FINAL ENVIRONMENTAL IMPACT STATEMENT

9-FOOT NAVIGATION CHANNEL PROJECT
CHANNEL MAINTENANCE MANAGEMENT PLAN
UPPER MISSISSIPPI RIVER
HEAD OF NAVIGATION TO GUTTENBERG, IOWA

JUNE 6, 1997

LEAD AGENCY:

U.S. ARMY CORPS OF ENGINEERS, ST. PAUL DISTRICT
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The purpose of this Environmental Impact Statement is to analyze the environmental impacts of actions proposed in the Channel Maintenance Management Plan (CMMP) for maintaining a 9-foot navigation channel, along with commercial and small-boat harbors, on the Upper Mississippi River between Guttenberg, Iowa and the head of navigation at Minneapolis, Minnesota. The proposed actions analyzed in this document include dredging; dredged material placement; recreational beach maintenance and development; repair, construction, modification, and/or removal of channel structures; clearing and snagging operations; and future site planning for dredged material placement.
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Robert Whiting

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BIOLOGICAL ASSESSMENT OF THE IMPACTS ON FEDERALLY LISTED THREATENED AND ENDANGERED SPECIES FROM IMPLEMENTATION OF THE CHANNEL MAINTENANCE MANAGEMENT PLAN

Environmental Resources Section
U.S. Army Engineer District, St. Paul
190 Fifth Street East
St. Paul, Minnesota 55101-1638

March 25, 1997

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Biological Assessment of the Impacts on
Federally Listed Threatened and Endangered Species From
Implementation of the Channel Maintenance Management Plan

I. INTRODUCTION

The St. Paul District (District) of the U.S. Army Corps of Engineers (COE) maintains a 9-foot navigation channel and various commercial and recreational harbor projects on the Upper Mississippi River (UMR) and several tributaries between Minneapolis, Minnesota, and Guttenberg, Iowa. The District has prepared a Channel Maintenance Management Plan (CMMP) which describes dredging, dredged material placement, snag removal and various structural and non-structural techniques of maintaining these projects. The purpose of this document is to assess the impacts of the activities described in the CMMP on threatened or endangered species in the project area.

In a previous biological opinion on maintenance of the 9-foot channel project, dated March 2, 1981, the U.S. Fish and Wildlife Service (USFWS) concluded, "normal cyclic O&M [operation and maintenance] procedures necessary to maintain the presently established 9-foot navigation channel are not likely to jeopardize the continued existence of federally listed threatened and endangered species". This opinion was based on a biological assessment of impacts to threatened and endangered mussel species which was prepared by the District after extensive mussel surveys were completed in all dredge cut locations in the District (Fuller 1980). The biological opinion recommended that consultation be reinitiated if:

1. A new dredge site is proposed within the present established channel.

2. New channel routes or alignments are proposed for dredge cuts that have not been surveyed since 1975.

3. Information suggests normal O&M procedures "may affect" a listed species.

4. If aquatic dredged material disposal sites must be used, a thorough survey of the proposed site be conducted prior to disposal.

Approximately 15 to 20 years have passed since the Fuller (1980) survey. During this interval, new information on the distribution and range of endangered and threatened mussel species has become available. Additionally, improvements in water quality have changed habitat conditions in the UMR. Also, the original biological assessment/biological opinion did not include an assessment of impacts of O&M activities on the endangered peregrine falcon (*Falco peregrinus*) and threatened bald eagle (*Haliaeetus leucocephalus*). We believe a new assessment of the effects of channel maintenance activities is needed.

The Higgins' eye pearly mussel (*Lampsilis higginsi*), winged mapleleaf mussel (*Quadrula fragosa*), and peregrine falcon, species listed by the Federal Government as endangered, and the bald eagle, listed as threatened, occur in the project area. While a variety of other species listed as threatened or endangered are known to occur in the geographic area, these four species have been identified by the USFWS as species to consider when assessing the effects of implementation of the CMMP on threatened and endangered species. This document evaluates the potential impacts of channel maintenance activities listed in the CMMP on these species. Criteria for determining if a project identified in the CMMP could affect threatened and endangered species are described and used to establish a list of projects that would have no effect on threatened and endangered species. Additionally, this document identifies those projects which could affect threatened and endangered species, and a procedure for initiating future consultation with the USFWS.

II. BACKGROUND

It is the policy of the COE to develop and implement dredged material management plans that satisfy the long-term placement needs for COE navigation projects. The CMMP consolidates previous planning efforts into a comprehensive long-term management plan for channel and harbor maintenance related activities. The CMMP identifies designated long-term dredged material placement sites, describes the District's Long-Term Management Strategy (LTMS) for placement site planning, discusses alternative channel maintenance techniques and documents policies and procedures. The CMMP will be used to guide the District and inform other agencies and the public of channel maintenance practices and actions. The CMMP, while long-term in nature, is designed to accommodate new information or changes as necessary. Revisions will be prepared, coordinated and distributed as necessary. A detailed discussion of the recommended channel maintenance plan can be found in Section 5 of the EIS.

III. AFFECTED ENVIRONMENT

In a February 10, 1995 letter, the USFWS determined the project area is located within the range of four federally protected species: the endangered Higgins' eye pearly mussel, the endangered winged mapleleaf mussel, the threatened bald eagle, and the endangered peregrine falcon. This biological assessment will address potential project impacts upon these species. Following is a description of these species and the habitat types they use.

III.A. GENERAL HABITAT USE

III.A.1. Higgins' Eye Pearly Mussel

Sparse information is available concerning the specific habitat requirements of Higgins' eye pearly mussels. Fuller (1980) collected Higgins' eye pearly mussels in the St. Croix River at Hudson, Wisconsin, from a mud-gravel bottom in 10 to 15 feet of water with moderate current velocity. A more recent survey by Hornbach et al. (1995) examined four known Higgins' eye pearly mussel beds on the St. Croix: Prescott, Lakeland, Interstate Park, and Fraconia Township. Hornbach et

al. (1995) were unable to specifically identify strict habitat requirements. They did note quadrats with Higgins' eye pearly mussel present were deeper and found to be associated with higher species richness and overall mussel densities than to those where Higgins' eye were absent. A substantially larger population of Higgins' eye occurs in the East Channel of the UMR at Prairie du Chien, Wisconsin, and although the substrates are similar, Fuller (1980) notes the two localities differ hydrodynamically. Higgins' eye pearly mussels have been collected from wing dam surfaces in pool 10 during District sponsored mussel surveys (Whiting personal communication). A comparison of the broad habitat features found within the "essential" habitats listed above indicates that Higgins' eye pearly mussels generally are found in main channel, main channel border (including wing dam surfaces) and side channel or slough localities.

III.A.2. Winged Mapleleaf

The draft Winged Mapleleaf Mussel Recovery Plan provides a description of the historic and present distribution of the winged mapleleaf mussel. The present distribution of the winged mapleleaf mussel within the District is limited to a 12.5-mile stretch of the St. Croix River below Taylors Falls, Minnesota. This species is not known to occur within the lower 24.5 miles (9-foot channel area) of the St. Croix River nor anywhere else in the District. The evaluation of potential project related impacts will be limited to the St. Croix River.

The specific habitat requirements of the winged mapleleaf mussel are not known. However, in the St. Croix River, winged mapleleaf mussels have been found in riffles with clean gravel, sand, or rubble substrates. Winged mapleleaf mussels were most abundant in shallow areas with fast current.

III.A.3. Bald Eagle

In recent years, bald eagle numbers have increased dramatically. The bald eagle has expanded its distribution throughout the United States, and its protected status has been changed from endangered to threatened throughout its range. Eagles use the project area year-round. In addition, the UMR is an important migration corridor. The two basic habitat types that have been defined as being very important and having the greatest potential for disturbance on the UMR are nesting and wintering habitats. These two important habitat types are the focus of this biological assessment.

Nesting habitat - Although eagles occasionally nest on the ground or on cliffs, they prefer larger, prominent trees of a variety of species. The bald eagle prefers to nest in mature or old-growth timber areas closely associated with water. Although eagle nests along the UMR occasionally are located over water, most are found away from the immediate shoreline in large areas of undisturbed mature or old-growth timber with an open and discontinuous canopy. Preferred nesting sites are usually tall, prominent trees, with an open structure and stable limbs which allow easy approach from the air.

Nest densities are highest in areas with minimal human activity. Densities are reduced in areas of moderate human use, and are rare in heavy human use areas. Mathisen et al. (1977) established three management zones for recommended "activity" levels around bald eagle nest sites. Viewed as concentric rings around the nest site, these zones are defined as follows: 1) In the 330-foot zone, there should be no activity any time during the year; 2) In the 660-foot zone, no activity from February 15 to October 1, and very little activity the rest of the year; and 3) In the 1,320-foot zone, no activity from February 15 to October 1, but no restrictions on activities the rest of the year. The 1,320-foot zone can be extended an additional 1,320 feet if it is justified in the nesting pair plan which is dependent on the nest site characteristics, pair behavior, and nesting history. Nesting surveys have identified at least 72 nest sites along the UMR since 1986.

Winter habitat - The majority of bald eagle use within the project area is during winter. Winter use is highest where the river is ice-free and adequate perch sites are available. These areas are important, providing stable feeding areas during high caloric demand periods. Large concentrations of eagles often are associated with open water areas bordered by suitable perch trees. High use areas within the St. Paul District include many of the tailwaters below the locks and dams, constrictions in the river which remain free of ice, and mouths of large tributary rivers (i.e., St. Croix and Chippewa). Of the habitat types used by eagles, toleration of human activity is highest in wintering areas.

There are basically three habitat components to winter management of bald eagles: feeding areas, daytime perching areas, and night roosts. Martell (1992) describes these components and provides management recommendations. The availability of food will dictate bald eagle use of an area during winter. They will congregate where open water conditions or other factors provide a food base (i.e., livestock operations). Daytime perching areas are near their foraging areas and are used to hunt from, eat in, or rest on. Trees within 100 feet of the shore are preferred.

Winter communal roosting behavior is found in a wide variety of habitats and is important for winter survival. Roost sites probably are selected because they offer bald eagles special advantages such as proximity to feeding areas, protection from the wind and cold, favorable sun exposure, and isolation. Removal or disturbance of roost sites could cause abandonment of a wintering area, causing stress during a critical period of the year and potentially affecting survival. Protection of roost sites is therefore important. Communal roosts receive high bald eagle use during the winter, with some sites supporting up to 50 eagles at a time. Roost sites are commonly used during evenings, but may be used during the day in inclement weather. There are two types of roosts: critical and secondary. The critical roosts are those used more than 14 nights per season by local breeding eagles, or used more than 14 nights per season by more than 15 eagles per night, or one that has been documented as active for more than 5 years. Secondary roosts do not meet the above criteria and may form temporary foraging areas.

III.A.4. Peregrine Falcon

The peregrine falcon is known to breed within the project area, but is more common during migration. Historic accounts (e.g. Kumlien and Hollister 1903) of peregrine falcons in Wisconsin, report their numbers as being very low. Declines of several populations worldwide occurred from 1946 to 1972. The major factor responsible in the worldwide decline of peregrine falcons was the use of pesticides, especially organochlorides. Since the ban of these pesticides in the U.S., peregrine falcon populations have increased close to pre-decline numbers. Natural nesting habitat in this area is usually on steep rocky bluffs associated with the major rivers. Nesting success has been successful in highly urbanized settings, such as the Twin Cities Metropolitan area.

III.B. ST. CROIX RIVER

The authorized 9-foot navigation channel extends up to river mile 24.5 and a 3-foot channel is authorized up to river mile 51.8, near Taylors Falls, Minnesota. In this upper reach, the St. Croix River occupies a gorge cut down to 400 feet below the surrounding uplands. Between Taylors Falls and Stillwater, the river is a braided stream occupying much of the floodplain. The floodplain is primarily forested with some marsh and backwater slough development. The Apple River enters the St. Croix River from Wisconsin a few miles above Stillwater.

Below Stillwater, Lake St. Croix nearly fills the valley floor. The lake is formed by the bed of the UMR damming the mouth of the St. Croix River. Lake St. Croix ranges from 1 to 2 miles wide and is over 70 feet deep in locations. The Willow and Kinnickinnic Rivers enter Lake St. Croix on the Wisconsin side. The lake is a popular recreational area for the Twin Cities metropolitan area. Developed areas along Lake St. Croix include Stillwater, Bayport, and a number of small communities on the Minnesota shoreline, and North Hudson, Hudson, and Prescott on the Wisconsin shoreline. A more detailed description of the general resources can be found in Section 4 of the EIS.

Species with Federal threatened or endangered status that use, or that might be found on, the lower St Croix River include: the Higgins' eye pearly mussel, the winged mapleleaf mussel, the bald eagle which may nest, roost, and feed in the area and the peregrine falcon which may use the area for nesting, roosting, and feeding. The USFWS has identified these four species as species to consider when assessing the effects of implementation of the CMMP on the St. Croix River.

III.B.1. Distribution of Higgins' eye pearly mussel

The St. Croix River contains the most upstream Higgins' eye populations in the upper Mississippi River basin (Hornbach et al. 1995). Fuller (1980) collected Higgins' eye pearly mussels in the St. Croix River at Hudson, Wisconsin, and Hornbach et al. (1995) examined four known Higgins' eye pearly mussel beds on the St. Croix: Prescott, Lakeland (Hudson), Interstate Park, and Fraconia Township.

III.B.2. Distribution of winged mapleleaf mussel

The draft Winged Mapleleaf Mussel Recovery Plan provides a description of the historic and present distribution of the winged mapleleaf mussel. The present distribution of the winged mapleleaf mussel within the District is limited to a 12.5-mile stretch of the St. Croix River below Taylors Falls. This species is not known to occur within the lower 24.5 miles (9-foot channel area) of the St. Croix River nor anywhere else in the District.

III.B.3. Distribution of bald eagle

Five known nest sites have been identified within the St. Croix River valley. There are currently three active nest sites located at Stillwater, Bayport, and Afton. Bald eagle use of the St. Croix River is limited for a number of reasons. The St. Croix River valley is much narrower than the UMR and has very little backwater habitat. Recreational traffic is extremely high at times, which discourages bald eagle use. Open water areas on the St. Croix River during the winter include the area below Taylors Falls, Minnesota, the narrows at Hudson, Wisconsin, the mouth of the Kinnickinnic River, and the confluence of the St. Croix/UMR at Prescott, Wisconsin. Eagle use of the St. Croix River during the winter is comparatively low (i.e. eagles are present at open-water near Hudson and Kinnickinnic daily, although there are rarely more than four birds present at each site), and there are no known winter roost sites.

III.B.4. Distribution of peregrine falcon

The only known breeding site within the St. Croix River valley is a peregrine falcon nest-box on the smokestack at the Allen S. King generating plant in Oak Park Heights, MN at river mile 21. One fledgling was produced in 1996. The peregrine falcon is also present in the St. Croix River valley during migration.

III.C. MINNESOTA RIVER

The authorized 9-foot navigation channel extends to river mile 14.7 and a 4-foot channel is authorized to river mile 25.6. In this 25-mile reach, the Minnesota River meanders through a floodplain bordered by low bluffs and terraces. The floodplain is 1 to 1 1/2 miles wide in this area and dominated by river lakes, marshes, and floodplain forest. The Minnesota Valley National Wildlife Refuge encompasses much of the floodplain in this reach of the river.

The uplands bordering the floodplain are steadily being developed as the Twin Cities metropolitan area continues to grow. The navigable portion of the Minnesota River is bordered by the cities of Shakopee, Eden Prairie, Savage, Bloomington, Burnsville, Eagan, Richfield, Mendota Heights, and St. Paul, Minnesota. A more detailed description of the general resources can be found in Section 4 of the EIS.

Fuller (1980) reported that mussels were probably extinct in the navigable portion of the lower Minnesota River. Heavy organic enrichment due to agricultural practices in the watershed, along with pesticide and herbicide runoff, are believed to be the primary causes which decimated the once strong mussel population of the river. Recent surveys performed show mussels are recolonizing this reach of the river, but limited data exists on species composition and densities.

The USFWS has identified the peregrine falcon, bald eagle, and the Higgins' eye pearly mussel as species to consider when assessing the effects of implementation of the CMMP on the Minnesota River.

III.C.1. Distribution of bald eagle

Due to the river valley's intense urbanization, bald eagle use of the Minnesota River valley is very limited. There has been one recorded nest from the lower Minnesota River near Long Meadow Lake. There are no known roosting sites, and winter use of the area is limited.

III.C.2. Distribution of peregrine falcon

The peregrine falcon is distributed throughout North America. It nests primarily on cliffs, sides of buttes, slopes and riverbanks, and occasionally in trees and man-made structures. The peregrine falcon is known to breed within the lower Minnesota River valley and is also present during migration.

III.D. UPPER MISSISSIPPI RIVER

Minneapolis, Minnesota, is the head of commercial navigation on the UMR, and marks the upstream end of the project area. In the vicinity of Minneapolis, the UMR flows in a narrow valley with steep bluffs on either side. The gradient of the riverbed near Minneapolis is the steepest of the entire river. Almost 60 percent of the Mississippi's total drop in elevation occurs within the District's boundaries.

Downstream of St. Paul, the UMR spreads into a wide floodplain with an extensive system of lakes and sloughs. Near Prescott, Wisconsin, the St. Croix River joins the UMR. Unlike the Minnesota River, the St. Croix is relatively clean, draining forested areas of Wisconsin and Minnesota to the north. Consequently, the water quality of the UMR improves below the mouth of the St. Croix.

The UMR continues to widen until it reaches Lake Pepin, a 22-mile-long natural river-lake approximately 2 miles wide in pool 4. Lake Pepin ends at the delta of the Chippewa River, which drains a large area of northwestern Wisconsin. The Chippewa River contributes large volumes of coarse sediment to the UMR.

Below the Chippewa River, the UMR again forms a main channel with a wide floodplain containing extensive backwaters. The Zumbro River enters the UMR in pool 5. Below pool 4, the floodplain is only about 550 feet above sea level and is flanked by bluffs that rise 650 feet above the valley floor. These characteristics cause a moderation in climatic conditions. Winters are less severe in the river community of Winona, Minnesota, for example, than they are in Rochester, Minnesota, only about 45 miles to the west.

In pool 7, another large lake, Lake Onalaska is found. The Black River flows into Lake Onalaska from Wisconsin. From pool 7 to Lock and Dam 10 at Guttenberg, Iowa, the river flows through a valley 2 to 3 miles wide between weathered bluffs. Terraces, usually narrow and sometimes discontinuous, provide locations for the development of small towns.

The Root River, which drains a portion of southeast Minnesota, enters the UMR in pool 8. The Upper Iowa River enters from the west in pool 9. The Wisconsin River, which drains much of central Wisconsin, enters the UMR in pool 10 below Prairie du Chien, Wisconsin. A more detailed discussion of the general resources can be found in Section 4 of the EIS.

Species with Federal threatened or endangered status that use, or that might be found on, the UMR floodplain include: the bald eagle which nests, roosts, and feeds in the area; the peregrine falcon which may nest, roost, and feed in the area; and the Higgins' eye pearly mussel.

The USFWS has identified these three species as species to consider when assessing the effects of implementation of the CMMP on the Mississippi River. Further discussion of these species distributions is provided.

III.D.1. Distribution of Higgins' eye pearly mussel

The Higgins' Eye Mussel Recovery Plan (Stern et al. 1982) provides a description of the historic and modern distribution of the Higgins' eye pearly mussel. Historically, the Higgins' eye pearly mussel was recorded throughout most of the UMR, ranging as far north as pool 3 and the Minnesota and St. Croix Rivers. Presently, the known distribution of the Higgins' eye pearly mussel within the District is limited to the St. Croix River and pools 7, 8, 9 and 10 (Stern et al. 1982; Havlik 1980; Duncan and Thiel 1983; Thiel 1981; Miller and Payne 1992). Five sites within the District have been identified as "essential" habitat by the Higgins' eye mussel recovery team (Stern et al. 1982). These sites are: 1) St. Croix River opposite Hudson, WI (UMR 17.6 - 16.2); 2) Mississippi River at Whiskey Rock, opposite Ferryville, WI, Pool 9 (UMR 658.4 - 655.8); 3) Mississippi River at Harpers Slough, Pool 10 (UMR 641.4 -639.0); 4) Mississippi River Main and East Channel at Prairie du Chien, WI, and Marquette, IA, Pool 10 (UMR 637.0 - 633.4); and 5) Mississippi River at McMillan Island, Pool 10 (UMR 619.1 - 616.4).

III.D.2. Distribution of bald eagle

In recent years, bald eagle use of the UMR has increased dramatically. Nest numbers within the UMR valley are steadily increasing as eagles are nesting in previously unoccupied areas. They can be found throughout the river valley during the winter, depending upon weather and ice conditions. During cold periods, winter feeding sites are limited to areas immediately downstream of the locks and dams, the confluence of major tributaries, or river constrictions. During most winters, winter feeding sites are not limiting, as there is much open water. Known winter roost sites are located in pools 2, 3, 4, 5, 8, 9, and 10.

III.D.3. Distribution of peregrine falcon

The peregrine falcon is known to breed within the upper Mississippi River valley (downtown areas of St. Paul and Minneapolis) and is also present during migration.

IV. GENERAL BIOLOGICAL EFFECTS OF CHANNEL MAINTENANCE ACTIVITIES

Assessing the effects of implementation of the CMMP on threatened and endangered species requires knowledge of the general mechanisms by which a project feature could affect a species. The specific channel maintenance activities proposed in the CMMP and the biological assessment of effects on threatened and endangered species are presented in Section V.

IV.A. POTENTIAL IMPACTS TO ENDANGERED MUSSEL SPECIES

IV.A.1. Use of Selected Disposal Sites Including Recreational Beaches

Placement of dredged materials on upland disposal sites would obviously kill any mussels contained within the dredged material through desiccation. Additionally, hydraulic placement of materials on upland disposal sites normally requires a ponding or settling basin from which an effluent is discharged. The quality of this effluent would depend largely on the quality, in terms of contaminants, of the sediments placed at the site. In areas with sediment contamination problems (i.e., the Twin Cities metropolitan area), effluent discharge from disposal sites could affect mussel species downstream of the effluent through reduced water quality. Generally, however, use of upland disposal sites would have little or no effect on freshwater mussels, including threatened and endangered species.

Use of temporary "bathtub" sites could affect endangered mussels through direct coverage. However, the likelihood of endangered mussels colonizing "bathtub" areas is quite low. Generally, the shifting sand substrates in these areas are poor habitat for freshwater mussels. Additionally, these areas are frequently disturbed either through placement of dredged materials, or excavation of materials during transfer operations.

In-water placement of dredged material (thalweg disposal) could affect endangered mussel species through direct burial. Mussels buried by in-water placement of dredged material would likely perish as a result of asphyxiation and/or starvation. Although no permanent in-water disposal of dredged material is proposed in the CMMP, in some instances, a temporary in-water rehandling site is required. In addition to the potential for burial, endangered mussels inhabiting re-handling sites could be re-dredged and deposited on upland locations, leading imminently to death.

IV.A.2. Dredging

Dredging primarily affects the main channel of the river. However, it can also affect side channels, sloughs and backwater lakes and ponds through increased turbidity levels and resuspension of pollutants. Channel maintenance dredging is normally required and conducted in areas of shifting/shoaling bedload. The unstable substrates typically found in frequently dredged areas are generally inhospitable to mussels. As a result, dredging usually has little effect on freshwater mussels. However, dredging can result in the direct physical removal of freshwater mussels from dredge cut locations, and subsequent deposition at a disposal site.

Freshwater mussels, in addition to being susceptible to local extermination, can be affected by turbidity, intake of resuspended pollutants, direct coverage by settling sediments produced during the dredging process, and reduced oxygen levels. Suspended solids and sedimentation due to dredging can cause clogging and abrasion of gills and other respiratory surfaces in mussels.

Following dredging, bottom substrates in dredge cuts are often unstable or shifting for some time, providing poor habitat for recolonization of these areas by mussels (Burky 1983). Also, the habitat conditions that exist after dredging may not be suitable for use by fish host species, further delaying recolonization.

Miller and Payne (1992) collected Higgins' eye pearly mussels from a location in the East Channel of the UMR at Prairie du Chien, Wisconsin, which had been previously dredged, indicating that recolonization of dredge cut areas does occur. However, an interval of 8 years had occurred between the dredging operation and Miller and Payne's study.

IV.A.3. Non-structural Techniques

Adjusting channel dimensions, monitoring channel conditions, information sharing with users, and accurate marking of the channel are all non-structural channel maintenance techniques used to reduce dredging quantities. Another technique currently being used is sediment trap dredging. Of the non-structural techniques proposed in the CMMP, both sediment trap dredging and adjusting channel dimensions have the potential to affect threatened or endangered mussel species. The impacts of dredging and dredged material disposal on freshwater mussels are discussed in preceding sections of this document. Currently, one sediment trap, located at the mouth of the Chippewa River, is maintained in the District. Adjusting channel dimensions could affect mussels in two ways. By expanding the dredge cuts, more mussel habitat could potentially be disturbed.

Reducing the dredge cut dimension could benefit mussel populations by lessening dredging in the area.

IV.A.4. Channel Control Structure Construction and Rehabilitation

Channel structure modifications are designed to concentrate flows in the main channel and, therefore, primarily affect flow patterns along with sedimentation patterns. Construction of channel control structures would involve covering benthic habitat and could therefore affect threatened and endangered mussel species. The general impacts of wing dam construction/rehabilitation, closing dam construction/rehabilitation and shoreline riprapping are described below.

Wing dams would be constructed/rehabilitated in main channel and channel border habitats, areas likely to harbor endangered mussel species. Increased current velocities and, thus, increased scouring of main channel areas in the vicinity of constructed/rehabilitated wing dams would occur, resulting in increased channel depths and/or widths. Sedimentation patterns would be changed, with sediment transported through rehabilitated river reaches to downstream areas of lower velocity.

Closing dams would be constructed to reduce flows into side-channel areas. Primary impacts such as reduced volume of flow, reduced current velocities, reduced sediment input, and increased water residence time in backwaters would occur in these habitats and could affect endangered mussel species inhabiting side channel areas. The increased flows in the main channel resulting from side channel closure would have an impact on main channel and channel border habitats as well.

Placement of stone protection on shoreline areas or wing dams covers benthic habitats and organisms and thus would affect threatened and endangered mussel species present at the site.

IV.A.5. Snag Removal

Removal of trees or other obstructions from the navigation channel could affect threatened mussel species through disturbance of bottom substrates. However, the majority of snagging occurs on the Minnesota River, which is outside the known range of the Higgins' eye pearly mussel and the winged mapleleaf mussel.

Snag removal on the St. Croix River is completed only upon request of the National Park Service. The St. Croix River is within the range of the Higgins' eye pearly mussel and the winged mapleleaf mussel.

IV.A.6. Harbor Maintenance

Harbor maintenance generally involves dredging and disposal of sediments from within established harbor boundaries. The potential impacts of dredging and dredged material disposal on threatened and endangered mussel species are discussed in the preceding sections.

IV.A.7 Recreational Beach Development/Maintenance

Placement of dredged materials on upland recreational beaches for the purposes of maintaining or upgrading these areas would have similar potential impacts as those described in Section IV.A.1. Reshaping of recreational beaches could potentially impact endangered mussels if materials are pushed into the water to expand a site or reduce the slope of a beach.

