FINAL Dredged Material Management Plan and
Integrated Environmental Assessment

Pool 6 Dredged Material Management Plan

Upper Mississippi River
Winona County, Minnesota;
Buffalo and Trempealeau Counties, Wisconsin


Lock and Dam No. 6, Trempealeau, WI

US Army Corps of Engineers
St. Paul District

January 2023

CONTENTS

LIST OF FIGURES

LIST OF TABLES

PLATES

APPENDICES

Executive Summary

The purpose of this Dredged Material Management Plan (DMMP) is to prepare a coordinated, long-term plan for managing dredged material generated by the continued operation and maintenance of the 9-foot Navigation Channel Project in Pool 6 of the Upper Mississippi River (UMR). This plan was initiated due to a change in the availability of dredged material placement sites previously used in Pool 6. Pool 6 has seven active dredge cuts where maintenance dredging has occurred since 1970 (as shown on Plate 2), with over 1.5 million cubic yards of material dredged during this period.

Dredged material in Pool 6 was managed similarly from 1975 – 2013, according to the recommendations made in the Great River Environmental Action Team (GREAT) I study, and as implemented in the Channel Maintenance Management Plan ("CMMP") for the 9-Foot Navigation Channel. The CMMP describes the long-term dredged material placement plans of the St. Paul District and provides designated placement sites for all of the active channel dredging locations as well as the commercial and small-boat harbor dredging locations. Pursuant to the CMMP, all dredged material in Pool 6 was placed at one of three sites as described in the CMMP for Pool 6: Homer West (~50,000 cubic yard capacity under agreement with the owner), Winona Commercial Harbor (~55,000 cubic yard capacity), and Winona Harbor (~20,000 cubic yard capacity). These properties were owned by private parties or local government and the site owners either had uses for this dredged material or were able to sell the dredged material that was placed on their property. This recurrent use of the material provided replenished annual capacity for the dredging needs of the pool at these relatively small sites.

In 2013, the Corps lost access to the Winona Commercial Harbor Site. That same year, it was indicated to the Corps by the owner of the Homer West site that availability for placement was limited because the owner had material stored there, and the owner was planning to sell the site. This left only 20,000 cubic yards of assured material placement capacity (at the Winona Harbor site). These events led to beginning the DMMP process. Since that time, the Corps was able to acquire the Homer West site in fee in 2018 under authority of the CMMP, but the available capacity still does not meet the Corps' anticipated long-term dredged material placement needs in Pool 6. This DMMP is part of a planning process tiered off of the original CMMP, to meet the demands of these changing conditions.

The primary functions of this planning effort are to (1) Determine how much dredged material capacity is needed, (2) Identify potential sites for use, and (3) Evaluate and compare the sites to make recommendations on their use.

The amount of space needed is dependent on how much dredging is expected and how the material will be managed after dredging. Per Corps policy, DMMP planning is based on securing dredged material storage capacity for the projected dredging needs of the upcoming 20 or more years. Pool 6 is expected to produce approximately 1.5 million cubic yards of dredged material over the next 20 years. However, Pool 6 is different than most pools managed by the St. Paul District because all the material dredged from Pool 6 over the last 30+ years has been placed at smaller sites and is used by the local community for purposes such as construction fill, road maintenance, or cattle bedding. This method of dredged material management provides a valuable commodity to the community and reduces land acquisition needs and costs to the Federal Government. Due to the history of beneficial use success, the Corps formulated this DMMP with the primary goal of securing enough capacity to successfully operate open beneficial use sites rather than seek the much greater area required to store all the dredged material over the plan life. A secondary goal of identifying contingency capacity was added to the study in the event beneficial use management does not fulfil all dredged material management needs in Pool 6 over the 20-year study period.

The Corps opted to develop a target minimum placement capacity based on the largest amount of material expected to be dredged in one year. This was estimated by reviewing the historic dredging records. The highest quantity of dredging required in Pool 6 in a single dredging season was 134,400 cubic yards in 2014, a year which involved a significant flood event. A twenty-five percent contingency (approximately 33,600 cubic yards) was added to account for unusually high-dredging years or low beneficial use, resulting in a target minimum revolving capacity of 168,000 cubic yards.

The second component of DMMP planning is identifying sites potentially suitable for dredged material placement. The Corps performed an assessment of current local land uses and coordinated with local river and land use management representatives in Pool 6. Thirty-three sites were identified in total. Material would generally be managed at these sites in one of three ways:

> **Open Beneficial Use** sites are areas where dredged sand would be stockpiled from dredging events, and then removed on an as-needed basis by private or local entities. This is how dredged material has been managed in Pool 6 for over 30 years. Sites where open beneficial use is possible are the primary focus of the long-term plan for Pool 6.

Permanent Placement sites are areas where the material would be placed by the Corps and then would be unlikely to be moved again. Any vacant land could serve as a potential permanent placement site. Mining pits were identified here because they typically provide more capacity per-acre. No permanent placement sites with direct river access were identified, so transportation costs were high in this category.

One-time Beneficial Use and **Private Beneficial Use** sites are opportunities for using dredged material for a specific purpose. Examples include construction fill for developing an upland area, or for creating and enhancing islands or habitat within the river system. Many opportunities were identified in this category. Many of the opportunities identified would require substantial further planning to implement, and most have planning requirements for entities outside of the Corps. Therefore, most of these were not carried forward as part of this plan but will be considered on a case-by-case basis as the opportunities develop.

The Corps also identified **Transfer Sites** that would be critical to efficiently moving material from barges onto land, providing shorter truck routes to identified placement sites.

Third, each of the sites were evaluated based on aspects of economic, environmental, social, and cultural resource impacts. Sites were placed into one of four categories based on the results of this evaluation: (1) Currently available sites carried forward for continued use; (2) Sites screened from further consideration because they would not meet the study objectives or fit within the identified constraints; (3) Sites that could provide beneficial use opportunities for dredged material in the future, but were determined to be unsuitable as part of the plan to meet the long-term capacity needs; and (4) Sites that were the most promising candidates for meeting the study objectives and were carried forward for possible implementation. Twelve of the thirty-three sites were carried forward and are shown on the map on Plate 4.

Finally, the twelve sites carried forward were evaluated in more detail by estimating costs and site capacities to prioritize their use and develop a Tentatively Selected Plan (TSP). The sites were split into three tiers by cost of use to differentiate them and select the “Federal standard” (see 33 C.F.R. § 335.7). In this case, the capacity of the Tier 1 sites with the lowest unit cost combine to meet the target minimum capacity developed in this study. These sites include two CMMP sites (i.e. Winona Harbor and Homer) that have been previously used by the Corps. The CMMP-defined ‘Homer’ site includes property owned by two separate entities and were therefore evaluated separately in this report and referred to as the Homer West and Homer East sites. The Corps presently owns the Homer West site and has used the site for dredged material placement

consistently since the 1980s. However, to be consistent with the CMMP, the Homer East and West sites are collectively referred to as the Homer site, which is included in the TSP, and altogether could provide up to 175,000 cubic yards of capacity. The Winona Harbor site has a capacity for 20,000 cubic yards, and an option for expanding the existing site was also carried forward as a Tier 1 site which would increase the site capacity by 26,500 cubic yards. Although the Tier 1 sites meet the target minimum revolving capacity, the Corps also recognized that this plan carries some risk because dredging trends or beneficial use trends could change resulting in a lack of space for the long-term dredging needs. To reduce risk and plan for this uncertainty, several more expensive options were also retained in the TSP. Three local mine pits were identified that could accommodate substantial permanent placement to relieve pressure at the open beneficial use sites. These are classified as Tier 3 sites and would provide high capacities for dredged material placement, but the use of these sites comes at the highest expense due to the long transportation routes. Three moderately expensive sites that represent future placement opportunities were carried forward for consideration as Tier 2 sites. The Tier 2 sites are closer to transfer sites and would therefore cost less than Tier 3 sites but are dependent on site development plans and owner needs. These opportunistic sites could be used when available. Two transfer sites were identified that would be critical to efficiently moving material from barges into trucks for transport to inland sites. Finally, the Corps will continue to work with partners to develop one-time beneficial use sites where opportunities and authorities allow. This may include projects designed for ecosystem restoration or enhancement purposes.

A draft DMMP report was released in February of 2020 for public and agency review. A public meeting was held on February 11, 2020 at the Winona Historical Society to present the plan to the community. The comment period for the draft plan was extended upon request to April 10, 2020. Reviewers expressed concerns about potential environmental and social impacts at Latsch Island from the proposed expansion of the Winona Harbor site, and potential social impacts from the use of the Homer placement site. The Corps considered the public comments from 2020 and worked with stakeholders to modify the proposed plan to reduce concerns where possible. In summary, the following changes were made:

- Removed Winona Harbor Large Expansion from consideration
- Added two new future placement opportunities in Tier 2, which if implemented, could manage a substantial volume of dredged material, and reduce impacts at other sites.
- Added two transfer sites to improve trucking efficiency.

Following these revisions, a second draft DMMP report was released in June of 2022 for public and agency review. A public open house was held on June 22, 2022 at the Winona Historical Society to present the plan to the community. The

comment period for the draft plan ended on July 15, 2022. Some reviewers expressed concerns about social impacts from the use of the Homer placement site. The Homer placement site will be retained in the plan due to the limited availability of potential placement sites within Pool 6 and because having these management options available in the future may be critical to maintaining the 9-Foot Navigation Channel. However, the Corps is not actively pursuing the Homer East site at this time. As a part of plan implementation, the Corps' will attempt to secure access to as many of the DMMP selected sites as practicable, because having more options would help reduce the burden on any given site and reduce implementation risks. Other potential actions to minimize impacts have been identified and are listed in Chapter 9 of this document.

The environmental effects of the TSP are temporary but recurring minor adverse effects on noise, transportation, and air quality; minor adverse effects on aesthetic values, terrestrial habitat, wetlands, aquatic habitat, and biological productivity; and minor beneficial effects on transportation and commercial navigation.

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 Acts of 1930 and 1932. 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 is focused on the area in the vicinity of navigation Pool 6 of the Mississippi River, located between Lock and Dam Number 5A at River Mile 728.5 and Lock and Dam Number 6 at River Mile 714.1. The lateral boundaries of the study generally include the floodplain and adjacent upland areas, which encompass approximately 22,000 acres. The study area borders the city of Winona, Minnesota at the upstream end and extends downstream to the Village of Trempealeau, Wisconsin. Pool 6 includes the 6,226-acre Trempealeau National Wildlife Refuge (NWR), which forms most of the northern border of the Pool. In addition, the Pool is located within the Upper Mississippi River National Wildlife and Fish Refuge, a large corridor of land and water that includes most of the Mississippi River and its floodplain between Wabasha, Minnesota and Rock Island, Illinois. Plate 1 shows the study area and identifies some of the landmarks and local place names referenced in this report.

The NEPA process used within this report follows the original 1978 NEPA implementation regulations. The updated 2020 regulations apply to NEPA processes begun after September 14, 2020 (40 CFR § 1506.13 (2020)). This current draft report is a revision to the draft that was released for public review in February 2020.

1.3 Purpose and Need

The Corps is responsible for maintaining the Upper Mississippi River, 9-Foot Navigation Channel Project. Dredging is an integral part of maintaining the channel, and dredged material must be managed in a cost-effective and environmentally acceptable manner. The purpose of this Dredged Material Management Plan (DMMP) is to prepare a coordinated, long-term plan for managing dredged material generated by the continued operation and maintenance of the 9-foot Navigation Channel Project in Pool 6 of the Upper Mississippi River (UMR). This DMMP will update the dredged material management practices in Pool 6 that are currently implemented under the CMMP. The DMMP must comply with Corps policy for managing dredged material pursuant to the Federal standard. The Federal standard is defined as "the dredged material disposal alternative identified by the Corps which represents the least costly alternative consistent with sound engineering practices and meeting the environmental standards established by the 404(b)(1) guidelines." *33 CFR 335.7*. This DMMP was initiated due to decreased availability of CMMP-identified dredged material placement sites in Pool 6. This report documents the plan formulation efforts conducted by the U.S. Army Corps of Engineers. 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 6. The following studies and projects addressing channel maintenance, resource management, land use, and recreational planning in Pool 6 have the most relevance to this study. These studies and reports are being incorporated into this DMMP by reference.

1.4.1 UMR 9-Foot Navigation Channel Project Environmental Impact Statement (Record of Decision 1974)

This document, completed in October 1974, 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 Study (GREAT I)

This 9-volume report (completed in 1980) documents the results of the 5-year Great River Environmental Action Team 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, including the preparation of a 40-year plan for dredged material placement for all of the historic dredging locations in the St. Paul District.

1.4.3 Channel Maintenance Management Plan (CMMP) and Environmental Impact Statement (Record of Decision 1997)

The CMMP and accompanying Environmental Impact Statement (EIS) is the St. Paul District's plan for channel maintenance and dredged material management for the UMR. The report was published in 1996. Much of the plan is devoted to the designation and design of dredged material placement sites. Included in this report is a discussion of the District’s program for channel management.

1.4.4 “Beneficial Dredged Material Use in Pool 6” Report, 2014 & 2016

This Definite Project Report and Integrated Environmental Assessment, finalized in April of 2016, describes and evaluates two beneficial uses for dredged material in Pool 6: (1) Transportation to and stockpiling of dredged material in a vacant lot owned by the City of Winona – the “Port Authority Business Park”, and (2) A plan to restore a portion of land mass eroded from the head of Mosquito Island in Pool 6. The Corps prepared this plan to provide immediate options for dredged material placement capacity while formulating a long-term plan in the DMMP. Dredged material has been placed at the Port Authority Business Park site periodically since 2014. The work at Mosquito Island was completed in 2017.

1.4.5 Final Environmental Assessment and FONSI for “Transfer of Dredged Material from Homer to Yaedke Pit”, October 2020

This abbreviated Environmental Assessment was tiered from the February 2020 public release of the draft Pool 6 DMMP. While the Corps pursued reformulation of the DMMP, there was an immediate need to unload the Homer placement site to ensure adequate capacity for the 2021 dredging season.

CHAPTER 2.

Affected Environment

A description of components of the nearby environment is given here to provide a measure of the current state of the project's 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. In addition, Chapter 5 contains more specific analysis of the affected environment for each of the dredged material placement sites contained in the alternatives. Effects of the alternatives under consideration are discussed in Chapter 7.

2.1 Socioeconomic Conditions

The cities of Winona, Minnesota and Trempealeau, Wisconsin have populations of approximately 27,000 and 1,300, respectively. The cities of La Crosse and Onalaska, Wisconsin, are located about 20 miles south of Lock and Dam 6 and have a combined population of more than 65,000. The city of Fountain City, Wisconsin, located approximately 3 miles above Lock and Dam 5A, has a population of approximately 800.

Transportation corridors bound both sides of the floodplain in Pool 6. Railroad tracks border both sides of the river. A railroad track also runs through the pool along a levee on the southwestern edge of the Trempealeau National Wildlife Refuge to near Winona where it angles back towards the Wisconsin bank. On the Wisconsin side, State Highway 35 parallels the river in the upper parts of the pool, whereas gravel and smaller paved roads parallel the lower end of the pool. In Minnesota, U.S. Highway 61 parallels the river the entire length of the pool. A single bridge, Minnesota State Highway 43/Wisconsin State Highway 54 crosses the pool from downtown Winona to the Wisconsin side.

2.1.1 COMMERCIAL NAVIGATION

Pool 6 is a portion of the Upper Mississippi River–Illinois Waterway (UMR-IWW), 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, Minnesota Metro Area,

downstream as far as New Orleans, Louisiana, and to points east and west on the 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 2019, over 9 million tons of commodities were transported through Lock and Dam 5A and more than 11 million tons of commodities were transported through Lock and Dam 6. Tonnage exiting the navigation system through the Port of Winona accounts for the difference in traffic levels through the locks. Between 2005 and 2015, barge freight through Lock and Dam 6 ranged from 7.2 to 11.0 million tons (average of 9.3 million tons). Transportation benefits to the nation associated with this level of tonnage amount to approximately $250 million.

2.1.2 RECREATION

The natural character of this portion of the river, proximity to Winona, and the relatively good water quality in Pool 6 contribute to its recreational and aesthetic desirability. Approximately forty-five percent of the land within Pool 6 is under Federal ownership, including over 6,000 acres managed for wildlife as part of the Trempealeau National Wildlife Refuge, 3,400 acres managed as part of the Upper Mississippi River National Wildlife and Fish Refuge, and an additional 1,139 acres of Aghaming Park, owned by the City of Winona and managed by the USFWS through a lease agreement. The City of Winona manages a number of recreational facilities, including Latsch Island, the Prairie Island Campground, the city harbor boat ramp (at Dick's Marine), and the Winona Marina. Perrot State Park is located along the Wisconsin shoreline just below the Trempealeau NWR. The Pool receives recreational boat traffic, and a number of public day-use and camping recreation facilities and private marina facilities are available to recreationists in the Pool. There is widespread use of the Pool by anglers and hunters. Other public recreation facilities in Pool 6 include several boat landing/parking areas that are scattered throughout the Pool. Beach areas include nine sand-covered island areas created by past channel maintenance activities and three additional locally-owned beach sites, most of which receive some recreational use.

2.1.3 NOISE, AESTHETICS, DUST, AND TRAFFIC

Noise, aesthetics, dust, and traffic are typically highly local considerations, and pool wide generalizations aren't necessarily useful in evaluating potential impacts. Therefore, land uses around affected areas are described in Chapter 7: Environmental Effects to provide better context of the effects for the reader.

2.1.4 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. Figure 1 shows the approximate project study area boundary with a 2-mile buffer added to the boundary. This represents the community impacted by the project. The communities of comparison selected for the project area are the counties of Winona, Minnesota, and Buffalo and Trempealeau, Wisconsin (Table 1). The EJScreen tool estimated an approximate population 39,889 in the project area. The overall population of the three counties representing the community of comparison is 93,452. Table 1 displays key demographic data for use in this analysis including overall population size, minority population percentage, and low-income population percentage. Low-income groups within the project area are those where household income is less than or equal to twice the federal "poverty level."

Figure 1. Overall Study Area for Environmental Justice Analysis

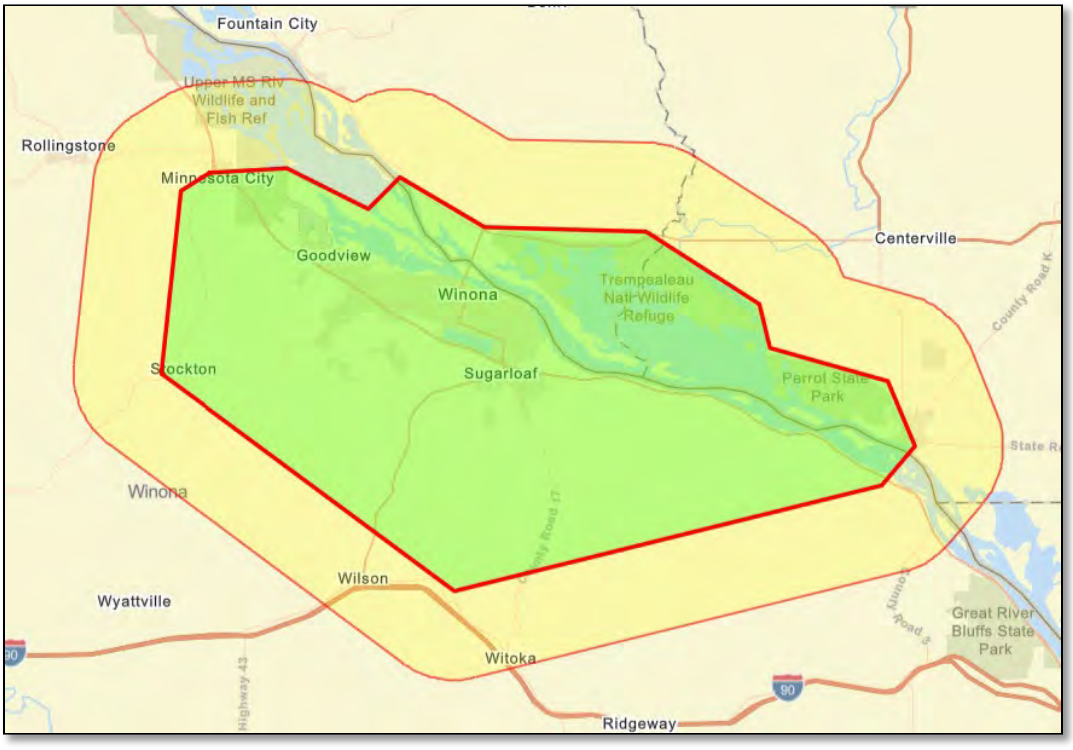


Table 1 - Demographic data for the project area, counties, and USA

	Study Area	Winona County, MN	Trempeleau & Buffalo Counties, WI	USA
Population	39,899	50,847	42,605	308.7 M
Minority Population	8%	9%	8%	39%
Low Income Population	32%	30%	28%	33%

2.2 Natural Resources

2.2.1 PHYSICAL SETTING

The valley of Pool 6 varies in width from about one mile at Trempealeau, Wisconsin to over 5 miles mid-pool. The bluffs are steep on both sides and highly dissected, with a maximum relief of around 600 feet. The main channel parallels the high Wisconsin shoreline at Lock and Dam 5A but angles across the valley to the city limits of Winona where it parallels the Minnesota shoreline to Lock and Dam 6. Trempealeau NWR comprises a large portion of the pool and is separated from the main channel by the Burlington Northern Railroad embankment. Because of the embankment, the channel is constricted which inhibits barge access to the Wisconsin shoreline throughout most of Pool 6. On the Minnesota side, much of the city of Winona is separated from the floodplain by an 11-mile-long levee constructed for the purpose of flood risk reduction between the years 1965 and 1985.

Sediment and Substrate

Sediment quality is generally good in Pool 6. Main channel sediments are primarily medium to coarse sands with only trace amounts (generally less than 3 percent 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. Levels of pesticides and other chlorinated hydrocarbons are generally below detection limits in all main channel sediments and detected at low levels in backwaters.

Hydrology

The Mississippi River at Lock and Dam 6 drains an area of approximately 60,000 square miles. The drainage basin above Lock and Dam 6 includes large portions

of Minnesota and Wisconsin and a small portion of eastern South Dakota. Approximately two-thirds of the watershed is agricultural use; the rest is primarily forested lands and urban areas. Annual precipitation in the area is about 32 inches per year.

Since 1959, the average annual discharge at Lock and Dam 6 has been 34,008 cubic feet per second (cfs). Over the same time frame, the lowest recorded discharge was 2,500 cfs in December 1980 and the highest recorded discharge was 267,000 in April 1965. Early summer (June) discharges at Lock and Dam 6 generally range from 30,000 to 50,000 cfs. By late summer, discharges usually decrease to a range of 20,000 to 35,000 cfs. Winter low flows are usually in the range of 10,000 to 20,000 cfs. There was a 28% increase in the average annual flow for the 1981-2020 time period compared to the 1929-1980 time period.

Water Quality

Pool 6 of the Mississippi River has generally good water quality. Except 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 (BOD) loading. Fertility levels (nitrogen, phosphorus, potassium, calcium, etc.) are ample to support growth of rooted aquatics and algae. Water quality is generally better in this reach of the river than above Lake Pepin (located approximately 40 miles upstream from Pool 6). Pool 6 is listed as impaired in Wisconsin due to total phosphorus and mercury, and for perfluorooctane sulfonate (PFOS) and polychlorinated biphenyls (PCBs) in fish tissue. Pool 6 is also listed as impaired in Minnesota due to aluminum and sulfate, and mercury and PCBs in fish.

2.2.2 BIOLOGICAL RESOURCES

Fish

The UMR on a whole supports a diverse assemblage of freshwater fish. Approximately 100 species of fish representing as many as 25 families have been recently sampled from the UMR between Minneapolis and Lock and Dam 10 (Schmidt & Proulx, 2009). Most of the fish present in Pool 6 are native warmwater species. Common game species include walleye, sauger, northern pike, channel catfish, largemouth bass, bluegill, and white and black crappie. Common non-game fish include freshwater drum, carp, redhorses, buffaloes, and a wide variety of minnows. Pool 6 also harbors less common non-game species such as sturgeons, gars, paddlefish, and bowfin. Non-native species currently residing in the UMR include common carp, grass carp, bigheaded carp, and

goldfish. State-listed rare fish species that occur within Pool 6 are described in Section 2.2.5.

Wildlife

Pool 6 contains an abundance of wildlife. The area contains a rich mixture of vertebrate animals from the northern and southern United States, as well as an overlapping of eastern and western species. White-tailed deer use the area as a food source and a wintering area. Many small- and medium-sized carnivores such as red and gray fox, raccoon, and river otters also use the area. Many other mammals such as mink, beaver, muskrat, shrews, moles, bats, rabbits, and squirrels and numerous varieties of mice are common in the area. State-listed rare wildlife species that occur within Pool 6 are described in Section 2.2.5.

The great variety of bird species that use the Pool 6 area can be attributed to its location within the Mississippi flyway. At least 300 species of birds, about 60 percent 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 percent of the continent's waterfowl migrate (U.S. Fish and Wildlife Service, 2006). The Mississippi flyway also provides migration habitat for songbirds, colonial nesting birds, secretive marsh birds, and raptors, making the UMR a resource of national and international importance.

In addition to the Mississippi flyway the Trempealeau NWR provides critical nesting, resting, and foraging habitat for a host of migratory birds. Major breeding waterfowl use is by wood duck. Other breeding waterfowl include the blue-winged teal, mallard, hooded merganser, and Canada goose.

Several bird species occur in Pool 6 that are of special interest because of their status as rare species. Notable species include the bald eagle, red-shouldered hawks, and prothonotary warblers. Pool 6 is known to have nesting colonies of black terns and double-crested cormorants (*Stefanski, U.S. Fish and Wildlife Service (USFWS) Pers. Comm*). Other species known to occur in Pool 6 that are of special interest include the osprey, double-breasted cormorant, and pileated woodpecker.

The floodplain of Pool 6 provides habitat for a wide variety of amphibians and reptiles. Common species typically found in and along sloughs of the floodplain may include fox snake, tiger salamander, American toad, gray tree frog, green frog, snapping turtle, painted turtle, common map turtle, and northern leopard frog. Within the river itself, at least 28 species of freshwater mussels are known to occur in Pool 6, including federal- and state-listed threatened and endangered species (Kelner, 2021).

2.2.3 TERRESTRIAL HABITAT

Terrestrial habitats within the floodplain of Pool 6 include areas of forest, brush and shrub areas, wet and upland meadows, areas disturbed by commercial or 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. Pool 6 contains approximately 5,400 acres of terrestrial habitat.

2.2.4 AQUATIC HABITAT / WETLANDS

A variety of aquatic habitats exist in the Pool 6, as classified by Wilcox (1993). The main navigation channel conveys the majority of river discharge. Typically, flows within the main channel are at a higher velocity with shifting substrates and devoid of vegetation. Main channel border areas lie between the main navigation channel and the riverbank (i.e., island shorelines) and may harbor river training structures, submerged logs and riprap that provide habitat for a variety of biota. Secondary channels are large channels that carry less flow than the main channel and are defined by the apparent shorelines or inundated natural bank lines. Secondary channels offer variable habitats depending on flow, water depth, substrate, submerged structures, light penetration, wind, water quality, etc. Contiguous backwater areas within Pool 6 are limited due to the constrictions imposed by the Winona City Levee system and the railroad dike that runs along much of the left descending bank of the river, but there are floodplain depression lakes and floodplain shallow aquatic areas that occur throughout the area.

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 (Environmental Laboratory, 1987). 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 preclude vegetative growth.

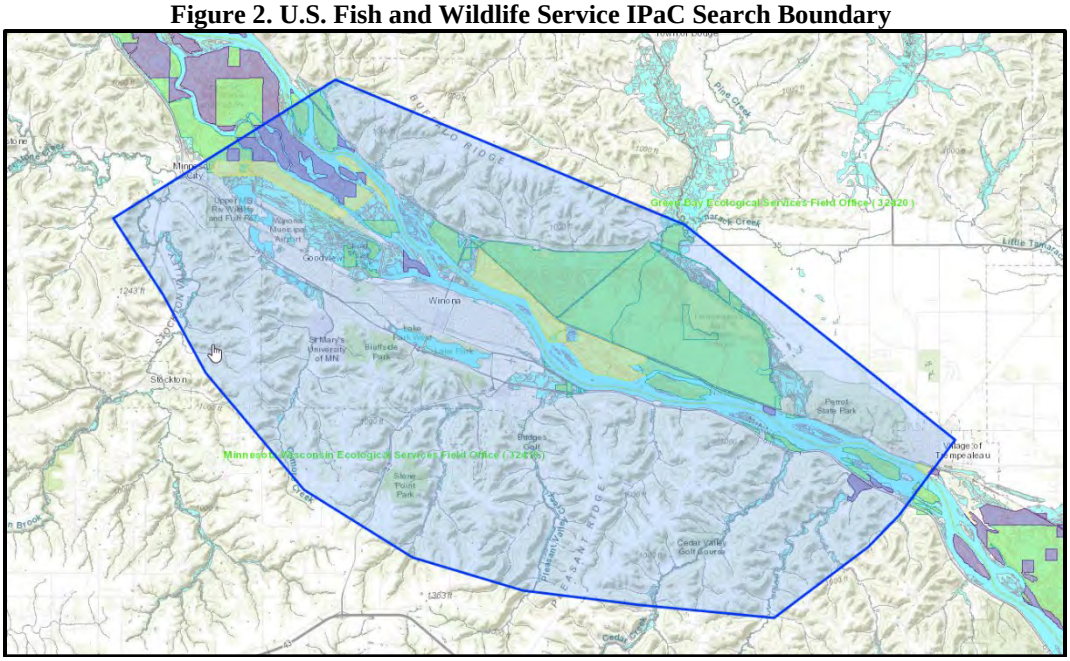
2.2.5 THREATENED AND ENDANGERED SPECIES

Federally-Listed Threatened and Endangered Species

The U.S. Fish and Wildlife Service's "Information for Planning and Conservation" (IPaC) website was consulted to determine if any proposed, candidate, threatened, or endangered species occurred within the project area. The species list was last updated on January 20, 2022. The results indicated that a total

of four Federally-listed endangered species are known to occur in in Pool 6 and the immediate surrounding area. This includes two freshwater mussels: the Higgins eye pearlymussel (*Lampsilis higginsii*) and sheepnose (*Plethobasus cyphyus*), and two insects: the Karner blue butterfly (*Lycaeides Melissa samuelis*) and the rusty patched bumble bee (*Bombus affinis*). In addition, one species of bat is Federally-listed as threatened: the northern long-eared bat (*Myotis septentrionalis*); and one insect species is listed as a Candidate: the monarch butterfly (*Danaus plexippus*). A non-essential experimental population of the whooping crane (*Grus Americana*) may also occur locally. No critical habitat for any Federally-listed species is present within the project area. These species and their federal status as of January 2022 are listed in Table 2 at the end of this section.

Figure 2. U.S. Fish and Wildlife Service IPaC Search Boundary



Suitable habitat for the Higgins eye pearlymussel includes areas of various stable substrates in large streams and rivers (U.S. Fish and Wildlife Service, 2004). Although rare, live specimens of the Higgins eye pearlymussel have been found as recently as 2007 in Pool 6. 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). The sheepnose is not known to be extant in Pool 6 of the Upper Mississippi River - no live specimens have been found for over 30 years (Kelner, 2021).

Suitable habitat for the Karner blue butterfly includes oak savannas and pine barren ecosystems. The species is dependent on the wild lupine plant, which grows best in dry sandy soils located in open-canopy habitats (USFWS, 2003).

The rusty patched bumble bee occupies grasslands and tallgrass prairies of the Upper Midwest and Northeast. This bumble bee needs areas that provide food (nectar and pollen from flowers), nesting sites (underground and abandoned rodent cavities or clumps of grasses above ground), and overwintering sites for hibernating queens (undisturbed soil) (USFWS, 2016).

Suitable habitat for the northern long-eared bat 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. 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, 2013).

The monarch butterflies found in Minnesota and Wisconsin are part of the eastern North American migratory population which spend their summers in the northern United States and winters in Mexico. Adult monarchs require diverse blooming nectar sources for feeding, and milkweed on which to lay eggs and for larvae to eat. During migration, monarchs require nectar, milkweed, and roosting sites along their route (U.S. Fish and Wildlife Service, 2020).

Whooping cranes are large, aquatic, migratory birds. They use shallow, seasonally and semipermanently flooded palustrine (marshy) wetlands for roosting and various cropland and emergent wetlands for feeding. During migration, whooping cranes are often recorded in riverine habitats (Canadian Wildlife Service and U.S. Fish and Wildlife Service, 2007).

Table 2. Federally-Protected Species that May Occur Within Project Area

Common Name	Scientific Name	Fed Status
Higgins eye	*Lampsilis higginsii*	Endangered
Sheepnose	*Plethobasus cyphyus*	Endangered
Karner blue butterfly	*Lycaeides Melissa samuelis*	Endangered
Rusty patched bumble bee	*Bombus affinus*	Endangered
Northern long-eared bat	*Myotis seprentrionalis*	Threatened
Monarch butterfly	*Danaus plexippus*	Candidate
Whooping crane	*Grus americana*	Non-essential experimental pop.

State-Listed Rare Species

A number of species that are listed by the States of Minnesota or Wisconsin as endangered or threatened have been historically documented in the vicinity of the project area. These species are listed in Table 2 and Table 3, respectively. These species include freshwater mussels, fish, plants, birds, reptiles, and an amphibian. The resource search was conducted following plan selection to focus the species list on resources near areas of activity.

Table 3. Minnesota State-Protected Species with records within one-mile of all placement sites carried forward. *

Common Name	Scientific Name	MN Status	Fed Status
Birds			
Bell's Vireo	*Vireo bellii*	SPC	
Cerulean Warbler	*Setophaga cerulea*	SPC	
Common Gallinule	*Gallinula galeata*	SPC	
Henslow's Sparrow	*Ammodramus henslowii*	END	
Peregrine Falcon	*Falco peregrinus*	SPC	
Fish			
Black Buffalo	*Ictiobus niger*	THR	
Blue Sucker	*Cycleptus elongatus*	SPC	
Bluntnose Darter	*Etheostoma chlorosoma*	SPC	
Crystal Darter	*Crystallaria asprella*	END	
Mississippi Silvery Minnow	*Hybognathus nuchalis*	SPC	
Mudpuppy	*Necturus maculosus*	SPC	
Paddlefish	*Polyodon spathula*	THR	
Pirate Perch	*Aphredoderus sayanus*	SPC	
Skipjack Herring	*Alosa chrysochloris*	END	
Suckermouth Minnow	*Phenacobius mirabilis*	SPC	
Warmouth	*Lepomis gulosus*	SPC	
Yellow Bass	*Morone mississippiensis*	SPC	
Amphibians			
Blanchard's Cricket Frog	*Acris blanchardi*	END	
Freshwater mussels			
Black Sandshell	*Ligumia recta*	SPC	
Butterfly	*Ellipsaria lineolata*	THR	
Ebonyshell	*Reginaia ebenus*	END	
Elephant-ear	*Elliptio crassidens*	END	
Elktoe	*Alasmidonta marginata*	THR	
Fawnsfoot	*Truncilla donaciformis*	THR	
Monkeyface	*Theliderma metanevra*	THR	
Mucket	*Actinonaias ligamentina*	THR	
Rock Pocketbook	*Arcidens confragosus*	END	
Round Pigtoe	*Pleurobema sintoxia*	SPC	
Spike	*Eurynia dilatata*	THR	
Wartyback	*Quadrula nodulata*	THR	
Washboard	*Megalonaias nervosa*	END	
Plants			
Blunt-lobed Grapefern	*Botrychium oneidense*	THR	
Cattail Sedge	*Carex typhina*	SPC	
Ebony Spleenwort	*Asplenium platyneuron*	SPC	
Gray's Sedge	*Carex grayi*	SPC	
Green Dragon	*Arisaema dracontium*	SPC	
Hooded Arrowhead	*Sagittaria calycina var. calycina*	THR	
Lance-leaf Violet	*Viola lanceolata var. lanceolata*	THR	
Muskingum Sedge	*Carex muskingumensis*	SPC	
Stream Parsnip	*Berula erecta*	THR	
Tall Extinguisher Moss	*Encalypta procera*	SPC	
Reptiles			
Blanding's Turtle	*Emydoidea blandingii*	THR	
North American Racer	*Coluber constrictor*	SPC	
Timber Rattlesnake	*Crotalus horridus*	THR	
Insects			
Splendid tiger beetle	*Cicindela splendida cyanocephalata*	SPC	

Table 4 - Wisconsin State-Protected Species with records that are near placement sites carried forward. *

Common Name	Scientific Name	WI Status	Fed Status
Birds			
Cerulean Warbler	*Setophaga cerulea*	THR	
Red-shouldered Hawk	*Buteo lineatus*	THR	
Prothonotary Warbler	*Protonotaria citrea*	SC	
Black-crowned Night-Heron	*Nycticorax nycticorax*	SC	
Great Egret	*Ardea alba*	THR	
Yellow-crowned Night-Heron	*Nyctanassa violacea*	THR	
Bald Eagle	*Haliaeetus leucocephalus*		
Fish			
River Redhorse	*Moxostoma carinatum*	THR	
Lake Sturgeon	*Acipenser fulvescens*	SC	
Bluntnose Darter	*Etheostoma chlorosoma*	END	
Paddlefish	*Polyodon spathula*	THR	
American Eel	*Anguilla rostrata*	SC	
Shoal Chub	*Macrhybopsis hyostoma*	THR	
Crystal Darter	*Crystallaria asprella*	END	
Goldeye	*Hiodon alosoides*	END	
Blue Sucker	*Cycleptus elongatus*	THR	
Pallid Shiner	*Hybopsis amnis*	END	
Black Buffalo	*Ictiobus niger*	THR	
Mud Darter	*Etheostoma asprigene*	SC	
Amphibians			
Blanchard's Cricket Frog	*Acris blanchardi*	END	
Freshwater mussels			
Fawnsfoot	*Truncilla donaciformis*	THR	
Higgins Eye	*Lampsilis higginsii*	END	END
Elktoe	*Alasmidonta marginata*	SC	
Washboard	*Megalonaias nervosa*	SC	
Monkeyface	*Theliderma metanevra*	THR	
Ebonyshell	*Fusconaia ebena*	END	
Elephant Ear	*Elliptio crassidens*	END	
Plants			
Pale Green Orchid	*Platanthera flava var. herbiola*	THR	
Reptiles			
Blanding's Turtle	*Emydoidea blandingii*	SC	

* Copyright 2021, State of Wisconsin, Department of Natural Resources (DNR). Element Occurrence Data included here were provided by accessing the Natural Heritage Inventory Portal database 20 October, 2021.
**(END = Endangered; THR = Threatened; SC = Special Concern).

