located 1.5 miles downstream and across the Mississippi River from Wabasha, Minnesota, at RM 757.5. The site is owned by the USFWS. The site includes 46 acres, and currently 16 acres are actively used to manage a maximum capacity of approximately 970,000 CY.

6.4.4. GRAND ENCAMPMENT (ISLAND TRANSFER SITE)

General Description. The site is located 3 miles downstream and across the river from Wabasha, Minnesota, at RM 756.2. The site is owned by the USFWS. It covers 8 acres and holds approximately 550,000 CY of dredged material.

6.5. Transportation Route Details

6.5.1. PIPELINE A: READS LANDING & CHIPPEWA DELTA CUTS TO WABASHA GRAVEL PIT

This 20-year temporary pipeline is approximately 1 mile in length and extends from the Mississippi River at Reads Landing to the Wabasha Gravel Pit. The pipeline will be constructed along an alignment that has been used several times for temporary pipelines. This DMMP assumes Pipeline A is in place and functioning as part of the no action alternative. The Corps has existing easements and other necessary real estate interests in place for the majority of the route. Pipeline A is fully described in an EA separate from this DMMP, and it is proceeding as a separate project. The Pipeline A EA was finalized and the Finding of No Significant Impact (FONSI) signed on 27 July 2022 (USACE 2022).

The pipeline is needed to handle the Reads Landing cut, Chippewa Delta cut, and potential Reads Island offloads. The pipeline would allow for the dredged material to go directly from the cuts to the Wabasha Gravel Pit site instead of being placed on Reads Island. Bringing the dredged material directly to land reduces the need for expensive island offloads, which have historically been needed approximately every 10 years.

The pipeline could also be used to offload material from the other island transfer sites. Material could be excavated from the islands and barged to the head of Pipeline A where it would be mixed with water and pumped to Wabasha Gravel Pit.

Pipeline A will use a 24-inch diameter polypropylene pipe. It will begin at the Mississippi River near Reads Landing, follow the railroad corridor, cross Brewery Creek, cross underneath the railroad and 5th Grant Boulevard West (CR 59), follow the highway right-of-way along CR 59, and end at the Wabasha Gravel Pit. The portion of the pipeline that crosses Brewery Creek would be structurally supported and remain in place for 20 years of use. A diesel operated booster pump would be placed between Brewery Creek and 5th Grant Boulevard West when the pipeline is operating. A water well and concrete pad would be installed at the booster pump location to support pump operation. The exact location and size of the booster pump and well will be determined during implementation.

6.5.2. Pipeline C: Dam 4 Embankment to Zumbro River Flats, G-1, or Rolling Prairie

General Description. The anticipated Pipeline C route is approximately 2.2 miles long and would extend from the Mississippi River, along and across the Dam 4 embankment, south and west over USFWS property, and follow township road rights-of-way to the Zumbro River Flats South or G-1 sites. A Special Use Permit (SUP) would be needed to cross USFWS property, and a utility permit would be needed to use highway rights-of-way. See Figure 9. The Corps routinely acquires SUPs for work on Refuge lands and will continue to do so.

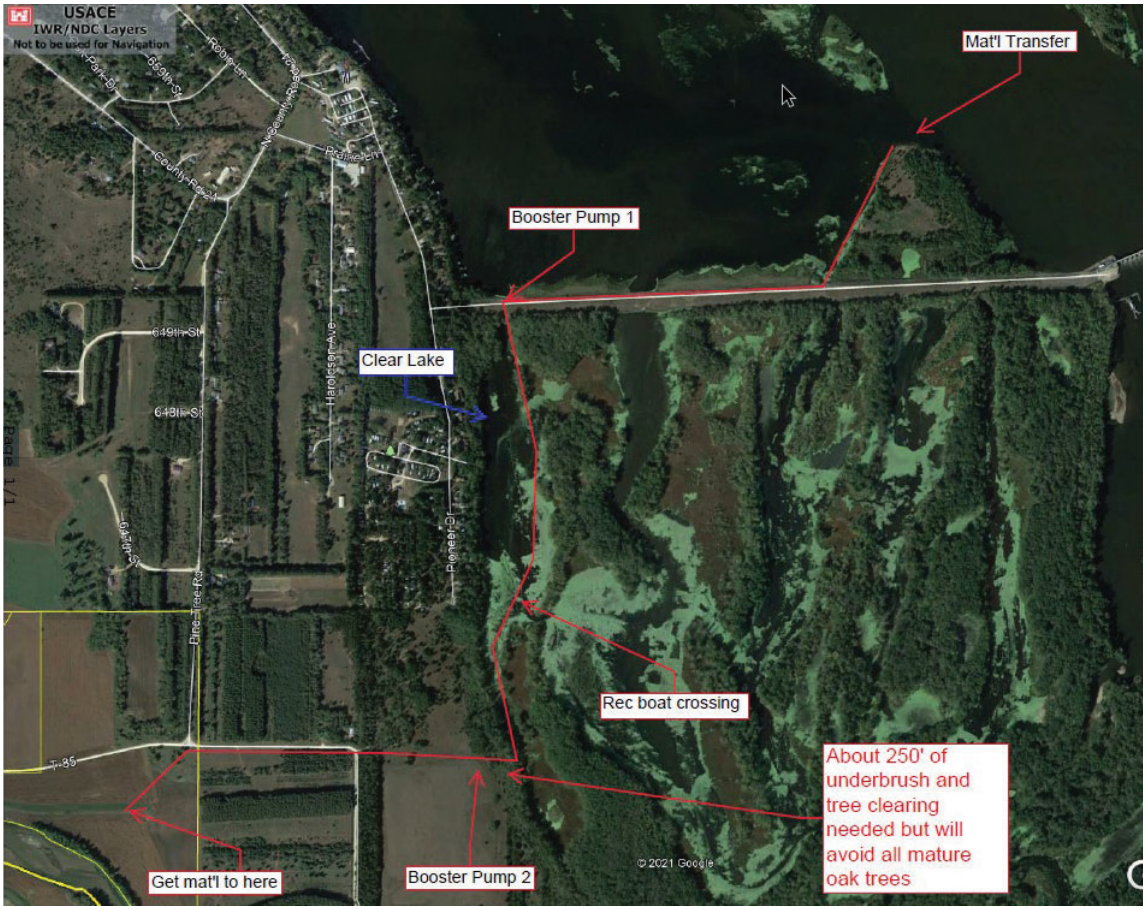

Figure 9. Pipeline C conceptual route

Pipeline C is a temporary pipeline that would be used to offload the island transfer sites periodically to maintain their capacities and move material to the Zumbro River Flats South of G-1 sites. An extended Pipeline C could bring material to the Rolling Prairie site south of the Zumbro River. The pipeline would be installed approximately once every 10 years and used in two consecutive years. The first use of Pipeline C could be as early as 2025. The use of the pipeline would significantly reduce the number of trucks hauling material on TH 61, which would be necessary if material from island offloads passed through the Carrels or Wabasha Gravel Pit onshore transfer sites.

Material would be excavated from the island transfer sites and barged to the head of Pipeline C where some access dredging may be required. There the material would be mixed with water and pumped through Pipeline C to the Zumbro River Flats South, G-1, or Rolling Prairie placement sites.

It is anticipated that the pipeline would be above ground except where it crosses under roadways. Within the refuge, the pipe would be laid near the shoreline and floating, except where it crosses commonly used navigation channels, where it would be submerged to allow boat traffic. The pipeline extension to the Rolling Prairie Site would use a temporary bridge or floating pipeline arrangement to cross the Zumbro River to reduce impacts to waters and ensure no permanent

impacts occur for pipeline usage. Diesel fuel operated booster pumps would likely be needed on the dam embankment and near the point where the pipeline leaves the river. The exact location and size of the pipeline and booster pumps will be determined during implementation and will be coordinated with the USFWS Refuge and agency partners where appropriate. Methods of sound abatement for the booster pump during operation can include mufflers on the equipment and sound dampening walls around the equipment. Supplemental infrastructure needed to operate the booster pumps may include a gravel pad for placement of the booster pump which would be removed after each offloading event. A shallow water well may also be needed at the same location as the booster pump for pumping groundwater to provide gland-seal water. Gland seal water is clean pressurized water that is pumped into the pump to enable the pump shaft to rotate with minimum friction, prevent slurry from back-flowing into the seals and damaging the shaft, and allows for a small amount of cooling of the pump shaft.

6.5.3. TRUCKING ROUTES

Moving dredged material from transfer sites to upland placement sites requires trucking. The primary roads that would be used include U.S. Trunk Highway 61 (TH 61); Wabasha County Roads (CR) 18, 24, 30, 59, 81, and 84; and Township Road T-85. The portions of these roads used in the Recommended Plan are described below as legs that would be combined to create a complete route from one site to another. There are seven potential truck legs that are included in the Recommended Plan; all legs would be used as round-trip routes between the transfer sites and placement sites. The different routes are generally described below. All potential routes are shown on Plate 2 and discussed in Appendix A: Traffic Impact Analysis. Hauling operations would observe all posted load limits and applicable traffic laws.

Truck - Leg 1: Carrels Site to Wabasha Gravel Pit (WGP). Trucking Leg 1 covers approximately 0.5 miles from the Carrels onshore transfer site to the WGP. Upon leaving the Carrels site, the trucks would use 5th Grant Boulevard West (CR 59) to reach the northwest access to the WGP.

Truck – Leg 2: WGP to Wabasha Sand & Gravel Pit (WS&G). Trucking Leg 2 route consists of trucking dredged material approximately 1 mile from the WGP to the WS&G pit. Trucks would leave the WGP on CR 59 and use TH 61 and CR 30 West to access the WS&G pit. If the material's destination is beyond the WS&G pit, the trucks would not turn on CR 30 and would continue on TH 61 instead.

Truck – Leg 3: WS&G to the intersection of TH 61 and CR 81. Trucking Leg 3 consists of approximately 5 miles on TH 61 from the intersection of TH 61 and CR 30 West near the WS&G site to the intersection of TH 61 and CR 81. Leg 3 is an integral part of all trucking operations that move material from WGP to upland placement sites in the Recommended Plan.

Truck – Leg 4: Intersection of TH 61 and CR 81 to Rolling Prairie site. Trucks traveling south on TH 61 would continue past the intersection of TH 61 and CR 81, drive past Kellogg and turn left on CR 18, then right on CR 84. Trucks would continue east on CR 84 until they reach the Rolling Prairie Site. The total length of Leg 4 is approximately 4 miles.

Truck – Leg 5: Intersection of TH 61 and CR 81 to Zumbro River Flats North. Trucks traveling south on TH 61 would turn left onto CR 81, cross the railroad tracks, turn left onto CR 30 East, then turn right onto CR 24 and drive approximately 1 mile east to the Zumbro River Flats North site. The total length of Leg 5 is approximately 1.7 miles.

Truck – Leg 6: Intersection of TH 61 and CR 81 to Zumbro River Flats South. Trucks traveling south on TH 61 would turn left onto CR 81, cross the railroad tracks, turn right onto CR 30 East, then follow T-85 to the Zumbro River Flats South site located just south of T-85 and north of the Zumbro River. The total length of Leg 6 is approximately 1.7 miles.

Truck – Leg 7: West Newton Chute to Rolling Prairie site. Trucking Leg 7 route consists of approximately 1.25 miles of CR 84 between the West Newton Chute onshore transfer site and the Rolling Prairie Site. Use and impacts of this trucking route were described in the Feasibility Report and Integrated EA, Pool 5 Dredged Material Management Plan, Upper Mississippi River, Wabasha and Winona Counties, Minnesota, Buffalo County, Wisconsin. St. Paul District, USACE. (USACE 2020).

6.5.4. BARGING ROUTES

Barge -- Leg 1: Island Transfer Sites to Pipeline A. Barges would follow the navigation channel to access the four island transfer sites and bring material to the head of Pipeline A on the right descending bank of the Mississippi River near Reads Landing.

Barge -- Leg 2: Island Transfer Sites and Dredge Cuts to Carrels. Barges would follow the navigation channel to access the dredge cuts and the four island transfer sites and bring material to the Carrels onshore transfer site on the right descending bank of the Mississippi River near RM 761. Access dredging would be needed between the navigation channel and the Carrels site, as described above in Paragraph 6.3.3.

Barge -- Leg 3: Island Transfer Sites to Pipeline C. Barges would follow the navigation channel upstream of RM 754.5 and a side channel downstream of RM 754.5 to access the four island transfer sites and bring material to the head of Pipeline C, on the right descending bank of the Mississippi River at approximately RM 753.1 northwest of Lock and Dam 4. Some access dredging may be required in the side channel; a survey would be completed prior to use to determine if there would be a need to dredge.

Barge -- Leg 4: Island Transfer Sites to West Newton Chute. Barges would follow the navigation channel to access the four island transfer sites and bring material through Lock and Dam 4 to the West Newton Chute onshore transfer site, and then mostly likely to Rolling Prairie for final placement.

Barge -- Leg 5: Beef Slough Dredge Cut to Alma Marina. Barges would follow the navigation channel to bring mechanically dredged material from the Beef Slough dredge cut to the Alma Marina placement site.

6.6. Section 217(d) Agreement Details

Overview of Section 217(d) Authority

Under the provisions of Section 217(d) of the Water Resources Development Act (WRDA) of 1996, as amended, 33 U.S.C § 2326a(d), the Corps may enter into an agreement with a non-federal interest (a public entity), a private entity, or both for the acquisition, design, construction, management, or operation and maintenance of a dredged material processing, treatment, contaminant reduction, or disposal facility (including any facility used to demonstrate potential beneficial uses of dredged material) using funds provided in whole or in part by the private entity. If any funds provided by a private entity are used to carry out a project, the Corps may reimburse the private entity over a period of time agreed to by the parties to the agreement through the payment of subsequent user fees. Such fees may include the payment of a disposal or tipping fee for placement of suitable dredged material at the facility. The user fee paid under Section 217(d) shall be sufficient to repay funds contributed by the private entity plus a reasonable return on investment.

Potential Section 217(d) Agreement with the City of Wabasha

The Corps and the city of Wabasha are currently exploring a potential Section 217(d) agreement, which would be negotiated and approved separately from this DMMP. The Corps and the city of Wabasha entered into a memorandum of understanding in 2017 in which they agreed to work together in good faith to develop mutually acceptable dredged material management alternatives for Lower Pool 4. It is anticipated to have a Section 217(d) agreement in place by April/May of 2023. If a Section 217(d) agreement is reached, the Corps could pay the city of Wabasha a user fee for providing a disposal facility (or facilities) up to an amount that is determined by the Corps to be in accordance with the federal standard. A Section 217(d) agreement would allow the city of Wabasha to manage and control the movement and fate of material placed in the facilities in exchange for the user fee.

The city has tentatively identified the Carrels and Wabasha Sand & Gravel pit sites as the facilities to be initially furnished under the proposed 217(d) agreement.

Utilization of a 217(d) agreement could help prolong the life of the DMMP by preserving capacity in other Corps placement sites. Potential uses of the material could include upland placement for development, mine reclamation, incorporation into manufactured soil (a blend of two or more materials to create desired soil), and other beneficial uses.

The current Lower Pool 4 DMMP and integrated EA will address the federal action of moving dredged material from Wabasha Gravel Pit and the Corps' island transfer sites to the facilities anticipated at this time to be designated under the agreement. The Corps would relinquish all rights, title, and interest in the material upon placement at a facility. The city of Wabasha would be responsible for acquiring all necessary permits and real estate agreements and ensuring compliance with all applicable laws and regulations when transporting, utilizing, disposing or selling the material, as is the case currently with beneficial users who remove dredged material from Corps-owned placement sites along the UMR. As the Section 217(d) agreement

negotiations become more defined, the Corps will determine whether any supplemental Corps environmental analyses are necessary.

Anticipated Operations under a Section 217(d) Agreement:

The Corps would continue to perform all dredging activities needed to maintain the UMR 9-Foot Navigation Channel project. Most often, material from the Chippewa Delta and Reads Landing dredge cuts would be dredged hydraulically and placed directly on the Wabasha Gravel Pit site using Pipeline A. Material from Beef Slough would be mechanically dredged, placed at the Alma Marina onshore transfer site, and left there for beneficial use. Typically, material from the Crats, Teepeeota, and Grand Encampment dredge cuts would be hydraulically dredged and placed on the islands adjacent to the cuts bearing the same names. Occasionally, material could be mechanically dredged and placed on the island transfer sites or brought to the Carrels site.

Under the Section 217(d) agreement, dredged material from the Wabasha Gravel Pit would be transported to the Wabasha Sand and Gravel facility. Dredged material from the Crats, Teepeeota and Grand Encampment island transfer sites would be transported to the Carrels transfer facility for processing. The material placed at the Carrels site would then be transported to the Wabasha Sand and Gravel facility. Volumes of material to be removed from the various sites would be defined each year in an annual operations plan to be developed prior to the dredging season. The city would manage the material after it was placed at the facilities. Through payment of the user fee, which is currently being negotiated, the city would be reimbursed for its operation and maintenance costs at the facilities in addition to being paid a reasonable return on investment. The city would be responsible for acquisition; placing, loading, processing and transporting material at the facilities; environmental compliance and monitoring; and any other necessary tasks associated with operating and maintaining the facilities for dredged material placement.

The agreement would not obligate the city to reserve placement of dredged material at the facilities for the Corps or require the Corps to use the facilities every year for placement. It would simply allow the Corps to use the facilities that the city will provide when such use is convenient for both parties. For this reason, the Corps must pursue additional sites identified in the Recommended Plan to ensure that capacity is available for the 20-year period of analysis.

Evaluation and Rationale for Inclusion in the Recommended Plan

The proposed potential Section 217(d) Agreement with the city of Wabasha would be the Corps' priority approach as long as it is determined by the Corps to be in accordance with the Federal standard. That determination depends largely upon the costs that would be negotiated under the agreement. As discussed in Chapter 5, the Corps is obligated to manage dredged material in the least costly manner consistent with sound engineering practices and meeting the environmental standards established by the 404(b)(1) evaluation process. The proposed facilities, the Carrels and Wabasha Sand and Gravel Pit facilities, are existing industrial sites that have been used for dredged material management before, and their use presents no significant environmental impacts as further explained in Chapter 8. Hauling and barging operations needed to transport material to the sites use the shortest routes in comparison to other sites the Corps considered, and

the proposed haul routes avoid the Wabasha urban area. As noted above, use of a 217(d) agreement would help to preserve the capacity of other sites in the Recommended Plan. For these reasons, use of a Section 217(d) agreement is retained as part of the Recommended Plan.

CHAPTER 7. Recommended Plan and Tiered Implementation

7.1. Overview

The Recommended Plan includes all the sites and transportation modes described in Chapter 6. Taken together, use of these sites *in the most efficient way that is practicable at any given time* constitutes the Base Plan and Federal standard for Lower Pool 4, as defined in Section 5.1.1. The various components of the Recommended Plan have been described in Chapter 6 and are shown on Plate 2. The sites and transportation routes included in the Recommended Plan were determined to be optimal based on aspects of environmental acceptability, operational feasibility, and estimated costs. In addition, other factors such as social acceptability and impacts to local communities were also considered for each site when compared to other potential sites. Chapter 7 explains how the sites would be used in combination with each other over the 20-year period of analysis covered by this plan.

This DMMP documents the Corps' interest in using the identified sites and presents the anticipated environmental impacts associated with the proposed use of the sites. The DMMP, once approved, would allow the Corps to enter into formal real estate discussions with the owners of identified properties. Inclusion in the Recommended Plan will not automatically lead to Corps acquisition of the properties.

7.2. Tiered Implementation Plan

The Recommended Plan would secure placement capacity for at least 20 years using some or all of the identified sites. The sites are tiered from the Corps' most preferred to least preferred options for implementation. The order of preference was based on the sites' operational cost, importance to efficient dredging operations, and landowners' current willingness to consider selling.

All tiers assume that Pipeline A and the existing federally owned sites in Lower Pool 4 would be used to the extent they are needed. These sites include Wabasha Gravel Pit, Alma Marina, and the four island transfer sites (Reads Landing, Crats, Teepeeota, and Grand Encampment). All material from the Beef Slough dredge cut will be placed at the Alma Marina onshore transfer and beneficial use site. All tiers also assume the use of the truck and barge routes described in Chapter 6 that connect transfer sites to upland placement sites.

Tiers 1 through 4 include additional sites for which the Corps would need to acquire a real estate interest, use agreement, or other arrangement before they could be used. Tier 5 makes use of the existing federally owned sites in both Lower Pools 4 and 5. The additional sites and features associated with each implementation tier are as follows:

- Tier 1: Use of a Section 217(d) Agreement

- Tier 2:
    - Zumbro River Flats North (Upland Placement)
    - Zumbro River Flats South (Onshore Transfer & Upland Placement)
    - Pipeline C (Transportation Route)

- Tier 3:
    - Bean Field (Onshore Transfer)
    - G-1 (Onshore Transfer)

- Tier 4:
    - WS&G Pit (Upland Placement)
    - Carrels (Onshore Transfer)

- Tier 5: Use of Existing Federal Sites in Pool 5
    - Rolling Prairie (Upland Placement)
    - West Newton Chute (Onshore Transfer)

In addition to the identified sites, the Corps would also continue working with local, state, and federal entities to take advantage of opportunities for one-time placement, additional beneficial uses, and pursuing real estate interests in additional suitable parcels that become available on the real estate market. Additional environmental and technical analyses, NEPA documentation, and public coordination would be conducted as required to support future actions.

The Corps will attempt to implement the paths that use Tiers 1 and 2 features first. Tier 1 alone does not guarantee the required 20-year capacity at the least cost, so the Corps will attempt to implement Tiers 1 and 2 concurrently.

The Tier 3 sites present opportunities to reduce operational costs and provide additional capacity, but they would not be needed to obtain the target 20-year capacity if Tier 2 can be implemented. The Corps will pursue Tier 3 sites when needed to secure adequate capacity or as opportunities arise.

The Tier 4 sites present opportunities to reduce operational costs and provide additional capacity in the future. Tier 4 uses the same sites as Tier 1, so Tier 4 is not implementable while Tier 1 is implemented. The Corps would pursue the Tier 4 sites in the future if Tier 1 is not implemented and when the Corps could place material in the WS&G Pit without adversely affecting the private mining operations, as discussed above.

Tier 5 uses the Rolling Prairie destination in Pool 5 and would only be implemented if Tiers 1-4 do not provide sufficient capacity. Some of the Tier 5 alternatives would use features of Tiers 1-4 that reduce overall costs, such as Pipeline C or Carrels, if those features are available.

7.3. Alternative Management Paths and Associated Costs

7.3.1. OVERVIEW

The sites and routes included in the Recommended Plan can be combined in a variety of ways to manage dredged material. Material always comes initially from a dredge cut in the navigation channel and eventually goes to a destination. In the Recommended Plan, destinations are upland placement sites or beneficial uses where the material requires no additional federal transfer. The Corps makes dredged material available to the public at most of its placement sites, so these sites are not technically final or permanent destinations for the material that is removed for beneficial uses by others. Beneficial use by others is not a federal action and is not addressed by this DMMP and integrated EA.

The figures and tables in the following sections of the DMMP describe the alternative paths that dredged material could follow and the total annual cost associated with each path. The dredge cuts fall into three groups:

1. Chippewa Delta and Reads Landing (CR),
2. Crats, Teepeeota, and Grand Encampment (CTG), and
3. Beef Slough (BS).

A complete alternative for all of Lower Pool 4 must include one path from each of the three groups. The Corps will use the least-cost paths that are implementable at any given time, and those paths will constitute the Base Plan and Federal standard while they remain the least-cost implementable option.

The descriptions and costs presented below assume that most of the dredging in Lower Pool 4 will be done hydraulically, and the Beef Slough cut will continue to be mechanically dredged. As mentioned previously, 95% of the dredged volume has historically been hydraulically dredged. All cuts other than Beef Slough will occasionally be mechanically dredged depending on channel conditions and the availability of hydraulic dredges. The discussion and tables below assume that when the cuts are mechanically dredged, the material would be placed on the island transfer sites. Potential savings from use of the Carrels site in Tier 4 for mechanical dredging is discussed separately in Section 7.3.6.

Costs presented in the tables below include all dredging, transportation, placement, real estate and other associated costs and contingencies. All costs presented in Chapter 7 are at the October 2021 (FY 2022) price level. Refer to Section 5.1.2 for a general description of the cost estimates.

