DEPARTMENT OF THE ARMY
DETROIT DISTRICT, CORPS OF ENGINEERS
477 MICHIGAN AVE.
DETROIT, MICHIGAN 48226-2550

February 14, 2013

IN REPLY REFER TO

Planning Office

PUBLIC NOTICE

1. The U.S. Army Corps of Engineers (USACE) Detroit District proposes to place limited quantities of dredged material from maintenance dredging of the Federal navigation project at Duluth-Superior Harbor into the embayment of the 21st Avenue West Channel in Duluth, Minnesota. This will allow for evaluation of using dredged material from maintenance dredging of the harbor for aquatic habitat restoration. The 21st Avenue West Channel site is within the Duluth-Superior Harbor, which is located at the western end of Lake Superior between Duluth, Minnesota, and Superior, Wisconsin. Alternative sites for placement of dredged material that would allow similar evaluation included other inner harbor embayments. Upland sites were not considered as they would not provide opportunity to evaluate aquatic habitat restoration potential.

2. This Public Notice and the attached Environmental Assessment (EA)—Dredged Material Placement, 21st Avenue West Channel Embayment, Duluth, Minnesota—are being issued for the purpose of providing information to various government agencies and the general public and to solicit their comments and views relative to the proposed activity. The EA, which contains more detailed information about the proposed action and its potential impacts, is incorporated by reference into this Public Notice.

3. The EA includes a Section 404(b)(1) Evaluation, pursuant to the Clean Water Act, for placement of the dredged material into the waters of the United States. Any person who has an interest that may be affected by the proposed in-water dredged material placement may request a public hearing. The request must be submitted in writing within the comment period of this notice (as described below) and must clearly set forth the interest that may be affected and the manner in which the interest may be affected by this activity. The sediment analytical data report and a summary evaluation of the data are available at the USACE Detroit District website on the Environmental Services page.

4. Environmental review of the proposed dredged material placement indicates it would not result in significant adverse environmental effects. Nor would it be expected to result in any significant cumulative or long-term adverse environmental effects. Sediment, elutriate, biological, and bioaccumulation testing indicate that in-water placement of dredged materials from the Federal navigation project will not cause an adverse impact on biota or water quality. Impacts would be minor and temporary, consisting primarily of noise and air emissions from equipment and transportation operations, and minor, short term turbidity during placement

activities. The placed material is expected to provide benefits of cleaner substrate at a suitable elevation below the water surface to support aquatic habitat. Results of the placement will help inform the design process for future site restorations in the harbor and will help towards delisting of such areas from being part of the contaminants Area of Concern for the Lower St. Louis River.

5. The proposed dredged material placement at the 21st Avenue West Channel embayment is expected to have minimal effect on the coastal zone of Minnesota and would be consistent to the maximum extent practicable with Minnesota's Lake Superior Coastal Program. Water quality certification under Section 401 of the Clean Water Act has been requested from the State of Minnesota. State certification or a waiver thereof would be obtained prior to reaching a final determination regarding the need to prepare an Environmental Impact Statement.

6. Copies of this Public Notice and EA are being sent to the U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, the States of Minnesota and Wisconsin and other Federal, state, and local agencies, Native American tribes and interests, and other interested groups and individuals. Any comments you may have concerning the proposed dredged material placement should be made within thirty (30) days from the date of this notice. If no comments are received by the end of the thirty (30) day review period, it will be assumed that you have no comment. Please direct your comments to:

U.S. Army Engineer District, Detroit
ATTN: CELRE-PPPM-E (Charles A. Uhlarik)
477 Michigan Avenue
Detroit, Michigan 48236-2550

7. Following the comment period and a review of the comments received, the District Engineer (Detroit District, USACE) will make a final decision regarding the necessity of preparing an Environmental Impact Statement (EIS) for the proposed dredged material placement in the 21st Avenue West Channel embayment, Duluth, Minnesota. Based on the conclusions of the EA, it appears that preparation of an EIS will not be required; therefore, a preliminary Statement of Findings/Finding of No Significant Impact has been included as Section 7.0 of the enclosed EA.

Sincerely,

Jim E. Galloway
Chief, Planning Office

Enclosure

March 18, 2013

Erratum:

Early coordination comments from the Wisconsin Department of Natural Resources were incorrectly presented in Section 4.4 of this EA. The word “project” in their comments was accidently changed to “placement” four times. Paragraph 4.4 of this EA should read thus:

“4.4 We are coordinating on this project with our Minnesota partners and share in their support and concerns for this project. We are interested in partnering on projects that make progress towards the delisting of beneficial use impairments for the St Louis River Area of Concern. We would generally support the reuse of dredged material for habitat projects in the harbor if measurable improvements in fish & wild life habitat can be demonstrated without adverse effects such as renewed availability of toxic substances in sediment, particularly bioaccumulating substances like mercury. We are interested in learning through this pilot if there will be any significant changes in mercury methylation and uptake through the food chain when compared to not using dredge material for habitat alterations.”

ENVIRONMENTAL ASSESSMENT

Dredged Material Placement
21st Avenue West Channel Embayment
Duluth, Minnesota

February 2013

U.S. Army Engineer District, Detroit
Corps of Engineers, CELRE-PL-E
477 Michigan Ave.
Detroit, MI 48228-2550

ENVIRONMENTAL ASSESSMENT

Dredged Material Placement
21st Avenue West Channel Embayment
Duluth, Minnesota

TABLE OF CONTENTS

1.0 INTRODUCTION 1
Purpose and Need 1
Authority for Proposed Action 1

2.0 ALTERNATIVES AND THE PROPOSED ACTION 2
Alternatives and the Proposed Action 2
Description of Proposed Action 2
Monitoring and Adaptive Management 7
Miscellaneous Details 7

3.0 AFFECTED ENVIRONMENT & ENVIRONMENTAL CONSEQUENCES 8
Duluth-Superior Harbor 9
St. Louis River Contaminants Area of Concern 9
Sediment Quality 11
Water Quality 12
Wetlands and Aquatic Habitat 14
Fisheries 16
Exotic Species 18
Terrestrial Habitat 19
Birds 19
Federally Listed Species 19
Flood Plain and Coastal Zone Consistency 20
Air Quality 20
Recreation, Noise, Aesthetics 20
Cultural Resources 20
Traffic and Safety 21
Cumulative Impacts 21
Other Resources 21

4.0 EARLY COORDINATION 22
Wisconsin Department of Natural Resources 22
Minnesota Pollution Control Agency 22
Minnesota Department of Natural Resources 24
US Fish and Wildlife Service 27
US Environmental Protection Agency 28
State Historic Preservation Office 33

TABLE OF CONTENTS (continued)

5.0 CONCLUSIONS AND DETERMINATIONS.....34

6.0 PUBLIC REVIEW.....35

7.0 PRELIMINARY STATEMENT OF FINDINGS / FINDING OF NO SIGNIFICANT IMPACT 36

8.0 REFERENCES 38

LIST OF FIGURES

Figure 1. Some Potential Sites for Aquatic Ecosystem Restoration.....3

Figure 2. General Area of 21st Avenue West Embayment for Dredged Material Placement.....4

Figure 3. Proposed Dredged Material Discharge Locations and Three-Year Sequencing.....5

Figure 4. Typical Section.....6

Figure 5. Duluth-Superior Harbor, Minnesota and Wisconsin.....10

Figure 6. Wetlands in Duluth-Superior Harbor as Identified from Aerial Photographs.....15

Figure 404-1. Unmaintained Harbor Areas, De-Authorized Channels, and Harbor Sediment Sampling Management Units..... Attachment 1, page 2

LIST OF ATTACHMENTS

1. Clean Water Act Section 404(b)(1) Evaluation

2. 1st Figure Provided with Minnesota Pollution Control Agency Comments

3. 2nd Figure Provided with Minnesota Pollution Control Agency Comments

4. March 17, 2012 USFWS Letter to USACE RE: 21st Avenue West Channel Site

5. Summary of “Remediation to Restoration” in the Lower St. Louis River

ENVIRONMENTAL ASSESSMENT

Dredged Material Placement
21st Avenue West Channel Embayment
Duluth, Minnesota

1.0 INTRODUCTION

1.1 The U.S. Army Corps of Engineers Detroit District proposes to place limited quantities of dredged material from maintenance dredging of the Federal navigation project at Duluth-Superior Harbor into the embayment of the 21st Avenue West Channel in Duluth, Minnesota. This will allow for evaluation of using dredged material from maintenance dredging of the harbor for aquatic habitat restoration. The 21st Avenue West Channel site is within the Duluth-Superior Harbor, which is located at the western end of Lake Superior between Duluth, Minnesota, and Superior, Wisconsin. The harbor is at the mouth of the St. Louis River, which is the second largest tributary of Lake Superior.

Purpose and Need

1.2 The lower reaches of the St. Louis River are lacking vibrant submergent and emergent wetlands, which are important to the overall biological and ecological diversity of the St. Louis River estuary. Upstream parts of the estuary support a diverse ecosystem of national significance, providing habitat for many native fish species and native bird species, including songbirds, raptors, shorebirds, waterfowl, gulls and terns.

1.3 The proposed dredged material placement will help in determining the feasibility of full scale aquatic ecosystem restoration and help towards delisting the site from being part of a contaminant area of concern (AOC)[1]. Results will be useful in developing future restoration plans at the 21st Avenue West Channel site and other sites around the estuary for purposes of habitat restoration to provide aquatic macrophyte habitat areas, shoreline softening, mid-water shoals/islands, and partial filling of deep holes, as well as for delisting of areas from the AOC.

Authority for Proposed Action

1.4 Two harbor projects—Superior, Wisconsin, authorized in 1867, and Duluth, Minnesota, authorized in 1871—were combined in 1896 as the Duluth-Superior Harbor. The harbor has since been expanded and modified by ten River and Harbor Acts. Operation and maintenance of the harbor, which includes the currently proposed dredged material management plan, is an intrinsic part of the harbor authorization.

[1] The lower St. Louis River, including the Duluth-Superior Harbor, has been listed as one of forty-four Areas of Concern over impaired water resources within the Great Lakes ecosystem.

2.0 ALTERNATIVES AND THE PROPOSED ACTION

Alternatives and the Proposed Action

2.1 Various sites that have potential for future ecosystem restoration efforts are indicated in Figure 1. Several of the inner harbor sites were considered for the current placement activity, which while not an ecosystem restoration project, will help to inform the planning and design of future ecosystem restoration proposals in the harbor. Striker Bay was ruled out as it is part of a Superfund site, and the Hearding Island site was removed from consideration because it is too exposed to wind and waves.

2.2 Of the remaining sites, the 21st Avenue West Channel embayment is more sheltered and is closer to the outer harbor, where much of the dredging occurs, which also makes it more cost effective. Since the 21st Avenue embayment is sparsely vegetated and has limited macro-invertebrates, it provides a good location for the placement as the potential to adversely affect fish and wildlife resources is lower than at some of the other sites.

2.3 Therefore, the proposed action is the placement of dredged material in select locations of the 21st Avenue West Channel embayment. The No Federal Action alternative forms a baseline from which to evaluate the impacts of the action alternatives.

Description of Proposed Action

2.4 The proposed dredged material placement at 21st Avenue West Channel embayment would consist of three phases. All phases of dredged material placement will be within the middle part of the embayment (Figure 2). The eastern part of the embayment was avoided because of the higher erosion potential from its more exposed position in the mouth of the embayment. The head of the embayment was avoided to ensure free outflows from Miller and Coffee Creeks. Cultural resources exist in the 21st Avenue West Channel embayment but are outside the area of effects for the proposed dredged material placement.

2.5 The three-phased placement over a three-year period will allow for incremental evaluation of the objectives of sediment stability and natural vegetation establishment in various situations from sheltered shoreline placement to more open and deep water placement within the 21st Avenue West Channel embayment. Figure 3 shows target locations for the three phases of placement, providing both shallow and deep water placement and increasing levels of exposure to wave action. Each phase would require approximately 100,000 cubic yards of dredged material, placed at varying depths below the water surface. The actual placement areas may vary in location or sequence. Any changes in material placement location or sequencing will be coordinated with applicable federal and state agencies.

Figure 1. Some Potential Sites for Aquatic Ecosystem Restoration (approximate).

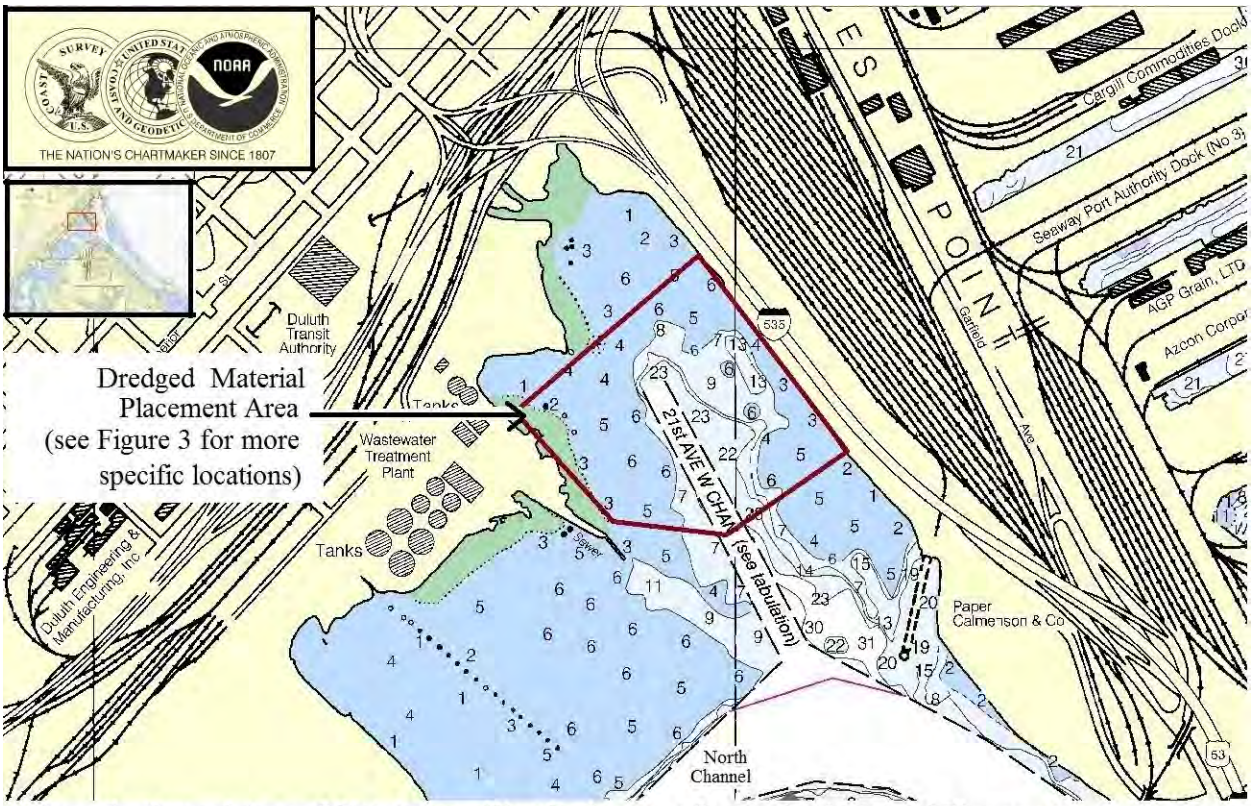


Figure 2. General Area of 21st Avenue West Embayment for Dredged Material Placement.

2.6 In all three phases, actual elevations of the placed dredged material would vary to allow for evaluation of plant growth at different depths and for potential placement of select soil materials to promote growth. Phase 1 (Year 1) includes a shallow water sheltered location along the southwest shore, a deep-water area, and a shoreline softening area along the northeast shore. The deep-water area is in the abandoned (Federally de-authorized) 21st Avenue West Channel. Phase 2 (Year 2) includes additional shallow water area along the northeast shore and additional placement in the 21st Avenue West Channel. Phase 3 (Year 3) expands the Phase 2 area.

2.7 Depths, capacities, and placement areas shown on Figure 3 are in reference to Low Water Datum[2] (LWD). These are target locations and capacities, not precise placement limits, as it would be physically impossible to place exactly to the indicated limits. Actual placement of the dredged material will center in these areas, but some material would extend beyond these areas as the mounded material slopes to the existing bottom (see Figure 4). The actual side slopes are dependent upon the physical characteristics of the dredged material, which varies throughout the harbor and over time as new shoaling occurs.

[2] Low water datum for Lake Superior is 601.1 feet (International Great Lakes Datum [IGLD] 1985). The zero-foot level for lGLD (1985) is approximately sea level, measured at Rimouski, Quebec, near the mouth of the St. Lawrence River.