2.2.6 AIR QUALITY

The U.S. Environmental Protection Agency (EPA) 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.' Winona, Buffalo, and Trempealeau Counties are classified as an attainment area for each of the six contaminants and are therefore not regions of impaired ambient air quality (U.S. EPA 2020). This designation means that the project area has relatively few air pollution sources of concern.

2.3 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 6. Several investigations have been completed within the study area and several historic properties have been identified. The Pool 6 locality contains numerous cultural resources located throughout the pool and across a wide variety of landforms indicating continual human occupation over approximately the last 13,000 years. Cultural resource sites within Pool 6 exist on a variety of landforms including uplands, terraces, islands, natural levees, deltas, submerged backwater lakes, and the river channel. Precontact cultural resources in the pool include 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) (SHPO files 2018, Madigan & Schirmer, 2001). Several sites have been identified in proximity to potential placement site locations.

Archaeological investigations have been ongoing in the Pool 6 locality since the mid to late 1800s. This early research was primarily focused on uplands areas to identify and map burial mounds. Focus continued on upland areas until the 1970s when surveys started to shift focus to floodplain areas. Since then, various cultural resource investigations within the pool have been completed for various projects including dredged material placement sites. The most recent overall survey of Pool 6 was conducted in 1997 (Pleger, 1997).

More detailed information specific to previous investigations and known historic properties within proposed placement sites is provided in Chapter 7. 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 National Register of Historic Places (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 lock 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 Upper Mississippi River between the 1870s and 1930s in support of the 4-1/2 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. Most placement locations for potential dredged material disposal use are located within areas that have or had at one time potential to contain archaeological resources. However, review of historic maps, aerial imagery, and onsite visits confirmed disturbance has occurred at varying degree within each location (i.e., quarry, agricultural, previous transportation).

CHAPTER 3.

Historic Changes

This section summarizes changes to Pool 6 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.

3.1 Early Navigation Projects

The first navigation modifications and maintenance on the UMR were legislated by Congress in 1824, when the Corps of Engineers 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 River and Harbor 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. A 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 Upper Mississippi River National Wildlife and Fish Refuge (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.

3.3 UMR 9-foot Navigation Channel Project

The River and Harbor Act of 1930 authorized the 9-Foot Navigation Channel project and led to the construction of a series of locks and dams to provide the necessary water depths. Land that would be affected by the increased water levels was purchased. The Corps purchased approximately 7,560 acres in Pool 6. About 7,190 acres of this land are managed as part of the Upper Mississippi River National Wildlife and Fish Refuge under a cooperative agreement between the U.S. Army Corps of Engineers and the U.S. Fish and Wildlife Service.

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 furbearers. Adversely affected were terrestrial wildlife and lotic fish species. The period from creation of the locks and dams through the late 1950s saw an increase in 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 natural changes, most specifically the filling of backwater habitats with sediments. Sedimentation was probably the most significant resource concern in the 1960s and 1970s, and still is an important concern.

3.4 Other Projects in Pool 6

Railroads

The Winona and St. Peter Railroad Company (W&StP) was the second operational railroad in Minnesota and had established tracks from Winona to Stockton, MN by 1862. The railroad bridge crossing the Mississippi River at Pool

6 was constructed prior to 1890. W&StP was acquired by the Chicago and North Western Railroad Company (C&NW) in 1867.

Construction of the commercial and recreational harbors

Construction of the Winona Commercial Harbor (Crooked Slough Harbor) was completed in October 1956. Aerial imagery from 1972 reveals the area as an established dredged material placement site and areas to the east (the existing Minnesota Marine Art Museum, Port Authority and ADM properties) had started to be constructed through sand placement.

Construction of the Winona Small Boat Harbor (Dick's Marine) was completed in May 1958. Historic maps and aerial imagery identify the current location of the Winona Small Boat Harbor as Island 72. The construction of the marina was through excavation and development of the existing island.

Upper Mississippi River Restoration Program

The Upper Mississippi River Restoration (UMRR) Program was the first environmental restoration and monitoring program undertaken on a large river system in the United States; authorized by the Water Resources Development Act of 1986. The UMRR Program combines habitat restoration activities, as well as scientific monitoring and research. Twenty-eight projects have been completed in the St. Paul District, including two projects constructed in Pool 6. In 1999, construction was completed on the Trempealeau Habitat Rehabilitation and Enhancement Project in Pool 6 which created a system of dikes, culverts, and pump stations to manage water levels and wind fetch within the Trempealeau National Wildlife Refuge. The Mississippi River Bank Stabilization Habitat Rehabilitation and Enhancement Project was also completed in 1999 and used rockfill to stabilize sites in several St. Paul District pools, including two sites in Pool 6.

Winona's flood control project

The Mississippi River at Winona, Minnesota Flood Control Project was authorized under the provisions of Section 205 of the Flood Control Act approved June 30, 1948, as amended. Section 205 provides authority to the Corps of Engineers for planning, designing, and constructing small flood damage reduction projects.

Stage I of an authorized flood control project at Winona was completed in 1967. The project includes a continuous flood barrier along the right descending bank of the Mississippi River, about 6.29 miles long, extending from Minnesota City downstream to near the Minnesota Highway 43 Bridge. The project was

constructed at a Federal cost of $2,035,631 plus $17,316 contributed by local interests.

The Stage II Project plan of improvement provides for levee and floodwall protection with necessary interior drainage works for the riverfront and the Lake Winona closure reaches, as well as a floodplain management program to prevent unwise development of the area bordered by U.S. Highway 61, Burns Valley, and Pleasant Valley Creeks. This project was completed in 1985.

New interstate bridge & bridge rehab

The Winona Trunk Highway 43 Bridge is a steel, high truss structure built in 1941 and rehabilitated (re-decked) in 1985. The main river span is 450 feet long, and the entire structure is 2,289 feet long. The bridge carries an average of 11,900 vehicles per day. A new bridge has been constructed upstream of the original structure. The new bridge was opened to traffic in August of 2016. Following completion of the new bridge, the old bridge was rehabilitated and re-opened in July of 2019.

CHAPTER 4.

Planning Considerations

4.1 Problems and Opportunities

One of the critical steps performed early in the planning process is the identification of problems and opportunities associated within the geographic scope of the project area. Problem statements are concise characterizations of the broad issues that will be addressed with the project. Opportunity statements follow and consist of an array of opportunities presented by the virtue of planning and construction activities occurring at the site of the problem. Opportunities can be directly related to solving the problem at hand but can also be ancillary to the identified problem. Objectives for the project are developed to address the problems and capitalize on the opportunities. The success of the project is determined by the fulfillment of the objectives through identified alternative measures.

4.1.1 PROBLEMS

Problems identified within the Pool 6 study area include:

Sedimentation is a continuing process in Pool 6. The majority of sediments entering Pool 6 are those carried in with the water entering upstream through Lock and Dam 5A. Some of these sediments deposit within the navigation channel of Pool 6, reducing the available clearance for larger vessels such as barges.

The primary problem addressed in this DMMP is that there are no longer facilities available in Pool 6 with capacity to place the amount of material dredged annually in Pool 6. One of the major sites historically used for dredged material placement in Pool 6 has become unavailable (Winona Commercial Harbor, due to reasons described in Chapter 4.3.1), and the remaining sites (Winona Harbor and Homer West) do not meet the pool's capacity needs.

One of the effects of lock and dam construction has been increased erosion and loss of islands in the lower portion of many navigation pools (for example, see Collins & Knox, 2003). Although Pool 6 has been an exception to this trend

overall based on a recent assessment of the quantity of land within the pool (see Freyer and Jefferson, 2013), there are still many areas of the pool where islands and shorelines have notably suffered from erosion. Mosquito Island is one example of an island in Pool 6 that lost a majority of the land mass present prior to lock and dam construction. Many other shorelines in the pool display steep cut banks and fallen trees, indicative of recent shoreline damage.

4.1.2 OPPORTUNITIES

Opportunities exist for the potential use of significant amounts of dredged material for productive purposes, referred to as "beneficial use" of dredged material. The sediment found in the main channel of the river in the study area consists of a medium to coarse sand. Contaminant testing has confirmed the material is free of elevated concentrations of pollutants and meets state standards for in-water and upland placement. The material is suitable for many applications such as construction fill material and winter road maintenance. One way this is encouraged is through the management and operation of placement sites that are open to the public that allow individuals, contractors, or communities to take material at any time for projects, referred to as "Open Beneficial Use Sites". 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 creation. When economical or when there are opportunities to partner with another Corps program or non-Federal sponsor, the use of dredged material can sometimes be accomplished in conjunction with the dredging.

Permanent control of a dredged material placement site would reduce future uncertainty of available capacity for annual dredging needs. The Corps has historically utilized sites owned by non-Federal entities with success. Short-term (i.e. approximately 5 or fewer years) easements and land-use agreements have been arranged with landowners, which leaves the Corps vulnerable to changes in the landowners' plans for sites.

Dredged material placement sites owned by the Corps can be made open to the public for utilization of the material. The St. Paul District maintains 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.

4.2 Goals, Objectives, and Constraints

4.2.1 GOALS

Planning goals are broad, conceptual statements that describe the ultimate and over-arching purposes for the study. The national goal of water resources planning is to contribute to national economic development while protecting the nation's environment. The overall goal of this project is to maintain a commercially navigable channel in the UMR in the least costly, environmentally acceptable manner, consistent with engineering requirements established for the project.

4.2.2 OBJECTIVES

Based on the project's problems and opportunities, specific objectives were established and are listed below. Many of these objectives are interrelated and will assist in meeting the over-arching goal. The guidance for developing objectives specifies that objectives must be clearly defined, must provide information on the effect desired, the subject of the objective, the location where the effect will occur and the timing and duration of the effect. For the purpose of this report, the timing or duration of the objectives is assumed to be the 20-year period of analysis. Clear objectives are used to identify measures and formulate alternatives that will achieve the project's goals.

The objectives for the proposed project are:

- Secure sufficient dredged material capacity for 20 years of maintenance dredging (an estimated 1.5 million cubic yards (CY)) within Pool 6.

- Maximize beneficial use of dredged material from Pool 6 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.

- Secure river access to support the efficient transfer of dredged material from Pool 6 to upland placement sites.

- Identify placement sites that could provide contingency capacity for exceptionally difficult dredging seasons or times of low beneficial use.

4.2.3 CONSTRAINTS AND CONSIDERATIONS

Planning constraints are temporary or permanent limits imposed on the scope of the planning process and the choice of solutions. These limits can be related to ecological, economic, engineering, legal and administrative aspects of a project. Some constraints are states of nature, whereas others are based on the design of built structures and other engineering considerations. Legislation and decision makers can impose other constraints; such human-imposed constraints are possible to change. The following planning constraints were established to guide and set boundaries on the formulation and evaluation of alternatives.

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

Dredging Type

Hydraulic dredging is typically only cost-effective for a particular dredging job if the quantity of material to be dredged is relatively high. The majority of historic dredging jobs in Pool 6 have been relatively small (less than 20,000 cubic yards), which led to mechanical dredging being the dominant dredging method used in Pool 6. Therefore, access for placement by mechanical dredging methods is critical. However, the upward trend of dredging quantities in Pool 6 over the last 10 years means that placement sites that could also be used for hydraulic dredging would be valuable so long as access for mechanical placement would also be feasible.

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, Section 404(b)(1) evaluation process.

Operational Feasibility

The charge presented by the Corps Planning Guidance for Dredged Material Management Plans (ER 1105-2-100) is that plans should ensure material placement needs are met for a minimum of 20 years. In order to meet this criterion, the Corps will likely need to obtain a long-term real-estate interest (e.g. easement, ownership in-fee, etc.) in any property that will be planned for long-term use. Purchase in-fee is recommended for any site that would involve recurrent use, is not already federally owned, and would constitute a significant portion of available space. The District Chief of Real Estate may propose to

deviate from the required minimum interest and/or standard estate. A formal request to HQUSACE to deviate from established policy and/or standard estate language may be required.

Cultural Resources

Avoid or minimize, to the extent practicable, adverse effects to historic properties.

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

Environmental Acceptability

Plans need to comply with applicable Federal environmental laws and regulations, including the Clean Water Act (CWA), which requires projects to avoid and minimize impacts to jurisdictional wetlands and meet State water quality standards.

Plans must avoid and minimize to the extent practicable any impacts to the 1 Percent Annual Exceedance Probability (“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 Annual Exceedance Probability (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 induced flooding 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 Minnesota Department of Natural Resources (MNDNR), no additional flood stage analysis is needed.

Plans should avoid significant adverse impacts to high value habitat and threatened and endangered species.

4.3 Forecasting Future Conditions

Planning for the future requires projecting future conditions under various scenarios, including the no-action scenario. Corps of Engineers (Corps) planning regulations (ER 1105-2-100) provide the following guidance concerning this subject. Future without plan conditions are the most probable based on:

a) Existing conditions and trend information
b) Available related forecasts (e.g. land use plans, population projections, etc.)
c) Established institutional objectives and constraints and local customs and traditions (e.g. authorized projects, refuge master plans, local recreational preferences, etc.)
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, climate change, etc.)

The Corps regulation providing guidance for conducting Civil Works Planning Studies is contained in ER 1105-2-100. Dredged material management plans are to be developed to meet dredging needs for a minimum of 20 years.

4.3.1 EXISTING CONDITIONS

Dredged Material Management History in Pool 6

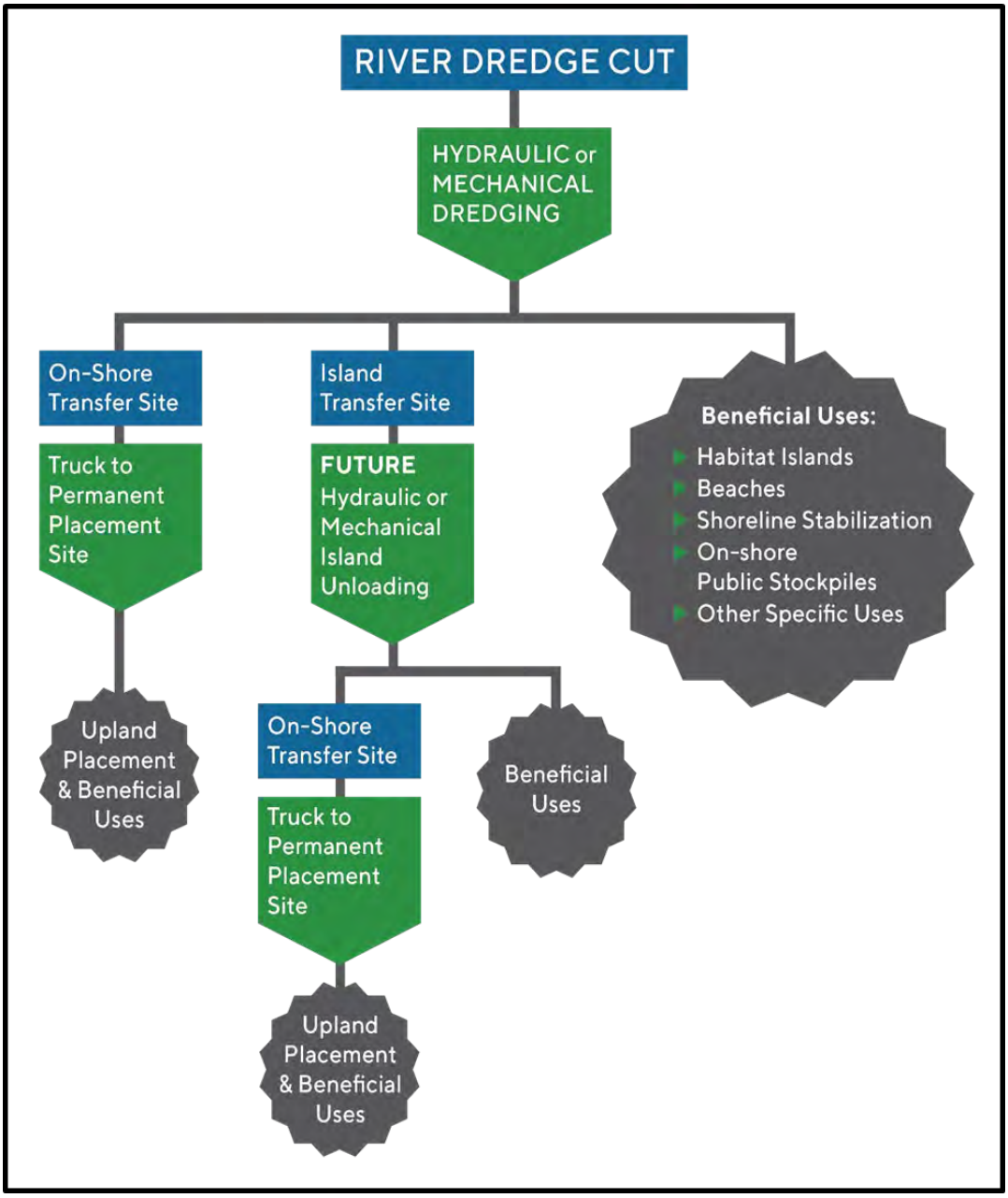
Pool 6 has seven dredge cuts with recorded maintenance dredging since 1970. Four of these dredge cuts have required the most attention and have produced 98% of more than one million cubic yards of material dredged in Pool 6 since 1970. These four cuts are situated in the center of the pool, towards the downstream end of Winona, Minnesota. The locations of the dredge cuts in Pool 6 are shown on Plate 2, along with the amount of dredging that has occurred at each cut.

Almost all dredging in Pool 6 since 1970 has been conducted by mechanical dredging methods for two reasons. First, placement sites for hydraulic dredging need to be fairly large (approximately 5 acres or more) in order to construct berms, settlement areas, and ponding areas, as necessary. None of the sites previously or currently available in Pool 6 meet this criterion. Second, to be cost-effective, hydraulic dredging typically requires jobs of at least 20,000 cubic yards, and many of the dredging jobs in Pool 6 have historically been smaller.

Dredged material in Pool 6 was managed similarly from 1975 – 2013, according to the recommendations made in the GREAT I study which were incorporated in the CMMP. All dredged material in Pool 6 was placed at one of three sites: Homer West (~50,000 cubic yard capacity), Winona Commercial Harbor (~55,000 cubic yard capacity), and Winona Harbor (~20,000 cubic yard capacity) (Site locations are shown on Plate 2). Figure 3 shows conceptual pathways for managing dredged material that have been used in the St. Paul District. All three of the sites used historically in Pool 6 fall into the category of "On-shore public stockpiles" listed under "Beneficial Uses" on the right side of the figure.

Throughout these years, the Corps held short-term real estate agreements with each of the landowners at these sites, and because the site owners either had uses for the material or were able to sell the material, placement capacity was continually replenished at these sites to meet the dredging needs of the pool.

Figure 3. Conceptual Paths of Movement for Dredged Material



This real-estate flexibility created a risk of losing site availability. In 2013, the lease for the Winona Commercial Harbor site was terminated by the owner of the site. The same year, it was indicated to the Corps by the owner of the Homer West site that availability for placement was limited because much of the material from recent placement events was still on the site. The owner also indicated that the dredged material placement agreement for the site would likely not be renewed when it expired in 2015. As a result, the Winona Harbor site was the only site

remaining in Pool 6 that was certain to be available. It was due to these events that the planning efforts of this DMMP began.

The Corps recognized that the process to prepare and finalize a 20-year plan could take some time. With only 20,000 cubic yards of capacity remaining, the Corps was committed to ensuring sufficient acceptable placement sites were also available in the short-term. Planning for the Corps' long-term and short-term dredged material placement needs were studied vigorously with hopes that a solution could be found that would simultaneously meet both needs. An interagency meeting was held in November of 2013 to visit a few options that had been noted and solicit input for opportunities to manage dredged material in Pool 6. It was at this meeting that an idea to restore a portion of Mosquito Island – an eroding island on the left descending bank of the main channel downstream of Winona, Minnesota – was proposed. Planning and environmental review of the Mosquito Island project has since been completed (reference USACE, 2014 for Environmental Assessment), and dredged material from Pool 6 was used to complete the Mosquito Island project in its entirety during the 2017 dredging season with final shaping, seeding, and planting in 2018.

An alternative upland site was used for dredged material in 2014-2019 and 2021. The City of Winona offered the use of a site referred to as the Port Authority Business Park (also known as Technology Park), in an area which is expanding with new business construction. In 2014, 64,000 cubic yards of material dredged from Pool 6 were placed in a portion of the Port Authority Business Park in order to fill in a ponded depression and create a stockpile (reference USACE, 2014 for Environmental Assessment). In 2015 and 2016, 82,000 cubic yards of dredged material was placed on top of the Business Park stockpile created in 2014. In 2017, 2018, 2019, and 2021, a total of 200,100 cubic yards were placed on various portions of the site. Most material was dredged from the main channel, transported by barge to the East End Boat Landing, and moved onto trucks to be transported approximately 1.5 miles to the Business Park. Some material was also transferred from the Homer West site to create additional capacity at the site.

In 2015, the owner of the West portion of the Homer site listed the property for sale. The St. Paul District made a decision to pursue purchase of this property as a part of implementing the CMMP. This allowed the Corps to retain access to a long-running, historical placement site with the added benefit of minimizing socioeconomic impacts by working with a willing seller. The purchase was completed in early 2018 and fulfilled some of the dredged material placement capacity need in Pool 6. However, there is still not enough space secured for the potential amount dredged in a single year, and limited capacity to buffer beneficial use fluctuations. This DMMP is focused on identifying and recommending the site or sites that would be most suitable to bring the overall placement site capacity in Pool 6 up to the identified need.

Dredging Trends in Pool 6

The average annual dredging conducted in Pool 6 from 1981-2021 was 28,100 cubic yards. However, Pool 6 is different from the pools adjacent to it in that the average dredging volume has substantially risen over the last four decades. Pool 6 has seen its average annual dredging quantities steadily increase. The average annual dredging volume in the 2010s was 67,500 cubic yards, nearly five times the average from the period of 1981-2009. Conversely, the adjacent pools, 5A and 7, have seen a relatively steady average annual dredging since the current dredging practices were enacted in 1981.

Figure 4. Pool 6 Dredging History

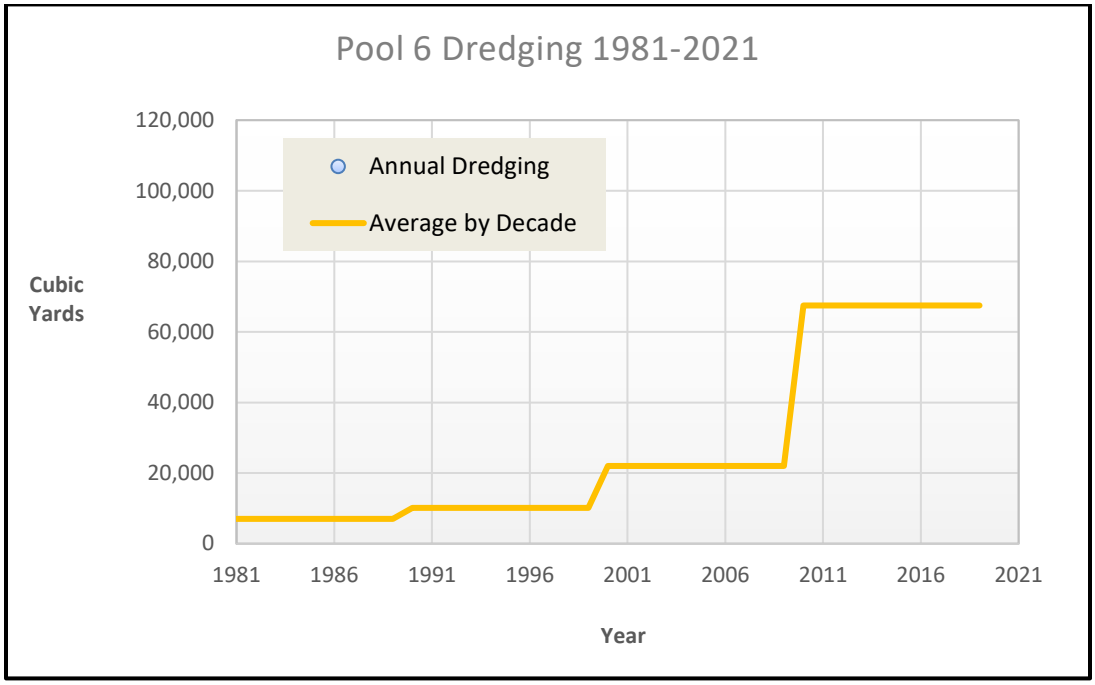


Figure 4 shows annual dredging quantities from 1981 to 2021. The period from 2006-2010 was unique in that the higher dredging quantity numbers for those years were influenced by dredging that may have otherwise been deferred in 2008, 2009, and 2010 in preparation of a growing season, pool-wide, water-level drawdown. The following period from 2011-2019 also had higher dredging quantity amounts in those years because this was the wettest decade on record with 2011, 2014, and 2016-2019 being exceptionally high-flow years, leading to more sediment transported into and settling in the pool. For comparison, the average annual discharge from 1981-2010 was 35,300 cfs. However, from 2011-2019 it was 45,100 cfs, or about 27 percent higher. Notably, 2019 had an average annual discharge of 71,410 cfs. The 2011 and 2014 flood events increased the dredging volume so much so that the channel was not maintained to the full depth

and width during that time period. The four-fold increase in dredging conducted in Pool 6, relative to the 1981-2015 average, was far greater than the increase that Pools 5A and 7 experienced for the same events. Dredging for Pools 5A and 7 only increased twofold during 2011-2015 relative to the 1981-2015 average. The reason for this increase in Pool 6 relative to Pools 5A and 7 is likely due to Pool 6 not having any large backwater areas around the typical dredge cuts for sediment to settle until much further downstream.

Figure 5. Hydrologic Trends in Pool 6

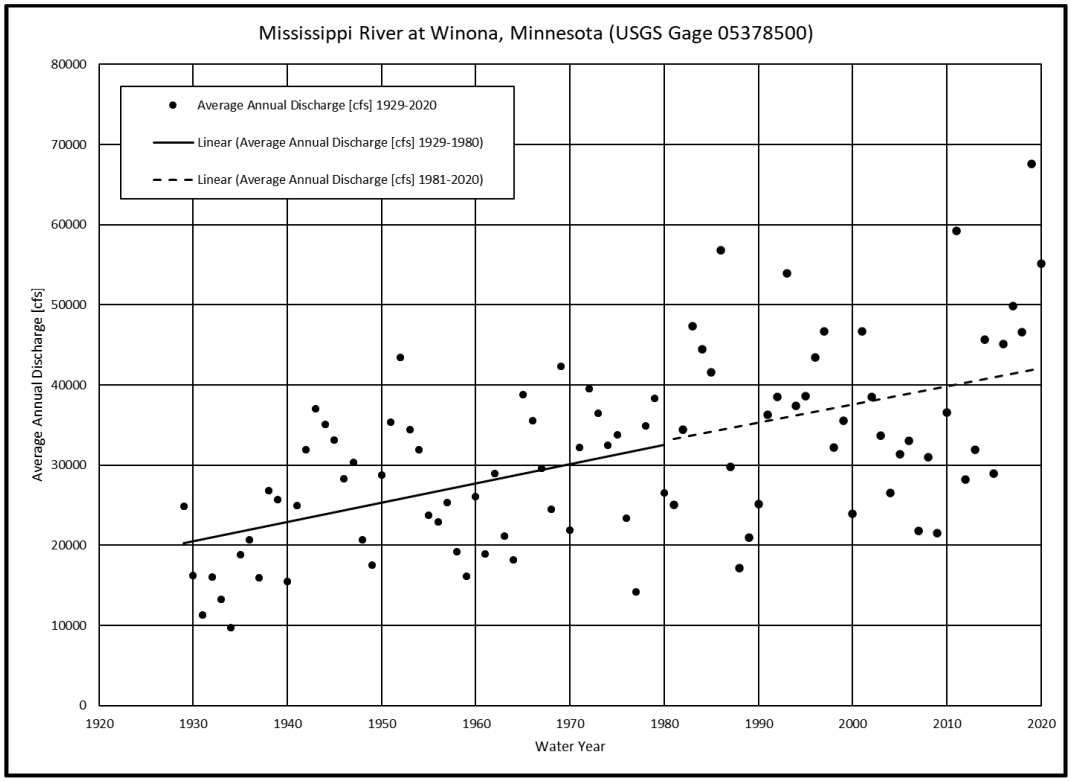


Figure 5 above shows the annual discharge at the USGS gage at Winona, MN from 1929-2020. As the figure shows, average annual discharge is rising. Using the period of analysis for dredging in Pool 6 (1981-2020), average annual discharge has increased by 42.8%.

A climate change assessment was performed in accordance with the USACE Engineering Construction Bulletin (ECB) 2018-14, Guidance for Incorporating Climate Change Impacts to Inland Hydrology in Civil Works Studies, Designs and Projects (USACE, 2016a), as well as USACE Engineering Technical Letter (ETL) 1100-2-3 Guidance for Detection of Nonstationarities in Annual Maximum Discharges (Friedman et al., 2016). The climate change assessment is summarized

here, and is presented in full in Appendix G. The goal of this qualitative analysis is to describe observed present and possible future climate threats, vulnerabilities, and impacts of climate change specific to the project goals or engineering designs. This includes research of peer-reviewed literature and an assessment of observed hydrologic and climate trends in the study area.

The literature review concluded that an increased average annual precipitation in the region may lead to variation in the flow regime, which could affect dredging in the area. An increase in precipitation would also promote erosion and increased sediment transport, also affecting dredging activity and future planning for dredge material placement. Observed trends in average annual discharge of the Mississippi River at Winona, MN were analyzed for statistical significance and concurred with findings in the literature review. Over the period of record (1928-2018), a positive trend was identified with a statistical significance (p-value) of $4.45x10^{-8}$, lower than the generally accepted threshold for significance of less than 0.05. Analysis was also done for the years 1941-2018 to account for dry years in the 1930s and 1940s, as well as regulation for the basin. A statistically significant positive trend line was observed for the discharge (p-value = 0.0013).

4.3.2 PROJECTED FUTURE CONDITIONS

Projecting future dredging trends is challenging in Pool 6 because there isn't a clear cause for the change in dredging needs that has occurred over the last four decades. The factors that have been identified as likely contributing are increased annual discharge, increasing flood frequency, and a lack of backwater storage. All of these factors are anticipated to persist over the next 20-40 years for which this plan is based. It is therefore prudent that the predicted future conditions include sustained, increased annual dredging needs similar to the past decade.

The predicted average annual dredging quantity for the study period is estimated at 73,161 cubic yards, based on the observed average over the most recent decade. Over the course of 20 years, this results in approximately 1,500,000 cubic yards of dredging (Table 3).

Another consideration is the range of annual dredging. At a minimum, no dredging has been required in some years (though this has not occurred in Pool 6 since 2006). Historically, the maximum dredging need identified in any one year was approximately 134,000* cubic yards in 2014 (**this quantity factors in dredging that was identified as needed but deferred due to placement site limitations*). This maximum observed amount is being used as the maximum projected future dredging quantity for Pool 6 in any given year.

Table 5. Pool 6 Historic Dredging 1981 - 2021

Dredge Cuts Pool 6	River Mile	*Total Dredged 1981-2021	Avg. Per Year	Avg. Per Job	Freq.	Projected Quantity for 20 Years
Lower Appch. L/D 5A	728.5	500	13	500	4%	244
Blw. Winona R.R. Br.	723.0-723.8	509,612	12,740	21,982	52%	248,591
Gravel Point	721.8-722.9	45,294	1,132	9,059	12%	22,095
Homer	719.7-721.1	354,481	8,862	25,258	31%	172,918
Blacksmith Slough	718.5-719.3	232,434	5,811	19,303	25%	113,382
LaMoille Light	716.9-717.2	9,984	250	9,984	2%	4,870
Upper Appch. L/D 6	714.5-714.6	1,466	37	1,466	2%	715
TOTAL		1,153,771	28,844			562,815

Table 6. Pool 6 Dredging Volumes Over the last 10 Dredging Seasons, 2012 - 2021

Dredge Cuts Pool 6	River Mile	*Total Dredged 2012-2021	Avg. Per Year	Avg. Per Job	Freq.	Projected Quantity for 20 Years
Lower Appch. L/D 5A	728.5	0	0	0	0%	0
Blw. Winona R.R. Br.	723.0-723.8	268,380	26.838		100%	536,760
Gravel Point	721.8-722.9	52.290	5.229		20%	104,580
Homer	719.7-721.1	239.804	23.980		80%	479,608
Blacksmith Slough	718.5-719.3	171.136	17.114		90%	342,271
LaMoille Light	716.9-717.2	0	0	0	0%	0
Upper Appch. L/D 6	714.5-714.6	0	0	0	0%	0
TOTAL		731,609	73,161			1,463,218

4.3.3 DREDGED MATERIAL CAPACITY NEED

There are several ways that alternative plans could be formulated to meet the objective to provide 20 years of dredged material placement capacity. One option is to identify an alternative that would have enough space to contain all of the material projected to be dredged for the next 20 years. A second option would be to create alternatives with lower capacity that incorporate measures to ensure that material placed at the sites is periodically removed to restore site capacity. One way to accomplish this is to maintain placement sites as “Beneficial Use sites.” The St. Paul District Corps currently maintains a number of Beneficial Use sites

that are open to the public, where the dredged material is offered free of charge, on a first-come, first-served basis.

There is a historic precedent of beneficial use of dredged material from Pool 6. Although the historic placement sites were not open to the public, all of the dredged material placed over the last 30 years was removed by local government users, contractors, or others that were willing to pay the private owners of the placement sites for the material. Beneficial use sites that are owned in fee by the Federal Government could instead allow these users and anyone else to remove the material for free. The study team concluded that these factors demonstrate that there is sufficient demand in the study area to design a plan focused on beneficial use (See Appendix C). This is the basis for the formulation of alternatives in this study.