7.3.2. *Material from Chippewa Delta and Reads Landing Dredge Cuts*

Material from these cuts will be hydraulically dredged and directly placed into Wabasha Gravel Pit through Pipeline A. The Corps plans to remove approximately 135,000 CY of dredged material from Wabasha Gravel Pit each year, on average, to restore its capacity for additional direct placement from these cuts. (The average annual volume dredged from the Chippewa Delta and Reads Landing cuts is approximately 128,000 CY as shown in Section 4.1.1, Table 5, and the tables below round the volume up to 135,000 CY to reflect the recent dredging history at Chippewa Delta as explained in Section 4.1.1.) Material from Wabasha Gravel Pit will be hauled in trucks to an upland placement site following one of the paths shown in Figure 10 and Table 12 below. Transportation from Wabasha Gravel Pit to each destination would use the truck routes listed in Table 12 and described in Chapter 6. (For example, "T-2" in Table 12 refers to T-Leg 2 in Chapter 6, and B-1 refers to B-Leg 1.) The Corps estimates that transporting 135,000 CY by truck would take approximately 24 10-hour workdays, as discussed in Appendix A, Traffic Impact Analysis. This hauling could take place any time of the year, as long as the capacity is restored in Wabasha Gravel Pit before the following dredging season. Timing of the hauling operation would need to consider the potential for load restrictions on roadways during the spring thaw.

Figure 10. Paths from Chippewa Delta and Reads Landing (CR) Dredge Cuts

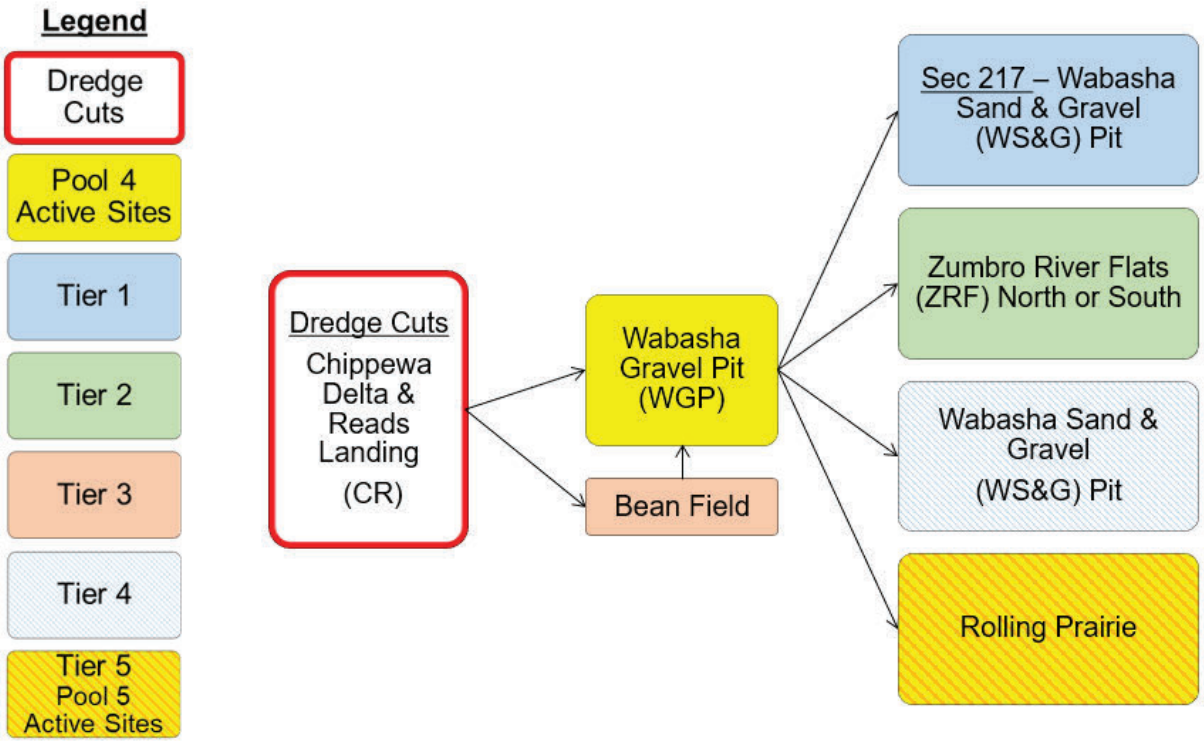

Table 12. Path Details from Chippewa Delta and Reads Landing (CR) Dredge Cuts

Dredge Cut-Tier	Transport Route	First Transfer Site	Transport Route	Second Transfer Site	Transport Route	Destination	Avg Total Cost/CY	Avg CY/Year	Average Annual Cost ($ Million)
CR-1	Dredging, Pipeline A	WGP	Sec 217, T-2	-->	-->	Sec 217 - WS&G Pit	TBD	135,000	TBD
CR-2A	Dredging, Pipeline A	WGP	T-2, 3, 5	-->	-->	ZRF North	$24.44	135,000	$3.3
CR-2B	Dredging, Pipeline A	WGP	T-2, 3, 6	-->	-->	ZRF South	$24.44	135,000	$3.3
CR-4	Dredging, Pipeline A	WGP	T-2	-->	-->	WS&G Pit	$20.38	135,000	$2.8
CR-5	Dredging, Pipeline A	WGP	T-2, 3, 4	-->	-->	Rolling Prairie	$27.94	135,000	$3.8

7.3.3. MATERIAL FROM CRATS, TEEPEEOTA, AND GRAND ENCAMPMENT DREDGE CUTS

Material from the Crats, Teepeeota and Grand Encampment cuts will be hydraulically dredged and placed initially on the adjacent island transfer sites bearing the same names. Approximately 120,000 CY per year, on average, is placed on these three sites in total. (The average annual volume dredged from these cuts is approximately 122,000 CY as shown in Section 4.1.1, Table 5, and the tables below round the volume down to 120,000 CY.) The material could be removed from the island transfer sites in a variety of ways, as shown in Figure 11 and Table 13.

- Use of a Section 217(d) agreement is described in Chapter 6.

- Material could be excavated from the island transfer sites and barged to the head of Pipeline C, then put into a slurry and pumped to Zumbro River Flats South or G-1. Using an extension of Pipeline C, the material could be pumped to Rolling Prairie. The Corps anticipates that Pipeline C would be installed approximately once every 10 years and used for 2 consecutive years. Pipeline C would typically be installed when the Grand Encampment Island Transfer Site is nearing its capacity, which is estimated to be in 2025. If a Section 217 agreement is executed, that would delay the need for Pipeline C.

- Material could be excavated from the island transfer sites and barged to the head of Pipeline A, then put into a slurry and pumped to Wabasha Gravel Pit. Because Pipeline A is a relatively permanent feature, island offloads could be accomplished whenever needed, provided there is capacity in Wabasha Gravel Pit. Material would be removed from Wabasha Gravel Pit as described above. The Corps estimates that transporting 120,000 CY by truck would take approximately 21 10-hour workdays, as discussed in Appendix A, Traffic Impact Analysis. This hauling could take place any time of the year, as long as the capacity is restored in Wabasha Gravel Pit before the following dredging season. Timing of the hauling operation would need to consider the potential for load restrictions on roadways during the spring thaw.

- Material could be excavated from the island transfer sites and barged to the Carrels onshore transfer site. From Carrels, the material could be trucked to any of the destinations described for material from Wabasha Gravel Pit. The Corps estimates that transporting 120,000 CY from a large stockpile by truck would take approximately 21 10-hour workdays, as discussed in Appendix A, Traffic Impact Analysis. The island excavation and barge handling operations assumed in this alternative may constrain the hauling operation, potentially extending the hauling timeframe slightly. Using the Carrels site would tie the hauling to the offloading operation, so hauling would need to take place concurrently with excavating the islands.

Figure 11. Paths from Crats, Teepeeota, and Grand Encampment (CTG) Dredge Cuts.

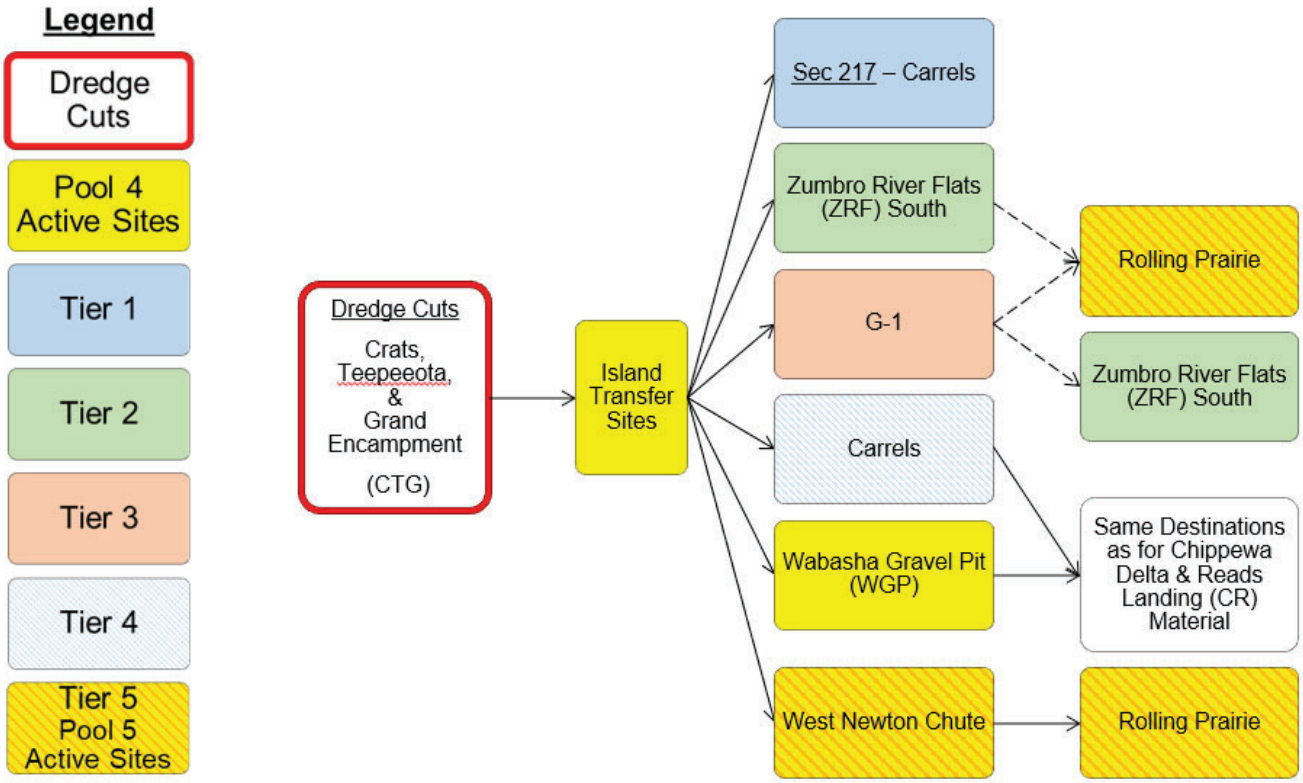

Table 13. Path Details from Crats, Teepeeota, and Grand Encampment (CTG) Dredge Cuts

Dredge Cut-Tier	Transport Route	First Transfer Site	Transport Route	Second Transfer Site	Transport Route	Destination	Avg Total Cost/CY	Avg CY/Year	Average Annual Cost ($ Million)
CTG-1	Dredging	Islands	Sec 217, B-2	-->	-->	Sec 217 - Carrels	TBD	120,000	TBD
CTG-2A	Dredging	Islands	B-3, Pipeline C	ZRF South (east end)	Scrapers	ZRF South	$32.19	120,000	$3.9
CTG-2B	Dredging	Islands	B-1, Pipeline A	WGP	T-2, 3, 5	ZRF North	$41.36	120,000	$5.0
CTG-2C	Dredging	Islands	B-1, Pipeline A	WGP	T-2, 3, 6	ZRF South	$41.36	120,000	$5.0
CTG-3	Dredging	Islands	B-3, Pipeline C	G-1	Scrapers	ZRF South	$32.19	120,000	$3.9
CTG-4A	Dredging	Islands	B-2	Carrels	T-1, 2	WS&G Pit	$32.06	120,000	$3.8
CTG-4B	Dredging	Islands	B-1, Pipeline A	WGP	T-2	WS&G Pit	$37.30	120,000	$4.5
CTG-4C	Dredging	Islands	B-2	Carrels	T-1, 2, 3, 5	ZRF North	$42.39	120,000	$5.1
CTG-4D	Dredging	Islands	B-2	Carrels	T-1, 2, 3, 6	ZRF South	$42.39	120,000	$5.1
CTG-5A	Dredging	Islands	B-1, Pipeline A	WGP	T-2, 3, 4	Rolling Prairie	$44.86	120,000	$5.4
CTG-5B	Dredging	Islands	B-2	Carrels	T-1, 2, 3, 4	Rolling Prairie	$44.79	120,000	$5.4
CTG-5C	Dredging	Islands	B-4	West Newton Chute	T-7	Rolling Prairie	$45.63	120,000	$5.5
CTG-5/2/3	Dredging	Islands	B-3, Pipeline C Extension	Rolling Prairie (NE Side)	Scrapers	Rolling Prairie	$32.38	120,000	$3.9

7.3.4. MATERIAL FROM BEEF SLOUGH DREDGE CUT

Material from the Beef Slough cut will be dredged mechanically and placed at the Alma Marina onshore transfer site for beneficial use as shown in Figure 12 and Table 14.

Figure 12. Paths from Beef Slough (BS) Dredge Cut.

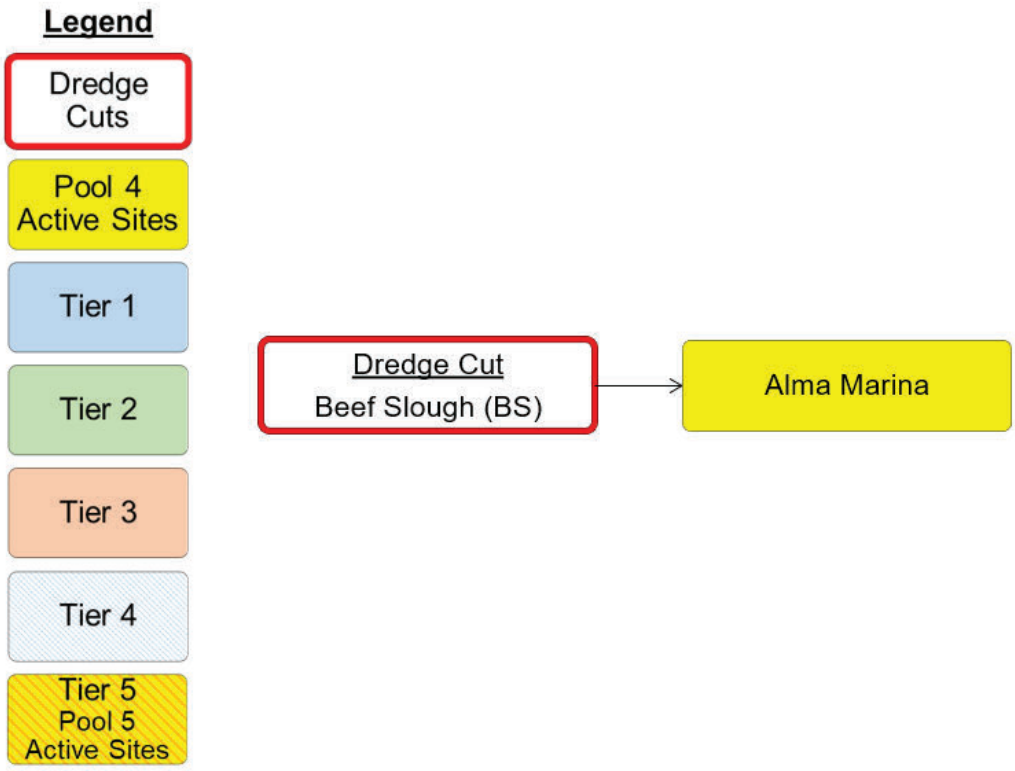

Table 14. Path Details from Beef Slough (BS) Dredge Cut.

Path Details for Material from Beef Slough (BS) Dredge Cut									
Dredge Cut-Tier	Transport Route	First Transfer Site	Transport Route	Second Transfer Site	Transport Route	Destination	Avg Total Cost/CY	Avg CY/Year	Average Annual Cost ($ Million)
BS-1	Dredging, B-5	-->	-->	-->	-->	Alma Marina	$10.55	15,000	$0.2

7.3.5. Alternative Combined Management Paths and Total Annual Costs

The Corps must implement at least one path from each group of dredge cuts presented above to create a complete plan to manage all the dredged material expected over the next 20 years. Three of the several possible combined paths are presented in Tables 15, 16 and 17 to illustrate the range of costs that could be experienced. These plans represent the most likely least cost plan (use of a Section 217(d) agreement), the next best plan if a Section 217(d) agreement cannot be implemented, and the least cost alternative using only existing federally owned sites.

Table 15. Tier 1 Combined Paths (Section 217(d) Agreement).

Dredge Cut-Tier	Transport Route	First Transfer Site	Transport Route	Second Transfer Site	Transport Route	Destination	Avg Total Cost/CY	Avg CY/Year	Average Annual Cost ($ Million)
CR-1	Dredging, Pipeline A	WGP	Sec 217, T-2	-->	-->	Sec 217 - WS&G Pit	TBD	135,000	TBD
CTG-1	Dredging	Islands	Sec 217, B-2	-->	-->	Sec 217 - Carrels	TBD	120,000	TBD
BS-1	Dredging, B-5	-->	-->	-->	-->	Alma Marina	$10.55	15,000	$0.2
							Annual Total	**270,000**	**TBD**

Table 16. Least Cost Tier 2 Combined Paths.

Dredge Cut-Tier	Transport Route	First Transfer Site	Transport Route	Second Transfer Site	Transport Route	Destination	Avg Total Cost/CY	Avg CY/Year	Average Annual Cost ($ Million)
CR-2A	Dredging, Pipeline A	WGP	T-2, 3, 5	-->	-->	ZRF North	$24.44	135,000	$3.3
CTG-2A	Dredging	Islands	B-3, Pipeline C	-->	-->	ZRF South	$32.19	120,000	$3.9
BS-1	Dredging	-->	-->	-->	-->	Alma Marina	$10.55	15,000	$0.2
							Annual Total	**270,000**	**$7.3**

Table 17. Tier 5 Combined Paths (Least Cost if Limited to Existing Federal Property)

Dredge Cut-Tier	Transport Route	First Transfer Site	Transport Route	Second Transfer Site	Transport Route	Destination	Avg Total Cost/CY	Avg CY/Year	Average Annual Cost ($ Million)
CR-5	Dredging, Pipeline A	WGP	T-2, 3, 4	-->	-->	Rolling Prairie	$27.94	135,000	$3.8
CTG-5A	Dredging	Islands	B-1, Pipeline A	WGP	T-2, 3, 4	Rolling Prairie	$44.86	120,000	$5.4
BS-1	Dredging	-->	-->	-->	-->	Alma Marina	$10.55	15,000	$0.2
							Annual Total	**270,000**	**$9.3**

Observations and comparisons:

- The cost of using a Section 217(d) Agreement depends upon future negotiations.
- The least cost Tier 2 plan (Table 16) would cost $2.0 million less each year than a Tier 5 plan that uses only existing federal property (Table 17). Over 20 years, the savings would total $40 million.

- The least cost Tier 5 plan limited to existing federal property requires an estimated 46 days of trucking each year on average. The least cost Tier 2 plan, which uses Pipeline C, requires approximately 24 days of trucking each year on average.

7.3.6. MECHANICAL DREDGING USING THE CARRELS SITE

On occasions when dredging is performed mechanically on cuts other than Beef Slough, it would be more cost-effective to take the material directly to the Carrels site than to place it on an island transfer site. The cost savings ranges from about $5.40 to $15.45 per CY depending on the path the material would otherwise follow between the island transfer site and the destination site. Approximately 13,000 CY per year, on average, could make use of direct placement at the Carrels onshore transfer site, which would save between $70,000 and $201,000 per year.

The costs associated with using Carrels for mechanical dredging are shown in Table 18.

Table 18. Paths for Mechanically Dredged Material from All Dredge Cuts.

Dredge Cut-Tier	Transport Route	First Transfer Site	Transport Route	Second Transfer Site	Transport Route	Destination	Avg Total Cost/CY	Avg CY/Year	Average Annual Cost ($ Million)
All Cuts-4E	Mechanical Dredging	Carrels	T-1, 2	-->	-->	WS&G Pit	$16.60	13,000	$0.2
All Cuts-4F	Mechanical Dredging	Carrels	T-1, 2, 3, 5	-->	-->	ZRF North	$26.80	13,000	$0.3
All Cuts-4G	Mechanical Dredging	Carrels	T-1, 2, 3, 6	-->	-->	ZRF South	$26.80	13,000	$0.3
All Cuts-4H	Mechanical Dredging	Carrels	T-1, 2, 3, 4	-->	-->	Rolling Prairie	$31.30	13,000	$0.4

Mechanically dredged material could also be brought to the Alma Marina onshore transfer site if capacity was available there. The Corps will consider this option on a case-by-case basis when mechanical dredging is conducted.

7.4. Risk and Uncertainty

Several aspects of implementing the Recommended Plan are uncertain. However, the Recommended Plan is robust and flexible to ensure that placement capacity is available for the entire 20-year planning period regardless how these aspects manifest themselves in the future.

The actual 20-year volume of dredged material is uncertain. The average annual volume of dredged material has been relatively stable since the early 1980s, so the risk is low that significantly more placement capacity than the estimated 5.3 million CY could be needed. The risk is mitigated by the fact that the existing federally owned Rolling Prairie Site has capacity for more than 18 million cubic yards.

The cost to manage dredged material under this DMMP is uncertain. Use of Tier 5 sites alone presents a maximum anticipated cost using federal properties that are currently available. Tiers 1 through 4 present opportunities to reduce costs by acquiring real estate interests in sites that reduce hauling distances and allow for movement of dredged material via pipelines or by working under a Section 217(d) agreement. Although the cost of implementing Tier 5 alone is relatively high, it would be possible and effective over the 20-year planning period even if the other tiers are not implementable.

The Recommended Plan relies on the existing highway network to transport dredged material. Road maintenance activities could involve lane closures or detours that would affect the efficiency of hauling operations. Seasonal load limits will also affect hauling operations. Corps staff involved with dredged material management will need to maintain situational awareness and factor anticipated highway conditions into annual dredging plans.

CHAPTER 8. Evaluation of Environmental Effects

This environmental analysis has been conducted to address compliance with the National Environmental Policy Act (NEPA). This document is tiering off the Final Environmental Impact Statement (FEIS) for the UMR 9-Foot Navigation Channel Project Channel Maintenance Management Plan (CMMP) published June 6, 1997[1], as described in Council on Environmental Quality (CEQ) guidelines 40 CFR 1502.20 and 1508.28 (1978). The NEPA process used within this report follows the original 1978 NEPA implementation regulations. The updated 2020 regulations apply to NEPA processes that began after September 14, 2020 (40 CFR § 1506.13 (2020)). This final report is a revision to the draft that was released for public review in 2017.

The Lower Pool 4 DMMP was initiated in 2014 when uncertainty of the future availability of dredged material placement sites in the area prompted an effort to identify the best strategy for long-term management of dredged material within the pool. The Recommended Plan includes use of both currently active and new placement sites. Table 19 lists the sites and transportation routes that are evaluated under an existing Environmental Impact Statement (EIS) or Environmental Assessment (EA), sites and routes that this Lower Pool 4 DMMP EA will address, and sites and routes that would need additional analysis in a future NEPA document. Everything listed here in Table 19 is part of the Recommended Plan. Future NEPA evaluations for some components are identified to address anticipated details of use that are not available at the current level of planning. An EA for Pipeline A was released for public review on 28 February 2022 and the Finding of No Significant Impact signed on 27 July 2022. Work to complete Pipeline A is being completed prior to the current DMMP so it can be constructed and used during the upcoming dredging season.

Table 1. Environmental Compliance Coverage of Features within the CMMP, an existing EA, through this Lower Pool 4 DMMP, or in a future EA.

	Evaluated in CMMP EIS[1]	Evaluated in Existing Individual EA	Evaluated in Lower Pool 4 EA (This Document)	Additional Evaluation in Future NEPA Document	Notes
A. Placement Sites					
Wabasha Gravel Pit	X				
Wabasha Sand & Gravel Pit		X[2]			

Carrels	X		X		A portion of the Carrels site was evaluated within the CMMP but the expanded and detailed use of the site will be addressed in this EA
Bean Field			X	X	Decision to purchase and use of property is evaluated here but detailed use will be addressed in future NEPA document
Zumbro River Flats - South			X	X	Decision to purchase and use of property is evaluated here but detailed use will be addressed in future NEPA document
Zumbro River Flats - North			X	X	Decision to purchase and use of property is evaluated here but detailed use will be addressed in future NEPA document
G-1			X	X	Decision to purchase and use of property is evaluated here but detailed use will be addressed in future NEPA document
West Newton Chute		X[3]			
Rolling Prairie Site		X[4]		X[5]	
Read's Landing, Crats, Teepeeota, and Grand Encampment Island	X				
Alma Marina	X				
B. Truck Routes					
T - Leg 1: Carrels to Wabasha Gravel Pit			X		
T-Leg 2: Wabasha Gravel Pit to Wabasha Sand & Gravel Pit			X		
T-Leg 3: Wabasha Sand & Gravel Pit to intersection of TH 61 and CR 81			X		
T-Leg 4: Intersection of TH 61 and CR 81 to Rolling Prairie Site			X		
T-Leg 5: Intersection of TH 61 and CR 81 to Zumbro River Flats - North			X		
T-Leg 6: Intersection of TH 61 and CR 81 to Zumbro River Flats			X		
T-Leg 7: West Newton Chute to Rolling Prairie		X[4]			

C. Pipelines					
Pipeline A: Reads Landing and Delta cuts to Wabasha Gravel Pit		X[6]			
Pipeline C: Lock and Dam 4 Embankment to Zumbro River Flats South			X	X	The general route and use of the pipeline is addressed here, but detailed planning and additional compliance work will be needed prior to use
D. Barge Routes					
B-Leg 1: Island Transfer Sites to Pipeline A		X[6]			
B-Leg 2: Island Transfer Sites and Dredge Cuts to Carrels	X		X		The use of Carrels is addressed in the CMMP EIS, but new access dredging is addressed here
B-Leg 3: Island Transfer Sites to Pipeline C			X		
B-Leg 4: Island Transfer Sites to West Newton Chute			X		
B-Leg 5: Beef Slough cut to Alma Marina	X				

NOTE: Highlighted items will be evaluated in the current Pool 4 DMMP EA.