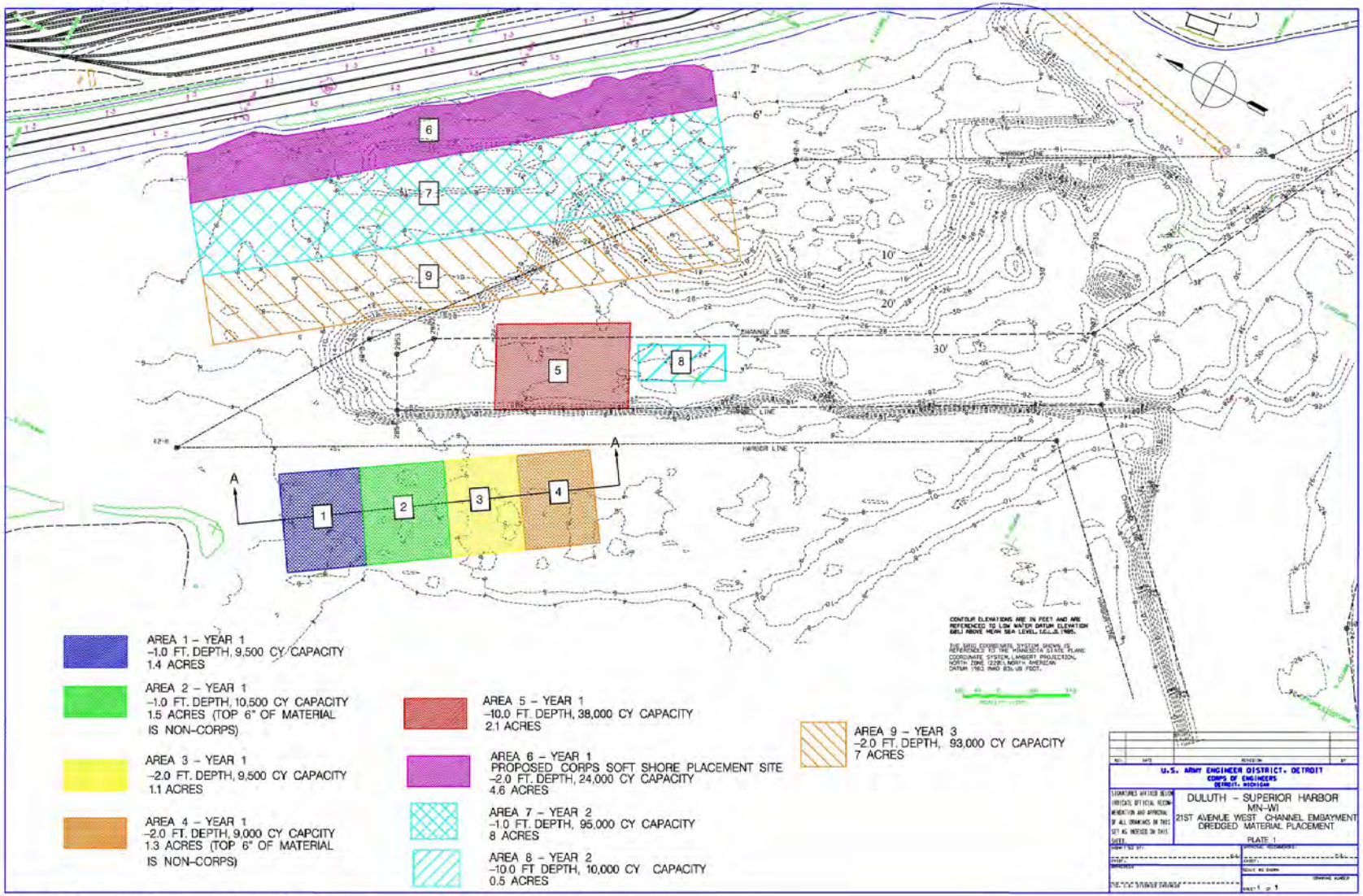


Figure 3. Proposed Dredged Material Discharge Locations and Three-Year Sequencing.

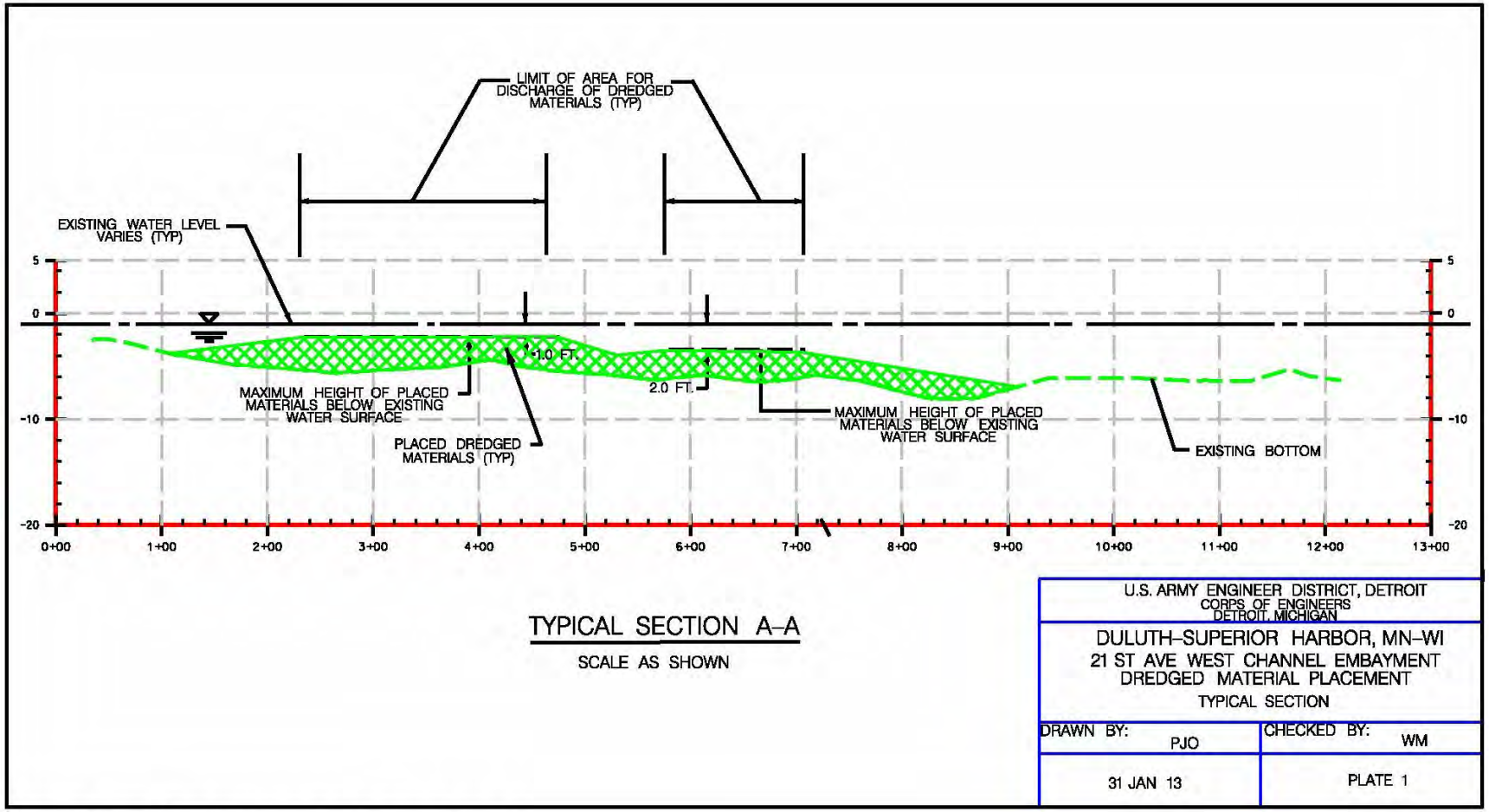


Figure 4. Typical Section (see section location on Figure 3).

2.8 These different placement locations will allow for evaluation of sediment movement in a variety of wave energy exposure situations. Preliminary evaluation of the potential for sediment movement indicates that in these locations the dredged material will not move any substantial distance and, in the worst case (apart from extraordinary record storms), may move out into the abandoned channel, but is not likely to move out of the embayment. Vegetation may become established to varying degrees in each location depending on wave energies, seed stock in the dredged material, and physical characteristics of the dredged material (or State supplied soil topping treatments) such as grain size, organics content, etc.

2.9 State resource agencies may coordinate to place additional organic medium on top of the navigation channel dredged material in select areas to evaluate whether the additional material can improve the establishment of desired submerged and emergent aquatic plant species.

Monitoring and Adaptive Management

2.10 The USACE will perform a bathometric survey at the beginning and end of each phase of material placement which will help in the evaluation of sediment stability. The Minnesota Pollution Control Agency plans to conduct biological monitoring of the placed material and to evaluate sediment stability. The details of these efforts are currently being developed and will be available upon completion.

2.11 Adaptive management may include measures such as revised placement depth and/or location, or other measures as warranted. Adaptive management will be applied as necessary based on monitoring results and other information that may become available during the three year placement. Phases 2 and 3 of the placement and any adaptive management measures will be coordinated with the States of Minnesota and Wisconsin, and the US Fish and Wildlife Service prior to finalizing adjustments to each subsequent placement phase.

Miscellaneous Details

2.12 Dredging for the Phase I placement is expected to begin in June 2013. Approximately 100,000 cubic yards would be dredged from shoaled areas of the Federal Navigation Project and placed into the Phase I sites. Material will be dredged either hydraulically or mechanically. Material will be placed into the 21st Avenue embayment placement sites either hydraulically or mechanically. Hydraulic placement would include a baffle plate mounted at the end of the hydraulic pipeline to dissipate energy and limit dispersal of the dredged material, resulting in more localized deposition. Mechanical placement would either be accomplished using a clamshell bucket or a bottom dumping scow. Additionally, a small bulldozer may temporarily be required to operate in areas with shallow water to reposition the placed material.

2.13 Placement activities are expected to be water based, similar to most dredging the USACE does in Duluth-Superior Harbor. Access would be by existing commercial docks and public launch sites. The proposed action could, depending on the contractor, require the construction of one or more temporary structures, upland or in-water. Temporary structures or fill material would be at USACE-approved locations, outside of any wetlands, areas containing Federal or state protected species or their critical habitat, or properties listed on or eligible for listing on the

National Register of Historic Places or state-listed properties. Temporary activities would include appropriate precautionary measures to prevent erosion and sedimentation or other undesirable environmental impacts.

2.14 The type and location of temporary structures and/or construction materials cannot be determined at this time, since they would be incidental to the work being performed. Examples are mooring facilities, dolphins, turnarounds, work and storage areas, access roads, and office facilities. These construction aids would be within site boundaries or rights-of-way and would be removed when no longer needed. Temporary sites would be restored upon completion of activities.

2.15 Some variation from the proposed action as described may occur with respect to sequence of activities, method of operation, or design details as a result of unanticipated design improvements, site conditions, or cost-saving measures. Such variations would not result in significant changes to either the overall proposed action or environmental impact, without further evaluation under the National Environmental Policy Act.

3.0 AFFECTED ENVIRONMENT & ENVIRONMENTAL CONSEQUENCES

3.1 Adverse effects associated with the proposed dredged material placement would be minor, including temporary turbidity during dredged material placement activities, potential minor erosion after placement, elimination of existing, limited benthos (bottom dwelling invertebrates) in the immediate placement sites by smothering, and displacement of fish during placement activities. No significant adverse secondary effects are expected, nor are any significant cumulative or long-term adverse environmental impacts expected, to result from the dredged material placement at the 21st Avenue West Channel embayment.

3.2 Benefits of the placement is that cleaner shoal material would cover the existing, more contaminated sediments at the site, potentially providing an improved substrate for benthos (depending on other factors such as grain size and nutrients), and removal of shoaling from the Federal navigation channels to maintain the economic benefits of the harbor. Potential for development of aquatic vegetation increases and, insofar as vegetation actually results, provides benefits of stabilizing the substrate from erosion, and provides habitat for a variety of aquatic organisms. Presence of exotic and invasive species in the vegetative mix would reduce these benefits particularly for fish and wildlife, but would still provide erosion control. Results of the placement would be used in developing the plans for full scale restoration of the embayment under the USACE Section 204 Regional Sediment Management Program (formerly called the Beneficial Use of Dredged Material Program) provided suitable results and funding to proceed.

Duluth-Superior Harbor

3.3 The Duluth-Superior Harbor is formed by the waters of the St. Louis River, one of largest tributaries of Lake Superior. The St. Louis River has a drainage basin of 3,640 square miles and, at Duluth, has a yearly mean flow rate of 2.1 billion gallons per day. The St. Louis River, after dropping 550 feet in elevation, flattens out and flows through ten miles of estuary. The estuary is characterized by an abundance of backwater areas, bays, and dense beds of aquatic vegetation before entering the upper reaches of the Duluth-Superior Harbor, at which point the river is about 2,000 feet wide.

3.4 The harbor area is characterized by shallow water, interspersed with navigation channels, several deep holes from past mining activities, and many boat slips and embayments. Most of the original shoreline in the harbor has been significantly altered over time through filling for harbor activities. This filling activity, along with construction of navigation channels and boat slips, has resulted in a substantial loss in aquatic habitat in the harbor area.

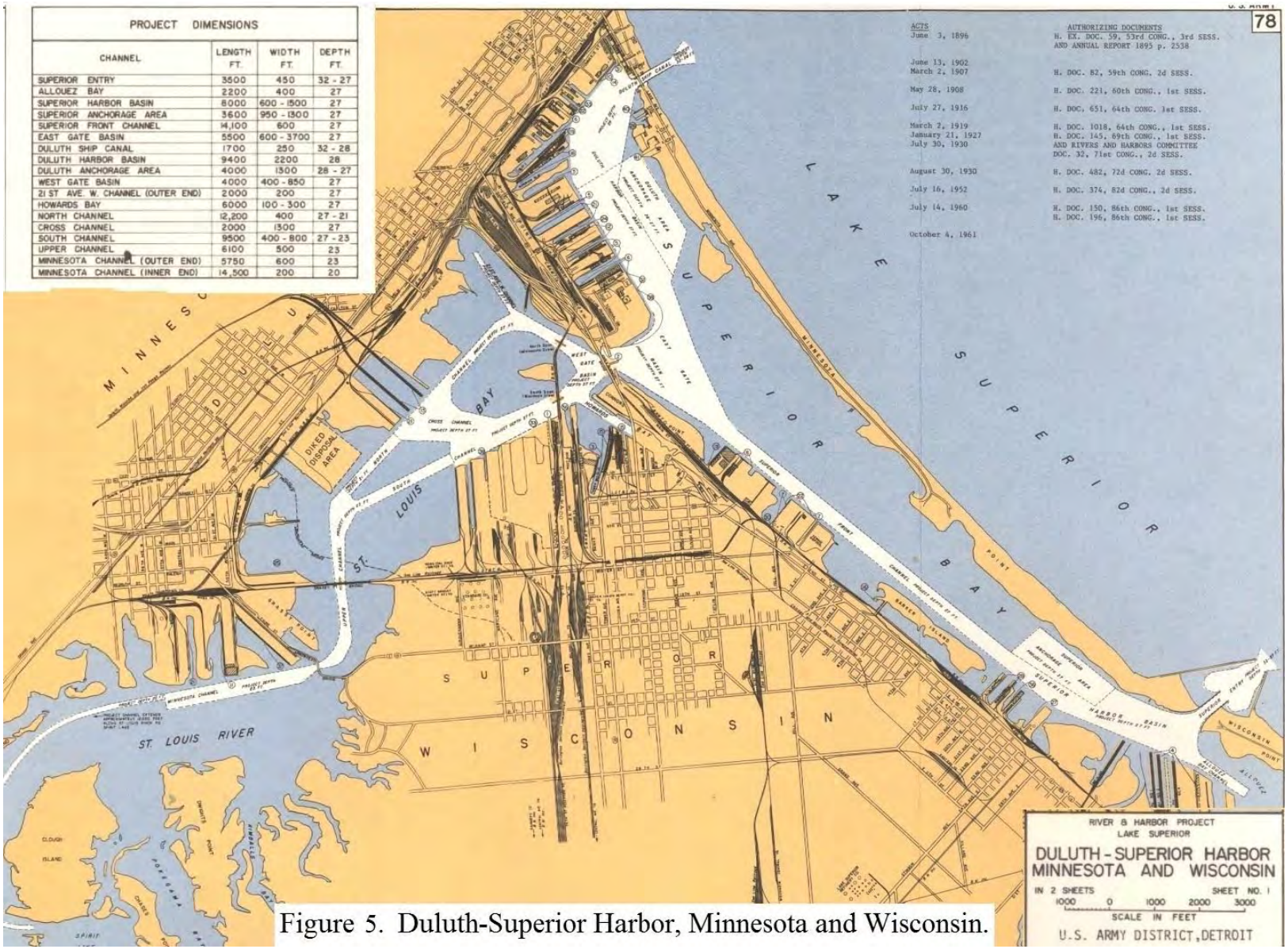
3.5 Two harbors at the mouth of the St Louis River, one in Superior, Wisconsin, the other in Duluth, Minnesota, were combined in 1896 to form the Duluth-Superior Harbor (Figure 5). The Federal navigation project includes 17 miles of channels, anchorage areas, and maneuvering basins. Authorized depths in the Federal project range from 20 to 27 feet. There are two entrances from Lake Superior: the Superior Entry on the southeast, between Superior and Minnesota Points, and the Duluth Entry (Duluth Ship Canal) on the northwest, which cuts through the base of Minnesota Point. Maintenance dredging operations for the Federal navigation project remove about 100,000 cubic yards per year (10-year average).

3.6 The harbor is divided by Rices Point into the inner harbor in St. Louis Bay and the outer harbor in Superior Bay. The outer harbor is separated from Lake Superior by two natural sand and gravel barriers, Minnesota Point and Wisconsin Point, which combined extend about 10.5 miles along Lake Superior. On the north side of the harbor is the City of Duluth, Minnesota, which is built upon a massive rock escarpment that rises up to 880 feet above the harbor. On the south side is the City of Superior, Wisconsin, built upon a low, flat plain of red clay that extends several miles inland. Land uses around the harbor vary among various municipal and industrial sites, highways and railroad tracks, commercial docks, and residential areas, situated around several embayments and peninsulas.

St. Louis River Contaminants Area of Concern

3.7 The lower St. Louis River, including the Duluth-Superior Harbor, has been listed by the International Joint Commission[3] as one of forty-four Areas of Concern (AOC) over impaired water resources within the Great Lakes ecosystem. A Remedial Action Plan (RAP) has been developed for the St. Louis River AOC: *The St. Louis River System RAP, Stage One* (MPCA and

3. The International Joint Commission (IJC) was established by the 1909 Boundary Waters Treaty as the bi-national organization (United States & Canada) responsible for the Great Lakes and other boundary waters (MPCA & WDNR 1992).



PROJECT DIMENSIONS			
CHANNEL	LENGTH FT.	WIDTH FT.	DEPTH FT.
SUPERIOR ENTRY	3500	450	32 - 27
ALLOUEZ BAY	2200	400	27
SUPERIOR HARBOR BASIN	8000	600 - 1500	27
SUPERIOR ANCHORAGE AREA	3600	950 - 1300	27
SUPERIOR FRONT CHANNEL	14,100	600	27
EAST GATE BASIN	5500	600 - 3700	27
DULUTH SHIP CANAL	1700	250	32 - 28
DULUTH HARBOR BASIN	9400	2200	28
DULUTH ANCHORAGE AREA	4000	1500	28 - 27
WEST GATE BASIN	4000	400 - 850	27
21 ST AVE. W. CHANNEL (OUTER END)	2000	200	27
HOWARDS BAY	6000	100 - 300	27
NORTH CHANNEL	12,200	400	27 - 21
CROSS CHANNEL	2000	1300	27
SOUTH CHANNEL	9500	400 - 800	27 - 23
UPPER CHANNEL	6100	500	23
MINNESOTA CHANNEL (OUTER END)	5750	600	23
MINNESOTA CHANNEL (INNER END)	14,500	200	20

Figure 5. Duluth-Superior Harbor, Minnesota and Wisconsin.