The study team used the historic annual dredging quantities to develop a target minimum site capacity for an alternative to be considered acceptable in meeting the study's objective. Because it is assumed that beneficial use will, on average, account for the majority of material placed in any given year, the team focused on ensuring that there would be enough capacity for the largest amount of material likely to be dredged in one year. This was predicted by reviewing the historic dredging records. The highest quantity dredged in a single dredging season was 96,400 cubic yards in 2014, a year which involved a significant flood event. However, due to the lack of available placement site capacity in Pool 6 during the 2011-2014 dredging seasons, the channel was maintained to smaller dimensions than is typical. Had the channel been dredged to its full depth and width, the channel would have been dredged approximately one foot deeper and one-hundred feet wider in each of the typical dredge cuts. Therefore, in 2014, an estimated additional 38,000 cubic yards would have been dredged, resulting in a total of 134,000 cubic yards. A twenty-five percent contingency of 33,600 cubic yards was added to provide some flexibility for unusually high-dredging years or low beneficial use, resulting in a target capacity of 168,000 cubic yards. While beneficial use demand has generally matched the dredged quantities over time, this contingency accounts for uncertainty associated with annual demand in the absence of yearly data associated with beneficial use rates. This target capacity is what the study team used to develop alternatives from the potential sites in Chapter 5.5. (Additional details of historic dredging and projections of future dredging needs can be found in Sections 4.1.1 and 4.1.2.)

CHAPTER 5.

Formulation of Alternatives and Plan Selection

This chapter details site identification, site screening, alternative development, and plan selection. The Corps developed a list of potential dredged material placement sites through assessing current land uses and coordinating with local representatives. Consideration has been given to the full range of measures for dredged material management including: management of existing placement sites to extend their life, various combinations of new placement sites involving different placement methods, and measures to reduce dredging requirements, including reduced channel dimensions. The plan identified in this Draft DMMP is a "tentatively selected plan" (TSP) at this time. After public review, the Corps will consider public comments on the TSP before deciding whether or not to modify or adopt, recommend, and implement the plan.

Chapter Organization

This chapter is organized similar to the stepwise planning procedure applied to the study. First, Section 5.1 describes the No-Action alternative, which identifies what would most likely happen if the Corps did not undertake this effort to identify and secure dredged material placement solutions in Pool 6. The No-Action alternative is the baseline alternative which allows for meaningful comparison with other identified alternatives. The next three sections (5.2 - 5.4) detail each of the identified potential placement sites listed in Table 6. Section 5.2 presents the sites that were identified but screened from detailed consideration because they would not meet the study objectives or fit within the identified constraints (i.e., significant operational concerns, environmental impacts, etc.). Section 5.3 describes sites that could provide an opportunity for beneficial use of material in the future but were determined to be unsuitable as part of the plan to meet the long-term capacity needs. Section 5.4 describes in detail the sites that were the most promising candidates for meeting the study objectives. Section 5.5 changes focus from looking at individual sites to creating groups of sites that will meet the overall needs. At the beginning of the section is a description of the methodology used to formulate alternative plans and how the existing and predicted future conditions were used to define what a plan required to manage

the material dredged from the pool for the next 20 years. Finally, Section 5.6 identifies the tentatively selected plan and the basis for its selection.

The "Summary of Planning Efforts" section below has been added to describe the how this document relates to past planning, because previous versions of this planning report have been circulated for public and stakeholder review.

Summary of Planning Efforts

Early Planning and First Iteration
The DMMP process was initiated in 2013 in response to changes in dredged material placement site availability in Pool 6. In the following years, several internal planning iterations occurred, alongside coordination with local stakeholders. In May of 2018, the Corps attended a meeting with the local residents of the Homer, MN community. In October of 2018, the Corps met with local stakeholders from Winona City, Winona County, and various natural resource agencies to seek input on sites preliminarily identified for use. A public meeting was held in February 2019 at the Winona Historical Society to introduce the study to the general public and seek input. Suggestions received were considered and incorporated into planning efforts. In February of 2020, a draft DMMP was released for public and agency review. A public meeting was held on February 11, 2020, at the Winona Historical Society to present the plan to the community. The comment period for the draft plan was extended upon request to April 10, 2020. Reviewers expressed concerns about potential environmental and social impacts at Latsch Island from the proposed expansion of the Winona Harbor site, and potential social impacts from the use of the Homer placement site.

Second Iteration
The Corps' second planning effort considered the public comments from 2020 and worked with stakeholders to modify the proposed plan to reduce concerns where possible. During this time, the Corps met with a group of Winona city representatives to discuss key issues and search for mutually acceptable dredged material management solutions within the community.

The revised version of the Pool 6 DMMP is still based on the premise of encouraging beneficial use of dredged material whenever practicable but incorporates additional cost-effective opportunities for material placement that can be used if beneficial use does not keep up with dredging needs. Just as in the 2020 plan, sites are organized by cost in "tiers." All the identified sites within the plan could be used at any given time to handle dredged material, but not all are required immediately. Identifying these sites in the TSP gives the Corps flexibility to cost-effectively manage the dredged material, minimize environmental and social impacts, and acquire sites in the future as needed to meet operational needs.

The revised TSP includes several newly identified opportunities for collaboration with local entities and a transfer site that allows material to be moved more efficiently from barges into trucks, and then to some of the Tier III permanent placement sites. All of these opportunities should help reduce the strain on each individual site.

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 Pool 6. 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 TSP presented in this DMMP constitutes the "Base Plan" and the "Federal Standard" for managing dredged material in Pool 6 through the year 2042.

Table 7. Potential Placement Sites Identified

Site Name	River Mile	Site Type
USFWS - Garvin Brook Pit Reclamation	NA	One-time Beneficial Use
Prairie Island Road Levee	NA	One-time Beneficial Use
Winona Sand and Gravel Airport Pit	730.5	Permanent Placement
Prairie Island Park Raise	NA	One-time Beneficial Use
Prairie Island Road Property	728.0	One-time Beneficial Use
Fastenal – Evanson	728.0	One-time Beneficial Use
Fastenal – Madison Silo	727.5	One-time Beneficial Use
Former Commercial Dock	727.0	Open Beneficial Use
Winona Commercial Harbor	726.6	Open Beneficial Use
Port Authority	726.5	River Access Transfer
Archer Daniels Midland (ADM) Property	726.4	Open Beneficial Use
Winona Harbor	726.2	Open Beneficial Use
Winona Harbor Expansion (Small)	726.0	Open Beneficial Use
Winona Harbor Expansion (Full)	726.0	Open Beneficial Use
WKM Property	724.2	One-time Beneficial Use
Miller Waste Management	723.9	One-time Beneficial Use
RTP Property	723.3	One-time Beneficial Use
East End Boat Ramp	723.2	River Access Transfer
Port Authority Business Park (Technology Park)	723.2	Open Beneficial Use
Mosquito Island Expansion	722.0	One-time Beneficial Use
Trempealeau NWR Levee	NA	One-time Beneficial Use
Trempealeau NWR Islands	721.0	One-time Beneficial Use
Former R.V. Shop	720.5	Open Beneficial Use
Homer West	720.5	Open Beneficial Use
Homer East	720.5	Open Beneficial Use
Backwater Complex near RM 720.5 (Islands)	720.5	One-time Beneficial Use
Island Enhancement near RM 718.5	718.5	One-time Beneficial Use
Forest River Campground	718.0	One-time Beneficial Use
Backwater near Forest River Campground (Islands)	717.8	One-time Beneficial Use
Perrot/Johnson/Pigeon Islands	717.5	One-time Beneficial Use
Robers	714.5	Open Beneficial Use
Highway 43 Pit	NA	Permanent Placement
Yaedke Pit	NA	Permanent Placement

Available CMMP Site carried forward for continued use
Site screened from further consideration
Site screened, but with potential future beneficial use
Site carried forward for DMMP analysis

Table 6 lists the sites evaluated during the creation of this plan and categorizes sites into four site types. "**Open Beneficial Use**" sites are areas where dredged sand would be stockpiled from dredging events, and then removed on an as-needed basis by private or local entities. "**Permanent Placement**" sites are areas where the material would be placed by the Corps and then would be unlikely to be moved or used again. The permanent placement sites identified in this report are all previously mined areas where placing material there may also serve a beneficial purpose by reclaiming the mined areas. Any vacant land could serve as a potential permanent placement site. Areas that have been mined were identified because they typically provide more capacity per-acre due to having more vertical space. "**One-time Beneficial Use**" sites are opportunities for using dredged material for a specific purpose. Examples include construction fill for developing an upland area, or for creating and enhancing islands or habitat within the river system. These opportunities usually require the landowner to initiate and participate in the process and may require substantial planning. Depending on costs compared to the Federal Standard, these may also require cost-sharing contributions by a non-Federal sponsor. The high complexity of planning and placement combined with typically smaller site capacities make most of these sites impractical as long-term solutions for average annual dredging. Finally, **"Transfer"** sites provide river access rather than storage capacity and are intended to allow efficient movement of material from barges on the river to trucks for hauling overland.

Site locations are shown on Plate 3.

5.1 No Action Alternative

The no action alternative for this DMMP represents no change in the current management plan. Under a normal feasibility study for a new project, the no action alternative would mean that no action would be taken. However, in the instance of an ongoing program, the no action alternative refers to no change in program direction. Therefore, under the no action alternative, the 9-Foot Navigation Channel Project and congressional authority for the Corps to maintain a navigation channel in Pool 6 would remain in place. The no action alternative represents continuing with dredging and material placement as it is currently being implemented, but under the forecasted future conditions. The current plan for managing dredged material is the CMMP.

The CMMP has identified the following order of priority for selecting placement sites for dredged material:

(1) CMMP-identified permanent or transfer placement sites
(2) CMMP-identified emergency placement sites
(3) Non-CMMP-designated placement sites*

**Material placed at non-designated placement sites during imminent closure or emergency response situations would be coordinated with regulatory agencies if possible and moved to an approved CMMP site as soon as possible.*

There are currently two CMMP-identified placement sites that are available for use by the Corps in Pool 6: the Homer West site and the Winona Harbor site, which provide a total maximum capacity of approximately 129,000 cubic yards. These two sites are described in Sections 5.1.1 and 5.1.2. The Homer East site is part of the CMMP-identified and approved site. For purposes of this planning study, Homer East and Homer West have been evaluated individually. The Homer West portion is being treated as part of the no action alternative because it has been consistently and successfully used for dredged material placement since the creation and previous approvals of the site, and the Corps purchased it in 2018). The continued use of the Homer West site and the Winona Harbor site is assumed to be part of the no action alternative and of all other alternatives considered in this planning effort.

The no action alternative considers what would happen in the absence of preparing and implementing a new plan for managing dredged material in Pool 6 of the Upper Mississippi River. In reality, the no action alternative is unlikely to persist for an extended period of time because it is the policy of the Corps that dredged material placement capacity be available for at least 20 years-worth of projected dredging needs. This is done by developing dredged material management plans (DMMPs). Based on the DMMP recommendations, new sites would be added to the CMMP's list of designated sites for each pool. In the case of Pool 6, there is an imminent need to identify and acquire access to long-term acceptable placement site(s).

Under the no action scenario, these sites are not expected to accommodate long-term dredged material placement needs. The CMMP does not identify any emergency placement sites in Pool 6. Therefore, if a situation arises such that approved sites are not available when dredging is required in Pool 6 due to navigation emergency situations, 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. The use of non-designated placement sites may result in greater environmental or social impacts. Presumably though, these instances would be short-term, and a

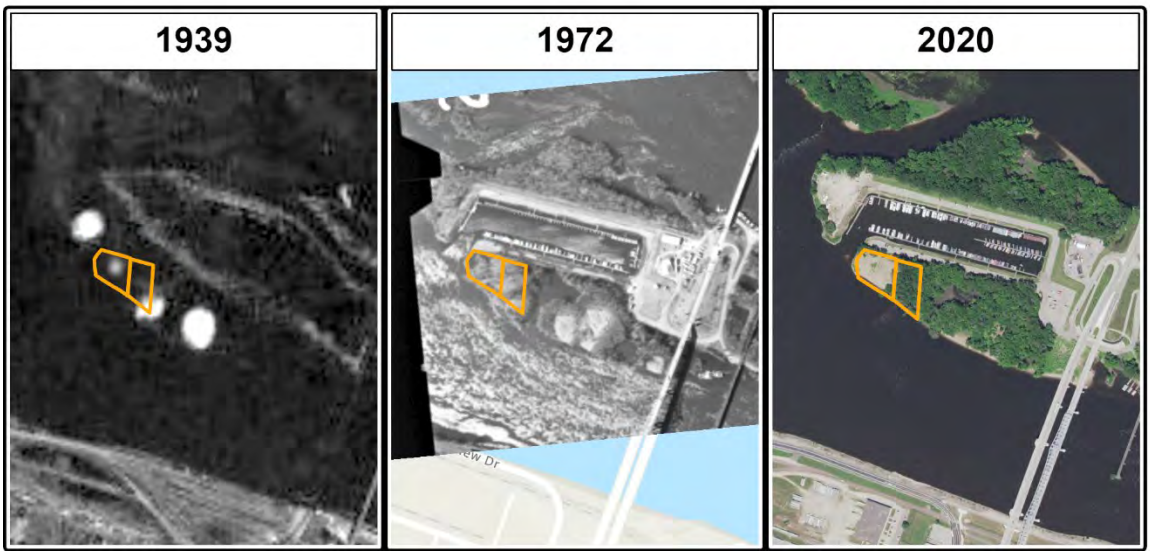
new planning effort would occur to identify the most acceptable dredged material management methods for the pool.

In summary, the no action alternative under evaluation in this report is based on the assumption that there will continue to be a need for periodic dredging to maintain the navigation channel and that the currently available CMMP placement sites will not provide adequate capacity for dredging needs over the next 20 years.

5.1.1 WINONA HARBOR

General Description: This active beneficial use site is located on the west end of Island Number Seventy-two, just north of downtown Winona, Minnesota. The site was selected as part of the GREAT I study. Approximately 100,000 cubic yards of dredged material have been placed during numerous dredging events since 1975, and the material has been periodically removed through beneficial use by the site owner. This site's limited capacity makes it unfeasible to use it for all of the placement needs in Pool 6, but it could remain useful for small placement events.

Figure 6. Aerial imagery shows the Winona Harbor site being created on Latsch Island by historical dredged material placement



Ownership: This site is owned by the City of Winona.

Size and Capacity:	Site Area:	0.7 Acres
	Fill Depth:	45 feet above road
	Capacity:	20,000 CY
	Site Type:	Open Beneficial Use
	Cost per Cubic Yard:	$ 13.00

Operational Feasibility: Material placed here has been used or sold by the City of Winona, with the majority of material placed here gone from the site within a year or two of placement. The site has a long history of material placement with no known operational obstacles. The site has good access for public beneficial use of the material.

The fill height of 45 feet was selected here based on coordination with the City of Winona who owns the land, and the 20,000 CY capacity is based on previous experience with the site.

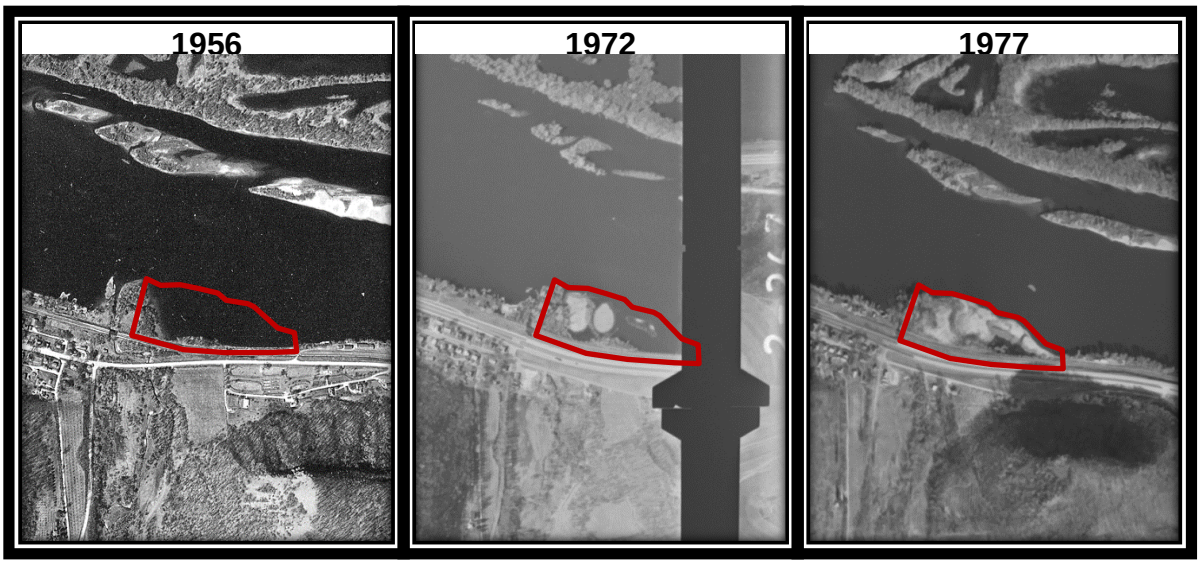
Natural Resources: This is an established dredged material placement site with no expected additional impacts to natural resources.

Socioeconomics: This is an established dredged material placement site with no expected additional socioeconomic impacts.

5.1.2 HOMER WEST

The CMMP-identified “Homer” site is an approximately 7.1-acre area located a few miles downstream of Winona, Minnesota. Based on aerial imagery, the site appears to have been created by Corps dredged material placement between the late 1950s and early 1970s. Figure 7 illustrates this, showing open water at the site location in 1956, noticeable sand piles visible in 1972, and nearly all of the site’s present land mass visible in 1977. The site was selected for dredged material placement during the GREAT I Study which was published in 1980. The site was re-selected under the St. Paul District’s comprehensive Channel Maintenance Management Plan (CMMP) that followed in 1996.

Figure 7. Aerial imagery shows the Homer site being created by historical dredged material placement



The CMMP-identified “Homer” site spans across two property parcels, as can be seen in Figure 8. The properties are being differentiated throughout this report as the Homer West and the Homer East. The Corps maintained a working relationship and placement easement with the owner of the West portion of the site and placed material there frequently since 1986. This portion of the site was listed for sale by owner in 2015 at which time the Corps began pursuing purchase of the property in fee under authority of the CMMP. The purchase was finalized in early 2018.

The expansion of the Homer West with the Homer East portion is discussed and evaluated in Chapter 5.4.8.

Figure 8. Approximate boundaries of the two Homer site properties

Ownership: Corps

Size and Capacity:

Site Area:	4.1 acres
Fill Depth:	50 feet above shoreline
Capacity:	110,000
Site Type:	Open Beneficial Use
Cost per Cubic Yard:	$ 11.70

Operational Feasibility: The Homer West site has been successfully used in the past for dredged material placement. Available records dating back to 1986 show that over 350,000 cubic yards of dredged material have been placed at the site. The previous landowner developed landward access to the site in 1996, which allowed transfer of the material upland through the site. Most of the material was removed for use by the previous landowner's business, while a large portion of the recently placed material has been removed for use in local construction projects. The site is directly adjacent to the river and adjacent to the "Homer" dredge cut, which accounts for a little more than 30% of the sediment dredged in Pool 6 since 1981. The site lies on the riverward side of the railroad tracks making

the placement of dredged material from the river simple. Removal of the material inland would benefit from improvement of the access road and railroad crossing. Access from Highway 61 could be improved with a deceleration lane (right turn lane) for removal of material for beneficial use and to accommodate future trucking traffic related to Corps dredging operations. This turn lane would serve a dual purpose of acting as a deceleration lane and providing for adequate truck stacking distance. The Corps has met with Minnesota Department of Transportation (MnDOT) representatives to discuss potential Hwy 61 roadway improvements, design standards, and permitting needs for the site. The MnDOT Road Design Manual for design and construction details would be used for standards and details. Once improved, the site would have good access for public beneficial use of the material.

Figure 9. Homer West Existing Site Conditions

Natural Resources: The majority of this property is barren, previously placed dredged sand, and further use of these disturbed areas would not have further impacts to natural resources (see Figure 8 and Figure 9). The site could continue to be used as it is presently without additional impacts.

Improvements to Highway 61 to allow beneficial use access would cause some conversion of roadside habitat into paved road.

The site is within the floodplain but not considered within the floodway (pers. comm., Minnesota DNR. See Appendix A.), meaning that use of the site would not adversely impact flood stages during the one-percent annual exceedance probability flood.

Socioeconomics: Community members in the area have expressed concern about noise, traffic, dust, and aesthetic impacts in meetings and correspondence. There are opportunities to reduce the noise and visual effects by incorporating some

structural (e.g., berm and/or fence) and vegetative screening to lessen the visibility of the site from the road and residential surroundings. There are also opportunities to improve the safety and traffic flow at this site. Site capacity and cost calculations were developed with these measures incorporated. These effects are further discussed in more detail in Chapter 7.

5.2 Sites Screened from Further Consideration

The following paragraphs briefly describe each of the sites that were screened from detailed analysis. All sites identified were considered. Sites were evaluated in accordance with the Corps' four planning Principles and Guidelines evaluation criteria (P&G Criteria): completeness, effectiveness, efficiency, and acceptability in addition to the CMMP's criteria for identifying reasonable alternative placement sites, which is largely inclusive of the P&G Criteria. The CMMP's criteria are: cost, natural resources, beneficial use, cultural resources, social impacts, and recreation. The social impacts criterion includes 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; and aesthetic values and noise levels. Upon preliminary consideration of one or a number of these categories, it was clear that these sites would not meet the planning criteria and the Federal Standard. The specific reasons for screening are identified for each site in this section. Sites are listed from upstream to downstream.

5.2.1 PRAIRIE ISLAND ROAD PROPERTY

This site was screened from consideration for beneficial use placement due to the unacceptability of wetland and river impacts, and significant tree clearing and site preparation that would be required. These access and environmental issues also make this site unappealing to acquire and develop for long-term and recurring material placement.

This site consists of approximately two acres of privately-owned wetland within the Mississippi River floodplain. The owner has expressed interest in using material for development of his property, and potentially for stockpiling material for sale and personal beneficial use. Barge access would require substantial dredging in Straight Slough (up to one mile). Material could be trucked to the site from the Port Authority site.

5.2.2 FORMER COMMERCIAL DOCK

The site was screened from further consideration because the site was developed during the course of this study. The use of the site is no longer feasible and was therefore determined unacceptable.

This site is located along the shoreline of Yeoman's Pond in Winona's general manufacturing district, a few parcels northwest of the Winona Commercial Harbor Site. The site was previously used as a commercial material loading facility. The site has been paved recently and is currently used by the city to load agricultural commodities onto barges from trucks.

5.2.3 WINONA COMMERCIAL HARBOR

This site was screened due to substantial infrastructure construction on-site. The use of the site is no longer feasible and was therefore determined unacceptable.

This is a 3.5-acre site located along the shoreline of Yeoman's Pond, a small backwater area bordering Winona's general manufacturing district on the northwestern portion of the city. This site was established in 1989 at the request of the City of Winona and was active until 2013. Approximately 315,000 cubic yards of dredged material was placed at this site over 17 dredging events. All material was moved off-site for beneficial use. The real estate agreement expired in 2013 and was not renewed due to plans for future infrastructure development. Since that time, the site has been developed and a large, aggregate commodity storage structure has been constructed.

5.2.4 ARCHER DANIELS MIDLAND (ADM) PROPERTY

This site was removed from further consideration due to the unacceptability of the substantial wetland impacts its use would cause.

This site is downstream of the former Winona Commercial Harbor site and has direct access to the Mississippi River through Yeoman's Pond. The site is approximately 8 acres, would hold an estimated 100,000 CY of dredged material, and would provide good access for beneficial use removal. The site consists entirely of relatively undisturbed, high-quality native floodplain forest. A Minnesota Routine Assessment Method (MnRAM) analysis conducted on the wetland resulted in an Exceptional rating for wildlife (see Appendix B).

5.2.5 WINONA HARBOR LARGE EXPANSION

This site was removed from further consideration due to the public and stakeholder response received during public review of the project in early 2020,

based on concerns about habitat loss, wetland impacts, flood stage increases, and recreational and social impacts its use would cause.

A large expansion of the Winona Harbor site would increase the current capacity of the Winona Harbor site by an estimate 264,000 cubic yards and would increase operational flexibility. The fully expanded site could support hydraulic dredged material placement. Approximately 4 acres of the site are terrestrial, containing floodplain tree species such as silver maple and cottonwood, with hackberry in the understory. There is also a small open field area that consists mainly of smooth brome and other non-native upland field species. Approximately 4.3 acres is bottomland hardwood swamp, with floodplain tree species including silver maple, green ash and cottonwood around the perimeter of a shallow to deep marsh basin. Hydraulic modeling has shown that it would cause minor increases in local flood stages.

5.2.6 WKM PROPERTY

This site was removed from further consideration because the owner changed their plans and is no longer interested in material for beneficial use.

This one-acre site is towards the downstream end of Winona's riverfront. The site was identified early in the DMMP process as a potential site for one-time material placement because the owner was interested in obtaining dredged material. Because of the site's location and small size, material placement would not be convenient for long-term or repeated placement; therefore, the site was not considered as part of a long-term plan.

5.2.7 RTP PROPERTY

This is a three-acre site on the downstream end of Winona's riverfront that was identified as a potential site for one-time placement. However, the site has since been developed with a 150,000 square-foot warehouse and is no longer available for use. Therefore, the use of the site was determined unacceptable and was removed from further consideration.

5.2.8 FORMER R.V. SHOP

This site was removed from further consideration due to the unacceptability of environmental impacts.

This site is located to the south of the historic Homer placement site, on the opposite side of Highway 61. When the DMMP planning process began, the site was identified as a potential placement site because the property was listed for

sale. However, since that time, the property has been sold and portions of the site were developed by three different businesses. Additionally, significant tree clearing would be required to use the site, a stream dissects the site, and wetlands appear to be present in several areas. Developing the site while avoiding impacting these features would not be possible, and the environmental impacts of modifying these features would be unacceptable and would require significant mitigation. Therefore, this site was removed from further consideration.

5.2.9 ROBERS

This site was screened from further consideration due to unacceptable environmental impacts and operability concerns.

The Robers site is located on the edge of the floodplain at the downstream end of Pool 6, directly adjacent to the spillway of Lock and Dam Number 6. The site is owned by the Corps and leased to the Minnesota Department of Natural Resources but is not currently in use. This site is an average of seven miles from the dredge cuts in Pool 6 whereas all the other sites being considered are within four miles. Water depths near the site are shallow and would require recurrent dredging for barge access. Beneficial use for this site is not ideal because Highway 61 is not divided at this location and therefore there is no room to provide a left turn lane for trucks coming from the north. Additionally, the site is largely comprised of wetlands. For these reasons, the Robers site was screened from further consideration.

5.2.10 IN-WATER PLACEMENT

In-water placement concepts were considered; however, no such alternatives were carried forward as part of the TSP. Beneficial use projects that involve placing fill in the water may still be considered if needs and opportunities align, and some examples are identified in Chapter 5.3. Many of the island construction opportunities would provide environmental benefits.

Simple in-water placement within the navigation channel below a dredge cut (often called “thalweg placement”) is impractical due to the longitudinal decrease in sediment transport capacity. A very large breakout flow occurs in Pool 6 at RM 721 reducing main channel flows and sediment transport capacity down to River mile 719 where the breakout flow returns to the main channel. Dredged material placed back into the channel from dredge cuts upstream or adjacent to this reach would deposit in this reach from RM 721 to 719 and would have to be re-dredged.

In-water placement to construct stable features such as islands large enough to meaningfully address the dredged material placement needs in the pool is

problematic for several reasons. Projects to beneficially use dredged material for island projects (e.g. UMRR Program) or for construction fill (e.g., Lock and Dam embankment protection projects) have been studied and implemented throughout the St. Paul District. However, significantly larger in-water placement solutions would be required to meet the objectives here. While the Corps supports the beneficial use of dredged material for ecosystem restoration purposes, constructing islands over such a large area and over the course of 20 years would be a novel undertaking. The planning required for this large of a novel project is outside of the scope of this DMMP. Some of the additional considerations and constraints are described below.

The objective of this DMMP is for the management of up to 1.5 million yards of granular material over the next twenty years. The Corps has constructed many artificial islands under the UMRR Program over the past 30 years. Typical artificial islands require on average about 12,000 cubic yards of granular material per one-acre of island (typical wide type island sited in water 3-4 feet deep and rising 2 feet above water surface). These islands not only require a granular base, but at least one foot of fine material for topsoil, rock protection for erosion control (such as rock vanes, groins and end protection) as well as ground cover plantings. If islands were constructed with 1.5 million yards of granular material, it could result in the construction of more than 100 acres of islands.

The construction of features such as islands is also limited by the impacts of increased flood stages and likely impacts to insurable structures. Pool 6 is adjacent to the Winona flood control project, with many insurable structures in the surrounding floodplain. The induced flood level rise from placing structures in the floodway/floodplain cannot exceed zero (No-rise Certification), which is defined as 0.005 feet (1/16 inch) in Pool 6 per Federal Emergency Management Agency (FEMA) regulations. Adding substantial acres worth of structures such as artificial islands would likely result in a flood stage rise exceeding 0.005 feet, the level for No-rise Certification in Pool 6.

Another consideration is that filling aquatic habitat at this magnitude would likely have unacceptable environmental consequences. Even if impacts to wetlands could be avoided, there would certainly be some impacts to freshwater mussels, likely including many state- and federally-listed threatened and endangered species. Such impacts may be unacceptable to partner resource agencies and could be avoided through the selection of other available alternatives.

Finally, the Clean Water Act prohibits dredged material placement into a water of the U.S. that is not the least environmentally damaging practicable alternative. The sites carried forward here as the tentatively selected plan are less environmentally damaging than large-scale in-water placement as described above.

5.3 Screened Sites with Potential for Future Beneficial Use

Several sites were determined to be unsuitable for consideration as part of the long-term DMMP but could provide opportunities for beneficial use of dredged material in the future. These opportunities would each contribute to meeting the project objective but are not acceptable because they would not be implementable under the authority of the DMMP alone. This is primarily because they are conceptual construction projects with other purposes that would require planning and action on the part of the landowners or managers of those properties that are outside of the scope of the DMMP. If the landowners take the necessary planning steps and request assistance from the Corps, these could become options for contingency placement if beneficial use removal from DMMP-selected sites is low. Some sites may be good candidates for cost-sharing programs that are available.

5.3.1 USFWS - GARVIN BROOK PIT RECLAMATION

The U.S. Fish and Wildlife Service's Garvin Brook pit is an abandoned mining pit located north of Winona near Minnesota City. The USFWS wants to reclaim and level the site to approximately former site elevations to restore the previous habitat conditions. The use of the site as proposed would be for the purpose of restoring habitat; it would only be considered as one-time placement site with no potential for beneficial use removal. The proposed use of the site would require approximately 130,000 cubic yards of dredged material. The pit was impacted by the 2007 flood, which breached the Garvin Brook streambank and filled the pit with water. The streambank was rebuilt and fortified in 2009 with riprap. The pit has naturally revegetated with shrubs (primarily willow and sumac) and small trees (Siberian elm, linden sp., red cedar, and others).

5.3.2 PRAIRIE ISLAND ROAD LEVEE

A public member suggested supplementing the levee along Prairie Island Road, on the upstream end of Winona. This suggestion has been communicated to the Corps' levee team, and the use of sand in any planned levee modifications in the area will be evaluated as a potential option.

5.3.3 PRAIRIE ISLAND PARK RAISE

There is a park and campground located along Prairie Island Road that is frequently subjected to flooding. If desired by the site owners, there could be an opportunity to use dredged material to raise the park higher out of the floodplain to reduce flooding impacts.

5.3.4 MILLER WASTE MANAGEMENT

This site was considered as a potential Tier 2 open beneficial use site but was removed from further consideration in that capacity due to a history of petroleum contamination. The landowner has indicated a potential desire for material to raise the site, so this may be possible for use as a one-time beneficial use placement opportunity in coordination with the landowner. While site remediation was performed to clean the site of remnant contaminates from an underground storage tank leak, the Minnesota Pollution Control Agency nevertheless indicated that contaminated soils remain on-site. At a minimum, use of this site would require HTRW analysis (Phase I and II Environmental Site Assessments) and installation and testing of monitoring wells. The site may not be suitable for hydraulic dredged material placement. Additional site details that were collected during planning follow in case there is future re-consideration of this site.

This site is in an industrial area of the downstream end of Winona, Minnesota. The site is adjacent to the river, but behind the city's levee. Mechanical placement of dredged material would likely require trucking, which adds a significant per-cubic yard cost due to the need for double-handling and additional equipment. A public boat launch, operated by the city of Winona, is directly east of the Miller Waste Management property. This boat launch has been used successfully as a river access site for transferring dredged material onto trucks.

Levee modifications were evaluated. The only modification that would allow direct placement from a barge would be to move the entire levee to the other side of the property and create a low-elevation access point that would allow equipment to move material from barges on the river directly into the site. The levee is part of the Winona system, owned and maintained by the City of Winona. Another possible alternative would be to use a conveyor system to move the material over the levee. Conveyor systems have been used relatively few times to move dredged material on the Upper Mississippi River, and it is unknown whether production could keep up with dredging.

This site was previously occupied by a facility used for fertilizer distribution. The building and equipment were removed in 2005-06. The site has been leveled and prepared for another structure. Because of this high level of recent disturbance, effects to natural resources at the surface level are expected to be minimal. However, use of the site could impact groundwater during hydraulic material placement operations, on account of the previous site contamination.

5.3.5 TREMPEALEAU NATIONAL WILDLIFE REFUGE LEVEE

The Trempealeau NWR is a large wildlife complex that spans most of the length of the north border of Pool 6. One of the Trempealeau NWR's dikes - the

Marshland Dike – has suffered flood damage in recent years and requires repair. The Trempealeau NWR proposed using dredged material from Pool 6 to repair and reinforce the dike. A preliminary cost estimate was prepared by the Corps, which indicated that it would not be cost effective to consider under this DMMP, and that a higher level of engineering study would be necessary to ensure that the project would function as desired. However, the project could be further studied and investigated jointly between the Corps and the U.S. Fish and Wildlife Service.

5.3.6 FOREST RIVER CAMPGROUND

This is a privately-owned parcel developed and operated as a campground, approximately six miles downstream of the lower end of Winona, Minnesota. The owner has expressed interest in filling portions of the property up to four feet. Much of the area is within the floodway. The portion outside of the floodway contains some wetlands, and a stream crosses through the center of the site – both of these would need to be avoided for placement. Two parcels would meet these criteria and be fillable and would hold approximately 19,000 cubic yards. Because of the low capacity of the site and one-time nature of the placement, it was screened from consideration for long-term DMMP planning. However, if the property owner's interests and the Corps' dredging needs align in the future, it could be considered as a one-time beneficial use site, provided the owner has obtained all necessary permits.

5.3.7 ISLAND CONSTRUCTION

Constructing islands using dredged material can provide benefits to fish and wildlife or improvements for recreation sites. The Corps often builds islands in the Mississippi River as features of UMRR Program projects. The Corps has determined that these types of projects would not be suitable for inclusion as part of the TSP in Pool 6, primarily due to planning constraints (see also discussion in Chapter 5.2.10). Changes in conditions, funding from other programs or outside sources, or work in-kind to construct these additional features could make island construction a viable alternative in the future. Although not directly included in the TSP, the Corps will continue to seek opportunities to plan environmentally beneficial dredged material uses and will work with interested parties when opportunities arise.

Several locations have been identified in Pool 6 where new islands could be constructed or existing islands could be nourished or expanded:

Trempealeau National Wildlife Refuge

The Trempealeau NWR has a long-term management goal of having islands constructed in the open water areas to create habitat and cut down on wind-driven wave-action. The refuge maintains a culvert through the railroad levee that would likely support the use of hydraulic dredge pipeline. Further design and a feasibility study will be required in order to move forward with this option. Preliminary cost estimates showed that constructing these islands would likely be significantly more expensive than other practicable plans being considered for the long-term management of dredged material in Pool 6; therefore, use of this site would likely not be cost-effective. There may be cost-sharing opportunities available if the USFWS or other government or resource agencies wish to provide assistance.