[1] Final Environmental Impact Statement, 9-foot Navigation Channel Project, Channel Maintenance Management Plan, Upper Mississippi River, Head of Navigation to Guttenberg, Iowa. St. Paul District, USACE. July 1997.
[2] Environmental Assessment. Wabasha Sand and Gravel Pit #2, Dredged Material Placement Site Establishment. St. Paul District, USACE. June 2015.
[3] Lost Island-west Newton Transfer, Upper Mississippi River Pool 5, Wabasha County Minnesota, Buffalo County, Wisconsin Environmental Assessment. St. Paul District, USACE. June 2016.
[4] Draft Feasibility Report and Integrated Environmental Assessment, Lower Pool 4 Dredged Material Management Plan, Upper Mississippi River, Wabasha and Winona Counties, Minnesota, Buffalo and Pepin Counties, Wisconsin. St. Paul District, USACE. 2021. The Pool 4 DMMP addresses trucking from Pool 4 (T-Leg 4 and T-Leg 7).
[5] Future NEPA documentation needed to address additional material placed and expanded use of the site needed for Pool 4 and long-term land use management of the site.
[6] Environmental Assessment. Reads Dredged Material Pipeline, Finding of No Significant Impact signed 27 July 2022 (USACE 2022). (This pipeline was evaluated under a separate EA to ensure completion prior to the 2022 dredging season. This pipeline would be used to place material in the approved Wabasha Gravel Pit and is not dependent on this DMMP.)

This EA has been prepared to assess the environmental consequences of the no action alternative, transportation legs, and temporary and long-term storage sites that are within the Recommended Plan that have not been previously addressed with NEPA documentation (Table 19). The EA will address the acquisition and use of various properties; more detailed land use plans will be developed for sites in the future after acquisition. Additional environmental analyses will be completed as needed to address the effects of detailed alternatives within these land use plans.

The discussion below focuses on the environmental effects of new placement sites and associated transportation routes to move the material from the channel to a suitable resting spot. The new placement site acquisitions discussed in this EA are the Carrels Site (expanded from existing site), the Zumbro River Flats - South site, the Zumbro River Flats - North Site, the Bean Field, and G1. In terms of the Carrels Site, this EA focuses on expanding the site to 27 acres instead of the 18 acres identified in the CMMP, and for the mechanical and hydraulic placement of material at the site. For both the Zumbro River Flats - South and Zumbro River Flats – North sites, detailed future use of the sites will be addressed in future NEPA documentation. The use of the Bean Field and G1 sites may also require additional future planning and review depending on their condition at the time of use.

This EA does not focus on environmental effects to existing sites that have already been reviewed through previous NEPA documentation, though those effects are collectively addressed in Section 8.11. Additionally, this EA focuses on all methods of dredged material management at these placement sites and routes identified as part of the Recommended Plan unless plan details are insufficient at this time for full analysis, in which case those details will be assessed as needed in future analyses (See Table 19). If over the course of the project it is determined that impacts differ from what is described in this EA, those effects will be reevaluated, and additional environmental compliance documentation will be prepared and coordinated as required.

The no action alternative serves as the base condition against which all alternatives are compared for evaluating effects. In this case, the no action alternative includes the continued use of currently available and approved dredged material placement sites. The no action alternative also includes an increased risk for the need to use non-designated placement sites due to the lack of available capacity but assumes that in the long term, another DMMP effort will be initiated in order to ensure compliance with Corps policy. The effects of the no action plan can vary greatly depending on whether existing sites and routes are used, or if non-designated sites and routes are used (See Section 5.2). Under the use of existing sites and routes, the effects of the no action alternative are effectively the same as those experienced to date and evaluated and described in past reviews (Section 1.4 and Table 19. The effects of the Recommended Plan are the results of the expected differences in conditions short-term and into the future between the no action alternative and options that are identified as part of the Recommended Plan. Therefore, under a scenario where use of existing approved sites continues, the effects of the Recommended Plan are the same as those of the no action alternative. For simplicity, the no action scenario for comparison to the Recommended Plan focuses on the use of non-designated placement sites. This scenario of the no action alternative is expected to have the most meaningful effects (i.e., different from existing conditions), and those effects are generally not described in other analyses.

The Sections 8.2-8.10 describe the effects of using new individual sites and transportation route categories found within the Recommended Plan as compared to the no action alternative. This has been done to help the reader understand the impacts of the new components of the Recommended Plan at specific locations. In addition, the collective effects of the Recommended Plan, which includes the use of existing sites and new sites, were evaluated comprehensively and discussed in Section 8.11. Table 19 lists everything included within the Recommended Plan. The first two columns of the table, "Evaluated in CMMP EIS" and "Evaluated in Existing Individual EA" denote sites and routes that are part of the no action alternative and the Recommended Plan. The environmental effects of the Recommended Plan are summarized in Table 20.

The degrees of environmental effects are categorized here as minor, substantial, or significant. The determination of the degree of an effect, or its "significance," must be made while considering the context and intensity of the effect (40 CFR 1508.27). It is important to consider the intensity of an effect in several contexts because the level of intensity will likely be viewed differently when considering its impact locally than it would, say, regionally or nationally. Significant effects are those of a high intensity on an important aspect of the human environment and require the greatest consideration. Minor effects are more than negligible but are low in intensity. Substantial effects are greater than minor ones, but still do not rise to the level of being "significant" within the context of NEPA. The use of substantial here is a means to draw attention to effects that, while not significant, deserve more consideration than those that are minor.

The context for considering effects in the sections in this chapter generally vary depending on whether the effects are being considered for a specific component of the Recommended Plan, such as in Sections 8.2-8.10, or for the Recommended Plan as a whole as in Section 8.11. Project components may have higher intensity effects in the context of a specific locality, but lesser effects when considering those in the context of the greater region over the entire Recommended Plan. One such example are the effects of transporting dredged material over roads. In the context of a new travel route, where material is not currently hauled, the relative effects in that specific location might be "substantial" relative to what is occurring now. However, the overall effects to transportation in the region for the entire Recommended Plan may only be minor relative to the no action effects because the overall change is the truck traffic regionally that might be considered negligible.

Table 20. Environmental Assessment Matrix*.

		RECOMMENDED PLAN								
		NEW PLACEMENT SITES					TRANSPORTATION			Collective Effects for Recommended Plan Evaluated in this EA
	No Action Alternative	Carrels	Bean Field	ZRF South	ZRF North	G1	Trucking Legs 1-6	Pipeline C	Barge Legs 1-5	
A. Social Effects										
Noise Levels	-1	-1	-1	-1	-1	-1	-2	-1 ST	-1	-1
Aesthetic Values	-1	-1	-1	-1	-1	-1	-2	-1 ST	-1	-1
Recreational Opportunities	0	0	0	0	0	0	0	-1 ST	-1	-1
Transportation	-1 ST	0	-1	-1	-1	-1	-1	0	-1	-1
Public Health and Safety	0	0	0	0	0	0	-1	0	0	-1
Community Cohesion (Sense of Unity)	0	0	0	0	0	0	0	0	0	0
Community Growth and Development	0	0	0	0	0	0	0	0	0	0
Business and Home Relocations	0	0	0	0	0	0	0	0	0	0
Existing/Potential Land Use	-1	-1	-1	-1	-1	-1	0	0	0	-1
Controversy	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
B. Economic Effects										
Property Values	0	0	0	0	0	0	0	0	0	0
Tax Revenue	0	-1	-1	-1	-1	-1	0	0	0	-1
Public Facilities and Services	0	0	0	0	0	0	0	0	0	0
Regional Growth	0	0	0	0	0	0	0	0	0	0
Employment	0	0	0	0	0	0	0	0	0	0
Business Activity	0	0	-1	0	0	0	0	0	0	-1
Farmland/Food Supply	-1	0	-1	-1	-1	-1	0	0	0	-1
Commercial Navigation	-1	1	1	1	1	1	1	1	1	2
Flooding Effects	-1 ST	0	0	0	0	0	0	0	0	0

Energy Needs and Resources	0	0	0	0	0	0	0	0	0	0
C. Natural Resource Effects										
Air Quality	-1	-1	-1	-1	-1	-1	-1	-1	-1 ST	-1
Terrestrial Habitat	0	-1	-1	-1 ST/1 LT	-1 ST/1 LT	-1 ST/1 LT	0	-1 ST	0	-1 ST/1 LT
Wetlands	0	0	0	0	0	0	0	0	0	0
Aquatic Habitat	-1 ST	-1	0	0	0	0	0	-1 ST	-1	-1
Habitat Diversity and Interspersion	0	0	0	0	0	0	0	0	0	0
Biological Productivity	-1	-1	-1	-1 ST/1 LT	-1 ST/1 LT	-1 ST/1 LT	0	0	0	-1 ST/1 LT
Surface Water Quality	-1	0	0	0	0	0	0	0	0	0
Water Supply	0	0	0	0	0	0	0	0	0	0
Groundwater	0	0	0	0	0	0	0	0	0	0
Soils	0	0	0	0	0	0	0	0	0	0
Threatened and Endangered Species	0	0**	0**	0**	0**	0**	0	0**	0	0**
D. Cultural Resource Effects										
Historic Architectural Values	0	**	**	**	**	**	**	**	**	**
Prehistoric & Historic Archeological Values	0	**	**	**	**	**	**	**	**	**
Key*: +3 = Significant Beneficial, +2 = Substantial Beneficial, +1 = Minor Beneficial, 0 = No Effect, -1 = Minor Adverse, -2 = Substantial Adverse, -3 = Significant Adverse, ST = Short Term, LT = Long Term										
*An effect of "0" under an alternative plan indicates that conditions for that factor would be equal to those under the No-Action Alternative. If the no action alternative has an adverse effect (-1), but that effect doesn't change under an alternative, the effect of the alternative would be listed as "0".										
**Additional future review and compliance work is needed to accurately assess and ensure these effects.										

8.1. No Action

The no action alternative represents no change in the current management plan and represents continuing with dredging operations as they are currently being implemented as identified in the CMMP with potential environmental impacts discussed in the associated FEIS (USACE 1997) and supplemental NEPA documents. The use of the new Rolling Prairie Site in Pool 5 would a permanent placement option that has been included in a subsequent EA and is available for use

under the no action alternative. The practicability of using this site during the dredging season may depend on the urgency of dredging operations; moving material to this site would be inefficient and may not be expedient enough to maintain navigation in the event of an imminent channel closure condition.

If previously approved sites are not available when dredging is required, dredged material may need to be placed at non-designated placement sites. Non-designated placement sites can include temporarily placing dredged material in the aquatic main channel border areas (in-water placement). See section 5.2 for more information on the no action alternative.

The effects of using previously approved placement sites have been discussed in previous NEPA documents. Fundamentally, the effects of using the approved sites are those effects that have been occurring under current conditions. There would be no additional effects resulting from the continued use of the approved sites in the future under the no action alternative. The potential effects of using non-designated placement sites are different; however, and the focus of the no action alternative effects discussion and for the comparison to the Recommended Plan. Additionally, the likelihood of using non-designated sites is relatively low and there are many unknowns regarding the circumstances of using such sites. If non-designated sites are used in the future, additional environmental effects analyses would be conducted at that time.

8.1.1. SOCIOECONOMIC EFFECTS

Commercial Navigation. The no action alternative could have minor adverse effects on commercial navigation. Overall, the navigation channel would still be maintained, and closures would be unlikely but the inefficiencies of maintaining the channel would result in higher overall costs. However, deteriorated channel conditions (narrower or shallower than would typically be maintained) may result from the just-in-time dredging that would be likely when it is difficult to find material placement locations. The no action alternative would likely cause an increase in costs incurred by the federal government in operating and maintaining the channel in Lower Pool 4, but the extent of such an increase is unknown. In instances where placement sites are not available when dredging is required, temporary placement sites are used, which often leads to double handling the dredged material. Double handling can nearly double the expense of managing the material. Future unknown costs may be incurred for use of placement sites not owned by the federal government. Restoration of temporary placement sites may also be necessary, further increasing costs.

Noise and Aesthetics. The no action alternative would continue to have a recurring minor adverse impact on noise and aesthetics as dredging and near-by material placement would continue as identified in the 1997 CMMP EIS. If sites identified within the 1997 CMMP EIS are full, then there may be a temporary minor effect on both noise and aesthetics as there would be a need to find an additional placement site(s) for dredged material. Noise impacts from dredged material placement typically include noise created by machinery used to place and manipulate the material at the placement site, which could include dozers, loaders, and trucks. Trucks would also be expected at the West Newton Chute beneficial use placement site which offers material free for public use. Dredged material placement aesthetic effects are changes in the way a site looks compared to its present state. Following placement of dredged material, sites usually

maintain a sandy characteristic for a long time. There may be a temporary minor effect on noise and aesthetics in the event there is a need to do an emergency placement of dredged material. Under this emergency scenario, there may need to be dredged material placed on an agricultural field that is easily viewable by the community. At the conclusion of the emergency placement, material will be moved to an approved long-term placement site.

Agriculture and Land Use. The no action alternative may impact agricultural land; however, agricultural lands would likely be avoided. The no action alternative would rely on previously approved temporary non-agricultural placement sites. In the event of an emergency dredging situation, there may be a need to place on agricultural land within the project area if offered by willing sellers or if the Corps owned such lands. If needed, the need to use agricultural land stems from the idea that there are comparatively less environmental regulations associated with placing dredged material on agricultural land compared to other sensitive environmental areas. Due to this, there may be a minor adverse effect on land use due to the conversion of agricultural land to a dredged material placement site.

Controversy. Due to the potential need for emergency dredging within Pool 4, there may be a temporary minor adverse effect on controversy because converting agricultural land to a dredged material placement site would change how the land is being used and likely cause concerns in the community. Additionally, truck traffic needed to haul material to such a site may be controversial depending on the route.

Transportation. The effects to transportation under the no action alternative where the existing approved sites are in use would be no different than those experienced now. The no action alternative may have a temporary minor adverse effect on transportation if emergency placement is needed, but placement sites and haul routes are unknown under this scenario under the no action alternative. If needed, material may be transported to an unknown emergency placement site, which would likely involve truck movement that may strain infrastructure and exacerbate traffic concerns.

Flooding Effects. The no action alternative would have no effect on flooding in the event of emergency in water placement because the effective cross-section of the channel would be maintained (the material placed would be that removed from the channel).

8.1.2. NATURAL RESOURCE EFFECTS

Air Quality. The no action alternative would have a temporary, recurring, minor adverse effect on air quality, both of a similar scope, but likely in different locations within the pool.

Aquatic Habitat/Wetlands. Under the no action alternative, if emergency in-water placement of dredged material is needed, there could be a temporary adverse impact to aquatic habitat of the main channel border areas. There is no expected impact to wetlands as they will be avoided under the no action alternative.

Terrestrial Habitat. Under the no action alternative, there would be no measurable impacts to terrestrial habitat. Potential placement sites on agricultural land would typically provide negligible terrestrial habitat value.

Threatened and Endangered Species. While extremely rare, the three endangered mussel species; Higgins eye, sheepnose, and spectaclecase, are present in Pool 4 and could be present in locations considered for dredged material placement under emergency conditions. However, under the no action alternative, there would be no effects to threatened and endangered species as we would specifically avoid impacting the three federally endangered mussel species or other threatened and endangered species or adversely modifying their critical habitat. This would be achieved by conducting appropriate surveys to avoid such impacts by avoiding use of sites with these species. A rapid response to survey of potential placement sites has been successfully used in past rare occasions and is expected to be successful in the future. Although typically required for preparation of dredged material placement activities at newly acquired sites, tree clearing to facilitate placement of dredged material would not likely be required under an emergency placement scenario; thus no effects to the northern long-eared bat NLEB would be anticipated.

State-Listed Rare Species. Under the no action alternative, effects to state-listed rare species may occur if there is a need to do emergency placement of dredged material although the impacts are generally unknown. Avoidance of rare species would be implemented but disturbing their habitat with dredged material may have a minor adverse effect.

8.1.3. CULTURAL RESOURCE EFFECTS

Under the no action alternative, the Corps would continue to carry out cultural resources management activities, including supplemental analysis and coordination, on all channel maintenance and dredged material placement projects following the Section 106 process under the NHPA (Section 1, PL 89-665, as amended by PL 96-515).

8.2. Use of a Section 217(d) Agreement

The use of a Section 217(d) agreement, as described in Section 6.6, would involve placing dredged material at Carrels Site and/or the Wabasha Sand and Gravel Pit facilities from which the city of Wabasha would operate, maintain, process and manage the dredged material from the dredge cuts and the island transfer sites. This material management after placement at a facility would be the responsibly of the city; therefore, the effects of the dredged material movement up to and including placement at one of these facilities is addressed by this EA. However, it will be the responsibility of the city to obtain any needed permits or conduct any additional environmental review for management of the material after placement at one of the facilities.

The initial placement of dredged material at these sites under a Section 217(d) agreement would be essentially the same as that of the Corps' use of the Carrels facility as a transfer site, and the Wabasha Sand and Gravel Pit as a placement site. The effects of using the Carrells Site for dredged material placement were addressed in the CMMP. However, under the current DMMP,

the site is proposed for an expansion beyond that considered in the CMMP. Therefore, the effects of using the site, including the expansion, have been reevaluated and are discussed in Section 8.3. The environmental effects of placing dredged material at Carrels as a facility through a 217(d) agreement would be the same as those described in 8.3 and are not repeated here. In addition, the city and/or facility owner would be required to comply with federal, state and local laws pertaining to the facilities which will help to ensure that all applicable environmental requirements are met. Therefore, a separate assessment of the effects of a Section 217(d) agreement is not necessary at this time.

The effects of placement of dredged material at the Wabasha Sand and Gravel Pit were evaluated in a 2015 EA (USACE 2015), which addressed the effects of ongoing placement at this site. Activities at the Wabasha Sand and Gravel Pit facility would likely involve transporting, loading and placing dredged material in addition to other operation and maintenance tasks. Given the ongoing nature of this industrial mining facility, as described in the 2015 EA, the environmental effects of the facility continuing to accept Corps dredged material through a Section 217(d) arrangement are likely to be minimal and are similar to what was described in the EA. In addition, the city and/or facility owner would be required to comply with federal, state and local laws pertaining to the facilities which will help to ensure that all applicable environmental requirements are met.

The use of these sites by the city for the purpose of dredged material management could be conducted in the manner described here. However, the city is contemplating the development of a modern commercial port at the Carrels Site. While such a port would facilitate its use for dredged material management, the existence of a commercial port is not necessary for this purpose, which can be conducted as described in 6.3.3. Therefore, the development of a commercial port at Carrels is independent of its use under a Section 217(d) agreement.

8.3. Carrels Placement Site

The Carrels site, located on the northwest end of the City of Wabasha, Minnesota, is part of a proposed onshore transfer site capable of accepting dredged material placed hydraulically and mechanically. The site is identified in the approved CMMP with potential environmental impacts discussed in the associated FEIS (USACE 1997). The CMMP identifies use of the site for both mechanical and hydraulic placement. The site would be expanded from the CMMP to include the 9-acre area leading directly to the river to facilitate access to the site (CMMP and USACE 1997). Impacts would not be expected to be appreciably different, relative to the 1997 EIS, as this access corridor is elevated and generally disturbed.

Material would be brought into the site via Barge Route B-Leg 2 (Section 8.9). A temporary work platform would be constructed for use during material offloads. To utilize this site for any mechanical offloads, access dredging would be needed (See Section 8.9). For hydraulic placement, dredged material would be used to establish bermed settling basins to assist in containing and directing carriage water return to the river near the site.

The temporary work platform would consist of a "trench box" constructed in the water near shore on which the excavator would be placed and the area surrounding the box would then be backfilled with sand. The temporary work platform would typically be approximately 20 feet long (parallel to shoreline) by 6-feet deep, though dimensions may vary. The platform and sand would remain in place during use (typically about 30 days) and would be removed and the shoreline restored once work is complete.

New features for the use of Carrels in this DMMP that are the focus of discussion here are the 9-acre expansion and the access dredge cut, which is addressed in Section 8.9.

8.3.1. SOCIOECONOMIC EFFECTS

Commercial Navigation. The Carrels site is in close proximity to dredge cut areas in lower Pool 4 which is advantageous for efficiently moving dredged material off the river. Also, it is the only readily available option for mechanical transport of dredged material off the river on the Minnesota side and in the upper reaches of the study area. For these reasons, the use of the Carrels site, and its expansion, would provide a minor beneficial effect to commercial navigation through its use in maintaining the navigation channel.

Noise and Aesthetics. The use of this site would generate recurring increases in noise levels associated with heavy equipment when this site is actively being used and during access dredging. This may lead to recurring displacement of some wildlife species and a disturbance to residents in the area, with the closest resident being adjacent to the property. There would also be a minor adverse effect on aesthetics due to the island material being offloaded to the Carrels site.

Agriculture, Land Use, and Controversy. The Carrels site is private property and is not used for recreation or agriculture. The use of the site may have a recurring minor adverse effect on recreation in the surrounding area during access dredging and offloading of material (use of B-Leg 2). There would also be a minor adverse effect to land use as this site is currently not being used as a dredged material placement site. There could be a minor adverse effect on controversy when material is being moved in and out of this site because this location is within 1 mile of the local hospital. Conversion of the land from private agricultural to federally owned land would result in a loss of property tax revenue to Wabasha County

Transportation. Dredged material would likely be brought into the site via barge (B-Leg 2). Removal from the site would likely occur in a similar manner as to what occurs at the Wabasha Gravel Pit under current conditions. Impacts to transportation at the Carrels site are expected to be adverse but minor, but trucking impacts are discussed collectively in Section 8.7.

8.3.2. NATURAL RESOURCE EFFECTS

Hydrology. The use of the Carrels site would have no effect on the 1% annual exceedance probability (AEP) flood profile when material is offloaded to the site.

Aquatic Habitat/Wetlands. The use of the Carrels site would have a recurring minor adverse effect on aquatic habitat during construction/deconstruction of the temporary work platform. During the placement of material for the work platform, there would be a temporary increase in turbidity and suspended solids which could suppress phytoplankton productivity; however, this effect would be short term and localized. Benthos would be lost when material is placed for the temporary work platform but would likely recolonize these areas after work is completed.

For hydraulic placement of material, a containment and settling area would be constructed on the site so that suspended solid material can settle out of the carriage water effluent before it is returned to the river. This would ensure no effects to aquatic habitat would be expected from carriage water return. The hydraulic carriage water effluent that is discharged would be subject to specific water quality limitations and monitoring and reporting requirements outlined in the existing CWA Section 401 Water Quality Certification for dredged material placement at Carrels.

Terrestrial Habitat. The use of the Carrels site would result in additional sand being placed on the site and would have a minor adverse effect on terrestrial habitat. Debris and trees would be removed prior to placement of sand. Up to 15 acres of trees would need to be cleared. Herbaceous vegetation would be covered with sand.

Threatened and Endangered Species. The use of the Carrels site would have no effect on the federally listed eastern massasauga rattlesnake or the whooping crane because the site does not have habitat suitable for use by these species. While the rusty patched bumble bee occurs in the broader project area, it is not listed as occurring in this specific site in the USFWS Information for Planning and Consultation (IPaC) system. The site also does not contain ideal habitat for this species; for these reasons, the use of the site would not affect the bee at this time. Habitat available for the monarch butterfly may be limited here, and the project would not be expected to affect this species; however, additional survey work would be needed to assess potential impacts.

The in-water portion of the unloading platform could possibly serve as mussel habitat, however, mussel surveys near this location for the access channel resulted in no live mussels being collected, indicating that this area isn't providing suitable mussel habitat. Therefore, the use of the site would have no effect on the federally listed mussel species.