WDNR 1992). Goals of the RAP include water quality maintenance, remediation of polluted sites, pollution prevention and reduction, reduced sediment loading, beneficial use of dredged material, protection and restoration of fish and wildlife habitat and wetlands, enhanced water oriented recreation, and protection and restoration of scenic beauty.

Sediment Quality

3.8 Bottom sediments in Duluth-Superior Harbor are comprised of silts, sands, and fine clays. Contaminant concentrations have come down over the past 30+ years as pollution controls and better management practices have come into effect, and past dredging has removed older, more contaminated dredged material.

3.9 Sediments within the lower St. Louis River and Duluth-Superior Harbor contain a variety of contaminants, including nutrients such as ammonia-nitrogen, and phosphorus; inorganics such as metals; and organic compounds such as oil and grease[4], PCBs and polycyclic aromatic hydrocarbons (PAHs) (MPCA 2010 and 2011). Upstream and in the upper reaches of the harbor the St. Louis River flows past two Superfund[5] contamination sites—the U.S. Steel/Duluth Works Site and the St. Louis River/Interlake/Duluth Tar Site. Only the latter site is near a Federal dredging area and includes Stryker Bay (see Figure 1). However, the shoal material to be dredged is periodically tested to ensure that it has not been contaminated by the adjacent Superfund site.

3.10 Sediment in the Federal navigation channels at Duluth-Superior Harbor is suitable for this in-water placement[6], and for future restoration placements. Samples were obtained at Duluth-Superior Harbor in the summer of 2011. Sediment, elutriate, biological, and bioaccumulation testing indicate that in-water placement of these dredged materials will not cause an adverse impact on biota or water quality. A detailed evaluation of the sediment sampling from 2011 is included in the Section 404(b)(1) evaluation attached to the EA (Attachment 1).

3.11 No significant adverse effects on sediment quality in the harbor are expected as a result of implementing the three phased dredged material placement at the 21st Avenue Channel West embayment since the navigation channel material (except material from the Superior Harbor Basin) did not show significant bioaccumulation or toxicity to test organisms. Placement of the shoal material at the 21st Avenue site would cover contaminated sediment at the site, helping isolate them from the aquatic environment.

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4. Oil and grease in sediment can be of natural origin from rotting vegetation or of anthropogenic origin from petroleum wastes.

5. Comprehensive Environmental Response, Compensation, and Liability Act, 1980.

6 Except as noted in the attached 404(b)(1) Evaluation, areas not currently maintained are not included in this evaluation. If in future years, testing in the unmaintained areas show it is suitable, then sediment from those areas could be used.

Water Quality

3.12 An evaluation of the effects of the discharge of fill material into waters of the U.S. has been prepared pursuant to Section 404(b)(1) of the Clean Water Act (CWA) and is included as Attachment 1 of this Environmental Assessment.

3.13 Nine beneficial use impairments (BUIs) were identified in the Remedial Action Plan for the St. Louis River AOC (MPCA and WDNR, 1992):

- Restrictions on fish and wildlife consumption
- Excessive Loading of Sediment and Nutrients
- Degradation of fish and wildlife populations
- Beach closings
- Fish tumors or other deformities
- Degradation of aesthetics
- Degradation of benthos
- Restriction on dredging activities
- Loss of fish and wildlife habitat

3.14 Duluth-Superior Harbor and the lower St. Louis River have a history of water quality problems resulting primarily from municipal and industrial discharges at and upstream from Duluth-Superior Harbor. Water quality has improved markedly since 1978 when the Western Lake Superior Sanitary District (WLSSD) began treating industrial and municipal waste for a 500 square mile area. The treatment plant was identified as a source of heavy metal pollution (mainly mercury) through the incineration of the wastewater sludge using municipal and industrial solid waste (Glass, et al., 1990). The WLSSD has since taken steps to minimize further mercury pollution of the estuary. Bahnick and Markee (1985) suggested that the WLSSD was a major source of PCB (polychlorinated biphenyls) pollution in the harbor. Harbor water quality issues would not affect the City of Duluth drinking water supply, which is drawn from Lake Superior at a point about seven miles northeast from the harbor.

3.15 Two creeks, Miller and Coffee, discharge into the head of the 21st Avenue West embayment. Miller Creek is about 10 miles long and has approximately 10 square miles of watershed. Coffee Creek is roughly about half the size of Miller Creek. The WLSSD effluent discharges to the south of and outside of the placement area along the west side of a long, narrow point leading southeast from the wastewater treatment plant. The treatment plant has an average discharge of 43 million gallons per day. In comparison, based upon yearly mean flow, the St. Louis River discharges about 2.1 billion gallons per day, and the combined discharge of Coffee and Miller Creeks is about 14.5 million gallons per day (Sanchez and Wilhelms, 1999).

3.16 The City of Duluth Comprehensive Plan (2006) states that “In 2001, the South St. Louis Soil and Water Conservation District submitted a study and plan called the Miller Creek Diagnostic Study and Implementation Plan. The water quality is extremely poor near the Miller Hill Mall, but in the less developed regions downstream, the water quality improves dramatically. The primary concern is the decline and potential loss of the brook trout fishery in

the creek. Habitat loss includes degraded benthic macro-invertebrate populations, increased water temperatures and sedimentation, and high concentrations of chloride and metals. The purpose of the implementation plan is pollution prevention. When control measures such as education, setting aside vegetative buffers, minimizing road salt use, and passing ordinances are implemented it should result in pollution reductions and improved stream water quality and habitat."

3.17 No significant adverse effects on water quality are expected to result from the dredged material placement. As this material is suitable for unrestricted open-water placement, no special measures are planned to "contain" sediment at the placement sites. The sediment, other than a minor amount that will carry a short distance as turbidity, will remain at the placement site. Essentially the placement activity relocates clean sediment from one part of the harbor, where it is interfering with shipping, to another location of the harbor where it can provide benefits.

3.18 Placement activities would temporarily increase turbidity in the immediate dredge discharge vicinity from shoal material placement and disturbance of existing bottom sediments. Turbidity from dredged material placement will increase in the vicinity of the discharge but will decrease with distance to normal conditions. This may result in temporary turbidity similar to that of storm events, but localized and shorter term. Turbidity will be controlled through use of a baffle plate mounted at the end of the hydraulic pipeline to dissipate energy. This will limit dispersal of the dredged material, resulting in more localized deposition.

3.19 No significant long-term contaminant releases into the water column would be expected from in-water placement of shoal material from the navigation channels. The presence of carriage water and the release of interstitial[7] water likely would create increased concentrations of suspended solids in the water column during and immediately after placement operations. The water column oxygen concentration would be temporarily reduced but would return to normal conditions.

3.20 No significant adverse long-term changes in any background levels of toxic metals, organic, or pathogenic organisms are anticipated. Placement of the navigation channel shoal material at the 21st Avenue West Channel site would improve long-term harbor water quality by covering the existing contaminated sediments with the cleaner navigation channel shoal material. The USACE has determined from evaluation of elutriate testing results from the dredged material that placement of material at the site would meet state water quality standards. Water quality certification under Section 401 of the Clean Water Act has been requested of the State of Minnesota.

3.21 Construction equipment has the potential for introducing petrochemical products into the water in localized areas. Contractor(s) would be required to comply with U.S. Coast Guard and Wisconsin and Minnesota Departments of Transportation regulations as applicable to marine work, construction activities, and truck transport. Spill kits to contain and/or neutralize

7. Interstitial water is the water normally filling the spaces between sediment particles when in an undisturbed state.

accidental minor discharges would be required on-site. These safeguards would minimize the chance of significant impacts.

Wetlands and Aquatic Habitat

3.22 This subsection addresses the existing aquatic environment and potential impacts on that environment and the aquatic organisms within that environment. Fish and exotic species are discussed below in separate subsections.

3.23 Open water areas are the largest aquatic habitat type in the Duluth-Superior Harbor. These are primarily dredged shipping channels up to 27 feet deep, a number of deep holes created by past mining activities, and adjacent shallow water areas, generally under 6 feet in depth, which are largely devoid of vegetation. Extensive stands of aquatic vegetation exist in scattered, sheltered areas of the harbor, such as Allouez Bay[8] and Grassy Point (3 miles southwest of the 21st Avenue West site), and provide valuable habitat for a variety of plant, fish, and wildlife species. Historically, within the St. Louis River estuary approximately 7,700 acres (out of an estimated 12,000-acre total) of wetlands and open water habitat have been lost or altered through filling and dredging (MPCA and WDNR 1995). Approximately 3,000 acres of this habitat alteration/loss occurred in the lower estuary (roughly the area downstream from Grassy Point (Figure 1).

3.24 The general location of some emergent and scrub shrub wetlands in the lower estuary area that were visible from aerial photographs (photos from 1997-1999) are indicated in Figure 6. This includes an area of approximately 20 acres on the downstream side of Erie Pier[9] and an additional half dozen other wetlands ranging in size from 2-10 acres. Sheltered bay wetlands provide critical spawning and nursery habitat for many forage and game fish species. The waters within these sheltered bay wetlands warm earlier in the spring and contain emergent vegetation required for spawning. A number of sheltered bay areas in the harbor are lacking wetlands.

3.25 The 21st Avenue West Channel embayment is an open water area that includes shallow areas up to about 5 feet deep, surrounding the abandoned (Federally de-authorized) 21st Avenue West Channel and adjacent deep areas (see Figure 2 for general depth information). Two small areas adjacent along the shore of the embayment have been characterized as wetlands: a 4-acre "Fresh Meadow" type on the east side of the wastewater treatment plant (west embayment shoreline) and a ½-acre shrub swamp in the vicinity of the mouth of Miller Creek (MIC 1992). No significant adverse effects on these areas are expected since these areas are outside the limits of shoal material placement. Existing seed stock from these areas and from within shoal

[8] Allouez Bay has a surface area of approximately one square mile and is located between inside of Wisconsin Point, just beyond the Superior Entry of the harbor. The mouth of Allouez Bay is in the lower right hand corners of Figures 5 and 6.

[9] Erie Pier, which occupies approximately 82 acres along the northwest shore of Duluth-Superior Harbor, was constructed in 1979 and has received the majority of dredged material from the Federal navigation channels, but even with removals for beneficial reuse and the raising of its dikes, is currently near its capacity.

material, is expected to result in natural regeneration of aquatic vegetation in the created shallow areas. Plant species that are expected to occur include vallisneria, native milfoils, and pondweeds for submergents and bulrush, cattail, and water lilly for submergents. Bullrush and water lilly.

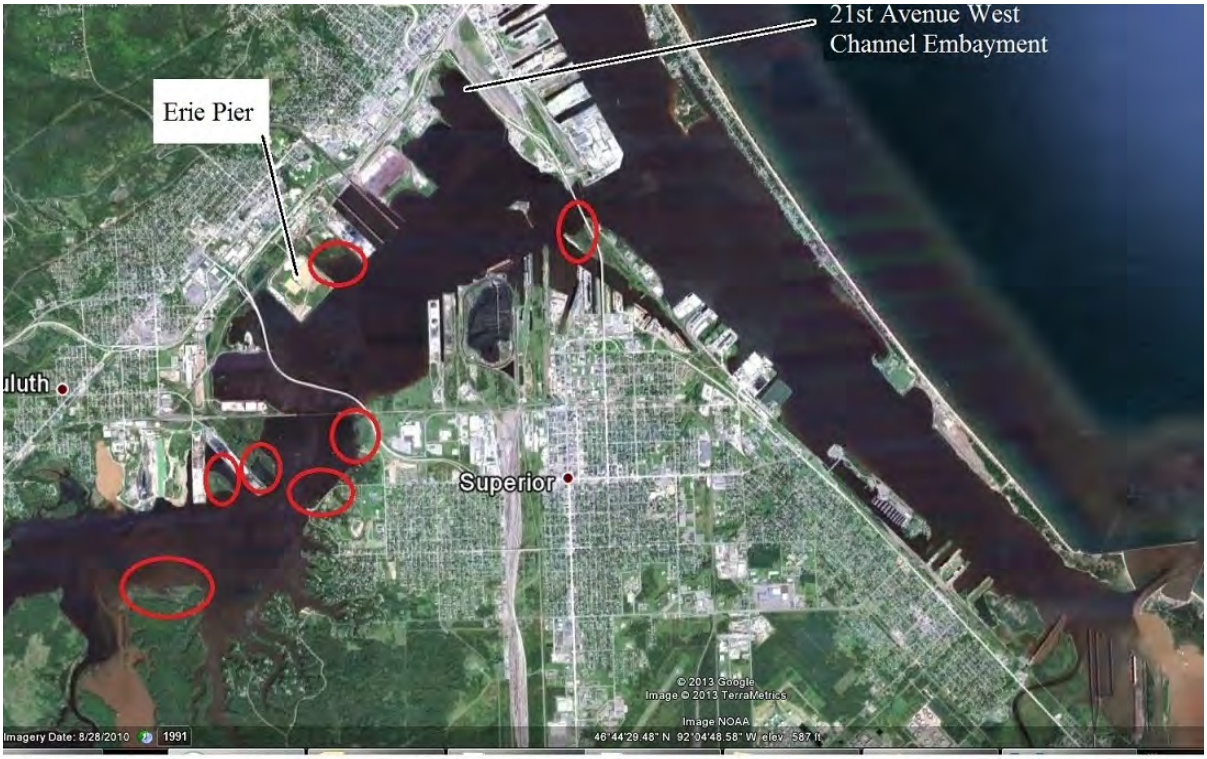

Figure 6. Wetlands in Duluth-Superior Harbor as Identified from Aerial Photographs—General Location.

3.26 The Phase I site was surveyed in 1994, for benthic (bottom dwelling) invertebrates (Crane, et al., 1997). Out of 10 samples within the 21st Avenue West Channel embayment, mean total abundance ranged from 1,121 to 34,379 organisms per square meter. The dominant taxon were Tubificidae, which ranged from 38 to 78 percent of the composition of each sample site. From 9 to 26 percent of the sample composition were bivalve mollusks and 4 to 46 percent were polychaetes (mostly *Manayunkia speciosa*). Additionally, some individuals representing Naididae (2 to 8%) and Chironomidae (2 to 11%), were present at most sample stations, and Trichoptera (up to 8%) at three sites. A few other taxa were present at a few sites at lower abundance. The dominance of tubificid oligochaetes is congruous with the contaminated nature of the sediments at this site, as many tubificids are tolerant of pollutants and/or low dissolved oxygen levels.

3.27 In a United States Fish and Wildlife Service study, benthic macro-invertebrates were sampled in August 2011 within the greater 21st Avenue West Channel area including the area in front of the wastewater treatment plant and out into the harbor to include Interstate Island (NRRI, 2012). The report notes that "the 21st Avenue West macro-invertebrate assemblage is highly

dominated by aquatic earthworms (Oligochaeta) and contains fewer aquatic insects, both in abundance and as representative taxa, than the Reference Area." This indicates a low diversity of aquatic organisms and the report found the 21st Avenue area was poorer in diversity than other areas in the estuary.

3.28 Dredged material placement would result in incidental mortality of benthic invertebrates from smothering, and destruction or displacement of other aquatic invertebrates present in the water column. The navigation channel shoal material to be placed in the ecosystem restoration area would provide a cleaner substrate for re-colonization by benthic organisms, isolating them from the existing, more contaminated sediment. This could result in increased productivity for fish and wildlife. No significant adverse effects on aquatic invertebrates are expected since the embayment does not have a quality benthic community.

Fisheries

3.29 This subsection addresses potential impacts on harbor fisheries. Potential interactions regarding exotic fish species are discussed below in the *Exotic Species* subsection.

3.30 The Duluth-Superior Harbor area supports a large and diverse fish community of over 50 species, many of which are seasonally abundant, using the river and estuary for spawning (MPCA and WDNR 1992). The St. Louis River estuary, which is considered to be the most productive fish breeding area in the western half of the lake, supports a walleye stock that extends east to the Apostle Islands (USACE 1982).

3.31 Historically, the fishery in the estuary was severely degraded by habitat loss and water quality problems attributable to over 100 years of shoreline and watershed development and by heavy fishing pressure. The fishery has improved significantly in the last 20 years, in part due to significant water quality improvements associated with better wastewater treatment in the estuary. As noted in the RAP, recent, dramatic water quality improvements have resulted in rapid changes to fish population in the estuary (MPCA and WDNR 1992).

3.32 Prior to 1986, high chemical oxygen demand from organic pollutants in the harbor favored species such as northern pike, black bullhead, yellow perch, and white sucker (Lindgren et al. 1997). Since then, black bullhead and yellow perch have declined significantly in abundance, while predator species, which tend to be less tolerant of low dissolved oxygen levels have increased from 14 percent of catch per unit effort in 1986 to 35 percent in 1994 (Lindgren et al. 1997). Part of the increased predator abundance may be attributable to predator stocking efforts at the estuary.

3.33 Data collected by the Lake Superior National Estuarine Research Reserve (NERR, 2011) in 2011 from May through September at Blatnik Bridge indicates the waters within the lower St. Louis River are suitable for warm water fish species for spawning and survival as outlined in the Habitat Suitability Indices (HSI's) developed by the USFWS in the early 1980's. The HSI's identify the range of habitat requirements that are necessary to maintain fish assemblages. The water quality of the lower river meets the requirements for warm water fish habitat for dissolved oxygen (6.68-12.78 ppm), pH (6.96-7.89) and temperatures (10.39-24.39 Centigrade) for

selected warm water fish species of concern such as, northern pike, smallmouth bass, common shiner and yellow perch.