IV.B. POTENTIAL IMPACTS TO BALD EAGLE

IV.B.1. Use of Selected Disposal Sites Including Recreational Beaches

Placement of dredged material on upland disposal sites could affect bald eagles in two ways: (1) cause sufficient disturbance during placement activities to have an impact on nesting; or (2) change the conditions of bald eagle habitat. The disturbance factor in dredged material placement is dependent upon the timing of placement, the duration of placement, and the proximal distance to a bald eagle nest. Sediment quality in terms of contaminants could also be a factor in the effects to bald eagles. In areas with sediment contamination problems, effluent discharge from disposal sites could affect the fisheries downstream of the discharge through reduced water quality, both in fish densities and contaminant buildup in fish tissue. This would affect bald eagles by decreasing food source and bioaccumulation of contaminants in the food chain.

Use of temporary bathtub sites could affect bald eagles through destruction of habitat, disturbance, and potential contamination. Destruction of habitat could be removal of nesting, perching and roosting trees, or changing the habitat conditions of feeding areas, such as precluding the growth of trees along the main channel. Disturbance can result from increased human activity within 0.6 mile from an active nest site. Human disturbance has been shown to negatively affect bald eagle nesting. Eagles are most sensitive to disturbance during the critical nesting period when they are involved with courtship, egg-laying, and incubation. The critical nesting period is generally from March 15 to May 15. The moderately critical period is 1 month before and after the critical nesting period. From February 15 to March 15, the eagles are becoming physiologically conditioned for breeding. From May 15 to June 15, the newly hatched eagles require frequent brooding and feeding. Eagles tolerate moderate amounts of human presence during the low critical period from June 15 to October 1, when young are in the post-fledgling stage.

In-water placement of dredged material could affect bald eagles through disturbance and change of habitat in feeding areas. Although no permanent in-water disposal of dredged material is proposed in the CMMP, in some instances, a temporary in-water rehandling site is required.

IV.B.2. Dredging

Dredging primarily affects the main channel of the river. However, it can also affect side channels, sloughs and backwater lakes and ponds through increased turbidity levels and resuspension of pollutants. This again can affect bald eagles because it has an impact on their food source. Dredging in the location of a nest could cause nest failure or abandonment, depending upon the time of year, duration of dredging, and proximity of the nest to dredging activity.

The local fish base is the main staple diet item to bald eagles. Fish are also susceptible to local extermination, and can be affected by turbidity, intake of resuspended pollutants, and reduced oxygen levels. Suspended solids and sedimentation due to dredging can cause clogging and abrasion of gills and other respiratory surfaces in fish, can affect spawning beds, and feeding.

IV.B.3. Non-structural Techniques

All the non-structural techniques proposed in the CMMP can have an impact on bald eagles by potentially increasing human activity around nesting and roosting sites. The impacts of dredging and dredged material disposal on eagles are discussed in preceding sections of this document. Currently, one sediment trap, located at the mouth of the Chippewa River, is maintained in the District.

IV.B.4. Channel Control Structure Construction and Rehabilitation

Channel structure modifications are designed to concentrate flows in the main channel and, therefore, primarily affect flow patterns along with sedimentation patterns. Construction related impacts of channel control structures could be expected in areas near nesting or roosting sites. Closing dams would be constructed to reduce flows into side-channel areas. Primary impacts such as reduced volume of flow, reduced current velocities, reduced sediment input, and increased water residence time in backwaters would occur in these habitats and could affect the local fishery species inhabiting side channel areas. The increased flows in the main channel resulting from side channel closure would affect main channel and channel border habitats as well. Changes in the dynamics of side channels could change the local fisheries, thereby affecting bald eagle feeding opportunities. Placement of stone protection on shoreline areas could affect bald eagles if bank reshaping, including tree removal, is included in the plan, especially if the project is within nesting or roosting zones.

IV.B.5. Snag Removal

Removal of trees or other obstructions from the navigation channel could affect bald eagles by removing nest, perch, or roost trees along the shoreline. The majority of snagging occurs on the Minnesota River and is performed on the St. Croix River upon request of the National Park Service. Both the Minnesota and St. Croix Rivers receive little eagle use.

IV.B.6. Harbor Maintenance

Harbor maintenance generally involves dredging and disposal of sediments from within established harbor boundaries. The potential impacts on bald eagles from dredging and dredged material disposal are discussed in the preceding sections. Due to the high amount of fine grained sediment in most harbors, the likelihood of encountering contaminated sediment is much higher than in main channel sediment.

IV.B.7 Recreational Beach Development/Maintenance

Placement of dredged materials on upland recreational beaches for the purposes of maintaining upgrading these areas would have similar potential impacts as those described in Section IV.B.1

V. BIOLOGICAL ASSESSMENT

V.A. ENDANGERED MUSSEL SPECIES

V.A.1. Actions with no effect

As discussed above, many of the actions proposed in the CMMP could affect threatened and endangered mussel species. However, many of the dredging locations (including harbors and the sediment trap at the mouth of the Chippewa River), snag removal sites on the Minnesota River and upland dredged material disposal sites are outside the known distribution of endangered mussel species, are unsuitable habitat for endangered mussel species, or are maintained so frequently that colonization by endangered mussel species is unlikely. Therefore, several criteria were established or considered for determining if an action proposed in the CMMP would have no effect on endangered mussel species. For dredging actions, including harbor dredging, and snag removal, the following criteria were established:

1) Dredging operations at the site since 1987 indicates endangered mussel colonization at the dredge cut is not likely.

2) Dredging frequency exceeding 20% (once every 5 years) precludes endangered mussel colonization in the dredge cut.

3) Substrates in the project vicinity are unsuitable (i.e., silt/muck with particle size distribution of greater than 10 percent passing a U.S. standard mesh of 200) for endangered mussel species.

4) Historic and recent surveys by Fuller (1980), Thiel (1981), the St. Paul District, and others indicate the presence of a low quality or impoverished mussel bed containing no threatened and endangered mussel species.

The rationale for these criteria are discussed below.

The first factor considered to determine potential impacts to endangered mussels species is the period since the area was last maintained. Miller and Payne (1992) investigated mussel recolonization in a maintained dredge cut located the East Channel of the UMR at Prairie du Chien, Wisconsin and found recolonization occurred after 8 years following dredging. In this evaluation we used a period of 10 years since the dredge cut was last maintained. A dredge cut that has not been maintained within a 10-year period indicates the area is somewhat stabile, and it is conceivable mussels could recolonize within this time frame.

The second criteria examined to determine potential impacts to endangered mussels was the dredging frequency within a dredge cut. Dredge cuts meeting the "no effect" criteria have dredging frequencies of greater than 20 percent (i.e., are dredged greater than once every 5 years; 1/5 = 0.20). As a result, dredging in these high frequency cuts would have no effect on threatened and endangered species. The key feature of these substrates, in terms of mussel inhabitation, is stability; the substrate must be stable. The frequency an area requires dredging is a strong indicator of continuous sediment deposition and/or moving bedload. The relative instability of substrates in frequently dredged locations makes colonization by freshwater mussels unlikely. We believe where dredging occurs on a fairly frequent basis (i.e., if the interval between dredging is less than 5 years) the opportunity for recolonization by Higgins' eye pearly mussels does not exist.

Fuller (1980) suggests very few taxon-specific habitat requirements can be stated for endangered species. Endangered mussel species typically prefer gravel, viscous mud or hard-packed sand substrates and have been found on wing dam surfaces. Only a few UMR streambed types are consistently inhabited by mussels: gravel, viscous mud and, to a lesser extent, hard-packed sand. Fine-grained sediments like silt or oozing muck, because of their unconsolidated nature, are typically unsuitable mussel habitat. Sediment samples have been collected in many of the historic dredge cut locations in the District. Particle distribution analysis indicates sediments defined as silt or clay typically have 10 percent or greater of their volume passing a size 200 U.S. standard mesh. We believe endangered mussel species do not occur in dredge cut locations with fine-grained silt as a major component of the sediment.

The distribution of Higgins' eye pearly mussels and winged mapleleaf mussels were identified in the Recovery Plans for these species (Stern et al. 1982, Vaughn et al. 1993). Surveys (Fuller

1980, Thiel 1981, Havlik 1980) indicated the Higgins' eye pearly mussels range in the District included the St. Croix River and pools 7, 8, 9 and 10 of the UMR. The winged mapleleaf is found only in the St. Croix River below Taylors Falls. Fuller (1980) believed mussels were probably extinct in the lower Minnesota River and had been so for many years. However, recent surveys have shown mussel populations have been recovering in this reach due to improvements in water quality. Fuller (1980) suggested three distinct zones of mussel distribution in the UMR: the Twin Cities, Chippewa and Recovery Zones. The Twin Cities Zone begins with Upper St. Anthony Falls and extends to the Chippewa River confluence in pool 4. Mussel resources in this zone were historically impoverished as a result of pollution and resulting poor water quality. The Chippewa Zone includes pool 4 below the Chippewa-Mississippi confluence and pools 5 and 5A. The enormous load of sediment carried to the Mississippi by the Chippewa River and persistent pollutants from the Twin Cities limit mussel resources in this reach. The Recovery Zone includes pools 6 through 10. Mussel resources in this reach of the river are considered healthy. We believe the likelihood of encountering endangered mussel species in the Minnesota River and pools USAF, 1, 2, 3, 4, 5, and 5A is lower than in the more downstream reaches.

TAB 4-1 of the CMMP provides a listing of the location and frequency of maintenance of historic dredge cuts within the District. TAB 5 of the CMMP provides a summary of sediment quality and characteristics of samples collected by the District in historic dredge cut areas. TAB 3 of the CMMP provides a listing of the active placement sites in the District while TABs 9 through 20 provide placement site information and operational characteristics for the active placement sites in each pool. Using this information, Tables 1 and 2 provide listings of the dredging projects and harbor maintenance and snag removal projects, respectively, and whether any of these projects meet the "no effect" biological assessment criteria established above. For those projects that meet two or more of the "no effect" criteria, it is our biological assessment that these projects would have no effect on endangered mussel species. Criteria 4 is based on historical mussel survey data. In certain instances two criteria met the no effect, yet no determination to endangered mussels was made. In these cases, if the area had not been dredged in 10 years, had a dredging frequency over 20%, and Fuller (1980) found a low quality mussel bed, a no determination of impacts to mussels could be made at this time without additional mussel surveys in these cuts. Specifically, the dredge cuts meeting these criteria are Washington Avenue Bridge (852.5-853.0; pool 1), Upper Approach to L/D 1 (847.7-848.4; pool 1), and Island 58 (734.0-735.2; pool 5A).

Several factors determine whether a dredged material disposal/placement site could affect threatened and endangered mussel species. Use of entirely upland disposal/placement sites would have little or no effect on threatened mussel species. The effects, if any, would occur as a result of contaminated effluent return causing water quality problems downstream of the effluent discharge site. As defined by Fuller (1980), mussel resources in the Twin Cities zone are impoverished because of pollution and poor water quality. Therefore, at locations in and above Lake Pepin, concern for contamination of sediments would be greater than for areas below Lake Pepin. Upland disposal/placement sites with no effluent return or with an effluent return but in areas with low concern for sediment contamination (i.e., below Lake Pepin and the St. Croix River) would have no effect on endangered mussel species. Additionally, in areas where

Table 1. Historic dredge cut locations and biological assessment of effects on endangered mussels.

Pool	Location (river mile)	Cut Name	Criteria 1*	Criteria 2**	Criteria 3***	Criteria 4****	Biological Assessment
MN	14.3-14.7	Above Savage R.R. Bridge	yes -1992	yes -26.9	yes	yes	no effect
MN	12.8-13.6	Cargill Slip	no -1983	no -3.8	yes	yes	no effect
MN	11.8-12.4	Peterson's Bar	yes -1995	yes -50.0	yes	yes	no effect
MN	11.0-11.6	Below Peterson's Bar	no -1983	no -15.4	yes	yes	no effect
MN	10.1	Above 35W Bridge	no -1983	no -3.8	no	yes	no determination
MN	4.0	4 Mile Cutoff	no -1987	no -3.8	no	yes	no determination
MN	0.0-0.5	Mouth of MN River	yes -1993	no -7.7	yes	yes	no effect
St. Croix	6.0-6.5	Kinnickinnic Bar	yes -1989	no -19.2	no	yes	no effect
USAF	856.8-857.6	Minneapolis Turning Basin	yes -1994	yes -50.0	no	yes	no effect
USAF	856.4-856.8	Above Lowry Ave. Bridge	yes -1994	yes -57.7	no	yes	no effect
USAF	855.5-856.1	Broadway Ave. Bridge	yes -1994	yes -46.2	no	yes	no effect
USAF	854.8-855.5	Above Plymouth Ave. Bridge	yes -1994	yes -38.5	no	yes	no effect
1	853.4	Lower Approach LSAF	yes -1988	no -3.8	no	yes	no effect
1	852.5-853.0	Washington Ave. Bridge	no -1987	yes -26.9	no	yes	no determination
1	851.6-853.4	Above Franklin Ave. Bridge	yes -1991	yes -26.9	no	yes	no effect
1	850.7-851.4	Below Franklin Ave. Bridge	yes -1994	yes -34.6	no	yes	no effect
1	849.9-850.5	Above Lake Street Bridge	yes -1994	yes -53.8	yes	yes	no effect
1	848.9-849.9	Below Lake Street Bridge	yes -1994	yes -34.6	yes	yes	no effect
1	848.5-848.9	St. Paul Daymark	yes -1988	yes -23.1	no	yes	no effect
1	847.7-848.4	Upper Approach L/D 1	no -1987	yes -26.9	no	yes	no determination
2	840.8-841.3	Above & Below Smith Ave.	yes -1994	yes -46.2	yes	yes	no effect
2	836.4-837.8	St. Paul Barge Terminal	yes -1995	yes -42.3	yes	not surveyed	no effect
2	827.5-828.3	Grey Cloud Slough	yes -1995	yes -30.8	no	not surveyed	no effect
2	826.1	Robinson Rocks	no -1977	no -3.8	no	yes	no determination
2	822.7-823.7	Pine Bend	yes -1995	yes -38.5	yes	not surveyed	no effect
2	820.8-821.4	Boulanger Bend	yes -1995	no -19.2	yes	not surveyed	no effect
2	819.0-819.8	Boulanger Bend Lower Light	yes -1995	no -19.2	yes	not surveyed	no effect
3	814.9-815.1	Lower Approach L/D 2	yes -1992	no -11.5	yes	not surveyed	no effect
3	810.3-811.7	Prescott	no -1972	no -3.8	no	yes	no determination
3	807.9-808.6	Truedale Slough	no -1972	no -3.8	no	yes	no determination
3	807.0-807.9	Four Mile Island	no -1972	no -3.8	no	yes	no determination
3	804.1-806.0	Big River	yes -1995	no -15.4	no	yes	no effect
3	801.9-803.0	Morgan's Coulee	yes -1992	no -7.7	no	yes	no effect
3	800.8-801.8	Coulter's Island	yes -1995	yes -26.9	no	yes	no effect
3	798.8-800.4	Diamond Bluff	yes -1995	yes -26.9	no	yes	no effect
4	794.0-794.6	Trenton	no -1975	no -7.7	no	no	no determination
4	792.1-793.5	Cannon River	yes -1994	no -19.2	yes	yes	no effect
4	790.8-791.2	Above Red Wing Hwy. Bridge	no -1972	no -3.8	yes	no	no determination
4	789.5-790.3	Below Red Wing Hwy. Bridge	no -1971	no -3.8	yes	no	no determination
4	785.2-785.4	Head of Lake Pepin	yes -1990	no -5.0	yes	no	no effect
4	763.2	Chippewa Delta	yes -1995	yes -26.9	no	not surveyed	no effect
4	761.8-763.8	Read's Landing	yes -1993	yes -53.8	no	yes	no effect
4	758.5-759.5	Above Crat's Island	yes -1995	yes -73.1	no	yes	no effect
4	757.0-757.9	Above Teepeota Point	yes -1995	yes -53.8	no	yes	no effect
4	755.8-756.9	Grand Encampment	yes -1995	yes -53.8	no	yes	no effect
4	753.9-754.6	Beef Slough	yes -1995	yes -26.9	yes	yes	no effect
5	752.6-752.8	Lower Approach L/D 4	no -1976	no -11.5	no	yes	no determination
5	748.6-749.6	Mule Bend	yes -1994	yes -23.1	no	yes	no effect
5	748.2-747.2	West Newton	yes -1995	yes -23.1	no	no	no effect
5	746.0-746.8	Below West Newton	yes -1995	yes -61.5	no	no	no effect
5	744.8-746.0	Fisher Island	yes -1995	yes -69.2	no	not surveyed	no effect
5	744.0-744.6	Lower Zumbro	yes -1995	yes -50.0	no	not surveyed	no effect
5	742.6-743.9	Sommerfield Island	yes -1995	yes -30.8	no	not surveyed	no effect
5A	734.0-735.2	Island 58	no -1982	yes -30.8	no	yes	no determination
5A	733.3-733.8	Fountain City	no -1972	no -3.8	no	yes	no determination
5A	731.0-732.0	Betsy Slough	yes -1995	yes -76.9	no	yes	no effect
5A	730.2-730.7	Wilds Bend	yes -1995	yes -61.5	no	yes	no effect
6	723.4-723.8	Below Winona R.R. Bridge	yes -1995	yes -23.1	no	yes	no effect
6	721.8-722.9	Gravel Point	no -1972	no -3.8	no	no	no determination
6	720.4-721.1	Homer	yes -1991	no -15.4	yes	not surveyed	no effect
7	714.0-714.3	Lower Approach L/D 6	yes -1993	no -15.4	no	yes	no effect
7	711.4-712.3	Richmond Island	no -1982	no -15.4	no	no	no determination
7	707.4-709.3	Winter's Landing	yes -1995	yes -57.7	no	no	no effect
7	706.1-706.6	Dakota	yes -1995	yes -34.6	yes	not surveyed	no effect
7	704.0-705.3	Head of Dresbach	yes -1995	yes -38.5	no	not surveyed	no effect
7	703.0-703.7	Lower Dresbach Island	yes -1995	yes -23.1	no	not surveyed	no effect
7	702.9-702.5	Upper Approach L/D 7	yes -1989	no -7.7	no	no	no determination
8	699.8-700.4	LaCrosse R.R. Bridge	yes -1992	yes -30.8	no	no	no effect
8	694.3-695.0	Sand Slough	no -1970	no -3.8	no	yes	no determination
8	691.4-692.4	Picayune Island	no -1973	no -7.7	no	yes	no determination
8	689.9-690.8	Above Brownsville	yes -1995	yes -53.8	no	yes	no effect
8	688.7-689.4	Brownsville	yes -1995	yes -69.2	no	yes	no effect
8	687.5-688.7	Head of Raft Channel	yes -1994	yes -42.3	no	not surveyed	no effect
8	686.5-687.5	Deadman's Slough	yes -1989	no -7.7	no	not surveyed	no determination
9	678.7-679.2	Lower Approach L/D 8	yes -1988	no -7.7	no	not surveyed	no determination
9	677.5-678.4	Island 126	yes -1989	no -7.7	no	yes	no effect
9	676.0-676.6	Twin Island	no -1969	no - ND	no	yes	no determination
9	671.0-672.0	Battle Island	no -1980	no -11.5	no	yes	no determination
9	665.0-665.8	Indian Camp Light	yes -1995	yes -57.7	no	yes	no effect
9	663.8-664.9	Lansing Upper Light	yes -1995	yes -57.7	no	yes	no effect
10	646.0-646.6	Hay Point	no -1972	no -7.7	no	no	no determination
10	643.7-644.7	Jackson Island	no -1981	no -11.5	yes	no	no determination
10	642.7-643.4	Mississippi Gardens	no -1976	no -7.7	no	no	no determination
10	627.0-629.0	Wyalusing	no -1970	no -3.8	no	no	no determination
10	618.4-619.6	McMillan Island	yes -1995	yes -38.5	no	no	no effect

*Criteria 1 - Dredge cut has been maintained since 1987; colonization of endangered mussel species is unlikely.
**Criteria 2 - Dredging frequency exceeds 20%; colonization of endangered mussels is unlikely.
***Criteria 3 - Substrates in the project vicinity are unsuitable (i.e. silt/muck with particle size distribution of greater than 10% passing U.S. standard mesh of 200) for endangered mussel species.
****Criteria 4 - Surveys (Fuller, 1980; Theil, 1981; COE) indicate presence of low quality or impoverished mussel bed.

Table 2. Harbor maintenance and snag removal locations and biological assessment of effects on endangered mussels.

Pool	Location (river mile)	Project Name	Criteria 1*	Criteria 2**	Biological Assessment
2	839.6	St. Paul Small Boat Harbor (SBH)	yes	not surveyed	no effect
3	813.2	Hastings SBH	yes	yes	no effect
4	791.5	Red Wing Commercial Harbor	yes	yes	no effect
4	791.0	Red Wing SBH	yes	yes	no effect
4	786.8	Bay City SBH	no	yes	no effect
4	772.5	Lake City SBH	yes	yes	no effect
4	767.0	Pepin SBH	no	not surveyed	no effect
4	760.5	Wabasha SBH	yes	yes	no effect
4	754.0	Alma SBH	yes	yes	no effect
6	726.3	Winona Commercial Harbor	yes	yes	no effect
6	726.1	Winona SBH	yes	yes	no effect
9	663.5	Lansing SBH	no	yes	no effect
10	635.2	Prairie du Chien Comm. Harbor	no	no	***
10	636.0	Prairie du Chien SBH	yes	no	no effect
MN	various	Snag Removal	N/A	N/A	no determination
St. Croix	various	Snag Removal	N/A	N/A	no determination

*Criteria 1 - Substrates in the project vicinity are unsuitable (i.e. silt/muck with particle size distribution of greater than 10% passing U.S. standard mesh of 200) for endangered mussel species.

** Criteria 2 - Surveys (Fuller, 1980; Theil , 1981; COE) indicate presence of low quality or impoverished mussel bed.

*** These impacts have been previously evaluated in "Long-term channel maintenance for the federal commercial harbor and a permit application to construct and expand barge terminal facilities in the East Channel of the Upper Mississippi River at Prairie du Chien, Wisconsin - Final Environmental Impact Statement, January 1996."

contaminated sediments are of concern, the likelihood of finding an endangered mussel species is low. Use of upland disposal/placement sites with effluent return in areas with potential for contamination (i.e., Twin Cities metropolitan area) would also have no effect on endangered mussel resources.

Along this same line of reasoning, disposal/placement sites (including recreational beaches) outside of the habitat conditions of endangered mussel species would have no effect. Areas that would not meet endangered mussel habitat would include bathtub areas, areas with unsuitable substrate conditions, and secluded wetland areas. Use of disposal sites and recreational beaches that include wetland or open water areas, require an in-water rehandling site, or are of the "bathtub" type of disposal site are the most likely to have an impact on endangered mussel resources. However, wetlands are generally not considered good mussel habitat because of the muck/silt nature of substrates and the natural wet/dry cycles which periodically desiccate large wetland areas. The frequency of disturbance of both "bathtub" and in-water rehandling sites makes colonization of these areas by endangered mussel species unlikely. Use of these disposal/placement areas would have no effect on endangered mussel species.

Table 3 provides a listing of disposal sites and the "no effect" criteria met by each site. Table 4 provides a listing of the recreational beach sites and the "no effect" criteria met by each sites. It is our biological assessment that use of all but three of the disposal sites listed in the CMMP would have no effect on threatened and endangered mussel species. Use of the St. Paul Barge Terminal in pool 2, the in-water rehandling site and Wyalusing Beach site both in pool 10, and 10 of recreational beach sites do not meet the no effect criteria and no determination of the potential impacts can be made at this time without additional mussel surveys.

V.A.2. Actions which could affect

V.A.2.a. Dredging, including harbor maintenance

The dredge cuts listed in Table 5 meet none of the "no effect" criteria, supported relatively "adequate" mussel assemblages during Fuller's surveys, are areas where suitable mussel substrate exists but recent mussel surveys have not been completed, or are infrequently maintained. There is not enough data available to us at this time to conclude these sites would meet the no effect criteria. It is possible maintenance of these cuts could affect endangered mussel species and, therefore, a separate assessment of the impacts of dredging these cuts on threatened and endangered species would be completed prior to project implementation. In addition, if dredging becomes necessary in new areas in the future, an assessment of impacts to threatened and endangered mussel species and coordination with the USFWS would be required.

Table 3. Disposal site locations and biological assessment of effects on endangered mussels.

Pool	Location (river mile)	Site Name	Biological Assessment	* Applicable Factors for Determining "No Effect"
MN	13.5-RM	Cargill	no effect	4, 6
MN	12.1-RM	Kraemer Site	no effect	1, 6
MN	10.1-RM	NSP Site	no effect	1, 6
MN	7.3-RM	Hwy. 77 Bridge	no effect	1, 6
St. Croix	6.7-LW	Kinnickinnic Bar - Upper	no effect	1, 3, 6
St. Croix	6.5-LW	Kinnickinnic Bar - Lower	no effect	1, 3, 6
USAF	856.6-RM	USAF Site	no effect	1, 6
1	853.2-LM	Pool 1 Site	no effect	1, 2, 6
1	851.3-LM	Below Franklin Avenue	no effect	1, 6
1	849.5-RM	Below Lake Street	no effect	1, 6
2	840.4-RM	Highbridge	no effect	1, 6
2	838.2-RM	Northport	no effect	1, 6
2	837.5-RM	St. Paul Barge Terminal	no determination	
2	836.8-RM	Holman Field	no effect	4, 6
2	836.3-RM	Southport	no effect	4, 6
2	824.1-LM	Pine Bend	no effect	1, 6
2	823.8-RM	C.F. Industries	no effect	1, 2, 6
2	822.5-LM	Shiely	no effect	1, 6
2	821.5-LM	Upper Boulanger	no effect	4, 6
2	821.1-LM	Lower Boulanger	no effect	4, 6
3	815.1-RM	Hastings	no effect	1, 2, 6
3	814.7-RM	Koch	no effect	1, 2, 6
3	813.2-RM	Hastings Harbor	no effect	1, 2
3	811.5-LM	Point Douglas	no effect	4, 6
3	808.4-LW	Dry Run Slough	no effect	1, 6
3	802.3-RM	Morgan's	no effect	4, 6
3	801.7-LW	Coulter's Island	no effect	4, 6
3	800.0-LWP	County Gravel Pit	no effect	1
3	798.0-LWP	Private Gravel Pit	no effect	1
3	799.2-RM	Corps Island	no effect	4, 5, 6
4	794.7-RM	Red Wing Yacht Club	no effect	4, 6
4	791.6-RM	Red Wing Commercial Harbor	no effect	2, 4, 6
4	788.5-RM	Colvill Park	no effect	1, 6
4	762.7-LW	Read's Landing	no effect	3, 4, 5, 6
4	761.1-RM	Carrel's Pit	no effect	1
4	761.0-RM	Wabasha Gravel Pit	no effect	1, 3, 6
4	760.2-RM	MDNR.2	no effect	1, 3, 6
4	759.5-RM		no effect	1, 3, 6
4	759.3-RM		no effect	1, 3, 6
4	759.3-LW	Crat's Island	no effect	3, 4, 5, 6
4	757.5-LW	Teepeeota Point	no effect	1, 3, 6
4	756.5-LW	Grand Encampment	no effect	3, 4, 5, 6
4	754.0-LW	Alma Marina	no effect	3, 4, 6
5	749.8-RM	West Newton Chute	no effect	1, 3, 6
5	748.0-RM	Above West Newton	no effect	1, 3, 6
5	745.8-RM	Above Fisher Island	no effect	1, 3, 5, 6
5	744.7-LW	Lost Island	no effect	1, 3, 5, 6
5	744.0-RM	Weaver Bottoms	no effect	3, 4, 6
5A	738.2-RM	L/D 5 Site	no effect	1, 2, 6
5A	734.5-LW	Island 58	no effect	1, 3, 6
5A	733.5-LW	Fountain City Service Base	no effect	3, 4
5A	731.9-LWP	Fountain City 1	no effect	1, 2, 6
5A	731.8-LWP	Fountain City 2	no effect	2, 4, 6
5A	730.5-LW	Wild's Bend	no effect	1, 3, 5, 6
6	726.3-RM	Winona Commercial Harbor	no effect	1, 2, 6
6	726.0-LWP	Winona Small Boat Harbor	no effect	1, 2, 6
6	720.5-RM	Homer	no effect	3, 4, 6
7	714.1-LW	Trempealeau	no effect	3, 4, 6
7	713.1-RM	Hot Fish Shop	no effect	1, 2, 6
7	708.7-LW	Winter's Landing	no effect	3, 4, 5, 6
7	707.3-RM	Dakota Boat Ramp	no effect	3, 4, 6
7	706.5-RM	Dakota Island	no effect	1, 3, 5, 6
8	695.7-LW	Isle La Plume	no effect	1, 2, 6
8	690.4-LW	Above Brownsville	no effect	1, 3, 5, 6
8	688.7-RM	Brownsville Containment	no effect	3, 4, 6
9	677.7-LW	Genoa Power Plant	no effect	1, 2, 6
9	670.5-WI	Blackhawk Park	no effect	3, 4, 6
9	665.8-RI	Indian Camp Light	no effect	1, 3, 5, 6
9	664.3-RI	Lansing	no effect	1, 3, 5, 6
9	663.5-LW	Lansing Highway Bridge	no effect	2, 4, 6
10	647.1-LW	Varo Property	no effect	3, 4, 6
10	644.5-RI	Jackson Island	no effect	1, 3, 5, 6
10	643.5-LW	In-water Rehandling Site	no determination	
10	642.4-LW	Mississippi Gardens	no effect	1, 3, 6
10	628.0-LW	Wyalusing Pit	no effect	1 ,2, 6
10	627.8-LW	Wyalusing Beach	no determination	
10	618.7-RI	McMillan Island	no effect	3, 4, 6
10	618.0-RI	Buck Creek	no effect	1, 3, 6

* The following factors were considered in determining if a disposal/placement site would have "no effect" on endangered mussel species:

1 - Upland site
2 - Use of site requires no effluent discharge (e.g. mechanical placement)
3 - Use of site requires an effluent discharge, but low concern for sediment contamination (i.e. UMR below Lake Pepin and St. Croix River
4 - Site is not suitable endangered mussel species habitat
5 - Bathtub site with frequent placement/excavation (> 20% or 1 in 5 years)
6 - In-water rehandling of dredge materials not required

Table 4. Recreational beach site locations and biological assessment of effects on endangered mussels.