Mosquito Island Expansion

Mosquito Island is a small, main channel border island located a few miles downstream of Winona, Minnesota. This island is currently used for recreation. The island eroded substantially following the construction of the Lock and Dam system. The Corps has recently (2017) restored a portion of the historic island using dredged sand and excess riprap from another project. There would be potential for further extending the island to a size larger than historic extents, if supported by the partner resource agencies.

Backwater Complex Near RM 720.5

During an on-site meeting in this area with the purpose of investigating potential topsoil borrow locations for the construction of Mosquito Island, representatives from the USFWS, the Wisconsin Department of Natural Resources (WIDNR), and the Corps noted potential opportunities for restoring this area with dredged material. No plans have been suggested or prepared to date.

Island Enhancement Near RM 718.5

This area has been identified by the Minnesota DNR and USFWS as an area that may benefit from sand placement. An initial suggestion has been to extend the high ground on the downstream northern (channel) side of the existing island to protect and enhance the backwater area within.

Backwater near Forest River Campground, Minnesota Side (RM 718)

This was suggested by the WIDNR as an area that may benefit from material placement. This location could be convenient for material generated from the three dredge cuts in the lower end of the pool. However, these cuts account for only 15% of all dredging needs in Pool 6 and are dredged infrequently

(approximately once every six years). The area has shallow access and may require additional access dredging.

Perrot Island / "Johnson Island" (RM 717.5)

This island, in the lowermost portion of Pool 6, is owned by the WIDNR. The WIDNR has identified erosion occurring at the island and suggested that placement of material here may be useful. This location could be convenient for material generated from the three dredge cuts in the lower end of the pool. The WIDNR has also prepared a preliminary fact sheet and maps showing potential desirable features.

5.3.8 LOCAL LANDOWNER REQUESTS

A number of public members contacted the Corps with proposals for beneficial use following the initial public meeting in February 2019 and a newspaper article published in the Winona Post describing the DMMP. Each of the suggestions were considered. The sites are not listed individually within the report because none of the sites were considered useful for the long-term DMMP planning. Sites were generally far from the river and would have high transportation costs, offered relatively low-capacity, and/or would require significant planning and permitting on the part of the landowner for filling of wetlands or placing fill within a waterway. Landowners were informed that they could obtain the dredged material free of charge on a first-come, first-served basis at our open beneficial use sites. Even though these inquiries did not directly provide locations for dredged material management in the DMMP, they do demonstrate that there is a demand for material in the area. Additional ideas were received following the report release and public meetings in early 2020, and from stakeholder coordination throughout 2020 and 2021. Two of these suggestions were incorporated in the draft TSP.

5.4 Sites Carried Forward

The sites that met overall criteria and project objectives are identified and evaluated in this section. Each of the sites carried forward were determined to be complete, effective, and acceptable placement sites that met the evaluation criteria contained in the CMMP for economic, environmental (which includes cultural resources), and social acceptability. The sites vary in efficiency as evidenced by the differences in cost, which are summarized in Table 8 at the beginning of Chapter 6. These sites were carried forward for detailed planning analysis and alternative formulation. The criteria used to evaluate sites are briefly discussed below, followed by details for each site.

Environmental Acceptability

To judge environmental acceptability, criteria included compliance with the Clean Water Act, Endangered Species Act, and other Federal laws and regulations, as well as consideration of natural resources, flood stage impacts, hazardous, toxic, or radioactive waste considerations, wetland impacts, cultural resources, and other natural resources as appropriate.

Operational Feasibility

Operational feasibility included considerations of site capacity, proximity to the dredge cuts and whether dredged material placement at a site would constitute either a beneficial use for the site itself or be beneficially used by the public, once placed. It also considered the methods of dredged material placement that would be available to the site.

Social Impacts

Socioeconomic criteria were used to evaluate dredged material placement site alternatives in terms of social impacts and included examination of the following categories: business and industrial activity, community cohesion, public services and facilities, property taxes and tax revenues, life, health, and safety, and aesthetic values and noise levels, as described in the CMMP.

Costs

Costs for each site were estimated for site acquisition, site development (preparing a site for access and material placement), dredging costs, and dredged material transportation costs. (Dredging itself is not a part of the proposed action evaluated here, but because material placement is typically tied to the costs of dredging it is incorporated into the unit cost for more realistic comparison). Costs were normalized to costs per cubic yard of dredged material for easy comparison. Detailed descriptions of the components of cost calculations follow:

Unit Cost

The Cost/Cubic Yard includes the physical handling of the dredged material by means of mechanically dredging the material out of the river, barging the material to a transfer site, unloading the material, trucking the material, if required, and placing the material in its final placement site. The estimate also includes indirect costs such as real estate and development costs.

Mechanical Dredging

The unit price of $9.55/CY was obtained from the current Mechanical Dredging Contract for year 3 and includes unloading the barge. $1.00/CY was added to cover Mobilization for a total of $10.55 /CY.

Hydraulic Dredging

Hydraulic dredging would be implemented if sites and dredging needs make it a viable option. However, costs for hydraulic dredging were not incorporated because: (1) the majority of dredging is anticipated to be conducted mechanically, and (2) the cost of dredging hydraulically would be similar to the costs for mechanical dredging at these particular sites.

Trucking

The cost of trucking is primarily a function of the number of trucks needed to achieve a certain production rate and the travel distance. 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.

Transfer Site Use

Sites that do not have direct river access and therefore would require transfer sites include the costs for acquiring access to the nearest transfer site.

Placement

This cost includes the work of a dozer to spread the dredged material after it is dumped by a truck or placed by another piece of equipment such as an excavator.

Real Estate Cost and Development Cost

Real estate costs include site acquisition and development costs. Development Cost include access improvements[1], site clearing, erosion control, wetland mitigation, and screening. The combination of real estate and development costs were generally less than $0.50/CY.

Cost Risk and Uncertainty

The unit costs presented for managing dredged material at each site were developed using the best available information. Many unforeseeable factors

[1] At the Homer (West) site, for example, this includes the railroad crossing and turn lanes.

could affect costs over time. Costs for real estate acquisition or site development are one-time costs and therefore present minimal risk once implemented. Other costs like dredging costs would affect each alternative equally and are dependent on how much dredging is needed rather than on how the material is managed. The greatest amount of risk and uncertainty in the lifetime cost assumptions for the DMMP are transportation costs for trucking material. If trucking costs increase substantially, the sites with greater trucking distances will be impacted most.

5.4.1 WINONA SAND AND GRAVEL AIRPORT PIT

General Description: This is a large, ponded pit created by an active sand and gravel mine. The site is not adjacent to the river and located slightly upstream of Lock and Dam 5A, which means dredged material from Pool 6 would need to be offloaded at a site with river access such as the Winona Harbor, Homer site, etc. and then trucked to the pit. This may require between 4-11 miles of trucking, depending on which river access location is available. The dredging locations in Pool 6 are concentrated in the middle of the pool so the upstream river access locations may require longer than average barge transport.

Figure 10. Winona Sand and Gravel Airport Pit (North end)

Ownership: Private

Size and Capacity:

Site Area:	100+ acres
Fill Depth:	100 feet
Capacity:	8,027,000 CY
Site Type:	Permanent Placement
Cost per Cubic Yard:	$ 22.70

Operational Feasibility: Placing dredged material from Pool 6 would require trucking from an offload site with river access, which adds a significant per-cubic yard cost due to the need for double-handling and additional equipment.

Capacity estimates for this site were based on preliminary assumptions that the existing pit exceeds 100 feet in depth. Google Earth imagery was used to estimate the surface area of the pit. An assumed ground elevation of 647 was used to assume the pit could be filled back up to meet and match existing ground elevation surrounding the perimeter of the pit and to not exceed the elevation at the edge of the adjacent airport runway. Side slopes of 1V:3H were assumed when determining the capacity and quantities of the site. These assumptions resulted in a capacity estimate of over 8,000,000 CY.

Environmental Acceptability: Minimal impacts to natural resources would be expected at this site because it is already being actively disturbed by mining operations.

Social Impacts: The largest socioeconomic impact of using this site for dredged material placement would likely be effects of trucking. The effects would depend on the truck route used, which would in turn depend on the availability of offload sites with river access. Since this is an active mine, there is likely considerable truck traffic entering and exiting the site already, and the roads leading from the nearest transfer site (Port Authority) are designated truck routes.

5.4.2 WINONA HARBOR SMALL EXPANSION

General Description: This site is directly downstream from the existing and operational Winona Harbor site. The area is a mix of forest and barren sand. Tree clearing would be required to utilize this site. The site would have good access for public beneficial use of the material. This small expansion would approximately double the current capacity of the Winona Harbor site. This expansion would not cause any measurable increase in local flood stages and would not require any wetland fill.

Ownership: City of Winona

Size and Capacity:	Site Area:	Approximately 1 acre
	Fill Height:	45 feet
	Additional Capacity w/expansion:	26,500 CY
	Site Type:	Open Beneficial Use
	Cost per Cubic Yard:	$ 13.00

Operational Feasibility: This site would be operationally feasible for mechanical placement of dredged material, directly from barges on the river – just as the

existing Winona Harbor site has been used in the past. The site would not be large enough to support hydraulic placement. The existing Winona Harbor site has a long history of material placement with no known operational obstacles. The site has good access for public beneficial use of the material.

Capacity estimates for this site assumed fill elevations up to 675.0 and a site perimeter elevation of 650.0. Side slopes of 1V:3H were assumed when determining the capacity and quantities of the site. These assumptions resulted in a capacity estimate of 46,500 CY of material over the total site area. This is an increase of 26,500 CY over the existing site capacity.

Environmental Acceptability: Use of this site would convert approximately one acre of existing forest to barren sand. The small expansion area is entirely terrestrial and is vegetated with floodplain tree species such as silver maple and cottonwood, with hackberry in the understory. The use of this site would not result in any fill of wetland based on an on-site delineation.

Social Impacts: There would be minor increases in truck traffic to the area for beneficial use removal due to the increased capacity of the site.

5.4.3 FASTENAL – EVANSON

General Description: This site is part of a wetland and open water pond complex at the upstream end of Winona, bordering Goodview, MN. The 12-acre site is approximately half emergent wetland and half forested/shrub wetland. This site was suggested as a potential future placement opportunity for the Corps by the Winona City Task Force in coordination with the site owner, the Fastenal Company. There is interest in the development of this site, although no plans or timeline have been presented to the Corps at the time of writing.

Ownership: Fastenal Company Purchasing

Size and Capacity:	Site Area:	12 acres
	Fill Height:	29 feet
	Additional Capacity w/expansion:	335,000 CY
	Site Type:	One-Time Beneficial Use
	Cost per Cubic Yard:	$ 16.20

Operational Feasibility: Use of this site would require substantial site preparation and clearing. It is assumed that the site owner would prepare the site before material is permitted to be placed. An access road would need to be constructed to truck material into the site and half of the site is forested so trees may need to be cleared and removed. The site is approximately 1.5 miles from the Port Authority transfer site and would therefore require substantially less trucking miles than

Tier III sites. It is assumed that the Corps would work with the site owner to place the material in an accessible location on-site, and the owner would move the material within the site for their construction activities.

Capacity estimates were based only on preliminary assumptions about what the landowner may want to do, and on existing site and surrounding elevations. The elevation of the wetland bottom was assumed from a Google Earth elevation of the water surface (650 feet amsl). The fill height of 29 feet was estimated based on the assumption that the landowner may want to fill the site to match a grade surrounding the property, and the elevation near the Pelzer Street Viaduct at Theurer Blvd was selected as a target (679 feet amsl). Actual material needs may vary substantially depending on the landowner's plans. These assumptions provided capacity for over 335,000 CY. of material.

Environmental Acceptability: Use of this site would convert up to 12 acres of mixed emergent and forest/shrub wetland to barren sand, though final site conditions would depend on prior landowner use and future site development plans. Environmental acceptability of the federal action cannot be fully determined until site plans have been presented to the Corps for review. Additional environmental review, which may include NEPA, Clean Water Act, and Endangered Species Act compliance would be prepared as needed before Corps' placement of material would occur.

Social Impacts: This site is located on a designated truck route, so impacts from the trucks hauling material to and from the sites would be minimal.

5.4.4 FASTENAL – MADISON SILO

General Description: This site is a small portion of a 7.8-acre property where the Fastenal Company operates a retail building materials store and storage yard at the upstream end of Winona. An estimated 2.5-acre portion on the northwest corner of the property is an open mix of seasonal wetland, mowed fescue, and trees. This site was suggested as a potential future placement opportunity for the Corps by the Winona City Task Force in coordination with the site owner, the Fastenal Company. The site owner has expressed interest in leveling the site for future development, although no plans or timeline have been presented to the Corps at the time of writing. There may also be interest in creating a temporary stockpile at the site.

Ownership: Fastenal Company Purchasing

Size and Capacity:	Site Area:	2.5 acres
	Fill Height:	Level with surrounding property
	Additional Capacity w/expansion:	10,000 CY
	Site Type:	One-Time Beneficial Use
	Cost per Cubic Yard:	$ 15.15

Operational Feasibility: This site would be operationally feasible for mechanical placement of dredged material via truck. The site is approximately 1 mile from the Port Authority transfer site and would therefore require substantially less trucking miles than Tier III sites. The site has direct road access from Riverview Drive.

Capacity estimates were based on preliminary assumptions about what the landowner may want to do and on existing site and surrounding elevations. Elevations surrounding the project site were based on Google Earth imagery. The top of the stockpile was assumed at elevation 666 which matches the NE corner of Prairie Island Rd and Riverview Dr. This elevation would flatten out the low area of the project to match the surrounding area and allow the landowner opportunity to expand the use of the site. The bottom of the depression was assumed at elevation 650. Side slopes of 1V:3H were assumed when determining the capacity and quantities of the site. These assumptions resulted in a capacity estimate of approximately 10,000 CY.

Environmental Acceptability: Use of this site would convert up to an estimated 1.2 acres of mowed fescue, 0.5 acres of trees, 0.4 acres of forested/shrub wetland, and 0.2 acres of emergent wetland to barren sand, though final site conditions would depend on prior landowner use and future site development plans. Environmental acceptability of the federal action cannot be fully determined until site plans have been presented to the Corps for review. Additional environmental review, which may include NEPA, Clean Water Act, and Endangered Species Act compliance would be prepared as needed before Corps' placement of material would occur.

Social Impacts: This site is located on a designated truck route, so impacts from the trucks hauling material to and from the sites would be minimal.

5.4.5 PORT AUTHORITY SITE

General Description: This site is downstream of the former Winona Commercial Harbor site and has direct access to the Mississippi River through Yeoman's Pond. The site is small with minimal storage capacity. The site would provide a

critical access route to transfer material from barges in the river onto trucks. The site location would allow for efficient material transport to several other identified sites located in the upstream portion of Winona. On the upstream side of the site is the Minnesota Maritime Art Museum, while the downstream side is the Archer Daniels Midland Property described in Section 5.2.4.

Ownership: City of Winona

Size and Capacity:

Site Area:	2.5 acres
Fill Depth:	25 feet
Capacity:	9,000 CY (No current plans to use)
Site Type:	River Access Transfer
Cost per Cubic Yard:	N/A

Operational Feasibility: About half of the Port Authority site is minimally vegetated, filled, and graded, and would provide an ideal area for dredged material transfer from barges into trucks. The Port Authority has stated they have used the site for similar purposes of moving material off of barges and into trucks for overland transport.

The site could also provide a small dredged material storage area (150' x 200'). If side slopes of 1V:3H are assumed, this area of the site could hold approximately 9,000 cu.yd of material. However, it is not anticipated that any material would be placed on or stored at the site. This site's importance in the TSP is based on efficient transfer of material to other sites.

Environmental Acceptability: The downstream half of the site is relatively undisturbed, high-quality native floodplain forest. A Minnesota Routine Assessment Method (MnRAM) analysis conducted on the wetland resulted in an Exceptional rating for wildlife (see Appendix B). This area is not needed for hauling or storage and would be avoided.

Social Impacts: This site is located on a designated truck route, so impacts from the trucks hauling material to and from the sites would be minimal.

5.4.6 EAST END BOAT LANDING

General Description: This site is located toward the downstream end of Winona and has direct access to the Mississippi River. The site is an active public boat ramp. The site would provide a critical access route to transfer material from barges in the river onto trucks to allow efficient material transport, primarily to the Port Authority Business Park. The site is located in an area with other industrial uses and is located along a designated truck route. The site has been used for transfer of dredged material multiple times since 2014.

Ownership: City of Winona

Size and Capacity:	Site Area:	1 acre
	Fill Depth:	N/A
	Capacity:	N/A
	Site Type:	River Access Transfer
	Cost per Cubic Yard:	N/A

Operational Feasibility: This site has been used successfully to mechanically transfer dredged material from barges to trucks numerous times. However, the site is too small to allow the boat landing to operate safely alongside dredged material transfer. The landing is closed to public use while dredged material is being actively transferred.

Environmental Acceptability: The site consists of a developed boat ramp and parking lot, so no terrestrial impacts would occur from the proposed temporary use of the site. Minor access dredging has been required to use the site in the past. Environmental effects of the use of this site, including aquatic resources that would be disturbed during access dredging were evaluated in the "Beneficial Use of Dredged Material in Pool 6" environmental assessment and FONSI (USACE, 2014).

Social Impacts: The closure of the site during dredged material transfer would have minor social impacts. This has been minimized in the past by limiting workdays to Monday through Thursday and allowing public use on the weekends. Winona also has several alternative boat ramps that could be used by the public during these closure periods. This site is located on a designated truck route, so impacts from the trucks hauling material from this site would be minimal.

5.4.7 PORT AUTHORITY BUSINESS PARK (TECHNOLOGY PARK)

General Description: This is a collection of vacant lots located on the southeast side of Winona, Minnesota. Part of the site was used for the placement of dredged material from 2014 – 2016 and 2018. The site is not adjacent to the river, so the East End Boat Landing was used to transfer the material to trucks, which transported the material 1.5 miles via a city-designated truck route to the Business Park. Some of the area was previously wetland, filled by the city of Winona under permit 91-00179-IP-BCN. The material placed here was used for beneficial use in preparing the site for commercial development, and some material was stockpiled for other beneficial uses. Ongoing recent developments of newly constructed warehouses and retail businesses are resulting in increased public use. Several of the lots where Corps dredged material was recently placed now have businesses established. The City of Winona is actively working on selling and promoting

development of these lots, so these sites are likely a short-term solution. The Corps could consider other similar lots in the future if there was interest from the City.

Ownership: City of Winona

Size and Capacity:		
	Site Area:	15 acres total parcels
	Fill Depth:	25 feet
	Capacity:	100,000 CY
	Site Type:	Open Beneficial Use
	Cost per Cubic Yard:	$ 16.20

Operational Feasibility: There is no river access to this site, so material would need to be transferred onto trucks at another site and driven to the Port Authority Business Park. The estimated capacity at this site was developed based on previous volume of placement and rough acreage. Actual placement capacity will depend entirely on site availability and landowner needs.

Environmental Acceptability: All of the Port Authority Business Park sites under consideration are vacant city lots, vegetated with fescue, and regularly mowed.

Social Impacts: The sites are located on a designated truck route, so impacts from the trucks hauling material to and from the sites would be minimal. If the East End Boat Landing is used to offload material from barges onto trucks, the boat landing would need to be closed to the public during that time.

5.4.8 HOMER EAST

General Description: This is the downstream portion of the Homer site. The site was created in the mid-1970s by Corps placement of dredged material. No sand has been placed on this portion of the site since the creation of the site in the 1970s. The Homer East site is mostly wetland consisting of sparse bottomland forest vegetation and includes a one-acre ponded area. Use of both Homer properties (East and West) together would increase the overall function of the site by allowing hydraulic placement, which would not be possible with either portion alone. Use of the full site would also maximize the benefits of improving the access to the site for beneficial users. The Homer East site is not considered by itself since the Homer West site is already under Corps ownership, however, the Corps is not actively pursuing the Homer East site at this time but is retaining the site in the overall plan.

Ownership: Private

Size and Capacity:	Site Area (East portion):	3.0
	Site Area (Homer Total):	7.1 acres
	Fill Depth:	50 feet above shoreline
	Overall Homer capacity with expansion:	175,000 CY
	Site Type:	Open Beneficial Use
	Cost per Cubic Yard:	$ 13.65

Operational Feasibility: This is the downstream portion of the Homer site. There is not currently a railroad crossing into the East portion of the Homer site, so access to the site is assumed to occur from the West portion. The East portion of the Homer site would require some tree and brush clearing. Material could be placed to a height of approximately fifty feet above the shoreline, which is roughly to the top of the adjacent mature cottonwood trees, and consistent with prior similar placement activity at the adjacent West portion.

Capacity estimates for this site assumed fill elevations up to 695.0 and a site perimeter elevation of 650.0. Side slopes of 1V:3H were assumed when determining the capacity and quantities of the site. These assumptions resulted in a capacity estimate of 175,000 CY of material over the total Homer site (East and West). This is an increase of 66,000 CY over the existing site capacity.

Figure 11. Homer (East) Existing Site Conditions

Environmental Acceptability: This site was carried forward as environmentally acceptable although there are wetlands present. This portion of the Homer site includes most of the one-acre ponded area and the higher elevation area around it (e.g., see Figure 11). The soils are primarily sand, which was dredged from the main channel of the Mississippi River and placed on the site in the 1970s. There are about two dozen cottonwood trees that average approximately 16 inches in diameter. The rest of the site consists of sparse, smaller floodplain forest trees less than 5-inches in diameter and patches of brushy vegetation. The ponded area appears to be a portion of the site that did not get filled by the channel maintenance material placed in adjacent areas in the 1970s, as can be seen in the 1977 aerial photo in Figure 7. Duckweed, arrowhead, cattail, and rushes have been observed from the shoreline of the pond.

Full use of this site would involve clearing the vegetation, filling the approximately 1-acre ponded area, and converting most of the area to barren sand. The National Wetlands Inventory identifies 1.55 acres of deep marsh. However, the entire area has been disturbed within the last 40 years by dredged material placement. Because of this recent disturbance, the vegetation is at an early successional stage represented by species such as cottonwood, silver maple, Siberian elm, and black locust. Vegetation is sparse due to the extremely sandy soil. An on-site wetland delineation would be conducted to determine the appropriate type and quantity of mitigation, which would be completed before using the site. Approximate costs for mitigating the wetland fill have been incorporated into the estimated cost per cubic yard of using the site.

The site is within the floodplain but not considered within the floodway (pers. comm., Minnesota DNR. See Appendix A.), meaning that use of the site would not adversely impact flood stages during the one-percent annual exceedance probability flood.

Social Impacts: Community members in the area have expressed concern about noise, traffic, dust, and aesthetic impacts in meetings and correspondence. There are opportunities to reduce the noise and visual effects by incorporating some structural (e.g., berm and/or fence) and vegetative screening to lessen the visibility of the site from the road and residential surroundings. There are also opportunities to improve the safety and traffic flow at this site. Site capacity and cost calculations were developed with these measures incorporated. These effects are further discussed in more detail in Chapter 7.

5.4.9 YAEDKE PIT

General Description: This is an inactive mining pit identified from aerial imagery, drive-by observation, and discussions with the site owner. Part of this

site was used in the winter of 2021 to transfer approximately 55,000 cubic yards of dredged material that was stockpiled on the Homer West site.

Ownership: Private

Size and Capacity:

Site Area:	15 acres
Fill Depth:	100 feet
Capacity:	1,100,000 CY
Site Type:	Permanent Placement
Cost per Cubic Yard:	$ 22.65

Operational Feasibility: This site was successfully used in 2021 for the placement of dredged material. Use of this site substantially increases costs due to the distance that material would need to be trucked to the site. Material could be transferred into trucks at the Homer West site and trucked approximately 4 miles to the Yaedke Pit. The site could be managed for beneficial use removal or for reclamation of the mine. The capacity for this site is a rough estimate based on aerial imagery. The estimate assumes sand would be spread across the current footprint of the site and filled approximately to match surrounding elevations. Actual fill capacity will depend on the future activity at the site.

Environmental Acceptability: This site is a mining pit that has experienced significant recent disturbance. Therefore, there are few environmental resources of concern. However, during coordination for use of the site in 2021, it was learned that a local individual had been relocating timber rattlesnakes to the entrance of the pit area. Timber rattlesnakes (*Crotalus hirridus*) are listed as threatened by the State of Minnesota. Use of the site would take this into consideration.

Social Impacts: Truck traffic generated from hauling material to this site is of concern to residents that live along County Highway 15.

5.4.10 HIGHWAY 43 PIT

This is a mine that was identified using aerial imagery. It appears to be active, with no apparent areas ready for reclamation at this time. Truck transport costs (more than six miles) significantly increases costs.

Ownership: Private

Size and Capacity:

Site Area:	15 acres
Fill Depth:	80 feet
Capacity:	3,700,000 CY
Site Type:	Permanent Placement
Cost per Cubic Yard:	$ 36.30

Operational Feasibility: Use of this site would incur significant costs due to the distance that material would need to be trucked to the site. Material could be transferred into trucks at the Homer West site and trucked approximately 8.5 miles to the Highway 43 Pit. The site could be managed for beneficial use removal or for reclamation of the mine. The capacity for this site is a rough estimate based on aerial imagery. A site fill depth of 80 feet was selected here based on the estimated depth of the mine and spread across the current footprint of the site. Actual fill capacity will depend on the future activity at the site.

Environmental Acceptability: There is a low likelihood of significant resources on site, but no investigations were conducted due to the high cost of utilizing the site.

Social Impacts: There is a low likelihood of socioeconomic impacts, but no investigations were conducted due to the high cost of utilizing the site.

5.5 Tentatively Selected Plan

Typically in a DMMP study, the sites carried forward would be sorted into individual sites or groups of sites that meet the study's objectives, and then compared against each other on the basis of metrics such as cost and environmental effects. These plans are typically formulated to have capacity for all of the material expected to be dredged over the study period (e.g., 20 years in this study). In this case, relatively few sites were suitable to be carried forward based on criteria of acceptability, and the sites with the lowest unit cost have relatively low capacity compared to the 20-year projected dredging quantity of 1.5 million cubic yards. In addition, Pool 6 has historically had great success in beneficial use of material, which presents an opportunity to reduce navigation channel maintenance costs and also reduce impacts by requiring less overall land for the project.

The minimum target placement capacity that is anticipated to meet the dredging needs in Pool 6 using beneficial use sites is 168,000 cubic yards. This goal was developed as described in Chapter 4.1.3 – by adding a contingency amount to the highest historical single-year dredging required in Pool 6.

The team's recommendation is to secure placement capacity for at least the minimum target placement capacity in Open Beneficial Use sites. This plan would reduce per-cubic-yard placement costs by nearly half. However, the team also recognized the implementation risks inherent with this strategy. First, if dredging trends in Pool 6 continue to increase, the identified site capacity may not be enough. Second, placement site needs could outpace beneficial use removal. Finally, continued land development into the future could result in even fewer suitable options. Therefore, rather than screening sites further and limiting the recommended plan to the minimum number of sites required, the study team chose to retain all sites found to be acceptable. To reduce the identified implementation risks, the team recommends securing additional Open Beneficial Use sites beyond the minimum target capacity if possible due to the unknowns of dredging trends and actual beneficial use, particularly those sites with the lowest unit cost. More storage at Open Beneficial Use sites would provide a larger buffer against needing to use the much more expensive sites, and beneficial use may increase by providing more diversified locations for interested parties to use. Retaining the identified permanent placement sites as part of the long-term solution helps provide contingency capacity for exceptionally difficult dredging seasons or times of low beneficial use. Securing access to permanent placement site options is also recommended to occur immediately as part of implementation to prepare the Corps for placement needs that exceed Open Beneficial Use site capacity.

The sites included in the TSP are organized into three tiers based on placement costs and type of use. The Tier 1 alternatives have river access for direct placement of dredged material and direct road access for beneficial use users to remove the material. The Tier 1 alternatives include the two sites currently available – Homer West and Winona Harbor – as well as Homer East and the Winona Harbor Small Expansion site. Although Homer East is classified as a Tier 1 site, the Corps is not actively pursuing the Homer East site at this time but is retaining the site in the overall plan in case of future need. The Tier 2 alternatives – the Port Authority Business Park, Fastenal-Madison Silo, and Fastenal-Evanson – would require material to be offloaded at a river access site and trucked to the site, significantly increasing the cost of using the site. Third tier sites are permanent placement sites that would require substantial trucking from one of the river access points. These sites include the Yaedke Pit, Highway 43 Pit, and Winona Sand & Gravel Airport Pit. Under this plan, the Corps would attempt to manage as much material as possible through Tier 1 open beneficial use sites with direct river access. If dredging demands outpace the capacity provided by the Tier 1 sites or if beneficial use from the active sites does not keep up with demand, the Corps would pursue higher-cost alternatives. In addition to the three tiers of placement sites, two transfer sites are included. These are sites with river access that can be used to move material into trucks for delivery to placement sites that do not have direct river access. Inclusion of these transfer sites substantially reduces the transportation costs to some of the second and third tier sites.

The Federal Standard is defined as "The dredged material disposal alternative identified by the Corps which represents the least costly alternative consistent with sound engineering practices and meeting the environmental standards established by the 404(b)(1) evaluation process." The Federal Standard in Pool 6 has been identified as maximizing the open beneficial use of material using sites with direct river access. These sites have the lowest cost because they avoid double handling and minimize land use. However, the Corps also recognizes that sites and capacity for this style of management are limited and there is uncertainty about future dredging trends and beneficial use demand. If beneficial use does not keep up as anticipated, then the Federal Standard, by definition, will need to expand to include more expensive management options.

In addition to these three tiers, the Corps would also continue working with local, state, and federal entities to take advantage of opportunities for one-time beneficial use of material. All sites that were identified in this report as "screened, but with potential for future use" could be pursued as opportunities to reduce the pressure at open beneficial use sites. Other similar opportunities may be brought to the Corps and pursued.

CHAPTER 6.

Detailed Description of the Tentatively Selected Plan

The tentatively selected plan is a tiered approach, as described in Section 5.5. The Tier 1 sites comprise the Federal Standard for managing dredged material as of this time: the dredged material disposal alternative identified by the Corps which represents the least costly alternative consistent with sound engineering practices and meeting the environmental standards established by the 404(b)(1) evaluation process. In accordance with Engineer Regulation 405-1-12, paragraph 12-9(b)(7), Determining the Appropriate Interest to Acquire, Fee Title is generally required for disposal areas located on fast land that are required for commercial navigation.

Table 8 below shows the sites carried forward in order of increasing cost of use. These sites are also shown on the map in Plate 4. Tier 1 sites would be preferred for first implementation and are described in the most detail. Site plans for Tier 2 and Tier 3 sites would be further developed as necessary based on capacity needs.

Table 8. Placement Sites Carried Forward by Tier

TIER	Site Name	Capacity (CY)	Cost $/CY	Site Use
Existing	Homer West	110,000	$ 11.70	Open Beneficial Use
Existing	Winona Harbor	20,000	$ 13.00	Open Beneficial Use
1	Winona Harbor Expansion (Small)	26,500	$ 13.00	Open Beneficial Use
1	Homer East	65,000	$ 13.65	Open Beneficial Use
2	Fastenal – Madison Silo	10,000	$ 15.15	One-time Beneficial Use
2	Port Authority Business Park	100,000	$ 16.20	Open Beneficial Use
2	Fastenal – Evanson	335,000	$ 16.20	One-time Beneficial Use
3	Yaedke Pit	1,100,000	$ 22.65	Permanent Placement
3	Winona Sand and Gravel Airport Pit	8,027,000	$ 22.70	Permanent Placement
3	Highway 43 Pit	3,700,000	$ 36.30	Permanent Placement
Transfer	Port Authority	N/A	N/A	Transfer Site
Transfer	East End Boat Landing	N/A	N/A	Transfer Site

6.1 Tier 1: Homer

The Homer site consists of two parcels that were selected for dredged material placement as part of the GREAT I study that was finalized in 1980. The site was also carried forward and selected in the CMMP study that was finalized in 1996. Approximately half of the Homer site has been used for dredged material placement since 1986. The Minnesota DNR has indicated that the area will be mapped outside of the floodway so any additional material placed within would not pose flood stage impact concerns.

The Corps currently owns the West portion of the Homer site in fee title. The Corps has no existing real estate interest in the East portion and is not actively pursuing the Homer East site at this time but is retaining the site in the overall plan.

Operation and Beneficial Use

Dredged material placed at the site would be made available to the public for free for beneficial use. Dredged material typically consists of clean sand, which can be useful for general construction fill, winter road maintenance, and landscaping, among other applications. Consistent beneficial use of the material placed at the site is anticipated, which would continuously replenish site capacity available for material placement throughout the 20-year planning horizon. See Appendix C for further details.

Site Layout and Preparation

Minimal site preparation is needed to continue using the existing Homer West portion of the site. The area near the site entrance will be supplemented with additional vegetation and/or fencing to reduce and minimize aesthetic impacts as discussed below. Some site preparation would be necessary before using the Homer East property. The Homer East property has not been used for dredged material placement. The site is currently vegetated or ponded and would be cleared and filled. Once this area is prepared, the access road would likely be shifted to the outer boundary of the site to maximize the interior area of the site available for material placement. The proposed site layout is shown on Plate 6. Alternative site layouts may be used.

Screening Berm

As with other Corps upland placement sites, a containment berm and screening (either vegetative, fencing or a combination of the two) would be incorporated into the site design. The containment berm is necessary to accommodate hydraulic placement of material into the site by creating a material ponding area. The

screening will help reduce the visual impacts and blend the site into the adjacent landscape.

Wetland Mitigation

Wetland has been identified on the Homer site, which would be filled under the tentatively selected plan. The Corps would mitigate the wetland losses incurred. Wetland mitigation credits for deep marsh type habitat is available within the project's watershed. When the Corps gains access to the site, the wetland would be delineated and assessed to determine the exact quantity of wetland that would be impacted and determine the appropriate measure to compensate for the function and value of the wetland.

Access Improvements

Several improvements have been identified that would be recommended in order to enhance the site for public removal of dredged material. First, the site lies on the riverward side of the railroad tracks, making the placement of dredged material from the river simple, but removal of the material inland requires crossing the railroad tracks. The current railroad crossing is a simple passive grade crossing with a crossbuck warning sign. Improvements to the site may include upgrading the site to an active crossing with automatic gates and crossing signals.

Access from northbound Highway 61 into the site could be improved with a deceleration lane (right turn lane) off of Highway 61 for beneficial users taking material from the site and to accommodate future truck traffic related to Corps dredging operations. Several coordination meetings have occurred between USACE and MnDOT personnel to discuss potential Highway 61 roadway improvements, design standards, and permitting. The MnDOT Road Design Manual for design and construction details will be used for standards and details. The design parameters discussed for the proposed deceleration lane are as follows:

- Length = 500 ft. turn lane with 180 ft. taper for a total of 680 feet
- Width = 12 feet
- Area = 12 ft wide x 680 feet long (stripe the taper)
- Shoulder = 18" (1 1/2')
- Pavement Section = 6-8" Class 5, 7" bituminous
- Cross slope of road = 0.25"/ft
- 6:1 side slopes off of shoulder into the ditch
- Access drive into site to be 24'-32' wide with 4H:1V inslopes off access

Approximate locations of the railroad crossing improvements and deceleration lane are shown on Plate 6. Costs for these improvements were estimated during planning and incorporated into the overall cost estimates.

6.2 Tier 1: Winona Harbor and Expansion Options

The Winona Harbor site, owned by the City of Winona, has been in use since 1975 and would be used and operated similarly to previous use. The existing portion of the site consists entirely of previously placed dredged material. The environmental impacts of placing dredged material on the existing Winona Harbor site were assessed in the 1997 CMMP EIS and Record of Decision. Material would be placed here as capacity is available. Historically the Corps' real estate interest in the site consisted of a short-term easement for use of the existing, ~1 acre area. This plan also includes an expansion of approximately 1 acre of placement capacity downstream of the existing site.

Operation and Beneficial Use

Dredged material placed at the site would be available for beneficial use. Dredged material typically consists of clean sand, which can be useful for general construction fill, winter road maintenance, and landscaping, among other applications. Consistent beneficial use of the material placed at the site is anticipated, which would continuously replenish site capacity available for material placement throughout the 20-year planning horizon. See Appendix C for further details.