The proposed project may affect NLEB, but any resulting incidental take would not be prohibited under the ESA USFWS Programmatic Biological Opinion for the species. Over time, up to 15 acres of trees could be cleared as the landowner develops the site to accept additional material. Anticipated effects to the species from tree removal were consulted with USFWS, , through a Section 4(d) (16 U.S.C. §1533(d)) Rule Streamlined Consultation Form. In a response dated December 10, 2021, the USFWS acknowledged the Corps' consultation using the IPaC Determination Key and has concluded the consultation requirement has been met for NLEB (Appendix B). The effects determination for NLEB under the Programmatic Biological Opinion is valid for one year. Prior to work that may affect the NLEB, the Corps will review its existing ESA compliance and current site conditions to determine if additional consultation with the USFWS is required under Section 7 of the ESA, 16 U.S.C. §1533(d), and will undertake such

consultation as needed. To reduce potential impacts to NLEB, no tree clearing would occur between June 1 and August 15.

Although the bald eagle (*Haliaeetus leucocephalus)* is no longer protected under the ESA, it remains protected under the Bald and Golden Eagle Protection Act. If an eagle nest is discovered within proximity to the placement site, measures to avoid and minimize impacts to the eagles would be evaluated and incorporated into the project as necessary (in accordance with the National Bald Eagle Management Guidelines) and the action would be coordinated with the USFWS.

Prior to use of the site, another review of potential effects to federally listed threatened and endangered species would occur to ensure all impacts to these or any newly listed species are addressed.

State-Listed Rare Species. The project area does not contain suitable habitat for the seaside three-awn,cattail sedge, or timber rattlesnake; therefore, the Recommended Plan would have no effect on these species. Although timber rattlesnake occurs in the general area, habitat conditions at the site are not ideal for the species as it typically occurs in the bluffs within the county and less likely to occur in lowland areas such as the Carrels site. The use of the site may have a temporary effect on state-listed fish species, but fish would move out of the project area during access dredging and construction/deconstruction of a temporary work platform and return once work was completed. Recent mussel surveys conducted within the proposed access dredge cut only found a few individuals of common species reported. State-listed mussel species would not be affected by the project. Similar to that with federally listed species, an additional review of potential impacts to state listed species will occur prior to implementing actions that may affect them.

Air Quality. Dust generation at any placement site is expected to be negligible primarily due to the particle size of the material to be dredged. The operation of heavy equipment during access dredging, construction/deconstruction of temporary work platforms and placement of the dredged material would temporarily increase vehicle emissions and slightly degrade air quality in the immediate vicinity of the project area. However, impacts would be short term and recurring, but minor. Predicting the duration and frequency of these effects is difficult because they depend on the frequency of use which is unknown now. It would be reasonable to expect the duration and frequency to be similar to that described for trucking (Section 8.11).

Hazardous, Toxic and Radioactive Waste (HTRW). A Phase I Environmental Site Assessment (ESA) completed for the eastern portion of the Carrels site in January 2020 found no HTRW concerns for use of the site and there is no need for further examination of the site with a Phase II ESA. For the western portion of the Carrels site, a Phase 1 ESA report was completed in December 2014 and Phase 2 investigations in March 2015 showed that there were no apparent HTRW concerns; although there is some debris and material on the site (i.e. vehicles, barrels, bricks, construction materials, etc.) that would need to be removed.

8.3.3. CULTURAL RESOURCE EFFECTS

The Corps completed background research review of the proposed site. Carrels Site is an abandoned quarry excavated into the glacial terrace that is approximately 40 feet above the river. Vertical depth of the pit is between 30-40 feet deep. The eastern portion of the pit extends into the river, where mined terrace sediments were pushed or otherwise placed. Carrel's Site was identified to receive dredged material as early as the 1970s, as documented in the Corps GREAT I study (1980). Use of the pit was coordinated with the Minnesota State Historic Preservation Office (MNSHPO) and approved for use as of January 13, 1982. A portion of the northwest part of the pit was filled with dredged material in 1984. The site was again identified to receive dredged material in the Corps' 1997 CMMP.

Construction of the quarry would have obliterated any archaeological resources within the bounds of the gravel and sand excavations. There is no potential for intact, significant cultural resources to exist within the proposed placement site. Placement of dredged material within the pit has no potential to cause effects to historic properties. There is no horizontal expansion of the pit that would occur and dredged material would be mechanically placed and accessed from a riverside platform. A river closing structure was placed off the main channel adjacent to the pit; it has since been partially removed. Shipwrecks have not been recorded in the vicinity of the project area. The river closing structure has previously been notched and no additional tampering with this river training structure will occur as part of the project.

The Corps has implemented a programmatic agreement (PA) to cover proposed activities identified in the report and establish the process the Corps will follow for compliance with Section 106 and address any effects that cannot be fully determined in advance of the undertaking. Stipulations within the PA identify how the Corps will complete appropriate identification, evaluation, and consultation for the site prior to any activities associated with placement of dredged material. The PA is included as Appendix G.

8.4. Bean Field Placement Site

The site is about 4 acres, located on the northwest edge of the city of Wabasha, Minnesota. It is a small privately owned agricultural field immediately northwest of and adjacent to the federally owned Wabasha Gravel Pit. The land is privately owned, and the landowner has previously discussed the desire to sell after it has been mined for sand and gravel. Under the no action alternative, this site would not be used nor would it be affected.

8.4.1. SOCIOECONOMIC EFFECTS

Commercial Navigation. The route of Pipeline A currently includes sharp bends to avoid passing over this property to get to Wabasha Gravel Pit. Use of the Bean Field would reduce the length of Pipeline A, which could eliminate the need for a booster pump and its associated operational costs. This parcel combined with the northwest portion of the existing Wabasha Gravel Pit would provide sufficient capacity to manage the material from Chippewa Delta and

Reads Landing cuts that would be placed there and trucked away to upland placement sites prior to the next dredging season. Use of the Bean Field site would reduce the Corps' dredging costs and increase efficiency of ongoing management of the Wabasha Gravel Pit. This would result in a minor beneficial effect to commercial navigation.

Noise and Aesthetics. The use of this site would generate recurring increases in noise levels associated with heavy equipment when this site is actively being used. This may lead to recurring disturbance to residents in the area and the business as described below. In general, this area of Wabasha has a low residence density. Also, because it is adjacent to the Wabasha Gravel Pit, dredged material management activities in this vicinity are common and recurring. For these reasons, the impacts to noise levels, while adverse, are expected to be minor. However, use of this site may eliminate the need for an additional booster pump on Pipeline A, which would reduce noise levels at the location of a pump. The use of the Bean Field for dredged material management would have a minor adverse effect on aesthetics, relative to the current use of crops. If the area is mined and then filled with dredged material, this impact would be less. Under either scenario, the site would likely resemble that of the adjacent Wabasha Gravel Pit.

Business Activity. There is a private business, 5th Grant Boutique, located adjacent to the site. This business opened in 2017 and is a "locally owned boutique offering unique and affordable home and garden décor [with] vendors from all over Minnesota selling unique items…" (https://www.5thgrantboutique.com/). Increasing construction activity at the Bean Field site could have an adverse impact on the experience of customers shopping at this business as a result of increased noise. However, the frequency and level of noise expected is likely similar to that which exists now as a result of agricultural activities at the site. Therefore, adverse impacts to business activity because of the placement of dredged material at this site is expected to be minor at most, relative to current conditions.

Agriculture, Land Use, and Controversy. The Bean Field site is private property currently in agricultural row crops. Use of the site for dredged material placement now would have an adverse effect on agriculture. This would also be somewhat controversial, as conversion of agricultural lands in the project area is generally viewed unfavorably. However, the timing of use of the site is unknown, and the current landowner has expressed some intent to mine the site, presumably for aggregate. If acquisition occurs after mining, use of the site for dredged material placement would have no effect on agriculture. There would also be a temporary minor adverse effect to land use as this site is currently not being used as a dredged material placement site. Conversion of the land from private agricultural to federally owned land would result in a loss of property tax revenue to Wabasha County.

Transportation. Dredged material would likely be brought into the site via Pipeline A. Removal from the site would likely occur in a similar manner as to what occurs at the adjacent Wabasha Gravel Pit under current conditions. Impacts to transportation are expected to be adverse but minor at the Bean Field site, but trucking impacts are discussed collectively in Section 8.7.

8.4.2. NATURAL RESOURCE EFFECTS

Hydrology. The use of the Bean Field site would have no effect on the 1% AEP flood profile when material is offloaded to the site.

Aquatic Habitat/Wetlands. The use of this site would have no impact to aquatic habitat or wetlands as none are likely present on the site now. Prior to use of the site, a wetland assessment would be conducted and if avoiding wetlands in the future becomes impracticable due to capacity needs, the district will conduct a supplemental environmental analysis and prepare a Section 404(b)(1) evaluation before any wetland fill occurs. In addition, the district would mitigate for any unavoidable wetland impacts according to current policy at that time.

Terrestrial Habitat. The continued use of the Bean Field site to transfer dredged material would have a minor adverse effect on terrestrial habitat and associated wildlife and biological productivity. Such use would be limited to existing agricultural land, or a future mined area, which have limited value as terrestrial habitat. Cutting down trees is not being proposed at this time. Wildlife using this site now for feeding or other uses would be disturbed and displaced following conversion of the site for placement and transfer of dredged material. However, due to the proximity to Wabasha and the adjacent Wabasha Gravel Pit, wildlife use the Bean Field now is likely very limited, so impacts of this change are expected to be minor.

Threatened and Endangered Species. The use of the Bean Field site would have no effect on federally listed mussel species, the eastern massasauga rattlesnake, or the whooping crane, as the site does not have suitable habitat for these species. There would be no effect to the NLEB because no tree cutting would occur. Regarding the rusty patched bumble bee, the Bean Field does not occur within a High Potential Zone (USFWS 2021c), nor does the site have habitat suited to bee use. Because it is in row crops, it would not be useable for overwintering habitat. For these reasons, use of this site would have no effect on the bee. Habitat available for the monarch butterfly is also limited here, and the project would not be expected to affect this species.

Although the bald eagle (*Haliaeetus leucocephalus*) is no longer protected under the ESA, it remains protected under the Bald and Golden Eagle Protection Act. If an eagle nest is discovered within proximity to the placement site, measures to avoid and minimize impacts to the eagles would be evaluated and incorporated into the project as necessary (in accordance with the National Bald Eagle Management Guidelines), and the action would be coordinated with the USFWS.

Prior to use of the site, another review of potential effects to federally listed threatened and endangered species would occur to ensure all impacts to these or any newly listed species are addressed.

State-Listed Rare Species. The Bean Field site does not contain suitable habitat for the seaside three-awn, cattail sedge, or timber rattlesnake; therefore, its use would have no effect on these species. Timber rattlesnake typically occur in bluff areas within the county and are less likely to occur in lowland areas such as the Bean Field site. Similar to that with federally listed species,

an additional review of potential impacts to state listed species will occur prior to implementing actions that may affect them.

Air Quality. Dust generation at any placement site is expected to be negligible primarily due to the particle size of the material to be dredged. The operation of heavy equipment during placement and removal of the dredged material would temporarily increase vehicle emissions and slightly degrade air quality in the immediate vicinity of the project area. However, impacts would be short term and recurring, but minor. Predicting the duration and frequency of these effects is difficult because they depend on the frequency of use which is unknown now. It would be reasonable to expect the duration and frequency to be similar to that described for trucking (Section 8.11).

Hazardous, Toxic, and Radioactive waste (HTRW). Based on the results of a preliminary review of the Bean Field site, there appear to be no concerns with HTRW. A Phase I Environmental Site Assessment will be completed prior to real estate acquisition in accordance with ER 1165-2-132.

8.4.3. CULTURAL RESOURCE EFFECTS

The Corps completed background research on the proposed site and identified no historic properties. The area is currently being used for agricultural purposes. If historic properties are identified, avoidance and mitigation measures will be employed to ensure that any effects are minimized and that no significant or unmitigated impacts to historic properties occur. The Corps has implemented a programmatic agreement (PA) to cover proposed activities identified in the report and establish the process the Corps will follow for compliance with Section 106 and address any effects that cannot be fully determined in advance of the undertaking. Stipulations within the PA identify how the Corps will complete appropriate identification, evaluation, and consultation for the site prior to any activities associated with placement of dredged material.

8.5. Zumbro River Flats South Placement Site

To minimize adverse environmental effects, placement of dredged material would be limited as practicable to agricultural upland sites with no wetlands and limited tree cover. However, if avoiding wetlands becomes impracticable due to capacity needs, the district would at that time follow all wetland mitigation sequencing procedures (avoid, minimize, compensate) and prepare a Section 404(b)(1) evaluation as needed. To ensure cultural resources are adequately considered prior to placement of dredged material, USACE will follow the guidelines set forth in the DMMP PA (Appendix G) to address potential impacts to cultural resources.

Within the project area, it is anticipated that smaller sub areas (40-80 acres) would be filled incrementally until desired capacity is reached. If land is not being used for placement, it would remain in the same state that the land is currently in (i.e. agricultural row crop and wetland). Upon filling sub areas to capacity, the dredged material will be covered with topsoil and planted with native prairie grasses. The specific location identified for initial placement of dredged

material at the Zumbro River Flats South site has not been identified but will be approximately 75 acres in size, a typical area needed for an offload of an island transfer site. It is anticipated this area will be filled to capacity before other parcels are used; however, other areas within the Zumbro River Flats South site may need to be considered for initial placement of material as needed. Over the life of the plan most of the 215 acres of upland area identified at Zumbro River Flats South will be used for dredged material placement. Environmental effects of placing dredged material apply throughout the entire Zumbro River Flats South placement site under the constraints identified (i.e. upland agricultural land lacking wetlands with minimal tree clearing needed). If over the course of the project it is determined that the impacts of placing dredged material differ from what is described here, those affects will be reevaluated and additional environmental compliance documentation will be prepared and coordinated as required.

This EA evaluates the impacts generally associated with acquiring the approximately 270 acres from willing sellers for the purpose of placing dredged material over the course of the next 20 years. The anticipated environmental effects are described below; however, a detailed plan for the long-term use of this site has not been developed. A long-term land use management plan including detailed use of the site for placement and management of material may require additional analysis and NEPA documentation. Under the no action alternative, this site would not be used nor would it be affected.

8.5.1. SOCIOECONOMIC EFFECTS

Commercial Navigation. The use of this site would have a minor beneficial effect on commercial navigation by providing sufficient dredged material placement capacity to maintain the navigation channel in a timely manner.

Noise and Aesthetics. The use of the site would have recurring minor adverse effects on noise. Noise impacts from dredged material placement typically include noise created by machinery used to place and manipulate the material at the placement site, which could include dozers, loaders, and excavators. Trucks would also be expected to move material around the site on a regular basis. The use of the site would have minor adverse effects on aesthetics. Aesthetic effects typical of dredged material placement are changes in the way a site looks compared to its present state. Following placement of dredged material, sites usually maintain a sandy characteristic for a long time. The aesthetic character is also impacted by how high the dredged material is placed on the site, which is expected to vary along with annual variations in dredging need and beneficial use demand. Pile heights are also limited at some sites to the amount of space available and the angle of repose.

Agriculture, Land Use, and Controversy. The use of the site would have a recurring minor adverse effect on agriculture and land use as this location would eventually get converted from agricultural row crop to a dredged material placement site. Conversion of the land from private agricultural to federally owned land would result in a loss of property tax revenue to Wabasha County. There may be some controversy with the use of the site relating to the conversion of agricultural land to a dredged material placement site. However, this site would be purchased from willing sellers and would comprise less than 0.02% of the 128,000 acres of row crop agriculture present in Wabasha County. The district has coordinated with the U.S. Department of

Agriculture Natural Resources Conservation Service (USDA/NRCS) to convey impacts, including those to prime farmland (see Appendix B: Coordination and Correspondence). The USDA/NRCS determined that if the site is to be converted to a restored prairie, as planned of the site following dredged material placement occurs, there will be no irreversible conversion of important farmland to nonagricultural uses.

Transportation. Dredged material would likely be brought into the site via Trucking Leg-6 or Pipeline C. Impacts to transportation are expected to be adverse but minor at this site, and trucking impacts are discussed collectively in Section 8.7.

8.5.2. NATURAL RESOURCE EFFECTS

Hydrology. The Zumbro River Flats site is mostly within the Mississippi River 1% AEP floodplain but outside the floodway limits, and placement of dredged material at these locations would therefore have no effect on the 1% AEP flood profile.

Aquatic Habitat/Wetlands. The use of this site will have no impact to wetlands in the near term. If avoiding wetlands in the future becomes impracticable due to capacity needs, the district will conduct a supplemental environmental analysis and prepare a Section 404(b)(1) evaluation before the wetland is filled. In addition, the district would mitigate for any unavoidable wetland impacts according to current policy at that time. For hydraulic placement of dredged material on the site, there may be a need to discharge carriage water to the Zumbro River, if infiltration is insufficient to absorb all the carriage water. Carriage water would be contained in settlement basins to ensure that the return water contains Total Suspended Solid (TSS) levels that meet or exceed state water quality standards for the receiving waters. The current standard for TSS on the Zumbro River is 30 mg/L. This would minimize any impacts to aquatic habitat in the Zumbro River; impacts are expected to be minor or negligible.

Terrestrial Habitat. The use of the Zumbro River Flats South site would have a minor short term adverse effect but a minor long term beneficial effect on terrestrial habitat and associated wildlife and biological productivity. Under any alternative that uses this site, the majority of placement would be on existing agricultural land, which has limited value as terrestrial habitat. Wildlife using this placement site for feeding or other uses would be disturbed during and displaced following placement of dredged material. However, other agricultural lands found throughout the area would provide similar functions. These temporary impacts would occur yearly to meet the long-term needs for dredged material placement. Tree clearing to facilitate access is not anticipated. The Zumbro River Flats South site would likely be restored to native prairie after dredged material is placed providing minor long term beneficial effects to terrestrial habitat and associated wildlife at the site.

Threatened and Endangered Species. This site is large and its initial use for dredged material placement would generally be limited to areas currently in agricultural production. The Corps would avoid placing dredged material in areas where endangered species have been found or where they may be likely to occur.

Although typically required for preparation of dredge material placement activities at newly acquired sites, tree clearing to facilitate placement of dredged material will likely not be required for the use of this site, thus no effects to NLEB are anticipated.

Use of this site would not impact suitable habitat for freshwater mussels, including the Higgins eye, sheepnose, or spectaclecase. There is no suitable habitat for eastern massasauga rattlesnake on the site, so no effects to these species are expected. While the whooping crane may use wetlands, the wetlands on site would be avoided and the crane would be expected rarely in the area and if so, only during migration. While the site does fall within a high potential zone for the rusty patch bumble bee (USFWS 2021c), this species does not utilize row cropped agricultural lands to a great extent even though they may occasionally be found in such areas. Lands in row crops would not support nesting sites for the bee due to ground disturbance. For the bee, the Corps has determined that the use of this site may affect but is not likely to adversely affect the species. In a response dated December 10, 2021, the USFWS concurs with this determination (Appendix B). Habitat available for the monarch butterfly is limited here, even though it may occur in patches within the site those areas could be avoided and the project would not be expected to affect this species. Eventual restoration of the site to native prairie would have a minor beneficial effect to the bumble bee and the butterfly in the long term.

Although the bald eagle (*Haliaeetus leucocephalus*) is no longer protected under the ESA, it remains protected under the Bald and Golden Eagle Protection Act If an eagle nest is discovered within proximity to the placement site, measures to avoid and minimize impacts to the eagles would be evaluated and incorporated into the project as necessary (in accordance with the National Bald Eagle Management Guidelines), and the action would be coordinated with the USFWS.

Prior to use of the site, another review of potential effects to federally listed threatened and endangered species would occur to ensure all impacts to these or any newly listed species are addressed.

State-Listed Rare Species. Potential State of Minnesota-listed species were identified from information available in the Minnesota Natural Heritage Database (MNHD). Locations of the new proposed placement sites were compared to available MNHD data within ArcView GIS to identify the presence of potential state-listed species. This list was filtered to those species that could potentially be present at the proposed new placement areas. Minnesota species of concern are listed in Table 3.

Because this site is upland, the assessment of state-listed rare species focused on terrestrial and wetland species. Currently, the site is primarily agricultural land or previously disturbed and would not be expected to serve as primary habitat for state-listed species. No suitable terrestrial or wetland habitat would be impacted by the acquisition and use of this site. However, two state listed turtle species, Blanding's and wood turtle occur adjacent to the site along the Zumbro River and the sandy nature of the site once filled with dredged material, could create desirable nesting conditions for state listed turtle species. Similar to that with federally listed species, an additional review of potential impacts to these species will occur prior to implementing actions that may affect them and best management practices and avoidance measures such as providing

turtle and wildlife pipeline crossings and fencing could be implemented to prevent impacts to state-listed turtle species. Once the site has been filled to capacity and likely restored to native prairie, it will provide better turtle habitat than currently exists and there would be a long-term beneficial impact to turtle species.

Air Quality. Dust generation at any placement site is expected to be negligible primarily due to the particle size of the material to be dredged. The operation of heavy equipment placement and movement of the dredged material would temporarily increase vehicle emissions and slightly degrade air quality in the immediate vicinity of the project area. The impacts would be recurring and minor, though predicting the duration and frequency of these effects is difficult. It would be reasonable to expect the duration and frequency to be similar to that described for trucking (Section 8.11), but there would be additional work preparing a site, moving material, and stabilizing it with topsoil and planting.

Hazardous, Toxic, and Radioactive waste (HTRW). Based on the results of a preliminary review of the Zumbro River Flats South site, there appear to be no concerns with HTRW. A Phase I Environmental Site Assessment will be completed prior to real estate acquisition in accordance with ER 1165-2-13.

8.5.3. CULTURAL RESOURCE EFFECTS

The bulk of this area is within the historic Zumbro River and Mississippi River floodplain. Prior to improvements to the Zumbro River where its channel was straightened, the Zumbro River meandered across its floodplain with wetlands, lakes, ponds, and side channels. The exact paths of the river's migration have not been determined, nor have the timing of meandering events been ascertained. Today, the area is used for agricultural purposes. The Corps completed background research of this area and identified no historic properties. If historic properties are identified, avoidance and mitigation measures will be employed to ensure that any effects are minimized and that no significant or unmitigated impacts to historic properties occur. The Corps has implemented a programmatic agreement (PA) to cover proposed activities identified in the report and establish the process the Corps will follow for compliance with Section 106 and address any effects that cannot be fully determined in advance of the undertaking. Stipulations within the PA identify how the Corps will complete appropriate identification, evaluation, and consultation for the site prior to any activities associated with placement of dredged material. The PA is included as Appendix G.

8.6. Zumbro River Flats North Placement Site

The site is an 80-acre site located ½ mile north of the Zumbro River Flats South site and 6.5 miles south of Wabasha and immediately south of County Road 24. The site is currently being used as agricultural row crops but does contain 8 acres of wetland.

To minimize adverse environmental effects, placement of dredged material would be limited as practicable to agricultural upland sites with no wetlands and limited tree cover (about 72 acres). However, if avoiding wetlands becomes impracticable due to capacity needs, the district would at that time follow all wetland mitigation sequencing procedures (avoid, minimize, compensate) and prepare a Section 404(b)(1) evaluation as needed. To ensure cultural resources are adequately considered prior to placement of dredged material, USACE will follow the guidelines set forth in the DMMP PA (Appendix G) to address potential impacts to cultural resources.

Within the project area, it is anticipated that smaller sub areas (20-40 acres) would be filled incrementally until desired capacity is reached. If land is not being used for placement, it would remain in the same state that the land is currently in (i.e. agricultural row crop and wetland). Upon filling sub areas to capacity, the dredged material will be covered with topsoil and planted with native prairie grasses. The specific location identified for initial placement of dredged material at the Zumbro River Flats North site has not been identified but would be approximately 20-40 acres in size, though it could be as much as the full 72 acres, a typical area needed for an offload of an island transfer site. Over the life of the plan most of the 72 acres of upland area identified at Zumbro River Flats North would be used for dredged material placement. Environmental effects of placing dredged material apply throughout the entire Zumbro River Flats North placement site under the constraints identified (i.e. upland agricultural land lacking wetlands with minimal tree clearing needed). If over the course of the project it is determined that the impacts of placing dredged material differ from what is described here, those affects will be reevaluated and additional environmental compliance documentation will be prepared and coordinated as required.

This EA evaluates the impacts generally associated with acquiring the approximately 80 acres from a willing seller and of placing dredged material over the course of the next 20 years. The anticipated environmental effects are described below; however, a detailed plan for the long-term use of this site has not been developed. A long-term land use management plan including detailed use of the site for placement and management of material may require additional analysis and NEPA documentation. Under the no action alternative, this site would not be used nor would it be affected.

8.6.1. SOCIOECONOMIC EFFECTS

Commercial Navigation. The use of this site would have a minor beneficial effect on commercial navigation by providing sufficient dredged material placement capacity to maintain the navigation channel in a timely manner.