Pool	Location (river mile)	Site Name	Biological Assessment	* Applicable Factors for Determining "No Effect"
2	828.1-LM	*Recreational Beach*	no effect	1, 3, 4
2	827.8-RM	*Recreational Beach*	no effect	1, 3, 4
2	824.1-LM	*Recreational Beach*	no effect	1, 3, 4
3	807.5-RM	*Recreational Beach*	no effect	1, 3, 4
3	805.5-RM	*Recreational Beach*	no effect	1, 3, 4
3	802.3-RM	*Recreational Beach*	no effect	1, 3, 4
3	799.4-RM	*Recreational Beach*	no effect	1, 3, 4
4	789.6-RM	*Recreational Beach*	no effect	1, 3, 4
4	784.7-RM	*Recreational Beach*	no effect	1, 3, 4
4	762.4-RM	*Recreational Beach*	no effect	1, 3, 4
4	759.5-LW	*Recreational Beach*	no effect	1, 3, 4
4	756.2-RM	*Recreational Beach*	no effect	1, 3, 4
4	753.3-RM	*Recreational Beach*	no effect	1, 3, 4
5	749.7-LW	*Recreational Beach*	no effect	1, 3, 4
5	743.6-RM	*Recreational Beach*	no effect	1, 3, 4
5	741.6-RM	*Recreational Beach*	no effect	1, 3, 4
7	712.8-LW	*Recreational Beach*	no effect	1, 3
7	712.1-LW	*Recreational Beach*	no effect	5
7	711.7-RM	*Recreational Beach*	no effect	5
7	709.0-LW	*Recreational Beach*	no effect	5
7	706.5-RM	*Recreational Beach*	no effect	1, 2, 3, 4
7	706.5-LW	*Recreational Beach*	no effect	5
7	705.0-LW	*Recreational Beach*	no effect	5
8	694.6-RM	*Recreational Beach*	no effect	5
8	692.5-LW	*Recreational Beach*	no effect	5
8	691.6-LW	*Recreational Beach*	no effect	5
8	690.8-RM	*Recreational Beach*	no effect	5
8	690.5-RM	*Recreational Beach*	no effect	5
8	690.2-LW	*Recreational Beach*	no effect	1, 3, 4
8	689.2-LW	*Recreational Beach*	no effect	5
8	688.5-RM	*Recreational Beach*	no effect	1, 3, 4
8	688.2-LW	*Recreational Beach*	no effect	1, 3, 4
9	678.2-RM	*Recreational Beach*	no determination	
9	677.8-LW	*Recreational Beach*	no determination	
9	676.7-LW	*Recreational Beach*	no determination	
9	676.0-RM	*Recreational Beach*	no determination	
9	671.4-RI	*Recreational Beach*	no effect	1, 3, 4
9	665.8-RI	*Recreational Beach*	no effect	1, 3, 4
9	665.3-RI	*Recreational Beach*	no determination	
9	664.8-RI	*Recreational Beach*	no effect	1, 3, 4
9	664.3-RI	*Recreational Beach*	no effect	1, 3, 4
9	663.8-LW	*Recreational Beach*	no effect	1, 3, 4
10	646.6-LW	*Recreational Beach*	no effect	5
10	645.0-RI	*Recreational Beach*	no effect	5
10	644.2-LW	*Recreational Beach*	no determination	
10	643.0-RI	*Recreational Beach*	no effect	5
10	637.2-RI	*Recreational Beach*	no determination	
10	637.2-LW	*Recreational Beach*	no determination	
10	627.9-RI	*Recreational Beach*	no determination	
10	627.7-RI	*Recreational Beach*	no effect	5
10	627.3-LW	*Recreational Beach*	no effect	5
10	626.0-RI	*Recreational Beach*	no effect	5
10	623.0-LW	*Recreational Beach*	no determination	
10	619.5-RI	*Recreational Beach*	no effect	5
10	619.0-LW	*Recreational Beach*	no effect	5
10	618.6-LW	*Recreational Beach*	no effect	5
10	618.6-RI	*Recreational Beach*	no effect	5

* The following factors were considered in determining if a disposal/placement site would have "no effect" on end

1 - Upland site
2 - Use of site requires an effluent discharge, but low concern for sediment contamination (i.e. UMR below Lake Pepin and St. Croix River
3 - In-water rehandling of dredge materials not required
4 - No dredged material would be placed on-site, beach would be reshaped or maintained with existing material
5 - Recent surveys by COE indicate presence of low quality or impoverished mussel bed.

Table 5. Dredge cuts which could affect endangered mussels.

DREDGE CUT	FREQUENCY OF DREDGING (PERCENT)	YEAR LAST DREDGED
Above 35W Bridge (MN River)	3.8	1983
Four Mile Cutoff (MN River)	3.8	1987
Kinnickinnic Bar (St. Croix River)*	19.2	1989
Washington Ave. Bridge (pool 1)	26.9	1987
Upper Approach L/D 1 (pool 1)	26.9	1987
Robinson Rocks (pool 2)	3.8	1977
Prescott (pool 3)	3.8	1972
Truedale Slough (pool 3)	3.8	1972
Four Mile Island (pool 3)	3.8	1972
Trenton (pool 4)	7.7	1975
Above Red Wing Hwy. Bridge (pool 4)	3.8	1972
Below Red Wing Hwy. Bridge (pool 4)	3.8	1971
Lower Approach L/D 4 (pool 5)	11.5	1976
Island 58 (pool 5A)	30.8	1982
Fountain City (pool 5A)	3.8	1972
Gravel Point (pool 6)	3.8	1972
Richmond Island (pool 7)	15.4	1982
Upper Approach L/D 7 (pool 7)	7.7	1989
Sand Slough (pool 8)	3.8	1970
Picayune Island	7.7	1973
Deadman's Slough (pool 8)	7.7	1989
Lower Approach L/D 8 (pool 9)	7.7	1988
Twin Island (pool 9)	**ND	1969
Battle Island (pool 9)	11.5	1980
Hay Point (pool 10)	8.3	1972
Jackson Island (pool 10)	12.1	1981
Mississippi Gardens (pool 10)	8.3	1976
Wyalusing (pool 10)	4.2	1970

* Although Kinnickinnic is a no effect in Table 1, it is included in this table by USFWS request
**ND = No data available

V.A.2.b. Use of Selected Disposal Sites Including Recreational Beaches

Use of the in-water rehandling and Wyalusing Beach sites in pool 10 could affect threatened and endangered mussel species. Prior to use, an assessment of impacts on threatened and endangered species and coordination with the USFWS would be required.

Ten sites proposed for development/enhancement as recreational beaches could affect threatened and endangered mussel species (Table 4). These sites have not been surveyed and meet none of the "no effect" criteria:

Pool 9 - 678.2-RM, 677.8-LW, 676.7-LW, 676.0-RM and 665.3-RI
Pool 10 - 644.2-LW, 637.2-RI, 637.2-LW, 627.9-RI and 623.0-LW

Prior to development/maintenance of these sites, surveys would need to be completed and further assessment of the potential impacts on threatened and endangered mussel species coordinated with the USFWS.

V.A.2.c. Channel Control Structure Construction and Rehabilitation

Each channel structure modification implemented would have different project specific impacts; therefore, any proposed modifications would be evaluated during preparation of the required NEPA documents for that particular project. Separate endangered species consultation would be required. Channel structures would generally be constructed outside the main channel of the river. Project areas within the known range of the Higgins' eye pearly mussel could be inhabited by this species. Prior to construction, any areas suspected of being able to support this mussel would be surveyed and an assessment of the impacts of the project on threatened and endangered species would be completed. Channel structures are not employed or proposed on either the Minnesota or St. Croix River.

V.A.2.d. Non-Structural

As with channel control structures, dredging of sediment traps would have different project specific impacts depending on the location of the trap. Maintenance of the Chippewa River sediment trap would have no effect on threatened and endangered mussel species as determined in Section V. The effects of any new proposed sediment traps would be evaluated during preparation of the required NEPA documents for that particular project. Separate endangered species consultation would be required and an assessment of the effects of the project on threatened or endangered species would be completed prior to project implementation.

Changes in channel dimensions are proposed at 24 locations in the District. Bend width increases of 50 feet are proposed for the nine locations shown below.

Location	River Mile	Present Width (ft)	Identified Change
Grey Cloud Slough	827.3-828.0	400	+50
Boulanger Bend	820.3-821.5	450	+50
Truedale Slough	808.2-808.8	350	+50
Four Mile Island	807.2-807.8	450	+50

Location	River Mile	Present Width (ft)	Identified Change
Head of Lake Pepin	785.2-785.6	450	+50
Reads Landing	762.4-763.3	450	+50
Below Reads Landing	761.5-762.5	450	+50
Mule Bend	747.8-748.8	450	+50
Betsy Slough Bend	731.0-731.7	450	+50

Three of the dredge cut expansions listed above have been implemented since GREAT: Reads Landing, Mule Bend, and Betsy Slough Bend. As discussed in Section V.A.1, several criteria were developed to determine if a proposed action would have no effect on threatened and endangered mussel species.

1) Dredging operations at the site since 1987 indicates endangered mussel colonization at the dredge cut is not likely.

2) Dredging frequency exceeding 20% (once every 5 years) precludes endangered mussel colonization in the dredge cut.

3) Substrates in the project vicinity are unsuitable (i.e., silt/muck with particle size distribution of greater than 10 percent passing a U.S. standard mesh of 200) for endangered mussel species.

4) Historic and recent surveys by Fuller (1980), Thiel (1981), the St. Paul District, and others indicate the presence of a low quality or impoverished mussel bed containing no threatened and endangered mussel species.

Based on the above criteria, it is our assessment maintaining the increased channel width at Reads Landing, Mule Bend, and Betsy Slough Bend would have no effect on threatened and endangered mussel species. There is no current data available on the mussel assemblages at the remaining locations to make a no effect determination. Therefore, prior to implementing the channel modifications at these sites, surveys would need to be completed and further assessment of the potential impacts on threatened and endangered mussel species coordinated with the USFWS.

Bend width reductions of 50 to 150 feet were identified at 15 locations. As discussed in Section IV.A.3, reducing channel width dimensions would have a beneficial effect on threatened and endangered mussel species by reducing the area of bottom substrate affected by dredging. It is our biological assessment that reducing channel widths in these locations would have no adverse effect on threatened and endangered mussel species.

Location	River Mile	Present Width (ft)	Identified Change
Boulanger Bend L. Light	818.4-820.3	450	-50
Below Wind Creek	800.0-800.7	500	-50
Crats Island	758.0-759.5	500	-50
Below West Newton	746.6-746.9	500	-50
Broken Arrow	695.8-696.8	500	-50
Sand Slough	694.4-695.2	600	-100
Brownsville	689.7-690.2	500	-50
Island 126	677.2-678.2	500	-50
Bad Axe Bend	674.0-675.0	600	-150
Below Lansing	600.3-661.0	600	-100
Gordons Bay	645.5-643.5	600	-50
Mississippi Gardens	624.5-643.5	550	-50
Wyalusing Bend	628.6-629.3	600	-100
Wyalusing	627.2-628.0	600	-100
Ferry Slough	615.6-616.3	600	-150

V.A.2.e. Snag Removal

Before a snagging project would be completed on the St. Croix or Minnesota River, appropriate NEPA documents would be prepared and endangered species consultation would be initiated with the USFWS including an assessment of the impacts of the project on threatened and endangered species.

V.A.2.f. Harbors

One harbor project, the Prairie du Chien Commercial Harbor, meets none of the no effect criteria (Table 2). A biological assessment and draft Environmental Impact Statement have been prepared, and a biological opinion completed by the USFWS, for the channel maintenance plan for the Prairie du Chien Commercial Harbor. Any dredging at Prairie du Chien would be in compliance with that biological opinion.

V.B. BALD EAGLES

As discussed above, many of the actions proposed in the CMMP could affect the bald eagle. Two broad categories are discussed below, those actions that would not affect and those that could potentially affect the bald eagle.

V.B.1. Actions with no effect

V.B.1.a. Dredging, including harbor maintenance

For the purpose of this assessment, dredging and disposal operations are being evaluated separately because the potential effects are different and the geographical locations may be quite different, especially for mechanical dredging.

Dredging occurs during the open water season and, therefore, no disturbance to bald eagle use of winter feeding and roosting habitat should occur. Dredging operations can begin in April during the critical nesting period, which could disturb bald eagle nesting activities. However, the average date of first dredging is mid-May, after the most critical period. Dredging occurs in the main navigation channel or within the confines of established boat harbors. These areas are frequently being disturbed from recreational and commercial craft use. The dredging operations would add an incremental increase to this disturbance factor. However, dredging operations at a site are typically of short duration, usually lasting only a couple of days. In addition, it is assumed that bald eagles that nest in proximity to the main channel are fairly tolerant of human activity. We do not believe the incremental increase in activity in the main channel or boat harbors from dredging would add appreciably to the existing disturbance by recreational and commercial craft activities. Therefore, no effects on bald eagle nesting activities are anticipated from dredging.

V.B.1.b. Use of Selected Disposal Sites Including Recreational Beaches

Several criteria were established or considered for determining if the use of a proposed disposal site or recreational beach site would have no effect on bald eagles. For disposal actions, the degree of development, level of human activity, historic nest site locations, winter feeding areas, and winter roost locations were considered to determine impacts (Tables 6 and 7).

The rationale for these criteria are discussed below.

Since bald eagle populations reach the highest densities in areas of minimal human activity, the amount of development and level of human activity were considered in evaluating impacts. Human activity was a primary criterion since eagle use is lower in high human use areas. It is assumed a bald eagle pair nesting in high human use areas is quite tolerant of this type of activity. Nesting sites away from heavy human activity, close to historical eagle use areas, and with minimal screening to bald eagle habitat are the most sensitive to habitat alterations. It has been shown that bald eagle disturbances are reduced if there is sufficient forest cover between the nest site and human activity. There are a number of factors making the prediction of no effect difficult. Behavior of bald eagle pairs is often quite different. One pair may be quite tolerant of human activity within 0.25 mile of the nest, while another pair may be intolerant of the same activity for a mile. The guidelines used in this assessment are general, and may not be the case for each nest site in the St. Paul District.

Table 6. Disposal site locations and biological assessment of effects on bald eagles.

Pool	Location (river mile)	Site Name	Biological Assessment	* Factors used in Determining Impact
MN	13.5-RM	Cargill	no effect	1,2
MN	12.1-RM	Kraemer Site	no effect	1,2
MN	10.1-RM	NSP Site	no effect	2
MN	7.3-RM	Hwy. 77 Bridge	no effect	1,2
St. Croix	6.7-LW	Kinnickinnic Bar - Upper	no effect	1,2,3
St. Croix	6.5-LW	Kinnickinnic Bar - Lower	no effect	1,2,3
USAF	856.6-RM	USAF Site	no effect	1,2,3
1	853.2-LM	Pool 1 Site	no effect	1,2,3
1	851.3-LM	Below Franklin Avenue	no effect	1,2,3
1	849.5-RM	Below Lake Street	no effect	1,2,3
2	840.4-RM	Highbridge	no effect	1,2,3
2	838.2-RM	Northport	no effect	1,2,3
2	837.5-RM	St. Paul Barge Terminal	no effect	2,3
2	836.8-RM	Holman Field	no effect	2,3
2	836.3-RM	Southport	no effect	2,3
2	824.1-LM	Pine Bend	no effect	3
2	823.8-RM	C.F. Industries	no effect	1,2,3
2	822.5-LM	Shiely	no effect	1,2,3
2	821.5-LM	Upper Boulanger	no effect	3
2	821.1-LM	Lower Boulanger	no effect	3
3	815.1-RM	Hastings	additional evaluation required	5,7
3	814.7-RM	Koch	additional evaluation required	5, 7
3	813.2-RM	Hastings Harbor	no effect	3
3	811.5-LM	Point Douglas	no effect	3
3	808.4-LW	Dry Run Slough	no effect	3
3	802.3-RM	Morgan's	additional evaluation required	6
3	801.7-LW	Coulter's Island	no effect	3
3	800.0-LWP	County Gravel Pit	no effect	3
3	798.0-LWP	Private Gravel Pit	no effect	3
3	799.2-RM	Corps Island	no effect	3
4	794.7-RM	Red Wing Yacht Club	additional evaluation required	5
4	791.6-RM	Red Wing Commercial Harbor	no effect	1,2,3
4	788.5-RM	Colvill Park	additional evaluation required	6,7
4	762.7-LW	Read's Landing	additional evaluation required	6,7
4	761.1-RM	Carrel's Pit	no effect	1,2,3
4	761.0-RM	Wabasha Gravel Pit	no effect	1,2,3
4	760.2-RM	MDNR.2	no effect	1,2,3
4	759.5-RM		no effect	1,2,3
4	759.3-RM		no effect	1,2,3
4	759.3-LW	Crat's Island	no effect	1,2,3
4	757.5-LW	Teepeeota Point	additional evaluation required	5
4	756.5-LW	Grand Encampment	additional evaluation required	5
4	754.0-LW	Alma Marina	no effect	1,2,3
5	749.8-RM	West Newton Chute	additional evaluation required	6
5	748.0-RM	Above West Newton	no effect	3
5	745.8-RM	Above Fisher Island	no effect	3
5	744.7-LW	Lost Island	no effect	3
5	744.0-RM	Weaver Bottoms	no effect	3
5A	738.2-RM	L/D 5 Site	no effect	2,4,7
5A	734.5-LW	Island 58	additional evaluation required	4
5A	733.5-LW	Fountain City Service Base	no effect	2,3
5A	731.9-LWP	Fountain City 1	additional evaluation required	5
5A	731.8-LWP	Fountain City 2	no effect	3
5A	730.5-LW	Wild's Bend	additional evaluation required	5
6	726.3-RM	Winona Commercial Harbor	no effect	1,2,3
6	726.0-LWP	Winona Small Boat Harbor	no effect	2,3
6	720.5-RM	Homer	no effect	4
7	714.1-LW	Trempealeau	no effect	2,3
7	713.1-RM	Hot Fish Shop	no effect	3
7	708.7-LW	Winter's Landing	no effect	3
7	707.3-RM	Dakota Boat Ramp	no effect	3
7	706.5-RM	Dakota Island	no effect	3
8	695.7-LW	Isle La Plume	no effect	3
8	690.4-LW	Above Brownsville	no effect	3
8	688.7-RM	Brownsville Containment	no effect	2,3
9	677.7-LW	Genoa Power Plant	additional evaluation required	1,6
9	670.5-WI	Blackhawk Park	no effect	2,3
9	665.8-IA	Indian Camp Light	no effect	3
9	664.3-IA	Lansing	no effect	3
9	663.5-WI	Lansing Highway Bridge	no effect	3
10	647.1-LW	Varo Property	no effect	3
10	644.5-IA	Jackson Island	no effect	3
10	643.5-LW	In-water Rehandling Site	no effect	3
10	642.4-WI	Mississippi Gardens	additional evaluation required	6,7
10	628.0-LW	Wyalusing Pit	no effect	3
10	627.8-LW	Wyalusing Beach	no effect	3
10	618.7-RI	McMillan Island	no effect	3
10	618.0-RI	Buck Creek	no effect	3

* The following factors were considered in determining potential impacts of a disposal/placement site on bald eagles:

1 - Highly developed area; eagle use unlikely
2 - High human activity; eagle use unlikely
3 - No records of nesting activity within 0.6 mile
4 - Abandoned nesting site within 0.6 mile of disposal area
5 - Nesting site within 0.6 mile of disposal site
6 - Winter roosting site within vicinity
7 - Winter feeding area

Table 7. Recreational beach site locations and biological assessment of effects on bald eagles.

Pool	Location (river mile)	Site Name	Biological Assessment	* Factors used in Determining Impact
2	828.1-LM	*Recreational Beach*	no effect	1, 2, 3
2	827.8-RM	*Recreational Beach*	no effect	1, 2, 3
2	824.1-LM	*Recreational Beach*	no effect	1, 2, 3
3	807.5-RM	*Recreational Beach*	no effect	1, 2, 3
3	805.5-RM	*Recreational Beach*	additional evaluation required	5
3	802.3-RM	*Recreational Beach*	additional evaluation required	6
3	799.4-RM	*Recreational Beach*	no effect	1, 2, 3
4	789.6-RM	*Recreational Beach*	no effect	1, 2, 3
4	784.7-RM	*Recreational Beach*	no effect	1, 2, 3
4	762.4-RM	*Recreational Beach*	additional evaluation required	6, 7
4	759.5-LW	*Recreational Beach*	no effect	1, 2, 3
4	756.2-RM	*Recreational Beach*	additional evaluation required	5 (inactive nest)
4	753.3-RM	*Recreational Beach*	no effect	1, 2, 3
5	749.7-LW	*Recreational Beach*	no effect	1, 2, 3
5	743.6-RM	*Recreational Beach*	no effect	1, 2, 3
5	741.6-RM	*Recreational Beach*	no effect	1, 2, 3
7	712.8-LW	*Recreational Beach*	no effect	1, 2, 3
7	712.1-LW	*Recreational Beach*	no effect	1, 2, 3
7	711.7-RM	*Recreational Beach*	no effect	1, 2, 3
7	709.0-LW	*Recreational Beach*	no effect	1, 2, 3
7	706.5-RM	*Recreational Beach*	no effect	1, 2, 3
7	706.5-LW	*Recreational Beach*	no effect	1, 2, 3
7	705.0-LW	*Recreational Beach*	no effect	1, 2, 3
8	694.6-RM	*Recreational Beach*	additional evaluation required	5
8	692.5-LW	*Recreational Beach*	no effect	1, 2, 3
8	691.6-LW	*Recreational Beach*	no effect	1, 2, 3
8	690.8-RM	*Recreational Beach*	no effect	1, 2, 3
8	690.5-RM	*Recreational Beach*	no effect	1, 2, 3
8	690.2-LW	*Recreational Beach*	no effect	1, 2, 3
8	689.2-LW	*Recreational Beach*	no effect	1, 2, 3
8	688.5-RM	*Recreational Beach*	no effect	1, 2, 3
8	688.2-LW	*Recreational Beach*	no effect	1, 2, 3
9	678.2-RM	*Recreational Beach*	no effect	1, 2, 3
9	677.8-LW	*Recreational Beach*	additional evaluation required	6
9	676.7-LW	*Recreational Beach*	no effect	1, 2, 3
9	676.0-RM	*Recreational Beach*	additional evaluation required	5
9	671.4-RI	*Recreational Beach*	no effect	1, 2, 3
9	665.8-RI	*Recreational Beach*	no effect	1, 2, 3
9	665.3-RI	*Recreational Beach*	no effect	1, 2, 3
9	664.8-RI	*Recreational Beach*	no effect	1, 2, 3
9	664.3-RI	*Recreational Beach*	no effect	1, 2, 3
9	663.8-LW	*Recreational Beach*	no effect	1, 2, 3
10	646.6-LW	*Recreational Beach*	no effect	1, 2, 3
10	645.0-RI	*Recreational Beach*	no effect	1, 2, 3
10	644.2-LW	*Recreational Beach*	no effect	1, 2, 3
10	643.0-RI	*Recreational Beach*	no effect	1, 2, 3
10	637.2-RI	*Recreational Beach*	no effect	1, 2, 3
10	637.2-LW	*Recreational Beach*	no effect	1, 2, 3
10	627.9-RI	*Recreational Beach*	no effect	1, 2, 3
10	627.7-RI	*Recreational Beach*	no effect	1, 2, 3
10	627.3-LW	*Recreational Beach*	no effect	1, 2, 3
10	626.0-RI	*Recreational Beach*	no effect	1, 2, 3
10	623.0-LW	*Recreational Beach*	no effect	1, 2, 3
10	619.5-RI	*Recreational Beach*	no effect	1, 2, 3
10	619.0-LW	*Recreational Beach*	no effect	1, 2, 3
10	618.6-LW	*Recreational Beach*	no effect	1, 2, 3
10	618.6-RI	*Recreational Beach*	no effect	1, 2, 3

* The following factors were considered in determining potential impacts of a disposal/placement site on bald eagles:

1 - Highly developed area; eagle use unlikely
2 - High human activity; eagle use unlikely
3 - No records of nesting activity within 0.6 mile
4 - Abandoned nesting site within 0.6 mile of disposal area
5 - Nesting site within 0.6 mile of disposal site
6 - Winter roosting site within vicinity
7 - Winter feeding area

Another factor making predictions difficult is bald eagle pairs will move the nest site if something happens to the original site. The new nest is often in the same general area, but the selection of the new nest site is impossible to predict. The last factor making predictions difficult is the great expansion of bald eagle nesting on the UMR in recent years. For example, in the 6-year period from 1989 to 1994, bald eagle nests have shown an increase every year. In 1989, 14 nests were located on the UMR within the St. Paul District. From 1990 to 1994, nest numbers were 16, 23, 24, 36, and 41. Again, it is impossible to predict where a new nesting pair will select a nest site. There are certain areas within the St. Paul District where conflicts with eagles are very unlikely. These are the urbanized and high recreational sites. This does not imply that eagle nesting would not occur at these locations. But it does imply that if bald eagles nest in these locations, the pair would be quite tolerant of disturbance.