Site Layout and Preparation

Site layout and development needs would be based on the level of expansion. For the existing site, no further development would be needed; the site would continue to be used as it is presently. Barges would place material using mechanical dredging methods at the western end of the site adjacent to the main navigation channel, and trucks are able to remove material from the north side of the site using existing roads. The small expansion would require approximately one acre of tree clearing for initial site development. Layout and use of the site would likely remain the same, with material being placed at and removed from the site at the same locations.

Screening

Screening along the perimeter of the site would help reduce the visual impacts and blend the site into the adjacent landscape. It is anticipated that the existing

tree line along the north and south sides of the site could be maintained while developing the interior of the site for dredged material management.

6.3 Transfer: Port Authority

The Port Authority transfer site is critical to reducing transport costs and social impacts for use of the Fastenal-Madison Silo site, the Fastenal-Evanson site, and the Wabasha Sand & Gravel Airport Pit. This site would not require substantial setup, as it already has an access road leading from the river to Riverview Drive, and the owner has stated that they have previously used the site for movement of materials off of the river. Setup and operation may include minor grading and gravel placement. A temporary trench box may be placed at the site where an excavator would be staged to move material from barges into trucks. This site is recommended for immediate implementation in order to be prepared for future use of other sites.

6.4 Transfer: East End Boat Landing

The East End Boat Landing has been successfully used for past dredged material transfer. Use of the site requires closing the boat landing temporarily. This site is primarily useful for the efficient movement of material to the Port Authority Business Park site. No preparation is needed for the use of this transfer site.

6.5 Tier 2: Port Authority Business Park

Site Layout and Preparation

No substantive site preparations would be necessary as the site is currently graded and cleared, with direct site access from designated truck routes.

Operation and Beneficial Use

It is anticipated that dredged material placed at the site would be used for beneficial use, either by the city directly in preparing sites for development or used by the city for winter road maintenance or other general construction fill among other purposes.

Transportation

These sites have been used in the past. The East End Boat Landing was used as a transfer site to move dredged material off of the river and onto trucks, which transported the material 1.5 miles via a city-designated truck route to the Port Authority Business Park. This route results in the shortest haul but does impact the weekday use of the boat landing. An alternate route may be to transport the material from the Homer site, but this would be a substantially longer distance. Both routes are shown on Plate 5.

6.6 Tier 2: Fastenal-Madison Silo and Fastenal-Evanson Sites

These two Tier 2 sites are private, one-time beneficial use opportunities that have been identified as reasonably foreseeable material needs. These opportunities would be pursued at the mutual agreement of the Corps and site owners. Additional planning will need to take place with the landowner to understand the intended use of the sites and determine if the Corps could deliver material to these sites. The sites would need to be consistent with the Federal Standard at the time of placement. Additional environmental review may be needed to ensure compliance with the NEPA, Clean Water Act, Endangered Species Act, and other laws and regulations.

6.7 Tier 3: Permanent Placement Pit Sites

The three permanent placement pit sites – the Yaedke Pit, Highway 43 Pit, and Winona Sand and Gravel Airport Pit – are all Tier 3 sites that would be implemented when the other options are either exhausted or unavailable. All three sites are mining pits. Two of the pits are currently being mined. Only the Yaedke Pit is idle at present. Placement strategies would be developed for each site based on the conditions at the time of placement, and therefore details have not been developed at this time.

Transportation

Truck routes would be dependent upon the availability of offload sites and where the material is coming from. The material might come directly from a channel dredge cut, or the Corps may decide to unload one of the Open Beneficial Use sites to make more room. Plate 5 shows potential truck haul routes. For the Yaedke Pit for example, the most convenient site with river access would be the Homer site. The route would utilize U.S. Highway 14/61 and County Highway 15

and would be approximately 4.25 miles long. Plate 5 shows potential truck routes between different sites with river access and the Tier 3 Permanent Placement Pit sites. It is estimated that to transport the sand dredged in an average year (62,500 CY), it would take approximately 33 working days, using an estimated 6,250 truck trips. Volumes could vary depending on the dredged material management strategy employed.

Beneficial Use

Beneficial use would not be anticipated from these sites and is not being considered at this time. If these sites are implemented, open beneficial use could be considered.

6.9 Environmental Compliance Implementation Considerations

Several actions have been identified to be taken before proceeding with implementing the sites in the TSP, such as mitigation for wetland impacts, endangered species coordination, and additional analysis and coordination. Below summarizes sites with actions remaining to be completed prior to implementation.

Site Name	Issue	Action
Homer East	Endangered Species – northern long-eared bat coordination	Review 4(d) Streamlined Coordination with U.S. Fish and Wildlife Service when trees are identified to cut and update as needed.
Winona Harbor Expansion (Small)		
Homer East	Clean Water Act – Section 401 Certification	Procure CWA Section 401 Certification from MPCA.
Homer East	Wetland Impacts Mitigation	Conduct on-site delineation if necessary and purchase appropriate bank credits when Real Estate interest is acquired.
Fastenal – Evanson and Fastenal – Madison Silo	Environmental Review for specific site use	Conduct environmental analysis and documentation for NEPA, Clean Water Act, Endangered Species Act, and any other applicable laws that need to be addressed prior to Corps placement.
Yaedke Pit	Timber Rattlesnake avoidance	Education efforts to encourage truck drivers to avoid snakes when it is safe to do so.
All Sites	Best Management Practices	Implement BMPs at sites such as screening when and where practicable to minimize social effects.

CHAPTER 7.

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 of the Final Environmental Impact Statement for the 9-Foot Navigation Channel Project Channel Maintenance Management Plan (CMMP EIS) published June 6, 1997[2], as described in 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 begun after September 14, 2020 (40 CFR § 1506.13 (2020)). This current draft report is a revision to the draft that was released for public review in February 2020.

Table 9. Tentatively Selected Plan Sites Evaluated for Environmental Impacts

TIER	Site Name	Proposed Site Use	Existing Site Conditions
Existing (No Action)	Homer West	Open Beneficial Use	5.0 ac. Dredged Sand
Existing (No Action)	Winona Harbor	Open Beneficial Use	1 ac. Dredged Sand
1	Winona Harbor Expansion (Small)	Open Beneficial Use	1 ac. Forested
1	Homer East	Open Beneficial Use	1.4 ac. Forested 1.6 ac. Deep Marsh
2	Fastenal – Madison Silo	One-time Beneficial Use	1.2 ac. Mowed/Fescue[3] 0.5 ac. Forested[3] 0.4 ac. Forested / Shrub[3] 0.2 ac. Emergent[3]
2	Port Authority Business Park	Open Beneficial Use	15 ac. Mowed Fescue
2	Fastenal – Evanson	One-time Beneficial Use	6.6 ac. Emergent[3] 5.8 ac. Forested / Shrub[3]
3	Yaedke Pit	Permanent Placement	15 ac. Upland Quarry
3	Winona Sand and Gravel Airport Pit	Permanent Placement	100 ac. Ponded Quarry
3	Highway 43 Pit	Permanent Placement	15 ac. Upland Quarry
Transfer	Port Authority	Transfer	1.0 ac. Gravel / Mowed 0.5 ac trees and shrubs
Transfer	East End Boat Landing	Transfer	0.9 ac. Gravel parking lot

[2] As of September 2019, the CMMP EIS is available at:
Volume I: http://www.dtic.mil/docs/citations/ADA328183
Volume II: http://www.dtic.mil/docs/citations/ADA328184
[3] Existing site conditions estimated from NWI data and aerial imagery.

The Dredged Material Management Plan for Pool 6 (DMMP) was initiated in 2014 due to future availability of dredged material placement sites in Pool 6 being uncertain. This uncertainty prompted an effort to identify the best strategy for long-term management of dredged material within the pool. The Tentatively Selected Plan (TSP) sites identified in the DMMP are shown on Table 9, along with generalized descriptions of the existing conditions at each location.

The environmental impacts of placing dredged material on the Homer and Winona Harbor sites were assessed in the 1997 CMMP EIS and Record of Decision. Further, the Homer West and Winona Harbor sites have been used for dredged material placement since 1986 and 1975, respectively.

This Environmental Assessment has been prepared to compare and assess the environmental consequences of the no-action alternative, which includes the continued use of the Homer West and Winona Harbor sites, to the TSP, which adds an additional 10 potential sites for dredged material management over the next 20 years. The Corps has chosen to implement a tiered approach to manage the dredged material though the use of as few Open Beneficial Use sites as possible. Because of the uncertainty and risk of this strategy, all sites carried forward are evaluated here for environmental impacts to be prepared in case they need to be used.

The “Fastenal-Evanson” and “Fastenal-Madison Silo” sites are opportunities where landowner development needs could create opportunities for beneficial use of dredged material. The use of these sites would essentially involve the Corps placing material at an owner-designated location within the sites, and the landowner would manage the material within the site. The current owner has expressed an interest in receiving this material for their own site development. This material management and whatever site development ensues after placement would be the responsibility of the landowner. Therefore, only the effects of Corps’ transportation and placement of dredged material at the sites are addressed by this environmental assessment. The Corps may need to prepare additional NEPA documentation and complete a Clean Water Act Section 404(b)(1) analysis to address additional details regarding any proposed Corps activity at these sites prior to use.

The effects of the no-action alternative are those expected to occur in the near-term without implementing an alternative plan. The no-action alternative serves as the base condition against which the TSP is 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. Non-designated placement sites may include in-water placement near the dredge cuts, with removal of the material later to an approved site. The effects of the TSP are the results of the expected differences in conditions short-term and into the future between the no-action alternative and the TSP. The environmental

effects of the no-action alternative and TSP are summarized in Table 10 at the end of this chapter.

7.1 Socioeconomic Effects

7.1.1 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 in the short-term. However, deteriorated channel conditions (narrower or shallower than would typically be maintained) may result from the just-in-time dredging that may be more likely due to the limited placement site capacity. In addition, the Corps would undergo another DMMP for the purpose of identifying placement sites to maintain a minimum placement capacity of 20 years.

The TSP would have minor beneficial effects on commercial navigation by providing sufficient dredged material placement capacity to maintain the navigation channel in a timelier manner.

9-Foot Navigation Channel Federal Operation & Maintenance Costs

The no-action alternative would likely cause an increase in costs incurred by the Federal Government in operating and maintaining the 9-Foot Navigation Channel in Pool 6 of the UMR. In instances where placement sites are not available when dredging is required, temporary placement sites are sought, which often leads to double handling the dredged material. Double handling can nearly double the expense of managing the material. Costs may be incurred for use of placement sites not owned by the Federal Government. Restoration of a temporary placement site may also be necessary, further increasing costs. This study has identified the TSP as the base plan (or Federal standard), which is defined as the least costly alternative, consistent with engineering requirements for managing dredged material and meeting the environmental standards established by the 404(b)(1) guidelines. Therefore, the TSP would result in the lowest cost to the Federal Government for operating and maintaining the 9-Foot Navigation Channel in Pool 6 of the UMR.

7.1.2 NOISE, AESTHETICS, DUST, AND TRAFFIC

The impacts of the no action alternative and TSP on noise, aesthetics, dust, and traffic are discussed below. Similar activities would take place at each site used. For example, all sites would incur intermittent increases in noise from equipment used to place and manage dredged material. To avoid repetition, the general dredged material placement activities that would be shared by all sites are discussed first. However, the effects at each site are relative to the land uses present near the project, so a site-by-site discussion of the effects follows.

Under the no action alternative, the effects would be focused at the Homer and Winona Harbor placement sites because those are the sites currently available. Under the TSP, the impacts would be expected to be spread across more sites and lessened at each individual site.

Dredged Material Management and Noise, Aesthetics, Dust, and Traffic

Noise: Both the no action alternative and TSP 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 periodically visit the open beneficial use sites to load and remove material from the site. Under the TSP, beneficial use removal would be expected to occur on an as-needed basis. Therefore, trucks and material loading equipment would be expected to periodically enter and utilize the site when contractors, local municipalities, or individuals need the sand. The Corps' contractors would be responsible for complying with any Federal, State and municipal laws, codes, and regulations for noise or any other requirement applicable to the performance of the work of transporting, placing or removing material from the sites as required under the federal contract.

Aesthetics: Both the no action alternative and TSP 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.

Air Quality & Dust: Both the no action alternative and TSP may produce temporary, minor, adverse effects to air quality from fugitive dust. The adverse effects of dust, or 'particulate matter' (PM), is related to the size of the particles. Smaller particles are more likely to be mobilized by activity at the placement site and carried by wind and have a greater potential for causing health problems. PM is commonly measured in micrometers and shown by a subscript number following the acronym (e.g., "PM_{10}" would describe particles 10 micrometers and less in diameter – particles like dust, pollen, and mold. "PM_{70}" is approximately equivalent to fine sand or the width of an average human hair). According to the U.S. Environmental Protection Agency (EPA), "Particles less than 10 micrometers in diameter [i.e., PM_{10}] pose the greatest problems, because they can get deep into your lungs, and some may even get into your bloodstream."[4] The EPA has set regulations for PM_{10} and smaller particles, but not for larger particles such as sand. The material dredged to maintain Mississippi River Pool 6 and placed on storage sites would be much larger than PM_{10}. The main channel dredge cuts account for approximately 96% of the overall dredging in Pool 6. Sediment testing in these cuts shows that on average, 99.5% of the material is sand (larger than PM_{74}), and 97.5% of the material is medium or

[4] https://www.epa.gov/pm-pollution/particulate-matter-pm-basics

coarse sand (larger than PM_{250}). Particles this size would not be expected to be transported long distances by wind, or to pose health threats. Material dredged from the Winona Small Boat Harbor is significantly finer, with sediment sampling results showing 27.4-52% silt content. However, this material accounts for a very small portion of the overall dredging in Pool 6 and would likely be placed at the Winona Harbor placement site, which is directly adjacent to the dredge cut and is a currently available site. In summary, dust generation at any placement site is expected to be negligible primarily due to the particle size of the material to be dredged.

Traffic: Both the no action alternative and TSP would cause a minor increase in traffic. A dump truck can hold approximately 10 cubic yards of sand. Based on this report's assumption that approximately 62,500 cubic yards of material would be dredged in Pool 6 annually, this would amount to an average of 6,250 truck trips on local roads per year. The magnitude of effects would be dependent on which sites are available and the beneficial use demand for the material at each site. In general, the more open beneficial use sites are available, the less additional traffic each site would experience. If beneficial use does not keep up with dredging demand, the traffic effects would become more concentrated at certain sites as trucks would be used to transport material from one of the open beneficial use sites to a permanent placement site.

Homer Placement Site

The land uses around the Homer placement site can be seen on Plate 6. To the east and west of the Homer site are several seasonal and permanent residences located directly on the river. The nearest residence to the west of the placement site is approximately 150 feet away, while the nearest residence to the east is approximately 300 feet away from the edge of the placement site. Two major transportation corridors are situated directly to the south of the Homer site and separate the river and the placement site from other land uses: the Canadian-Pacific railway and U.S. Highway 14/61. Continuing south on the other side of the railroad and highway are scattered residences on the floodplain terrace, the nearest site being approximately 400 feet away from the southwestern edge of the placement site. The density of residences increases to the west of Winona County Road 15. Nearby businesses include several registered in-home daycare facilities and an auto repair shop.

Site specific impacts at the Homer site would generally be a continuation of those experienced over the last 30 years. The Homer West site has been used for dredged material placement since the 1980s, following the creation of the site by the Corps via placement of dredged material in-water along the shoreline. The Corps has placed dredged material at the site during 7 of the last 10 years. The site was used as a sand stockpile by the previous owner, who removed sand from the site for sale or personal use.

Noise and traffic may increase with expansion into the Homer East site, and with the rising dredging quantities Pool 6 has experienced. As noted above, 6,250 truck trips are expected to be generated by Pool 6 dredged material management annually. A portion of these would be entering and exiting the Homer placement site. For context, the segment of U.S. Highway 14/61 adjacent to the proposed placement site has an estimated annual

average daily traffic (AADT) of 10,500 vehicles per day, which equates to over 3.8 million vehicles annually.[5]

Aesthetic impacts would fluctuate over time. Pool 6 dredging needs, beneficial use demand, and availability of other placement sites within the pool would be the main factors influencing the aesthetic impacts at any given time. In general, the aesthetic impacts would increase during periods when more material is stored at the site. The expansion of the site into Homer East would provide more space to manage the dredged material and may lead to lower pile heights and reduced aesthetic impacts.

Community members in the area have expressed concern about noise, traffic, and aesthetic impacts to the Corps in meetings and correspondence (see Appendix A). Concerns include stockpile height, noise and safety from traffic entering and exiting the site, noise from the railroad crossing, and air quality.

Based on the discussion above, the anticipated increase in intensity of the use of the site would not result in a significant impact. Within the context of the surrounding noise sources, the existing traffic on Highway 61, and the long historic use of the placement site for similar purposes, the overall impacts of the TSP on noise, aesthetics, dust and traffic at the Homer site would be minor. As a courtesy to the concerns of nearby residents, the Corps would plan to reduce the noise and visual effects by incorporating some structural (e.g., berm and/or fence) and vegetative screening to lessen the visibility of the site from the road and residential surroundings, which may reduce the impacts of the TSP as compared to the no-action alternative.

As described above, dust is not expected to leave the site due to the relatively large particle size of the dredged material. Site screening implemented around the site would further reduce the possibility of producing dust.

Winona Harbor and Winona Harbor Small Expansion

The Winona Harbor placement site and the proposed expansion are located on Latsch Island, a small island in the Mississippi River just north of downtown Winona. The island is bisected by the Highway 43 Bridge. To the west of the bridge is the Winona Small Boat Harbor (Dick's Marine), while on the east side of the island are some boat houses and a recreational area.

The Winona Harbor placement site is located on the west side of the Highway 43 Bridge and has been used by the Corps for dredged material placement since 1975. If none of the expansions are implemented, the effects of operations on noise, aesthetics, dust, and traffic would not be expected to change at this site. By increasing the size and capacity of the site, noise and traffic would increase proportionately. A buffer of trees has been retained at the existing site which limits aesthetic impacts, noise, and dust; additional

[5] Based on the most recent 2015 traffic count data, available from MnDOT Traffic Forecasting and Analysis website: http://www.dot.state.mn.us/traffic/data/data-products.html

impacts of expansion would be limited by continuing the buffer along the road between Dick's Marine and the placement site.

Port Authority Business Park

The Port Authority Business Park is located in an area of Winona that has undergone substantial development in recent years. The site is located in an area shared by several large retailers and warehouses. This site consists of parcels in-between the developed sites that are currently vacant.

The site is conveniently located along a designated truck route, so traffic impacts would be negligible. Similarly, the impacts of noise would be minor because the area is surrounded by high-traffic businesses, warehouses, manufacturing, etc. Storage of material at these sites long-term would change the aesthetics, though long-term material storage would not be expected at these sites.

Fastenal - Evanson and Fastenal - Madison Silo

These two private beneficial use sites are located near each other in Winona's Heavy Industrial District. Dredged material transfer and trucking would likely occur from the nearby Port Authority site. The site is conveniently located along a designated truck route, so traffic impacts would be negligible. Similarly, the impacts of noise would be minor because the area is surrounded by high-traffic businesses, warehouses, manufacturing, etc. Future aesthetics of the site would be determined by the landowners' developments.

Port Authority

The Port Authority site is located in Winona's Heavy Industrial District. Directly adjacent on the upstream side of the site is the Minnesota Marine Art Museum. Directly upstream of the art museum is an industrial storage, barge fleeting, and trucking facility. Across Riverview Drive is a train switching yard. On the downstream side of the site is located the ADM property (See section 5.2.4), which is primarily bottomland hardwood forest wetland. The traffic impacts from trucking and noise would be minor because similar activities occur around the site daily, year-round. Dredged material transfer at this site would be expected to occur at a much lower frequency of a few weeks to a month per year. Aesthetic impacts would be minor because the site is proposed for temporary use as a transfer site.

East End Boat Landing

The East End Boat Landing is located in Winona's Heavy Industrial District. The typical use of the site is as a public boat launch. The adjacent property upstream is a large vacant lot, while downstream of the site is a small harbor. The site is conveniently located along a designated truck route, so traffic impacts would be negligible. The use of the site would cause a temporary minor adverse increase in noise in the project vicinity during material transfer operations, particularly to users of the adjacent boat harbor. No permanent impacts to aesthetics would occur because no permanent changes would occur at the site.

Yaedke Pit, Highway 43 Pit, and Winona Sand and Gravel Airport Pit

The Yaedke Pit is an aggregate mine situated in a rural area surrounded by steep, undeveloped ravines and farmland on the flatter blufftops. The Highway 43 Pit is similarly located in a rural area with few noise or visual receptors nearby that would be impacted by intermittent use of the site. The Winona Sand and Gravel Airport Pit is adjacent to an airport and a residential development.

Increases in local traffic would occur at each of these sites during periods of active material placement from the trucks transporting dredged material to the sites. This activity would not be substantially different from the mining activities typical of the sites already and would likely be less traffic and for a shorter duration than typical mining activities. Dredged material placement would not likely occur while mining or aggregate hauling activities were occurring. Placing sand in the mines may contribute to reclamation of the mine sites and may improve aesthetics in the long-term at each of these sites.

7.1.3 ENVIRONMENTAL JUSTICE

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 Pool 6 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.

The EJScreen results (Section 2.1.4, Table 1) were analyzed to identify minority groups within the study area using the *Fifty Percent* analysis, and the *Meaningfully Greater* analysis, and to identify low-income groups using the *Low-Income Threshold Criteria* analysis[6]. A percentage difference of 10% was selected as the threshold for determining whether the study area contains a meaningfully greater population of minority or low-income individuals. The minority population is lower than 50 percent in the study area (8%). Further, the percentage of minority residents in the study area is very similar to those within the communities of comparison (8-9%), and much smaller than the USA (39%), indicating that there is not a meaningfully greater minority population within the study area. These results taken together do not indicate a need for heightened focus on EJ impacts based on minority populations. Similar to the minority group analyses, the three

[6] See "Promising Practices for EJ Methodologies in NEPA Reviews, Report of the Federal Interagency Working Group on Environmental Justice & NEPA Committee" March 2016.

Counties represented in the project area were used as reference communities for comparison of low-income populations. The low-income populations within the study area (32%) is slightly higher than those of the reference communities within Minnesota and Wisconsin (30% and 28%, respectively). The national low-income population is 33%. This data indicates that there is not a meaningfully greater low-income population within the study area compared to the reference communities.

Based on the analysis above, the results of the Environmental Justice review do not indicate a high likelihood for the TSP to have disproportionally high and adverse impacts on minority groups or low-income populations. Under the no action alternative, project actions would be focused at the Homer and Winona Harbor placement sites because those are the sites currently available. As these are a subset of the TSP, this determination also applies to the no-action alternative.

7.1.4 HAZARDOUS, TOXIC, AND RADIOACTIVE WASTE (HTRW)

A preliminary Phase I Environmental Site Assessment (ESA) screening was conducted from the EDR Radius map of each of the properties included in the TSP for material placement. The ESA followed ASTM Standard Practice E 1527-13 without a site reconnaissance. The Corps gathered and reviewed available historical data, including fire insurance maps, survey plat maps, aerial photography, topographic maps from the United States Geological Survey, hydrogeology maps from the Minnesota Geological Survey (MGS), and geological maps from the MGS. The preliminary ESA did not identify any evidence of contamination present at the TSP sites.

7.2 Natural Resource Effects

7.2.1 PHYSICAL SETTING

Sediment Quality

The majority of sediments dredged in Pool 6 are sand and are therefore unlikely to contain contaminants. The St. Paul District routinely tests sediments in historic and contemporary dredge cuts for contaminants. Test results are compared to human health standards (Soil Reference Values - Minnesota Pollution Control Agency (MPCA)) and guidelines used for the protection of benthic invertebrates (Sediment Quality Targets - MPCA). Individual dredge cuts are sampled on a rotating basis every 5-10 years. Sediment sampling and contaminant testing of dredge cuts in Pool 6 were last conducted most recently in 2014 and 2016, except for Lower Approach L/D 5A (last tested in 1989) and the Winona Commercial Harbor (last tested in 2008). Heavy metals, polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs) and pesticides were all found at concentrations below both MPCAs sediment quality targets (SQTs) and soil reference values (SRVs). Also shown to not exceed MPCA's SQTs or SRVs was the

2016 testing of the Winona Small Boat Harbor sediment, although both heavy metals and organics in the harbor were detected at slightly higher levels than seen in the main channel. Testing within the Winona Commercial harbor had SQT Level 1 exceedances for PAHs acenaphthene and anthracene in one sample and acenaphthene in the other. Otherwise the material was clean.

Based on these results, there would be no restrictions for upland placement of dredged material from any of the known dredge cuts within Pool 6, and both the no action and the TSP would have a very low risk for contamination of aquatic environments or the proposed placement sites.

Hydrology / Hydraulics

The no-action alternative would have no effect on the one-percent flood profile under routine placement at the Homer or Winona Harbor sites. Although the Minnesota DNR has not officially released the newest version of the floodway mapping, correspondence with the agency has indicated that the Homer site is outside of the floodway. The Winona Harbor site is within the floodway but is accounted for in the current floodway mapping. The use of these sites under the TSP would also have no effect on the one-percent flood profile for the same reasons. In the event that non-designated placement sites need to be used, material may be placed within the floodplain, and would cause temporary effects to flood stages until the material is able to be removed and transferred to an approved site.

The Port Authority Business Park site, Yaedke Pit, Highway 43 Pit, and Winona Sand and Gravel Pit are all outside of the 100-year floodplain limits, and placement of dredged material at these locations would therefore have no effect on the one-percent flood profile.

The Winona Harbor Expansion alternative and the Port Authority site are located within the floodway, and preliminary no-rise hydraulic analyses were conducted on these sites to determine if each would comply with FEMA's, MNDNR's, and WIDNR's floodplain regulations. One-dimensional steady state hydraulic modeling was completed using HEC-RAS (Hydrologic Engineering Corps Center – River Analysis System Version 5.0.7). The HEC-RAS model was used to simulate the effects of each TSP-selected site on water surface elevations associated with the one-percent annual exceedance probability base flood. WIDNR's floodplain regulations (Wisconsin State Statute NR 116) of preventing a rise in the regional flood elevation (i.e. one percent annual exceedance probability (AEP)) of equal to or greater than 0.01-foot is the most restrictive requirement in the area, and was therefore used as the preliminary limit for the no-rise analysis for the Winona Harbor Expansion, and the MNDNRs similar restriction of 0.005-foot was applied to the Port Authority Site.

The modeling results indicated that filling the small Winona Harbor expansion site would not result in a rise of the one-percent annual exceedance probability water surface elevations above the WIDNR allowable limit and similarly the Port Authority site would not exceed the MNDNR's allowable limit.

Water Quality

The no action alternative could have temporary adverse effects to water quality as a result of placing dredged material in the water adjacent to a dredge cut in the main channel border. If such placement is required, it would result in minor increases in total suspended solids (TSS) levels at the immediate placement site. However, these increases would be short-lived and negligible relative to ambient TSS levels in Pool 6. Overall water quality in Pool 6 under the No Action alternative would not have significant long-term effects.

The TSP would result in some increased in TSS levels if the Homer site is developed and used for hydraulic dredged material placement. Effluent discharges of excess water from the hydraulic dredging process would occur adjacent to the main (navigation) channel, after the sediments were allowed to settle out. The resulting increases in turbidity and suspended solids would be short-term and would cease after each dredging job is complete. Therefore, the impacts of the TSP would be minor.

7.2.2 TERRESTRIAL HABITAT

The no-action alternative would have a minor adverse impact on terrestrial habitat and biological productivity at the Homer West site during initial site setup. A small area of currently mowed roadside would be converted to a paved turn lane. The rest of the site that would be used under the no-action alternative is previously and frequently disturbed, barren sand. Some incidental wildlife use of this sandy shoreline habitat does occur, such as by some common species of nesting turtles, and these uses would be disrupted if material placement or removal coincides with wildlife use. There is also a potential for additional, unidentified impacts due to the low dredged material capacity available under the no-action alternative. These could occur if the Corps needs to move dredged material from the Homer site to another location to make room at the Homer site or if not enough room is available at the Homer site during emergency or imminent closure channel conditions, as defined in the CMMP. The Corps would work to minimize the impact to the largest extent practicable by attempting to identify a site without a high level of biological resources.

The TSP would have a minor adverse effect on terrestrial habitat and biological productivity. These would include the no action impacts, plus those of the additional sites included in the TSP. In summary, if all of the sites in the TSP were used, 3.9 acres of trees and shrubs, 16.2 acres of mowed fescue, and 30 acres of upland quarry would be converted to barren sand habitat. In addition, up to 1.6 acres of deep marsh wetland, 6.8 acres of emergent wetland, 6.2 acres of forested/shrub wetland, and 100 acres of ponded quarry would be converted to terrestrial habitat. Site-by-site impacts are identified in more detail below, and Table 9 lists the general habitat conditions for each site.

Homer East

The Homer East site consists of sparsely vegetated sand and wetland that would be cleared and/or filled under the TSP. Approximately 1.3 acres of the site is terrestrial

habitat. The vegetation is at an early successional stage represented by species such as cottonwood, silver maple, Siberian elm, and black locust. Vegetation is sparse due to the extremely sandy soil, which is a thick layer of previously dredged channel sand.

The area that would be impacted is the same area that was identified and described for the Homer site in the CMMP EIS. The scope and extent of the effects have not significantly changed from effects described in the CMMP EIS.

Fastenal - Evanson and Fastenal - Madison Silo

The Fastenal-Evanson site is entirely wetland according to the National Wetlands Inventory dataset. Part of the Fastenal-Madison Silo site is also wetland. The remaining upland area of the site consists of approximately 1.2 acres of mowed fescue and 0.5 acres of various upland trees and shrubs. These areas where wetland exist could be converted to barren sand from the placement of dredged material. This placement would result in minimal biological impacts because the site is already disturbed and is surrounded by development, and therefore provides limited habitat value.

Winona Harbor Expansion

The entirety of the existing Winona Harbor site is previously disturbed dredged material, and additional material placement would have no or negligible impacts on biological productivity. The small expansion would have a minor adverse effect on biological productivity by converting approximately one acre of existing bottomland floodplain forest to barren sand. The small expansion area is entirely terrestrial and is vegetated with floodplain tree species such as silver maple and cottonwood, with hackberry in the understory.

Port Authority (Transfer Site)

The Port Authority site is currently a mix of approximately 1.0 acre of an unmaintained road/path consisting of dirt and gravel that leads from Riverview Drive to the Mississippi River, and 0.5 acres of various young, early successional trees and shrubs growing in areas of previous recent disturbance. Temporary use of these highly disturbed areas for transfer and hauling of dredged material would have no material effect on terrestrial habitat.

Port Authority Business Park

The Port Authority Business Park site (~15 acres) consists of vacant city lots. Placing dredged material on these sites would convert the areas from fescue to barren sand. Sites have been disturbed in the recent past and their use would have negligible adverse biological effects because the area at present has limited value as terrestrial habitat.

East End Boat Landing (Transfer Site)

The entirety of the East End Boat Landing is a gravel or paved parking lot. No permanent changes to the site would be made and use of the site would have no material effect on terrestrial habitat.

Yaedke Pit, Highway 43 Pit, and Winona Sand and Gravel Airport Pit

The Yaedke Pit and Highway 43 Pit are both entirely terrestrial. Both sites are recently or currently mined quarries and consist of flat limestone and gravel surfaces. Placing sand at these sites should have no material biological impact on terrestrial habitat. Placing fill material at this site could eventually lead to reclamation and restoration of the sites. The Winona Sand and Gravel Airport Pit is primarily below the water table and material would be placed within the ponded area. This would have no material effect on terrestrial resources.

7.2.3 AQUATIC HABITAT / WETLANDS

The no-action alternative would not involve placing material in wetlands under normal circumstances. However, the no-action alternative may result in the placement of dredged material in aquatic habitat under emergency conditions. Placement of materials in aquatic habitats or wetlands would be avoided, if at all possible, but may be necessary under certain conditions if no alternative, practicable placement sites are available. Every practicable measure would be taken to first avoid filling wetlands. There is an increased risk that without pre-identified sites the Corps would have to do emergency placement in aquatic habitat or wetlands (e.g., side-casting of dredged material in main channel border areas). While undesirable, this could happen in the event of an emergency closure of the navigation channel. Impacts typical of dredged material placement in aquatic areas include the smothering of macroinvertebrates and aquatic vegetation and conversion of the area to a sandy substrate (or conversion to land, if enough material is placed). Mobile biota would temporarily avoid the area during disturbance and could avoid the area longer if habitat is substantially altered. It is possible that aquatic placement could cause benefits if these characteristics are preferred over what exists in an area. Ultimately, the risk for undesirable effects to biological resources is greater under this alternative than under the TSP.

The TSP would fill the entire ponded area at the Homer site, estimated by the National Wetland Inventory to be 1.55 acres of deep marsh. The Corps would compensate for these impacts, most likely by purchasing credits in a wetland bank within the watershed. The TSP would also result in placing fill into the aquatic area of the Winona Sand and Gravel Airport Pit. It is presently unknown if the aquatic area contains wetlands or not.

At the Homer site, the entire area has been disturbed within the last 40 years by dredged material placement. Because of this recent disturbance, the vegetation is at an early successional stage represented by species such as cottonwood, silver maple, Siberian elm, and black locust. Vegetation is sparse due to the extremely sandy soil. The area of wetland that would be filled is the same as was identified and described in the CMMP

EIS. See Appendix E. Because the Corps does not currently have permission to access the site, the wetland would be delineated and evaluated prior to use to determine the appropriate compensation for the function and value of the wetland.

The placement of dredged material at the Winona Sand and Gravel Airport Pit would impact aquatic habitat and may impact wetlands. Because this is an active mining pit, the habitat could change substantially before use would occur. No on-site investigations of the aquatic areas at the site have been conducted to date but would be conducted prior to use of the site. The site would be evaluated for wetland impacts and a Clean Water Act Section 404(b)(1) analysis would be prepared prior to filling any jurisdictional wetlands at the site.

The placement of dredged material at the Fastenal-Evanson and Fastenal-Madison Silo sites may impact wetlands. According to the National Wetland Inventory dataset, the Fastenal-Evanson site consists of 6.6 acres of emergent wetland and 5.8 acres of forested/shrub wetland. The Fastenal-Madison Silo site contains 0.2 acres of emergent wetland and 0.4 acres of forested/shrub wetland. The Corps would only place material at these sites in support of site owner plans, which will be needed for the Corps to define the federal action and assess the impacts. The site would be evaluated for wetland impacts and a Clean Water Act Section 404(b)(1) analysis would be prepared prior to filling any jurisdictional wetlands at the site.

7.2.4 THREATENED AND ENDANGERED SPECIES

The TSP 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 TSP that may affect such species to ensure compliance with the Endangered Species Act (ESA).

The Corps has determined that both the no action alternative and the TSP may affect the northern long-eared bat (NLEB), but that any resulting incidental take of the NLEB is not prohibited by the final 4(d) rule under the Endangered Species Act. This determination is based on the streamlined consultation framework published by the U.S. Fish and Wildlife Service (USFWS), which relies on the finding of a programmatic biological opinion that the USFWS prepared for the NLEB 4(d) rule. Specific considerations for the application of the streamlined framework are: (1) The TSP would not purposefully take NLEB; (2) The alternative area is located in the White-nose Syndrome area; (3) The alternative would not affect caves or mines where NLEB are known to hibernate or alter the environment near a known hibernaculum; (4) The alternative would involve tree removal, but would not include removing a NLEB known occupied maternity roost tree, any tree within 150 feet of a known occupied maternity roost tree during the pupping season (June 1 – July 31), or any tree within 0.25 miles of a known NLEB hibernaculum. The no action alternative would not result in any tree clearing. The TSP would result in an estimated 2.5 acres of tree clearing at the Homer East site and up to 1 acre of tree clearing at the small Winona Harbor Expansion site. The Corps coordinated these activities using the streamlined consultation process for the NLEB with the USFWS through the

"Information for Planning and Conservation" (IPaC) website on January 23, 2022 (see verification letter included in Appendix A, Coordination and Correspondence). The Corps' responsibilities under 7(a)(2) with respect to the NLEB were fulfilled through the USFWS January 5, 2016, Programmatic Biological Opinion, following the 30-day review by the USFWS which ended on 22 February 2022. The Corps does not anticipate being involved in any tree clearing at the privately-owned Fastenal-Madison Silo or Fastenal-Evanson sites. On March 22, 2022, the USFWS announced a proposal to reclassify the NLEB as endangered under the ESA. The proposed reclassification, if finalized, would remove the current 4(d) rule as these rules may be applied only to threatened species. Prior to the Corps undertaking any work at the sites, 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.