Noise and Aesthetics. The use of the site would have temporary but recurring minor adverse effects on noise. Noise impacts from dredged material placement typically include noise created by machinery used to place and manipulate the material at the placement site, which could include dozers, loaders, and excavators. Trucks would also be expected to move material around the site on a regular basis. The use of the site would have minor adverse effects on aesthetics. Aesthetic effects typical of dredged material placement are changes in the way a site looks compared to its present state. Following placement of dredged material, sites usually maintain a sandy characteristic for a long time. The aesthetic character is also impacted by how high the dredged material is placed on the site, which is expected to vary along with annual variations in dredging need and beneficial use demand. Pile heights are also limited at some sites to the amount of space available and the angle of repose. Typical slopes at dredged material placement sites are 1V:3H.

Agriculture, Land Use, and Controversy. The use of the site would have a recurring minor effect on agriculture, land use, and controversy as the location of the site is adjacent to County Road 24. The details of the short and long-term use of this site have not been developed, but the appropriate environmental compliance issues would be in place prior to any placement.

Transportation. Dredged material would likely be brought into the site via Trucking Leg-5. Impacts to transportation are expected to be adverse but minor at this site, but trucking impacts are discussed collectively in Section 8.7.

Hydrology. The site is non-effective flow area located within the Mississippi River 1% AEP floodplain. Placement of dredged material at these locations would therefore have no effect on the 1% AEP flood profile.

8.6.2. NATURAL RESOURCE EFFECTS

Aquatic Habitat/Wetlands. The use of this site would have no impact to wetlands in the near-term. If avoiding wetlands in the future becomes impracticable due to capacity needs, the district will conduct a supplemental environmental analysis and prepare a Section 404(b)(1) evaluation before the wetland is filled. In addition, the district would mitigate for any unavoidable wetland impacts according to current policy at that time.

Terrestrial Habitat. The use of this site would have a minor short term adverse effect but a minor long term beneficial effect on terrestrial habitat and associated wildlife and biological productivity. Under any alternative that uses this site, the majority of placement would be on existing agricultural land, which has limited value as terrestrial habitat. Wildlife using this placement site for feeding or other uses would be disturbed during and displaced following placement of dredged material. However, other agricultural lands found throughout the area would provide similar functions. These temporary impacts would occur yearly to meet the long-term needs for dredged material placement. Tree clearing to facilitate access is not anticipated. The Zumbro River Flats North site will would likely be restored to native prairie after dredged material is placed providing minor long term beneficial effects to terrestrial habitat and associated wildlife at the site.

Threatened and Endangered Species. This site is large and its initial use for dredged material placement would generally be limited to areas currently in production agriculture with a few small stands of mature trees present that would likely remain in place. The Corps would avoid placing dredged material in areas where endangered species have been found or where they may be likely to occur.

Although typically required for preparation of dredge material placement activities at newly acquired sites, tree clearing to facilitate placement of dredged material will likely not be required for the use of this site, thus no effects to NLEB are anticipated.

There is no suitable habitat for freshwater mussels, including the Higgins eye, sheepnose, or spectaclecase that would be impacted under the use of the site. There is no suitable habitat for eastern massasauga rattlesnake that exists on the site, so there are no effects to these species expected. While the whooping crane may use wetlands, the wetlands on site would be avoided and the crane would rarely be expected in the area and if so, only during migration. While the site does fall within a high potential zone for the rusty patch bumble bee (USFWS 2021c), this species does not utilize row cropped agricultural lands to a great extent even though they may occasionally be found in such areas. Lands in row crops would not support nesting sites for the bee due to ground disturbance. For the bee, the Corps has determined that the use of this site may affect, but is not likely to adversely affect the species. In a response dated December 10, 2021, the USFWS concurs with this determination (Appendix B). Habitat available for the monarch butterfly is limited here, even though it may occur in patches within the site those areas could be avoided and the project would not be expected to affect this species. Eventual restoration of the site to native prairie would have a minor beneficial effect to bumble bee and the butterfly in the long term.

Although the bald eagle (*Haliaeetus leucocephalus*) is no longer protected under the ESA, it remains protected under the Bald and Golden Eagle Protection Act. There is a stand of a few larger mature trees approximately in the center of the property with an inactive bald eagle nest that may either be a practice or new nest being established or it was abandoned prior to completion. The nest was observed in late January 2022 and was inactive and appears undersized from typical nests and likely unable to be used by eagles for nesting. However, if the eagle nest is active prior to use of the site, measures to avoid and minimize impacts to the eagles would be evaluated and incorporated into the project as necessary (in accordance with the National Bald Eagle Management Guidelines), and the action would be coordinated with the USFWS.

Prior to use of the site, another review of potential effects to federally listed threatened and endangered species would occur to ensure all impacts to these or any newly listed species are addressed.

State-Listed Rare Species. Potential state of Minnesota listed species were identified from information available in the Minnesota Natural Heritage Database (MNHD). Locations of the new proposed placement sites were compared to available MNHD data within ArcView GIS to identify the presence of potential state-listed species. This list was filtered to those species that

could potentially be present at the proposed new placement areas. Minnesota species of concern are listed in Table 3.

Because this site is upland, the assessment of state-listed rare species focused on terrestrial and wetland species. The site is primarily agricultural land or previously disturbed and would not be expected to serve as primary habitat for state-listed species. No suitable terrestrial or wetland habitat would be impacted by the acquisition and use of this site. However, two state listed turtle species, Blanding's and wood turtle occur adjacent to the site along the Zumbro River and the sandy nature of the site once filled with dredged material, could create desirable nesting conditions for state listed turtle species. Similar to that with federally listed species, an additional review of potential impacts to these species will occur prior to implementing actions that may affect them and best management practices and avoidance measures such as providing turtle and wildlife pipeline crossings and fencing could be implemented to prevent impacts to state-listed turtle species. Once the site has been filled to capacity and likely restored to native prairie, it will provide better turtle habitat than currently exists and there would be a long-term beneficial impact to turtle species.

Air Quality. Dust generation at any placement site is expected to be negligible primarily due to the particle size of the material to be dredged. The operation of heavy equipment during placement and movement of the dredged material would temporarily increase vehicle emissions and slightly degrade air quality in the immediate vicinity of the project area. The impacts would be recurring and minor though predicting the duration and frequency of these effects is difficult. It would be reasonable to expect the duration and frequency to be similar to that described for trucking (Section 8.11), but there would be additional work preparing a site, moving material, and stabilizing it with topsoil and planting.

Hazardous, Toxic, and Radioactive waste (HTRW). Based on the results of a preliminary review of the Zumbro River Flats North site, there appear to be no major concerns with HTRW. Phase I and Phase II Environmental Site Assessments will be completed prior to real estate acquisition in accordance with ER 1165-2-132.

8.6.3. CULTURAL RESOURCE EFFECTS

Similar to the Zumbro River Flats area, the Zumbro River Flats North area is also within the historic floodplain of the Zumbro River. The Corps completed background research of this area and identified no historic properties. If historic properties are identified, avoidance and mitigation measures will be employed to ensure that any effects are minimized and that no significant or unmitigated impacts to historic properties occur. The Corps has implemented a programmatic agreement (PA) to cover proposed activities identified in the report and establish the process the Corps will follow for compliance with Section 106 and address any effects that cannot be fully determined in advance of the undertaking. Stipulations within the PA identify how the Corps will complete appropriate identification, evaluation, and consultation for the site prior to any activities associated with placement of dredged material. The PA is included as Appendix G.

8.7.G-1 Placement Site

The G-1 site is a 52-acre site located on the northeast bank of the Zumbro River south and west of Township Road T-85 and approximately 2.5 miles east of TH 61 at Kellogg, Minnesota. About 25 acres are useable for dredged material placement due to the presence of forest and wetlands, but the site is also valuable as a potential endpoint for Pipeline C. The site could hold approximately 600,000 CY of dredged material.

To minimize adverse environmental effects, placement of dredged material would be limited as practicable to agricultural upland sites with no wetlands and limited tree cover. However, if avoiding wetlands becomes impracticable due to capacity needs, the district would at that time follow all wetland mitigation sequencing procedures (avoid, minimize, compensate) and prepare a Section 404(b)(1) evaluation as needed. To ensure cultural resources are adequately considered prior to placement of dredged material, USACE will follow the guidelines set forth in the DMMP PA (Appendix G) to address potential impacts to cultural resources

This EA evaluates the impacts generally associated with acquiring the property for the purpose of placing dredged material over the course of the next 20 years. The anticipated environmental effects are described below; however, a detailed plan for the long-term use of this site has not been developed. A long-term land use management plan including detailed use of the site for placement and management of material may require additional analysis and NEPA documentation. Under the no action alternative, this site would not be used nor would it be affected.

8.7.1. SOCIOECONOMIC EFFECTS

Commercial Navigation. The use of this site would have a minor beneficial effect on commercial navigation by providing sufficient dredged material placement capacity to maintain the navigation channel in a timely manner.

Noise and Aesthetics. The use of the site would have recurring minor adverse effects on noise. Noise impacts from dredged material placement typically include noise created by machinery used to place and manipulate the material at the placement site, which could include dozers, loaders, and excavators. Trucks would also be expected to move material around the site on a regular basis. The use of the site would have minor adverse effects on aesthetics. Aesthetic effects typical of dredged material placement are changes in the way a site looks compared to its present state. Following placement of dredged material, sites usually maintain a sandy characteristic for a long time. The aesthetic character is also impacted by how high the dredged material is placed on the site, which is expected to vary along with annual variations in dredging need and beneficial use demand. Pile heights are also limited at some sites to the amount of space available and the angle of repose. Typical slopes at dredged material placement sites are 1V:3H.

Agriculture, Land Use, and Controversy. The use of the site would have a recurring minor adverse effect on agriculture and land use as this location would eventually be converted from agricultural row crop to a dredged material placement site. Conversion of the land from private

agricultural to federally-owned land would result in a loss of property tax revenue to Wabasha County. There may be some controversy with the use of the site related to the conversion of agricultural land to a dredged material placement site. The district has coordinated with the USDA-NRCS to convey impacts, including those to prime farmland (see Appendix B: Coordination and Correspondence). The USDA/NRCS determined that if the site is to be converted to a restored prairie, as planned for the site following dredged material placement, there will be no irreversible conversion of important farmland to nonagricultural uses.

Transportation. Dredged material would likely be brought into the site via Pipeline C. Impacts to transportation are expected to be negligible at this site unless trucking is used to bring material here. In that case, there would be a minor adverse effect to transportation. Trucking impacts are discussed collectively in Section 8.7.

8.7.2. NATURAL RESOURCE EFFECTS

Hydrology. The G-1 site is mostly within the Mississippi River 1% AEP floodplain but outside the floodway limits, and placement of dredged material at this location would therefore have no effect on the 1% AEP flood profile.

Aquatic Habitat/Wetlands. The use of this site would have no impact to wetlands in the near-term. If avoiding wetlands in the future becomes impracticable due to capacity needs, the district will conduct a supplemental environmental analysis and prepare a Section 404(b)(1) evaluation before the wetland is filled. In addition, the district would mitigate for any unavoidable wetland impacts according to current policy at that time. For hydraulic placement of dredged material on the site, there may be a need to discharge carriage water to the Zumbro River, if infiltration is insufficient to absorb all the carriage water. Carriage water would be contained in settlement basins to ensure that the return water contains Total Suspended Solid (TSS) levels that meet or exceed state water quality standards for the receiving waters. The current standard for TSS on the Zumbro River is 30 mg/L. This would minimize any impacts to aquatic habitat in the Zumbro River; impacts are expected to be minor or negligible.

Terrestrial Habitat. The use of the G1 site would have a minor short term adverse effect but a minor long-term beneficial effect on terrestrial habitat and associated wildlife and biological productivity. The majority of material placement would be on existing agricultural land, which has limited value as terrestrial habitat. Wildlife using this placement site for feeding or other uses would be disturbed during and displaced following placement of dredged material. However, other agricultural lands found throughout the area would provide similar functions. These temporary impacts would occur yearly to meet the long-term needs for dredged material placement. Tree clearing to facilitate use is not anticipated. The site would likely be restored to native prairie after dredged material is placed providing minor long-term beneficial effects to terrestrial habitat and associated wildlife at the site.

Threatened and Endangered Species. This site is large and its initial use for dredged material placement would generally be limited to areas currently in production agriculture. The Corps would avoid placing dredged material in areas where endangered species have been found or where they may be likely to occur.

Although typically required for preparation of dredge material placement activities at newly acquired sites, tree clearing to facilitate placement of dredged material will likely not be required for the use of this site, thus no effects to NLEB are anticipated.

There is no suitable habitat for freshwater mussels, including the Higgins eye, sheepnose, or spectaclecase that would be impacted under the use of the site. No suitable habitat for eastern massasauga rattlesnake exists on the site, so no effects to this species are expected. While the whooping crane may use wetlands, the wetlands on site would be avoided and the crane would rarely be expected in the area and if so, only during migration. While the site does fall within a high potential zone for the rusty patch bumble bee (USFWS 2021c), this species does not utilize row cropped agricultural lands to a great extent even though they may occasionally be found in such areas. Lands in row crops would not support nesting sites for the bee due to ground disturbance. For the bee, the Corps has determined that the use of this site may affect but is not likely to adversely affect the species. In a response dated 10 December 2021, the USFWS concurs with this determination (Appendix B). Habitat available for the monarch butterfly is limited here, even though it may occur in patches within the site those areas could be avoided and the project would not be expected to affect this species.

Although the bald eagle (*Haliaeetus leucocephalus*) is no longer protected under the ESA, it remains protected under the Bald and Golden Eagle Protection Act. If an eagle nest is discovered within proximity to the placement site, measures to avoid and minimize impacts to the eagles would be evaluated and incorporated into the project as necessary (in accordance with the National Bald Eagle Management Guidelines), and the action would be coordinated with the USFWS.

Prior to use of the site, another review of potential effects to federally listed threatened and endangered species would occur to ensure all impacts to these or any newly listed species are addressed.

State-Listed Rare Species. Potential State of Minnesota-listed species were identified from information available in the Minnesota Natural Heritage Database (MNHD). Locations of the new proposed placement sites were compared to available MNHD data within ArcView GIS to identify the presence of potential State listed species. This list was filtered to those species that could potentially be present at the proposed new placement areas. Minnesota species of concern are listed in Table 3.

Because this site is upland, the assessment of state-listed rare species focused on terrestrial and wetland species. Areas of this site proposed for use are primarily agricultural and would not be expected to serve as primary habitat for state-listed species. However, two state listed turtle species, Blanding's and wood turtle occur adjacent to the site along the Zumbro River and the sandy nature of the site once filled with dredged material, could create desirable nesting conditions for state listed turtle species. Similar to that with federally listed species, an additional review of potential impacts to these species will occur prior to implementing actions that may affect them and best management practices and avoidance measures such as providing turtle and wildlife pipeline crossings and fencing could be implemented to prevent impacts to

state-listed turtle species. Once the site has been filled to capacity and likely restored to native prairie, it will provide better turtle habitat than currently exists and there would be a long-term beneficial impact to turtle species.

Air Quality. Dust generation at any placement site is expected to be negligible primarily due to the particle size of the material to be dredged. The operation of heavy equipment placement and movement of the dredged material would temporarily increase vehicle emissions and slightly degrade air quality in the immediate vicinity of the project area. The impacts would be recurring and minor though predicting the duration and frequency of these effects is difficult. It would be reasonable to expect the duration and frequency to be similar to that described for trucking (Section 8.11), but there would be additional work preparing a site, moving material, and stabilizing it with topsoil and planting.

Hazardous, Toxic, and Radioactive waste (HTRW). Based on the results of a preliminary review of the G-1 site, there appear to be no concerns with HTRW. A Phase I Environmental Site Assessment will be completed prior to real estate acquisition in accordance with ER 1165-2-132.

8.7.3. CULTURAL RESOURCE EFFECTS

The Corps completed background research for this proposed activity. No historic properties were identified. The bulk of this area is within the historic Zumbro River floodplain. Prior to improvements to the Zumbro River where its channel was straightened, the Zumbro River meandered across its floodplain with wetlands, lakes, ponds, and side channels. The exact paths of the river's migration have not been determined, nor have the timing of meandering events been ascertained. Today, the area is used for agricultural purposes.

If historic properties are identified, avoidance and mitigation measures will be employed to ensure that any effects are minimized and that no significant or unmitigated impacts to historic properties occur. The Corps has implemented a programmatic agreement (PA) to cover proposed activities identified in the report and establish the process the Corps will follow for compliance with Section 106 and address any effects that cannot be fully determined in advance of the undertaking. Stipulations within the PA identify how the Corps will complete appropriate identification, evaluation, and consultation for the site prior to any activities associated with placement of dredged material. The PA is included as Appendix G.

8.8. Truck Transportation Routes

The truck transportation routes discussed in the following paragraphs describe the moving of material between temporary and long-term placement sites. There are a total of seven different truck legs that make up the Recommended Plan of which one, T-Leg 7 West Newton Chute to Rolling Prairie, has been previously evaluated with NEPA documentation (see Table 19 and Table 20). The effects of using T-Leg 7 here are the same as those previously evaluated. The use

of the other legs would not occur under the no action alternative and would have no effects. Additional truck transportation details can be found in Appendix A: Traffic Impact Analysis. The environmental effects analysis addresses the movement of material between placement sites of the six trucking legs. Its anticipated trucking effects are similar among legs and are collectively evaluated here.

8.8.1. SOCIOECONOMIC EFFECTS

Commercial Navigation. None of the trucking legs would have an adverse impact on commercial navigation, but their use would have a minor beneficial effect to commercial navigation as a result of their contribution to maintaining the navigation channel.

Noise and Aesthetics. All trucking legs would include a recurring substantial adverse impact on noise and aesthetics at and between transfer and placement sites described in their routes.

The proposed plan is anticipated to result in an estimated 286 to 380 round trips each day with each truck carrying 12 to 20 cubic yards of sand when transporting up to 135,000 cubic yards per year, on average, from one of the designated transfer sites to one of the placement sites. An estimated 24 to 30 workdays of hauling would be needed to move 135,000 CY. If Pipeline C is not available and material from island transfer site offloads moves through Wabasha Gravel Pit (WGP) or Carrels, an additional 21 to 27 workdays would be needed to haul 120,000 CY per year, on average. It was assumed that all truck trips would occur within the time window of 7 a.m. to 5 p.m. (10 hours). Assuming a consistent arrival/departure rate of 2.1 minutes results in an estimate of 29 trips entering and leaving a site (for example, entering and leaving the Wabasha Gravel Pit, and entering and leaving Zumbro River Flats North) each hour when using 20 CY capacity trucks. For more detail, see Appendix A. Trucking could be accomplished any time during the year. These trucking operations are subject to operational flexibility by the Corps and could vary from what is described here, though it is expected that impacts would not occur over more than 180 days per year. Corps-funded trucking operations will be briefed in advance via public notice to the general public and local government leadership. Public removal of dredged material from designated sites would have similar or lower effects to those discussed for placement.

Agriculture, Land use, and Controversy. All trucking legs would have no impact on the agriculture and land use. There could be a minor adverse effect on controversy as there would be increased truck traffic in locations where such traffic is now minimal (portions of T-Legs 4, 5 and 6). Dredged material would move to/from their described sites and there would be no deviation from the set path.

Transportation. Trucking of material under any of the Transportation Legs under the Recommended Plan would result in a minor increase in truck traffic overall, but a substantial increase in locations along T-Legs 4, 5 and 6 that currently experience limited truck traffic. Overall, the impact to transportation is expected to be adverse but minor. Additional truck traffic on anticipated routes is likely to increase congestion in those locations; therefore, there may be an increased risk of vehicle collisions. Increased truck traffic would also likely increase wear and tear on the route. Impacts would occur during periods when material is relocated from one

placement site to another and may vary from what is described above in noise and aesthetics, but likely would not occur for more than 180 days per year. Public removal of dredged material from designated sites would have similar or lower effects to those discussed for placement. Additional discussion of trucking impacts can be found Section 8.11.

Public Health and Safety. In general, the increase in truck traffic may result in an increased risk of vehicle collisions simply due to the higher volume of traffic. This would result in an associated adverse impact to public safety. Because the increase in traffic volume would not be substantial and because reduced conflict intersections were installed in 2019 (TH 61 at CR 30, TH 61 at Shields Ave, and TH 61 at TH 60 – See Appendix A), the adverse impact to public safety is expected to minor.

8.8.2. NATURAL RESOURCE EFFECTS

Air Quality. All trucking transportation legs would have temporary, minor adverse effects to air quality. Emissions would be generated by increased truck traffic in the study area during periods when trucks are transporting sand to and from the two placement sites.

Hydrology, Aquatic Habitat, Wetlands, Terrestrial Habitat, Endangered Species. The trucking transportation routes are not expected to have additional impacts to hydrology, aquatic habitat, wetlands, terrestrial habitat, or endangered species.

8.8.3. CULTURAL RESOURCE EFFECTS

In general, historic properties would not be affected by truck transportation. However, review of the routes may be necessary, and application of Section 106 procedures may be required. Avoidance and mitigation measures will be employed if necessary, to ensure that any effects are minimized and that no significant or unmitigated impacts to historic properties occur.

8.9. Pipeline C Transportation Route

Pipeline C: Lock and Dam 4 Embankment To Zumbro River Flats South. Pipeline C is a temporary pipeline that would be installed approximately once every 10 years and used in 2 consecutive years. Material would be excavated from the island transfer sites and barged to the head of Pipeline C. There the material would be mixed with water and pumped through Pipeline C to the Zumbro River Flats South placement site, G-1, or Rolling Prairie. The anticipated pipeline route would extend from the Mississippi River, along and across the Dam 4 embankment, south over USFWS property, and follow township road rights-of-way to the Zumbro River Flats South, G-1 or Rolling Prairie properties, but the exact route and distance of pipeline has yet to be determined. Diesel fuel operated booster pumps would be placed on a reinforced concrete pad on the embankment and near the point where the pipeline leaves the river. Some tree clearing would be required where the pipeline leaves the river, over a length of about 250 feet. The portion of the pipeline on the river would be located on the UMR National

Wildlife and Fish Refuge. Pipeline C would not be used under the no action alternative and would have no effects.

8.9.1. SOCIOECONOMIC EFFECTS

Commercial Navigation. The pipeline would result in a beneficial effect to commercial navigation. The use of a pipeline would reduce the need for double handling of dredged material which would reduce the costs of supporting the navigation system in the area.

Noise, Aesthetics, and Recreation. The proposed action would result in a temporary recurring, minor adverse impact on noise and aesthetics during installation and use. The pump and barge activity at the head of the pipe near the embankment and that from a booster pump likely located where the pipe leaves the river would be the most notable sources of noise. The nearest noise receptors to the head of the pipeline are residences nearly 0.75 miles to the west. However, the booster pumps may be located much closer. Measures to mitigate any potential adverse noise effects can include mufflers on the equipment and sound dampening walls around the equipment. The proposed action would likely have a minor adverse effect on the aesthetics along the proposed pipeline route, especially where it crosses the Mississippi River backwaters. Impacts to recreation in the Mississippi River would be minimized by submerging the pipeline where it may interfere with boat traffic, though there may still be some minor adverse effects to recreation due to the effect on aesthetics and noise during operation.

Agriculture, Land use, and Controversy. Most of the proposed pipeline route is located on public lands and existing road rights-of-way. There would be no changes to existing land use or agricultural lands. There may be some potential for controversy due to the pipeline being located on the Refuge. However, the USFWS has finalized a Compatibility Determination (CD) for dredged material transport in the project area. The CD was posted for public review and comment on the refuge website from September 11 to September 26, 2021, and finalized by the refuge manager and Region 3 chief in October 2021. The determination is that this use is compatible with the purpose of the Refuge, with some stipulations which would be adhered to.

Transportation. The installation and use of the pipeline are not anticipated to impact transportation due to its location.

8.9.2. NATURAL RESOURCE EFFECTS

Hydrology, Aquatic Habitat, Wetlands, Terrestrial Habitat. The pipeline would have a temporary minor adverse effect on aquatic environments during the setup and installation along the pipeline route. The proposed project could have a minor adverse impact on the terrestrial habitat in sections that are above ground, due to vegetation disturbance, tree clearing, and the potential of obstructing wildlife's natural paths. To mitigate adverse effects to wildlife movement, the pipeline would have sections elevated approximately 18 inches off the ground to allowing crossing under the pipe for animals such as turtles to cross. A temporary bridge or floating pipeline arrangement would be used to cross the Zumbro River to reduce impacts to waters and ensure no permanent impacts occur for pipeline usage. Tree cutting would be minimized, though some would be required along

the pipeline route which could have a minor adverse impact to terrestrial species that utilize this habitat.