3.34 Harbor sampling, conducted by the Minnesota Department of Natural Resources (Lindgren et al. 1997) with gill nets indicates that in 1994 lake sturgeon, Eurasian ruffe, channel catfish, walleye, shorthead redhorse, and yellow perch, each represented at least 10 percent of catch by species. Lake sturgeon, which had been nearly eliminated from the harbor by the turn of the century, were restored through intensive stocking (735,000 fry and 128,000 fingerlings from 1986 through 1994) by the Minnesota and Wisconsin Departments of Natural Resources. Walleye, northern pike, and muskellunge have also been stocked over the last 10 years. Yellow perch have significantly declined from 35 percent of catch-per-unit-effort in 1986 to 9% of catch-per-unit-effort in 1994.

3.35 According to Minnesota Department of Natural Resources (MDNR) data from summer sampling in the 1980's, the harbor area, including the 21st Avenue embayment area, appears to be used mostly as a gamefish nursery area; whereas forage fish and adult gamefish are more predominant in the upper areas of the estuary. Summer catches with an experimental gill net (various mesh size gradations in one net) by the MDNR throughout the 1990's in the area in front of the wastewater treatment plant, which is just outside the 21st Avenue embayment, were dominated by white suckers, with fair numbers of northern pike, and a few yellow perch, walleye, and Eurasian ruffe. Apparently the walleye and northern pike are foraging on the white suckers. Yellow perch, depending upon their size, would forage on the white suckers or be foraged upon by the walleye and pike.

3.36 Placement of dredged material at the 21st Avenue West Channel embayment would begin the process of providing for a more diversified fishery habitat in an area of the harbor currently lacking in aquatic habitat. Insofar as desirable emergent and submergent macrophytes (aquatic vegetation) develop on the dredged material to be placed, fish and other aquatic organisms would benefit. These benefits would be limited by the size of the placement areas, but with a future full scale restoration, should improve the overall fishery value in the harbor.

3.37 Submergent vegetation on the dredged material placement areas will die back in the fall and then will begin growing again in later spring after the northern pike and yellow perch have spawned in March and April on vegetation or the remnant stalks of vegetation. The submergent wetland remnants also provide other values during this period. While quality native plant species can occupy this submergent zone in the summer after the growing season has commenced (generally in later May), the overall value is limited by the lack of use for spring spawning by the designated game fish species. This submergent vegetation within the estuary is much higher quality and value than the existing open water. The submergent vegetation also provides habitat for invertebrates as a food source for juvenile fish. Adult predators consisting of fish and avian species would be expected to traverse the area for food.

3.38 The emergent wetland provides additional habitat diversity and is the critical component for spawning. The aquatic plant remnants consisting of stems is somewhat suitable habitat for use by spawning fish such as northern pike and yellow perch, adding a component that is necessary for spawning game fish that is lacking in the submergent wetland complex. The

emergent wetlands in connection with other habitat types of the area are of regional importance of providing a regionally scarce spawning habitat in the lower river.

3.39 Future successive placement actions in the three-phased plan would disrupt adjacent fish activity in the prior placed material. The fish using the limited existing habitat in the embayment, or using the newly formed habitat from placement phases, would tend to avoid the area during placement activities, finding temporary alternative habitat within the harbor, and return after the disturbance is gone.

Exotic Species

3.40 A variety of invasive exotic species have entered the Great Lakes. A number of invasive exotic plant species have become established along the Lake Superior shoreline and in harbors, in some cases displacing native plant species and resulting in diminished wildlife habitat values. Some of the more aggressive invasive species include giant reed grass, reed canary grass, purple loosestrife, Eurasian milfoil, and glossy buckthorn. Rocky shorelines and breakwaters provide habitat for the invasive exotic zebra and quagga mussels, the round goby, and the Eurasian ruffe. The spiny water flea is found in open and protected waters. The impact of these exotic animal species in the colder waters of Lake Superior has been limited to date.

3.41 According to MDNR sampling, a variety of exotic species have entered the harbor in recent years, including alewife, carp, Eurasian ruffe, freshwater drum, round goby, threespine stickleback, white perch, spiney water flea, and zebra mussel (Lindgren et al. 1997). Only the ruffe has become abundant in the harbor; however, the MDNR sampling suggests that the ruffe peaked in abundance in 1992 and is currently declining. The MDNR is managing predator species, in part, to control exotics. The zebra mussel has not become a problem in the harbor, probably because the waters of Lake Superior are too cold for zebra mussels and are lacking calcium and nutrients necessary for zebra mussel growth.

3.42 Purple loosestrife, an exotic wetland plant species that grows fast, is hardy, crowds out native vegetation, and is of little value to fish and wildlife, is well established throughout the harbor. Purple loosestrife is currently growing in the harbor among the native vegetation but there has not been a noticeable decline in fish, waterfowl, or marsh bird populations (MPCA and WDNR 1992). The potential for adverse impacts upon fish and bird populations would increase if loosestrife becomes more abundant in the estuary. Both Minnesota and Wisconsin Departments of Natural Resources have released German loosestrife beetles in the harbor as a potential loosestrife control method.

3.43 Placement impacts associated with the potential introduction of, or accidental harboring of, exotic species are expected to be minimal. Purple loosestrife and phragmites both occur in limited areas of the 21st Avenue West embayment. Deeper water between these areas and the placement sites will help prevent spread from these areas. Allowing for sufficient water depth above the placed material will also help prevent the establishment of these exotics. Material will be placed -1 and -2 feet of LWD (see footnote #2, page 4), and much of the placed material will be deeper as the material slopes off to the existing bottom depth. This will minimize the area where these exotics potentially could become established, and when higher water levels return

what exotics do become established should be killed off. Since purple loosestrife is limited by water depth, it would not prevent colonization of the deeper water areas by desirable aquatic plant species.

Terrestrial Habitat

3.44 Terrestrial Wildlife at the 21st Avenue West Channel embayment is limited by the industrial nature of the site and a lack of substantial habitat. There is some vegetation along the shore and a larger vegetated area in the head of the bay by the mouths of Coffee and Miller Creeks. As the placement is in the water and submerged, no effects on terrestrial wildlife are expected. Some water oriented mammals will likely make use of any aquatic habitat that results from the dredged material placement, but none would be adversely impacted.

Birds

3.45 Over 310 bird species have been identified within the Duluth city limits (Eckart 1983). Excluding colonial nesting birds (gulls, terns, plovers, and herons), the most heavily used areas of the harbor vicinity include the Allouez Bay, Wisconsin Point, Hearding Island, Erie Pier, Grassy Point, Hog Island, Spirit Lake, Mud Lake, Horseshoe Island, the Oliver Bridge and Morgan Park mudflats. As a group, colonial nesting birds comprise the most abundant, yet sensitive, breeding birds in the harbor area. Interstate Island is listed on the Minnesota Natural Heritage Database as a colonial waterbird nesting site used by terns and gulls.

3.46 A variety of shore, marsh, and water birds reside in or migrate through the Duluth-Superior Harbor vicinity. Migratory waterfowl use the harbor extensively both for breeding and as feeding and resting stops during migration. Migrating birds avoid crossing large bodies of water and thus are directed around Lake Superior through the St. Louis River estuary and the harbor.

3.47 Hawks, falcons, and owls find suitable habitats in the Duluth-Superior area. The Bong Bridge over the harbor is listed on the Minnesota Natural Heritage Database as a nesting area for peregrine falcon. Among the relatively few birds that spend the winter in the harbor area are the snowy and great horned owls and a local population of ring-necked pheasant. Also some hardy waterfowl winter in warm water discharge areas, particularly the wastewater treatment plant outfall.

3.48 Aquatic habitat that results from the placement of dredged material would provide habitat for a variety of water oriented birds and is not likely to have any adverse effects on these birds.

Federally Listed Species

3.49 Current listings under the Endangered Species Act for St Louis County, Minnesota include piping plover (Endangered and Critical Habitat) and Canada lynx (Threatened and Critical Habitat). Neither of these species occur in the vicinity of the 21st Avenue West Channel embayment, nor does the embayment include habitat suitable for either species. Therefore, the USACE has determined that the proposed three-phased dredged material placement in the 21st

Avenue West Channel embayment would have no effect on Federally listed species or their critical habitats.

Flood Plain and Coastal Zone Consistency

3.50 The proposed action complies with the Federal Executive Order on Flood Plain Management (E.O. 11988) because there is no practicable alternative to dredged material placement in the flood plain and the placed dredged material would not encourage floodplain development nor induce flooding. The dredged material is expected to have beneficial effects on the coastal zone of Minnesota. Since the proposed action would have no adverse effect on the coastal zone, it would be "consistent to the maximum extent practicable" with the Coastal Zone Management Act, and Minnesota's Lake Superior Coastal Program.

Air Quality

3.51 Effects on air quality will arise from emissions from equipment used to load, transport, and spread the dredged material at the beneficial use site. All equipment involved in the movement of dredged material to beneficial use sites would be required to meet emissions standards and emissions are expected to be minor. Dredged material transport impacts are considered short term. Thus, the placement impacts are exempt as *de minimis* (Latin for 'of minimal importance') and meet the conformity requirements under Section 176 (c) of the Clean Air Act, and 40 C.F.R. 93.153.

Recreation, Noise, Aesthetics

3.52 No significant adverse impacts to recreation or aesthetics are expected. Placement operations would prevent fishing activity within the 21st Avenue West Channel embayment; however, adjacent areas of St. Louis Bay likely provide ample fishing opportunities. The placement may result in improved habitat for fisheries and other wildlife, as well as improved aesthetics, all of which can benefit recreation.

3.53 Operation of construction equipment associated with the proposed action would result in periodic, temporary noise emissions in the placement vicinity. Equipment noise would not have adverse effects on recreation in the harbor as the placement area is within an industrial area and is subject to noise from two Interstate Highways that run alongside the site.

Cultural Resources

3.54 The proposed dredged material placement at the 21st Avenue West Channel embayment would not impact known cultural resources. In compliance with Section 106 of the National Historic Preservation Act of 1966 and Executive Order 11593, Protection and Enhancement of the Cultural Environment, the National Register of Historic Places and the Minnesota State Historic Preservation Office have been consulted. Additionally, available shipwreck maps have been reviewed. There are no known historic properties or shipwrecks located within the area of effects for the proposed dredged material placement. At the request of the State Historic Preservation Office (SHPO) additional research has been conducted and provided to them for

review (See discussion of the January 11, 2013, SHPO correspondence below in section 4.0 "Early Coordination").

3.55 Impacts upon any unidentified cultural resources that may exist in the placement areas would be minimized. Contract specifications will designate that, if during placement the contractor observes unusual items that might have historical, archeological, or cultural value, the contractor shall protect those items and immediately report the find to the contracting officer so that the State Historic Preservation Office may be notified.

Traffic and Safety

3.56 The placement is not expected to interfere with recreational, charter, and/or commercial vessels since the placement site is at an abandoned channel and the nearby Federal channels are no longer maintained. The dredging contractor would be required to comply with U.S. Coast Guard regulations applicable to marine work. Therefore, navigational impacts are expected to be temporary and minor.

3.57 The construction contractor most likely would bring equipment to the site by water transportation. However, some ancillary equipment (such as small craft for personnel transport to the job site) may be brought in on land. As such, all land transport would be required to obey all applicable Federal, State, and local driving laws, and obtain any required permits for such activity.

Cumulative Impacts

3.58 Cumulative impacts of the placement include the potential for improved habitat at the site, and will help planning of future beneficial use of dredged material. Other cumulative impacts are minor, including fuel use and air emissions from equipment operations. Potential for negative impacts from exotic species exists, but would not necessarily represent a negative cumulative impact since the site already is heavily impacted from surrounding industrial uses and any exotic species that may find habitat in the placement area would already be occurring at the harbor.

Other Resources

3.59 The proposed placement of suitable dredged material at the 21st Avenue West Channel Embayment would not be expected to adversely impact community cohesion, desirable community growth, tax revenues, property values, public facilities, public services, recreation, aesthetics, regional growth, employment or the labor force, business and industrial activity, farmlands, or man-made resources. Nor would the proposed action be expected to cause displacement of people.

4.0 EARLY COORDINATION

4.1 Early coordination of the proposed placement at 21st Avenue West Channel, Duluth Minnesota, was mailed out on November 28, 2012, to various local, state, and federal agencies, Native American tribes and interests, and other interested parties. Coordination was mailed to the State Historic Preservation Office on December 10, 2012, and additional coordination was sent to Native American tribes and interests on December 11, 2012.

4.2 Comments have been received from the Wisconsin Department of Natural Resources (WDNR), the Minnesota Pollution Control Agency (MPCA), the Minnesota Department of Natural Resources (MDNR), the US Fish and Wildlife Service (USFWS), and the US Environmental Protection Agency (USEPA). Comments from these agencies are addressed below. (Informational comments are included below, but not specifically responded to, unless clarification is necessary.)

4.3 **Wisconsin Department of Natural Resources—**"The WDNR provided comments by electronic mail (Dec. 28, 2012), noting that they will provide a full response during the Environmental Assessment review period:

4.4 "We are coordinating on this placement with our Minnesota partners and share in their support and concerns for this placement. We are interested in partnering on placements that make progress towards the delisting of beneficial use impairments for the St Louis River Area of Concern. We would generally support the reuse of dredged material for habitat placements in the harbor if measurable improvements in fish & wild life habitat can be demonstrated without adverse effects such as renewed availability of toxic substances in sediment, particularly bioaccumulating substances like mercury. We are interested in learning through this pilot if there will be any significant changes in mercury methylation and uptake through the food chain when compared to not using dredge material for habitat alterations."

4.5 **Response**: Monitoring of the placements will be conducted by the Minnesota Pollution Control Agency to evaluate habitat improvements and potential for adverse effects. USACE will perform bathometric surveys of the placement areas prior and after material placement. USACE is also evaluating the potential for methyl mercury uptake once the material is placed on-site. This is currently under review and monitoring for methyl mercury may be included in the monitoring plan.

4.6 **Minnesota Pollution Control Agency—**"The MPCA provided comments by electronic mail (Dec. 19, 2012):

4.7 "The MPCA understands that the purpose of this request is to gather information which will support planning and environmental assessment regarding the proposal.

4.8 "Several laws, rules and agreements affect dredge material management in Minnesota. This includes: Clean Water Act, Minnesota's delegated authority to implement the Clean Water Act including use of Minnesota Laws (Minnesota Statutes 115 and 116) and Rules (most notably

Chapters 7050 and 7052), Coastal Zone Management Act and Great Lakes Water Quality Agreement. This response will primarily focus on relevant laws and rules related to MPCA 401 Certification perspectives. Our comments regarding the proposal will further detail these regulatory requirements.

4.9 "Conceptually, there do not appear to be any insurmountable MPCA regulatory requirements that would prohibit MPCA approval to proceed with the pilot. In fact in the larger context of addressing the St. Louis River Area of Concern, the MPCA is very supportive of efforts to restore damaged aquatic habitat and water quality for the purpose of removing beneficial use impairments and delisting the Area of Concern. We intend to do everything we can to support moving forward and comply with Minnesota's legal requirements.

4.10 "In cases where water quality habitat is already degraded, Minnesota rules provide for regulatory discretion regarding prudent and feasible action. The fact that the net effect of the proposal is to move sediment from one part of the St. Louis River to another part also enables more flexibility. Our conceptual regulatory position is that as long as the placement results in a net benefit to water quality habit, and deploys best management practices [BMP] during construction and operation, the placement should proceed and a 401 Certification will be granted. It is also important that this placement is a priority within the St. Louis River Restoration Initiative and is being implemented for the purpose of achieving delisting of the Area of Concern, a priority goal of the Great Lakes Restoration Initiative and the Great Lakes Water Quality Agreement."

4.11 **Response**: Dredging may be done with either hydraulic or mechanical dredge, but the discharge to the placement site is likely to be by hydraulic pipeline. As a BMP turbidity will be controlled by use of a baffle plate mounted at the end of the hydraulic pipeline to dissipate energy. This will limit dispersal of the dredged material, resulting in more localized deposition. The discharge of this material has been evaluated and will meet applicable State water quality standards and is discussed in the Section 404(b)(1) evaluation attached to the EA. The placed material is expected to provide benefits of cleaner substrate at a suitable elevation below the water surface to support aquatic habitat.

4.12 "There are some regulatory issues that should be addressed in design of the placement:

4.13 "Measuring and monitoring to confirm that the placement resulted in improved water quality and habitat should be defined. We understand that there is already some discussion about this and that resources are being sought to ensure appropriate monitoring occurs.

4.14 "Given the history of toxics contamination in the St. Louis River, a detailed monitoring plan should be developed to confirm compliance with Minnesota toxics standards. Care should also be taken to avoid existing toxic disturbance of existing "hot spots." Given present knowledge of existing contamination and the conceptual plan, it does not appear that toxics will present a significant problem. The MPCA requires adequate monitoring to confirm that there is not a problem."

4.15 **Response**: The area under consideration for placement does not have any toxic chemical hot spots. We understand that the MPCA will be conducting biological monitoring and will evaluate sediment stability. The USACE will perform a bathometric survey prior to and after each placement cycle to assist in the stability evaluation. USACE is also evaluating the potential for methyl mercury uptake once the material is placed on-site. This is currently under review and monitoring for methyl mercury may be included in the monitoring plan.

4.16 "Assuming that toxics will not be a problem, this placement becomes a simpler matter of reasonably controlling sediment dispersal using best management practices (BMP's) during construction and maintenance of the restoration area. Details regarding this should be developed and submitted with an application for Minnesota 401 Certification."

4.17 **Response**: Dredging may be done with either hydraulic or mechanical dredge, but the discharge to the placement site is likely to be by hydraulic pipeline. As a BMP turbidity will be controlled by use of a baffle plate mounted at the end of the hydraulic pipeline to dissipate energy. This will limit dispersal of the dredged material, resulting in more localized deposition. A request for Section 401 Water Quality Certification was recently sent to your agency.

4.18 "We should also note that other permits are likely to be required before the placement can proceed. Other permits may include: Minnesota Department of Natural Resources (MDNR) permit for work in Minnesota public waters and MPCA Stormwater Permit.