Two federally listed mussel species are known to occur in Pool 6: the Higgins eye (*Lampsilis higginsii*) and the sheepnose (*Plethobasus cyphyus*). The Placement of dredged material in the water adjacent to a dredge cut under emergency or imminent closure conditions could result in smothering mussels in those locations. This scenario would be more likely to occur under the no action alternative because of the limited placement capacity. However, the need to conduct in-water placement under the no action alternative would only be used as a last resort, and there would be no effect to the Higgins eye or sheepnose mussels because the Corps would specifically avoid these impacts by conducting appropriate surveys to avoid the use of areas with these species.

The Corps has determined that no other federally-listed threatened or endangered species would be impacted under the no-action alternative or TSP. The following paragraphs describe the rationale for this determination:

No suitable habitat for freshwater mussels, including the Higgins eye or sheepnose, as described in Chapter 2.2.5, would be impacted by use of the sites in the TSP.

No suitable habitat for the Karner blue butterfly or the rusty-patched bumble bee, as described in Chapter 2.2.5, would be disturbed by the TSP. A small portion of the Yaedke Pit lies within the border of an identified "High Probability Zone" (HPZ) for the rusty-patched bumble bee. However, the use of this site would not impact any suitable habitat for the bee. The affected habitat within the HPZ consists of barren, compacted soils, rock outcrops, and gravel road. This habitat is not suitable either for use as nesting, wintering, or foraging habitat by the bee (USFWS, 2021). Therefore, the Corps has determined that there would be no effect on the bee, based on the Voluntary Implementation Guidance published by the U.S. Fish and Wildlife Service (USFWS, 2021).

While candidate species are not afforded legal protection under the Endangered Species Act, avoiding unnecessary impacts to the monarch could reduce the likelihood they will require protection in the future. No determination of effects is being made at this time.

The TSP would not result in substantial conversion of nectar or milkweed resources because most affected areas are already disturbed.

A non-essential, experimental population of the whooping crane has been introduced to the Necedah National Wildlife Refuge (NNWR) in Central Wisconsin, approximately 75 miles east of the project area. The population migrates to Florida during the winter and returns to the NNWR in Central Wisconsin annually in the spring (Canadian Wildlife Service and U.S. Fish and Wildlife Service, 2007). Due to the proximity of the NNWR to the project area, it is possible that whooping cranes may occur nearby. However, the sites identified in the TSP do not include shallow marshy areas that the whooping crane would be likely to use.

Although the bald eagle (*Haliaeetus leucocephalus*) is no longer protected under the Endangered Species Act, it remains protected under the Bald and Golden Eagle Protection Act. There are approximately 25 eagle nests in Pool 6, although not all are currently active. 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 Winona District Office of the U.S. Fish and Wildlife Service Upper Mississippi River National Wildlife and Fish Refuge.

State-Listed Rare Species

Placement of dredged material in the water adjacent to a dredge cut under emergency or imminent closure conditions could result in smothering mussels in those locations, which could include state-listed species. This scenario would be much more likely to occur under the no action alternative because of the limited placement capacity. However, mussel habitat in such locations would not be expected to be high-quality because every effort would be made to place that material close to the active dredge cut.

No suitable habitat for state-listed freshwater mussels or fish would be impacted under routine placement or new site development under either the no action or the TSP.

The TSP sites do not provide quality nesting habitat for any of the rare bird species that may occur in the area. If birds happen to be using the sites when material placement activities began, they would quickly vacate the site.

No suitable habitat for the timber rattlesnake would be impacted by the no-action alternative or TSP. The timber rattlesnake primarily lives on steep, rugged bluff prairies and woodland and grassland habitats in the Mississippi River drainage (Vogt, 1981; Oldfield and Moriarty, 1994). However, it was brought to the Corps' attention that a local citizen had been removing snakes from their property and placing them somewhere within the Yeadke Pit. The site itself is a gravel pit, but it is surrounded by woodland bluffs which could provide good habitat for the timber rattlesnake. This will be taken into consideration during future use of the site. Avoidance measures will be incorporated as

practicable, which may include education efforts to encourage truck drivers to avoid snakes when it is safe to do so.

The Homer East site would not be considered good habitat for the Blanding's turtle for most of its life cycle, primarily due to its small size. The site consists of sparse vegetation and sandy soils, which fits the description for nesting habitat. However, the site is small and disconnected from other similar habitats, being bounded to the north by the deep and swift-flowing main navigation channel and to the south by the railroad, Highway 61, and then blufflands. Eggs are also typically laid far from water (up to 1 mile) rather than at the rivers' edge where this site is located.

The North American racer utilizes forested hillsides, bluff prairies, grasslands, and open woods, none of which would be impacted by the TSP.

Ideal breeding and active season habitats for the Blanchard's cricket frog consist of open-canopy water bodies with gently sloping muddy banks that support abundant emergent, submergent and/or floating vegetation within the littoral zone (Oldfield and Moriarty, 1994; Gray and Brown, 2005; WIDNR 2017). The Homer East site does contain wetland. Frog surveys have not been conducted at the site, but the aquatic areas that would be impacted under the TSP do not match this habitat description. The sites are very sandy, have little aquatic vegetation, and are therefore unlikely to harbor the Blanchard's cricket frog.

The proposed placement sites do not provide suitable habitat for state-listed plant species. Most of the species listed are typically found in intact and mature mesic or floodplain forests. All of the sites within the TSP have been highly disturbed either very recently, or within the past decades. Several species are very specialized. Hooded arrowhead is an emergent wetland plant. The wetland at the Homer East site that would be impacted under the TSP does not support aquatic emergent plants. The stream parsnip grows in calcareous fens and wet seepage meadows, neither of which are present at any of the proposed placement sites. Tall extinguisher grass grows on calcareous rock outcrops or cliff edges.

The proposed placement sites do not provide suitable habitat for state-listed insect species. The splendid tiger beetle are known to prefer steep clay embankments, which are not present on any of the proposed placement sites.

The Fastenal-Evanson and Fastenal-Madison Silo sites have not been reviewed for effects to state listed species at this time because the specifics of site placement have not been determined. Prior to any work at these sites, the Corps would review the landowner site plans and site conditions at the time of placement to determine the potential of the action to impact state listed species.

7.2.5 AIR QUALITY

Both the no action alternative and the TSP would have a temporary, recurring, minor adverse effect on air quality, both of a similar scope.

Construction air quality effects would consist primarily of emissions from construction equipment, including the dredge, barges, skiffs, excavators, dozers, and dump trucks. The area surrounding the TSP is in attainment for all criteria pollutants, meaning air quality in the area is relatively good. The dredged material stockpiled at the proposed sites would be coarse-grained sand, which would not likely contribute dust to the surrounding areas (see also the "Dust" subheading under Chapter 7.1.2).

7.3 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).

The Corps has completed background research review of all the proposed sites within the TSP. Most placement sites identified for potential dredged material management are located within areas that had at one time potential to harbor significant archaeological resources; however, review of historic maps and aerial imagery along with onsite visits identify disturbance has occurred to varying degrees at each location.

The Corps has determined that the proposed placement of dredged material at the specified locations described in the report would have no effect on historic properties. The Corps' determination was coordinated with Minnesota State Historic Preservation Office and Tribal Historic Preservation Offices (THPO) (see Section 8.3.4). Consultation letters can be found in Appendix A – Coordination and Correspondence.

Separate from the proposed activities that were consulted on with the SHPO for this DMMP, the Corps has determined due to the nature of undertakings associated with dredged material management plans, that a programmatic agreement (PA) was needed to clarify review procedures, improve consistency, consultation, and accountability in fulfilling its responsibilities to comply with Section 106 of the National Historic Preservation Act (NHPA). Stipulations within the PA, executed on 23 August 2022 would identify how the Corps would complete appropriate identification, evaluation, and consultation for eligible historic properties prior to the occurrence of any activities associated with placement of dredged material that may have an effect on those properties. Because the Corps completed review and consultation for the TSP identified within this report, the PA will apply to new undertakings not already covered in this DMMP that require additional section 106 review in Pool 6.

Homer Site

Homer West has been an active dredge placement site since the 1970s. This location was surveyed in 1975 with negative results; however it was already actively being used for dredged material placement during the time of survey. Homer West is being considered for continued use with no expansion of existing boundaries. The Corps has determined that continued use of the location for dredged material placement would have no effect to historic properties.

No known archaeological resources or historic structures have been identified within or adjacent to Homer East. Homer East is bordered by an existing approved dredged placement location (Homer West), a railroad line, and the Mississippi River. A review of the 1890s Mississippi River Commission (MRC) maps identified no existing land mass within the boundaries of the proposed Homer East. This was confirmed by 1956 aerial imagery. The existing landmass is constructed out of dredged material which appears to have been placed in the 1970s. The Corps has determined using this location for dredged material placement would have no effect to historic properties.

Fastenal – Evanson and Fastenal - Madison Silo

Both locations have experienced extensive disturbance from past quarry and commercial use. No historic properties were identified within or adjacent to the proposed sites. The MRC map shows the area as natural upland adjacent to the Mississippi River floodplain; however, aerial imagery shows that by 1954 the Fastenal-Evanson site was being used as an active quarry and the Fastenal-Madison Silo site under heavy commercial use. More recently, the Fastenal-Evanson site is an unfilled depression where vegetation has grown and Fastenal-Madison Silo continues to be under commercial use with the presence of buildings, truck trailers, and gravel/paved parking surfaces. There is little to no likelihood for intact buried resources within these two locations due to past disturbance. In addition, dredged material placement would not have a visual impact because it would be at the same elevation as the surrounding roadways to the north, east, and west and the railroad to the south. The Corps has determined using these two locations for dredged material placement would have no effect to historic properties.

Winona Harbor Expansion

Three identified placement locations are located south of Dick's Marine and include the existing Winona Harbor (Dick's Marine) and two potential areas of expansion. A review of aerial imagery identifies Winona Harbor and Dick's Marine being constructed sometime between 1953 and 1972. In addition to aerial imagery, the MRC Charts (1890), and flowage easements (1933) were also reviewed. One historic wingdam and a shipwreck polygon coincide with the proposed Winona Harbor. Prior to the existing conditions, the area was primarily comprised of water and a sand bar that was formed by the constructed wing dam. A small section of the Winona Harbor Expansion overlaps with a previously existing island which is represented on the MRC charts and flowage easements as Island 72. Comparing this to the aerial imagery, this small section was modified and dug out for the construction of Dick's Marine. The identified wingdam is also in an area that has been heavily modified and dug out and no characteristics of the

wingdam appear to be present. This area would not harbor any shipwreck remnants due to its location in relation to the navigation channel and the significant disturbance that has occurred in the area. Based on the historic changes of the area for existing placement and the proposed harbor expansion, the Corps has determined using this location for dredged material placement would have no effect to historic properties.

Port Authority (Transfer Site)

No historic properties were identified within or adjacent to the Port Authority transfer site. The government land office surveyed this area in 1884, showing no existing landmass but a light sketch of an island is evident and field notes place an X in the area with a handwritten note potentially identifying the presence of a landmass. The railroad is the only constructed feature in the area by 1890. The original land remaining today is adjacent to areas created by fill placement beginning in the 1960s. The northern section of the area was disturbed by the construction of a levee sometime in the 1980s. There was also a road constructed for river access that didn't appear until the 1980s. The purpose of this site is for efficient bare-to-truck access and limited or no storage of dredged material is anticipated. Use of the site would require road improvements to allow truck traffic, and material placement to level the existing ground to the existing road elevation. Based on the proposed activity and history of the area based on maps and aerial photos, the Corps has determined no historic properties will be affected.

Port Authority Business Park

The Port Authority Business Park was originally represented as a low lying marsh during the 1890 MRC survey and has been alternatively used as an agricultural field and open prairie beginning around 1940. Since 2005, the area has been under development with significant changes in 2008 from excavation and site preparation for commercial development (grading, landscaping, etc.).

Due to its location within the city of Winona, the transportation of sand from the river to the placement site was reviewed. The transfer of sand will be on a designated city of Winona truck route. Review of the Minnesota state site file records identified two historic structures that had been inventoried and determined eligible to the National Register of Historic Places (NRHP) on the designated truck route from the boat landing to the stockpile site. Historic structure WN-WAC-1073 is located on 4th street and is a commerce trackside warehouse related to the railroad and agricultural industry. WN-WAC-0747 is a residential house located at 1076 Sanborn Street East. Both structures are unevaluated. The DMMP has no potential to affect these historic properties. Truck activities on this designated route already occur. The two properties are located at two intersections on this truck route where trucks would stop and make left turns. The temporary increased truck activity would not exceed weight limits of the road. There would be no change in the use of the historic properties on the truck route or change to their setting. The Corps has determined using the Port Authority Business Park for dredged material placement would have no effect to historic properties.

East End Boat Landing (Transfer Site)

The entirety of the East End Boat Landing is a gravel or paved parking lot. No permanent changes to the site would be made. The Corps has determined using this location as a transfer site would have no effect to historic properties.

Highway 43 Pit

Review of aerial photos reveal the Highway 43 Pit being put into operation between 1940 and 1954. Since 1954 it has continued to expand to its present size. Review of the Minnesota state site file database identified one historic property, archaeological site 21WN0030 adjacent to the existing pit. First identified in 1970, the lithic scatter is located outside of the existing pit boundaries. No known archaeological sites have been identified within the pit itself. Based on significant disturbance, the Corps has determined using this location for dredged material placement would have no effect to historic properties.

Winona Sand and Gravel Airport Pit

Review of aerial photos reveal the Winona Sand and Gravel pit being put into operation between 1953 and 1972 with a significant amount of sand and gravel being removed to create the existing large pit predominately filled with water. Review of the Minnesota state site file database revealed no historic properties within or immediately adjacent to the existing pit location. Based on significant disturbance, the Corps has determined using this location for dredged material placement would have no effect to historic properties.

Yaedke Pit

Review of aerial photos reveal the Yaedke Pit being put into operation after 1956. It is currently an active sand and gravel pit. Review of the Minnesota state site file database revealed no historic properties within or immediately adjacent to the existing pit location. Based on significant disturbance, the Corps has determined using this location for dredged material placement would have no effect to historic properties.

7.4 Cumulative Effects

The TSP is a component of the much larger set of plans and actions undertaken as maintenance of the 9-Foot Navigation Channel on the Upper Mississippi River. The cumulative effects of the TSP would include those discussed in the CMMP EIS, as well as additional impacts discussed here.

7.4.1 SCOPE OF CUMULATIVE EFFECTS ANALYSIS

Cumulative effects are defined by the Council on Environmental Quality as, “[T]he impact 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.

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 life-span 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 of 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.

The geographic scale of actions considered was focused on but was not limited to Pool 6; actions upstream or downstream were also considered because of their potential to impact this particular reach of the river.

7.4.2 ACTIONS IDENTIFIED WITHIN THE PROJECT IMPACT ZONE

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.

Past Actions:

Modifications to the Upper Mississippi River for Navigation

The floodplain geomorphology, stream hydraulics, and water levels of the Upper Mississippi River 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 6 in 1936, which raised water levels by several feet in the immediate project area and allowed for a 9-foot-deep navigation channel. The cumulative effect of these actions has played a large role in the development of the habitat that currently exists in the project area.

Other Modifications to the Upper Mississippi River – Railroads and Flood Risk Reduction

Actions for two other purposes have also dramatically shaped the project area: construction of a levee system to reduce flood risk to the city of Winona, MN, and construction of a railroad embankment along the Wisconsin side of the River. The Mississippi River at Winona, Minnesota Flood Control Project led to the construction of a continuous levee on the Minnesota side of the River over 6 miles downstream from Lock and Dam 5A. A railroad embankment runs the length of the entire Pool on the

Wisconsin side. Both of these embankments significantly restrict the floodplain of the Mississippi River within Pool 6.

Winona Trunk Highway 43 Bridge Rehabilitation

The Winona Trunk Highway 43 Bridge traverses the Mississippi River at the upper end of Pool 6. Between 2014 and 2020, a project was undertaken to both rehabilitate the old bridge and to construct a new permanent bridge immediately upstream of the current bridge. The new bridge has been constructed, the old bridge has been rehabilitated, and both are now open to traffic.

Mosquito Island Beneficial Use Island Restoration (2018)

In 2018, the Corps completed the restoration of a portion of land mass eroded from the head of Mosquito Island in Pool 6. This project provided dredged material placement capacity while restoring lost land mass, habitat, and recreation area.

Dredged Material Transfer from Homer West to Yaedke Pit (2021)

There was an immediate need to unload the Homer placement site to ensure adequate capacity for the 2021 dredging season. Approximately 55,000 cubic yards of dredged material were moved from Homer to the Yaedke Pit.

Concurrent and Ongoing Actions:

Navigation on the UMR

The operation, maintenance, and navigation use of the main channel of the UMR at its current authorized level is ongoing and expected to continue into the future.

Development in and around Winona, MN

The community of Winona continues to grow, and some recent developments have occurred throughout the community, including warehouses and businesses in locations within the Technology Park area where dredged material has been placed. The City is currently in the process of developing an updated comprehensive plan, expected to be completed in Spring of 2023.

Reasonably Foreseeable Future Actions:

Development in and around Winona, MN

Development has been ongoing in the Winona Port Authority Business Park area on the southern end of the city. Several new businesses have opened or constructed new

facilities in the area. It is reasonable to assume this area will continue to be developed, and that the ongoing City comprehensive plan update will guide the direction.

7.4.3 CONSEQUENCES OF CUMULATIVE EFFECTS

The environmental consequences outlined below are organized by resource categories, in the same order the resources are discussed in Chapters 2 and 7 and are limited to resource categories that would be affected by both the proposed project and other past, current, or reasonably foreseeable actions.

Transportation and Commercial Navigation

The TSP would have a temporary, minor adverse effect on transportation by increasing truck traffic during periods when dredged material is actively being removed from sites. The TSP in combination with the other transportation related projects provide an overall cumulative benefit of maintaining and improving transportation routes and modes in the project area, including commercial navigation.

Natural Resources

Many of the identified projects have had impacts on wetlands in the region. The transportation projects such as the railroads, harbors, and existing navigation channel likely impacted wetlands in the Mississippi River floodplain when they were constructed. The ongoing bridge replacement impacted several acres of wetland on Latsch Island that will be restored following project completion. The National Wildlife Refuges in the area preserve and protect hundreds of acres of wetland. The proposed project would impact an estimated 1.55 acres of previously disturbed deep marsh wetland. The TSP may also affect wetlands at the Winona Sand and Gravel Airport Pit. Development at the Fastenal-Evanson and Fastenal-Madison Silo sites could impact up to 6.8 acres of emergent wetland and 6.2 acres of forested / shrub wetland habitat.

The magnitude of the proposed effect is relatively minor within the watershed. The incorporated wetland compensation would minimize the overall effects to wetland function and values within the area. No significant cumulative effects are expected.

Table 10. Environmental Assessment Matrix

	No Action Alternative							TSP Alternative						
	BENEFICIAL				ADVERSE			BENEFICIAL				ADVERSE		
PARAMETER	SIGNIFICANT	SUBSTANTIAL	MINOR	NO EFFECT	MINOR	SUBSTANTIAL	SIGNIFICANT	SIGNIFICANT	SUBSTANTIAL	MINOR	NO EFFECT	MINOR	SUBSTANTIAL	SIGNIFICANT
A. Social Effects														
1. Noise Levels					T							T		
2. Aesthetic Values					x							x		
3. Recreational Opportunities				x							x			
4. Transportation					T					x		T		
5. Public Health and Safety				x							x			
6. Community Cohesion (Sense of Unity)				x							x			
7. Community Growth and Development				x							x			
8. Business and Home Relocations				x							x			
9. Existing/Potential Land Use				x							x			
10. Controversy				x							x			
B. Economic Effects														
1. Property Values				x							x			
2. Tax Revenue				x							x			
3. Public Facilities and Services				x							x			
4. Regional Growth				x							x			
5. Employment				x							x			
6. Business Activity				x							x			
7. Farmland/Food Supply				x							x			
8. Commercial Navigation					x					x				
9. Flooding Effects				x							x			
10. Energy Needs and Resources				x							x			
C. Natural Resource Effects														
1. Air Quality					T							T		
2. Terrestrial Habitat					x							x		
3. Wetlands					x							x		
4. Aquatic Habitat					x							x		
5. Habitat Diversity and Interspersion				x							x			
6. Biological Productivity					x							x		
7. Surface Water Quality					T							T		
8. Water Supply				x							x			
9. Groundwater				x							x			
10. Soils				x							x			
11. Threatened or Endangered Species				x							x			
D. Cultural Resource Effects														
1. Historic Architectural Values				x							x			
2. Prehistoric & Historic Archeological Values				x							x			

T= Temporary Effect

CHAPTER 8.

Environmental Compliance and Review

8.1 Public Involvement

A public meeting was held in February 2019 at the Winona Historical Society to introduce the study to the general public and seek input. A public notice of availability of the Draft Report was published on February 4, 2020, on the Corps website. A public meeting was held at the Winona Historical Society, on February 11, 2020 from 6:00-8:00 p.m. to discuss the project and obtain public input. The comment period for the draft plan was extended upon request to April 10, 2020. Reviewers expressed concerns about potential environmental and social impacts at Latsch Island from the proposed expansion of the Winona Harbor site, and potential social impacts from the use of the Homer placement site. Comments from stakeholder agencies and the public were consolidated in a spreadsheet. Responses to substantive comments can be found in the spreadsheet which is included in the Coordination & Correspondence Appendix. The report was also updated as needed in response to these comments.

A public notice of availability of the updated Draft Report was published on June 14, 2022, on the Corps website. An Open House was held at the Winona Historical Society on June 22, 2022, from 6:30 – 7:30 p.m. to discuss the project and obtain public input. Reviewers expressed concerns potential impacts arising from the use of the Homer West and Homer East placement sites. Concerns included pile height and aesthetics, airborne particulates, traffic safety, property values, socioeconomic impacts, and environmental effects. Reviewers also expressed concerns about wetland fill at the Homer East site and the Fastenal – Evanson sites. Several suggestions for report revisions were suggested to improve clarity and resource descriptions. A summary of comments received and responses to substantive comments can be found in a spreadsheet included in the Coordination and Correspondence Appendix. As noted in the spreadsheet, the report was modified where appropriate to reflect these comments.

8.2 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 follow.

8.2.1 CLEAN WATER ACT

The use of the Homer East site would involve the discharge of fill into waters of the United States, by converting the existing wetland into an upland placement site. The Corps has prepared an updated Section 404(b)(1) analysis for the use of this site, which is presented in Appendix E. Mitigation for the proposed wetland impacts are planned to be achieved through the purchase of in-kind credits in a wetland bank within the watershed. Acquisition of these credits would occur following an on-site investigation of the wetland. If appropriate credits are not available at the time of implementation, a site-specific plan may be pursued. Section 401 Water Quality Certification would be obtained from the MPCA. The schedule for securing wetland mitigation is dependent on acquiring all necessary real estate interests but would occur prior to placing fill in waters of the United States.

If hydraulic dredging methods are used to place material at the Homer site, excess carriage water would be returned to the river. This discharge is addressed in Nationwide Permit 16, which also includes Section 401 Water Quality Certification from the MPCA. The discharge would comply with all applicable national and regional conditions for use of Nationwide Permit 16 and the MPCA's Section 401 Water Quality Certification specific conditions.

The Corps would comply with the Clean Water Act by conducting Section 404(b)(1) evaluations and preparing wetland mitigation plans as appropriate prior to use of any site where discharges of fill into waters of the United States would occur. A Section 404(b)(1) evaluation has not been prepared for the Winona Sand and Gravel Airport Pit because the condition of the aquatic habitat at the site has a high probability of changing before the Corps has a need to fill the site. A Section 404(b)(1) evaluation would be prepared before Corps use of the site if wetlands are found to be present at the time and location of fill within the Winona Sand and Gravel Airport Pit. A Section 404(b)(1) evaluation may need to be prepared before Corps' use of the Fastenal-Evanson site or Fastenal-Madison Silo occurs. No other sites in the TSP have potential to include discharge of fill into waters of the United States.

8.2.2 FISH AND WILDLIFE COORDINATION ACT

Project plans have been coordinated with the USFWS and the Minnesota and Wisconsin DNRs. Correspondence is documented in Appendix A: Coordination and Correspondence.

During a preliminary review of an older version of the report in February 2016, the U.S. Fish and Wildlife Service commented that their agency did not support the use of the Homer East site due to the wetland impacts associated with using the site. This site was carried forward as a part of the Tentatively Selected Plan due to the small pool of practicable sites identified during the study and the low quality of wetland present at the site. Wetland mitigation was incorporated into the plan to offset these unavoidable impacts.

8.2.3 ENDANGERED SPECIES ACT

The TSP 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 TSP, 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 seven species identified as either endangered, threatened, candidate for listing, or experimental in the project area, the TSP would have no effect on six species: Higgins eye pearly mussel, sheepnose mussel, Karner blue butterfly, rusty-patched bumble bee, monarch butterfly, and whooping crane. The no-effects determinations for these species was 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 TSP 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.

ESA consultation for effects to the northern long eared bat was initiated 23 January 2022 with the USFWS through the Section 4(d) Rule Streamlined Consultation Form (Appendix A). The preliminary determination is that the proposed project may affect northern long eared bat, but any resulting incidental take would not be prohibited under the Service's Programmatic Biological Opinion for the species. In a response dated 23 January 2022, the USFWS acknowledged the Corps' consultation using the IPaC Determination Key and has concluded the consultation requirement has been met for northern long eared bat. The effects determination for NLEB under the Programmatic Biological Opinion is valid for one year. On March 22, 2022, the U.S. Fish and Wildlife Service announced a proposal to reclassify the NLEB as endangered under the ESA. The proposed reclassification, if finalized, would remove the current 4(d) rule as these rules may be applied only to threatened species. 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.

USFWS also will have the opportunity to review this report and Environmental Assessment.

8.2.4 STATE PERMITS

The Corps maintains a general permit, acquired out of comity, from the Minnesota Department of Natural Resources for placing fill below the ordinary high water level at approved CMMP designated placement sites. This would cover the proposed fill at the Homer site.

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 Minnesota Department of Natural Resources (MNDNR), and a Solid Waste Disposal Site (SDS) programmatic permit with the Minnesota Pollution Control Agency (MPCA) that list permanent and temporary placement sites. The Corps would request that the sites be added to these Minnesota permits for Corps dredged material placement prior to dredged material placement activities. The MOU with Wisconsin would be unchanged as a result of the DMMP.

8.2.5 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, 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 inclusion in the National Register of Historic Places. Letters were sent to the Minnesota State Historic Preservation Office (SHPO) and Tribal Historic Preservation Offices (THPO) of the Ho Chunk Nation, Prairie Island Indian Community, and Shakopee Mdewakanton Sioux Community on 23 January 2020 with a determination of no effect to historic properties. The SHPO responded on 27 February 2020, concurring with the Corps determination. No response was received from the THPO offices. Since consultation was completed, additional locations were selected for review that were not previously known. The revised APE only included three additional dredged material placement sites. Dredging locations, transfer sites, and transportation routes would remain the same as previously coordinated with SHPO and THPO offices. No historic properties were identified within or adjacent to the revised APE and all placement sites had all been previously disturbed. Because no THPO offices expressed interest to be consulting parties in the Pool 6 DMMP and no historic properties were identified within the revised APE, the Corps only reinitiated consultation on the revised APE with the SHPO on 20 December 2021 with a determination of no effect to historic properties for the additional dredged placement sites. The SHPO responded on 17 February 2022, concurring with the Corps determination. Copies of the letters are located in Appendix A – Coordination and Correspondence.

8.2.6 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. Executive Order 13175 requires 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, 1 Nov 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 11. 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 United States 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 Winona County, MN and Buffalo and Trempealeau Counties, WI 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 the study area.

8.3 Distribution of Draft Environmental Assessment

This environmental assessment has been provided via computer on the following website: http://www.mvp.usace.army.mil/Home/Public-Notices/. A notice of availability was sent to the following agencies:

Federal

Environmental Protection Agency
U.S. Fish and Wildlife Service
U.S. Geological Survey

Others

Winona Library
Trempealeau Library
City of Winona

State of Wisconsin

Department of Natural Resources

State of Minnesota

Department of Natural Resources
Pollution Control Agency

8.4 Comments on the Environmental Assessment

Comments were requested and welcomed on the draft report and environmental assessment from June 14, 2022 to July 14, 2022. All agency and public comments are summarized in a spreadsheet in Appendix A: Coordination and Correspondence, along with Corps' responses. Copies of comments received are also included for reference. Comments were carefully considered and addressed, and changes were made as described in the response spreadsheet. Per NEPA guidance, substantive comments have been incorporated into this EA for evaluating and disclosing reasonably foreseeable effects directly related to the proposed actions. Rationale for comments that were not directly incorporated into this EA or which were already included in the EA are documented in the spreadsheet in Appendix A. Chapter 9: Recommendation includes a discussion of considerations that will be made during implementation of the DMMP based on comments received.

Table 12. 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[2]
Clean Air Act, as amended	Full
Clean Water Act, as amended	Partial[3]
Coastal Zone Management Act, as amended	N/A
Endangered Species Act of 1973, as amended	Partial[4]
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	Partial[5]
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	N/A
Executive Orders, Memoranda	
Floodplain Management (EO.. 11988)	Full
Protection and Enhancement of Environmental Quality (E.O. 11514)	Full
Protection and Enhancement of the Cultural Environment (E.O. 11593)	Full
Protection of Wetlands (E.O. 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, E.O., or other policy and related regulations have been met for the current stage of planning.
b. Partial - Some requirements of the statute, E.O., 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, E.O., or other policy and related regulations.
d. Not Applicable (N/A) - Statute, E.O., or other policy and related regulations not applicable for the current stage of planning.

[2] No bald eagles reside in the project area currently. Coordination with the USFWS will continue throughout implementation.

[3] Full compliance to be achieved following public review with the District Commander's signing of the 404(b)(1) Evaluation and receipt of Section 401 Water Quality Certification. Corps use of Fastenal sites may require additional Clean Water Act review.

[4] Additional review will be required prior to implementation of some features.

[5] Full compliance will be achieved with the District Engineer's signing of the Finding of No Significant Impact (Appendix E) or Record of Decision, if an Environmental Impact Statement is needed.

CHAPTER 9. Recommendation

The recommended plan for managing dredged material in support of the 9-Foot Navigation Channel Project in Pool 6 of the Upper Mississippi River is the Tentatively Selected Plan presented in this Dredged Material Management Plan Final Report. This recommendation is made with consideration of the study planning efforts, the coordination with local and regional stakeholders, and the comments received during public review. This plan constitutes the Base Plan and the Federal Standard for Pool 6, 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 plan includes twelve sites within Pool 6 that can be used to manage the material dredged from Pool 6 for the next twenty years. Two sites are existing placement sites with a long history of dredged material placement and open beneficial use removal. Two sites are expansions of these currently active sites. Two sites are transfer sites that increase the efficiency of moving dredged material from barges onto trucks. Three sites would provide potential beneficial uses for dredged material. The final three sites are previously mined pits that offer high capacity for permanent material placement. These twelve sites were selected to maximize flexibility, minimize risk, and maximize beneficial use of dredged material in the Pool.

In response to comments received, the following will be considered to minimize impacts of placement activities on the surrounding community of Homer:

1. Secure access to as many DMMP sites as reasonable and practicable, and continue to seek additional available placement sites to reduce the burden on any existing site and to reduce implementation risks of lower-than-expected beneficial use rates or site closures.

2. Work with the surrounding community and if practicable implement screening and access improvements at the Homer West site to address concerns raised during the public comment period.

3. Continue to engage with the Winona, Homer, and surrounding Pool 6 communities in seeking new opportunities for beneficial use of dredged material that may benefit these communities and the Navigation program in Pool 6.

I have weighed the accomplishments to be obtained from the Pool 6 DMMP against the cost and have considered the alternatives, impacts, and scope of the proposed project. Therefore, I recommend that the Pool 6 DMMP of the Upper Mississippi River 9-Foot

Navigation Project be approved for implementation, along with the considerations outlined above.

The recommendations contained herein reflect the information available at this time and current department policies governing formulation of DMMPs under the Operation and Maintenance of the Upper Mississippi River 9-Foot Navigation Project.

Eric Swenson
Colonel, Corps of Engineers
District Commander

References

Butler, R.S. (2002). Status assessment report for the spectaclecase, Cumberlandia monodonta, occurring in the Mississippi River system (U.S. Fish and Wildlife Service Regions 3, 4, 5, and 6). U.S. Fish and Wildlife Service, Asheville, N.C. 69 pp.

Canadian Wildlife Service and U.S. Fish and Wildlife Service. (2007). International recovery plan for the whooping crane. Ottawa: Recovery of Nationally Endangered Wildlife (RENEW), and U.S. Fish and Wildlife Service, Albuquerque, New Mexico. 162 pp.

Collins, M.J., Knox, J.C., (2003). Historical changes in the Upper Mississippi River water areas and islands. Journal of the American Water Resources Association 39 (2) 487–500.

Environmental Laboratory. (1987). "Corps of Engineers Wetlands Delineation Manual," Technical Report Y-87-1, U.S. Army Engineer Waterways Experiment Station, Vicksburg, Miss.

Frayer, J.B, and Jefferson, A.J. (2013). An exception to island loss in the engineered Upper Mississippi River: History of land growth in Pool 6 and implications for restoration. Anthropocene 2: 65-75.

Gibbon, Guy. (2012). *Archaeology of Minnesota: The Prehistory of the Upper Mississippi River Region.* University of Minnesota Press, Minneapolis, Minnesota.

Kelner, D. (2021). Upper Mississippi River mussel species list. U.S. Army Corps of Engineers, St. Paul District.

Madigan Thomas and Ronald Schirmer. (2001). Geomorphological Mapping and Archaeological Sites of the Upper Mississippi River Valley, Navigation Pools 1-10, Minneapolis, Minnesota to Guttenberg, Iowa. U.S. Army Corps of Engineers, St. Paul District. Contract No. DACW37-96-M-0665.

Minnesota Department of Natural Resources (MNDNR). Date unknown. Online Rare Species Guide Species Profile for *Vitis aestivalis*. Accessed March 10, 2016. Accessible at: http://www.dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=PDVIT04020

Minnesota State Historic Office Site Files. (2018). St. Paul, Minnesota. Geospatial Information Services data.

Ohio River Valley Ecosystem Team Mollusk Subgroup (ORVETMS). (2002). Status Assessment for the sheepnose, Plethobasus cyphyus, occurring in the Mississippi River system (U.S. Fish and Wildlife Service Regions 3, 4, and 5). ORVETMS, U.S. Fish and Wildlife Service, Asheville, NC.

Oldfield, B.L., and J.J. Moriarity. (1994). Amphibians and reptiles native to Minnesota. University of Minnesota Press, Minneapolis, Minnesota, USA.

Pleger, Thomas C. (1997). *A Phase I Archaeological Survey of the Floodplain of Pool Nos. 5, 5A, and 6 of the Upper Mississippi River Valley*. Reports of Investigations No. 248 of the Mississippi Valley Archaeology Center, University of Wisconsin, La Crosse, Wisconsin.

Schmidt, K. and N. Proulx (2009). State Wildlife Grant Final Report: Status and critical habitat of rare fish species in the Mississippi River from the Coon Rapids Dam to the Iowa Border. Minnesota Department of Natural Resources, Division of Ecological Services. Accessed at: http://files.dnr.state.mn.us/eco/nongame/projects/consgrant_reports/2009/2009_schmidt_proulx2.pdf

U.S. Army Corps of Engineers (USACE). (1997). Final Environmental Impact Statement for 9-Foot Navigation Channel Maintenance Management Plan, Upper Mississippi River, Head of Navigation to Guttenberg, Iowa. Record of Decision (ROD) signed 7 July 1997.