Threatened and Endangered Species. There is a potential for an impact to mussel species for activities in the water at the head of the pipeline (access dredging, spudding in work barges, etc.). The installation and use of the pipeline are not expected to impact federally listed mussel species. Mussel skimmer dredge and wading surveys were conducted in 2015 in close proximity and within similar habitat to the offloading staging site along the Lock and Dam 4 embankment. A total of 73 live mussels representing eight common species were collected. The collection was dominated by the threeridge (*Amblema plicata*) which comprised 80% of the individuals.

Trees along approximately 250 feet of the pipeline route would need to be cut. Because of this, the proposed project may affect NLEB, but any resulting incidental take would likely not be prohibited under the ESA USFWS Programmatic Biological Opinion for the species. In a response dated December 10, 2021, the USFWS acknowledged the Corps' consultation using the IPaC Determination Key and has concluded the consultation requirement has been met for NLEB. The effects determination for NLEB under the Programmatic Biological Opinion is valid for one year. Prior to pipeline work that may affect the NLEB, the Corps will review its existing ESA compliance and current site conditions to determine if additional consultation with the USFWS is required under Section 7 of the ESA, 16 U.S.C. §1536, and will undertake such consultation as needed. To reduce potential impacts to NLEB, no tree clearing would occur between June 1 and August 15.

The specific installation and use of the pipeline are not expected to affect the rusty patched bumble bee, the rattlesnake, or the whooping crane. Potential effects to the monarch butterfly are possible because milkweed is often located in road rights-of-way where some of the pipeline would be located. These potential effects would need to be considered and addressed in the future if the butterfly is listed. Effects of the use of the placement sites are addressed in Section 8.4 and 8.6.

Prior to use of the site, another review of potential effects to federally listed threatened and endangered species would occur to ensure all impacts to these or any newly listed species are addressed.

State-listed Rare Species. A portion of the pipeline route will be within a Minnesota Biological Survey Site of Outstanding Biodiversity and contains two species listed as threatened in Minnesota, clasping milkweed and Blanding's turtle. Additional state listed species review and coordination with MNDNR will be conducted prior to implementation to identify if any impacts to these species. Similar to that with federally listed species, an additional review of potential impacts to state listed species will occur prior to installing and use of the pipeline which may affect them. For example, best management practices and avoidance measures such as providing wildlife pipeline crossings could be implemented to prevent impacts to state-listed turtle species.

Air Quality. The booster pumps are operated by diesel engines that would have a temporary minor adverse impact to air quality in the immediate vicinity and during their operation.

8.9.3. CULTURAL RESOURCE EFFECTS

The Corps completed background research for this proposed activity. No historic properties were identified and there is low potential for the placement of a pipeline to affect historic properties. If historic properties are identified, avoidance and mitigation measures will be employed to ensure that any effects are minimized and that no significant or unmitigated impacts to historic properties occur. The Corps has implemented a programmatic agreement (PA) to cover proposed activities identified in the report and establish the process the Corps will follow for compliance with Section 106 and address any effects that cannot be fully determined in advance of the undertaking. Stipulations within the PA identify how the Corps will complete appropriate identification, evaluation, and consultation for the site prior to any activities associated with placement of dredged material.

8.10. Barge Transportation Routes (Legs 2, 3, and 4)

The use of the barge transportation routes has largely been addressed in previous reviews, especially the portions of those routes that occur on the main channel (see Table 19). New barge transportation routes discussed here include: B-Leg 2 (Island Transfer Sites and Dredge Cuts to Carrels, Section 6.3.3); B-Leg 3 (Temporary Placement Sites to Pipeline C); and B-Leg 4 (Temporary Placement Sites to West Newton Chute). B-Leg 2 and B-Leg 4 would not be used under the no action alternative, though the existing legs would. The effects discussed here are those for B-Leg 2 and B-Leg 4. The effects of using the existing barge legs are the same as those under the no action alternative.

B-Leg 2 had been used historically for access to Carrells and was previously dredged in 1982. However, it would require new access dredging that would be approximately 2 acres (860 feet long by 100 feet wide) and to a depth of 7 feet. The amount of material to be removed from this channel would be approximately 3,600 CY initially and may need maintenance dredging in the future. This estimate is based on previous surveys in this area. Material dredged from the access cut may initially be taken to Crats Island, or another approved site, as there would be too much material to store on a barge. Once access is established, material dredged from the access channel would be taken to Carrels.

B-Leg 3 departs from the main channel at about RM 754.3 and continues down a large secondary channel to approach the head of Pipeline C. B-Leg 4 follows the main navigation channel but requires lockage through Lock and Dam 4.

8.10.1. SOCIOECONOMIC EFFECTS

Commercial Navigation. Overall, the use of these barge routes to transport dredged material would have a beneficial effect on commercial navigation as a result of the maintenance of the navigation channel. Increased barge traffic during this transport wouldn't be measurably different than under existing conditions with the exception of B-Leg 4. The use of B-Leg 4 would require lockage through Lock and Dam 4. This increased traffic at the lock could impact

commercial traffic through lockage delays. However, the use of this leg would be required only when barging material to the West Newton placement site for transport to Rolling Prairie. The use of this site is an expensive option and would probably only be implemented under an unlikely circumstance where no other options were available (see Table 13).

Noise. The use of the barge routes would result in increased noise levels along the routes during transport. This increase would be minor relative to existing conditions.

8.10.2. NATURAL RESOURCE EFFECTS

Air Quality. Barge traffic may contribute to minor adverse impacts to air quality as a result of burning diesel fuel to power tow vessels.

Sediment Quality. One sediment sample was collected from within the Carrels access cut in 2020. The sample consisted of 100% sand. Per the Minnesota Pollution Control Agency, samples containing less than 7% fines do not require further testing and are not expected to present any contamination of concern. Because only one sample was obtained from the Carrels access cut, additional samples from Lower Pool 4 were reviewed and consistently show samples that do not contain fines are clean.

Aquatic Habitat. Barge traffic would have a minor adverse effect on aquatic habitat through the general disturbance of aquatic organisms from noise and prop wash. Access dredging would also have an adverse effect. Dredging 2 acres of aquatic habitat for access dredging for the use of the Carrels placement site would result in impacts to benthic aquatic organisms living there.

The use of the Carrels site would have a recurring minor adverse effect on aquatic habitat during access dredging and construction/deconstruction of the temporary work platform but no effect from hydraulic placement of material. For mechanical placement, the access channel required would be excavated mechanically within an approximate 2-acre footprint to a depth of 7 feet. The amount of material to be removed from this channel would be up to 8,000 CY initially and may need maintenance dredging in the future. The anticipated dredge cut location can be found in Figure 7. The temporary work platform would consist of a “trench box” constructed in the water near shore on which the excavator would sit and the area surrounding the box would then be backfilled with sand. The temporary work platform would be approximately 20-feet long (parallel to shoreline) by 6-feet deep. The platform and sand would remain in place for approximately 30 days each year and would be removed and the shoreline restored once work is complete. During access dredging and the placement of material for the work platform, there would be a temporary increase in turbidity and suspended solids which would locally suppress phytoplankton productivity; however, this effect would be short term. Benthos would be lost when material is placed for the temporary work platform and during access dredging but would likely recolonize these areas after work is completed. There is only one small area of wetland within the Carrels site. The Corps would avoid impacting this area and there will be no effects to wetlands.

Threatened and Endangered Species. The use of the barge routes would have no effect on the federally listed terrestrial species evaluated here. The access dredge cut for the Carrels site on B-

Leg 2 would have the potential to affect mussel habitat. A mussel survey was conducted within the proposed access dredge cut in 2021. A total of two skimmer dredge transects approximately 300 and 400 meters in length were collected within the cut; no live mussels were collected. Because of this the access cut location is not serving as mussel habitat. Dredging this cut would have no effect on listed mussel species.

8.10.3. CULTURAL RESOURCE EFFECTS

Cultural resources are not expected to be affected by barge transportation.

8.11. Collective Recommended Plan Options

The environmental effects of the combination of sites and methods comprising the Recommended Plan (all actions listed in Table 19), including actions addressed in previous NEPA documentation or planned for the future requiring additional NEPA documentation is generally described in the following paragraphs. Because these options (placement sites, trucking legs, pipeline route) could all be used to some degree either concurrently or intermittently over the 20-year implementation time period, their effects were evaluated collectively (see Table 20).

In general, the effects of the Recommended Plan and those that occur under existing conditions are not significantly different. The volume of dredged material and the methods of its transportation and placement are not markedly different. Fundamentally, the difference in effects is related to the use of different placement sites and transportation routes. These differences are highlighted in the preceding sections discussing impacts at specific locations.

Through the prior evaluation (Corps 2020), the use of the Rolling Prairie Site would have minor adverse effects to noise levels, aesthetic values, recreational opportunities, tax revenue, and air quality, but beneficial effects to commercial navigation, terrestrial habitat, and biological productivity. Those effects would be same under the Recommended Plan being evaluated here, except that material from Pool 4 would be hauled there resulting the site filling faster as described in 6.2.4. The effects of hauling are addressed above. The effects of the site filling faster simply increase the rate in which the site's land use is changed.

Similarly, the use of the Wabasha Sand and Gravel site was previously evaluated in 2015 (Corps 2015). That evaluation determined that the use of the site for dredged material placement would result in minor adverse effects to aquatic habitat, wetlands, noise, and air emissions, but beneficial effects to commercial navigation. The effects of the site filling faster simply increase the rate in which the pit is filled to capacity.

8.11.1. SOCIOECONOMIC EFFECTS

Commercial Navigation. Compared to the no action alternative, the Recommended Plan would have a substantial beneficial effect on commercial navigation by providing sufficient dredged material placement capacity to maintain the navigation channel in a timely manner. The no action alternative would likely result in minor adverse effects to navigation resulting from inadequate placement options for dredged material. This would result in increased costs to maintain the channel and could lead to temporary channel closures in instances where a lack of placement capacity hampers timely dredging.

Noise, Aesthetics, and Recreation. Compared to the no action alternative, the Recommended Plan would have recurring minor adverse effects on noise, aesthetics, and recreation. The magnitude of these effects would not be substantially different than those occurring under the no action alternative, but the locations where these effects are occurring would change in instances where the use of new sites and transportation routes occurs. Noise impacts from dredged material placement typically include noise created by trucks, booster pumps, machinery used to place and manipulate the material at the placement site, which could include dozers, loaders, and excavators. Trucks, in addition to bringing material to the sites would also be expected to move material around the site on a regular basis. Also, truck traffic may occur at beneficial use sites when material is being removed by the public but would have similar or lower effects to those discussed for placement. The use of the sites and methods would have minor adverse effects on aesthetics. Aesthetic effects typical of transporting dredged material and placement are changes in the way a site looks compared to its present state. Recreation may be adversely impacted through the use of Pipeline C and barge traffic, but such effects would be minor and temporary.

Agriculture, Land Use, Business Activity, and Controversy. Compared to the no action alternative, the Recommended Plan would have minor adverse effects on these categories. New placement sites would change from existing to new land uses. The greatest effect would be removing land from private ownership and agricultural production. The total acreage of new land being considered for use in the Recommended Plan is approximately 500 acres, though it is not expected that all of the identified sites within the Recommended Plan will be used. Of the 500 acres, about 300 are estimated to currently be in production agriculture. It is likely portions within a site would be leased for crop production until such time it is needed for dredged material placement. Doing this will maintain agricultural use for as long as possible. At the Rolling Prairie site, material taken there from Pool 4 would expedite the site's conversion from agricultural use relative to what would occur with only material placement there from Pool 5.

Transportation. The Recommended Plan collectively would have a minor adverse effect on transportation when hauling is conducted (see Section 8.8). However, describing the details of increased truck traffic at a specific location under the Recommended Plan is very difficult due to several unknown factors. Such unknowns include whether a specific placement site will eventually be used, the total volume of material that would be moved at a time, the size and number of trucks that a contractor may use, and the season during which a contractor may choose to haul material. The development of the Recommended Plan did include consideration of avoiding hauling material through the larger population centers in the project area. The Traffic Impact Analysis (Appendix A) sets several assumptions to present the potential impacts of hauling. Following those assumptions, the Recommended Plan is anticipated to generate

approximately 286 to 380 round trips per 10-hour workday using trucks each carrying 12 to 20 cubic yards of sand, when transporting 135,000 cubic yards per year, on average, from the Wabasha Gravel Pit transfer site to one of the upland placement sites. It is assumed that all truck trips would occur within the time window of 7 a.m. to 5 p.m. (10 hours), but this may vary. Assuming 20-CY trucks with a consistent arrival/departure rate of 2.1 minutes yields an estimate of 29 trips entering and 29 leaving a site each hour. Under these assumptions, it would take about 24 workdays to move the 135,000 CY of material. Therefore, the increased truck traffic to a placement site might be expected to occur for about a month annually. However, for contracting efficiency it may be beneficial to move material on a different timeframe, so these numbers will likely be different for individual hauling contracts. A probable scenario may be that material would be hauled every two years, but at twice the volume. This would result in an increase in truck traffic to and from a placement site that could occur over the course of two or more months. Public removal of dredged material from designated sites would have similar or lower effects to those discussed for placement

Contactors hauling dredged material would be required to follow road restrictions such as load limits and seasonal restrictions that are designed to reduce damages to roadways.

Public Health and Safety. Compared to the no action alternative, increased truck traffic under the Recommended Plan may increase the risk of vehicle collisions, having a potential adverse effect to public safety (see Section 8.7.1). However, truck traffic occurs under the no action alternative, and the overall difference in those effects and the ones under the Recommended Plan would be minor.

Hydrology. The sites are within the 1% AEP floodplain limits but outside of the floodway and effective flow areas, and placement of dredged material at these locations would therefore have no effect on the 1% AEP flood profile.

8.11.2. NATURAL RESOURCE EFFECTS

Aquatic Habitat/Wetlands. Compared to the no action alternative, the Recommended Plan would have minor adverse impacts on aquatic habitat, but no impacts to wetlands in the near term. If avoiding wetlands in the future becomes impracticable due to capacity needs, the district will conduct a supplemental environmental analysis and prepare a Section 404(b)(1) evaluation before the wetland is filled. In addition, the district would mitigate for any unavoidable wetland impacts according to current policy at that time. The no action alternative would have the potential for additional impacts to aquatic habitat in the event that dredged material must be temporarily placed in water.

Terrestrial Habitat. Compared to the no action alternative, the Recommended Plan would collectively have a minor short term adverse effect but a minor long term beneficial effect on terrestrial habitat and associated wildlife. Material placement on most sites would be limited to agricultural lands, which have limited value as terrestrial habitat. Wildlife using these sites for feeding or other uses would be disturbed during and displaced following placement of dredged material. However, other agricultural lands found throughout the area would provide similar

functions. These temporary impacts would occur yearly to meet the long-term needs for dredged material placement. Minor tree clearing is anticipated at the Carrels site and along the Pipeline C route. Upland sites used for dredged material placement would be restored to native prairie after dredged material is placed providing minor long-term beneficial effects to terrestrial habitat and associated wildlife at those sites. The no action alternative may have minor adverse impacts to terrestrial habitat if dredged material is placed in an undesignated upland site.

Threatened and Endangered Species. The Recommended Plan is expected to have negligible effects to federally listed threatened and endangered species. Potential effects to these species will be reevaluated prior to the implementation of the various features of the Recommended Plan that may affect such species to ensure compliance with the ESA. At this time, the Corps has determined that the Recommended Plan would have no effects on the eastern massasauga rattlesnake, whooping crane, Higgins eye pearlymussel, spectaclecase mussel, and sheepnose mussel. There may be effects to the NLEB, but any resulting incidental take would not be prohibited under the ESA USFWS Programmatic Biological Opinion for the species. In a response dated December 10, 2021, the USFWS acknowledged the Corps' consultation using the IPaC Determination Key and has concluded the consultation requirement has been met for NLEB. The effects determination for NLEB under the Programmatic Biological Opinion is valid for 1 year. Prior to work that may affect the NLEB, the Corps will review its existing ESA compliance and current site conditions to determine if additional consultation with the USFWS is required under Section 7 of the ESA, 16 U.S.C. §1536, and will undertake such consultation as needed. To reduce potential impacts to NLEB, there is no tree clearing that would occur between June 1 and August 15. Some portions of the Recommended Plan would occur in areas listed as high potential zones for the rusty patched bumble bee, but the Corps has determined that the proposed use of these sites is not likely to adversely affect the species because the habitat at those sites is not ideal for the bee. In a response dated December 10, 2021, the USFWS concurs with this determination. See Section 10.3.5. and Appendix B for details regarding ESA determinations and coordination.

Because the sites are upland, the assessment of state-listed rare species will focus on terrestrial and wetland species. No suitable aquatic habitat for freshwater mussels or fish would be impacted. No suitable terrestrial or wetland habitat would be impacted by the acquisition and use of sites or transportation routes. The sites are primarily agricultural land or previously disturbed and would not be expected to serve as primary habitat for state-listed species.

There are no adverse effects to state-listed species expected at this time. However, similar to that with federally listed species, an additional review of potential impacts to these species will occur prior to implementing actions that may affect them. For example, best management practices and avoidance measures such as providing wildlife pipeline crossings could be implemented to prevent impacts to state-listed turtle species.

Invasive Species. The Recommended Plan is not expected to have a measurable effect on invasive species establishment over the no action alternative. Dredged material is placed upland and if it were to contain any viable invasive aquatic plant species seeds, they would be unable to establish in upland habitats. Disturbance of soils in upland sites could lead to opportunities for invasive plant species establishment but plans for growing native vegetation on those sites would

include measures to control any potential invasive or other undesired plant species. Similarly, the no action alternative would also be unexpected to result in adverse effects to invasive species by increasing their populations or introducing new species to the region. The movement of dredged material in the project area could in theory provide opportunities for the movement and establishment of invasive species, but relative to the movement of such species through other means such as flooding or other natural or human-induced movements, the effects of dredged material management would be inconsequential.

Air Quality. The Recommended Plan would collectively have a minimal adverse impact on air quality relative to the effects that would occur under the no action alternative. For upland placement sites, dust generation is expected to be negligible primarily due to the particle size of the material to be dredged. As described in the preceding sections, emissions would be generated by increased truck traffic in different locations than under the existing condition, however, the total volume of dredged material moved under the Recommended Plan is the same as under the no action alternative. The movement of dredged material requires the use of fuel, which results in air emissions. The volume of material moved, and the distance it is moved are the primary factors driving total air emissions for dredged material management. Under the Recommended Plan, efforts to reduce the double handling of material, especially the use of Pipeline A, could result in a total reduction of emissions. On the other hand, trucking to distant locations such as Rolling Prairie, could result in increased emissions collectively. Because much of the cost of dredged material placement is a result of transportation, selecting the least-cost option for placement would result in minimizing fuel usage, and the resultant emissions.

Hazardous, Toxic, and Radioactive waste (HTRW). Based on the results of a Phase I and Phase II Environmental Site Assessments for the Carrels site and preliminary review of the other sites that include the non-site visit components of a Phase I ESA, there appear to be no concerns with HTRW occurring at proposed Recommended Plan sites. Phase I Environmental Site Assessments will be completed on each site prior to real estate acquisition in accordance with ER 1165-2-132.

8.11.3. CULTURAL RESOURCE EFFECTS

The Corps has determined that the approval and implementation of a DMMP meet the definition of federal undertaking under Section 106, which could have the potential to cause effects on historic properties either included in or eligible for inclusion in the National Register of Historic Places (NRHP). The Corps completed background research for the Recommended Plan and there are no historic properties identified except for the UMR 9-Foot Navigation Project and the associated wing dams and closing dams. For those known historic properties, no significant effects are anticipated to occur. If other historic properties are identified, avoidance and mitigation measures will be employed to ensure that any effects are minimized and that no significant or unmitigated impacts to historic properties occur. The Corps has implemented a programmatic agreement (PA) to cover proposed activities identified in the report and establish the process the Corps will follow for compliance with Section 106 and address any effects that cannot be fully determined in advance of the undertaking. Stipulations within the PA identify how the Corps will complete appropriate identification, evaluation, and consultation for the site prior to any activities covered under this DMMP and integrated EA.

The Corps considers the significance of the impacts being associated with the potential dredge material management activities that would cause the loss of eligibility or destruction of a historic property. Potential activities could include transportation of material to the placement site, grading for the development of a placement site, excavation and/or trenching for pipeline placement, or potential mitigation for adverse effect. Many of these activities can be modified or changed to consider historic properties and minimize or avoid adverse impacts. Given the degree of previous disturbance and ability to modify activities, the Corps has determined the proposed activities would result in less than significant effects to historic properties; however, to fully be in compliance with Section 106 of the National Historic Preservation Act (NHPA), the Corps has implemented a PA to address the effects that cannot be fully determined in advance of the undertaking (see Appendix G).

CHAPTER 9. Cumulative Effects of Recommended Plan

The Recommended Plan is a component of the much larger set of plans and actions undertaken as maintenance of the UMR 9-Foot Navigation Channel Project. The cumulative effects of the Recommended Plan would include those discussed in the 1997 CMMP EIS (USACE 1997), as well as additional impacts that would come with the use of the new features proposed here. Table 19 (Chapter 8) lists the placement sites and transportation routes that are evaluated under an existing EIS or EA as past actions, sites and routes that this Lower Pool 4 DMMP EA address as current actions, and sites and routes that would need to be evaluated prior to their use in a future EA as future actions, and all the actions in Table 19 are considered here in the cumulative effects analysis

Cumulative effects are defined by the CEQ as, "[T]he impacts on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time." 40 CFR § 1508.7 (1978).

The time frame considered for the scoping of potential future cumulative impacts was bounded by the project life considered during other analyses, which was 20 years. This is the lifespan for project costs, benefits, and effects that was considered during the planning of the project. No reasonably foreseeable future actions were identified beyond this time scale, except that there will likely be a continuing need to dispose dredged material beyond 20 years. That need will be addressed through future planning efforts, and any attempt to address potential future placement sites now would be speculative.

Chapter 3 discusses past and ongoing projects that have been identified in the vicinity of UMR Lower Pool 4 that also impact local resources. These include a designated wildlife refuge and habitat improvement project; and a number of transportation related activities including the UMR navigation channel, commercial and recreational boat harbors, barge mooring facility at a coal fired power plant, and three railroads. In addition to assessing the cumulative effects for past and ongoing projects, future foreseeable projects in the vicinity of the UMR Lower Pool 4 also need to be addressed.

The following past, present, and reasonably foreseeable future actions were identified as having the potential to interact with or have impacts related to those of the proposed project.

9.1. Past Actions in the Project Area

9.1.1. Modifications Of The Upper Mississippi River For Navigation

The floodplain geomorphology, stream hydraulics, and water levels of the UMR have been modified by impoundment and other navigation features since the 1820s. The most relevant navigation improvement actions within the project impact area are likely the construction of hundreds of channel training structures placed between 1866 and 1907 as part of the 4-foot, 4.5-foot, and 6-foot navigation channel projects. Following the construction of these structures was the construction of Lock and Dam Number 4 in 1935, which raised water levels by several feet in the immediate project area and allowed for a navigation channel for vessels drafting nine feet. The cumulative effect of these actions has played a large role in the development of the habitat that currently exists in the project area.

9.1.2. National Wildlife Refuge

The UMR National Wildlife and Fish Refuge was established in 1924 as a refuge for fish, wildlife, and plants and a breeding place for migratory birds. The refuge encompasses one of the largest blocks of floodplain habitat in the lower 48 states and stretches through four states along the Mississippi River: Minnesota, Wisconsin, Iowa, and Illinois. Bordered by steep wooded bluffs that rise 100 to 600-feet above the river valley, the Mississippi River corridor and refuge offer scenic beauty and productive fish and wildlife habitat unmatched in the heart of America. The Refuge covers just over 240,000-acres and extends 261 river miles from north to south at the confluence of the Chippewa River in Wisconsin, to near Rock Island, Illinois.

9.1.3. Railroads

While railroads parallel Lower Pool 4 on both sides of the river, there are no railroad bridge crossings of the Mississippi River in Lower Pool 4. On the Wisconsin side, a pair of Burlington Northern Santa Fe railroad tracks lie riverward of State Hwy 35. A portion of the line runs through the pool along a levee constructed across Beef Slough where it angles back towards the Wisconsin bank. On the Minnesota side, a pair of Canadian Pacific railroad tracks are set back from the river and generally follow along U.S. Hwy 61. Both rail lines were constructed prior to 1890 and have been operational to this day.

9.1.4. Construction of the Commercial and Recreational Harbors

The Wabasha Marina and Boatyard was constructed in 1958. Other marinas in the study area were started at some time between 1954 and 1972 and include the Parkside Marina at Wabasha and the Alma Marina at Alma. The Alma Marina is adjacent to an active dredged material placement and beneficial use site in Lower Pool 4.

9.1.5. INTERSTATE BRIDGE

The Wabasha-Nelson Bridge is a steel, high truss structure that connects Wabasha, with Nelson, Wisconsin. It carries vehicular traffic on two lanes of Minnesota State Hwy 60 and Wisconsin 25 in either direction. The main river span is 470-feet long, and the entire structure is 2,462-feet long. The current bridge was opened in 1988, replacing a similar, narrower bridge that was built in 1931.