4.19 "We are aware of the dynamic nature of this placement and the many organizations and people involved in design. Attached to this correspondence are two maps [See attachments 2 and 3 of this EA] prepared by the 21st Avenue West restoration site team to spur discussion and describe a vision for the Phase 1 dredge demonstration pilot placement design elements to be finalized with the Army Corps of Engineers. The intent of the maps is to highlight the importance of incorporating into a final plan both monitoring of material stability and habitat improvements, while cost-effectively providing capacity for placement of beneficial-reuse dredge materials in the context of a remediation to restoration placement site."

4.20 **Response**: The dredged material placement is being coordinated with the respective agencies to ensure compliance with applicable laws and regulations. We will maintain coordination with your agency as we move into a full scale restoration study.

4.21 **Minnesota Department of Natural Resources**—"The MDNR provided comments on Dec. 26, 2012:

4.22 "We recognize that this pilot proposal is being offered in the context of an evolving cooperative process aimed at integrating the goals of many stakeholders and agencies working within the St. Louis River estuary. The proposed placement is one element of a larger remediation and restoration effort at this site. We appreciate the efforts of the U.S. Army Corps of Engineers to engage with Area of Concern (AOC) partners to work toward possible solutions involving the beneficial re-use of dredged materials and encourage moving this placement forward in compliance with Minnesota's legal requirements.

4.23 “Several laws, rules and agreements affect dredge materials management in Minnesota. These include, but are not limited to the Clean Water Act, Minnesota's delegated authority to implement the Clean Water Act, Minnesota's Laws (Minnesota Statutes 115 and 116) and Rules, the Coastal Zone Management Act and Great Lakes Water Quality Agreement. Comments offered here pertain primarily to the regulatory aspects under Minnesota DNR jurisdiction.”

4.24 **Response**: The dredged material placement is being coordinated with the respective agencies to ensure compliance with applicable laws and regulations. The discharge of this material has been evaluated and will meet applicable State water quality standards and is discussed in the Section 404(b)(1) evaluation attached to the EA.

4.25 “Permits are required for restoration of public waters under Minnesota Rules Part 6115.0216, Subp. 5 and notably can be issued when the proposed placement represents the item (A) “minimal impact to a specific need with respect to all other reasonable alternatives" if it is intended to achieve one or more of the following purposes under item (B), sub-items (1) through (6): (1) improve navigational or recreational uses; (2) improve or restore fish and wildlife habitat; (3) expose sediment to remove or eliminate nutrients or contaminants; (4) restore shorelines or watercourse channels to more natural conditions; (5) improve or restore natural hydrologic conditions; or (6) improve or restore water quality. Additionally the proposed work must be consistent with all other elements of Subpart 5.”

4.26 **Response**: The proposed dredged material placement appears to be compatible with Minnesota Rules Part 6115.0216, and will provide initial steps towards requirements or Subpart 5, Item A, and Item B, sub sections 1, 2, 4, 5, and 6, that can only be fulfilled in their entirety by a full scale ecosystem restoration project, which would follow this placement activity, provided suitable results and funding to proceed with a project under the USACE Section 204 authority for an ecosystem restoration using dredged material.

4.27 “The description of the placement involves implementation in three phases. A critical aspect to the permit application for the placement will be a mechanism for evaluation and design development of Phase 2 and 3 which is mutually agreed contributes to emerging restoration goals. The AOC partners have been utilizing a U.S. Fish and Wildlife Service grant to develop an ecological design based model to predict outcomes of various restoration alternatives at the site, which will be completed at the end of December, 2012. Although it would be more desirable for the AOC Partners to have more developed information prior to engaging with USACE on placement of dredge material at 21st Avenue West, there are very positive and necessary reasons for us to develop a partnership with USACE that will result in coordinated placement of maintenance dredge material to achieve AOC delisting objectives. There will also be a need to incorporate flexibility to respond to newly available information in cooperation with the AOC partners and other agency representatives so that the placement can be considered consistent with 6115.0215 permitting requirements enumerated above.”

4.28 **Response**: While this EA presents plans for all three phases, the USACE will be consulting with the respective state and federal agencies regarding the various additional information inputs you describe. USACE will coordinate with the respective federal and state

agencies during the design process for phase 2 and 3 to ensure the optimum placement of dredge material in support of the effort to evaluate outcomes for a future full scale restoration at this site.

4.29 "To evaluate the identified prime objectives, further detail will be necessary to document how these objectives will be accomplished and how they contribute to the improvement of water quality and habitat. Your letter states that sediment in the Federal navigation channels at Duluth-Superior harbor is suitable for this pilot study and future restoration placements. Restoration work would be prohibited under Minnesota Rule 6115.0215 Subp. 3 when it violates the regulations of any local zoning authority or water management agency. The Minnesota DNR would consider the guidance of the Minnesota Pollution Control Agency relative to sediment toxicity in order to evaluate whether fill is clean, whether the placement will create disturbance to existing hot spots, as well as any requirements for controlling sediment dispersal under their 401 certification process. Recently available sediment characterization data will be considered relative to the placement of fill."

4.30 **Response**: The USACE is working with the MPCA towards the issuance of a Section 401 Water Quality Certification. Water quality data from 2011 has been evaluated relative to the proposed dredged material placement and is summarized in the attached Section 404(b)(1) Evaluation. The USACE has determined that the discharge of dredged material as proposed in this EA will meet applicable State water quality standards. A full sediment evaluation and the raw data from harbor sampling and testing are posted on the USACE Detroit District web site, under the Environmental Services page. The proposed placement areas do not include any hot spots in the 21st Ave. West Channel.

4.31 "The emerging St. Louis River Estuary Framework for Delisting is an important and extensive multi-agency, multi-stakeholder effort working to identify the agreed upon priorities of the Area of Concern community that will best contribute to the delisting of beneficial use impairments, a priority goal of the Great Lakes Restoration Initiative and Great Lakes Water Quality agreement. Work at the 21st Avenue site has been identified as a priority location via this framework. Efforts to specifically plan and clearly articulate how the proposed actions under this pilot tie to the remediation to restoration priorities identified in the framework are encouraged as a means of demonstrating the permitting requirements. For example, in the second paragraph of the early coordination memo from USACE it states the results of the pilot placement will be useful in planning of shoreline softening. Shoreline softening has been identified as a restoration goal aimed at enhancing fish and wildlife habitat and we understand that conversations are already underway with AOC partners to cooperatively design a proposal that incorporates this placement element. It is important to note that Minnesota Rule 6115.0215, Subp. 3 prohibits restoration work under item (E) which "results in the creation of land above the ordinary high water level that is not deemed essential by the commissioner as part of the placement." We bring this to your attention to enable you to pursue compliance with this requirement if achieving restoration goals necessitates inclusion of upland elements. It will also be necessary to address and comply with requirements to prevent the introduction of invasive species."

4.32 **Response**: The placement is being coordinated with your agency to ensure it contributes information towards a project that will meet the Framework for Delisting criteria for

this and any restoration site pursued in the harbor. No material would be placed above the Ordinary High Water Mark. It is our intent that all material placed be below low water datum. Invasive species are addressed in this EA.

4.33 "Public Waters Permits cannot be issued for this placement prior to the completion of the Environmental Assessment. Note also that under Minnesota's Lake Superior Coastal Program, federal activities within the coastal zone must be submitted for determination of federal consistency with the enforceable policies of the program as required by the Coastal Zone Management Act."

4.34 **Response**: This Environmental Assessment has been provided to the Minnesota Coastal Program contact provided in your correspondence, along with our request for a Federal consistency determination.

4.35 "We recognize the potential of this placement to contribute to the development of a well-integrated approach between involved partners working in the St. Louis River estuary to simultaneously achieve the mutually shared goal of delisting the St. Louis River Area of Concern and the beneficial use of dredge materials, and are interested in maintaining continued coordination to ensure the placement is consistent with state regulations."

4.36 **Response**: Ongoing coordination with your agency and others will continue both by teleconference and electronic mail.

4.37 **US Fish and Wildlife Service—**"The USFWS provided comments on Dec. 28, 2012:

4.38 "As our agencies have discussed in the context of the Canadian National Railway placement, the Service has allocated Great Lakes Restoration Initiative funding and technical assistance for the development of an Ecological Design at the 21st Ave. Site. (See attached letter of March 7, 2012) [See attachment 4 to this EA]. The Ecological Design is the first step in the Remediation to Restoration process that is recommended by St. Louis River Area of Concern State and Tribal Coordinators to address historical contamination while also restoring fish and wildlife habitat in the most cost-efficient manner (see attached "Remediation to Restoration' overview previously provided on Feb. 9, 2012) [See attachment 5 to this EA]. It is a goal of the Remediation to Restoration process to remove Beneficial Use Impairments (BUIs) by addressing multiple BUIs for each placement. The Ecological Design will address current physical and biological characteristics (i.e.: bathymetry, substrate type, plant communities, benthic invertebrate communities, etc.) as well as developing hydrodynamic modeling and a submerged aquatic vegetation modeling system. As part of this Ecological Design, the FWS has also collected sediment to look at the ecotoxicological conditions (chemistry, toxicity, and bioaccumulation) in conjunction with historical sediment chemistry and the current sediment chemistry that is being analyzed by the COE and MPCA. Thus, we appreciate and welcome this opportunity to collaborate and coordinate with you to ensure maximum alignment of priorities and expenditures."

4.39 **Response**: The USACE looks forward to the additional input of this Ecological Design effort and will work with the USFWS to incorporate it into the dredged material placement at the appropriate phase.

4.40 "The Service recognizes the importance of dredging to maintain navigation, and the necessity for planning for the appropriate and beneficial placement of dredge materials. As stated in your letter, the Pilot Study for the dredge material placement is necessary for maintenance of navigation and the future restoration of the 21st Avenue West Channel site. Navigation and ecosystem restoration-related placements are subject to the Fish and Wildlife Coordination Act (FWCA). The Service recommends the Corps initiate a FWCA Agreement with the Twin Cities Field Office as soon as possible. Due to the anticipated Service involvement and assistance specific to the 21st Avenue West Channel Embayment Pilot Study and Placement implementation, we would also like to suggest that development of a Scope of Work and subsequent documentation to transfer necessary funding to the Service seems appropriate at this time."

4.41 **Response**: The USACE plans to provide transfer funding if a Section 204 study is initiated for this site so that the prior USFWS report, completed in the 1990s can be thoroughly updated to accommodate current knowledge of the site.

4.42 **US Environmental Protection Agency**—"The USEPA provided comments on Jan. 2, 2013, noting that "Based on the limited information provided [in the USACE comment request, or "scoping document"], EPA offers the following comments for consideration when preparing the Draft Environmental Assessment (Draft EA) for the proposed placement.":

4.43 "USEPA recommends that the forthcoming Draft EA identify and substantiate the purpose and need for the proposed placement as well as the preferred alternative. The purpose and need statement for the proposed action should be clear and concise for reviewers of the Draft EA. After underlying problems have been identified and substantiated, the alternatives identified to solve the underlying problems should then be identified and explained. The no-action alternative and all action alternatives that would satisfy the substantiated purpose and need should be fully assessed in the Draft EA. The Draft EA should also identify any alternatives considered but dismissed from further consideration (if applicable), and should provide elimination criteria and clear explanations for their early elimination."

4.44 **Response**: This EA includes discussions of purpose and need, alternatives, and the proposed action. As there are numerous potential ecosystem restoration sites in Duluth-Superior Harbor, it is not practicable to address each possible alternative placement location throughout the EA. Effects would be very similar.

4.45 "In the Draft EA. please provide an appropriate amount of background information on the St. Louis River AOC in the vicinity of the proposed placement.

4.46 "The Draft EA should include information on existing or future conditions in the three areas of proposed dredged material placement."

4.47 **Response**: Background information on the AOC and the 21st Avenue West Channel Embayment are discussed in the EA. The placement areas are very similar, varying only in depth and location within the central part of the embayment. One purpose of the dredged material placement is to obtain an advance look at real world future conditions for the purpose of informing a potential future full scale restoration project.

"Aquatic Habitat/Spawning Areas/Water Quality

4.48 "The scoping document does not present any information on how the placement of dredged materials in the three areas as shown on the submitted figure will restore the embayment of the 21st Avenue West Channel. "Fish use" is noted as being an "important measure of success;" however, no information was provided on how this would be a measure of success or how such success would be measured. During development of the Draft EA, EPA recommends that you provide factual data on existing habitat types and quality, as well as specific information on how aquatic habitat is expected to increase due to placement implementation, and how USACE proposes to provide substantive measurement of embayment restoration with regard to 'fish use.' "

4.49 **Response**: The lack of habitat in the 21st Avenue West Channel embayment is discussed in this EA, including reference to a recent biological survey completed the 21st Avenue West Channel embayment area that showed a low diversity of aquatic organisms in the embayment (NRRI 2012). The Minnesota Pollution Control Agency plans to conduct biological monitoring of the placed material and to evaluate sediment stability. The USACE monitoring effort will be specific to the actual operation and maintenance activity, such as conducting bathymetric surveys before and after each placement activity.

"Use of Dredged Material as Fill

4.50 "USACE's descriptions of future (proposed) conditions at the three identified phased locations include a statement that approximately 100,000 cubic yards of dredged material will be necessary for construction of each phase of the placement. The scoping document does not provide background information on where dredging will occur (including maps of specific dredging locations), how dredged materials were or will be tested to ensure they are both suitable for open water disposal and also meet Minnesota Water Quality Standards, or how dredged material will be transported to the placement sites. As the Draft EA is developed, EPA recommends that this information be developed and included in the document."

4.51 **Response**: Sediment sampling of the harbor material was conducted in 2011. Sediment, elutriate, biological, and bioaccumulation testing indicate that in-water placement of dredged materials will not cause an adverse impact on biota or water quality. A detailed evaluation of the sediment sampling from 2011 is included in the Section 404(b)(1) evaluation attached to the EA. (A full sediment evaluation and the raw data from harbor sampling and testing are posted on the USACE Detroit District web site, under the Environmental Services page.) Elutriate testing was conducted on the dredged material in 2011. Comparison of the elutriate test results show that placement of the dredged material in water will meet state water quality standards. The dredged material can come from any of the currently maintained areas of

the Federal project (see Figure 404-1 that is included in the attached 404 Evaluation); unmaintained areas would have to be tested and evaluated if dredging of those areas is proposed at some future date.

4.52 "It is not clear if the placement proposal is to create wetland areas, or upland areas, in the locations of proposed dredged material placement. EPA would be concerned about a proposal involving the creation of significant acreages of upland within the St. Louis Bay at the phased areas submitted with your cover letter. While EPA supports additional measures to increase the quality and areas of aquatic habitat within the St. Louis Bay and the AOC, the areas to be "filled" total approximately 26 acres. In the Draft EA, please explain in more detail how this open-water-fill proposal came to fruition, what alternatives have been and are being studied, the implications of the no-action alternative, why and how this pilot proposal was developed, and why it will provide better habitat than the open water lake habitat currently in place."

4.53 **Response**: Upland areas are not a part of the proposed dredged material placement. All material will be placed at least one foot below low water datum for Lake Superior. Background information, alternatives, and the relation of this proposal to future restoration work are discussed in this EA.

"Diagrams/Illustrations/Maps

4.54 "Please ensure that the Draft EA includes cross-section of each proposed fill area. Please ensure the cross-sections properly notate the specific ends of the cross-sections (e.g. A1-AI')."

4.56 **Response**: Cross section will vary depending on the grain size structure of the material to be placed, which varies throughout the harbor and year by year. A typical cross section has been included in the EA.

4.57 "Existing and proposed water depths were not specified in the scoping document. EPA assumes USACE has this information and will provide it in the Draft EA, and also assumes USACE's information is based on bathymetric maps. Please include bathymetric maps/surveys completed for the restoration areas as an enclosure with the Draft EA."

4.58 **Response**: A bathymetric survey was completed in 2012 (available upon request) and was used in developing the current plan.

"Management/Monitoring

4.59 "Open-water restoration efforts to be undertaken by other USACE districts in the Great Lakes basin have proposed utilization of the Lacustuary Qualitative Habitat Evaluation Index (LQHEI) method to score each potential restoration site. EPA supports use of such a qualitative metric to score both baseline and restoration conditions. In the Draft EA, please provide narrative information on the type of proposed metric to be utilized for management/monitoring. EPA expects baseline measurements will be taken and utilized for comparison during monitoring."

4.60 **Response**: The placed dredged material will be monitored by the Minnesota Pollution Control Agency. Their monitoring plan is currently being developed, so details are not

available at this time. The USACE will conduct bathymetric surveys before and after each placement event to assist in the sediment stability evaluation. We use the USFWS Habitat Evaluation Procedure (HEP) to help develop predicted habitat improvements on our ecosystem restoration studies. Our HEP evaluations are typically based on fish species of national importance, and the output is used to justify an ecosystem restoration project within the USACE. The HEP procedure will be a part of any future full-scale restoration efforts for the 21st Avenue West Channel embayment or other sites.

4.61 "In the Draft EA, please provide information on funding available for monitoring up to Year 5 or Year 10 (post-construction) that will also allow for adaptive management, maintenance, and monitoring of the restoration sites. EPA recommends that detailed information on maintenance and monitoring of the restoration sites be included in the Draft EA."

4.62 **Response**: The dredged material placement is being done under the authority of our Operations and Maintenance Program. Under this authority we are limited in our monitoring efforts to items specific to the actual operation and maintenance activity such as performing bathymetric surveys of the area before and after each placement activity. However, the Minnesota Pollution Control Agency plans to conduct biological monitoring of the placed material and to evaluate sediment stability.

4.63 "EPA recommends that time frames (however preliminary they may be) for sediment characterization, site selection, restoration plan development, and construction/ implementation/ planting be included in the Draft EA."

4.64 **Response**: Sediment characterization was completed in 2011 for the Federal navigation project sediments and is summarized in the attached Section 404(b)(1) evaluation. A sediment evaluation and the raw data are available at the USACE Detroit District website under the Environmental Services page. The 21st Avenue West Channel embayment is the selected site as discussed in this EA. The placement plan is included as Figure 3 of this EA. However, a restoration plan is not included, but would be developed for a future full-scale restoration project at this site, provided such study is funded.