U.S. Army Corps of Engineers (USACE). (2014, with minor updates February 2016). Final Definite Project Report and Integrated Environmental Assessment for Beneficial Dredged Material Use in Pool 6. FONSI for placement in Technology Park signed June, 2014; FONSI for Mosquito Island restoration signed March 2016)

U.S. Environmental Protection Agency. (2013). The Green Book – Currently Designated Nonattainment Areas for All Criteria Pollutants. Website. Accessed at: http://www.epa.gov/oaqps001/greenbk/ancl.html

U.S. Fish and Wildlife Service. (2003). Final Recovery Plan for the Karner Blue Butterfly (Lycaeides melissa samuelis). U.S. Fish and Wildlife Service, Fort Snelling, Minnesota. 237 pp.

U.S. Fish and Wildlife Service. (2004). Higgins Eye Pearlymussel (Lampsilis higginsii) Recovery Plan: First Revision. Ft. Snelling, Minnesota.

U.S. Fish and Wildlife Service. (2006). Upper Mississippi River National Wildlife Refuge Final Environmental Impact Statement and Comprehensive Conservation Plan. Winona, MN.

U.S. Fish and Wildlife Service. (2020). Monarch (*Danuaus plexippus*) Species Status Assessment Report, Version 2.1, 96 pp + appendices.

U.S. Fish and Wildlife Service (2021). Rusty Patched Bumble Bee (*Bombus affinis*) Endangered Species Act Section 7(a)(2) Voluntary Implementation Guidance. Version 3.1, December 2021.

Vogt, R. C. (1981). Natural history of amphibians and reptiles of Wisconsin. Milwaukee Public Museum. 205 pp.

Wisconsin Department of Natural Resources. (2013). Wisconsin Northern Long-Eared Bat Species Guidance. Bureau of Natural Heritage Conservation, Wisconain Department of Natural Resources, Madison, Wisconsin. PUB-ER-700.

Plates

PLATE 1

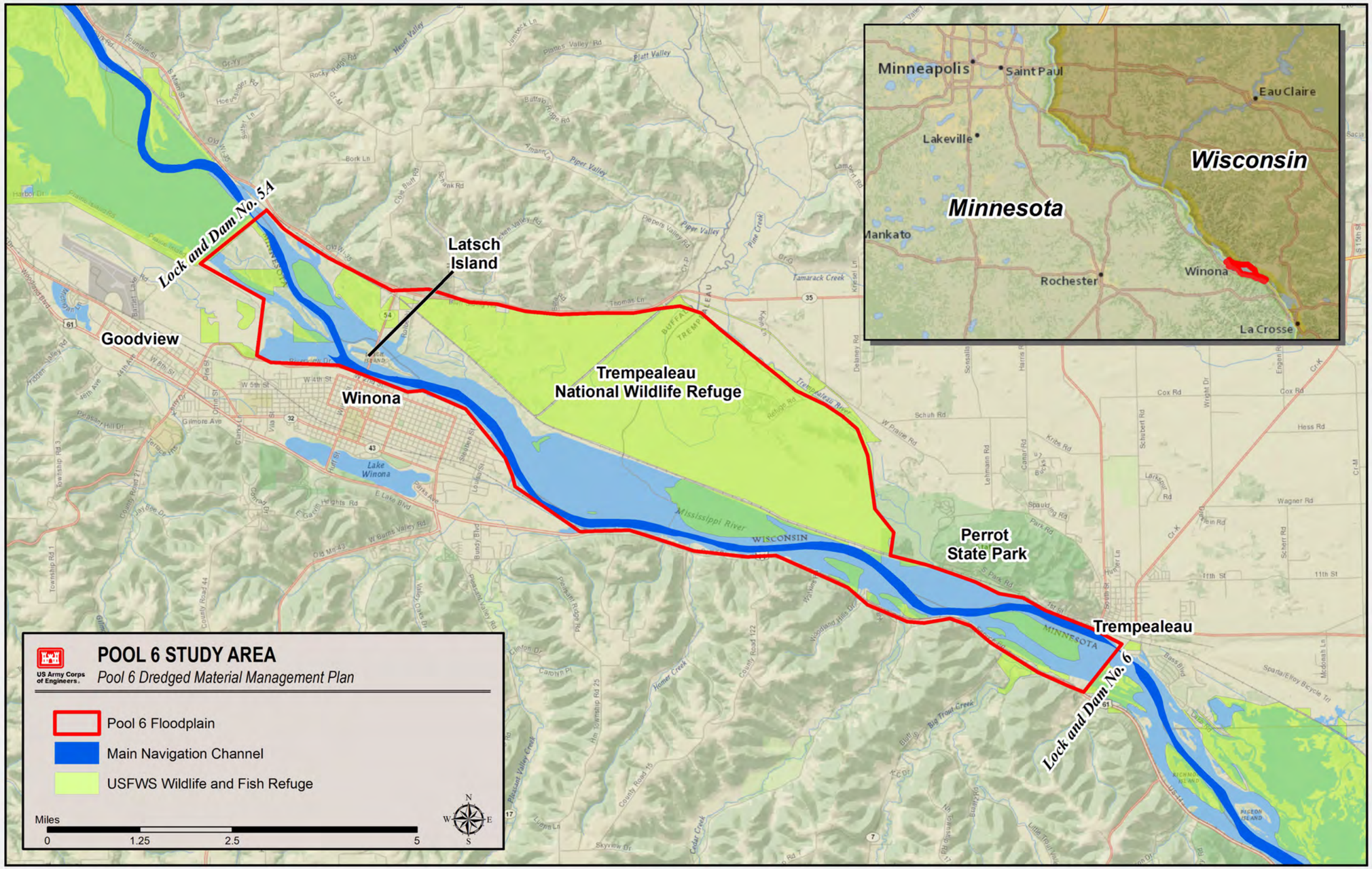

Minneapolis
Saint Paul
Eau Claire
Lakeville
Wisconsin
Minnesota
Mankato
Rochester
Winona
La Crosse
Lock and Dam No. 5A
Latsch Island
Goodview
Winona
Trempealeau National Wildlife Refuge
Perrot State Park
Trempealeau
Lock and Dam No. 6
Mississippi River
WISCONSIN
MINNESOTA
POOL 6 STUDY AREA
US Army Corps of Engineers
Pool 6 Dredged Material Management Plan
Pool 6 Floodplain
Main Navigation Channel
USFWS Wildlife and Fish Refuge
Miles
0
1.25
2.5
5
N
W
E
S

PLATE 2

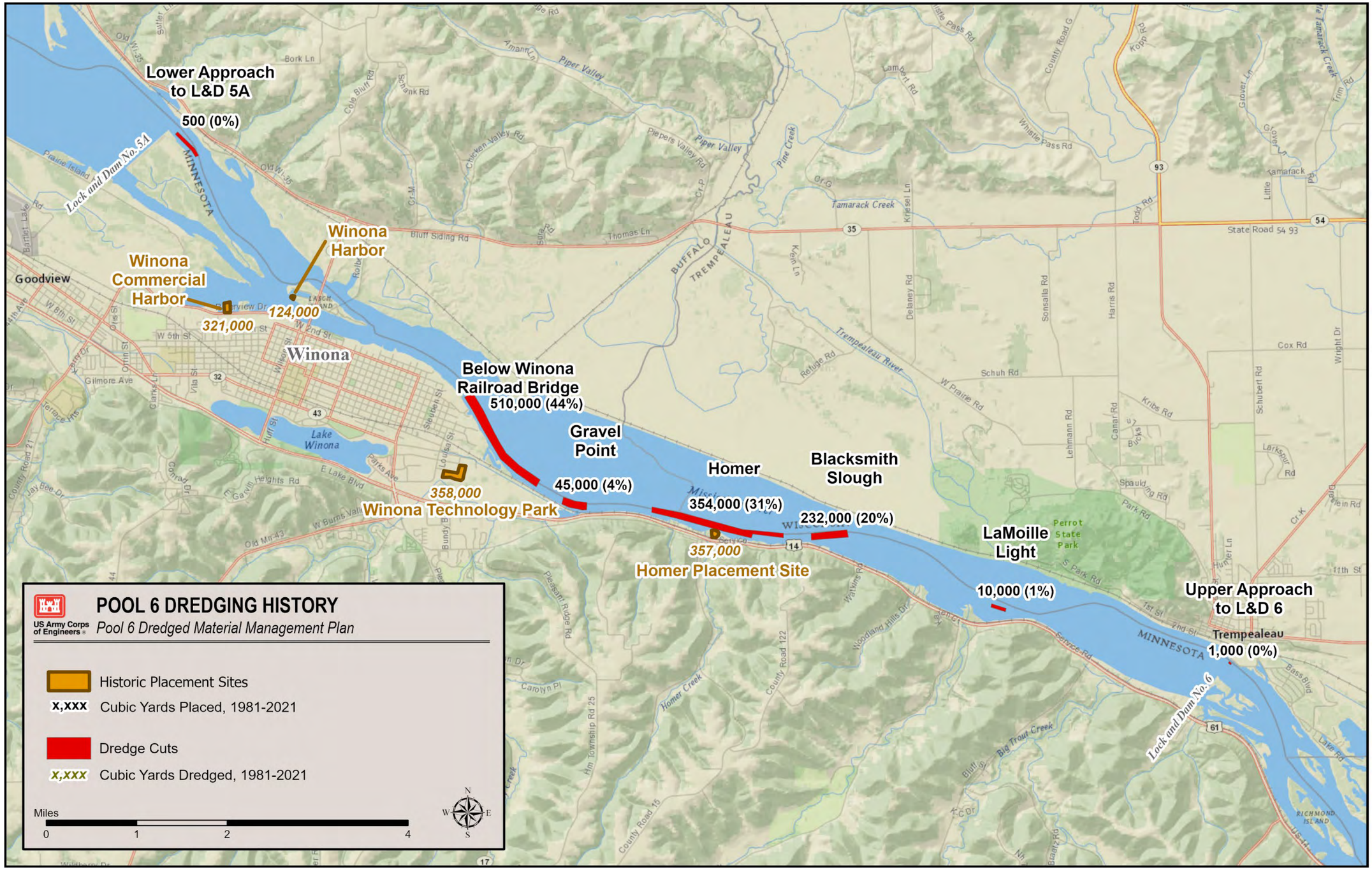

Lower Approach to L&D 5A
500 (0%)
Winona Harbor
124,000
Winona Commercial Harbor
321,000
Below Winona Railroad Bridge
510,000 (44%)
Gravel Point
45,000 (4%)
358,000
Winona Technology Park
Homer
354,000 (31%)
357,000
Homer Placement Site
Blacksmith Slough
232,000 (20%)
LaMoille Light
10,000 (1%)
Upper Approach to L&D 6
Trempealeau
1,000 (0%)
Goodview
Winona
Lock and Dam No. 5A
Lock and Dam No. 6
MINNESOTA
WISCONSIN
Tamarack Creek
Trempealeau River
Lake Winona
Perrot State Park
POOL 6 DREDGING HISTORY
US Army Corps of Engineers
Pool 6 Dredged Material Management Plan
Historic Placement Sites
x,xxx Cubic Yards Placed, 1981-2021
Dredge Cuts
x,xxx Cubic Yards Dredged, 1981-2021
Miles
0 1 2 4
N
W E
S

PLATE 3

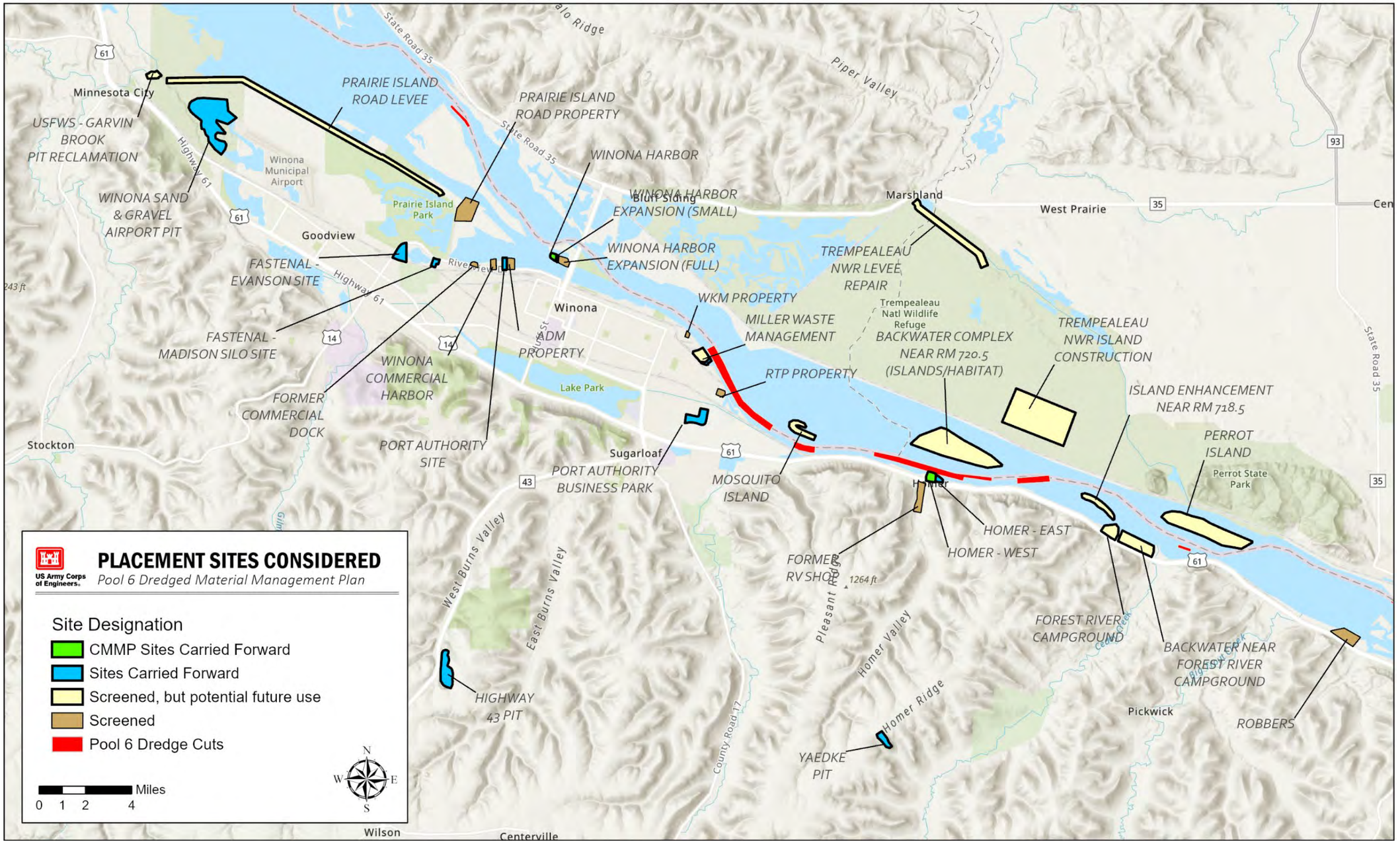

PRAIRIE ISLAND ROAD LEVEE
PRAIRIE ISLAND ROAD PROPERTY
WINONA HARBOR
WINONA HARBOR EXPANSION (SMALL)
WINONA HARBOR EXPANSION (FULL)
TREMPEALEAU NWR LEVEE REPAIR
WKM PROPERTY
MILLER WASTE MANAGEMENT
BACKWATER COMPLEX NEAR RM 720.5 (ISLANDS/HABITAT)
TREMPEALEAU NWR ISLAND CONSTRUCTION
ISLAND ENHANCEMENT NEAR RM 718.5
RTP PROPERTY
USFWS - GARVIN BROOK PIT RECLAMATION
WINONA SAND & GRAVEL AIRPORT PIT
FASTENAL - EVANSON SITE
FASTENAL - MADISON SILO SITE
FORMER COMMERCIAL DOCK
WINONA COMMERCIAL HARBOR
PORT AUTHORITY SITE
ADM PROPERTY
PORT AUTHORITY BUSINESS PARK
MOSQUITO ISLAND
FORMER RV SHOP
HOMER - EAST
HOMER - WEST
FOREST RIVER CAMPGROUND
BACKWATER NEAR FOREST RIVER CAMPGROUND
PERROT ISLAND
ROBBERS
HIGHWAY 43 PIT
YAEDKE PIT
Minnesota City
Winona Municipal Airport
Prairie Island Park
Goodview
Winona
Lake Park
Stockton
Sugarloaf
Bluff Siding
Marshland
West Prairie
Trempealeau Natl Wildlife Refuge
Perrot State Park
Pickwick
Homer
Wilson
Centerville
Piper Valley
West Burns Valley
East Burns Valley
Pleasant Ridge
Homer Valley
Homer Ridge
County Road 17
State Road 35
Highway 61
1264 ft
PLACEMENT SITES CONSIDERED
US Army Corps of Engineers
Pool 6 Dredged Material Management Plan
Site Designation
CMMP Sites Carried Forward
Sites Carried Forward
Screened, but potential future use
Screened
Pool 6 Dredge Cuts
Miles
0 1 2 4
N
W
E
S

PLATE 4

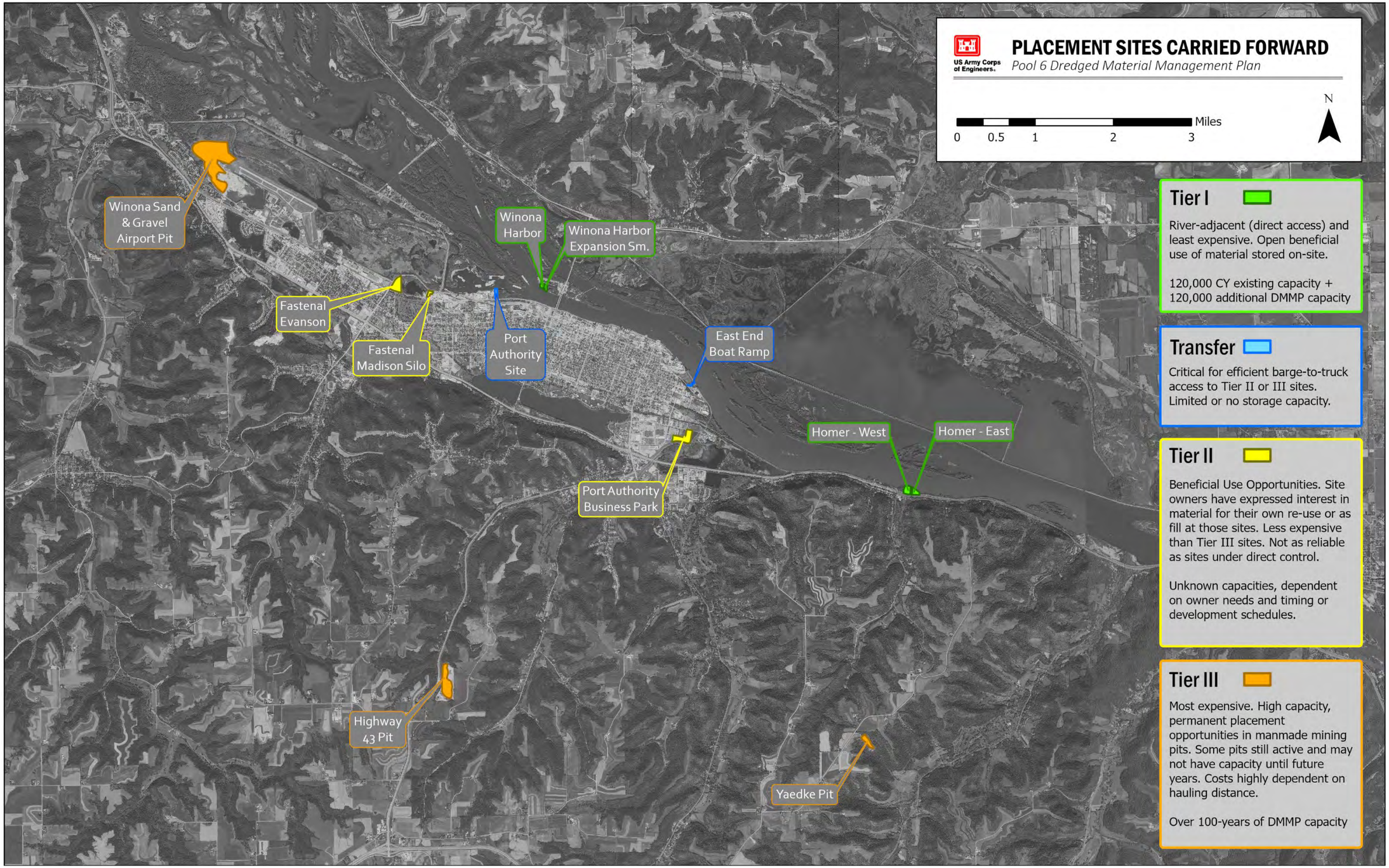

US Army Corps of Engineers
PLACEMENT SITES CARRIED FORWARD
Pool 6 Dredged Material Management Plan
N
0 0.5 1 2 3 Miles
Winona Sand & Gravel Airport Pit
Winona Harbor
Winona Harbor Expansion Sm.
Fastenal Evanson
Fastenal Madison Silo
Port Authority Site
East End Boat Ramp
Homer - West
Homer - East
Port Authority Business Park
Highway 43 Pit
Yaedke Pit
Tier I
River-adjacent (direct access) and least expensive. Open beneficial use of material stored on-site.
120,000 CY existing capacity + 120,000 additional DMMP capacity
Transfer
Critical for efficient barge-to-truck access to Tier II or III sites. Limited or no storage capacity.
Tier II
Beneficial Use Opportunities. Site owners have expressed interest in material for their own re-use or as fill at those sites. Less expensive than Tier III sites. Not as reliable as sites under direct control.
Unknown capacities, dependent on owner needs and timing or development schedules.
Tier III
Most expensive. High capacity, permanent placement opportunities in manmade mining pits. Some pits still active and may not have capacity until future years. Costs highly dependent on hauling distance.
Over 100-years of DMMP capacity

PLATE 5

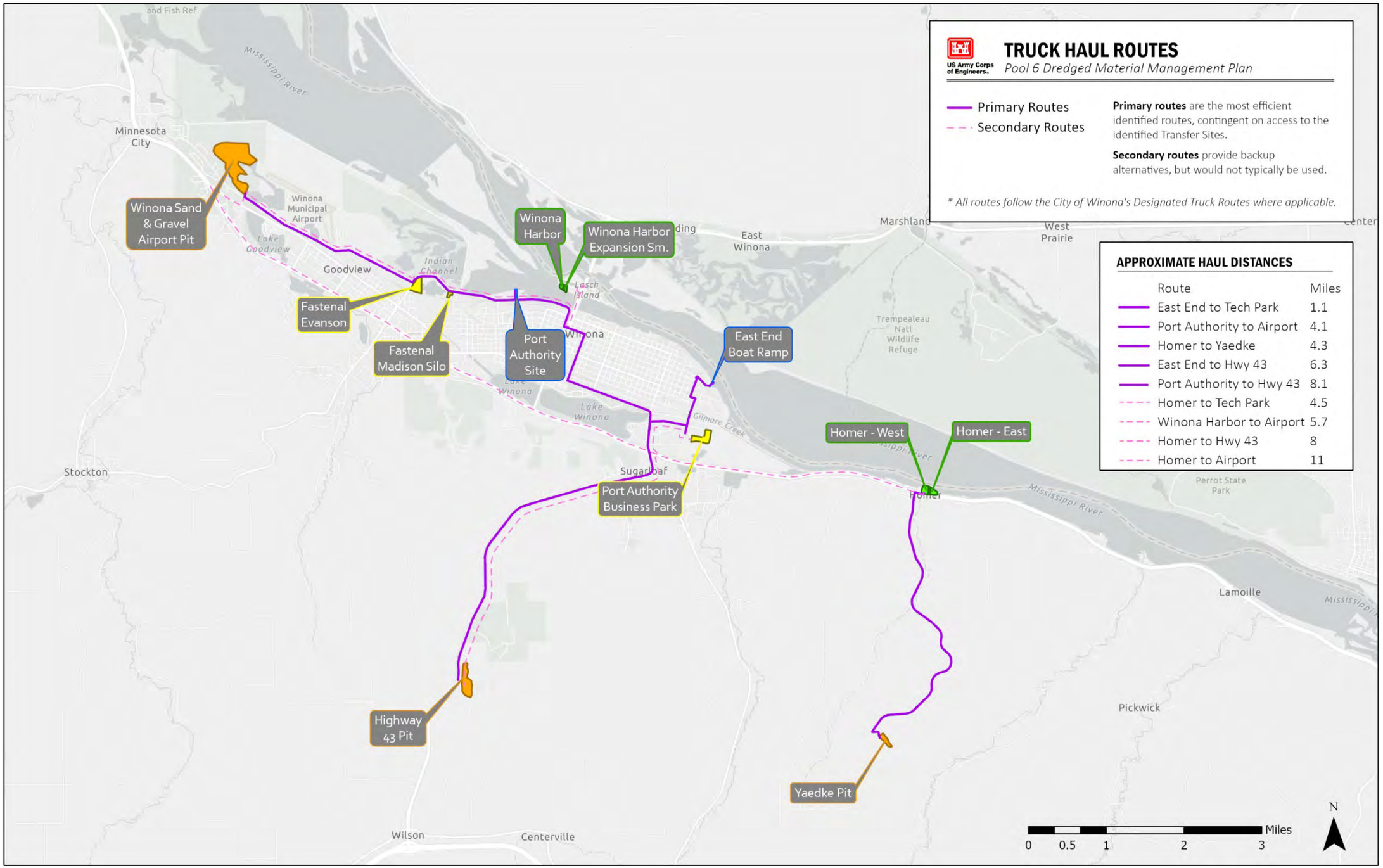

TRUCK HAUL ROUTES
US Army Corps of Engineers
Pool 6 Dredged Material Management Plan
Primary Routes
Secondary Routes
Primary routes are the most efficient identified routes, contingent on access to the identified Transfer Sites.
Secondary routes provide backup alternatives, but would not typically be used.
* All routes follow the City of Winona's Designated Truck Routes where applicable.
APPROXIMATE HAUL DISTANCES
Route Miles
East End to Tech Park 1.1
Port Authority to Airport 4.1
Homer to Yaedke 4.3
East End to Hwy 43 6.3
Port Authority to Hwy 43 8.1
Homer to Tech Park 4.5
Winona Harbor to Airport 5.7
Homer to Hwy 43 8
Homer to Airport 11
Winona Sand & Gravel Airport Pit
Winona Harbor
Winona Harbor Expansion Sm.
Fastenal Evanson
Fastenal Madison Silo
Port Authority Site
East End Boat Ramp
Port Authority Business Park
Homer - West
Homer - East
Highway 43 Pit
Yaedke Pit
Minnesota City
Winona Municipal Airport
Goodview
Lake Goodview
Indian Channel
Lasch Island
Winona
Lake Winona
Gilmore Creek
East Winona
Marshland
West Prairie
Trempealeau Natl Wildlife Refuge
Stockton
Sugarloaf
Homer
Perrot State Park
Mississippi River
Lamoille
Pickwick
Wilson
Centerville
0 0.5 1 2 3 Miles
N

PLATE 6

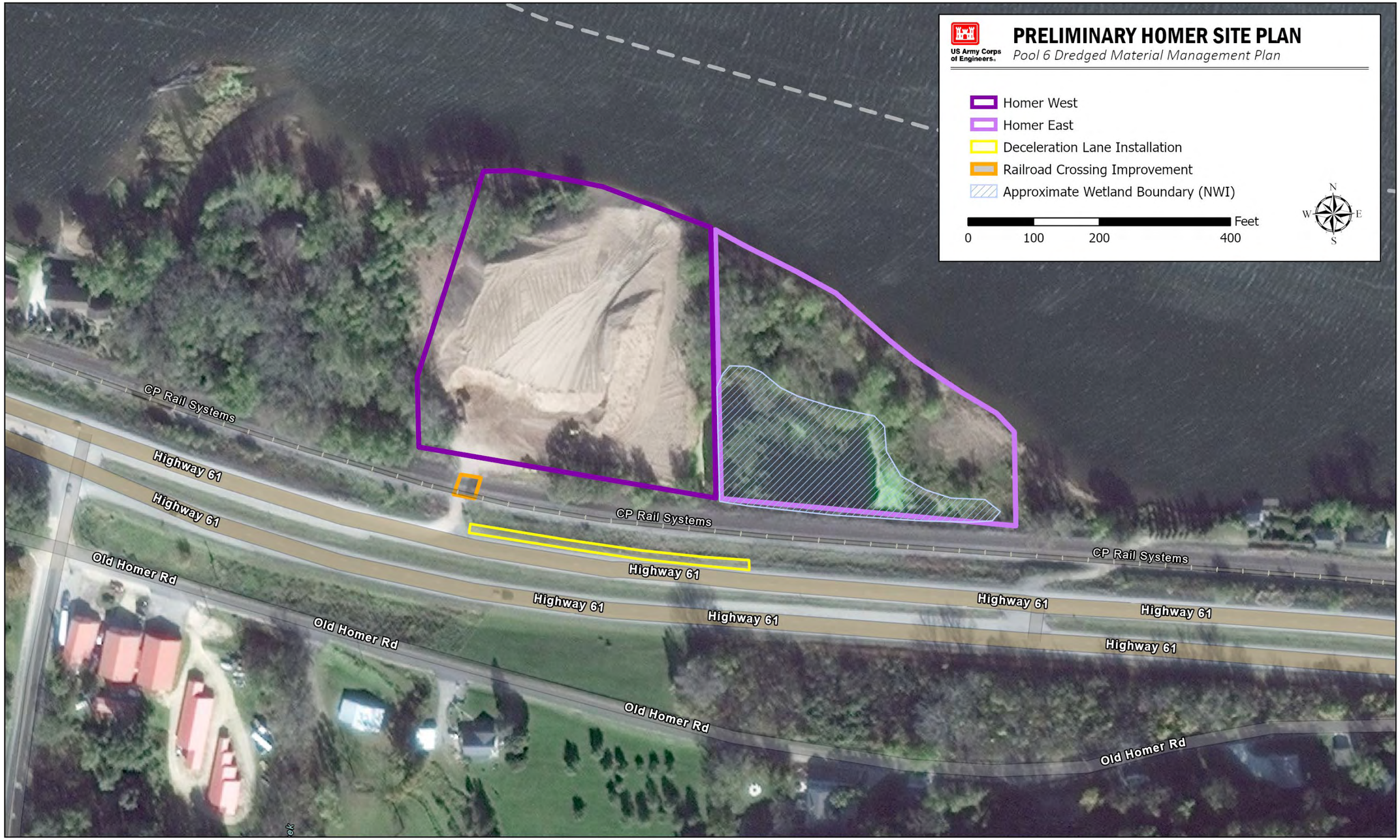

US Army Corps of Engineers
PRELIMINARY HOMER SITE PLAN
Pool 6 Dredged Material Management Plan
Homer West
Homer East
Deceleration Lane Installation
Railroad Crossing Improvement
Approximate Wetland Boundary (NWI)
Feet
0
100
200
400
N
W
E
S
CP Rail Systems
Highway 61
Old Homer Rd

PLATE 7

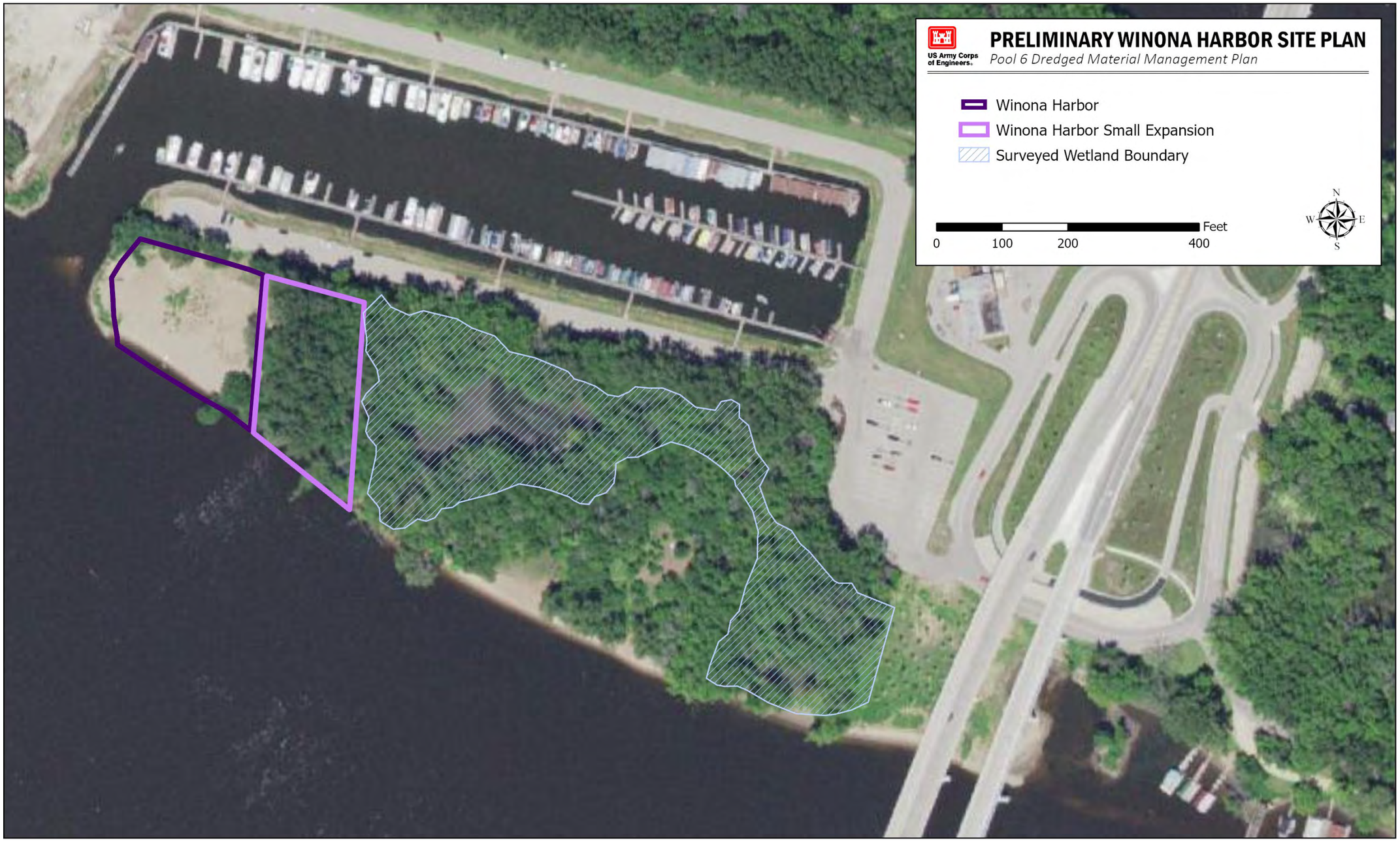

US Army Corps of Engineers
PRELIMINARY WINONA HARBOR SITE PLAN
Pool 6 Dredged Material Management Plan
Winona Harbor
Winona Harbor Small Expansion
Surveyed Wetland Boundary
Feet
0
100
200
400
N
W
E
S