9.1.6. MISSISSIPPI RIVER UPPER POOL 4 PIERCE COUNTY ISLANDS HEAD OF LAKE PEPIN PROJECT: SECTION 1122 (WRDA 2016)

The project is located downriver of Red Wing, Minnesota and across from Bay City, Wisconsin. It lies within the Pierce County Islands Wildlife Management Area, established by the State of Wisconsin.

Project features include four peninsulas, a water level management dike, and bankline restoration that will incorporate approximately 390,000 CY of dredged material from Lower Pool 4. The project is a pilot project under the Section 1122 (WRDA 2016) authority which subsidizes the use of dredged material to construct project features. The project is also authorized under Section 204 (WRDA 1992) for beneficial use of dredged material. Construction is expected to start in 2023.

9.1.7. PETERSON LAKE HABITAT REHABILITATION AND ENHANCEMENT PROJECT: UPPER MISSISSIPPI RIVER RESTORATION PROGRAM

The project consisted of increasing fish habitat in the lake primarily through decreasing flow velocities and sedimentation into upper Peterson Lake by construction of rock closing structures at barrier island openings separating the lake from the main navigation channel. The project completed in 1995 and modified in 2019 improved aquatic habitat in approximately 136 acres of Peterson Lake in lower Pool 4 for a variety of fish species including important sportfish (i.e. bluegill, black crappie, largemouth bass, yellow perch and northern pike) and non-game native fishes (i.e. bigmouth buffalo, bowfin and shortnose and longnose gar). The improved aquatic habitat also improved fishing opportunities and success in the lake, especially during winter months. Additionally, semi-aquatic habitat was improved as a result of these added flow restrictions, benefitting waterfowl, wading birds and furbearers.

9.1.8. INDIAN SLOUGH HABITAT REHABILITATION AND ENHANCEMENT PROJECT: UPPER MISSISSIPPI RIVER RESTORATION PROGRAM

The project completed in 1994 involved various types of construction, including a partial closure structure in Indian Slough, dredging a 3,000-foot-long by 125-foot-side channel in Big Lake Bay to create depths greater than 4 feet for fish habitat, using the dredged material to revegetate a channel maintenance placement site, and constructing two rock riffle-pool areas 4 feet deep in the slough and placing log snags along the shoreline of the slough to enhance fish and mussel habitat. The project preserves 120 acres of aquatic habitat, created 11 acres of deepwater fish

habitat, and maintains adequate dissolved oxygen levels in the backwater. Secondary benefits of the project include fish habitat enhancement of about 500 acres in the Big Lake backwater area.

9.1.9. Dredged Material Management: Lost Island Offload – West Newton Chute Placement

The offloading of the stored dredged material from the Lost Island Temporary Placement Site to the West Newton Chute Placement Site was conducted. The project involved transferring 1,300,000 CY of material and provided capacity at the Lost Island Temporary Placement Site.

9.2. Concurrent and Ongoing Actions in the Project Area

9.2.1. Maintenance of the Navigation Channel

The continued maintenance of the navigation channel will occur in the project area. This includes dredging the navigation channel and the use of the established temporary and permanent placement sites as identified in the CMMP, and those approved for use in subsequent evaluations such as the Wabasha Sand and Gravel Pit and Rolling Prairie.

9.3. Other Reasonably Foreseeable Future Actions in the Project Area

9.3.1. Wabasha Port

Under the tiered approach of the Recommended Plan, the preferred option for placement of dredged material will be the development of a Section 217(d) agreement between the Corps and the City of Wabasha. The city of Wabasha, in conjunction with the Wabasha Port Authority, is independently working to develop a port facility at the Carrels site to accept dredged material as well as other commodities using river transportation. The procurement and development of this port would be separate from the Corps' federal action and a modern port facility is not required for the placement of dredged material at this site. If a port was built, it may facilitate the movement of dredged material there off the river, but dredged material could be offloaded via a simple temporary work platform as discussed in 6.3.3. If a port is developed, the city of Wabasha would be required to obtain all applicable permitting and comply with environmental laws and regulations separately from this DMMP and integrated EA.

9.3.2. Lower Pool 4, Big Lake, Robinson Lake, and Tank Pond, Habitat Rehabilitation and Enhancement Project

This is a restoration project under the UMRR program; planning commenced in October 2021. The study area encompasses approximately 9,382 acres of open backwater, meandered side

channel, main channel border, and island formations from state Highway 25 (Nelson Dike) at Wabasha, Minnesota to Lock and Dam 4 near Alma, Wisconsin. The study area extends from approximate RM 760.2 to 752.8 (7.4 miles) and includes the main stem of the Mississippi River (8,276 acres) and portions of the Buffalo River (1,106 acres). The overall goal is to maintain/enhance/create quality habitat for native and desirable plant, animal, and fish species. Some potential project features include island construction/enhancement, mudflat creation/enhancement, and backwater and secondary channel dredging. There is a potential for the beneficial use of material dredged from the navigation channel. Because planning has just started, project construction would likely start no sooner than 2026.

9.3.3. READS LANDING PIPELINE "A" INSTALLATION PROJECT, UPPER MISSISSIPPI RIVER LOWER POOL 4, WABASHA COUNTY, MINNESOTA.

This is a 20-year temporary pipeline placement project for the continued operation and maintenance of the UMR 9-Foot Navigation Channel Project to transfer dredged material from Reads Landing to the Wabasha Gravel Pit (referred to as Pipeline A in this document). Planning for the installation began in 2020 with an anticipated EA completed in early 2022 followed by installation in 2022. Pipeline A will facilitate placement of dredged material directly from the Chippewa Delta and Reads Landing dredge cuts to avoid placing on Reads Island and reduce double-handling of that material. The 24-inch diameter pipeline will be approximately 6,030 feet in length and installed primarily on existing easements along the alignment previously used for temporary pipelines. Approximately 2,500 feet of the pipeline will be elevated approximately 18 inches above ground on cribbing every 200 feet from the UMR inland, with approximately 1,350 feet of the pipeline placed directly on the ground, and with a 50-foot segment elevated and spanning Brewery Creek. Approximately, 430 feet of the pipeline will be trenched adjacent to a private residence and another 1,700 feet trenched along county property near the Wabasha Gravel Pit. Utilization of the pipeline could commence as early as the 2022 dredging season.

9.4. Consequences of Cumulative Effects

The proposed action includes the continued use of an existing and active island placement sites, existing and expanding temporary onshore transfer sites, and the use of new placement sites which the majority are upland and in active agricultural production with ongoing disturbance and limited natural resources. The proposed action will not have a significant impact to natural resources when added collectively to the other past, present and reasonably foreseeable actions in Pool 4. The Zumbro River Flats - South and Zumbro River Flats - North sites will be restored to native prairie after dredged material is placed providing minor beneficial effects to natural resources in the area. The proposed project would have no significant cumulative adverse or beneficial effects.

9.4.1. SOCIOECONOMIC RESOURCES

The transportation related projects (including the Recommended Plan) provide a cumulative benefit of maintaining and improving transportation routes and modes in the project area, including commercial navigation on Pool 4.

There could be some cumulative adverse effects to transportation, noise, and potentially public safety resulting from increased truck traffic. These effects are most likely if the Wabasha Port is developed. The port would result in increased truck traffic in that immediate area, but when combined with the traffic from hauling dredged material under the Recommended Plan, the effects are not expected to be significant. The trucks routes used are already being used for commercial truck traffic and they generally avoid the more populated residential areas. Also, trucking of dredged material is expected to occur periodically over the course of a year rather and continuously. The other locations of increased truck traffic in the Recommended Plan are dispersed throughout the project area and there are no other known future actions that would increase truck traffic in those locations that could result in cumulative effects.

No significant cumulative effects are expected to recreation, as there are no known future actions affecting recreation in the project area other than those under the Recommended Plan.

There are no known future development projects in the project area that would result in significant cumulative effects to agricultural production, land use, or tax revenue.

9.4.2. NATURAL RESOURCES

Many of the identified projects have had both positive and negative impacts on natural resources in the region. The transportation projects such as the railroads, harbors, and existing navigation channel likely impacted terrestrial and aquatic habitat and wetlands in the Mississippi River floodplain when they were constructed. The proposed project is not anticipated to impact aquatic habitat or wetlands and will only have a marginal short term adverse impact to terrestrial habitat and associated wildlife and biological productivity but would be temporary and expected to have no long-term appreciable impacts regionally.

At new placement sites, land not being used for placement of dredged material would be left in its current state and after placement of material most sites would be restored to native prairie. Upon filling sub areas within sites to capacity, the dredged material will be shaped to topographically mimic adjacent natural areas, covered with topsoil, and planted with native prairie grasses. Restored prairie within the sites should remain into the foreseeable future thus restoring row crop agricultural land to its previous state and providing a long-term benefit to natural resources by increasing the extent and connectivity of natural prairie and wetlands within the area.

CHAPTER 10. Environmental Compliance and Review

10.1. Public Involvement

The first version of the draft DMMP was released in May 2017 for public and agency review. A public meeting was held on June 15, 2017, in Wabasha, Minnesota. During the public review, commenters expressed concerns about social impacts of acquiring farmland from unwilling sellers and multi-generational farmers, potential effects of dredging operations on adjacent residential properties, impacts to the viewshed from designated scenic highways, and concerns about proposed trucking of material through the developed areas of Wabasha, Nelson, and Alma. In general, natural resource agencies supported the Corps' efforts to avoid placing fill in sensitive natural resource areas. However, the plan met significant opposition from landowners, state and local governmental units, and political representatives from all levels of government.

For the 2022 version of the draft Report, a public notice of availability was published on March 21, 2022, on the Corps website. A public meeting was held at Wabasha-Kellogg High School, April 13, 2022 to discuss the project and obtain public input. The results of the review and meeting are documented in this section, and in Appendix B: Coordination & Correspondence.

10.2. Environmental Compliance and Coordination

Planning for the overall project has been coordinated with the public, state and federal agencies, and other interested parties. Descriptions of compliance efforts for certain regulations are found in Table 22 and as follows:

10.2.1. Environmental Justice

Environmental Justice is institutionally significant because of Executive Orders 12898 of 1994 (E.O. 12898) and 14008 of 2021 (E.O. 14008), and Department of Defense's Strategy on Environmental Justice of 1995, which directs federal agencies to identify and address any disproportionately high adverse human health or environmental effects of federal actions to minority and/or low-income populations. Environmental Justice is a national goal and is defined as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. The purpose of the project is to provide a coordinated, long-term plan for managing dredged material in Lower Pool 4 of the UMR for continued operation and maintenance of the UMR 9-Foot Navigation Channel Project over a

twenty (20) year timeframe. Commercial navigation on the Mississippi River provides numerous benefits to all people. Public involvement, via public meetings and distribution of information concerning the proposed project, has and will continue to be an integral part of planning for this project to ensure that concerns of all people will be fully considered in the decision-making process. According to the environmental justice screening tool there are no recognized minority populations within the analysis area (Section 2.1.2). In a similar fashion, there are no recognized low-income populations within the analysis area that deviate from the community of comparison. There would be minor adverse impacts to several socio-economic categories (see Chapter 8); however, these would not disproportionately affect any specific group within the analysis area. The implementation of the Recommended Plan would not have any permanent adverse effects on surrounding communities. Neither the No-Action Alternative nor the Recommended Plan would cause a disproportionately high and adverse impact on any environmental justice population.

10.2.2. CLEAN WATER ACT

Discharges of dredged or fill material into waters of the United States must comply with Section 404 of the CWA. The Recommended Plan is not anticipated to require fill in wetlands. Impacts to wetlands would be avoided during dredged material placement at Carrels, Zumbro River Flats – South, Zumbro River Flats – North, Bean Field, and G-1 sites for the duration of the plan. However, if avoiding wetlands later becomes impracticable due to capacity needs, the district will conduct an evaluation in accordance with NEPA and Section 404(b)(1) of the CWA, prior to placing any fill in wetlands.

The Recommended Plan does include two instances requiring a minor discharge of fill. When hydraulic dredging methods are used to place material at sites such as Carrels, Zumbro River Flats South, and G-1, excess carriage water would be returned to the river. Sites such as the Bean Field and the Wabasha Gravel Pit do not require the return of carriage water because carriage water infiltrates into the ground at larger sites with porous substrates. Carriage water return at the Carrels site was also previously addressed in the CMMP EIS and 404(b)(1) evaluation. The return of carriage water to a water body would occur after it has been stored in settling basins for a period of time to ensure the return water meets Total Suspended Solids (TSS) water quality standards. This discharge is addressed in Nationwide Permit (NWP) 16, which also includes Section 401 Water Quality Certification from the MPCA. All conditions of the NWP and Water Quality Certification would be followed. The TSS standard for the Mississippi River in Minnesota below Lake Pepin, and for the Zumbro River is 30 mg/L and return water to these waters would be monitored to ensure it is at or below this level.

A temporary access pad is required to facilitate mechanical unloading of barges for the placement of dredged material at the Carrels site (see Section 6.3.3). This discharge is addressed in NWP 18, Minor Discharges, which also includes Section 401 Water Quality Certification from the MPCA. All conditions of the NWP and Water Quality Certification would be followed.

The proposed fill activities are not anticipated to violate state water quality standards. Prior to conducting any of these activities, plans for doing so would need to be developed in detail and reviewed as appropriate to ensure CWA compliance.

10.2.3. Rivers and Harbors Act

Compliance with Section 10 of the Rivers and Harbors Act of 1899 is required for any work in, over, or under a navigable water of the United States. (33 U.S.C. 403). The proposed action would be in compliance with Section 10. The access dredge cuts at Carrels and the head of Pipeline C are new activities in a navigable water subject to Section 10. Each of these features would be constructed to support navigation and neither would impede it. Use of these new placement sites would not result in any appreciable differences with dredging operations as it relates to Section 10 compliance, relative to existing dredging activities, and all activities under the Recommended Plan are to support navigation.

10.2.4. Fish and Wildlife Coordination Act

In compliance with the Fish and Wildlife Coordination Act (16 U.S.C. 661-667) the project plans have been coordinated with the USFWS and the Minnesota and Wisconsin DNRs (Appendix B). These agencies also had the opportunity to review and they provided comments on this DMMP and integrated EA.

10.2.5. National wildlife refuge special use permit

In compliance with the National Refuge System Administration Act of 1966, the Corps will obtain Special Use Permits (SUP) for crossing and working on refuge lands where applicable prior to implementing the Recommended Plan.

10.2.6. Endangered Species Act

The Recommended Plan covers a 20-year planning horizon for use of placement sites and transportation routes for dredged material management. Effects to endangered species have been assessed in this DMMP; however, prior to implementation of any component of the Recommended Plan, another review of potential effects to federally listed threatened and endangered species would occur to ensure all impacts to these or any newly listed species are addressed.

At this time, of the eight species identified as either endangered, threatened, candidate for listing, or experimental in the project area, the Recommended Plan would have no effect on five species: Higgins eye pearlymussel, sheepnose mussel, spectaclecase mussel, eastern massasauga rattlesnake, and whooping crane. The no-effects determinations for these species were based on a lack of suitable habitat, the avoidance of work in locations where suitable habitat does exist, or field surveys showing the absence of a species. The monarch butterfly was identified as a candidate species in December of 2020 but it is not yet listed or proposed for listing. Most areas that would be affected by the Recommended Plan do not have ideal habitat for the species; however, potential effects to the butterfly would be evaluated and addressed in the future if the butterfly is listed.

For rusty patched bumble bee, the Corps has determined that portions of the Recommended Plan may affect but are not likely to adversely affect the species. Under ESA Section 7 informal

consultation, the Corps' biological assessment and concurrence request for rusty patched bumble bee was transmitted to the USFWS on November 16, 2021. In a response dated December 10, 2021, the USFWS concurs with this determination (see Appendix B). The use of the three upland placement sites; Zumbro River Flats – North and South, the G-1 site, and the western portion of the Pipeline C route are listed as high potential zones for the rusty patched bumble bee. However, activity at these sites under the Recommended Plan would be limited to areas that do not provide suitable habitat for the bee. The use of Pipeline C would involve tree clearing and placing the pipeline above ground, but disturbance would be minimal and no grassland or tallgrass prairie will be disturbed.

For the NLEB, ESA consultation for effects was initiated November 12, 2021, with the USFWS through the Section 4(d) Rule Streamlined Consultation Form (Appendix B). The preliminary determination is that the proposed project may affect NLEB, but any resulting incidental take would not be prohibited under the Service's Programmatic Biological Opinion for the species. In a response dated December 10, 2021, the USFWS acknowledged the Corps' consultation using the IPaC Determination Key and has concluded the consultation requirement has been met for NLEB. The effects determination for NLEB under the Programmatic Biological Opinion is valid for one year. On March 22, 2022, the USFWS announced a proposal to reclassify the NLEB as endangered under the ESA. Prior to work that may affect the NLEB, the Corps will review its existing ESA compliance and current site conditions to determine if additional consultation with the USFWS is required under Section 7 of the ESA, 16 U.S.C. §1536, and will undertake such consultation as needed. Tree clearing of 15 acres at the Carrels transfer site and along 250 x 40 feet the Pipeline C route may be required under the Recommended Plan.

Although the bald eagle is no longer protected under the ESA, it remains protected under the Bald and Golden Eagle Protection Act. If an eagle nest is discovered within proximity to placement sites or dredging operations including transport of material, measures to avoid and minimize impacts to the eagles would be evaluated and incorporated into the project as necessary (in accordance with the National Bald Eagle Management Guidelines) and the action would be coordinated with the USFWS.

10.2.7. STATE PERMITS

The Corps has an ongoing Memorandum of Understanding (MOU) with the Wisconsin DNR concerning the placement of dredged material. The Corps also has Public Waters Work General Permit (1994-5082) with the MNDNR, and a State Disposal System (SDS) programmatic permit with the Minnesota Pollution Control Agency (MPCA) that lists permanent and temporary placement sites. The Corps would request that the expanded Carrels, expanded Wabasha Sand and Gravel Pit, Zumbro River Flats South, Zumbro River Flats North, Bean Field, and G-1 sites be added to these Minnesota permits for Corps dredged material placement prior to dredged material placement activities. The Wisconsin MOU would be unchanged as a result of the DMMP.

10.2.8. FARMLAND PROTECTION POLICY ACT

In compliance with the Farmland Protection Policy Act (FPPA) of 1981 and under CFR 523.1, the United States Department of Agriculture-Natural Resources Conservation Service (USDA-NRCS) has been coordinated with regarding irreversible conversion of prime and important farmland to non-agricultural uses. Although prime farmland presently occurs on the Bean Field, Zumbro River Flats – South, Zumbro River Flats – North, and G-1 sites, it's the USDA-NRCS determination that if there is no real estate easement or prohibition for reversion to agricultural production after the sites have been filled and restored to native prairie, there is no unnecessary and irreversible conversion of important farmland to nonagricultural uses. The Zumbro River Flats – South, Zumbro River Flats – North, and G-1 sites will be restored to native prairie once filled with dredged material. The Corps will not use the Bean Field site as an onshore transfer site unless mining for aggregate of the site is conducted by the owner which will eliminate row crop agriculture and farming of the site. Thus, the site would not contain prime or important farmland prior to use of the site which at that time would be FPPA compliant.

10.2.9. NATIONAL HISTORIC PRESERVATION ACT

The National Historic Preservation Act (NHPA) of 1966, as amended by Public Law 96-515 (94 Stat. 2987), established national policy for historic preservation, authorized the Secretary of the Interior to expand and maintain a National Register of Historic Places (NRHP), and created the Advisory Council on Historic Preservation (ACHP). Section 106 specifies that federal agencies, before approval of any expenditure or before issuance of any license, must consider the effect of the action on any property included in or eligible for the National Register of Historic Places.

The Corps determined that certain dredged material placement and associated activities authorized under a DMMP may be Section 106 undertakings, which may have the potential to affect historic properties included in or eligible for inclusion in the NRHP. The Corps may defer final identification and evaluation of historic properties, assessment of effects, and resolution of adverse effects, if any, until after completing requirements of the NEPA for an individual DMMP. The dredged material placement under a DMMP may be designed and implemented by the Corps in phases, and the assessment of effects to historic properties contemplated by this stipulation may also be undertaken, prepared, and issued for review in phases, but prior to any final approval of the dredged material placement undertakings by the Corps.

The Corps has determined due to the nature of the undertakings, and because effects on historic properties are similar and repetitive and are regional in scope, that a PA is needed to clarify review procedures, improve consistency, consultation, and accountability in fulfilling its responsibilities to comply with Section 106 of the NHPA pursuant to 36 CFR § 800.14(b)(2). The PA developed would apply to all dredged material placement undertakings under DMMPs that have the potential to cause effects and require Section 106 review after the execution of the PA. The Corps has developed and will develop individual DMMPs for the Upper Mississippi River 9-Foot Navigation Channel Project (Project) beginning at Pool 2, Lock and Dam 1 (river mile 847.5) and continuing through Pool 10, ending at Lock and Dam 10 (river mile 615.1), as necessary, to accommodate the long-term management of dredged material for the continued

operation and maintenance of the Project. Section 106 compliance for the Lower Pool 4 DMMP will be addressed through this PA. The PA is included in Appendix G.

In accordance with Section 106 of the NHPA, letters were sent to the Iowa, Minnesota, and Wisconsin State Historic Preservation Offices (SHPO) on 27 Sept 2021 to initiate consultation and begin the development of a PA. Official notification to invite the Advisory Council on Historic Preservation (ACHP) to participate occurred on 20 Oct 2021. The ACHP notified the Corps on 23 Dec 2021, of their plans to participate in consultation. Letters were sent to Tribal leaders of 33 Tribal Nations on 22 Nov 2021 and 31 Tribal Historic Preservation Officers (THPO) on 30 Nov 2021. Two Tribal Nations do not have an acting THPO or cultural preservation director. The Corps identified fifteen federally recognized tribes that attach religious and cultural significance to historic properties within the study area of the Pool 4 DMMP that may be affected by the undertaking.

Since letters were sent initiating consultation on the development of a PA, the Corps hosted an information webinar on 14 Dec 2021 and established monthly consulting party workshops including those held in 2022 on Jan 18, Feb 15, Mar 15, Apr 19, May 17, June 21, and July 19. SHPO offices and ACHP were in attendance for the workshops along with some THPOs. Official letters from the Corps were sent to consulting parties at different stages of the PA development. Copies of the letters are located in Appendix B – Coordination and Correspondence and include:

1) 27 Sept 2021 – Corps initiates consultation with Iowa, Minnesota, and Wisconsin SHPO and requests to negotiate a PA

2) 20 Oct 2021 – Corps provides official notification to ACHP
    a. 23 Oct 2021 – ACHP plans to participate in consultation

3) 22 Nov 2021 – Corps initiates consultation with 33 Tribal Nations (Tribal Leaders)
    a. 30 Nov 2021 – Corps initiates consultation with 31 THPOs

4) 10 Mar 2022 – Corps submits draft PA to all consulting parties

5) 18 Mar 2022 – Corps consults with THPOs inquiring if they will sign as concurring party
    a. Winnebago Tribe of Nebraska – Mar 2022 request to sign
    b. Ho Chunk Nation THPO – Mar 2022 request to sign
    c. Iowa Tribe of Kansas and Nebraska – Mar 2022 request to sign

6) 2 August 2022 – Corps signed the PA and provided the signed version to all consulting parties for signature. MnSHPO signed on 3 August 2022.

10.2.10. CONSULTATION AND COORDINATION WITH INDIAN TRIBAL GOVERNMENTS

It is the policy of the federal government to consult with federally recognized Tribal Governments on a Government-to-Government basis. 13175 required each agency to have an accountable process to ensure meaningful and timely input by tribal officials in the development of regulatory policies with tribal implications. ("Consultation and Coordination with Indian Tribal Governments;" U.S. President 2000 The USACE Tribal Consultation Policy, November 1, 2012, specifically implements E.O. 13175 and later presidential guidance. The requirement to conduct coordination and consultation with federally recognized tribes on and off tribal lands for activities that have the potential to significantly affect protected tribal resources, tribal rights (including treaty rights), and Indian lands finds its basis in the constitution, Supreme Court cases, and is clarified in later planning laws. The 2012 USACE Tribal Consultation Policy and Related Documents provide definitions for key terms, such as tribal resources, tribal rights, Indian lands, consultation, as well as guidance on when and how to undertake consultation.

Table 21. Definition of Key Terms in Department of the Army American Indian and Alaska Native Policy, October 24, 2012

Category	Definition
Tribal rights:	Those rights legally accruing to a federally-recognized tribe or tribes by virtue of inherent sovereign authority, unextinguished aboriginal title, treaties, statutes, judicial decisions, executive orders or agreement and that give rise to legally enforceable remedies.
Tribal lands:	Any lands title to which is: either held in trust by the United States for the benefit of any federally-recognized Indian tribe or individual or held by any federally-recognized Indian tribe or individual subject to restrictions by the U. S. against alienation.
Protected tribal resources	Those natural resources and properties of traditional or customary religious or cultural importance, either on or off tribal lands, retained by, or reserved by or for, federally-recognized tribes through treaties, statutes, judicial decisions or executive orders.