"Construction Impacts

4.65 "EPA recommends that the forthcoming Draft EA recommend specific measures and best management practices (BMPs) that will be undertaken to minimize construction impacts to air quality, water resources, soil, and other regulated resources. The Draft EA should discuss proposed construction measures, including a discussion of staging areas and their locations, access to the worksite(s), and a discussion of staging and access for in-water construction and fill placement. USEPA recommends that equipment work from barges in the waterway, and that dewatering measures such as temporary portable dams or cofferdams be installed to isolate active work areas during construction."

4.66 **Response**: This EA discusses these details as applicable to the dredged material placement. Note that this is essentially a relocation of shoal material from one place in the harbor to another place in the harbor where it will be less susceptible to re-suspension. The

material has been tested and would not produce adverse water quality effects. Per a review of the Section 404(b)(1) evaluation and underlying sediment data, a baffle plate will be mounted at the end of the hydraulic pipeline to help limit turbidity and to localize the material deposition, but cofferdams and dewatering are not warranted.

"Permitting/Agency Coordination

4.67 "The Draft EA should include a list of all Federal, state, and local permits that will be required to undertake the proposed actions. This may include Minnesota Pollution Control Agency 401 Water Quality Certification, floodplain alteration permits, and coastal zone consistency reviews."

4.68 **Response**: Both the Minnesota Pollution Control Agency and the Minnesota Department of Natural Resources have provided lists of potential permits that may be needed and have identified specific permits required (see respective agencies' comments above).

4.69 "In the Draft EA please provide correspondence from agencies with oversight on this placement, including the U.S. Fish and Wildlife Service, the State Historic Preservation Office, the Minnesota Department of Natural Resources, and others. In the Draft EA, please include a list of all required as well as voluntary measures undertaken, underway, or planned to be taken by USACE with each agency regarding permitting requirements and any efforts to be taken with regard to early coordination."

4.70 **Response**: Agency comments are addressed in this EA. As the permit process partly relies upon the respective agencies' reviewing this EA, such details about permitting requirements are not available yet. Results of the permitting process and any special measure to be taken relative to the permits will be discussed in the Statement of Findings/ Finding of No Significant Impact (SOF/FONSI) for this EA—if the signing of a SOF/FONSI is warranted after the public review comments are evaluated.

4.71 "If construction plans are available, please include them with the Draft EA. EPA understands that construction plans may be draft or at less than 100% design."

4.72 **Response**: See Figure 3 of this EA.

"Wetlands

4.73 "It is unclear if a wetland delineation has been completed or is planned to be completed. USEPA recommends that USACE regulatory staff make a field visit and determination regarding whether or not wetlands are present adjacent to the bay in areas that may be used for staging or for water access."

4.74 **Response**: A wetland delineation has not been done and is not warranted because only a small fringe of wetland exists in the 21st Avenue West Channel embayment in a couple of locations that are not in the area of proposed placement. (See wetlands discussion in this EA.)

4.75 **State Historic Preservation Office—**The Minnesota State Historic Preservation Office (SHPO) did not concur with a recent USACE finding of "no historic properties affected" for the dredged material placement in the 21st Avenue West Channel embayment at Duluth (SHPO correspondence of January 11, 2013). Their reasons for not concurring are discussed below:

4.76 "Under 36 CFR 800.4(b)-(c) it is the Federal agency's responsibility to identify and evaluate historic properties that may be affected by the proposed placement. Our archaeologist has reviewed your submittal, and pointed out several gaps in the historical sites identification effort that prevent us from concurring with your "no historic properties affected" determination at this time. Before we can consider the survey and identification phase to be a "good faith effort" meeting federal requirements, we ask that you address the issues described below.

4.77 "You note that the Robert Wallace shipwreck was listed in the NRHP [National Register of Historic Places] since the previous consultation. The location of this site must be considered before a determination of effect, and is available for legitimate research purposes. Our archaeologist sent Karen Krepps the Register nomination for the Robert Wallace (listed in 2009), including location. Please consider what effects your placement may have on this resource."

4.78 **Response**: Using the National Register nomination form sent to Karen Krepps, the location of the Robert Wallace was mapped into a GIS program. The location of the Robert Wallace shipwreck is outside the area of proposed placement of dredged material, and is outside the harbor itself and will not be affected.

4.79 "Additionally, since our 1996 dredge management plan review cited by your letter, a number of new cultural resource investigations have occurred, including underwater placements by the Great lakes Shipwreck Preservation Society, and the SHPO-sponsored evaluation of underwater and water's-edge resources in the Duluth Harbor (conducted in 1995; report dated August 1996). These studies need to be referenced as part of the identification work for this placement."

4.80 **Response**: A USACE archeologist visited the Minnesota State Historic Preservation Office the week of January 21, 2013, and has reviewed the studies and reports mentioned above. After mapping the shipwrecks with known locations using the coordinates and locations found in the shipwreck files at your office, it is our determination that there are no known shipwrecks in the project area. This determination was sent to the SHPO on February 1, 2013.

4.81 "We believe that the Detroit District should conduct an updated review for this placement, incorporating the recent NRHP nomination you now have, as well as the shipwreck files maintained by this office. Our shipwreck files include information on properties that have not been fully evaluated. Unfortunately, this information is not currently incorporated into our inventory database (one of our volunteers is working with us on this), but it is available for review at our office during business hours."

4.82 **Response**: See previous response.

4.83 "We believe it would also be helpful for the Corps to conduct sonar surveys of the placement area, to identify other potential cultural resources. If anomalies are identified, it may be necessary to evaluate them through underwater archaeological investigations. Sonar surveys would be a cost-effective means of addressing the potential for NRHP-eligible properties in the area of potential effect (APE). Maritime Heritage Minnesota has conducted a number of studies like this recently, with great success. The APE for this placement is adjacent to site 21SL0820, the remains J.C. Mul1ery Lumber Wharf. The on-shore portion of this site was determined to be not eligible for the NRHP in the 1995-1996 SHPO study, but that investigation did not include the underwater area in the harbor."

4.84 **Response**: The Corps of Engineers recently completed a single beam sonar survey of the placement area in order to map the topography of the harbor floor. This data has been integrated into a 3D model which allows for analysis of the harbor floor for possible cultural sites. The approximate location of the J.C. Mullery Wharf has been mapped in GIS software and is outside, though near one of the placement areas. The USACE archeologist also has visited the J.C. Mullery site to determine if any of it is still visible and has confirmed its location as being outside the project area.

4.85 "In absence of complete Federal agency findings and due to the nature and location of the proposed placement, we recommend that the archaeological research and survey work suggested above be completed, in order to meet the requirements of the Secretary of the Interior's Standards for Identification and Evaluation. We look forward to receiving the results of the survey and evaluation work, so that we can complete our review responsibilities.

4.86 **Response**: The updated information was sent to the SHPO on February 1, 2013 with a new evaluation and determination pursuant to the National Historic Preservation Act.

5.0 CONCLUSIONS AND DETERMINATIONS

5.1 Environmental review of the proposed dredged material placement in the 21st Avenue West Channel embayment, Duluth, Minnesota, indicates that no significant cumulative or long-term adverse environmental effects would be expected to result. The adverse impacts, as summarized and discussed in Section 3.0 above, are minor. The placed material will provide improved, cleaner substrate for development of aquatic habitat that may support a variety of fish and wildlife. Results will help inform future ecosystem restoration efforts in the harbor.

5.2 The proposed action has been reviewed pursuant to the following Acts and Executive Orders, as amended: Fish and Wildlife Act of 1956; Fish and Wildlife Coordination Act of 1958; National Historic Preservation Act of 1966; National Environmental Policy Act of 1969; Clean Air Act of 1970; Executive Order 11593, Protection and Enhancement of the Cultural Environment, May 1971; Coastal Zone Management Act of 1972; Endangered Species Act of 1973; Clean Water Act of 1977, Executive Order 11988, Flood Plain Management, May 1977;

and Executive Order 11990, Wetland Protection, May 1977. The proposed dredged material placement has been found to be in compliance with the above Acts and Executive Orders.

5.3 The proposed dredged material placement site is within the 100-year floodplain; however, the placement would not significantly impact flood stages, nor would it encourage floodplain development. The placement would comply with the Federal Executive Order on Flood Plain Management (E.O. 11988) because there is no practicable alternative to placement in the floodplain, if the ancillary benefit of learning about the potential for habitat restoration is to be realized. Since the proposed action would have no adverse effect on the coastal zone, it would be "consistent to the maximum extent practicable" with the Coastal Zone Management Act, and Minnesota's Lake Superior Coastal Program.

5.4 Pursuant to the Clean Water Act (CWA), a Section 404(b)(1) evaluation of the environmental effects of the discharge of fill material into waters of the U.S. has been prepared (Attachment 5). The Section 404(b)(1) Evaluation concludes with the determination that "the proposed action is in compliance with Section 404 of the Clean Water Act." A Section 401 (CWA) water quality certification (or waiver thereof) would be obtained from the state prior to reaching a final determination regarding the need to prepare an Environmental Impact Statement.

5.5 This Environmental Assessment has been prepared in accordance with the National Environmental Policy Act (NEPA); the *Council on Environmental Quality, Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act* (40 CFR Parts 1500-1508); and the *Corps of Engineers, Policy and Procedure for Implementing NEPA* (33 CFR Part 230).

5.6 The conclusions of this Environmental Assessment are that the adverse environmental impacts of the proposed placement of dredged material in the 21st Avenue West Channel embayment, Duluth, Minnesota, are minor and local in scope; the benefits of the proposed action outweigh the minor impacts that would result from the proposed action; and the proposed action does not constitute a major Federal action significantly affecting the quality of the human environment.

6.0 PUBLIC REVIEW

6.1 This Environmental Assessment (EA) will be made available for a 30-day agency and public review to state, Federal and local agencies, various Indian tribes, and other interested groups and individuals. Following this period and a review of the comments received, the District Engineer (Detroit District USACE) will make a final determination regarding the necessity of preparing an Environmental Impact Statement (EIS).

6.2 Based on the conclusions of this EA, it appears that preparation of an EIS will not be required. Therefore, a Preliminary Statement of Findings/ Finding of No Significant Impact (SOF/FONSI) is included in the following section of this EA. If, after public review of this EA, the District Engineer determines that an EIS is not necessary, the Preliminary SOF/FONSI will be finalized and the dredged material placement would be implemented.

7.0 PRELIMINARY STATEMENT OF FINDINGS / FINDING OF NO SIGNIFICANT IMPACT

7.1 Proposed Action: In accordance with the National Environmental Policy Act of 1969, the Detroit District, Corps of Engineers, has assessed the environmental impacts of placing dredged material into the embayment of the 21st Avenue West Channel in Duluth, Minnesota, for evaluation of potential for aquatic habitat restoration. The dredged material would be from maintenance dredging of the Federal navigation project. Since the present proposed action is not for ecosystem restoration, but rather to evaluate the potential feasibility of future site restorations, several of the inner harbor sites could be used for the placement. The 21st Avenue Site was preferred because of its centrality to the dredging areas, its lack of habitat, and it more sheltered position in the harbor.

7.2 Coordination: In accordance with the National Environmental Policy Act of 1969 (NEPA), information regarding the proposed dredged material placement was provided to the U.S. Fish and Wildlife Service, the U.S. Environmental Protection Agency, Minnesota Department of Natural Resources, the Minnesota Pollution Control Agency, the Wisconsin Department of Natural Resources, the State Historic Preservation Office, and Native American Indian tribes and groups. Comments received are discussed in an Environmental Assessment, *Dredged Material Placement, 21st Avenue West Channel Embayment, Duluth, Minnesota*, which has been provided to these and other agencies and the public for a 30-day review and comment period.

7.3 Environmental Effects: Sediment, elutriate, biological, and bioaccumulation testing indicate that in-water placement of dredged materials from the Federal navigation project will not cause an adverse impact on biota or water quality. An Environmental Assessment (EA) for the proposed dredged material placement has been completed. The EA indicates the dredged material placement will not result in significant short-term, long-term or cumulative adverse environmental impacts. Impacts would be minor and temporary, consisting primarily of noise and air emissions from equipment and transportation operations, and minor, short term turbidity during placement activities. The placed material is expected to provide benefits of cleaner substrate at a suitable elevation below the water surface to support aquatic habitat. Results of the placement will help inform the design process for future site restorations in the harbor.

7.4. Determinations: The proposed dredged material placement has been reviewed pursuant to the following Acts and Executive Orders: Fish and Wildlife Act of 1956; Fish and Wildlife Coordination Act of 1958; National Historic Preservation Act of 1966; National Environmental Policy Act of 1969; Clean Air Act of 1970; Executive Order 11593, Protection and Enhancement of the Cultural Environment, May 1971; Coastal Zone Management Act of 1972; Endangered Species Act of 1973; Clean Water Act of 1977; Executive Order 11988, Flood Plain Management, May 1977; and Executive Order 11990, Wetland Protection, May 1977. The proposed dredged material placement has been found to be in compliance with these acts and executive orders.

7.5 The proposed action complies with the Federal Executive Order 11988 (Flood Plain Management), because it will not adversely impact flood plains. The placement is within the

coastal zone as defined by the Minnesota's Lake Superior Coastal Program, but would have no adverse effects on the coastal zone or the waters of Lake Superior and would be "consistent to the maximum extent practicable" with the Minnesota's Coastal Program.

7.6. Pursuant to the Clean Water Act (CWA), a Section 404(b)(1) evaluation of the environmental effects of the discharge of fill material into waters of the U.S. has been prepared and is included as Attachment 1 of the February 2013 EA. The Section 404(b)(1) Evaluation concludes with the determination that "the proposed action is in compliance with Section 404 of the Clean Water Act." The State of Minnesota has indicated that the project would comply with State water quality standards, pursuant to Section 401 of the Clean Water Act.[10]

7.7 Finding and Conclusion: Review of the proposed action and the comments received during public review of the EA indicates that the placement of navigation channel shoal material into the 21st Avenue West Channel embayment does not constitute a major Federal action significantly affecting the quality of the human environment; therefore, an Environmental Impact Statement will not be prepared.

_____	_____
DATE	Robert J. Ells Lieutenant Colonel, U.S. Army District Engineer

[10] Note. Water Quality Certification has not yet been received, but is anticipated.

8.0 REFERENCES

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ATTACHMENTS

to

ENVIRONMENTAL ASSESSMENT

Dredged Material Placement
21st Avenue West Channel Embayment
Duluth, Minnesota

1. Clean Water Act Section 404(b)(1) Evaluation
2. 1st Figure Provided with Minnesota Pollution Control Agency Comments
3. 2nd Figure Provided with Minnesota Pollution Control Agency Comments
4. March 17, 2012 USFWS Letter to USACE RE: 21st Avenue West Channel Site
5. Summary of "Remediation to Restoration" in the Lower St. Louis River

CLEAN WATER ACT
SECTION 404(b)(1) EVALUATION
Of the Effects of Placing Fill Material into the Waters of the United States

Dredged Material Placement
21st Avenue West Channel Embayment
Duluth, Minnesota

I. PROJECT DESCRIPTION

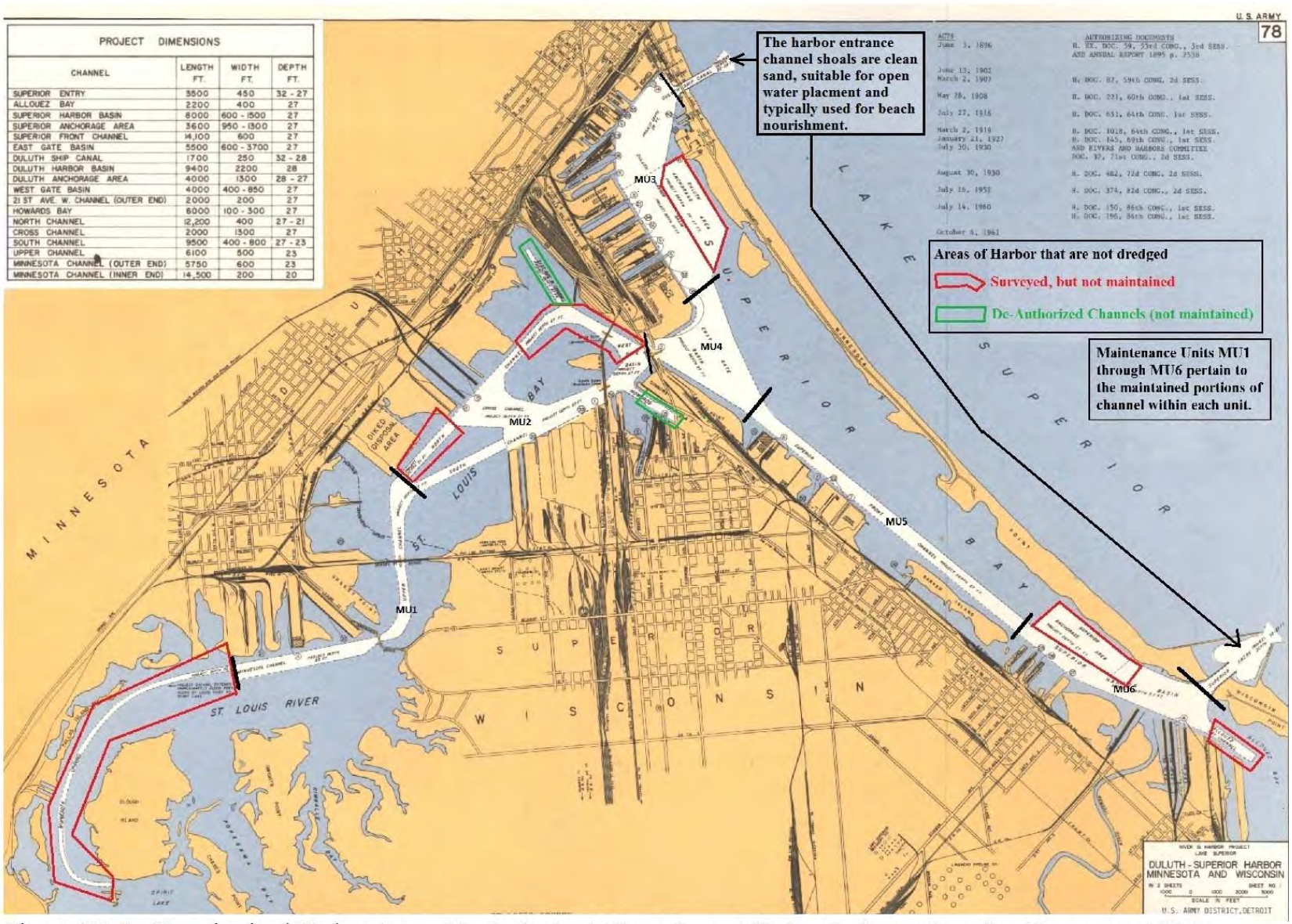
a. Location: The proposed dredged material placement is within the 21st Avenue West Channel embayment of the St. Louis Bay, Duluth-Superior Harbor, Minnesota and Wisconsin. The site lies between Rices Point and the Western Lake Superior Sanitary District wastewater treatment plant.

b. General Description: Suitable shoal material from the Federal navigation project would be progressively placed to create the shallow water in the target areas as depicted in Figure 3 of the EA for natural development of aquatic vegetation. Supplemental material may be placed by the State of Minnesota for treatments to evaluate plant growth on supplemented substrate as compared to the raw dredged material. The finished sites would allow for vegetated shallows, interspersed within the open water embayment.

c. Authority and Purpose: Two harbor projects—Superior, Wisconsin, authorized in 1867, and Duluth, Minnesota, authorized in 1871—were combined in 1896 as the Duluth-Superior Harbor. The harbor has since been expanded and modified by ten River and Harbor Acts. Operation and maintenance of the harbor, which includes the currently proposed dredged material management plan, is an intrinsic part of the harbor authorization. The proposed placement will help determine the feasibility of full scale aquatic ecosystem restoration and to help in delisting the site from being a contaminants area of concern.

d. General Description of Dredged or Fill Material: The fill material is dredged shoal material from the Federal navigation project at Duluth-Superior Harbor. Physical analysis of the sediments was conducted in 2011. The particle size distribution data are summarized in Appendix B, Table 5 of the 2012 sediment sampling report.[1] The analyses showed that the material in the management unit 1 area (Minnesota Channel and the Upper Channel, see Figure 404-1 on following page) averaged approximately 38 % fine material (silt/clay), with the remaining material being fine and medium sand. The material in management unit 2 (South Channel and West Gate Basin) had an average of 24% fine material (silt/clay), with the remaining material being predominantly fine sand. The remaining management units 3-6 had an

1. This Section 404(b)(1) evaluation includes discussion of recent sediment sampling and analysis for the Duluth-Superior Harbor. The full report and an evaluation can be viewed at the USACE Detroit District webpage under Environmental Services.