Another criterion considered in Tables 6 and 7 was nest site location in relation to the disposal activities. Disposal sites with active and abandoned eagle nests within 0.6 mile of each other are indicated in Tables 6 and 7.

Management guidelines for wintering bald eagles are somewhat different from the protection given to a breeding pair. Criteria for evaluating the potential impacts on winter use are discussed below. Buffer zones should be established at a minimum of 0.25 mile from the edge of a winter foraging area. It is suggested that human traffic should be severely restricted or prohibited in foraging areas between October 15 and March 15. The most sensitive time of the day is between sunrise and 10:00 a.m. when the eagles are feeding heavily. Protection of daytime perching areas included a buffer zone up to 0.25 mile around regularly used areas. Restrictions on human activity are the same as those for foraging areas. Since nighttime perching areas are often associated with daytime perching areas, the same buffer zones may be applicable to both areas. No cutting of trees with a diameter greater than 12 inches should be done within 100 feet of the riverbank within the foraging areas. Activities identified having the potential to impede foraging activities include dredged material disposal and docking of barges. Eagles are very sensitive to disturbances at night roosts. It is suggested minimum buffer zones of 0.25 mile be established around the edges of all critical roosts. No human activity should take place during October 15 to March 15. Activity can occur in the roost areas outside these dates if it does not damage or destroy the trees in the roost. Logging, road building, or development should not be allowed at any time within the critical roost zones.

Fourteen disposal sites and 7 recreational beach sites listed in Tables 7 and 8 respectively, meet none of the no effects criteria so additional evaluation was required. We believe for most of these disposal sites, the present disturbed nature of the sites and the inclusion of avoidance measures would preclude adverse impacts to bald eagle use. A more detailed evaluation of the potential effects, a summarization of avoidance measures that would be implemented, and justification for our "no effect" determination follow.

Table 8. Disposal and recreational beach sites meeting none of the "no effects" criteria for bald eagles.

Disposal Site	Location	Reasons for Additional Evaluation
Hastings	3 815.1-RM	Winter foraging - Active nest within 0.25 mile
Koch	3 814.7-RM	Winter foraging - Active nest within 0.25 mile
Recreational Beach	3 805.5-RM	Active nest within 0.5 mile of beach
Morgan's	3 802.3-RM	Winter foraging & roosting area within 0.5 mile
Recreational Beach	3 802.3-RM	Winter foraging & roosting area within 0.5 mile
Red Wing Yacht	4 794.7-RM	Active nest within 0.5 mile
Covill Park	4 788.5-RMP	Winter foraging & roosting area within 0.5 mile
Reads Landing	4 762.7-LW	Winter foraging & roosting area within 0.25 mile
Recreational Beach	4 762.4-RM	Winter foraging & roosting area within 0.5 mile
Teepeeota Point	4 757.5-LW	Winter foraging - Active nest within 0.5 mile
Grand Encampment	4 756.5-LW	Winter foraging - Active nest within 0.5 mile
Recreational Beach	4 756.2-RM	Inactive nest within 0.5 mile of beach
West Newton Chute	5 749.8-RM	Winter foraging & roosting area within 0.25 mile
Island 58	5A 734.5-LW	Inactive nest within 0.5 mile
Fountain City 1	5A 731.9-LW	Active nest within 0.6 mile
Wilds Bend	5A 730.5-LW	Active nest within 0.6 mile
Recreational Beach	8 694.6-RM	Active nest within 0.6 mile of beach
Recreational Beach	9 677.8-LW	Roosting area on nearby island
Genoa Power Plant	9 677.7-LW	Roosting area on nearby island
Recreational Beach	9 676.0-RM	Active nest within 0.6 mile of beach
Miss. Gardens	10 642.4-LW	Winter foraging & roosting within 0.6 mile

Hastings (pool 3) - This is a 1-acre site located immediately downstream of Lock and Dam 2 and immediately upstream of the Lake Rebecca City Park and the Koch Refinery storage area. This a grassed area, a majority of which is presently being used as a staging area for the Lock and Dam 2 major rehabilitation. The site is already highly disturbed, with a high level of human activity. The nesting pair that uses the area to the west of the site apparently is fairly tolerant of human activity. The incremental increase in human activity from disposal and beneficial use removal is not likely to adversely affect the present nesting pair of bald eagles. Ample screening from bottomland hardwoods aids in concealing the activity.

Koch (pool 3) - This is a 7-acre site located immediately downstream of Lock and Dam 2 and immediately upstream of the Lake Rebecca City Park. The area formerly was part of the Koch Refinery storage area. The storage tanks have been removed from the site recently and the site has a grass covering. The site is already highly disturbed, with a high level of human activity. The nesting pair that uses the area to the west of the site apparently is fairly tolerant of human activity. The incremental increase in human activity from disposal and beneficial use removal is

not likely to adversely affect the present nesting pair of bald eagles. Ample screening from bottomland hardwoods aids in concealing the activity.

Reads Landing (pool 4) - The mouth of the Chippewa area is a prime bald eagle winter feeding and roosting area. The main channel near Reads Landing stays open during most of the winter because of the constricted main channel in this area and the warmer water from Lake Pepin. Because of ice-free conditions and warmer water, temperature-intolerant fish species, such as gizzard shad, congregate in this area. This offers eagles excellent fishing opportunities. The Reads Landing area is a popular winter bald eagle viewing area for the public. The Reads Landing disposal site consists of a 15-acre sand containment site. No additional trees, which could be used as bald eagle perches, would be removed along the Reads Landing temporary containment site. Long-term plans for the Reads Landing temporary containment site include providing a vegetation screen along the main channel side; trees would be included in this plan to provide future bald eagle perching areas. Use of the Reads Landing containment site for normal and sediment trap maintenance dredging would be done during the open water season, minimizing any potential conflict with winter eagle use of the Reads Landing area. The proposed activities would have minimal impacts on water quality and fish use of the area because of the clean, coarse nature of the material to be dredged. Therefore, no impacts on fish, the primary bald eagle food resource in the area, are anticipated. Because of the existing highly disturbed nature of the site, the timing of the disposal operations, and the mitigative measures being implemented, no adverse impacts on bald eagle use of this important wintering and roosting area are anticipated.

Teepeeota Point (pool 4) - This is a 46-acre site located along the right descending bank. It consists of a 16-acre containment site and 30 acres of disturbed old dredged material, showing varying signs of vegetative recovery. An active nesting site occurs within 0.6 mile of the containment site. Continued use of the existing highly disturbed containment site is not likely to affect bald eagles. Future expansions would require an evaluation of the potential impacts at the time of implementation.

Grand Encampment (pool 4) - This is an 8-acre unvegetated containment site. This is a temporary site, and when capacity is reached, material would be transferred to the permanent site. An active nesting site occurs around 0.5 mile of the containment site, which is on the border of the maximum tertiary buffer zone (normally 0.25 to 0.5 mile) recommended by the Minnesota Department of Natural Resources in its Management Guidelines for Bald Eagle Breeding Areas. Continued disposal of normal maintenance dredged material at the existing highly disturbed containment site is not likely to affect bald eagles. In addition to placement of normal maintenance dredged material, periodic excavations and transfers to the permanent site would be done. Most of the activities associated with excavation of the Grand Encampment disposal site would be confined to the area along the main channel border and would be screened from the eagle nesting site by a series of barrier islands. The highly disturbed nature of the Grand Encampment site, which has actively been used for the past 20 years, indicates the probability of affecting the bald eagle nesting site by excavation at Grand Encampment is low. However, to minimize any potential disturbance to this nesting pair, no activities associated with future

excavations at Grand Encampment will be permitted from February 10 to April 15, as long as the nesting site continues to be actively used. After April 15, commercial navigation and other uses of the river increase substantially, and the incremental increase in activity from excavation at Grand Encampment is not likely to disturb this nesting pair. With the avoidance measures being implemented, no effects on bald eagles should occur with the use of this placement site.

West Newton Chute (pool 5) - This is 39-acre agricultural field. An active winter roosting and foraging area is located within 0.25 mile of this disposal site. Transfers from the temporary sites in pool 5 to this permanent site will occur during the open water season, thereby minimizing any potential impacts on bald eagle wintering activities. Beneficial use removal could occur throughout the year. However, very limited beneficial use removal and increased human activity during the winter are anticipated. With the existing poor habitat quality and the fact that nearly all human activity would occur during the open water season, no effects on bald eagle wintering activities are anticipated.

Fountain City 1 (pool 5A) - This is an existing 6-acre unvegetated beneficial use site. Disposal occurs during the open water season; however, beneficial removal occurs throughout the year. The active bald eagle nesting site is located on the opposite side of the main navigation channel and approximately 0.6 mile from the beneficial use site. Long-term plans for this beneficial use site include providing a vegetation screen along the main channel side; trees would be included in this plan to provide future bald eagle perching areas. The highly disturbed nature of the site, which has actively been used for the last 20 years, indicates the probability of affecting the bald eagle nesting site with continued use of this site is very low.

Wilds Bend (pool 5A) - This is an existing 8-acre unvegetated containment site. The active bald eagle nesting site is located on the other side of the main navigation channel, over 0.6 mile from the containment site. The highly disturbed nature of the site, which has actively been used for the last 20 years, indicates the probability of affecting the bald eagle nesting site with continued disposal of channel maintenance material at this site is very low. In addition to placement of normal maintenance dredged material, periodic excavations and transfers to the permanent site would be done. To minimize any potential disturbance to this nesting pair, no activities associated with future excavations at Wilds Bend will be permitted from February 10 to April 15, as long as the nesting site continues to be actively used. After April 15, commercial navigation and other uses of the river increase substantially, and the incremental increase in activity from excavation at Wilds Bend is not likely to disturb this nesting pair. With the avoidance measures being implemented, no effects on bald eagles should occur with the use of this placement site.

Genoa Power Plant - This is a 2-acre parking lot at the boat ramp near the Genoa Power Plant. A bald eagle roosting area occurs on Willow Island, very near the boat ramp. Material would be placed at the boat ramp during open water season, although beneficial use removal could occur throughout the year. Because of the existing high levels of human activity, the disturbed nature of the site, and the seasonal use of this site for placement, no effects on bald eagle use of this

roosting area from the incremental increase in activity from placement of material at this site should occur.

V.B.2. Actions which could affect

For actions described below, a complete assessment of the level of impact cannot be completed without further project and site specific information. Therefore, separate endangered species consultation including an assessment of the effects on threatened and endangered species will be deferred at this time and completed on a project-by-project basis for these actions.

V.B.2.a. Use of Selected Disposal Sites Including Recreational Beaches

Based on the criteria described previously, the disposal actions where no determination is made at this time are listed in table 9. Because bald eagle nest site locations are so dynamic and new breeding territories are added each year, this list is for existing conditions. A site determined as a no effect at the present time, could change to a could effect by addition of either a new nest or roost site.

Table 9. Disposal and recreational beach sites which could affect bald eagles.

Recreational Beach (pool 3) - 805.5-RM
Morgans Coulee and *Recreational Beach* (pool 3) - 802.3-RM
Red Wing Yacht (pool 4) - 794.7-RM
Covill Park (pool 4) - 788.5-RM
Recreational Beach (pool 4) - 762.4-RM
Teepeeota Point (pool 4) - 757.5-LW; Future expansion of the containment site
Recreational Beach (pool 4) - 756.2-RM
Recreational Beach (pool 8) - 694.6-RM
Recreational Beach (pool 9) - 677.8-LW
Recreational Beach (pool 9) - 676.0-RM
Mississippi Gardens (pool 10)- 642.4-LW
All NEW disposal sites not covered in this document

V.B.2.b. Channel Control Structure Construction and Rehabilitation

Each channel structure modification implemented would have different project specific impacts; therefore, any proposed modifications would be evaluated during preparation of the required NEPA documents for that particular project. Separate endangered species consultation would be required. Channel structures are not employed nor are proposed on the either the Minnesota or St. Croix River.

V.B.2.c. Non-Structural

As with channel control structures, dredging of sediment traps would have different project specific impacts depending on the location of the trap. Maintenance of the Chippewa River sediment trap would have no effect on bald eagles. The effects of any new proposed sediment traps would be evaluated during preparation of the required NEPA documents for that particular project. Separate endangered species consultation would be required, and an assessment of the effects of the project on threatened or endangered species would be completed prior to project implementation.

V.B.2.d. Snag Removal

Before a snagging project would be completed on the St. Croix or Minnesota River, appropriate NEPA documents would be prepared and endangered species consultation would be initiated with the USFWS, including an assessment of the impacts of the project on threatened and endangered species.

V.C. CUMULATIVE EFFECTS

Two broad classes of projects have been identified in this document, those that could affect threatened and endangered species and those that would have no effect. Assessment of the impacts of those projects that could affect has been deferred until more project specific information can be gathered; therefore, no cumulative impact assessment can be completed on these projects. The cumulative effects of implementation of all the no effect actions listed in this document would be no effect.

VI. SUMMARY AND CONCLUSIONS

Most of the activities associated with implementation of the CMMP were determined to have no effect on federally listed species. Activities that could affect are summarized below.

ACTIONS THAT COULD AFFECT HIGGINS' EYE PEARLY MUSSEL

- Any future thalweg in-water disposal sites
- Channel structure modifications
- Dredging of new sediment traps
- Channel width increases at:
    - Grey Cloud Slough (pool 2)
    - Boulanger Bend (pool 2)
    - Truedale Slough (pool 3)
    - Four-Mile Island (pool 3)
    - Head of Lake Pepin (pool 4)
    - Below Reads Landing (pool 4)

- Dredging new cuts and the following historic cuts:
  - Above 35W Bridge (MN River)
  - Four Mile Cutoff (MN River)
  - Kinnickinnic Bar (St. Croix River)
  - Washington Ave. Bridge (pool 1)
  - Upper Approach L/D 1 (pool 1)
  - Robinson Rocks (pool 2)
  - Prescott (pool 3)
  - Truedale Slough (pool 3)
  - Four Mile Island (pool 3)
  - Trenton (pool 4)
  - Above Red Wing Hwy. Bridge (pool 4)
  - Below Red Wing Hwy. Bridge (pool 4)
  - Lower Approach L/D 4 (pool 5)
  - Island 58 (pool 5A)
  - Fountain City (pool 5A)
  - Gravel Point (pool 6)
  - Richmond Island (pool 7)
  - Upper Approach L/D 7 (pool 7)
  - Sand Slough (pool 8)
  - Picayune Island (pool 8)
  - Deadman's Slough (pool 8)
  - Lower Approach L/D 8 (pool 9)
  - Twin Island (pool 9)
  - Battle Island (pool 9)
  - Hay Point (pool 10)
  - Jackson Island (pool 10)
  - Mississippi Gardens (pool 10)
  - Wyalusing (pool 10)
- Disposal at the following placement sites:
  - St. Paul Barge Terminal (pool 2)
  - In-water rehandling site (pool 10)
  - Wyalusing Beach (pool 10)
- Disposal, maintenance or development of the following recreational beaches
  - Pool 9 - 678.2-RM, 677.8-LW, 676.7-LW, 676.0-RM and 665.3-RI
  - Pool 10 - 644.2-LW, 637.2-RI, 637.2-LW, 627.9-RI and 623.0-LW
- Snagging

ACTIONS THAT COULD AFFECT WINGED MAPLELEAF MUSSEL

- Snagging

ACTIONS THAT COULD AFFECT BALD EAGLE

- o Channel structure modifications
- o Dredging of new sediment traps
- o Snagging
- o Disposal at the following placement sites:
  - Morgans Coulee (pool 3)- 802.3-RM
  - Red Wing Yacht Club (pool 4) - 794.7-RM
  - Covill Park (pool 4) - 788.5-RM
  - Teepeeota Point (pool 4) - Future expansion of the containment site
  - Mississippi Gardens (pool 10)- 642.4-LW
  - All NEW disposal sites not covered in this document
- o Recreational beach site development or maintenance at the following sites:
  - *Recreational Beach* (pool 3) - 805.5-RM
  - *Recreational Beach* (pool 3) - 802.3-RM
  - *Recreational Beach* (pool 4) - 762.4-RM
  - *Recreational Beach* (pool 4) - 756.2-RM
  - *Recreational Beach* (pool 8) - 694.6-RM
  - *Recreational Beach* (pool 9) - 677.8-LW
  - *Recreational Beach* (pool 9) - 676.0-RM

Prior to implementation of these components of the CMMP, surveys and other pertinent information would be gathered for these activities to evaluate their potential impacts on federally listed species and identify appropriate avoidance measures. It is also recognized that the distributions of bald eagles, winged mapleleaf mussels, and Higgins' eye pearly mussels are likely to change in the future, which could change the determinations of no effects. Reevaluation of parts of the channel maintenance plan will be done, as necessary, when new information is obtained indicating that a proposed activity could affect.

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APPENDIX D

SECTION 404(b)(1) EVALUATION
CHANNEL MAINTENANCE MANAGEMENT PLAN
UPPER MISSISSIPPI RIVER

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SECTION 404(b)(1) EVALUATION
CHANNEL MAINTENANCE MANAGEMENT PLAN
UPPER MISSISSIPPI RIVER

I. PROJECT DESCRIPTION

A. Background

The 9-Foot Navigation Channel Project was authorized by the River and Harbor Act of 3 July 1930. The project provides for a 9-foot navigation channel achieved through the construction of locks and dams, the most of which were constructed in the 1930's. Dredging in selected locations is required to maintain the channel on the Upper Mississippi River (UMR).

In addition to the 9-foot channel, a number of commercial and small boat harbors have been authorized by various legislation. These harbors require maintenance dredging on a periodic basis.

The St. Paul District, U.S. Army Corps of Engineers (COE) has developed a Channel Maintenance Management Plan (CMMP) to guide the maintenance of the 9-foot channel and the commercial and small boat harbors. The CMMP describes the long-term dredged material placement plans of the District and provides a designated placement site(s) (see Table 404-1) for all of the active dredging locations and the commercial and small boat harbors.

This evaluation addresses the impacts resulting from the placement of fill material in waters of the United States in compliance with Section 404 of the Clean Water Act. The specific fill activities addressed in this evaluation include the following:

1. Placement of dredged materials in selected wetland or aquatic sites associated with the implementation of the CMMP (see Table 404-2).

2. Placement site effluent discharged to waters of the United States resulting from hydraulic disposal of dredged materials at the CMMP selected sites (see Table 404-3).

It is recognized that it is difficult to evaluate the effects on water quality over the next 40 years, because of potential changes in sediment quality from spills, point sources, non-point runoff, and other sources of contaminants. In addition, changes in water quality goals for the UMR are likely to occur in the future. Updating of this 404 evaluation would be done as necessary, to address changes in sediment/water quality conditions.

There is not enough information at this time to fully evaluate the impacts of the proposed recreational beach development and maintenance program. Prior to implementation of applicable beach development plans, 404(b)(1) evaluations would be completed and circulated for public review.

B. Authority and Purpose

The COE is responsible for maintaining a navigable channel on the UMR. Authority for continued operation and maintenance of the Mississippi River Nine-Foot Channel Project is provided in the River and Harbor Acts of 1930 and 1932. Original authority for the COE to work on the UMR was provided in the River and Harbor Act of 1880.

C. Proposed Action

Dredged materials would be directly placed in wetlands both mechanically and hydraulically. The basic difference in the two types of dredging is that the mechanical dredge handles the material as a bulk solid, whereas the hydraulic dredge mixes the dredged material with water and transports the mixture as a slurry to the disposal area. On both upland and wetland sites where hydraulic disposal is used effluent return water would be discharged to a secondary site, most commonly a river site.

An estimated 31.7 million cubic yards of material would be dredged from the dredge cuts and harbors listed in Table 404-4 over the next 40 years. This material would be periodically placed on both upland and wetland locations. Approximately 13.2 million cubic yards of this total would be placed in wetland/aquatic locations.

Materials would be dredged from active dredge cuts (including commercial and small boat harbors) in the UMR, St. Croix and Minnesota Rivers. Table 404-4 provides a listing of the active dredging locations in the St. Paul District.

D. Quality of Dredged Material

Sands, silts and occasional gravel materials would be dredged from active dredge cuts (see Table 404-5) in the UMR. The types and gradations of material would vary by dredge cut. Table 404-5, 404 figures, and TAB 5 of the CMMP provide summarizations of general sediment characteristics within active dredge cuts. Sediment samples have been periodically collected from active dredge cuts since 1974. Bulk chemical analysis and sediment gradation testing have been routinely completed on sediment samples. The most recent sampling effort was 1994. Table 404-7 summaries the sediment quality pre-1989 and 1989 to present by dredge cut. Two general observations can be made from the the data presented in Table 404-7 and the 404 figues: 1). sediment quality in pool 2 and most of the boat harbors is generally worst than the rest of the river and 2). there has been a great reduction in contaminant levels in main channel and boat harbors since the 1970's and early 1980's. A pool by pool summarization of this information is provided below.

There are no established sediment quality standards or criteria for the UMR. To provide some perspective for reviewing the sediment quality data base for the dredge cuts on the UMR, the efforts on the Great Lakes to establish sediment guidelines are summarized in appendix B of the

CMMP, as well as the backwater concentrations of selected contaminants on the UMR The Ontario Ministry of the Environment (MOE) has established sediment quality guidelines to assist them in evaluating the discharge of dredged material into the Great Lakes and other provincial waters (Persaud, Jaagumagi and Hayton 1993).[1] The MOE guidelines are used most extensively in the evaluations below and are presented in the attached 404 figures. For most parameters MOE developed two guidelines; the "lowest effect level" and the "severe effect level". The lowest effect level indicates a level of contamination which has no effect on the majority of sediment-dwelling organisms. The sediment is considered to be clean to moderately polluted. The severe effect level indicates that the sediments are considered heavily polluted and likely to effect the health of sediment-dwelling organisms.

Upper St. Anthony Falls (USAF) - Sediments are relatively contaminant free in all the USAF cuts. Sediment samples were collected from the USAF pool dredge cuts in 1974, 1975, 1978, 1980, and 1989. Sediments from the Broadway Avenue, Lowry Avenue, and Minneapolis Turning Basin cuts consist primarily of medium sand. Sediments from the Plymouth Avenue cut consist primarily of medium to coarse sand and gravel. All samples collected from USAF contained less than 1% silts and clays (average of 0.7%). No pesticides or PCB's have been detected (figures 404-11 through 15). Concentrations of heavy metals were generally low in all samples collected, well below MOE's lowest effect guidelines (figures 404-1 through 10). A mercury concentration of 0.700 ug/g was detected in the 1974 samples collected from the Minneapolis Turning Basin cut. However, mercury levels in subsequent samples were below detection limits.

Pool 1 - Sediment samples were collected from pool 1 during 1974, 1975, 1978, 1982, 1985, 1989, and 1994. Bottom sediments from pool 1 consist primarily of fine to medium sand. The sediments dredged in pool 1 typically contain 1 to 3% silts and clays (average of 1.2%). Bulk chemical analysis of sediments from the dredge cuts in Pool 1 have detected traces of several contaminants including aldrin, 4,4'DDE, 4,4DDD, 4,4DDT, and chlordane (figures 404-11 through 15). However, no pesticides or PCB's were detected in samples collected in 1989 and 1994. Heavy metals including cadmium, chromium , copper, lead, nickel, and zinc have also historically been detected in this reach of the river, above MOE's lowest effect guideline (figures 404-1 through 10). Numerous hits of mercury above MOE's lowest effect criteria occurred in samples collected prior to 1989, especially in the 1970's. Of the 1989 and 1994 samples, only one contained a detectable amount of mercury, at 0.034 ug/g.

Minnesota River - Minnesota River sediments are high in nutrients, such as phosphorus and nitrogen, as well as coliform bacteria. Sediment samples were collected from various dredge cuts of the Minnesota River in 1975, 1980, 1982, 1983, 1984, 1985, 1989 and 1994. Sediments vary from coarse sand to material with high (≥70%) silt/clay content (average of 20.4%). Bulk chemical analysis indicated the presence of pesticides, PCBs, and metals of concern in a number

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[1]Persuad, D., R. Jaagumagi, and A. Hayton. 1993. Guidelines for the protection and management of aquatic sediment quality in Ontario. Water Resources Branch of the Ontario Ministry of the Environment and Energy. 24 pp. + figures.

of samples collected from the Minnesota River. Traces of pesticides detected include, alpha BHC, gamma BHC, heptachlor, dieldrin, 4,4'-DDE, 4,4'-DDD, 4,4'-DDT, and chlordane. Levels of lead varied from below detection limits to a high of 44.0 ug/g from a sample collected from the Above Savage Railroad Bridge dredge cut. Mercury levels were generally in the 0.50 ug/g range.

Pool 2 - Sediment samples were collected from pool 2 in 1974, 1975, 1978, 1981, 1982, 1983, 1984, 1985, 1989, 1992, and 1994. Sediments from the Below Smith Avenue Bridge cut consist primarily of coarse to medium sand. Sediments from the St. Paul Barge Terminal dredge cut are somewhat finer, consisting of medium to fine sand, with an average of 23% silts and clays. Sediments in the Grey Cloud Slough cut and the Pine Bend Foot Light cut are primarily sand (95 percent). Downriver to the Boulanger Bend cut and the Boulanger Bend Lower Light cut, the percentage of sand decreases and the percentage of fines increases substantially. Fine particles for the Boulanger Bend cut comprise 16% of substrate samples. Fine particles for the Boulanger Bend Lower Light comprise an average of 84 percent of the substrate samples analyzed. Lower pool 2 serves as a settling basin for fine sediment carried into the pool by the Minnesota River. The two lower dredge cuts are in the area of lower pool 2 where fine materials begin to precipitate in substantial quantities. Pool 2 accounts for approximately two thirds of the fine material dredged from the main channel within the St. Paul District. The average percent silts and clays for all samples collected in pool 2 is 23%.

Sediments in pool 2 are generally some of the most contaminated sediments the St. Paul District dredges. None of the sediment testing that has been conducted in lower pool 2 since 1974 has recorded heavy metal values that exceeded the MOE severe effect levels. Arsenic, cadmium, chromium, copper, nickel, mercury, and zinc have been recorded above the lowest effect levels, in the dredge cuts in the lower part of the pool, the St. Paul Barge Terminal dredge cut and the St. Paul Small Boat Harbor. Nearly all these higher values occurred in sediment samples collected prior to the mid-1980's, although more recent sampling had values near and slightly above the MOE lowest effect level for many of the heavy metals.
Detectable levels of mercury continue to occur in the finer textured dredge cuts in pool 2. Pesticides including, DDE/DDD/DDT, dieldrin, endrin, and chlordane, and PCB's have been detected in sediments from various dredge cuts in pool 2 (figures 404-11 through 15). Chlordane and endrin have not been detected since the mid-1980's. DDE/DDD/DDT, dieldrin, and PCB's have been detected in more recent sampling efforts, although at slightly lower levels than before 1989.