PLATE 1

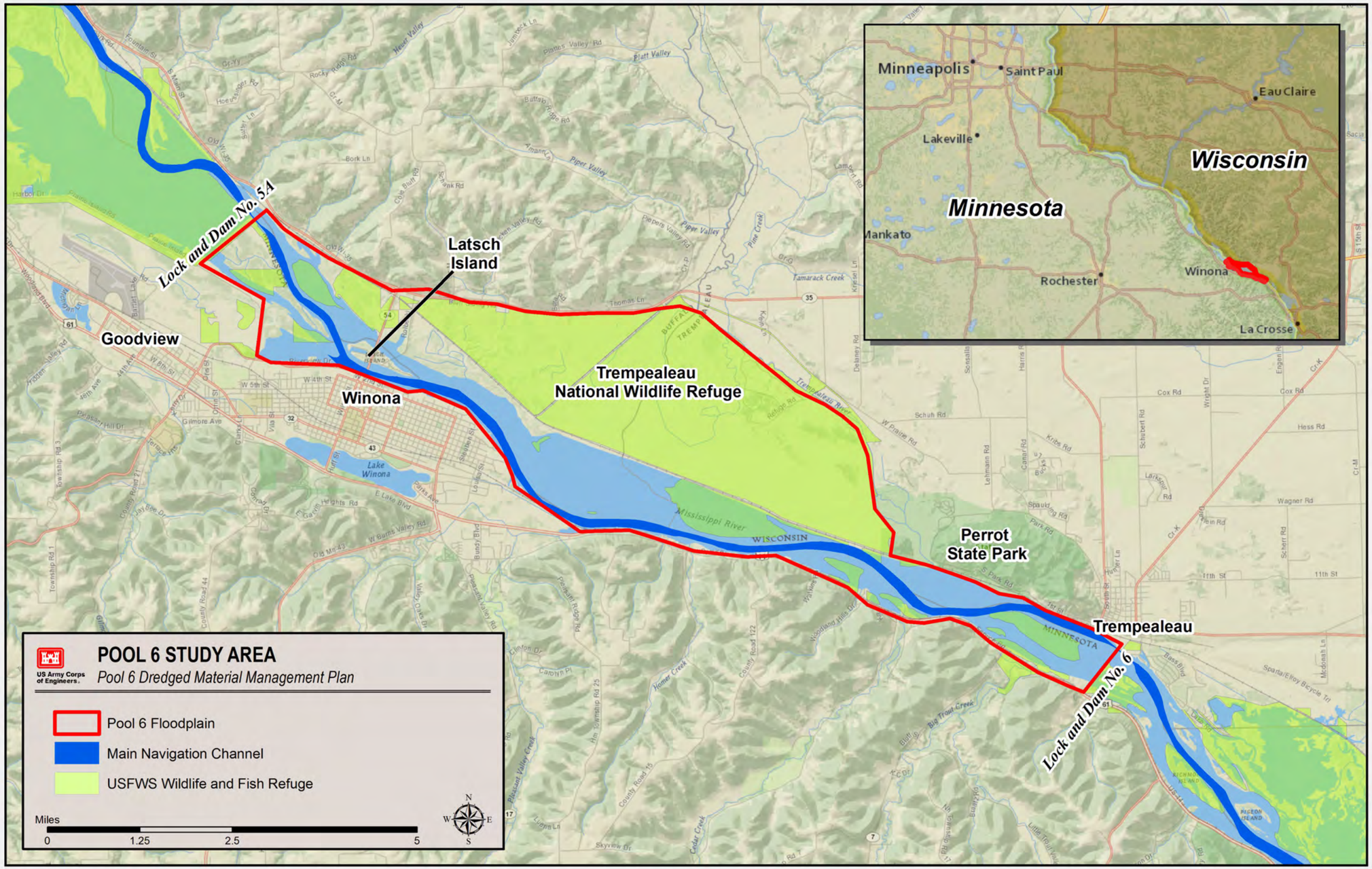

Minneapolis
Saint Paul
Eau Claire
Lakeville
Wisconsin
Minnesota
Mankato
Rochester
Winona
La Crosse
Lock and Dam No. 5A
Latsch Island
Goodview
Winona
Trempealeau National Wildlife Refuge
Perrot State Park
Trempealeau
Lock and Dam No. 6
Mississippi River
WISCONSIN
MINNESOTA
POOL 6 STUDY AREA
US Army Corps of Engineers
Pool 6 Dredged Material Management Plan
Pool 6 Floodplain
Main Navigation Channel
USFWS Wildlife and Fish Refuge
Miles
0
1.25
2.5
5
N
W
E
S

PLATE 2

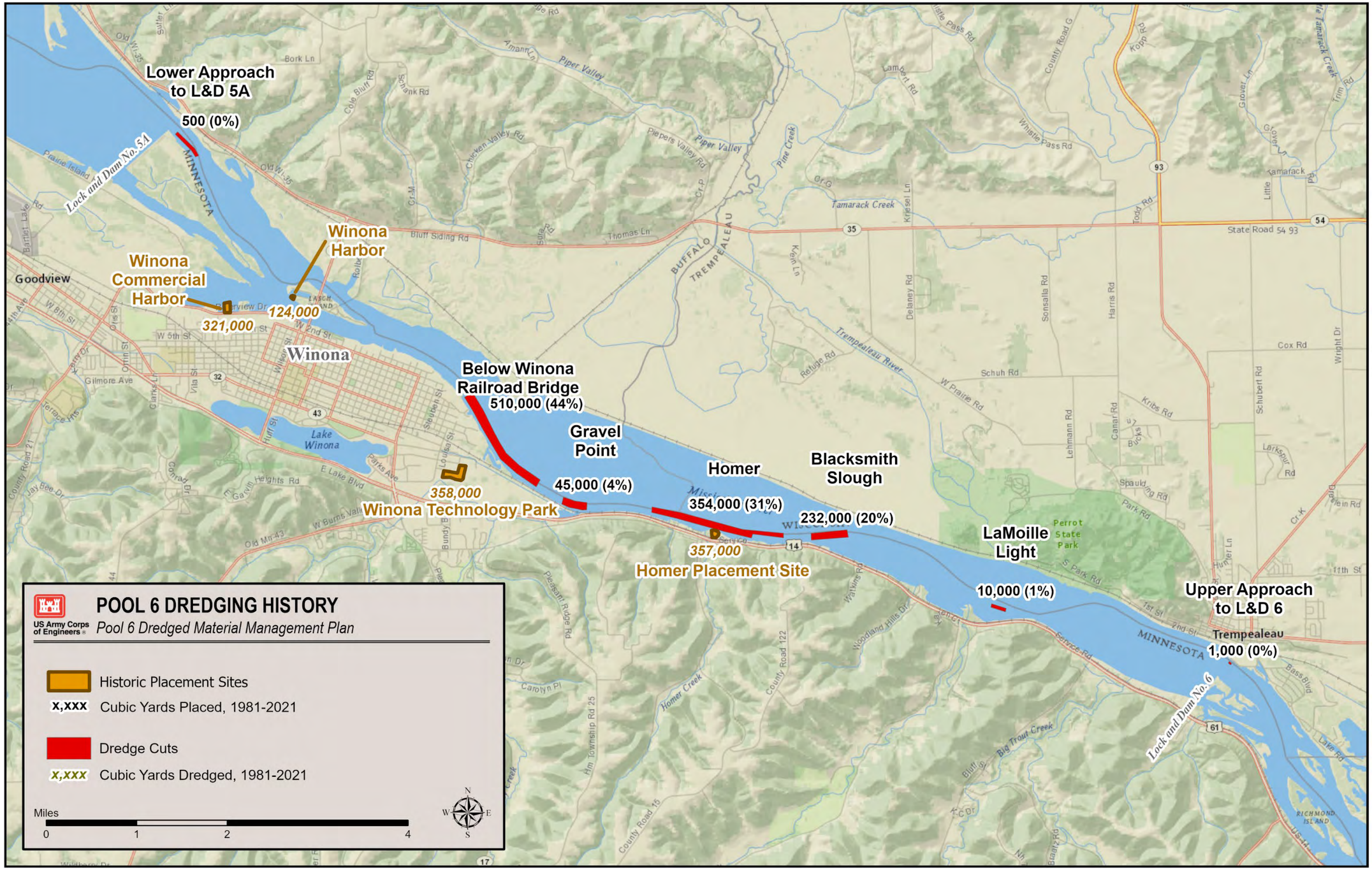

Lower Approach to L&D 5A
500 (0%)
Winona Harbor
124,000
Winona Commercial Harbor
321,000
Below Winona Railroad Bridge
510,000 (44%)
Gravel Point
45,000 (4%)
358,000
Winona Technology Park
Homer
354,000 (31%)
357,000
Homer Placement Site
Blacksmith Slough
232,000 (20%)
LaMoille Light
10,000 (1%)
Upper Approach to L&D 6
Trempealeau
1,000 (0%)
Goodview
Winona
Lock and Dam No. 5A
Lock and Dam No. 6
MINNESOTA
WISCONSIN
Tamarack Creek
Trempealeau River
Lake Winona
Perrot State Park
POOL 6 DREDGING HISTORY
US Army Corps of Engineers
Pool 6 Dredged Material Management Plan
Historic Placement Sites
x,xxx Cubic Yards Placed, 1981-2021
Dredge Cuts
x,xxx Cubic Yards Dredged, 1981-2021
Miles
0 1 2 4
N
W E
S

PLATE 3

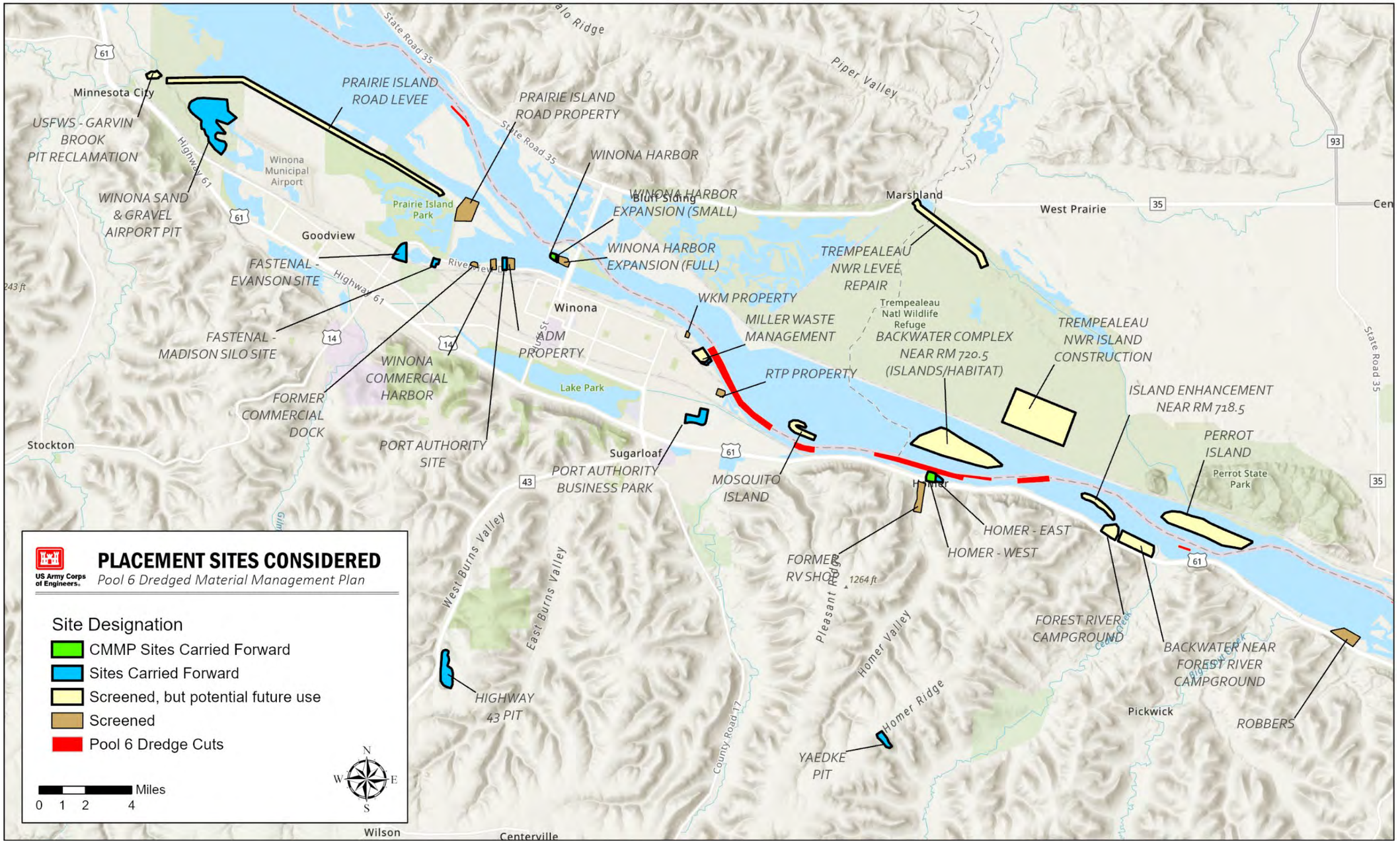

PRAIRIE ISLAND ROAD LEVEE
PRAIRIE ISLAND ROAD PROPERTY
WINONA HARBOR
WINONA HARBOR EXPANSION (SMALL)
WINONA HARBOR EXPANSION (FULL)
TREMPEALEAU NWR LEVEE REPAIR
WKM PROPERTY
MILLER WASTE MANAGEMENT
BACKWATER COMPLEX NEAR RM 720.5 (ISLANDS/HABITAT)
TREMPEALEAU NWR ISLAND CONSTRUCTION
ISLAND ENHANCEMENT NEAR RM 718.5
RTP PROPERTY
USFWS - GARVIN BROOK PIT RECLAMATION
WINONA SAND & GRAVEL AIRPORT PIT
FASTENAL - EVANSON SITE
FASTENAL - MADISON SILO SITE
FORMER COMMERCIAL DOCK
WINONA COMMERCIAL HARBOR
PORT AUTHORITY SITE
ADM PROPERTY
PORT AUTHORITY BUSINESS PARK
MOSQUITO ISLAND
FORMER RV SHOP
HOMER - EAST
HOMER - WEST
FOREST RIVER CAMPGROUND
BACKWATER NEAR FOREST RIVER CAMPGROUND
PERROT ISLAND
ROBBERS
HIGHWAY 43 PIT
YAEDKE PIT
Minnesota City
Winona Municipal Airport
Prairie Island Park
Goodview
Winona
Lake Park
Stockton
Sugarloaf
Bluff Siding
Marshland
West Prairie
Trempealeau Natl Wildlife Refuge
Perrot State Park
Pickwick
Homer
Wilson
Centerville
Piper Valley
West Burns Valley
East Burns Valley
Pleasant Ridge
Homer Valley
Homer Ridge
County Road 17
State Road 35
Highway 61
1264 ft
PLACEMENT SITES CONSIDERED
US Army Corps of Engineers
Pool 6 Dredged Material Management Plan
Site Designation
CMMP Sites Carried Forward
Sites Carried Forward
Screened, but potential future use
Screened
Pool 6 Dredge Cuts
Miles
0 1 2 4
N
W
E
S

PLATE 4

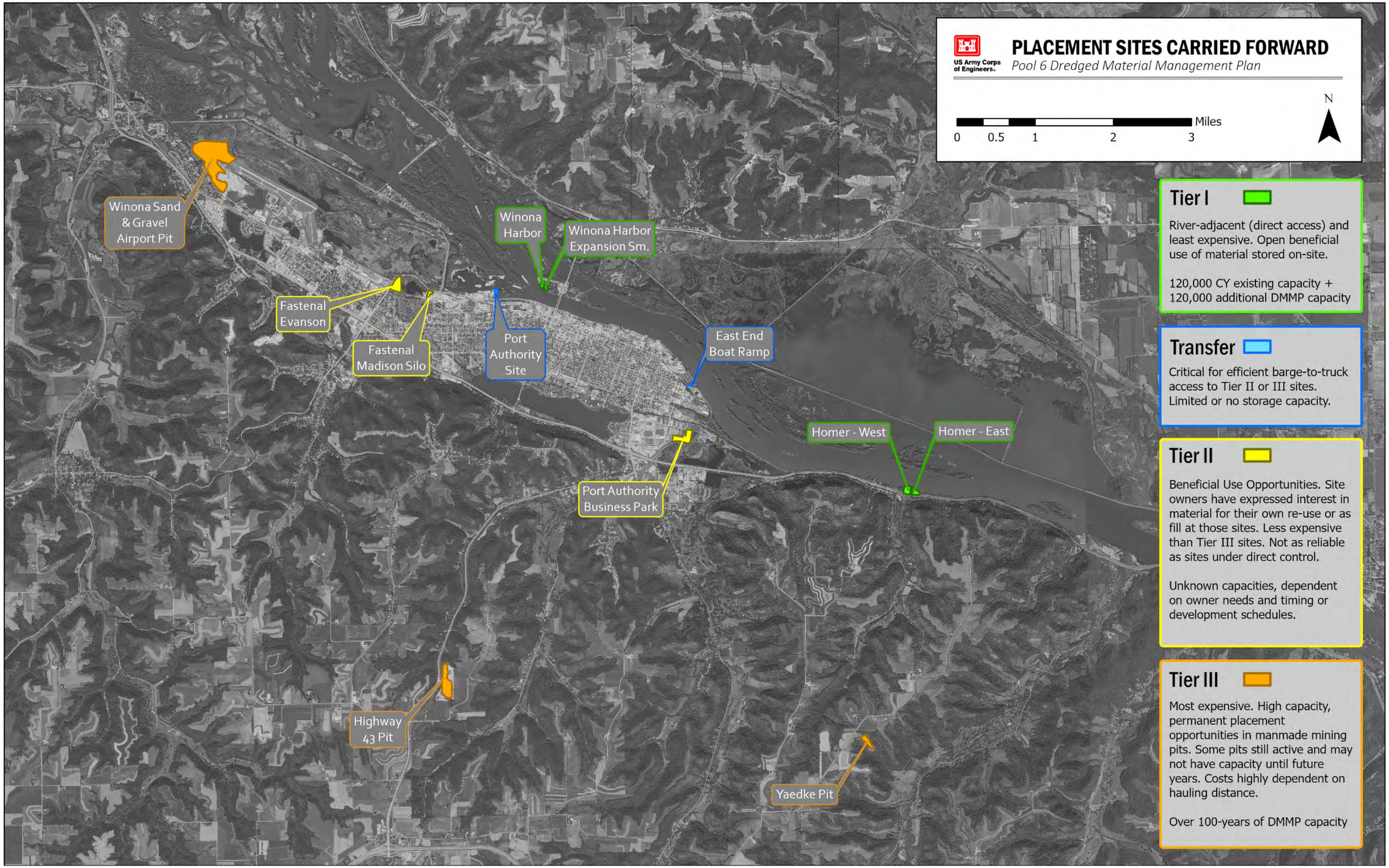

US Army Corps of Engineers
PLACEMENT SITES CARRIED FORWARD
Pool 6 Dredged Material Management Plan
N
0 0.5 1 2 3 Miles
Winona Sand & Gravel Airport Pit
Winona Harbor
Winona Harbor Expansion Sm.
Fastenal Evanson
Fastenal Madison Silo
Port Authority Site
East End Boat Ramp
Homer - West
Homer - East
Port Authority Business Park
Highway 43 Pit
Yaedke Pit
Tier I
River-adjacent (direct access) and least expensive. Open beneficial use of material stored on-site.
120,000 CY existing capacity + 120,000 additional DMMP capacity
Transfer
Critical for efficient barge-to-truck access to Tier II or III sites. Limited or no storage capacity.
Tier II
Beneficial Use Opportunities. Site owners have expressed interest in material for their own re-use or as fill at those sites. Less expensive than Tier III sites. Not as reliable as sites under direct control.
Unknown capacities, dependent on owner needs and timing or development schedules.
Tier III
Most expensive. High capacity, permanent placement opportunities in manmade mining pits. Some pits still active and may not have capacity until future years. Costs highly dependent on hauling distance.
Over 100-years of DMMP capacity

PLATE 5

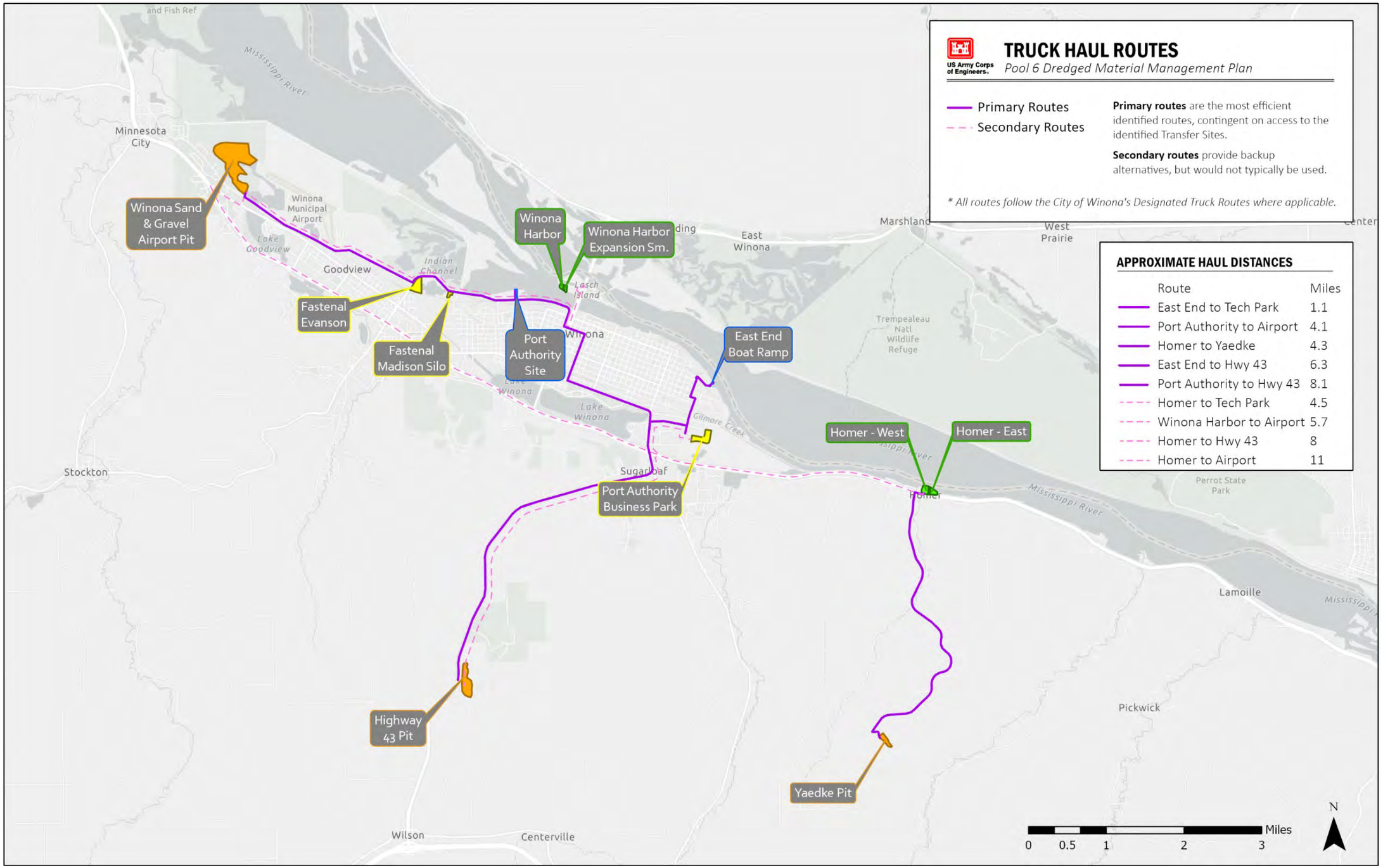

TRUCK HAUL ROUTES
US Army Corps of Engineers
Pool 6 Dredged Material Management Plan
Primary Routes
Secondary Routes
Primary routes are the most efficient identified routes, contingent on access to the identified Transfer Sites.
Secondary routes provide backup alternatives, but would not typically be used.
* All routes follow the City of Winona's Designated Truck Routes where applicable.
APPROXIMATE HAUL DISTANCES
Route Miles
East End to Tech Park 1.1
Port Authority to Airport 4.1
Homer to Yaedke 4.3
East End to Hwy 43 6.3
Port Authority to Hwy 43 8.1
Homer to Tech Park 4.5
Winona Harbor to Airport 5.7
Homer to Hwy 43 8
Homer to Airport 11
Winona Sand & Gravel Airport Pit
Winona Harbor
Winona Harbor Expansion Sm.
Fastenal Evanson
Fastenal Madison Silo
Port Authority Site
East End Boat Ramp
Port Authority Business Park
Homer - West
Homer - East
Highway 43 Pit
Yaedke Pit
Minnesota City
Winona Municipal Airport
Goodview
Lake Goodview
Indian Channel
Lasch Island
Winona
Lake Winona
Gilmore Creek
East Winona
Marshland
West Prairie
Trempealeau Natl Wildlife Refuge
Stockton
Sugarloaf
Homer
Perrot State Park
Mississippi River
Lamoille
Pickwick
Wilson
Centerville
0 0.5 1 2 3 Miles
N

PLATE 6

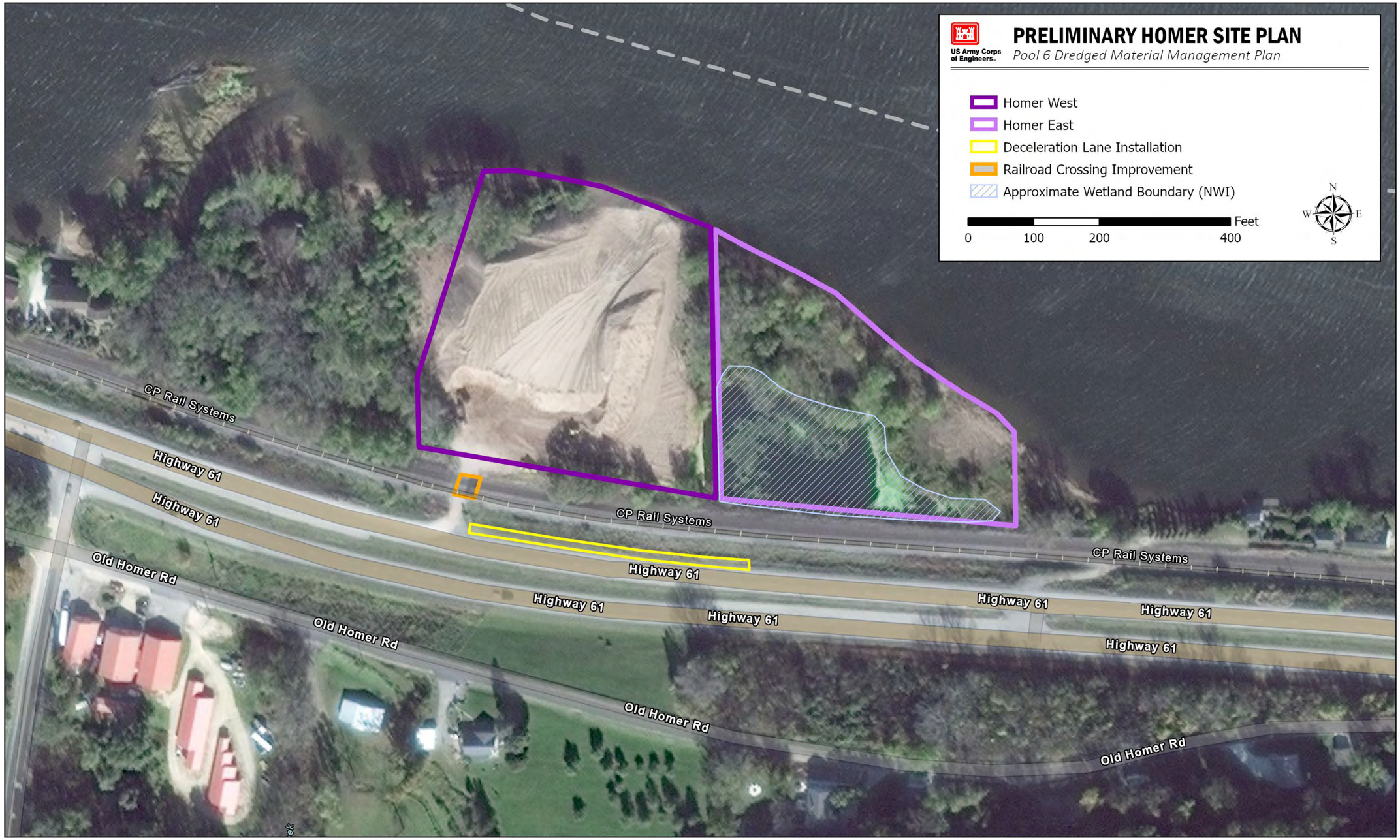
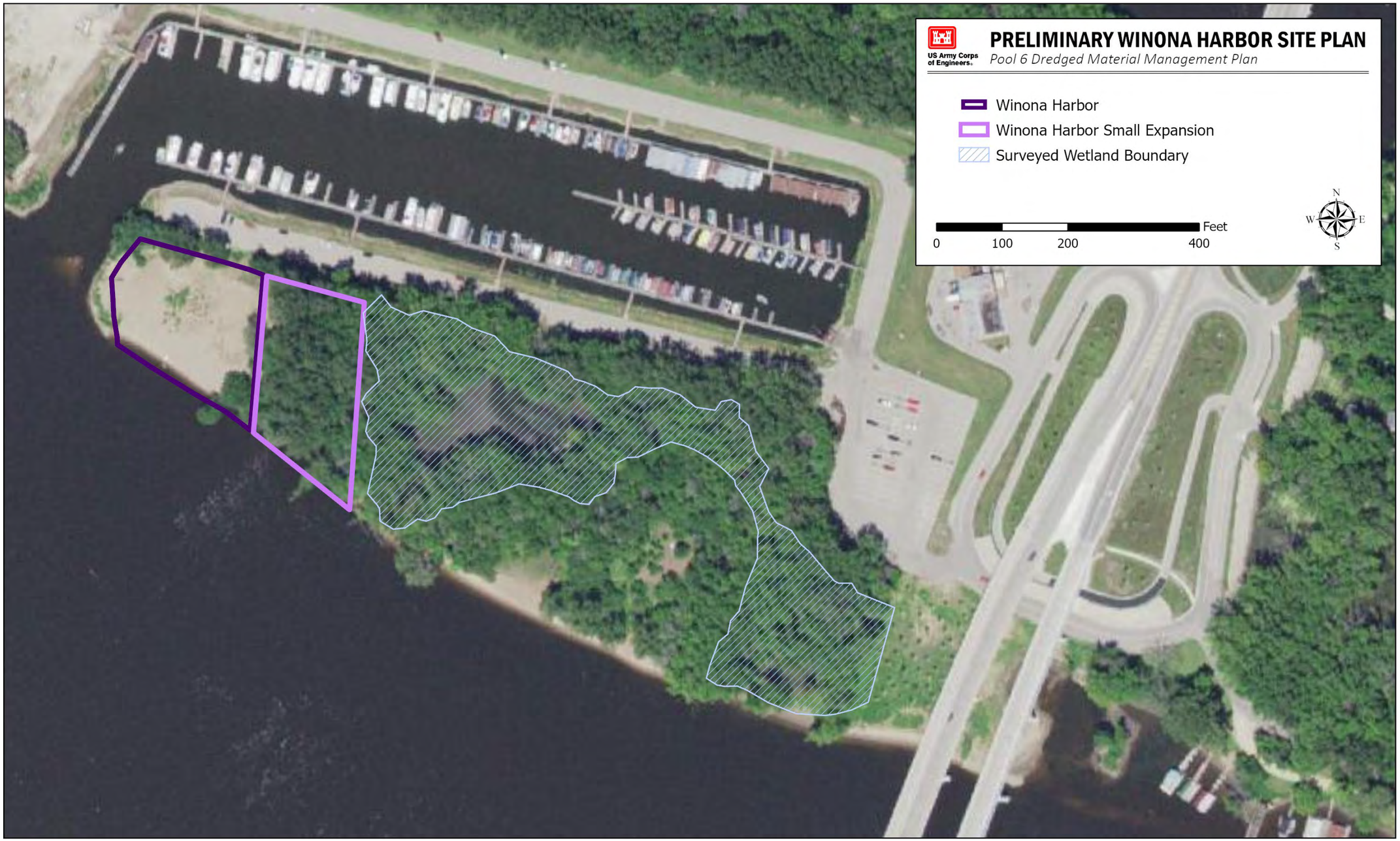

US Army Corps of Engineers
PRELIMINARY HOMER SITE PLAN
Pool 6 Dredged Material Management Plan
Homer West
Homer East
Deceleration Lane Installation
Railroad Crossing Improvement
Approximate Wetland Boundary (NWI)
Feet
0
100
200
400
N
W
E
S
CP Rail Systems
Highway 61
Old Homer Rd

PLATE 7


US Army Corps of Engineers
PRELIMINARY WINONA HARBOR SITE PLAN
Pool 6 Dredged Material Management Plan
Winona Harbor
Winona Harbor Small Expansion
Surveyed Wetland Boundary
Feet
0
100
200
400
N
W
E
S

Appendix D:

Finding of No Significant Impact (FONSI)

FINDING OF NO SIGNIFICANT IMPACT

POOL 6 DREDGED MATERIAL MANAGEMENT PLAN
WINONA COUNTY, MINNESOTA;
BUFFALO AND TREMPEALEAU 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 December 2022, for the Pool 6 Dredged Material Management Plan addresses the long-term plan for managing material dredged in Pool 6 of the Upper Mississippi River (UMR) for the purposes of continued operation and maintenance of the 9-foot Navigation Channel in Pool 6.

The Final IFR/EA, incorporated herein by reference, evaluated various alternatives that would be used to manage an estimated 1,500,000 cubic yards of material over a 20 year period. The recommended plan consists of:

- Periodically placing dredged material at any of twelve sites identified in the TSP and other actions in furtherance of that purpose. The IFR/EA prioritizes the twelve sites for implementation, using cost to split the sites into three tiers and identify the Federal Standard plan.

In addition to a "no action" plan, several alternatives were evaluated which are detailed in Chapter 5 Formulation of Alternatives and Plan Selection. In summary, the St. Paul District evaluated the management of material dredged from the seven routine dredge cuts at a number of existing (historic) and potential dredged material placement sites in the vicinity of Pool 6 on the UMR. Current local land uses were assessed and local river and land use management representatives in Pool 6 were contacted to develop a list of sites potentially suitable for permanent placement of dredged material. Once identified, sites were evaluated based on aspects of economic, environmental, social, and cultural resource impacts. Finally, alternative plans were developed that would meet the study objectives. Pool 6 has historically had great success in beneficial use of material, so the study team decided to attempt to maximize opportunities for beneficial use within the alternative plans.

For all alternatives, the potential effects were evaluated, as appropriate. 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	☒	☐	☐
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) as detailed in the Dredged Material Management Plan and appendices will be implemented, if appropriate, to minimize impacts. These could include the use of trees for site screening and constructing berms around hydraulic placement sites to minimize turbidity within return carriage water.

No compensatory mitigation has been included in the recommended plan to reduce environmental impacts below NEPA significance thresholds. The recommended plan would result in unavoidable minor adverse impacts to wetlands. In accordance with the Clean Water Act, compensatory mitigation for unavoidable impacts to waters of the United States would likely be provided through the purchase of in-kind credits in a wetland bank within the watershed.

Public review of the draft IFR/EA was completed on 14 July 2022. All comments submitted during the public comment period were responded to in the Final IFR/EA.

Pursuant to section 7 of the Endangered Species Act of 1973, as amended, (ESA) the U.S. Army Corps of Engineers determined that the recommended plan may affect but is not likely to adversely affect the following federally listed species: the northern long-eared bat (NLEB), and that any resulting incidental take of the NLEB is not prohibited by the final 4(d) rule under the Endangered Species Act. On March 22, 2022, the U.S. Fish and Wildlife Service announced a proposal to reclassify the NLEB as endangered under the ESA. The proposed reclassification, if finalized, would remove the current 4(d) rule as these rules may be applied only to threatened species. While the U.S. Army Corps of Engineers has determined that the recommended plan will have no effect on any other federally listed species or their designated critical habitat, additional ESA review and coordination will be completed during the implementation phase for individual features of the Recommended Plan to ensure that compliance is met with the ESA.

Pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended, the U.S. Army Corps of Engineers determined that the recommended plan would have no effect on historic properties.

Pursuant to the Clean Water Act of 1972, as amended, all discharges of dredged or fill material associated with the recommended plan will be compliant with the section 404(b)(1) Guidelines (40 CFR 230). The Clean Water Act Section 404(b)(1) Guidelines evaluation is found in Appendix E of the IFR/EA. When hydraulic dredging methods are used to place material at the Homer placement site, excess carriage water would be returned to the river. This discharge is addressed in Nationwide Permit 16, which also includes Section 401 Water Quality Certification from the MPCA. For any proposed wetland fill, water quality certification pursuant to section 401 of the Clean Water Act will obtained from the Minnesota Pollution Control Agency prior to construction. All conditions of the water quality certification will be implemented in order to minimize adverse impacts to water quality.

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.

24 May 2023
Date

ERIC R. SWENSON
Colonel, Corps of Engineers
District Commander