PROJECT DIMENSIONS			
CHANNEL	LENGTH FT.	WIDTH FT.	DEPTH FT.
SUPERIOR ENTRY	3500	450	32 - 27
ALLOUEZ BAY	2200	400	27
SUPERIOR HARBOR BASIN	6000	600 - 1500	27
SUPERIOR ANCHORAGE AREA	3600	950 - 1300	27
SUPERIOR FRONT CHANNEL	14,100	600	27
EAST GATE BASIN	5500	600 - 3700	27
DULUTH SHIP CANAL	1700	250	32 - 28
DULUTH HARBOR BASIN	9400	2200	28
DULUTH ANCHORAGE AREA	4000	1300	28 - 27
WEST GATE BASIN	4000	400 - 850	27
21 ST AVE. W. CHANNEL (OUTER END)	2000	200	27
HOWARDS BAY	6000	100 - 300	27
NORTH CHANNEL	12,200	400	27 - 21
CROSS CHANNEL	2000	1300	27
SOUTH CHANNEL	9500	400 - 800	27 - 23
UPPER CHANNEL	6100	500	23
MINNESOTA CHANNEL (OUTER END)	5750	600	23
MINNESOTA CHANNEL (INNER END)	14,500	200	20

ACTS	AUTHORIZING DOCUMENTS
June 3, 1896	H. EX. DOC. 59, 55th CONG., 3rd SESS. AND ANNUAL REPORT 1895 p. 3538
June 13, 1902	
March 2, 1907	H. DOC. 87, 59th CONG. 2d SESS.
May 28, 1908	H. DOC. 221, 60th CONG., 1st SESS.
July 27, 1916	H. DOC. 651, 64th CONG. 1st SESS.
March 2, 1919	H. DOC. 1018, 64th CONG., 1st SESS.
January 21, 1927	H. DOC. 145, 69th CONG., 1st SESS.
July 30, 1930	AND RIVERS AND HARBORS COMMITTEE DOC. 37, 71st CONG., 2d SESS.
August 30, 1930	H. DOC. 462, 72d CONG. 2d SESS.
July 18, 1952	H. DOC. 374, 82d CONG., 2d SESS.
July 14, 1960	H. DOC. 150, 86th CONG., 1st SESS.
October 4, 1961	H. DOC. 196, 86th CONG., 1st SESS.

Figure 404-1. Unmaintained Harbor Areas, De-Authorized Channels, and Harbor Sediment Sampling Management Units.

average of 15-20% fine material (silt/clay). Management unit 3 includes the area of the Duluth Ship Canal, the Duluth Harbor Basin, and the Duluth Anchorage area. The material from the Duluth Ship Canal is used for beach nourishment along Minnesota Point. Management unit 4 includes the East Gate Basin channel. The remaining material in management units 3 & 4 were predominantly fine sand. The remaining material in management units 5 & 6 were a mixture of fine and medium sand. Management unit 5 includes the Superior Front Gate Basin, and management unit 6 includes the Superior Harbor Basin, Superior Anchorage Basin, and the Superior Entry channel.

i. Contaminant analysis and bioassay testing show that, with the exception of areas that are not currently maintained (Figure 404-1), the shoal material is suitable for in-water placement. If in the future, areas currently not maintained are proposed for dredging, further testing and evaluation would be conducted.

e. Description of Proposed Discharge Site: The 21st Avenue embayment is bound on three sides by land, primarily devoted to commercial, industrial, and transportation uses. The site varies from shallow depths of 1 to 5 feet deep in the upper and western parts of the embayment and includes a 27-foot deep abandoned channel (the 21st Avenue W. Channel). Along the east side of the abandoned channel is a deep hole, varying in depth from about 10 to 30 feet. Two small creeks, Coffee and Miller Creeks, drain into the head of the 21st Avenue embayment.

f. Description of Disposal Method: Dredged material placement is expected to be achieved by hydraulic pumping, but other methods, such as bottom dumping barge, could be used at the discretion of the contractor, provided state water quality standards are met.

II. FACTUAL DETERMINATION

a. Physical Substrate Determinations: The site would be converted from the existing deep areas, ranging from 10 to 30 feet deep, and shallow areas that range up to 6 feet deep, into shallow-water aquatic habitat area, with a minimum depth of 2 feet, interspersed with deeper pool areas and islands for habitat diversity. Sediment grain size structure at the site after filling would be similar to the existing sediment. The 2010 MPCA sediment samples from the 21st Avenue West embayment has about 70% silt/clay (particle size less than 0.074-millimeter diameter) (MPCA 2010). Samples collected from the harbor navigation channels (excluding the harbor entrance channel material, which are used for beach nourishment) show that the management units range from 15% fine material (silt/clay) to 38% fine material (silt/clay). Management units 1 & 2 have 38 and 24% fine material, while the remaining management units (3-6) have less fine material, ranging from 15% to 20% maximum. The substrate after placement activities should be predominantly sand due to the predominant mixture of sand in the dredged material.

b. Water Circulation, Fluctuation, and Salinity Determinations: No significant adverse effects anticipated.

c. Suspended Particulate/Turbidity Determinations: No significant adverse effects expected. Hydraulic placement of the dredged material would result in suspension of particulates from the

dredged material and from the scouring of existing bottom sediments. However, a baffle plate mounted at the end of the hydraulic discharge pipeline would control turbidity and help focus the material placement. The presence of carriage water and the release of interstitial water likely would create increased concentrations of suspended solids immediately after placement operations. The water column oxygen concentration would be temporarily reduced, possibly below water quality standards. The water clarity and oxygen concentrations will return to pre-placement conditions. No significant cumulative or long-term contaminant releases into the water column would be expected.

d. Contaminant Determinations: Duluth-Superior Harbor, MN-WI was sampled and evaluated in August 2011. The harbor was divided into six management units (MU1 – MU6) and four in-water sites were evaluated: Minnesota Open Placement Unit (MOPU), Wisconsin Open Placement Unit (WOPU), Hearding Island Placement Unit (HIPU), and Interstate Island Placement Unit (IIPU).[1] Sediment samples were obtained from each management unit and placement unit and evaluated for chemistry, toxicity and bioaccumulation. Sediment samples were obtained from thirty locations within the Federal navigation channel (designated as DS-11-01 through DS-11-30). In addition, samples were collected from four proposed open water placement areas, including two open lake areas (MOPU and WOPU), and two inner harbor areas (HIPU and IIPU). Discrete sediment samples were composited into management unit/open-water placement area samples as follows (see Figure 404-1): Federal navigation channel management units—DS-11-MU1 (DS-11-01 through DS-11-05); DS-11-MU2 (DS-11-06 through DS-11-10); DS-11-MU3 (DS-11-011 through DS-11-15); DS-11-MU4 (DS-11-16 through DS-11-20); DS-11-MU5 (DS-11-21 through DS-11-25); and DS-11-MU6 (DS-11-26 through DS-11-30); Proposed open-water placement areas—Wisconsin, DS-11-WOPU (DS-11-31 through DS-11-35); Minnesota, DS-11-MOPU (DS-11-36 through DS-11-40); Hearding Island, DS-11-HIPU (DS-11-41 through DS-11-45); and Interstate Island, DS-11-IIPU (DS-11-46 through DS-11-50). Testing was conducted in accordance with the Great Lakes Dredged Material Testing and Evaluation Manual, dated 1998. Below is a list of the tests that were performed:

◊10-day solid phase toxicity tests (bioassays) employing the test species Hyalella azteca (amphipod) and Chironomus dilutus (midge fly) were applied to all management unit and placement area composite sediment samples. The biological measurement endpoints for these tests were survival, and survival and growth, respectively. The primary purpose of these bioassays was to assess the potential toxicity of the dredged material to benthic organisms relative to lake/bay bottom sediments.

◊48-hour Ceriodaphnia dubia (water flea) acute toxicity test and 96-hour Pimephales promelas (fathead minnow) acute toxicity test were performed on 100% elutriate from the management unit samples. Survival was the biological measurement endpoint for both tests. The primary purpose of these bioassays was to assess the toxicity of contaminants potentially released to the water column during dredged material placement in the lake/bay environs.

1. The sediment evaluation was prepared in relation to the four in-water sites, which have a cleaner contaminant character than the 21st Avenue West Channel embayment; therefore, the suitability of the dredged material placement at any of the four in-water sites also means that the dredged material is suitable for placement in 21st Avenue West Channel embayment.

◊28-day Lumbriculus variegatus bioaccumulation test for polychrlorinated biphenyls (PCBs) which included an analysis of the primary congeners PCB 8, 18, 28, 44, 49, 52, 66, 77, 87, 101, 105, 110, 118, 126, 128, 138, 153, 169, 170, 180, 183, 184, 187, 195, 206 and 209 was applied to all management unit and placement area composite sediment samples. This list was selected based on an assumption that total PCB tissue residues (i.e., total of 209 congeners) can be reliably estimated by doubling the subtotal concentration of the 22 PCB congeners PCB 8, 18, 28, 44, 49, 52, 66, 87, 101, 105, 118, 128, 138, 153, 170, 180, 183, 184, 187, 195, 206 and 209 (e.g., Committee on Remediation of PCB-Contaminated Sediments et al. 2001; USEPA 2002). PCBs 77, 110 and 226 were added to this group of congeners due to their toxicological importance. Lipid content in L. variegatus was also measured.

◊Standard elutriate testing (SET) for metals (arsenic, barium, cadmium, chromium, copper, iron, lead, manganese, mercury, nickel, selenium, silver and zinc), ammonia, total Kjeldahl nitrogen (TKN) and total phosphorus were applied to all management unit composite sediment samples. The primary purpose of this test was to quantify the potential release of contaminants from the dredged material during placement and ascertain compliance with applicable water quality standards. SET data on the dredged material indicate that releases of metals and organic contaminants during placement activities would comply with existing, applicable Minnesota State Water Quality Standards for the Protection of Aquatic Life.

◊Bulk sediment testing for PCBs (26 congeners) and total organic carbon (TOC) was applied to all management unit and placement area composite sediment samples. In addition, these samples were analyzed for ammonia (as N), TKN and total phosphorus. The individual samples were also analyzed for PCB aroclors, polyaromatic hydrocarbons (PAHs), metals, organic and nutrient parameters, and physical parameters.

(1) Bulk Inorganic Contaminants –While some dredged material concentrations significantly exceeded those of the open water placement areas (total phosphorus, TKN, barium, chromium, iron, lead, mercury, nickel and zinc), none were of significant toxicological concern.

(2) Bulk Organic Contaminants – All PAH compound concentrations in the Federal navigation channel sediments, as well as the open water placement area sediments, were non-detectable. Two PCB tests were conducted on the material: PCB aroclor testing and PCB congener testing. These results are discussed below.

(a) PCB Aroclors—PCB concentrations in the Federal navigation channel sediments, as well as at open-water placement area sediments, were non-detectable at detection limits ranging from 81 µg/kg to 210 µg/kg at most sites. At DS-11-28, Aroclor 1242 and 1260 were measured at concentrations of 1100 µg/kg and 610 µg/kg, respectively (i.e., total PCBs concentration = 1.71 mg/kg), therefore, total PCBs was identified as a contaminant of concern (COC) at this site; however, this site is within the unmaintained area of the Superior Anchorage and would not be dredged

and therefore is not further discussed in this evaluation.

(b) Congeners—PCB congener concentrations in management unit sediments, as well as at open-water placement area sediments, were mostly non-detectable. PCBs 101, 138, 153, 170 and 180 were detected in management unit DS-11-MU2 sediments at estimated concentrations (range 0.43 µg/kg to 0.79 µg/kg), and PCBs 138, 153, 170 and 180 were detected in management unit DS-11-MU5 at estimated concentrations (range 0.51 µg/kg to 1.6 µg/kg).

(3) Elutriate (Water Column) Bioassays – C. dubia and P. promelas – the mean survival of these test species exposed to all management unit sediment elutriates was 100%.

(4) Sediment Bioassays – H. azteca—The mean survival of this test species exposed to the management unit sediment samples ranged from 88±13.6% (DS-11-MU1) to 98±5.28% (DS-11-MU4, DS-11-MU5 and DS-11-MU6), and were not statistically different than that associated with the open-water placement areas (mean survival range 94% [DS-11-IIPU] to 100% [DS-11-WOPU and DS-11-HIPU]). C. dilutus—The mean survival of this test species exposed to the management unit sediment samples ranged from 92±14.2% (DS-11-MU6) to 98±5.28% (DS-11-MU4 and DS-11-MU5), and was not reduced by more than 20 percent, and was not statistically different than that associated with the open-water placement areas (mean survival range 94% [DS-11-IIPU] to 98% [DS-11-WOPU, DS-11-MOPU and DS-11-HIPU]). With respect to C. dilutus growth, mean biomass expressed as mean ash-free dry weight (AFDW) exposed to the management unit sediment samples ranged from 1.06 mg (DS-11-MU3), to 1.22±0.04 mg (DS-11-MU1) and 1.22±0.05 mg (DS-11-MU4). All values exceeded a mean AFDW of 0.48 mg (and MDW of 0.6 mg). These solid phase bioassay data show that placement of the dredged material at any of the open-water placement areas would not result in any contaminant-related unacceptable, adverse impacts.

(5) PCB bioaccumulation testing - Mean lipid-normalized ∑22 PCB residues in L. variegatus tissues exposed to all management unit sediments were not significantly greater relative to DS-11-HIPU. This indicates that material dredged from all management units meets Federal guidelines for placement at the Hearding Island area. Mean lipid-normalized ∑22 PCB residues in L. variegatus tissues exposed to the DS-11-MU1 and DS-11-MU6 sediments were not significantly greater relative to DS-11-IIPU. This indicates that material dredged from these management units meets Federal guidelines for placement at the Interstate Island area. Mean lipid-normalized ∑22 PCB residues in L. variegatus tissues exposed to DS-11-MU2, DS-11-MU3, DS-11-MU4 and DS-11-MU5 were significantly greater relative to DS-11-IIPU. This indicates that material dredged from these management units requires additional evaluation for placement at the Interstate Island area, with respect to the PCB bioaccumulation measurement endpoint. Therefore, total PCBs was identified as a preliminary COC in these management unit sediments relative to the Interstate Island placement area.

The results were then further evaluated for toxicological significance and magnitude that it exceeds open water reference area sediments. Based on the available data, the toxicity

to humans, birds and fish from PCB congeners that may bioaccumulate is low and near the background levels for lake sediments. The review also suggests that the measured PCB tissue residues associated with these management unit sediments was not biologically or ecologically significant relative to these two placement areas. Predictions of potential exposure to PCBs and risk to ecological receptors and human health require explicit consideration of both spatial and temporal factors within food web models. A receptor exposure risk model (Spatially Explicit Screening-level Exposure) was used to address the relatively small spatial area for dredged material placement compared to the overall area utilized by receptors to obtain food. Fish with a larger home range than the placement area will obtain only a fraction of their diet from the proposed placement area, resulting in a net bioaccumulation reduction compared to the laboratory bioaccumulation results. This model was used to compare MU2 through MU5 to both the MOPU and WOPU lake placement sites using lake trout as the receptor species, which indicated negligible exposure risk with respect to fish, wildlife and human health. For MU2 and MU3, limited information was available to run the receptor exposure risk model above, therefore, placement of these management units at IIPU will be evaluated for in-water placement when further information is available.