Traces of pesticides including, DDE/DDD/DDT, dieldrin, endrin, and chlordane have been identified in sediments from the St. Paul Barge Terminal dredge cut. Levels of lead up to 60.0 ug/g have been reported. Lead levels measured since 1989 in this cut have varied from 2 to 37 ug/g. Mercury levels up to 1.1 ug/g have been recorded. Levels in samples collected from this location during 1989 were 0.048 and 0.066 ug/g.

Fewer pesticides have been detected in the Below Smith Avenue Bridge dredge cuts, but traces of DDD/DDE and endrin have been recorded. Lead levels of up to 26.9 ug/g have been recorded

from the area of this cut. Lead levels measured since 1989 varied from were 2 to 27 ug/g. Mercury levels up to 4.6 ug/g have been recorded from this cut. Mercury levels in samples collected from this location since 1989 varied from non-detectable to 0.64 ug/g. Sand sediments from the Grey Cloud Slough and Pine Bend Foot Light cuts are relatively uncontaminated. Nutrient and heavy metal contents are low and comparable to the levels found in the "clean" main channel sands in pools 4 through 10. PCB's and chlorinated hydrocarbon pesticides were undetectable in nearly all samples at the 1.0 and 0.1 ug/kg detection limits used for the various compounds. Samples from the Boulanger Bend and Boulanger Bend Lower Light cuts (containing higher silt/clay contents) had elevated nutrient and heavy metals concentrations and the increased presence of PCB's and chlorinated hydrocarbon pesticides. PCB levels up to 170 ug/kg (ppb) were found while the pesticides were generally present in the 1 to 11 ug/kg range.

Sediments from the Boulanger Bend and Grey Cloud Slough cuts were used in bioassay testing in 1978 and 1980, respectively. Seven different organisms were used in the bioassay completed with the Boulanger Bend sediments. The following, taken from the abstract, summarizes the findings (Peddicord et al. 1980).[2]

"*All three test sediments were of low toxicity to all species except the amphipods, in that no sediment produced statistically greater mortality than occurred in the controls and reference sediment. Although statistical comparisons were not made, amphipod mortality in some UMR sediments apparently exceeded that in the controls but probably not that in the reference sediment. Bioaccumulation was the exception, rather than the rule, with 72 species-sediment-contaminant combinations being studied and bioaccumulation potential being indicated in 8 (11 percent) of the cases. Even in these cases, resulting concentrations were below those considered likely to cause adverse impacts.*"

The bioassay using relatively uncontaminated sand sediment from the Grey Cloud Slough dredge cut, produced no acute toxicity among nine different aquatic test organisms (Marking et al. 1980).[3]

St. Paul Small Boat Harbor - Pool 2 - Sediment samples were collected from the St. Paul small boat harbor in 1981, 1989, and 1994. Sediments from the harbor consist primarily of silts and clay with an average of 65% silts and clays. Concentrations of heavy metals were considerably higher in the sediments from the St. Paul small boat harbor than in sediments from the main

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[2]Peddicord, R., H. Tatem, A. Gibson, and S. Pedron. 1980. Biological assessment of Upper Mississippi River sediments. U.S. Army Engineers Experiment Station, Environmental Laboratory, Vicksburg, Mississippi River. prepared for U.S. Army Corps of Engineers, St. Paul District, and Office, Chief of Engineers, Washington D.C. Misc. Paper EL-80-5. 87pp.

[3]Marking, L.L., V.K. Dawson, J.L. Allen, T.D. Bills, and J.J. Rach. 1981. Biological activity and chemical characteristics of dredged material from ten sites on the Upper Mississippi River. Summary Report. U.S. Fish and Wildlife Service, La Crosse, Wisconsin. 145pp.

channel dredge cuts in this portion of the river. However, heavy metal concentrations in sediments collected in 1989 were below the mean for Upper Mississippi River backwater sediments. Traces of chlorinated hydrocarbon pesticides including Dieldrin, 4,4'-DDD, 4,4'-DDT, and Chlordane, were detected in the 1981 samples. However, levels of all chlorinated hydrocarbon pesticides were below detectable levels in 1989 samples. PCBs concentrations of 8.0 ug/g were detected in 1981 sediment samples. No PCBs were detected in 1989 samples.

St. Croix River - Sediment samples were collected from the Kinnickinnic Bar dredge cut in 1980 and 1989. Sediments are primarily composed of contaminant free medium to coarse sand. The average amount of silts and clays is 0.9%. No pesticides or PCB's which exceeded detection limits were found. Levels of heavy metals were generally low. Mercury levels of 0.30 ug/g and 0.20 ug/g were detected in the samples collected in 1980. However, mercury concentrations were below detection limits in samples collected during 1989. Lead levels ranged between 1 ug/g and 2 ug/g.

Pool 3 - Sediment samples were collected from the dredge cuts in Pool 3 during 1974, 1978, 1979, 1980, 1981, 1989, and 1994. Sediments are generally medium to coarse sand. Less than 10 percent of the material passed a #50 sieve (U.S. Standard sieve size). However, sediments in the Diamond Bluff dredge cut consisted primarily of fine to medium sand. Fines comprised an average of 2.3 percent of samples collected from pool 3. The Prescott dredge cut located between river miles 811.7 and 810.3 contains the most amount of fine material, average of 9.0%.

Considering Pool 3 is generally still part of the water quality recovery zone for the UMR as it leaves the Twin Cities Metropolitan area, the sediments from this pool are relatively contaminant free. Levels of heavy metals were low, generally below MOE's lowest effect guideline in all samples. Although lead concentrations up to 18.0 ug/g were recorded, the maximum in samples collected during 1989 was 5.3 ug/g. Mercury was detected in 1982 samples at levels up to 0.72 ug/g, but were detected up to 0.1 ug/g. Levels of PCBs and chlorinated hydrocarbon pesticides were low, with traces of pesticides detected in only two samples and PCBs in only one since 1978.

Hastings Small Boat Harbor - Pool 3 - Sediment samples were collected from the Hastings small boat harbor in 1979, 1989 and 1994. Sediments in the harbor consist of medium and fine sand, silt, and clay. An average of 54% of the material collected passed a #200 sieve. Concentrations of heavy metals detected in sediments collected for the Hastings small boat harbor are considerably higher than those collected from dredge cuts in the main channel of this stretch of the river. Concentrations of most metals have been detected above the MOE lowest effect level, even in more recent samples. Mercury was detected at 0.320 ug/g in 1989 and 0.11 ug/g in 1994. Chlorinated hydrocarbon pesticides including 4,4'-DDE, 4,4'-DDD, 4,4'-DDT, and Chlordane were detected in 1979 samples. No chlorinated hydrocarbon pesticides were detected in samples collected in 1989 or 1994. PCBs concentrations of 54 ug/kg were detected in 1994 samples.

Pool 4 - Sediments from the dredge cuts in Pool 4 were sampled in 1974, 1978, 1980, 1981, 1982, 1989, and 1994. Sediment texture and quality are substantially different in the main channel above and below Lake Pepin. Sediments in upper pool 4 show a progressive increase in silts and clays as you approach Lake Pepin. Sediments are primarily fine to medium sands in the Cannon River and Trenton cuts with most of the material (95 percent) passing a #16 sieve (U.S. Standard sieve size) but not a #100 sieve. Finer particles, such as silts and clays, composed an average of 7 and 17% of sediment sampled from the Above and Below Red Wing Highway Bridge cuts, respectively. Fines comprised an average of 10.1% of samples collected from above Lake Pepin. Sediments in the Beef Slough, Grand Encampment and Teepeeota Point cuts were primarily fine to medium sand with only about 4% passing a 100 U.S. Standard mesh screen. Sediments in the Read's Landing, Chippewa Delta and Crat's Island cuts are medium to coarse sand with over 75% not passing a number 20 U.S. standard mesh sieve. Fines comprised an average of 1.5% of samples collected from below Lake Pepin.

Sediments in upper pool 4 are relatively uncontaminated, but not as clean as sediments found below Lake Pepin. Nutrient and heavy metals concentrations are slightly higher than concentrations below Lake Pepin, however, levels are far below those found in contaminated sediments from the Twin Cities metropolitan area and from boat harbors along the river. In some samples, particularly those from the Below Red Wing Highway Bridge cut, low levels (1-10 ug/kg) of chlorinated hydrocarbon pesticides and PCB's (18 ug/kg) were detected.

One sample, from the Beef Slough dredge cut, showed traces of PCBs, that sample, collected in 1980, registering at 4.0 ug/kg. One sample collected in 1982 from Beef Slough detected a DDT concentration of 27 ug/kg. Pesticides were not detectable in any other samples. Levels of heavy metals are low, generally being below 10.0 ug/g. Lead concentrations up to 3.1 ug/g have been recorded. Mercury concentrations are generally low, although levels up to 0.400 ug/g were recorded from the Beef Slough, Grand Encampment and Teepeeota Point cuts in 1974. Mercury levels were below detection limit for samples collected in 1989 from these cuts. Mercury levels of 0.600 and 1.400 ug/g were detected in samples from Crat's Island collected in 1974, however, levels detected in 1982 samples were only 0.015 and 0.017. Lead concentrations of up to 4.0 ug/g have been detected in sediments from this dredge cut.

Three samples collected in Beef Slough at RM 754.0 during 1974 and 1989 indicated the presence of lead at levels between 28.0 ug/g and 11.6 ug/g. Lead levels in the other samples collected in Beef Slough were either below detection limits or at levels of 2.0 ug/g. Lead was not detected in any of the samples collected from the Grand Encampment dredge cut and was detected at levels of 2.0 ug/g in only two of the samples collected from the Above Teepeeota Point dredge cut.

Red Wing Commercial Harbor - Upper Pool 4 - Sediment samples were collected from the Red Wing commercial harbor in 1980 and 1989. Sediment consists almost entirely of fines (silt and clay), with an average of 67% passing a #200 sieve. Concentrations of metals were relatively high, with a number of metals exceeding the MOE lowest effect levels. Chlorinated hydrocarbon

pesticides including Dieldrin, 4,4'-DDE, Endrin, 4,4'-DDD, 4,4'-DDT, and Chlordane were detected in 1980 samples. Many of these pesticides were also found in the 1994 sampling efforts. Total PCBs of 59.8 ug/g were detected in 1980 samples, although no PCBs were detected in 1989 and 1994 samples. The Red Wing harbors, both the commercial and the small boat harbor discussed below, have been and continues to be some of the most contaminated of the boat harbors on the UMR.

Red Wing Small Boat Harbor - Upper Pool 4 - Sediment samples were collected from the Red Wing small boat harbor in 1979 and 1989. Sediments in the harbor consist primarily of fines (silt and clay), with an average of 59% of the material passing a #200 sieve. Concentrations of heavy metals in the harbor are relatively high. Heavy metals with concentrations higher than the MOE lowest effect level, include chromium, copper, iron, manganese, nickel, lead, and zinc. Chlorinated hydrocarbon pesticides including Dieldrin, 4,4'-DDE, 4,4'-DDD, 4,4'-DDT, and Chlordane were reported from samples collected during 1979. No chlorinated hydrocarbon pesticides were detected in 1989 samples. Total PCBs at concentrations of up to 82.0 ug/g were recorded for samples collected in 1979. No PCBs were detected in 1989 samples.

Lake City Small Boat Harbor - Upper Pool 4 - Sediment samples were collected from the Lake City small boat harbor in 1981 and 1989. Sediments in the harbor consist primarily of fine sand, silt, and clay, with about 98 percent passing a #30 sieve and 22 percent passing a #200 sieve. Concentrations of metals are relatively high. Metals with concentrations exceeding the lowest effect level include copper at 79.8 ug/g, manganese at 1290.0 ug/g, nickel at 25.5 ug/g, and zinc at 117.0 ug/g. Mercury was detected at 0.200 ug/g in one 1989 sample. Lead levels were high with 29.7 ug/g and 84.0 ug/g detected in the two 1989 samples collected. No chlorinated hydrocarbon pesticides or PCBs were detected in any samples collected in the harbor.

Pepin Small Boat Harbor - Upper Pool 4 - Sediment samples were collected from the Pepin small boat harbor in 1982 and 1989. Sediments in the harbor consist of medium and fine sand, silt, and clay with about 95 percent passing a #8 sieve, 81 percent passing a #30 sieve, and 18 percent passing a #200 sieve. Sediment in the harbor is relatively uncontaminated. Concentrations of metals are generally well below the mean for Upper Mississippi River Backwater sediments. Mercury was detected at concentrations of 0.031 ug/g in 1982, but was not detected in 1989. Lead was detected at concentrations of 11.0 ug/g in 1982, and levels of 7.3 and 7.7 in 1989. No PCBs were detected in any of the samples collected. A 4,4'-DDT concentration of 700.00 ug/g was detected in 1982, but no chlorinated hydrocarbon pesticides were present at detectable levels in 1989 samples.

Wabasha Small Boat Harbor - Lower Pool 4 - Sediment samples were collected from the Wabasha small boat harbor in 1981. Sediments in the harbor are medium and fine sand, silt, and clay, with 85 percent passing a #30 sieve and 21 percent passing a #200 sieve. Concentrations of metals are generally well below the mean for Upper Mississippi River backwater sediments. No mercury was detected. Lead was detected at concentrations of 80.0 ug/g. No chlorinated hydrocarbon pesticides or PCBs were detected.

Pool 5 - Sediment samples were collected from dredge cuts in Pool 5 in 1974, 1975, 1979, 1980 and 1989. Sediments from these cuts are primarily medium to coarse sands with only trace amounts (generally less than 3 percent by weight) of silts and clays. Levels of pesticides and PCB's were generally below detection limits in all samples tested. PCB's were detected in the 1980 sample from the West Newton dredge cut, however, the concentration was very low (1 part per billion). Selected heavy metals and nutrients were found in relatively low concentrations in the sediment samples analyzed. Arsenic, cadmium, chromium, copper, and mercury were detected near or slightly above MOE's lowest effect guidelines. Low concentrations of mercury were detected in sediment samples collected in 1974 and 1975, but mercury was not detected in samples collected in 1989. Sediment quality is similar among the dredge cuts in pool 5.

In 1979, sediments from the West Newton dredge cut were tested for biological toxicity by suspended particulate and solid phase acute toxicity exposures (Marking et al. 1980). A wide variety of indigenous species were tested. No acute toxicity was noted for any of the organisms tested in either the solid phase or suspended particulate phase bioassay.

Alma Small Boat Harbor - Pool 5 - Sediment samples were collected from the Alma small boat harbor in 1979 and 1989. Sediments from the harbor are fine sands, silts, and clays with over 80 percent passing a #30 sieve and over 55 percent passing a #200 sieve. Metals concentrations are generally fairly low, with most values below the MOE lowest effect levels. No mercury was detected in any of the samples collected. Lead was detected at concentrations of 20.0 ug/g in 1979, but was not detected in samples collected in 1989. 4,4'-DDT was detected in samples collected in 1979. However, no chlorinated hydrocarbon pesticides were detected in samples collected during 1989. A PCBs concentration of 15.0 ug/g total PCBs was detected in 1979 samples, although no PCBs were detected in 1989 samples.

Pool 5A - Sediment samples were collected from Pool 5A in 1974, 1978, 1979, 1980, 1981, 1982, and 1989. Sediments in the Pool 5A dredge cuts consist of medium to fine sands with very few fines. In most samples less than 2 percent of the material passed a #200 U.S. Standard Mesh screen (average of 0.6%). Nutrient levels and concentrations of metals are relatively low. Mercury was detected in some of the earlier samples collected with all but two samples registering at 0.300 ug/g or less. Mercury was below detection limits in all samples collected in 1989. Lead levels were also low. Of the 31 samples analyzed, lead was detected in only 7. The highest concentration of lead detected was 8.0 ug/g from a sample collected at Wilds Bend in 1978. The pesticide 4,4'-DDE was detected in 3 samples collected during 1974 at concentrations of 10.0 ug/kg. However, no chlorinated hydrocarbon pesticides have been detected in any subsequent samples. PCBs have not been detected in any samples collected in Pool 5A.

Pool 6 - Sediment samples were collected from dredge cuts in Pool 6 in 1974, 1978, 1981, 1982, and 1989. Sediments in the Homer Point dredge cut consist primarily of fine to medium sand. Sediment samples collected from this cut in 1982 contained up to 15% silt or clay. Sediment samples collected from the Gravel Point and Below Winona Railroad Bridge dredge cuts consist

primarily of medium to coarse sand, with less than 12% passing a #40 mesh sieve. The average amount of silts and clays from samples taken from pool 6 is 1.9%.

No PCBs have been detected in any of the samples taken. One sample collected from the Below Winona Railroad Bridge dredge cut in 1974 detected 4,4'-DDE, but no pesticides have been detected in any subsequently collected samples. Mercury concentrations of 0.200 ug/g were detected in 1974 samples collected in the Homer Point dredge cut. Samples from this cut collected in 1982 showed concentrations of mercury had dropped to 0.013 ug/g or less, and mercury was not detected in samples collected in 1989. Mercury levels in samples analyzed from the remaining two cuts showed similar results with concentrations up to 0.018 ug/g recorded for samples collected in 1981 and 1982 and with no mercury detected in samples collected during 1989. Lead concentrations of 30.0 ug/g were detected in sediments collected from the Homer Point dredge cut in 1978. However, lead concentrations in subsequent years have dropped with concentrations reported in 1989 of 2.1 ug/g and less. The maximum lead concentration reported in either the Gravel Point or Below Winona Railroad Bridge cut was 4.0 ug/g. Samples collected from these cuts in 1989 detected lead levels of only 1.5 ug/g.

Winona Commercial Harbor - Pool 6 - Sediment samples were collected from the Winona commercial harbor in 1979 and 1989. Sediments in the harbor are medium and fine sands, silts, and clays with about 92 percent passing a #10 sieve and 26 percent a #200 sieve. Metals were generally below the applicable MOE guidelines. No mercury was detected in any of the samples collected. Lead was detected at concentrations of 3.5 ug/g and 0.9 ug/g in samples collected in 1989. No chlorinated hydrocarbon pesticides were detected in any of the samples collected. Total PCBs of 13.0 ug/g were detected in 1979 samples, but no PCBs were detected during 1989 sampling.

Winona Small Boat Harbor - Pool 6 - Sediments samples were collected from the Winona small boat harbor in 1979, 1980, and 1989. Sediments in the harbor are primarily fine sands, silts, and clays, although some medium sands were also sampled. About 91 percent of the material will pass through a #40 sieve and up to 38 percent will pass a #200 sieve. Heavy metals concentrations are generally below the MOE lowest effects guidelines. No mercury was detected in any of the samples collected. Lead was detected at concentrations of 20.0 ug/g in 1979, 3.4 ug/g in 1980, and 14.7 ug/g and 2.4 ug/g in samples collected in 1989. Chlorinated hydrocarbon pesticides including 4,4'-DDE, 4,4'-DDD, and 4,4'-DDT were detected in sediment samples collected in 1979. Dieldrin and 4,4'-DDD were detected in sediment samples collected in 1980. No chlorinated hydrocarbon pesticides were present at detectable levels in samples collected during 1989. Total PCBs of 19.0 ug/g and 24.9 ug/g were detected in 1979 and 1980 samples respectively. However, no PCBs were detected in the sediment samples collected in 1989.

Pool 7 - Bulk chemical analysis of 25 samples collected from the dredge cuts in Pool 7 between 1974 and 1989 indicates that the sediments are relatively contaminant free. Mercury levels of up to 0.400 ug/g were detected in samples collected during 1974, but mercury has been below

detectable levels in subsequent samples. Lead levels of up to 10.0 ug/g were detected in samples collected during and before 1980, but 1989 samples show levels of 1.1 ug/g or less. No chlorinated hydrocarbon pesticides or PCBs were detected in any of the samples.

The sediments found in the dredge cuts in pool 7 are generally a medium sand. Particle-size analysis of samples taken from the dredge cuts reveals that most of the sediment will pass a #4 sieve but not a #70 sieve (U.S. standard sieve sizes). The average amount of silts and clays from samples taken from pool 7 is 2.1%.

Pool 8 - Sediment samples were collected from Pool 8 cuts in 1974, 1978, 1979, 1980, 1981 and 1989. Particle size analysis indicates that material from Pool 8 is fine to medium sand, with almost all of the material passing a #10 sieve but not a #70 sieve. Concentrations of heavy metals were low. Mercury levels of up to 0.400 ug/g were detected in several 1974 samples, but concentrations declined during subsequent sampling with no mercury detected in any samples collected during 1989. Lead levels in samples collected during 1989 were 1.2 ug/g or less. No chlorinated hydrocarbon pesticides or PCBs were detected in any of the samples tested.

Pool 9 - Since 1974, 13 sediment samples have been collected from the dredge cuts in pool 9 as part of the District's sediment monitoring program. Samples were taken from the Island 126 dredge cut in 1978, 1982, and 1989; the Twin Island cut in 1980 and 1989; and the Head of Battle Island cut in 1974, 1981, and 1989. The bulk of material in these dredge cuts is medium to fine sand. Most (>95 percent) of the material will pass a #16 sieve (1.2 um) but will not pass a #70 sieve (.2 mm). In all but one sample, fines were less than 2 percent. These results are consistent with visual observations of material dredged in this reach of the river over the years.

Nutrient levels are low, as are levels of heavy metals. Metals of concern such as arsenic, cadmium, chromium, copper, lead, nickel, mercury, and zinc have generally only been detected at levels less MOE's lowest effects guidelines. No chlorinated hydrocarbon pesticides or PCB's were found in any of the samples. The detection limit used for most pesticides was 0.1 ug/kg while for PCB's and a few pesticides the detection limit was 1 ug/kg.

Sediment samples were collected from the Lansing Upper Light dredge cut in 1974, 1978, 1981, and 1989; and from the Indian Camp Light dredge cut in 1978, 1982, and 1989. Sediments from these cuts vary from medium to fine sand, with silts and clays comprising less than 2 percent of the sediment. Concentrations of heavy metals were consistently low. Mercury was below detectable concentrations. Although lead concentrations of up to 20.0 ug/g were detected in some samples, the maximum concentration of lead recorded in 1989 samples was only 1.3 ug/g. No chlorinated hydrocarbon pesticides or PCBs have been detected in any of the samples collected from these dredge cuts.

Lansing Small Boat Harbor - Pool 9 - No sediment data is available for the Lansing small boat harbor. It is assumed the quality of the sediment in the Lansing small boat harbor is similar to that of the harbors reviewed above.

Pool 10 - Sediment samples were collected from the McMillan Island dredge cut in 1974 and 1989; the Mississippi Gardens dredge cut in 1981; the Jackson Island dredge cut in 1979 and 1989; and the Hay Point dredge cut in 1974 and 1981. Material from these cuts is fine to medium sand. Detected concentrations of heavy metals such as arsenic, chromium, copper, lead, nickel, and zinc were below 10 ug/g. Mercury was detected in concentrations of up to 0.600 ug/g in 1974 samples, but has been below detection limits in subsequent samples. The maximum lead recorded in any sample was 1.3 ug/g in a sample collected from the Jackson Island dredge cut in 1989. No chlorinate hydrocarbon pesticides or PCBs have been detected in any samples.

II. FACTUAL DETERMINATIONS

A. Description of Proposed Discharge Sites

Materials dredged from the UMR would be disposed of on both upland and wetland locations. Both mechanical and hydraulic methods of dredging and disposal would be used to place materials at selected disposal locations (Table 404-1).

The CMMP has impacted 129 acres of wetlands (108 acres for the Weaver Bottoms Rehabilitation project) which were covered under previouos 404(b)(1) evaluations and applicable State certifications and permits. Implementation of the CMMP would affect an additional 164 acres of wetlands at 23 locations (Table 404-2). An additional 28 acres of open water at the St. Paul Barge Terminal placement site would be impacted under the CMMP. However, the use of this site is not being covered under this 404(b)(1) evaluation, because of a lack of information on floodplain effects. A 404(b)(1) evaluation will be prepared at later time for this site when additional floodplain information is obtained. The actual size of each site is detailed in Table 404-2. Wetland habitats directly affected by disposal include 126 acres of type 1 and 2 wetlands, 29 acres of type 3, 4 and/or 5 wetlands and 9 acres of open water (main channel border) habitat. Wetland types include:

Type 1 and 2 Wetlands - bottomland forest and inland fresh meadows (Shaw and Fredine 1956).[4]

Types 3, 4, and 5 Wetlands - fresh marsh wetlands consisting of type 3 (shallow), 4 (deep) and 5 (open water) wetlands (Shaw and Fredine 1956)

Open Water - open water sites both shallow and deep aquatic, typically main channel border habitat (Wilcox 1993).[5]

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[4]Shaw, S.P. and C.G. Fredine. 1956. Wetlands of the United States. U.S. Fish and Wildlife Service, Circular 39. 67pp.

[5]Wilcox, D.B. 1993. An aquatic habitat classification system for the Upper Mississippi River System. U.S. Fish and Wildlife Service, Environmental Management Technical Center, Onalaska, Wisconsin. EMTC 93-T003. 9 pp. + appendix A.

Hydraulic methods of dredged material disposal could potentially occur at 62 locations (Table 404-3). Hydraulic disposal would occur on both upland and wetland locations. Typically, effluent return water generated during hydraulic disposal operations would be discharged to adjacent Minnesota, St. Croix or Mississippi River main channel sites. However, in two locations, the Wabasha Gravel Pit and Dakota Boat Ramp sites, effluent return water would be discharged to tributary channels of the Mississippi River. At the Cargill and Dry Run Slough sites, effluent return would be discharged into intermittent streambeds eventually entering the Minnesota and Mississippi Rivers, respectively. At the Southport and Trempealeau sites effluent return water would be discharged to adjacent wetlands slated for eventual placement of dredged materials. At the Shiely Pit and Wyalusing Pit sites effluent return would be contained within the existing quarry confines with no discharge to wetland or other aquatic areas.

Effluent return water discharged to river sites would primarily affect main channel border habitat for approximately 300 to 500 feet downstream of the discharge site. As discussed above, effluent return water would also be discharged to tributary channels, intermittent streambeds, wetlands slated for eventual disposal of dredged materials and existing quarry pits (no effluent discharge to aquatic sites anticipated).

Dredged material would be placed at the disposal sites listed in Table 404-2 periodically over the next 40 years depending on the need for dredging at any particular time. An accurate projection of when sites would be utilized for disposal cannot be made because of the dynamic nature of sediment movement in the UMR. However, Table 404-4 provides estimates of the annual frequency of dredging based on historic dredging patterns. Dredged material would be placed in the wetland disposal sites as dredging needs dictate.

B. Physical Substrate Determinations

The pre-fill and estimated maximum fill elevations of the proposed wetland disposal sites are summarized in Table 404-6. In all cases the wetland disposal sites are very flat with little or no slope. Existing sediments near and in the disposal sites are not expected to be significantly disturbed during placement of the dredged material. However, the wetland soils in disposal areas would be covered with dredged sands and elevated such that the areas would cease to function as wetlands.

Little or no movement of dredged materials would be expected after the material is placed on site. When hydraulic placement of materials is utilized, a containment berm would be constructed to control the dredge material slurry to a confined area. Finer clay or silt particles could remain in suspension and be returned to the water column in the effluent from the placement site. However, the amount of fine material in the material dredged from a majority of the dredge cuts contains only trace amount of silts and clays (Table 404-5). The effect of this on water quality would be minimal. Some of the dredge cuts in pool 2, 3, and upper 4 and the Minnesota River and all the boat harbors have a much greater percentage of fine material (Table 404-5), with increased potential for causing greater water quality impacts. More containment measures are proposed for

many of these dredge cuts, to minimize water quality impacts. When mechanical disposal is used, the bulk mass of dredged material would be relatively immobile once placed on site. When necessary erosion control measures would be employed to prevent secondary movement of dredged materials.