While Wabasha County, Minnesota, and Buffalo and Pepin Counties, Wisconsin, have a long history of occupation by Native American communities, prior to their establishment and throughout their history, the Corps has not identified any protected tribal resources, tribal rights, or Indian lands that have the potential to be significantly affected by the proposed actions within in the study area. In accordance with Corps' responsibilities under Section 106 of the NHPA, the Corps focused consultation on the development of the PA. See section 10.2.8, Appendix B for consultation letter date and any responses.

10.2.11. EXECUTIVE ORDER 11988 FLOODPLAIN MANAGEMENT

The objective of Executive Order 11988, Floodplain Management, is to avoid, to the extent possible, long-and short-term adverse impacts associated with the occupancy and modification of the base flood plain and to avoid direct and indirect support of development in the base flood plain wherever there is a practicable alternative. It is the policy of the Corps of Engineers to formulate projects which, to the extent possible, avoid or minimize adverse impacts associated with use of the base flood plain and avoid inducing development in the base flood plain unless there is no practicable alternative. The base flood plain is the flood plain associated with the base flood, which has a 1% chance of occurring or being exceeded in any given year, also known as the 1% AEP flood or 100-year flood.

All or portions of the following sites in the Recommended Plan are located in the base flood plain:

- Carrels
- ZRF North
- ZRF South
- G-1
- Rolling Prairie
- Reads Landing, Crats, Teepeeota and Grand Encampment Island transfer sites
- Alma Marina

Alternatives to these sites were considered, as described in Chapter 5 of this report. These sites are the most cost-effective and environmentally acceptable sites that are practicable to support efficient dredging operations and placement of dredged material during the period of analysis. Proposed placement practices at the island transfer sites and Alma Marina will be unchanged from past practices with respect to floodplain impacts. The Carrels, Zumbro River Flats North and South, G-1, and Rolling Prairie sites are located in the flood fringe outside of the floodway, so the proposed placement of dredged material on those sites will have no effect on one percent flood elevations. Long-term placement sites will be re-vegetated with prairie plantings to support natural and beneficial values and will not support development of the floodplain. Existing wetlands within the sites will be avoided or mitigated as described elsewhere in this report.

10.2.12. DISTRIBUTION OF DRAFT ENVIRONMENTAL ASSESSMENT

This EA has been provided via computer on the following website: https://www.mvp.usace.army.mil/DMMP A notice of availability was sent to interested citizens and the following agencies:

Federal
Environmental Protection Agency
U.S. Fish and Wildlife Service
U.S. Geological Survey
U.S. Coast Guard
Department of Agriculture

State of Wisconsin
Department of Natural Resources

State of Minnesota
Department of Natural Resources
Pollution Control Agency

Others
Libraries and/or City Hall Offices: Lake City, Wabasha, Kellogg, Buffalo City, Alma

Izaak Walton League of America

Adjacent property owners

Railroads
Canadian Pacific Railroad
Burlington Northern Santa Fe Railroad

10.3. Comments on the Environmental Assessment

Comments were requested and welcomed on the draft report and environmental assessment from March 21, 2022 to April 19, 2022 and from the public meeting held April 13, 2022. All agency and public comments with the Corps' responses as well as a summary of comments and responses from the public meeting are included in Appendix B: Coordination and Correspondence. Comments were carefully considered and are addressed here. If there are additional inquiries and questions, please send them to the St. Paul District, U.S. Army Corps of Engineers, ATTN: Mr. Daniel Kelner, CEMVP-PD-C, 180 Fifth Street East, Suite 700, St. Paul, MN 55101, or by email to: [redacted]

10.3.1. Agency Comments and responses

Comment letters were provided by the MNDNR, MPCA, WDNR, U.S. Fish and Wildlife Service National Wildlife and Fish Refuge, Izaak Walton League of America, Buffalo County (Wisconsin), and from a private citizen. Per NEPA guidance, substantive comments have been incorporated into this EA for evaluating and disclosing reasonably foreseeable effects directly related to the proposed actions. Nearly 100 comments, with some common among agencies, were provided. Rationale for comments that were not directly incorporated into this EA and in need of additional clarification were sent to respective agencies (see Appendix B).

10.3.2. Public Meeting Comments and responses

Approximately 25 participants from the public and agencies attended the meeting in person with another approximately 1,000 online views of the meeting which was also streamed live. The meeting format consisted of a half-hour presentation followed by question-and-answer period.

Approximately 17 comments and responses from the Corps at the public meeting held April 13, 2022, are provided in Appendix B.

Table 22. Compliance Review with all Applicable Environmental Regulations and Guidelines.

Environmental Requirement	Compliance[1]
Federal Statutes	
Archaeological and Historic Preservation Act	Full
Bald and Golden Eagle Protection Act of 1940, as amended	Full
Clean Air Act, as amended	Full
Clean Water Act, as amended	Full
Coastal Zone Management Act, as amended	N/A
Endangered Species Act of 1973, as amended	Partial[2]
Federal Water Project Recreation Act, as amended	Full
Fish and Wildlife Coordination Act, as amended	Full
Land and Water Conservation Fund Act of 1965, as amended	Full
Migratory Bird Treaty Act of 1918, as amended	Full
National Environmental Policy Act of 1969, as amended	Full
National Historic Preservation Act of 1966, as amended	Full
National Wildlife Refuge Administration Act of 1966	Full
Noise Pollution and Abatement Act of 1972	Full
Watershed Protection and Flood Prevention Act	N/A
Wild and Scenic Rivers Act of 1968, as amended	N/A
Farmland Protection Policy Act of 1981	Full
Executive Orders, Memoranda	
Floodplain Management (EO 11988)	Full
Protection and Enhancement of Environmental Quality (EO 11514)	Full
Protection and Enhancement of the Cultural Environment (EO 11593)	Full
Protection of Wetlands (EO 11990)	Full
Analysis of Impacts on Prime and Unique Farmland (CEQ Memorandum, 30 August 1976)	Full

[1] The compliance categories used in this table were assigned according to the following definitions:
a. Full - All requirements of the statute, EO, or other policy and related regulations have been met for the current stage of planning.
b. Partial - Some requirements of the statute, EO, or other policy and related regulations remain to be met for the current stage of planning.
c. Noncompliance (NC) - Violation of a requirement of the statute, EO, or other policy and related regulations.
d. Not Applicable (N/A) - Statute, EO, or other policy and related regulations not applicable for the current stage of planning.

[2] Additional review will be required prior to implementation of some features.

CHAPTER 11. Recommendation

The Recommended Plan identifies the placement sites, transportation methods and routes the Corps proposes to use for managing dredged material in support of maintaining the navigation channel in Lower Pool 4 of the Upper Mississippi River.

The Recommended Plan is the Base Plan and the Federal standard for Lower Pool 4, as defined in Engineer Regulation 1105-2-100 and the Code of Federal Regulations (C.F.R.). The Federal standard is defined as "the dredged material disposal alternative or alternatives identified by the Corps which represent the least costly alternatives consistent with sound engineering practices and meeting the environmental standards established by the 404(b)(1) evaluation process…" (33 C.F.R. § 335.7).

The Recommended Plan includes the following features;

1) **Upland Placement Sites**: Four upland placement sites.

2) **Onshore Transfer Sites**: Six upland sites with river access where dredged material would be temporarily placed for transfer to upland placement sites.

3) **Island Transfer Sites:** Four existing island transfer sites adjacent to dredge cuts.

4) **Transportation Routes:** Seven truck transportation routes, two pipeline routes, and five barge routes (including one direct placement route) to move dredged material.

5) **Use of a Section 217(d) Agreement**: The Corps and the City of Wabasha are exploring the potential to enter into an agreement under the authority of Section 217(d) of the Water Resources Development Act of 1996, as amended, 33 U.S.C § 2326a(d).

6) **Beneficial Use of Dredged Material**: The Recommended Plan would allow the public to take dredged material from certain upland placement sites for beneficial use, and the Corps will support other specific beneficial uses as opportunities arise. Material placed at the Alma Marina onshore transfer site has consistently gone to public beneficial use. The Recommended Plan assumes that use will continue.

The Recommended Plan includes sites and features that the Corps would be interested in using at some point in the future because their use would be cost-effective, environmentally acceptable and the least impactful from a social perspective. The Recommended Plan includes acquiring the right to use lands needed to manage dredged material from Lower Pool 4 for the next 20 years. The approved DMMP will support the real estate acquisition process.

These sites and methods used are part of a larger set of plans and actions undertaken as maintenance of the 9-Foot Navigation Channel on the Upper Mississippi River in Lower Pool 4.

I have weighed the accomplishments to be obtained from the Lower Pool 4 DMMP against the cost and have considered the alternatives, impacts, and scope of the proposed project. Therefore, I recommend that the Lower Pool 4 DMMP of the Upper Mississippi River 9-Foot Navigation Project be approved for implementation.

The recommendations contained herein reflect the information available at this time and current department policies governing formulation of individual projects under the Operation and Maintenance of the Upper Mississippi River 9-Foot Navigation Project.

Eric Swenson
Colonel, Corps of Engineers
District Commander

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Appendix D

Finding of No Significant Impact

Lower Pool 4 Dredged Material Management Plan

Upper Mississippi River

Wabasha County, Minnesota

Buffalo and Pepin Counties, Wisconsin

US Army Corps of Engineers
St. Paul District

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FINDING OF NO SIGNIFICANT IMPACT

MISSISSIPPI RIVER LOWER POOL 4 DREDGED MATERIAL MANAGEMENT PLAN FEASIBILITY REPORT AND INTEGRATED ENVIRONMENTAL ASSESSMENT WABASHA COUNTY, MINNESOTA; BUFFALO AND PEPIN COUNTIES, WISCONSIN

The U.S. Army Corps of Engineers, St. Paul District (Corps) has conducted an environmental analysis in accordance with the National Environmental Policy Act of 1969, as amended. The final Integrated Feasibility Report and Environmental Assessment (IFR/EA) dated November 2022, for the Mississippi River Lower Pool 4 Dredged Material Management Plan Feasibility Study addresses the long-term management of dredged material in Lower Pool 4 of the Upper Mississippi River (UMR) for the purposes of continued operation and maintenance of the 9-foot Navigation Channel in Lower Pool 4.

The final IFR/EA, incorporated herein by reference, evaluated various options that would be used to manage an estimated 5,300,000 cubic yards of material over a 20-year period. The Recommended Plan, listed in its entirety in the IFR/EA, consists of:

The use of four permanent upland placement sites; six upland transfer sites with river access where dredged material would be temporarily placed for transfer to upland placement sites; four island transfer sites that have been used historically; seven truck transportation routes, two pipeline routes, and five barge routes (including one direct placement route) as options to move dredged material; and the use of a Section 217(d) agreement with the City of Wabasha to manage dredged material from Lower Pool 4. These sites and methods used are part of a larger set plans and actions undertaken as maintenance of the 9-Foot Navigation Channel on the Upper Mississippi River in Lower Pool 4.

In addition to a "no action" plan, several options were evaluated which are detailed in Chapter 5, Formulation and Screening of Alternatives, and Chapter 6, Sites and Features Retained in the Recommended Plan. Additionally, as part of the Recommended Plan, the Corps evaluated the use of a Section 217(d) agreement with the City of Wabasha which would allow the Corps to utilize dredged material facilities provided by the City in Pool 4 for a minimum of 10 years. In summary, the St. Paul District evaluated the management of material dredged from the six dredge cuts at a number of existing (historic) and potential dredged material placement sites in the vicinity of lower Pool 4 on the UMR. Current local land uses were assessed and landowners were contacted to develop a list of sites potentially suitable for permanent placement of dredged material. Options were developed that would meet the study objectives. Placement sites that were found to be implementable were evaluated using factors such as cost effectiveness, environmental acceptability, and operational feasibility. Historically, a limited amount of beneficial use of dredged material in lower Pool 4 has been part of management plans. The Recommended Plan would allow the public to take dredged material from certain upland placement sites for beneficial use, and the Corps will support other specific beneficial uses as opportunities arise.

For all options, the potential effects were evaluated as appropriate, as described in detail in Chapter 8 of the IFR/EA. A summary assessment of the potential effects of the Recommended Plan are listed in Table 1:

Table 1: Summary of Potential Effects of the Recommended Plan.

	Insignificant effects	Insignificant effects as a result of mitigation	Resource unaffected by action
Aesthetics	☒	☐	☐
Air quality	☒	☐	☐
Aquatic resources/wetlands	☒	☐	☐
Invasive species	☐	☐	☒
Fish and wildlife habitat	☒	☐	☐
Threatened/Endangered species	☒	☐	☐
Historic properties	☒	☐	☐
Other cultural resources	☒	☐	☐
Floodplains	☐	☐	☒
Hazardous, toxic & radioactive waste	☐	☐	☒
Hydrology	☐	☐	☒
Land use	☒	☐	☐
Navigation	☒	☐	☐
Noise levels	☒	☐	☐
Public infrastructure	☒	☐	☐
Socio-economics	☒	☐	☐
Environmental justice	☐	☐	☒
Soils	☒	☐	☐
Tribal trust resources	☐	☐	☒
Water quality	☒	☐	☐
Climate change	☒	☐	☐

All practicable and appropriate means to avoid or minimize adverse environmental effects were analyzed and incorporated into the Recommended Plan. Best management practices (BMPs), such as those related to erosion control at the placement sites, will be implemented, if appropriate, to minimize impacts.

No compensatory mitigation is required as part of the Recommended Plan.

Public review of the draft IFR/EA was completed on 19 April 2022. All comments submitted during the public comment period were responded to in the Final IFR/EA. A 30-day state and agency review of the Final IFR/EA was also completed on 19 April 2022.

Pursuant to Section 7 of the Endangered Species Act of 1973, as amended, the U.S. Army Corps of Engineers determined that the Recommended Plan for this phase of planning may affect, but is not likely to adversely affect, the rusty patched bumble bee. The USFWS concurred with the Corps' determination for rusty patched bumble bee on 10 December 2021. The Corps also determined that the Recommended Plan may affect the northern long-eared bat, and any resulting take of northern long eared bat would not be prohibited under the USFWS' 5 January 2016 Programmatic Biological Opinion for the species. The USFWS provided verification letters for the Corps' determinations for northern long eared bat on 12 November 2021, and acknowledged the Corps had satisfied its consultation requirement for northern long eared bat on 10 December 2021. Additional ESA review and coordination will be completed during the implementation phase for

individual features of the Recommended Plan. The Corps concluded that the Recommended Plan would have no effect on Higgins eye pearlymussel, sheepnose mussel, spectaclecase mussel, eastern massasauga rattlesnake, and whooping crane.

Pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended (54 U.S.C. § 306108, et seq.) and its implementing regulations 36 CFR Part 800 – Protection of Historic Properties, a programmatic agreement has been executed on 23 August 2022 pursuant to 36 CFR § 800.14(b)(1)(ii) and compliance with Section 106 has been satisfied.

Pursuant to the Clean Water Act of 1972, as amended, the discharge of dredged or fill material associated with the Recommended Plan must be compliant with section 404(b)(1) Guidelines (40 CFR Part 230). When hydraulic dredging methods are used to place material at the Zumbro River Flats South, G-1, or the Carrels placement sites, excess carriage water that does not percolate into the ground would be returned to the river. This discharge is addressed in Nationwide Permit 16, which also includes Section 401 Water Quality Certification from the Minnesota Pollution Control Agency. A temporary access pad is required to facilitate mechanical unloading of barges for the placement of dredged material at the Carrels site (see Section 6.3.3). This discharge is addressed in NWP 18, Minor Discharges, which also includes Section 401 Water Quality Certification from the MPCA. All conditions of the NWPs and Water Quality Certifications will be followed. The Recommended Plan is not anticipated to result in any other fill activity in a Water of the U.S., including wetlands. As a result, a 404(b)(1) and 401 water quality certification is not required at this time. Impacts to waters or wetlands will be avoided during dredged material placement at all sites to the extent practicable for the duration of the plan. If avoiding wetland fill later becomes impracticable due to capacity needs, the District will first conduct an evaluation in accordance with Section 404(b)(1) of the Clean Water Act, and compensate for wetland losses as appropriate at that time.

Pursuant to the Farmland Protection Policy Act of 1981, the Recommended Plan will not result in irreversible conversion of important farmland to nonagricultural uses.

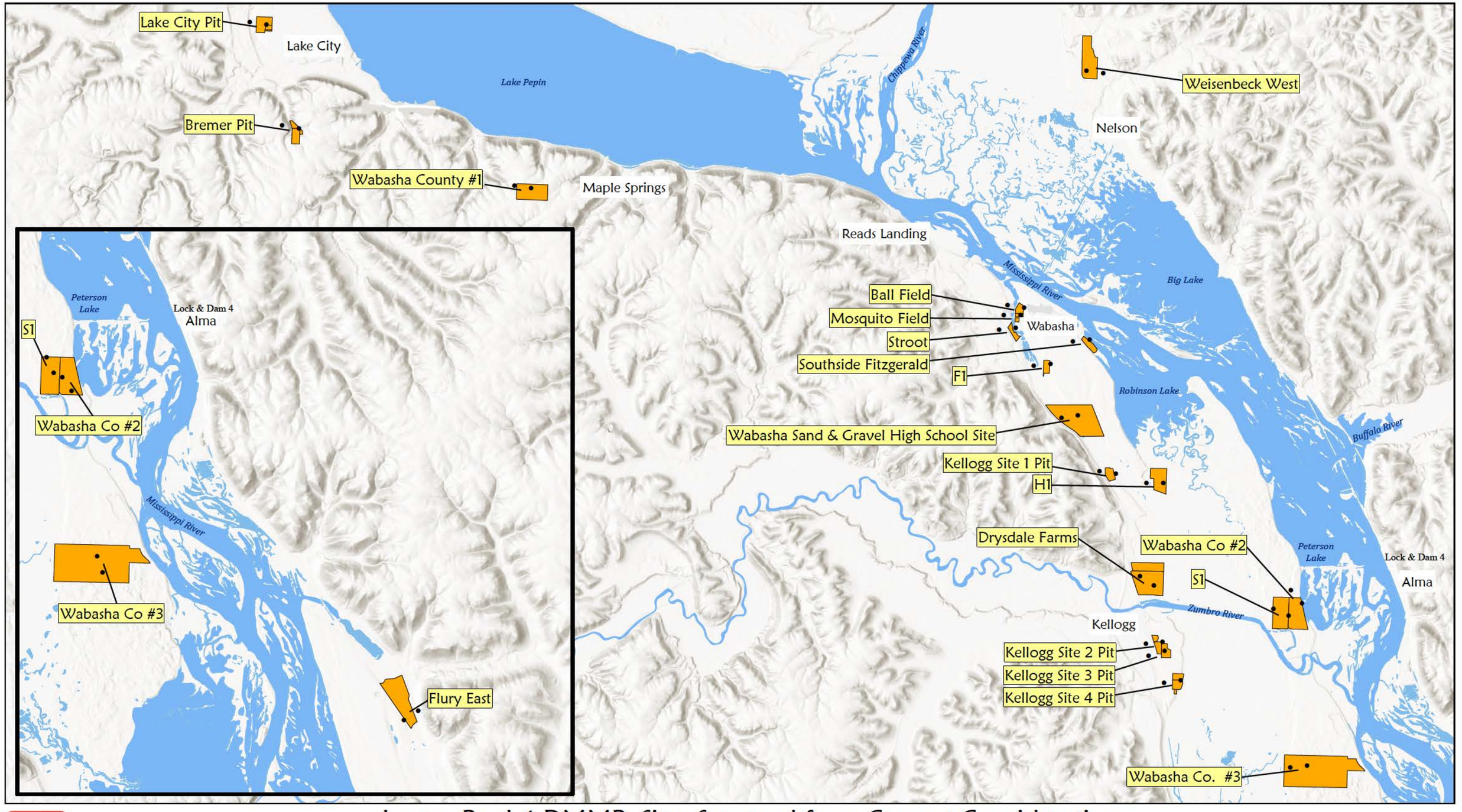
All applicable environmental laws have been considered and coordination with appropriate agencies and officials has been completed.

Technical, environmental, and economic criteria used in the formulation of alternative plans were those specified in the Water Resources Council's 1983 Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies. All applicable laws, executive orders, regulations, and local government plans were considered in evaluation of alternatives. Based on this report, the reviews by other Federal, State and local agencies, Tribes, input of the public, and the review by my staff, it is my determination that the Recommended Plan would not cause significant adverse effects on the quality of the human environment; therefore, preparation of an Environmental Impact Statement is not required.

9 November 2022

Date

Eric R. Swenson
Colonel, Corps of Engineers
District Engineer



St. Paul District
GIS CENTER

US Army Corps of Engineers ®

Lower Pool 4 DMMP: Sites Screened from Current Consideration

Base Image: ESRI WMS World Imagery

0 0.5 1 2 3 4 Miles

Plate 1

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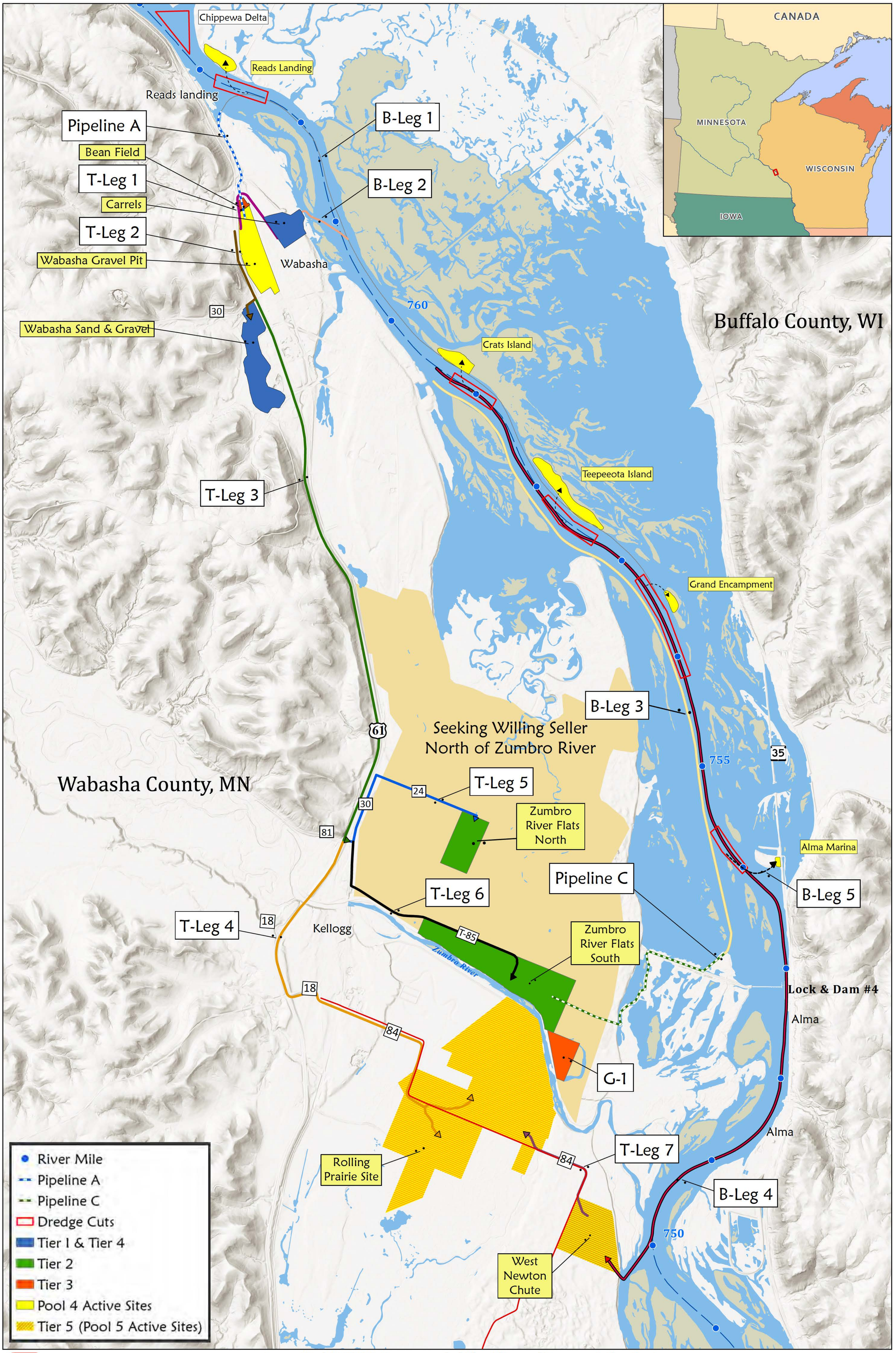

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Lower Pool 4 DMMP: Recommended Plan Sites and Transportation Routes

Base Image: ESRI WMS Topographic

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Plate 2