(6) Determination - Based on the data contained in Futurenet Group (2012) and other relevant information, contamination and toxicity associated with Duluth-Superior Federal navigation channel sediments has been shown to be comparable relative to open-water area sediments. With respect to PCBs in the dredged material, bioaccumulation, with the exception of placement of management unit DS-11-MU2 and DS-11-MU3 dredged material at open-water area DS-11-IIPU, would not result in unacceptable adverse impacts to the affected aquatic ecosystems. Therefore, with the exception of material at DS-11-MU2 and DS-11-MU3 dredged material at open-water area DS-11-IIPU and areas not maintained, all material dredged from these Federal navigation channels meets Federal guidelines for open-water placement. MU2 and MU3 would require further evaluation for placement at Interstate Island Placement Unit (IIPU), but are suitable for placement at the Hearding Island Placement Unit (HIPU) and both open lake sites (MOPU and WOPU). Areas in the harbor that are not maintained would require additional chemical characterization to evaluate whether those areas are suitable for open water placement, if at some future date dredging in these areas is proposed. Because the dredged material is suitable for open-water placement, with the restrictions noted above, the material is characterized as clean and would be a suitable cap material for the 21st Avenue West site.

The determination is summarized below:

(1) Metals. No significant effect.
(2) Chemical characteristics. No significant effect.
(3) Biological evaluation (toxicity and bioaccumulation). No significant effect.

e. Aquatic Ecosystem and Organism Determinations: Existing benthic habitat at the 21st Avenue West Channel embayment ecosystem restoration site is dominated by tubificid oligochaetes, many species of which are tolerant of pollutants and/or low dissolved oxygen levels. The cleaner shoal material to be placed at the site would isolate the aquatic ecosystem

from existing contaminated sediments and would provide a substrate suitable to support an improved benthic community, which likely would develop over time through re-colonization of the site. The completed ecosystem restoration, by increasing emergent and submergent aquatic vegetation and shallow edges would increase the complexity of habitat to provide for a variety fish and aquatic invertebrates. No significant adverse effects are anticipated on plankton, nekton, aquatic food web, wetlands, mud flats, vegetated shallows, species listed as threatened or endangered, or other wildlife.

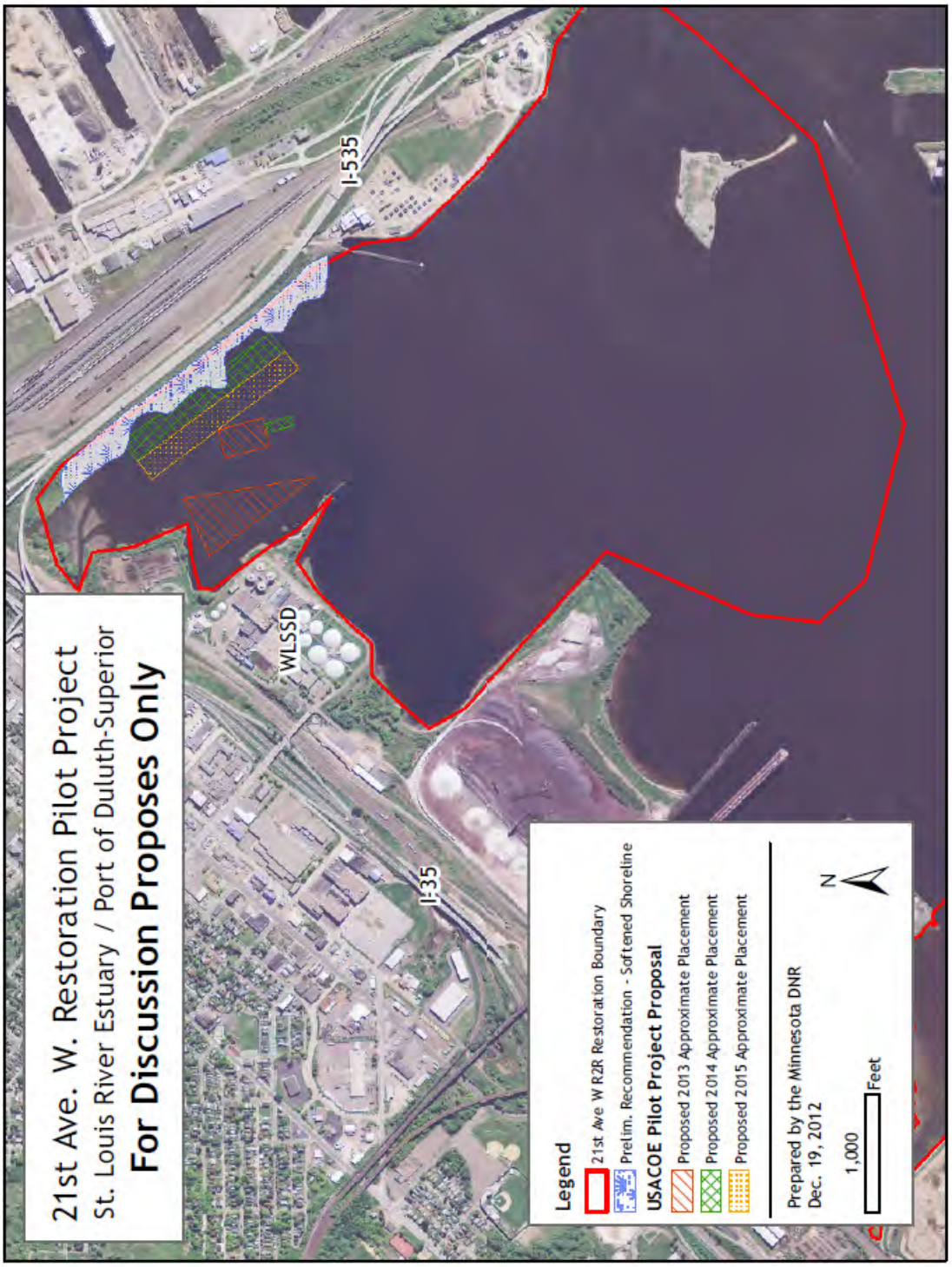
f. Proposed Disposal Site Determinations: The mixing zone includes the area within and immediately adjacent to the placement target locations as depicted in Figure 3 of the EA. The placement operation would be conducted to meet applicable water quality standards outside mixing zone. No significant adverse impacts on municipal or private water supplies, recreational or commercial fisheries, water related recreation, aesthetics, parks, monuments, wilderness areas, research sites, or similar preserves would occur.

g. Determination of Cumulative Effects on the Aquatic Ecosystem: No significant cumulative adverse effects are expected to occur.

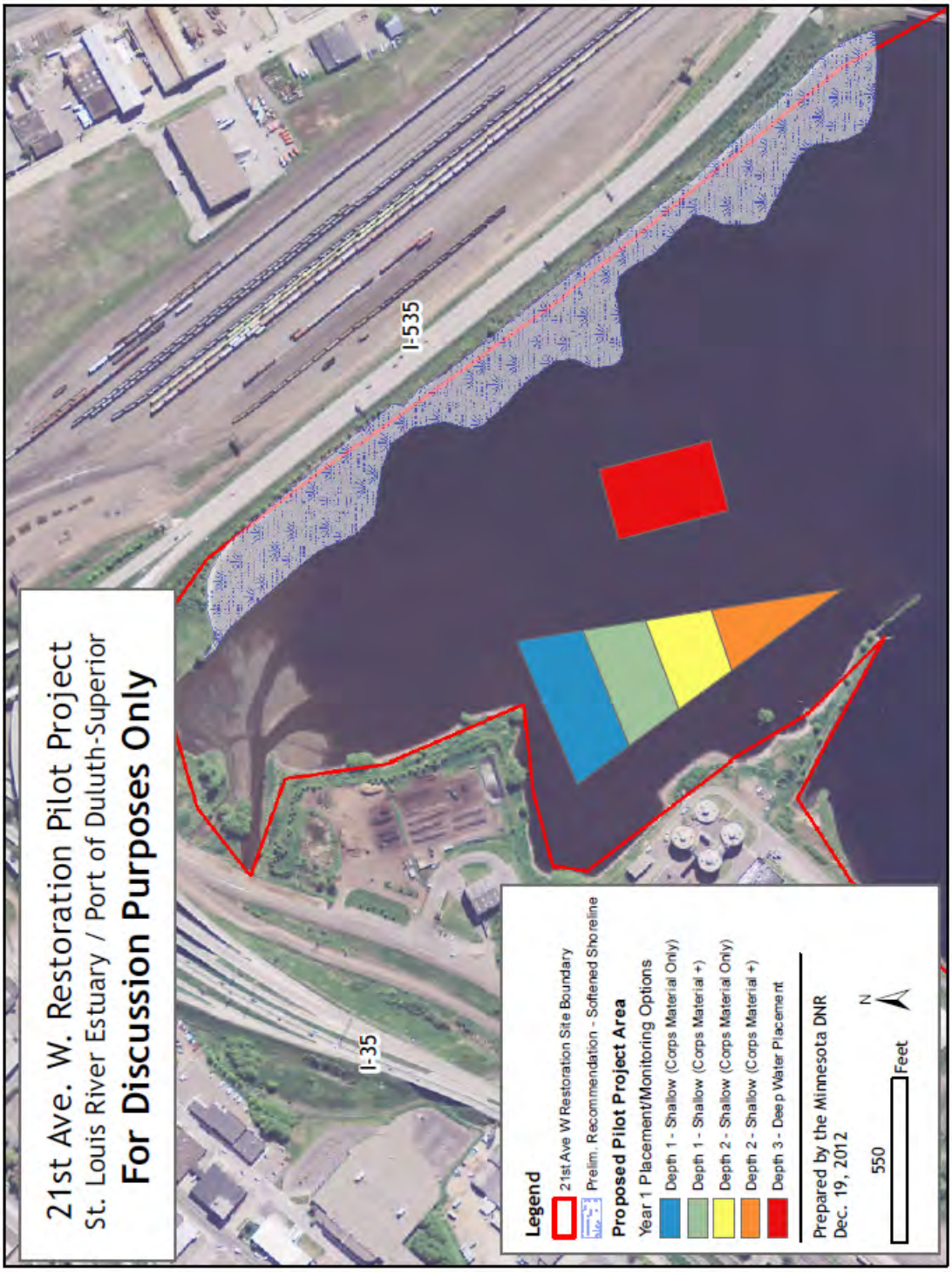
h. Determination of Secondary Effects on the Aquatic Ecosystem: No significant adverse secondary effects are expected to occur.

III. FINDING OF COMPLIANCE OR NON-COMPLIANCE WITH THE RESTRICTIONS ON DISCHARGE:

No significant adaptations of the guidelines were made relative to this evaluation. Of the various potential ecosystem restoration sites in the harbor, the 21st Avenue West Channel site was preferred over the others because it has lower wave action, is more centrally located to the dredging areas, and there is little existing habitat to be impacted. The placement of dredged material at the 21st Avenue West Channel embayment is expected to restore some of the aquatic habitat historically lost in the lower St. Louis River estuary, and will provide information and results useful towards future ecosystem restoration efforts in the harbor. The placement operation would be conducted to meet applicable water quality standards outside the mixing zone. The placement operation would not violate the Toxic Effluent Standards of Section 307 of the Clean Water Act. No species Federally listed as “threatened” or “endangered,” or critical habitat for such species, have been identified that would be affected by the proposed dredged material placement. The proposed action would not result in significant adverse effects on human health and welfare, aquatic life, or other wildlife dependent on the aquatic ecosystem, nor on the diversity, productivity, and stability of the aquatic ecosystem. Significant adverse effects on recreational, aesthetic, and economic values would not occur. Appropriate and practicable steps taken to minimize potential adverse impacts of the discharge on the aquatic ecosystem include specific environmental protection clauses in the contract specifications and, the use of a baffle plate at the hydraulic discharge to ensure State water quality standards are met outside the mixing zone. On the basis of the guidelines, the proposed placement of dredged or fill material at the 21st Avenue West Channel embayment is specified as complying with the requirements of these guidelines.



1st Figure Provided with Minnesota Pollution Control Agency Comments



2nd Figure Provided with Minnesota Pollution Control Agency Comments

United States Department of the Interior

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MAR - 7 2012

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Dear Sirs:

As an initial matter, I would like to sincerely thank you for the meeting we had on February 9, 2012, in St. Paul. It is clear that our goals and objectives for restoration work in the St. Louis River estuary have a great deal of overlap and both the FWS and COE will benefit from closer collaboration on projects in the Area of Concern (AOC). In addition, however, I would like to reiterate the concerns we expressed in February regarding the timing of our respective projects. As discussed in more detail below, **we believe that there is a strong need to realign design planning and schedules to take full advantage of both the past work and ongoing efforts from both agencies.**

As we discussed at the February 9 meeting, the FWS is committed to building on the momentum developed from our initial discussions by 1) committing staff time and resources to participate fully in the upcoming pre-application meeting and subsequent permit review for activities proposed at the Canadian National Railway's facility in Duluth, and 2) closely coordinating with the COE as data and other information is generated as part of the GLRI-funded project for Remediation to Restoration at 21st Avenue West.

We anticipate that close collaboration between our agencies during the planning and implementation of activities at the 21st Avenue site, the 40th Avenue West Remediation to Restoration site, as well as with other projects will result in the restoration of habitat features through the beneficial re-use of dredged materials.

Our primary concern is that the schedule the COE indicates for proposed activities at 21st Avenue (i.e., the construction of a wave barrier as described in "Alternative 1 – 21st Avenue

West Channel, Phase 1" in the December 1999 Draft Ecosystem Restoration Report and Environmental Assessment, Section 204 Study, 21st Avenue West Channel, Duluth, Minnesota, hereafter "1999 EA") does not allow adequate time to consider results from the ongoing FWS Ecological Design report. This ecological design project was designed, in part, to address issues unresolved during the original review of the 1999 EA. Delay of the COE feasibility study update and Environmental Assessment scheduled for April 2012 and September 2012, respectively, would allow for incorporation of information developed through the FWS-sponsored project to be incorporated into the COE design and assessment efforts.

Accordingly, we believe some of the negative consequences which could result from this include the following.

1) **Placement of the proposed wave barrier prior to determining the remediation approach could result in much higher remediation costs if sediment removal is required.** Construction of the proposed wave barrier presupposes that remediation of contaminated sediments at the 21st Avenue site will be accomplished solely though capping with clean sediment. Until existing sediment chemistry data can be assessed and the resulting information is evaluated, we do not know what methods will be best utilized for remediation.

2) **The final ecological design for the 21st Avenue project area may not even require a wave barrier.** The conservation community in the St. Louis River estuary has identified habitat restoration at the 21st Avenue site as a high priority. However, there has been (until the initiation of the FWS-sponsored project) limited discussion on specific restoration design alternatives at this site. The project currently underway for ecological design will result in a restoration design with buy-in from state agencies and local stakeholders. The design will optimize both the remediation of contaminated sediments and restoration of important habitat that will make progress toward delisting the St. Louis River AOC.

Again, we believe that there is a significant opportunity for collaboration at this and other sites in the St. Louis River where we can achieve mutually beneficial outcomes. Aligning our efforts at this site, and building on the work being done by both agencies will help assure our local partners that the Federal government is speaking with one voice and working to achieve one set of goals to protect, restore and enhance both the ecology and the economy of the St. Louis River.

In conclusion, we ask for your full consideration of any options available to you to align project timelines to take full advantage of the GLRI-funded ecological design report for Remediation to Restoration at 21st Avenue West, information which we project to be available December 31, 2012.

Sincerely,

Tony Sullins

Tony Sullins
Field Supervisor

"Remediation-to-Restoration" in the Lower St. Louis River:
The 21st Ave West Project
U.S. Fish and Wildlife Service
February 9, 2012

In 1989, the lower St. Louis River (SLR) and surrounding watershed was designated an "Area of Concern" (AOC) under the Great Lakes Water Quality agreement because of the presence of chemical contaminants, poor water quality, reduced fish and wildlife populations, and habitat loss (= Beneficial Use Impairments, or BUIs). In 2002, the St. Louis River Alliance completed the "*Lower St. Louis River Habitat Plan*" as "an estuary-wide guide for resource management and conservation that would lead to adequate representation, function, and protection of ecological systems in the St. Louis River, so as to sustain biological productivity, native biodiversity, and ecological integrity." Based on Alliance workgroup evaluations of historical contaminated sediment data and Habitat Plan goals, SLR AOC State and Tribal Coordinators recommended a "Remediation-to-Restoration" approach in the 21st Ave. West project area to allow for the most effective way to remediate an area impacted by contaminated sediment while also concurrently providing restoration for fish and wildlife populations. Through the Great Lakes Restoration Initiative (GLRI), the U.S. Fish and Wildlife Service Environmental Contaminants Program is working with the AOC Coordinators and local conservation partners to develop an "Ecological Design" for the 21st Avenue West complex as the first phase of the larger Remediation-to-Restoration project. The Ecological Design will guide the development of feasibility studies, remedial design, project construction (both remedial and restoration), and other components necessary to complete the overall Remediation-to-Restoration habitat project in subsequent years. Remediation-to-Restoration projects at the 21st Ave West project area and other sites will provide continued on-the-ground work in the SLR AOC aimed to progress towards removing BUIs and delisting the SLR as an AOC.

Ecological Design Components Completed:

- Select physical and biological site
    - Bathymetry and substrate analysis
    - Plant community structures and wetland characterization
    - Benthic invertebrate community survey
    - Avian community survey
    - Fish samples collected for chemical analyses

Ecological Design Components in Progress/to be Completed by December 31, 2012:

- Ecotoxicological characterization (inc. additional sediment chemistry evaluations)
- Hydrodynamic modeling options
- Draft ecological design ideas
- Stakeholder coordination and input
- Ecological Design Report

Ecological Design Project Cost: $385,670.00
(GLRI funds through the U.S. Fish and Wildlife Service)

Future Plans for 21st Ave West Remediation to Restoration (currently unfunded):

- Focused Feasibility Studies to evaluate remedial and restoration alternatives (inc. cost estimates)
- Detailed Remedial and Restoration construction designs utilizing hydrodynamic modeling program.
- Remediation of contaminated sediments.
- Habitat restoration integrated with remediation of contaminated sediment where necessary
- Continued partner and stakeholder coordination throughout each phase.
- Monitoring post-remediation and restoration to ensure long-term protection of human health and environment, as well as a successful outcome of desired habitats.