The placement of dredged materials in wetlands would directly and permanently eliminate the benthos present. The filling of wetland sites would convert these areas to upland habitat.

The discharge of effluent generated during hydraulic dredging operations would have negative affects on benthos present in the immediate vicinity of the discharge site. Depending on the size of the containment area and the effectiveness of actions taken to minimize water quality impacts (see proceeding discussion), the disturbance to benthic communities would range from minor to negligible. For the most part, effluent discharge sites would be located in main channel border habitats, which can be very productive areas for benthic invertebrates and fish and wildlife in general. Increases in turbidity and suspended solids concentrations would be anticipated at the effluent discharge site and for a short distance downstream (300 to 500 feet). However, rapid mixing and dilution would occur within the main channel border. Some settlement of materials remaining in suspension would also occur in this impact zone.

Little can be done to minimize the impacts of dredged material placement in wetlands. Placement of dredged materials in wetlands would permanently convert these areas to terrestrial habitat. Ponding of the dredged slurry produced during hydraulic dredging operations in the disposal containment area would allow for settling of suspended solids prior to discharge of the effluent back to the river. The specific containment methods used would depend on the concern for contaminants being released from the containment site back into the river. Contaminant concerns are primarily a function of sediment quality which has been described previously and is discussed further in Section E of this evaluation.

C. Water Circulation, Fluctuation, and Salinity Determination

The use of the majority of sites for disposal of hydraulically or mechanically dredged materials would have no appreciable affect on these parameters. Elevating riverine floodplain sites with dredged material would have an impact on current patterns under intermediate river flows. Donohue & Associates (1982)[6] evaluated, through a HEC-2 model, the impacts of disposal sites in pools 5A, 7, and 9 on 100-year water surface profiles. The disposal sites investigated had little or no effect (0.01 foot or less) on 100-year flood elevations. The effects on flood levels of the Lower Pool 5 Channel Maintenance/Weaver Bottoms Rehabilitation were also evaluated (Corps

[6]Donahue & Associates, Inc. 1982. Development of flood profiles for the Upper Mississippi River, Pools 5A, 6, 7, 9, 10. Prepared for the St. Paul District, U.S. Army Corps of Engineers. 17 pp + attachments.

of Engineers and U.S. Fish and Wildlife Service 1986).[7] In addition to the disposal of dredged material, the project involved significant changes in flow distribution within the floodplain. The effect on 100-year flood elevation was estimated to be less than 0.1 feet. A majority of sites in the CMMP would not affect or would have only minor impacts on flood levels and flows. Use of the St. Paul Barge Terminal site in pool 2 would convert approximately 28 acres of main channel border to fastland, potentially affecting stage and flow patterns in the UMR under higher river discharges. Because of the high level of concern with the potential floodplain impacts from the use of the St. Paul Barge Terminal site it is not included in this evaluation. The Buck Creek placement site in pool 10 would have substantial impacts on local flood levels (100-year) on Buck Creek, a maximum of 0.23 to 0.34 feet increase depending on the specific configuration and location of the placement site. Some other CMMP sites could have local floodplain impacts and would require additional floodplain analysis prior to implementation, include Dry Run Slough in pool 3 and the Dakota Boat Ramp site in pool 7. Table 5-14 in the EIS lists the CMMP placement that will require additional floodplain assessments. Generally, with the implementation of the CMMP whatever impacts would result on water flow patterns would likely be undetectable and insignificant.

D. Suspended Particulate/Turbidity Determination

The direct effects of filling wetlands on these parameters would be minimal. Suspended fine materials in the disposal site effluent would result in short-term increases in turbidity and suspended solids concentrations near the effluent discharge. Disturbance of bottom sediments in the dredge cut during removal of materials would also suspend fine particles and lead to increased turbidity. Neither of these increases is expected to significantly affect the aquatic ecosystem; the effects of these increases would be undetectable within a few hundred feet downstream of the discharge. No long term impacts would be expected.

No effects are expected on light penetration, dissolved oxygen, toxic metals, organisms, pathogens, or the aesthetics of the water column as a result of fill activities.

Placement of dredged material in wetlands would convert these habitats to relatively unproductive dredged sand barrens. The localized effects on biota would be substantial.

With hydraulic dredging, restraining and directional berms would be used to confine the dredged material to a designated retention/ponding area. A drop structure or weir might also be used to further control the material placement and return effluent water. Low level releases of some contaminants, such as heavy metals, PCBs, or pesticides could occur. However, these compounds have a high affinity for fine sediment particles. Some of these compounds could be released into the aquatic system for a short period until readsorbed to sediment particles or taken

[7]U.S. Army Corps of Engineers and U.S. Fish and Wildlife Service. 1986. Design analysis report and final supplemental environmental impact statement for the lower pool 5 channel maintenance/Weaver Bottoms rehabilitation plan on the Upper Mississippi River. two volumes.

up by some biological form. The impact of dredging and placement will vary from minor to substantial localized impacts The greatest potential impacts on water quality will occur for hydraulic dredging events in pool 2, the Minnesota River, and all boat harbors because of the finer textured and more contaminated sediments present at these locations.

E. Contaminant Determinations

The potential for releases of contaminants to the aquatic ecosystem as a result of dredging and dredged material disposal activities is largely related to the geographic location of these actions. In general, dredging and material disposal actions in the Minnesota River, in pool USAF, 1, 2 and upper 3 of the UMR and from commercial and small boat harbor locations have a greater likelihood of releasing contaminants than from locations in the UMR below pool 3 and the St. Croix River. The "quality" of sediments, in terms of contaminants, from locations through the District has been described previously in this document. For those locations with contaminated sediments, low level releases of some contaminants, such as heavy metals, PCBs, or pesticides could occur. However, these compounds have a high affinity for fine sediment particles. Some of these compounds could be released into the aquatic system for a short period until readsorbed to sediment particles or taken up by some biological form. Acute or chronic toxic releases would be unlikely.

With hydraulic dredging, restraining and directional berms would be used to confine the dredged material to a designated retention/ponding area. A drop structure or weir might also be used to further control the material placement and return effluent water, especially at dredging areas containing appreciable amounts of silts and clays.

F. Aquatic Ecosystem and Organism Determination

A total of approximately 164 acres of additional wetland and aquatic habitat would be converted to dredged sand habitat. Any existing use of wetland and aquatic areas by aquatic organisms would be eliminated. The localized effects on the aquatic ecosystem would be substantial. The impact upon the ecology of the UMR watershed from the loss of wetland and aquatic habitats would probably be negligible due to the large amount of wetland and aquatic habitats present. Approximately 137,070 acres of open water aquatic and 118,108 acres of wetland habitats are present within the St. Paul District's portion of the UMR (Olson and Meyer 1978).[8] The loss of 164 acres of aquatic and wetland habitats would have in absolute terms a very minor impact that would be difficult to measure in any quantifiable manner other than in terms of lost acreage.

[8]Olson, K.N. and M.P. Meyer. 1976. Vegetation, land and water surface changes in the upper navigable portion of the Mississippi River basin over the period 1939 - 1973. Institute of Agriculture, Forestry and Home Economics Research Report Number 76-4, College of Forestry and the Agricultural Experiment Station, University of Minnesota, St. Paul.

At sites where hydraulic disposal operations occur, increases in turbidity and suspended solids near the effluent return site would have a localized suppressing effect on phytoplankton productivity. However, these localized effects would not be significant. The plankton populations should recover quickly once the effluent discharge ceases.

Those benthic communities in the area of proposed fill activities would be buried and eliminated. Additionally, benthic communities located immediately at the effluent discharge site and for a short distance downstream would be affected by increased turbidity and suspended solids concentrations, however, as with phytoplankton productivity, the localized effects would not be significant.

The long-term effects of dredging and dredged material disposal on the total productivity of the Minnesota, Mississippi and St. Croix Rivers is expected to be negligible, although there would be a temporary disruption to the aquatic biota present.

No special aquatic sites would be affected by the proposed actions.

G. Threatened and Endangered Species

A biological assessment of the effects of the proposed actions has been completed and coordinated with the USFWS. Use of four wetland disposal sites included in this Section 404(b)(1) evaluation could affect threatened and endangered species, Morgan's Coulee in pool 3, Red Wing Yacht Club in pool 4 and Wyalusing Beach and the Jackson Rehandling Site in Pool 10. Prior to placement of materials at these sites endangered species surveys would be completed and the results coordinated with the USFWS. Other than at these four sites, the proposed actions would not affect threatened and endangered species.

H. Determination of Cumulative Effects on the Aquatic Ecosystem

As stated previously, the loss of 164 acres of aquatic/wetland habitats from a UMR reach containing approximately 137,070 acres of open water aquatic and 118,108 acres of wetland habitats would have in absolute terms a very minor impact that would be difficult to measure in any quantifiable manner other than in terms of lost acreage.

The loss of these 164 acres would occur over a 40-year period when the character of the UMR will also be changing. The pools of the UMR are in essence shallow reservoirs. As the system ages, the effects of sedimentation will become more and more apparent. Shallow open aquatic backwaters will fill in and covert to marsh and eventually to wooded habitats.

Over the next 40 years open aquatic habitat will be converted to marsh and forest. Most of the 164 acres of wetlands affected by the proposed actions are bottomland forest and marsh, the types of habitat which will probably increase over the next 40 years due to successional processes.

The bottom line is that the cumulative impact of the loss of wetlands and aquatic areas to dredged material disposal would be masked by the much larger changes that will occur as a result of natural successional changes.

I. Determination of Secondary Effects upon the Aquatic Ecosystem

Weathering and erosion of materials from disposal sites by wind and water could affect adjacent wetland and aquatic areas. However, where erosion is likely to occur, best management practices such as seeding to establish vegetative cover, silt fencing and berming would be employed to minimize erosion.

The filling of wetlands within the floodplain would affect the storage and conveyance of flood waters. However, the degree of impact on floodplain characteristics would be very minor and likely undetectable.

J. Determination of Potential Effects on Human Use Characteristics

The proposed actions are not expected to have any appreciable adverse impacts upon human uses of the UMR and its associated wetlands. The availability of readily useable sites capable of accepting hydraulically dredged material near high frequency dredge cuts ensures the reliability of the navigation channel.

K. Mitigation for Wetland Filling

The St. Paul District has developed a wetland mitigation policy described in detail in the CMMP. The policy provides guidance and procedures for wetland mitigation for St. Paul District Operation and Maintenance activities at existing Civil Works projects consistent with Corps policy and applicable laws and regulations. It is the District's position that a replacement plan for wetlands will not be required for wetland fill activities in the 1995 CMMP and covered in this evaluation. The reason for this position is discussed below.

The major product of the GREAT I planning effort was a document describing the manner in which the navigation project should be operated and maintained through the year 2025. This GREAT I Channel Maintenance Plan was approved by all State and Federal resource agencies, except the federal Department of Transportation, and was endorsed by Congress in the 1986 Water Resources Development Act. This channel maintenance plan attempted to balance environmental, recreational, social, and economic values. A great emphasis was placed on avoiding and minimizing impacts on aquatic and wetland habitats. The GREAT I selected plan would have affected 476 acres of aquatic or wetland habitat, compared to 915 acres with the GREAT I National Economic Development Plan and 215 acres with the Environmental Quality Plan.

The St. Paul District modified the GREAT I Channel Maintenance Plan through a series of long term management plans for dredged material placement. The District's recommended Channel Maintenance Management Plan (CMMP) further reduce the impacts to wetlands and aquatic areas to approximately 213 acres. The recommended plan does include some locations where the impacts to aquatic areas or wetlands exceed the GREAT I Channel Maintenance Plan. However, the overall recommended plan represents a significant reduction in the total number of acres to be affected. Therefore, a replacement plan for wetlands will not be required for implementation of the CMMP. The policy would be applied to all additional sites not covered in this evaluation to avoid, minimize and finally compensate for any adverse impacts on wetlands.

III. FINDING OF COMPLIANCE WITH RESTRICTIONS ON DISCHARGE

No significant adaptations of the guidelines were made relative to this evaluation.

A. Evaluation of Availability of Practicable Alternatives to the Proposed Discharge Which Would Have Less Impact Upon the Aquatic Ecosystem

Several alternatives to the wetland fill actions proposed were considered:

1. NO MAINTENANCE DREDGING - Ceasing maintenance of the 9-foot navigation channel project was assessed in the final EIS for operation and maintenance (COE 1974).[9] The socioeconomic status of the regional economy and the natural environment of the UMR valley would be profoundly and significantly impacted. Commercial navigation would be greatly reduced as a result of unreliable channel depths. A transfer of shipment of commodities to other modes of transportation would occur. Elimination of dredging would reduce the rate of replacement of valuable wildlife habitat with sandy bedload sediment. Implementation of this alternative would require a major change in the primary objectives of the project and would have such a great impact on the present socioeconomic and environmental setting it could be considered a socially undesirable alternative.

2. USE OF ALL UPLAND DISPOSAL SITES - Complete removal of all dredged materials from the floodplain and disposal of materials at strictly upland sites was considered, but determined to be not practicable.

3. GREAT I CHANNEL MAINTENANCE PLAN - The GREAT I Channel Maintenance Plan would affect 476 acres of wetlands, thus, this plan would have more impact upon the aquatic ecosystem.

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[9]U.S. Army Corps of Engineers (COE). 1974. Final Environmental Impact Statement: Operation and maintenance, 9-foot navigation channel, Upper Mississippi River, head of navigation to Guttenberg, Iowa. St. Paul District, USACE.

4. MOST PROBABLE FUTURE WITHOUT GREAT - An alternative to the GREAT I dredged material placement plan was developed in 1977. Titled the Most Probable Future Without GREAT (MPFW/OG), this plan identified disposal sites the Corps would use if GREAT made no recommendations. However, because of requirements established by the Clean Water Act of 1977, this plan is no longer feasible. The Clean Water Act of 1977 requires the COE channel maintenance operations to comply with State water quality laws and regulations. Most of the sites in the MPFW/OG plan could not be used because of this requirement, rendering the plan un-implementable.

B. Determination of Compliance with Applicable Water Quality Standards

The actual filling of wetland disposal sites would not violate any applicable State water quality standards. The use of sites for disposal of hydraulically dredged materials would result in an effluent discharge from the sites. Water quality certification from Wisconsin, Iowa and/or Minnesota would be obtained prior to discharge of effluents from sites.

The proposed fill activities would comply with the Section 404(b)(1) guidelines of the Clean Water Act. The placement of dredged material is required to maintain the 9-foot navigation channel project.

C. Compliance with Section 307 of the Clean Water Act

The proposed fill activities would comply with all State water quality standards. The disposal operation would not violate the Toxic Effluent Standards of Section 307 of the Clean Water Act.

D. Compliance with the Endangered Species Act

A biological assessment of the effects of the CMMP has been completed and is contained in appendix C of the DEIS. Use of two wetland disposal sites included in this Section 404(b)(1) evaluation could affect threatened and endangered mussel species, Wyalusing Beach (pool 10 - 627.8-LW) and In-water Rehandling Site (pool 10 - 643.5-LW) . Use of two wetland disposal sites included in this Section 404(b)(1) evaluation could affect the threatened bald eagle, Morgans Coulee (pool 3 - 802.3-RM) and Red Wing Yacht Club (pool 4 - 794.7-RM). Prior to placement of materials at these four sites surveys and/or gathering of additional information would be completed and the results coordinated with the USFWS. Other than at these four sites, the proposed actions would not affect threatened and endangered species.

E. Evaluation of Extent of Degradation of Waters of the United States

The proposed fill activities would not result in significant adverse effects on human health and welfare, including municipal and private water supplies, recreation, and commercial fishing. The fill activities would have minor adverse effects on plankton, fish, shellfish, wildlife, and special aquatic sites. The life stages of aquatic life and other wildlife would be adversely affected.

However, significant adverse effects on aquatic ecosystem diversity, and stability and on recreational, aesthetic, and economic values would not occur.

F. Appropriate and Practicable Steps Taken to Minimize Potential Adverse Impacts of the Discharge on the Aquatic Ecosystem.

To minimize the potential for adverse impacts, the following measures would be proposed.

1. The St. Paul District would actively promote the beneficial use of dredged material from selected sites to reduce the ultimate size of sites as much as possible.

2. Sites would be expanded incrementally as needed to preserve wetlands as long as possible.

3. Site use would be coordinated with applicable Federal and State agencies, primarily through the On-Site Inspection Team

4. The District's wetland mitigation policy would be applied to all additional sites not covered in this evaluation to avoid, minimize and finally compensate for any adverse impacts.

G. On the basis of this evaluation, I specify that the proposed actions comply with the requirements of the guidelines for discharge of fill material.

Date 6/30/97

WILLIAM J. BREYFOGLE
Lieutenant Colonel
Corps of Engineers
Acting District Engineer

Table 404-1. Dredged material placement sites for the Channel Maintenance Management Plan.

Location	GREAT Site #	Site Name	Dredge Methods	404(b)(1) Evaluation Status
MN-13.5-RMP	MN.03	Cargill	H&M	long-term proposed - hydraulic disposal (effluent return) & wetland fill
MN-12.1-RMP	-	Kraemer Site	H&M	long-term proposed - hydraulic disposal (effluent return)
MN-10.1-RMP	-	NSP Site	H&M	long-term proposed - hydraulic disposal (effluent return)
MN-7.3-RMP	-	Hwy. 77 Bridge	M	none required
SC-6.7-LWP	SC.13	Kinnickinnic Bar Upper	H&M	long-term proposed - hydraulic disposal (effluent return)
SC-6.5-LWP	SC.12	Kinnickinnic Bar Lower	H&M	long-term proposed - hydraulic disposal (effluent return)
U-856.6-RMP	-	USAF Site	M&H	long-term proposed - hydraulic disposal (effluent return)
1-853.2-LMP	1.01A	Pool 1 Site	M	none required
1-851.3-LME	1.07T	Below Franklin Avenue	H	long-term proposed - hydraulic disposal (effluent return)
1-849.5-RME	1.03T	Below Lake Street	H	long-term proposed - hydraulic disposal (effluent return)
2-840.4-RMP	2.16	Highbridge	M&H	long-term proposed - hydraulic disposal (effluent return)
2-838.2-RMP	2.15	Northport	M	Project completed
2-837.5-RMP	2.40	St. Paul Barge Terminal	H	none proposed - Needs further investigation of floodplain impacts
2-836.3-RMP	2.13	Southport	H	long-term evaluation - hydraulic disposal (effluent return) & wetland fill
2-824.1-LMT	2.25T	Pine Bend	H&M	long-term proposed - hydraulic disposal (effluent return)
2-823.8-RMP	-	C.F. Industries	M	none required
2-822.5-LMP	-	Shiely Pit	H	long-term proposed - hydraulic disposal (effluent return)
2-821.5-LMT	-	Upper Boulanger	H&M	long-term proposed - hydraulic disposal (effluent return)
2-821.1-LMT	2.31T	Lower Boulanger	H&M	long-term evaluation - hydraulic disposal (effluent return) & wetland fill
3-815.1-RME	-	Hastings	M	none required
3-814.7-RMP	-	Koch	M	none required
3-813.2-RMP	3.46	Hastings Harbor	M	none required
3-811.5-LMP	3.34	Point Douglas	M&H	long-term evaluation - hydraulic disposal (effluent return) & wetland fill
3-808.4-LWP	3.27	Dry Run Slough	H	long-term evaluation - hydraulic disposal (effluent return) & wetland fill
3-802.3-RME	3.14T	Morgans	H&M	long-term evaluation - hydraulic disposal (effluent return) & wetland fill
3-801.7-LWE	3.12T	Coulters	H	long-term evaluation - hydraulic disposal (effluent return) & wetland fill
3-799.2-RMT	3.07	Corps Island	M&H	long-term evaluation - hydraulic disposal (effluent return)
3-798.0-LWP	-	County/private Gravel Pits	H	long-term evaluation - hydraulic disposal (effluent return)
4-794.7-RMP	4.63	Red Wing Yacht Club	H	long-term evaluation - hydraulic disposal (effluent return) & wetland fill
4-791.6-RMP	4.57	Red Wing Commercial Harbor	M	long-term proposed - wetland fill
4-788.5-RMP	4.47	Colvill Park	H&M	long-term proposed - hydraulic disposal (effluent return)
4-762.7-LWT	4.29T	Reads Landing	H	long-term proposed - hydraulic disposal (effluent return)
4-761.1-RMP	4.25	Carrels Pit	H	long-term proposed - hydraulic disposal (effluent return)
4-761.0-RMP	4.24	Wabasha Gravel Pit	H	long-term evaluation - hydraulic disposal (effluent return) & wetland fill
4-760.2-RMP	MDNR.2	MDNR.2	H	Project completed
4-759.5-RMP	4.19		H	Project completed
4-759.3-RMP	4.17		H	Project completed
4-759.3-LWT	4.16T	Crats Island	H	long-term proposed - hydraulic disposal (effluent return)
4-757.5-LWP	4.13T	Teepeeota Point	H	long-term proposed - hydraulic disposal (effluent return)
4-756.5-LWT	4.10T	Grand Encampment	H	long-term proposed - hydraulic disposal (effluent return)
4-754.0-LWP	4.02	Alma Marina	M&H	long-term evaluation - hydraulic disposal (effluent return)

Table 404-1. Dredged material placement sites for the Channel Maintenance Management Plan.

Location	GREAT Site #	Site Name	Dredge Methods	404(b)(1) Evaluation Status
5-749.8-RMP	5.24	West Newton Chute	M&H	long-term proposed - hydraulic disposal (effluent return)
5-748.0-RMT	5.18T	Above West Newton	H	long-term proposed - hydraulic disposal (effluent return)
5-745.8-RMT	5.12T	Above Fisher Island	H	long-term proposed - hydraulic disposal (effluent return)
5-744.7-LWT	5.08T	Lost Island	H	long-term proposed - hydraulic disposal (effluent return)
5-744.0-RMP	5.30	Weaver Bottoms	H&M	partially completed (expires 2025)
5A-738.2-RMP	5A.36	L/D 5 Site	M	Wetland fill completed - none required
5A-734.5-LWT	5A.14T	Island 58	H	long-term proposed - hydraulic disposal (effluent return)
5A-733.5-LWP	5A.34	Ft. City Service Base	M	long-term evaluation - open water fill
5A-731.9-LWP	5A.25	Fountain City 1	H&M	long-term proposed - hydraulic disposal (effluent return)
5A-731.8-LWP	5A.32	Fountain City 2	H&M	long-term evaluation - hydraulic disposal (effluent return) & wetland fill
5A-730.5-LWT	5A.08T	Wilds Bend	H	long-term proposed - hydraulic disposal (effluent return)
6-726.3-RMP	-	Winona Commercial Harbor	M	none required
6-726.0-LMP	6.27	Winona Harbor	M	none required
6-720.5-RMP	6.11	Homer	H&M	long-term evaluation - hydraulic disposal (effluent return) & wetland fill
7-714.1-LWP	7.06	Trempealeau	H&M	long-term evaluation - hydraulic disposal (effluent return)
7-713.1-RMP	7.05	Hot Fish Shop	M	none required
7-708.7-LWE	7.11T	Winters Landing	H&M	long-term evaluation - hydraulic disposal (effluent return) & wetland fill
7-707.3-RMP	7.25A	Dakota Boat Ramp	H	long-term evaluation - hydraulic disposal (effluent return) & wetland fill
7-706.5-RMT	7.12T	Dakota Island	H&M	long-term proposed - hydraulic disposal (effluent return)
8-695.7-LWP	8.06	Isle La Plume	M	none required
8-690.4-LWT	8.17T	Above Brownsville	H	long-term proposed - hydraulic disposal (effluent return)
8-688.7-RMP	8.30	Brownsville Containment	H&M	long-term evaluation - hydraulic disposal (effluent return) & wetland fill
9-677.7-LWP	9.15	Genoa Power Plant	M	none required
9-670.5-LWP	9.55	Blackhawk Park	H&M	long-term evaluation - hydraulic disposal (effluent return) & wetland fill
9-665.8-RIE	9.18T	Indian Camp Light	H	long-term proposed - hydraulic disposal (effluent return)
9-664.3-RIT	9.17T	Lansing	H&M	long-term proposed - hydraulic disposal (effluent return)
9-663.5-LWP	9.50T	Lansing Hwy Bridge	H&M	long-term evaluation - hydraulic disposal (effluent return) & wetland fill
10-647.1-LWP	10.17	Varo Property	H&M	long-term evaluation - hydraulic disposal (effluent return) & wetland fill
10-644.5-RIE	10.22T	Jackson Island	H&M	long-term proposed - hydraulic disposal (effluent return)
10-643.5-RIT		Jackson Rehandling Site	H	long-term evaluation - hydraulic disposal (effluent return) & wetland fill
10-642.4-LWP	10.40	Mississippi Gardens	H	long-term proposed - hydraulic disposal (effluent return)
10-628.0-LWP	10.01	Wyalusing Pit	H	long-term proposed - hydraulic disposal (effluent return)
10-627.8-LWP	10.24	Wyalusing Beach	M&H	long-term evaluation - hydraulic disposal (effluent return) & wetland fill
10-635.0-LWP	10.43	Prairie Municipal Dock	M	none required*
10-618.7-RIT	10.18	McMillan Island	H&M	long-term evaluation - hydraulic disposal (effluent return) & wetland fill
10-618.0-RIP	-	Buck Creek	H	long-term evaluation - hydraulic disposal (effluent return) & wetland fill
		TOTAL		

NOTE: Use of the Prairie Municipal Dock site has been covered by a separate EIS and 404(b)(1) evaluation.

Table 404-2. Acreage of previously undisturbed wetlands to be affected at dredged material placement sites.

Location	GREAT Site #	Site Name	Type 1 and 2 wetlands (acres)	Types 3, 4 and 5 wetlands (acres)	Open Water (acres)	Total Wetland (acres)	Estimated Quantity Placed
MN-13.5-RMP	MN.03	Cargill	7			7	137,000
2-836.3-RMP	2.13	Southport	18			18	200,000
2-821.1-LMT	2.31T	Lower Boulanger	3			3	Rehandling Site
3-811.5-LMP	3.34	Point Douglas		4		4	400,000
3-808.4-LWP	3.27	Dry Run Slough	13			13	590,500
3-802.3-RME	3.14T	Morgans	3			3	Emergency Site
3-801.7-LWE	3.12T	Coulters	2			2	Emergency Site
4-794.7-RMP	4.63	Red Wing Yacht Club	2			2	25,000
4-791.6-RMP	4.57	Red Wing Commercial Harbor	2			2	1,346,500
4-761.0-RMP	4.24	Wabasha Gravel Pit	1	2		3	2,264,000
5A-733.5-LWP	5A.34	Fountain City Service Base			2	2	70,000
5A-731.8-LWP	5A.32	Fountain City 2	8	14		22	762,500
6-720.5-RMP	6.11	Homer	8			8	352,500
7-708.7-LWE	7.11T	Winter's Landing	1			1	Emergency Site
7-707.3-RMP	7.25A	Dakota Boat Ramp	5			5	156,100
8-688.7-RMP	8.30	Brownsville Containment	11	6		17	1,911,500
9-670.5-LWP	9.55	Blackhawk Park	36	2	3	41	860,000
9-663.5-LWP	9.50T	Lansing Hwy Bridge	2			2	469,000
10-647.1-LWP	10.17	Varo Property	2			2	272,500
10-643.5-RIT	N/A	Jackson Rehandling Site			3	3	Rehandling Site
10-627.8-LWP	10.24	Wyalusing Beach			1	1	10,000
10-618.7-RIT	10.18	McMillan Island	1	1		2	Rehandling Site
10-618.0-RIP	-	Buck Creek	2			2	535,000
		TOTAL	126	29	9	164	10,362,100

Table 404-3. Dredged material disposal sites where hydraulic placement could be employed.

Location	GREAT Site #	Site Name	Total Acres	Disposal Method(s)*	Effluent Discharge Site
MN-13.5-RMP	MN.03	Cargill	7	H & M	drainage ditch to Minnesota River
MN-12.1-RMP	-	Kraemer Site	5	H & M	main channel, Minnesota River
MN-10.1-RMP	-	NSP Site	7	H & M	main channel, Minnesota River
SC-6.7-LWP	SC.13	Kinnickinnic Bar Upper	4	H & M	Beach nourishment
SC-6.5-LWP	SC.12	Kinnickinnic Bar Lower	7	H & M	Beach nourishment
U-856.6-RMP	-	USAF Site	7	M & H	main channel, Mississippi River
1-851.3-LME	1.07T	Below Franklin Avenue	5	H	main channel, Mississippi River
1-849.5-RME	1.03T	Below Lake Street	4	H	main channel, Mississippi River
2-840.4-RMP	2.16	Highbridge	4	M & H	main channel, Mississippi River
2-837.5-RMP	2.40	St. Paul Barge Terminal	28	H	main channel, Mississippi River
2-836.3-RMP	2.13	Southport	18	H	no site id in CMMP
2-824.1-LMT	2.25T	Pine Bend	8	H & M	main channel, Mississippi River
2-822.5-LMP	-	Shiely Pit	15	H	quarry pit
2-821.5-LMT	-	Upper Boulanger	4	H & M	main channel, Mississippi River
2-821.1-LMT	2.31T	Lower Boulanger	8	H & M	main channel, Mississippi River
3-811.5-LMP	3.34	Point Douglas	10	M & H	no site id in CMMP
3-808.4-LWP	3.27	Dry Run Slough	13	H	Dry Run Slough
3-802.3-RME	3.14T	Morgans	3	H & M	no site id in CMMP
3-801.7-LWE	3.12T	Coulters	3	H	no site id in CMMP
3-798.0-LWP	-	Private & County Gravel Pits	31	H	main channel, Mississippi River
3-799.2-RMT	3.07	Corps Island	7	M & H	main channel, Mississippi River
4-794.7-RMP	4.63	Red Wing Yacht Club	6	H & M	no site id in CMMP
4-788.5-RMP	4.47	Colvill Park	5	H & M	main channel, Mississippi River
4-762.7-LWT	4.29T	Reads Landing	22	H	main channel, Mississippi River
4-761.1-RMP	4.25	Carrels Pit	18	H	main channel, Mississippi River
4-761.0-RMP	4.24	Wabasha Gravel Pit	86	H	tributary channel (Brewery Creek), Mississippi River
4-759.3-LWT	4.16T	Crats Island	22	H	main channel, Mississippi River
4-757.5-LWP	4.13T	Teepeeota Point	46	H	main channel, Mississippi River
4-756.5-LWT	4.10T	Grand Encampment	8	H	main channel, Mississippi River
4-754.0-LWP	4.02	Alma Marina	7	M & H	main channel, Mississippi River
5-749.8-RMP	5.24	West Newton Chute	39	M & H	no effluent return anticipated
5-748.0-RMT	5.18T	Above West Newton	14	H	main channel, Mississippi River
5-745.8-RMT	5.12T	Above Fisher Island	14	H	main channel, Mississippi River
5-744.7-LWT	5.08T	Lost Island	18	H & M	main channel, Mississippi River
5A-734.5-LWT	5A.14T	Island 58	3	H & M	main channel, Mississippi River

Table 404-3. Dredged material disposal sites where hydraulic placement could be employed.

Location	GREAT Site #	Site Name	Total Acres	Disposal Method(s)*	Effluent Discharge Site
5A-731.9-LWP	5A.25	Fountain City 1	6	H & M	main channel, Mississippi River
5A-731.8-LWP	5A.32	Fountain City 2	22	H & M	main channel, Mississippi River
5A-730.5-LWT	5A.08T	Wilds Bend	8	H & M	main channel, Mississippi River
6-720.5-RMP	6.11	Homer	10	M & H	main channel, Mississippi River
7-714.1-LWP	7.06	Trempealeau	5	H & M	wetlands adjacent to site
7-708.7-LWE	7.11T	Winters Landing	2	H & M	main channel, Mississippi River
7-707.3-RMP	7.25A	Dakota Boat Ramp	5	H & M	tributary channel (Dakota Creek), Mississippi River
7-706.5-RMT	7.12T	Dakota Island	8	H & M	main channel, Mississippi River
8-690.4-LWT	8.17T	Above Brownsville	14	H	main channel, Mississippi River
8-688.7-RMP	8.30	Brownsville Containment	36	H & M	main channel, Mississippi River
9-670.5-LWP	9.55	Blackhawk Park	69	M & H	main channel, Mississippi River
9-665.8-RIE	9.18T	Indian Camp Light	3	H & M	main channel, Mississippi River
9-664.3-RIT	9.17T	Lansing	9	H & M	main channel, Mississippi River
9-663.5-LWP	9.50T	Lansing Hwy Bridge	5	H & M	main channel, Mississippi River
10-647.1-LWP	10.17	Varo Property	2	M	main channel, Mississippi River
10-644.5-RIE	10.22T	Jackson Island	3	H & M	main channel, Mississippi River
10-643.5-RIT	-	Jackson Rehandling Site	3	H	main channel, Mississippi River
10-642.4-LWP	10.40	Mississippi Gardens	4	H & M	main channel, Mississippi River
10-628.0-LWP	10.01	Wyalusing Pit	8	M & H	no effluent return anticipated, contained within pit
10-627.8-LWP	10.24	Wyalusing Beach	2	M & H	main channel, Mississippi River
10-618.7-RIT	10.18	McMillan Island	5	H & M	main channel, Mississippi River
10-618.0-RIP	-	Buck Creek	10	H	main channel, Mississippi River

* H stands for Hydraulic dredging and M stands for Mechanical dredging

Table 404-4. Active dredge cuts.

Pool-Cut #	Cut Name	Location (river mile)	Estimated Total Cut Length (feet)	Recommended Cut Width (feet)	Estimated 40-Year Quantity (cubic yards)	Estimated Frequency of Dredging (percent)
*** Main Channel Dredging ***						
MN-5	Above Savage Railroad Bridge	14.3-14.7	2,112	100	101,500	26.9
MN-4	Cargill Slip	12.8-13.6	4,224	100	35,500	3.8
MN-3C	Peterson's Bar	11.8-12.4	3,168	100	232,500	50.0
MN-3B	Below Peterson's Bar	11.0-11.6	3,168	100	116,000	15.4
MN-3A	Above 35W Bridge	10.1	528	100	39,000	3.8
MN-2	4-Mile Cut-Off	4.0	528	100	80,000	3.8
MN-1	Mouth of MN River	0.0-0.5	2,640	100	117,500	7.7
TOTAL					722,000	
SC-1	Kinnickinnic Bar	6.0-6.5	2,640	200	272,000	19.2
TOTAL					272,000	
USAF-3	Minneapolis Turning Basin	856.8-857.6	4,224	150	446,000	50.0
USAF-2	Above Lowry Avenue Bridge	856.4-856.8	2,112	150	706,500	57.7
USAF-1B	Broadway Avenue Bridge	855.3-856.1	4,224	150	141,000	46.2
USAF-1A	Above Plymouth Avenue Bridge	854.8-855.5	3,696	150	211,500	38.5
TOTAL					1,505,000	
1-7B	Lower Approach to LSAF	853.4	528	200	32,000	3.8
1-7A	Washington Avenue Bridge	852.5-853.0	2,640	200	610,500	26.9
1-6	Above Franklin Avenue Bridge	851.6-852.4	4,224	200	589,000	26.9
1-5	Below Franklin Avenue Bridge	850.7-851.4	3,696	200	489,000	34.6
1-4	Above Lake Street Bridge	849.9-850.5	3,168	200	569,000	53.8
1-3	Below Lake Street Bridge	848.9-849.9	5,280	200	391,500	34.6
1-2	St. Paul Daymark	848.5-848.9	2,112	200	65,500	23.1
1-1	Upper Approach to L/D 1	847.7-848.4	3,696	200	287,500	26.9
TOTAL					3,034,000	
2-9	Above and Below Smith Avenue	840.0-841.3	6,864	200	356,500	46.2
2-7	St. Paul Barge Terminal	836.4-837.8	7,392	200	2,028,000	42.3
2-5B	Grey Cloud Slough	827.5-828.3	4,224	450	141,000	30.8
2-5A	Robinson Rocks	826.1	528	200	141,000	3.8
2-4	Pine Bend	822.7-823.7	5,280	400	379,500	38.5
2-3	Boulanger Bend	820.7-821.4	3,696	500	455,500	19.2
2-2	Boulanger Bend Lower Light	819.0-819.8	4,224	400	240,500	19.2
TOTAL					3,742,000	
3-9	Lower Appch. L/D 2	814.9-815.1	1,056	300	61,500	11.5
3-7	Prescott	810.3-811.7	7,392	450	322,000	3.8
3-5B	Truedale Slough	807.9-808.6	3,696	400	200,000	3.8
3-5A	Four Mile Island	807.0-807.9	4,752	500	390,500	3.8
3-4	Big River	804.1-806.0	10,032	300	20,000	15.4
3-3	Morgan's Coulee	801.9-803.0	5,808	300	25,000	7.7
3-2	Coulter's Island	800.8-801.9	5,280	300	180,000	26.9
3-1	Diamond Bluff	798.8-800.4	8,448	300	245,000	26.9
TOTAL					1,444,000	
4-10	Trenton	794.0-794.6	3,168	600	179,000	7.7
4-9	Cannon River	792.1-793.5	7,392	300	427,500	19.2
4-8	Above Red Wing High Bridge	790.8-791.2	2,112	500	85,500	3.8
4-7	Below Red Wing High Bridge	789.5-790.3	4,224	500	395,500	3.8
4-6	Head of Lake Pepin	785.2-785.4	1,056	500	274,000	5.0
4-5B	Chippewa Delta	763.2	528	500	2,000,000	26.9
4-5A	Read's Landing	761.8-763.8	10,560	500	264,000	53.8
4-4	Above Crat's Island	758.5-759.5	5,280	450	800,500	73.1
4-3	Above Teepeota Point	757.0-757.9	4,752	500	972,000	53.8
4-2	Grand Encampment	755.8-756.9	5,808	300	522,500	53.8
4-1	Beef Slough	753.9-754.6	3,696	400	235,000	26.9
TOTAL					6,155,500	
5-8	Lower Approach L/D 4	752.6-752.8	1,056	300	105,500	11.5
5-7	Mule Bend	748.6-749.6	5,280	500	358,000	23.1
5-6	West Newton	747.2-748.2	5,280	450	557,000	23.1
5-5	Below West Newton	746.0-746.8	4,224	450	381,500	61.5

Table 404-4. Active dredge cuts.

Pool-Cut #	Cut Name	Location (river mile)	Estimated Total Cut Length (feet)	Recommended Cut Width (feet)	Estimated 40-Year Quantity (cubic yards)	Estimated Frequency of Dredging (percent)
*** Main Channel Dredging ***						
5-4	Fisher Island	744.8-746.0	6,336	300	671,000	69.2
5-3	Lower Zumbro	744.0-744.6	3,168	500	520,000	50.0
5-2	Sommerfield Island	742.6-743.9	6,864	400	332,000	30.8
TOTAL					2,925,000	
5A-5	Island 58	734.0-735.2	6,336	500	724,000	30.8
5A-4	Fountain City	733.3-733.8	2,640	400	407,500	3.8
5A-3	Betsy Slough	731.0-732.0	5,280	500	461,000	76.9
5A-2	Wild's Bend	730.2-730.7	2,640	450	276,000	61.5
TOTAL					1,868,500	
6-3	Below Winona Railroad Bridge	723.4-723.8	2,112	300	434,000	23.1
6-2	Gravel Point	721.8-722.9	5,808	500	80,000	3.8
6-1	Homer	720.4-721.1	3,696	300	272,500	15.4
TOTAL					786,500	
7-7	Lower Approach to L/D 6	714.0-714.3	1,584	300	93,500	15.4
7-6	Richmond Island	711.4-712.3	4,752	450	652,500	15.4
7-4	Winter's Landing	707.4-709.3	10,032	400	467,500	57.7
7-3	Dakota	706.1-706.6	2,640	400	374,000	34.6
7-2B	Head of Dresbach	704.0-705.3	6,864	300	179,000	38.5
7-2A	Lower Dresbach Island	703.0-703.7	3,696	300	179,000	23.1
7-1	Upper Approach to L/D 7	702.5-702.9	2,112	300	141,500	7.7
TOTAL					2,087,000	
8-10	LaCrosse Railroad Bridge	699.8-700.4	3,168	300	280,500	30.8
8-9	Sand Slough	694.3-695.0	3,696	500	171,000	3.8
8-7	Picayune Island	691.4-692.4	5,280	300	211,000	7.7
8-6	Above Brownsville	689.9-690.8	4,752	400	904,500	53.8
8-5	Brownsville	688.7-689.4	8,976	400	654,500	69.2
8-4	Head of Raft Channel	687.5-688.7	6,336	400	1,018,000	42.3
8-3	Deadman's Slough	686.5-687.5	5,280	400	239,000	7.7
TOTAL					3,478,500	
9-10	Lower Approach to L/D 8	678.7-679.2	2,640	300	93,500	7.7
9-9	Island 126	677.5-678.4	4,752	450	302,000	7.7
9-8	Twin Island	676.0-676.6	3,168	400	362,000	—
9-6	Battle Island	671.0-672.0	5,280	500	363,500	11.5
9-4	Indian Camp Light	665.0-665.8	4,224	300	517,000	57.7
9-3	Lansing Upper Light	663.8-664.9	5,808	500	469,000	57.7
TOTAL					2,107,000	
10-9	Hay Point	646.0-646.6	3,168	300	272,500	7.7
10-8	Jackson Island	643.7-644.7	5,280	300	477,000	11.5
10-7	Mississippi Gardens	642.7-643.4	3,696	500	163,000	7.7
10-3	Wyalusing	627.3-628.0	3,696	500	123,000	3.8
10-2	McMillan Island	618.4-619.6	6,336	500	535,000	38.5
TOTAL					1,570,500	
TOTAL					31,697,500	
*** Authorized Harbor Dredging ***						
2	St. Paul SBH	839.6			156000	42.3
3	Hastings SBH	813.2			20000	7.7
4	Red Wing Comm. Harbor	791.5			12000	7.7
4	Red Wing SBH	791.0			44000	3.8
4	Lake City SBH	772.5				—
4	Pepin SBH	767.0			4000	7.7
4	Wabasha SBH	760.5				—
4	Alma SBH	754.0			4000	3.8
6	Winona Comm. Harbor	726.3			4000	7.7
6	Winona SBH	726.1			80000	53.8
9	Lansing SBH	663.5				—

Table 404-5. Quantity of dredged material total and by particle size.

Pool-Cut #	Cut Name	Location (river mile)	Average % Silts & Clays	CMMP - average annual quanity (CY) Total	Sand	Silts & clays
*** Main Channel Dredging ***						
MN-5	Above Savage Railroad Bridge	14.3-14.7	22.0%	2,538	1,978	559
MN-4	Cargill Slip	12.8-13.6	20.6%	888	704	183
MN-3C	Peterson's Bar	11.8-12.4	9.6%	5,813	5,255	558
MN-3B	Below Peterson's Bar	11.0-11.6	48.5%	2,900	1,494	1,407
MN-3A	Above 35W Bridge	10.1	ND	975	ND	ND
MN-2	4-Mile Cut-Off	4.0	ND	2,000	ND	ND
MN-1	Mouth of MN River	0.0-0.5	33.0%	2,938	1,968	969
TOTAL - Minnesota River			24.4%	18,050	11,399	3,676
SC-1	Kinnickinnic Bar	6.0-6.5	0.9%	6,800	6,737	63
TOTAL - St. Croix River			0.9%	6,800	6,737	63
USAF-3	Minneapolis Turning Basin	856.8-857.6	0.7%	11,150	11,067	83
USAF-2	Above Lowry Avenue Bridge	856.4-856.8	0.8%	17,663	17,521	141
USAF-1B	Broadway Avenue Bridge	855.3-856.1	0.4%	3,525	3,511	14
USAF-1A	Above Plymoth Avenue Bridge	854.8-855.5	0.7%	5,288	5,252	35
TOTAL - Pool USAF			0.7%	37,625	37,351	274
1-7B	Lower Approach to LSAF	853.4	ND	800	ND	ND
1-7A	Washington Avenue Bridge	852.5-853.0	0.6%	15,263	15,177	85
1-6	Above Franklin Avenue Bridge	851.6-852.4	1.0%	14,725	14,578	147
1-5	Below Franklin Avenue Bridge	850.7-851.4	0.3%	12,225	12,193	32
1-4	Above Lake Street Bridge	849.9-850.5	1.0%	14,225	14,084	141
1-3	Below Lake Street Bridge	848.9-849.9	3.2%	9,788	9,474	313
1-2	St. Paul Daymark	848.5-848.9	2.0%	1,638	1,605	32
1-1	Upper Approach to L/D 1	847.7-848.4	2.3%	7,188	7,023	165
TOTAL - Pool 1			1.2%	75,850	74,135	915
2-9	Above and Below Smith Avenue	840.0-841.3	4.9%	8,913	8,472	440
2-7	St. Paul Barge Terminal	836.4-837.8	23.8%	50,700	38,628	12,072
2-5B	Grey Cloud Slough	827.5-828.3	1.1%	3,525	3,487	38
2-5A	Robinson Rocks	826.1	4.5%	3,525	3,366	159
2-4	Pine Bend	822.7-823.7	7.5%	9,488	8,776	711
2-3	Boulanger Bend	820.7-821.4	16.3%	11,388	9,534	1,853
2-2	Boulanger Bend Lower Light	819.0-819.8	84.5%	6,013	932	5,081
TOTAL - Pool 2			21.8%	93,550	73,196	20,354
3-9	Lower Appch. L/D 2	814.9-815.1	3.7%	1,538	1,481	56
3-7	Prescott	810.3-811.7	9.0%	8,050	7,322	728
3-5B	Truedale Slough	807.9-808.6	2.0%	5,000	4,900	100
3-5A	Four Mile Island	807.0-807.9	1.5%	9,763	9,616	146
3-4	Big River	804.1-806.0	1.0%	500	495	5
3-3	Morgan's Coulee	801.9-803.0	0.3%	625	623	2
3-2	Coulter's Island	800.8-801.9	0.4%	4,500	4,484	16
3-1	Diamond Bluff	798.8-800.4	1.9%	6,125	6,006	119
TOTAL - Pool 3			3.2%	36,100	34,928	1,172
4-10	Trenton	794.0-794.6	3.0%	4,475	4,341	134
4-9	Cannon River	792.1-793.5	4.4%	10,688	10,215	472
4-8	Above Red Wing High Bridge	790.8-791.2	7.0%	2,138	1,988	150
4-7	Below Red Wing High Bridge	789.5-790.3	17.0%	9,888	8,204	1,684
4-6	Head of Lake Pepin	785.2-785.4	14.5%	6,850	5,857	993
TOTAL - Upper pool 4			10.1%	34,038	30,604	3,433

Table 404-5. Quantity of dredged material total and by particle size.

Pool-Cut #	Cut Name	Location (river mile)	Average % Silts & Clays	CMMP - average annual quanity (CY) Total	Sand	Silts & clays
*** Main Channel Dredging ***						
4-5B	Chippewa Delta	763.2	2.5%	50,000	48,750	1,250
4-5A	Read's Landing	761.8-763.8	0.5%	6,600	6,568	32
4-4	Above Crat's Island	758.5-759.5	0.8%	20,013	19,846	166
4-3	Above Teepeota Point	757.0-757.9	1.2%	24,300	24,008	292
4-2	Grand Encampment	755.8-756.9	0.3%	13,063	13,019	43
4-1	Beef Slough	753.9-754.6	1.2%	5,875	5,806	69
TOTAL - Lower pool 4			1.5%	119,850	117,999	1,851
5-8	Lower Approach L/D 4	752.6-752.8	0.1%	2,638	2,635	2
5-7	Mule Bend	748.6-749.6	1.5%	8,950	8,816	134
5-6	West Newton	747.2-748.2	0.6%	13,925	13,841	84
5-5	Below West Newton	746.0-746.8	1.0%	9,538	9,442	95
5-4	Fisher Island	744.8-746.0	0.4%	16,775	16,703	72
5-3	Lower Zumbro	744.0-744.6	2.5%	13,000	12,675	325
5-2	Sommerfield Island	742.6-743.9	1.5%	8,300	8,178	122
TOTAL - Pool 5			1.1%	73,125	72,290	835
5A-5	Island 58	734.0-735.2	0.2%	18,100	18,058	42
5A-4	Fountain City	733.3-733.8	1.0%	10,188	10,084	104
5A-3	Betsy Slough	731.0-732.0	0.8%	11,525	11,429	96
5A-2	Wild's Bend	730.2-730.7	1.1%	6,900	6,821	79
TOTAL - Pool 5A			0.7%	46,713	46,393	320
6-3	Below Winona Railroad Bridge	723.4-723.8	2.0%	10,850	10,633	217
6-2	Gravel Point	721.8-722.9	0.5%	2,000	1,990	10
6-1	Homer	720.4-721.1	4.9%	6,813	6,479	333
TOTAL - Pool 6			2.8%	19,663	19,102	560
7-7	Lower Approach to L/D 6	714.0-714.3	0.0%	2,338	2,338	0
7-6	Richmond Island	711.4-712.3	0.4%	16,313	16,247	65
7-4	Winter's Landing	707.4-709.3	0.2%	11,688	11,668	20
7-3	Dakota	706.1-706.6	9.5%	9,350	8,462	888
7-2B	Head of Dresbach	704.0-705.3	0.0%	4,475	4,475	0
7-2A	Lower Dresbach Island	703.0-703.7	ND	4,475	ND	ND
7-1	Upper Approach to L/D 7	702.5-702.9	ND	3,538	ND	ND
TOTAL - Pool 7			2.2%	52,175	43,189	973
8-10	LaCrosse Railroad Bridge	699.8-700.4	0.7%	7,013	6,962	50
8-9	Sand Slough	694.3-695.0	0.0%	4,275	4,275	0
8-7	Picayune Island	691.4-692.4	0.0%	5,275	5,275	0
8-6	Above Brownsville	689.9-690.8	1.9%	22,613	22,192	421
8-5	Brownsville	688.7-689.4	0.0%	16,363	16,363	0
8-4	Head of Raft Channel	687.5-688.7	0.7%	25,450	25,282	168
8-3	Deadman's Slough	686.5-687.5	0.0%	5,975	5,975	0
TOTAL - Pool 8			0.7%	86,963	86,323	639
9-10	Lower Approach to L/D 8	678.7-679.2	ND	2,338	ND	ND
9-9	Island 126	677.5-678.4	2.8%	7,550	7,342	208
9-8	Twin Island	676.0-676.6	0.0%	9,050	9,050	0
9-6	Battle Island	671.0-672.0	0.0%	9,088	9,088	0
9-4	Indian Camp Light	665.0-665.8	1.0%	12,925	12,796	129
9-3	Lansing Upper Light	663.8-664.9	1.0%	11,725	11,608	117
TOTAL - Pool 9			0.9%	52,675	49,883	454

Table 404-5. Quantity of dredged material total and by particle size.

Pool-Cut #	Cut Name	Location (river mile)	Average % Silts & Clays	CMMP - average annual quanity (CY) Total	Sand	Silts & clays
*** Main Channel Dredging ***						
10-9	Hay Point	646.0-646.6	0.0%	6,813	6,813	0
10-8	Jackson Island	643.7-644.7	7.0%	11,925	11,090	835
10-7	Mississippi Gardens	642.7-643.4	0.5%	4,075	4,055	20
10-6	East Channel	633.2-635.8	ND		ND	ND
10-3	Wyalusing	627.3-628.0	0.0%	3,075	3,075	0
10-2	McMillan Island	618.4-619.6	0.5%	13,375	13,312	63
TOTAL - Pool 10			2.3%	39,263	38,345	918
TOTAL For Main Channel			4.7%	792,438	741,875	36,438
*** Authorized Harbor Dredging ***						
2	St. Paul SBH	839.6	65.0%	3900	1,365	2,535
3	Hastings SBH	813.2	53.7%	500	232	269
4	Red Wing Comm. Harbor	791.5	66.7%	300	100	200
4	Red Wing SBH	791.0	58.5%	1100	457	643
4	Lake City SBH	772.5	30.8%			
4	Pepin SBH	767.0	9.9%	100	90	10
4	Wabasha SBH	760.5	21.0%			
4	Alma SBH	754.0	56.0%	100	44	56
6	Winona Comm. Harbor	726.3	13.1%	100	87	13
6	Winona SBH	726.1	17.4%	2000	1,651	349
9	Lansing SBH	663.5	ND			
10	Prairie Du Chien Comm. Harbor	635.2	ND			
10	Prairie Du Chien SBH	636.0	98.0%			
TOTAL - Boat Harbors			50.3%	8,100	4,025	4,075

* POOL average percent is a weighted average depending on quanity and particle size makeup for each dredge cut.
** ND - No Data on particle size available

Table 404-6. Pre- and maximum post-fill elevations of wetland disposal sites.

Location	GREAT Site #	Site Name	Size (acres)	Pre-fill Elevation (feet above mean sea level)	Maximum Fill Elevation (feet above mean sea level)	Low Control Pool Elevation (feet above mean sea level)
MN-13.5-RMP	MN.03	Cargill	7	700.0	715.0	687.2
2-837.5-RMP	2.40	St. Paul Barge Terminal	28	683.0	713.0	687.2
2-836.3-RMP	2.13	Southport	18	696.0	706.0	687.2
2-821.1-LMT	2.31T	Lower Boulanger	8	657.0	710.0	686.7
3-811.5-LMP	3.34	Point Douglas	10	705.0	730.0	675.0
3-808.4-LWP	3.27	Dry Run Slough	13	696.0	740.0	675.0
3-802.3-RME	3.14T	Morgans	3	682.0	697.0	674.3
3-801.7-LWE	3.12T	Coulters	3	682.0	697.0	674.3
3-799.2-RMT	3.07	Corps Island	7	679.0	709.0	674.1
4-794.7-RMP	4.63	Red Wing Yacht Club	6	677.0	680.0	667.0
4-791.6-RMP	4.57	Red Wing Commercial Harbor	13	674.0	704.0	667.0
4-761.0-RMP	4.24	Wabasha Gravel Pit	86	685.0	735.0	667.0
4-754.0-LWP	4.02	Alma Marina	7	667.0	702.0	666.6
5A-733.5-LWP	5A.34	Fountain City Service Base	2	647.0	664.0	650.9
5A-731.8-LWP	5A.32	Fountain City 2	22	650.0	675.0	650.4
6-720.5-RMP	6.11	Homer	10	649.0	664.0	644.8
7-708.7-LWE	7.11T	Winters Landing	2	644.0	669.0	638.5
7-707.3-RMP	7.25A	Dakota Boat Ramp	5	643.0	665.0	638.5
8-688.7-RMP	8.30	Brownsville Containment	36	632.0	662.0	630.6
9-670.5-LWP	9.55	Blackhawk Park	69	625.0	629.0	620.0
9-663.5-LWP	9.50T	Lansing Hwy Bridge	5	622.0	642.0	620.0
10-647.1-LWP	10.17	Varo Property	4	621.0	631.0	611.0
10-643.5-RIT	---	Jackson Rehandling Site	3	*	*	611.0
10-627.8-LWP	10.24	Wyalusing Beach	2	614.0	617.0	611.0
10-618.7-RIT	10.18	McMillan Island	5	620.0	650.0	611.0
10-618.0-RIP	---	Buck Creek	8	630.0	655.0	610.3

* In-water rehandling site - Site would be restored to pre-fill elevation immediately after each use

Table 404-7. Quality of dredged material.

Pool-Cut #	Cut Name	Location (river mile)	Average % Silts & Clays	Year Last Sampled	Contaminant Pre 1989*	Contaminant 1989 & post*
Minnesota River						
MN-5	Above Savage Railroad Bridge	14.3-14.7	22.0%	1989	Ni (17), Cd (1.2), Cr(29), Hg(0.31)	Cu(13)
MN-4	Cargill Slip	12.8-13.6	20.6%	1989	Pb(20)	
MN-3C	Peterson's Bar	11.8-12.4	9.6%	1989	Cr(20), Hg(0.13)	
MN-3B	Below Peterson's Bar	11.0-11.6	48.5%	1989	Dieldrin(0.5), DDD(0.8), Chlordane(1)	As(3.2)
MN-3A	Above 35W Bridge	10.1	NA	NA	NA	NA
MN-2	4-Mile Cut-Off	4.0	NA	NA	NA	NA
MN-1	Mouth of MN River	0.0-0.5	33.0%	1980	Dieldrin(0.6), DDE(1), DDD(0.8), DDT(0.4), Chlordane(1)	NA
St. Croix River						
SC-1	Kinnickinnic Bar	6.0-6.5	0.9%	1989		Cu(28)
Upper and Lower St. Anthony						
USAF-3	Minneapolis Turning Basin	856.8-857.6	0.7%	1989	Pb(40), Hg(0.7), Cr(20)	
USAF-2	Above Lowry Avenue Bridge	856.4-856.8	0.8%	1989	DDE(0.2)	
USAF-1B	Broadway Avenue Bridge	855.3-856.1	0.4%	1989	Hg(0.12)	
USAF-1A	Above Plymoth Avenue Bridge	854.8-855.5	0.7%	1989	DDE(2.2), DDD(1.3), Cr(20), Pb(20), Hg(0.12)	
Pool 1						
1-7B	Lower Approach to LSAF	853.4	NA	NA	NA	NA
1-7A	Washington Avenue Bridge	852.5-853.0	0.6%	1989	4,4'-DDE (4.2), 4, 4'-DDD (1.7), 4,4'-DDT (2.2)	
1-6	Above Franklin Avenue Bridge	851.6-852.4	1.0%	1989	Hg (0.3)	Aldrin (0.12)
1-5	Below Franklin Avenue Bridge	850.7-851.4	0.3%	1994		b-BHC (1.1), Dieldrin (0.58)
1-4	Above Lake Street Bridge	849.9-850.5	1.0%	1994	Cu (100), Pb (320), Hg (1.69), Ni (40), Zn (400), .4.4'-DDE (49), 4,4'-DDD (1.9), 4,4'-DDT (0.7)	b-BHC (3.1), Dieldrin (1.2), DDE (0.52)
1-3	Below Lake Street Bridge	848.9-849.9	3.2%	1994		Pb (32.4), b-BHC (1.2)
1-2	St. Paul Daymark	848.5-848.9	2.0%	1994	4,4'-DDD (2.2), 4,4'-DDT (1.0)	Cu (15.8), b-BHC 0.48
1-1	Upper Approach to L/D 1	847.7-848.4	2.3%	1994	Cr (37.5) Cu (39.7), Hg (1.1), Zn (158), 4,4'-DDE (1.2), 4,4'-DDD (3.6), 4,4'-DDT (0.5)	b-BHC (2.6)
Pool 2						
2-9	Above and Below Smith Avenue	840.0-841.3	4.9%	1994	4,4'-DDD (0.4), Hg (0.6), PCB's (5)	b-BHC (1.7), Cu (19.8), Hg (0.64), Pb (26.9)
2-7	St. Paul Barge Terminal	836.4-837.8	23.8%	1992	Dieldrin(1.9), Endrin(0.2), DDD(3.8), DDT(1.7), Chlordane(9), Cd(1), Cr(39),Cu(20), Hg(1.1), Ni(30), Pb(60), Zn (202), PCBs(200)	Aldrin(1.1), DDE(3.6), As(6.9), Cd(1), Cu(42), Hg(0.13), Pb(37), Zn(100)
2-5B	Grey Cloud Slough	827.5-828.3	1.1%	1994	a-BHC (4.9), 4,4'-DDD (0.2), As (8.82), Cr (50.2), Cu (24.8), Hg (0.7), Ni (28.7), Pb (25.8), Zn (102), PCB's 1406	
2-5A	Robinson Rocks	826.1	4.5%	1982		NA
2-4	Pine Bend	822.7-823.7	7.5%	1994	Cd (2.7), Cr (31.7), Cu 13.9 (Cu), Hg (0.8), PCB's (8)	Cu (18.3), Ni (15.8)
2-3	Boulanger Bend	820.7-821.4	16.3%	1994	Cd (4.5), Cr (54.7), Cu (25.3), Hg (1.8), Pb (104), Zn (93.4), PCB's (90)	b-BHC (1.3), Dieldrin (1.1), 4,4'-DDE (0.74)
2-2	Boulanger Bend Lower Light	819.0-819.8	84.5%	1995	Dieldrin (1.6), 4,4'-DDD (7), Chlorodane (11), Cd (8), Cr (17.3), Cu (38), Pb (30), Zn (130), PCB's (68)	4,4'-DDD (1.9), 4,4'-DDT (2.7), Cr (27), Cu (21.5), Hg (0.14), Ni (21.3), Pb, (16.5), Zn (82.8)
Pool 3						
3-9	Lower Appch. L/D 2	814.9-815.1	3.7%			
3-7	Prescott	810.3-811.7	9.0%			Cu (14.4)
3-5B	Truedale Slough	807.9-808.6	2.0%	1989	Cr (26.8), Cu (20)	
3-5A	Four Mile Island	807.0-807.9	1.5%	1989		
3-4	Big River	804.1-806.0	1.0%	1981	4,4'-DDD (1.4), 4,4'-DDT (0.7), Chlorodane (3), As (10), Cr (30), PCB's (2)	NA
3-3	Morgan's Coulee	801.9-803.0	0.3%	1989		Cr (19.4)
3-2	Coulter's Island	800.8-801.9	0.4%	1989	Hg (0.5)	Hg (0.13)
3-1	Diamond Bluff	798.8-800.4	1.9%	1994	As (17)	Hg (0.12)
Upper Pool 4						
4-10	Trenton	794.0-794.6	3.0%	1981		NA
4-9	Cannon River	792.1-793.5	4.4%	1994	Cr (17), Hg (0.66), Ni (77)	Hg (0.11)
4-8	Above & Below Red Wing High Bridge	790.8-791.2	7.0%	1989	Dieldrin (0.2), 4,4'-DDD (1.5), 4,4'-DDT (0.3), PCB's (18)	Dieldrin (0.2), 4,4'-DDD (1.5), 4,4'-DDT (0.3), Pb (35.2)
4-6	Head of Lake Pepin	785.2-785.4	14.5%	1987	As (3.15), Cr (63.6), Fe (22800), Hg (2.2), Ni (30), Pb (42), PCB's (65)	NA

Table 404-7. Quality of dredged material.

Pool-Cut #	Cut Name	Location (river mile)	Average % Silts & Clays	Year Last Sampled	Contaminant Pre 1989*	Contaminant 1989 & post*
Lower pool 4						
4-5B	Chippewa Delta	763.2	2.5%	1982	4,4'-DDD (2.2), 4,4'-DDT (16.7)	NA
4-5A	Read's Landing	761.8-763.8	0.5%	1989	Cd (0.76)	
4-4	Above Crat's Island	758.5-759.5	0.8%	1982	As (3), Cd (1), Cr (20), Hg (1.4)	
4-3	Above Teepeota Point	757.0-757.9	1.2%	1982		Pb (35.2)
4-2	Grand Encampment	755.8-756.9	0.3%	1980	Hg (0.4)	NA
4-1	Beef Slough	753.9-754.6	1.2%	1994	4,4'-DDE (10), 4,4'-DDT, Cr (23), Ni (17), Pb (28)	As (11.2), Cr (30), Cu (17.2), Ni (21.2), Pb (16), Zn (85.2)
Pool 5						
5-8	Lower Approach L/D 4	752.6-752.8	0.1%	1989		
5-7	Mule Bend	748.6-749.6	1.5%	1979		NA
5-6	West Newton	747.2-748.2	0.6%	1989	4,4'-DDE (10), Cr (28.3), Cu (19.8), Hg (0.9), Ni (23.7), PCB's (1)	Cu (11.2)
5-5	Below West Newton	746.0-746.8	1.0%	1980	PCB's (2)	NA
5-4	Fisher Island	744.8-746.0	0.4%	1989	As (10.9), Hg (0.3), PCB's (6)	
5-3	Lower Zumbro	744.0-744.6	2.5%	1989		
5-2	Sommerfield Island	742.6-743.9	1.5%	1994	4,4'-DDE (10), Cd (1.43), Hg (0.4), Ni (26), Zn (75.4)	
Pool 5A						
5A-5	Island 58	734.0-735.2	0.2%	1989	4,4'-DDE (10), Cd (.949), Cr (30), Hg (0.2), Zn (77.6)	
5A-4	Fountain City	733.3-733.8	1.0%	1989	Hg (.16)	
5A-3	Betsy Slough	731.0-732.0	0.8%	1989	Hg (0.7), Ni (20)	
5A-2	Wild's Bend	730.2-730.7	1.1%	1989	4,4'-DDE (10), Hg (.3)	
Pool 6						
6-3	Below Winona Railroad Bridge	723.4-723.8	2.0%	1989		
6-2	Gravel Point	721.8-722.9	0.5%	1981		NA
6-1	Homer	720.4-721.1	4.9%	1989	4,4'-DDE (10), Hg (.2), Pb (30)	
Pool 7						
7-7	Lower Approach to L/D 6	714.0-714.3	0.0%	1981		NA
7-6	Richmond Island	711.4-712.3	0.4%	1989	4,4'-DDE (10), Hg (0.2)	
7-4	Winter's Landing	707.4-709.3	0.2%	1989	Cd (1), Hg (0.4)	
7-3	Dakota	706.1-706.6	9.5%	1989	4,4'-DDE (10), Hg (0.1)	
7-2B	Head of Dresbach	704.0-705.3	0.0%	1989	Hg (0.4)	
7-2A	Lower Dresbach Island	703.0-703.7	NA	NA	NA	NA
7-1	Upper Approach to L/D 7	702.5-702.9	NA	NA	NA	NA
Pool 8						
8-10	LaCrosse Railroad Bridge	699.8-700.4	0.7%	1989		
8-9	Sand Slough	694.3-695.0	0.0%	1981	Hg (0.4)	
8-7	Picayune Island	691.4-692.4	0.0%	1989	Cd (0.9), Hg (0.2)	
8-6	Above Brownsville	689.9-690.8	1.9%	1989	Pb (20)	
8-5	Brownsville	688.7-689.4	0.0%	1988		NA
8-4	Head of Raft Channel	687.5-688.7	0.7%	1989	Cd (0.9), Cr (106), Hg (0.3), Ni (36)	
8-3	Deadman's Slough	686.5-687.5	0.0%	1981		NA
Pool 9						
9-10	Lower Approach to L/D 8	678.7-679.2	NA	NA		
9-9	Island 126	677.5-678.4	2.8%	1989		
9-8	Twin Island	676.0-676.6	0.0%	1989		
9-6	Battle Island	671.0-672.0	0.0%	1989	Cd (0.9), Hg (0.1)	
9-4	Indian Camp Light	665.0-665.8	1.0%	1989	Pb (20)	
9-3	Lansing Upper Light	663.8-664.9	1.0%	1989	Cd (0.9), Hg (0.5), Pb (20)	
Pool 10						
10-9	Hay Point	646.0-646.6	0.0%	1981	As (3), Hg (0.6)	
10-8	Jackson Island	643.7-644.7	7.0%	1989		
10-7	Mississippi Gardens	642.7-643.4	0.5%	1981		
10-6	East Channel	633.2-635.8	NA	NA	NA	NA
10-3	Wyalusing	627.3-628.0	0.0%	1989		
10-2	McMillan Island	618.4-619.6	0.5%	1989	Hg (.3)	

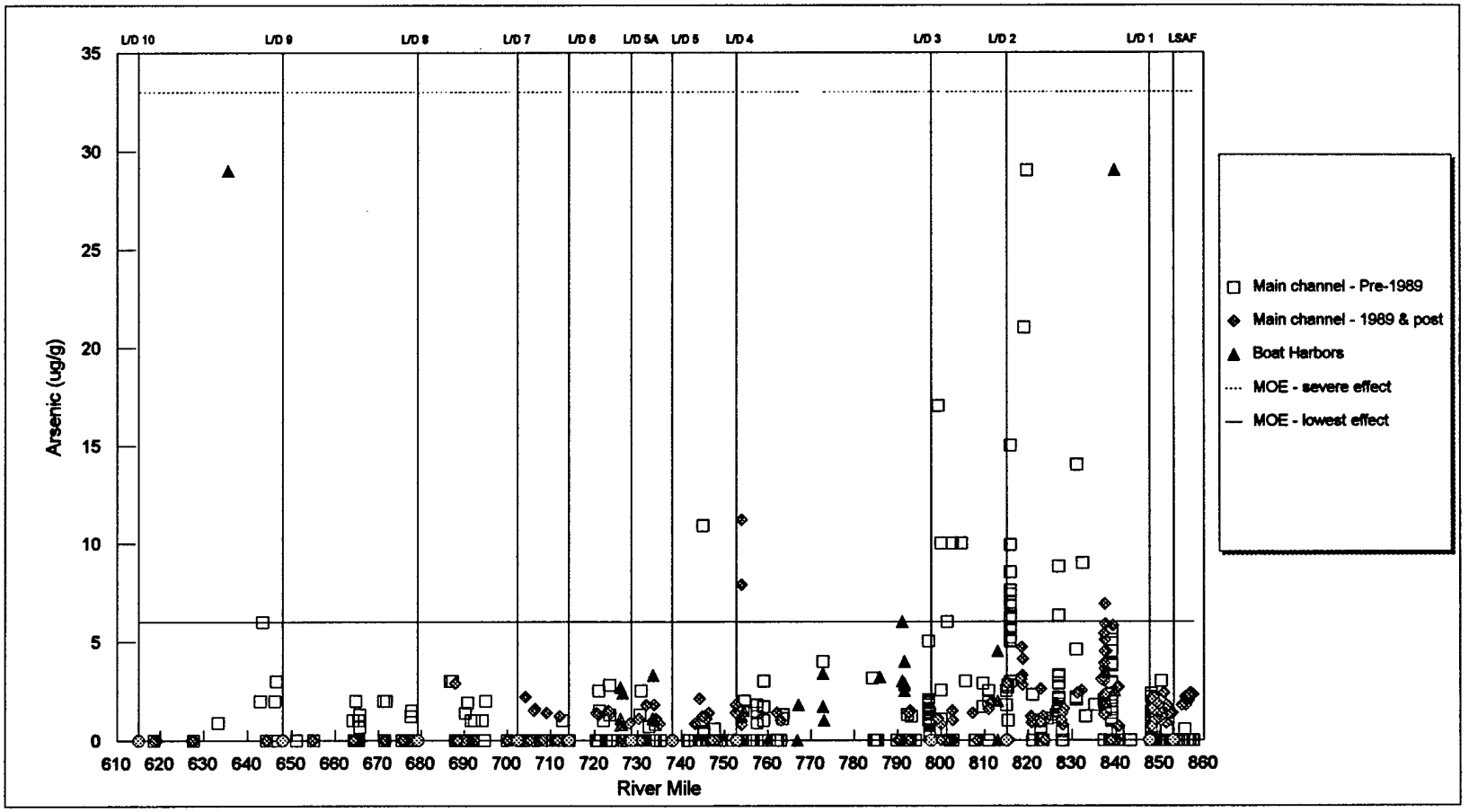
Table 404-7. Quality of dredged material.

Pool-Cut #	Cut Name	Location (river mile)	Average % Silts & Clays	Year Last Sampled	Contaminant Pre 1989*	Contaminant 1989 & post*
Harbors						
2	St. Paul SBH	839.6	65.0%	1994	Dieldrin (1.5), 4,4'-DDD (1.5), 4,4'-DDT (0.9), Chlorodane (7), As (29), Cd (3), Cu (18), Ni (20), Pb (40), Zn (67)	b-BHC (0.92), As (3.5)
3	Hastings SBH	813.2	53.7%	1994	4,4'-DDD (4.9), 4,4'-DDT (0.4), Cr (40), Cu (30), Ni (20), Pb (40), Zn (90)	b-BHC (2.4), As (4.5), Cd (1.4), Cr (31.3), Cu (24.1), Hg (0.32), Ni (19.7), Pb (19.6) Zn (87.6), PCB's (54)
4	Red Wing Comm. Harbor	791.5	66.7%	1994	Dieldrin (0.92), 4,4'-DDE (0.28), Endrin (0.24), 4,4'-DDD (5.28), 4,4'-DDT (0.56), Chlorodane (7.1), Cd (4.23), Cr (84.7), Cu (17.8), Fe (22900), Ni (57.4), Zn (216)	b-BHC (1), Cd (2.5), Cr (51), Cu (25), Hg (0.13), Ni (26), Zn (114)
4	Red Wing SBH	791.0	58.5%	1989	Dieldrin (1.2), 4,4'-DDE (5.3), 4,4'-DDD (4.2), Chlorodane (9), Cr (60), Cu (30), Ni (20), Pb (60), Zn (110), PCB's (82)	b-BHC (2.6), 4,4'-DDD (0.93), Cd (1.3), Cr (27.5), Cu (17.8), Hg (0.14), Ni (16.2), Pb (19.8), Zn (78.3), PCB's (41)
4	Lake City SBH	772.5	30.8%	1989	Cu (20), Ni (20), Pb (460), Zn (78)	As (3.4), Cr (31.3), Cu (79.8) Hg (0.2), Ni (25.5), Pb (84), Zn (117)
4	Pepin SBH	767.0	9.9%	1989	4,4'-DDT (700),	
4	Wabasha SBH	760.5	21.0%	1981	Pb (80), Zn (72)	NA
4	Alma SBH	754.0	56.0%	1989	4,4'-DDD (0.3), Chlorodane (1), Pb (20)	Cd (1.1)
6	Winona Comm. Harbor	726.3	13.1%	1989		
6	Winona SBH	726.1	17.4%	1989	Dieldrin (0.21), 4,4'-DDE (0.3), 4,4'-DDD (0.59), 4,4'-DDT (1.5), Chlorodane (0.63), Cd (1.58), Cr (35), Ni (22.8), Pb (20), Zn (66.2)	Cr (16.3)
9	Lansing SBH	663.5	NA	NA	NA	NA
10	Prairie Du Chien Comm. Harbor	635.2	NA	NA	NA	NA
10	Prairie Du Chien SBH	636.0	98.0%	1981	4,4'-DDD (1.2), As (29), Cd (1), Cr (20), Cu (28), Ni (30), Pb (40), Zn (83)	

* Metals listed are ones that were found at concentrations above 1/2 the MOE Lowest Effects Levels (ug/g) & chlorinated hydrocarbons are any hits (ug/kg) - All values are maximum values recorded for that dredge cut and time period

** NA - No Available Information

Figure 404-1. Arsenic Bulk Sediment Concentrations - Dry Weight



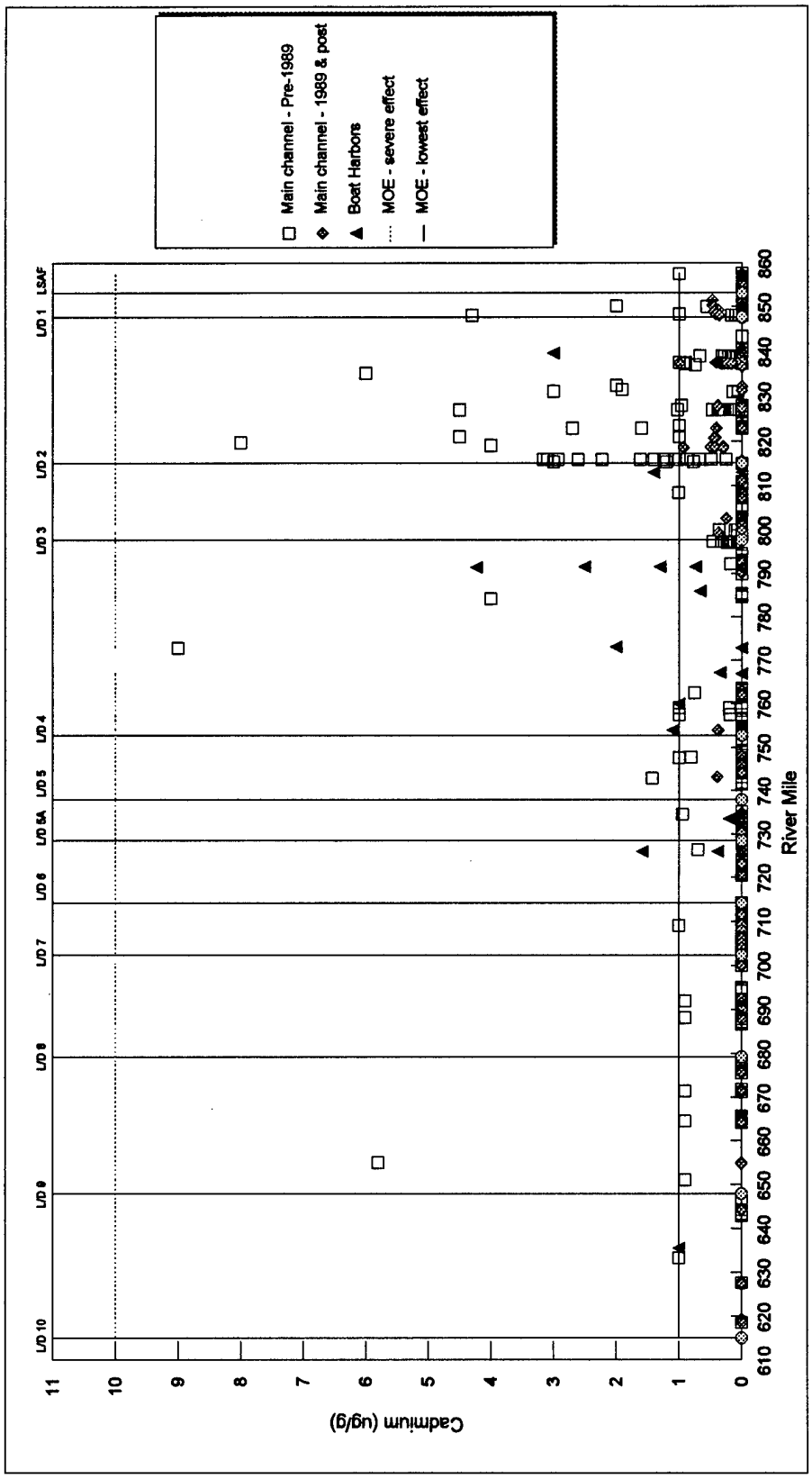
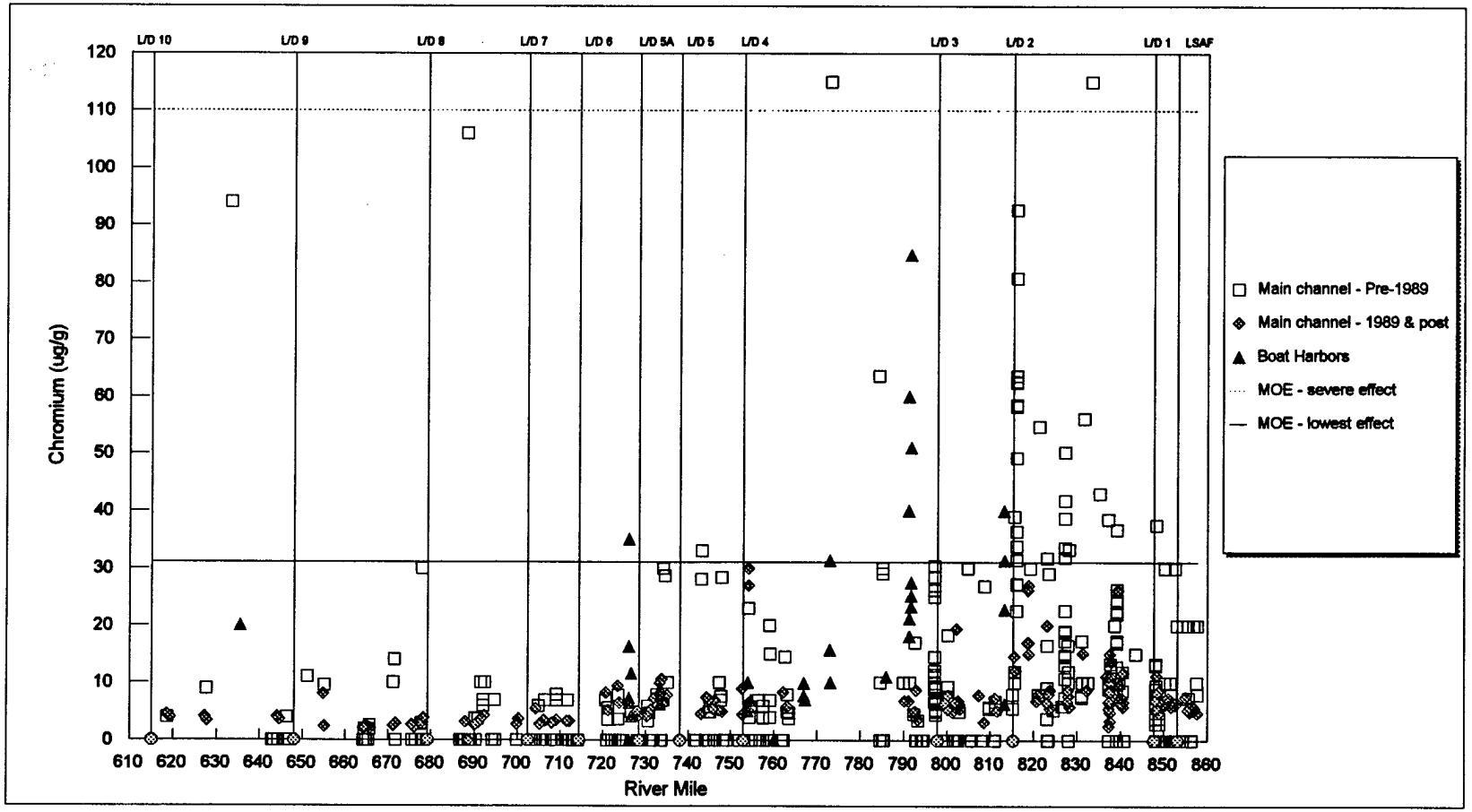


Figure 404-2. Cadmium Bulk Sediment Concentrations - Dry Weight

Figure 404-3. Chromium Bulk Sediment Concentrations - Dry Weight



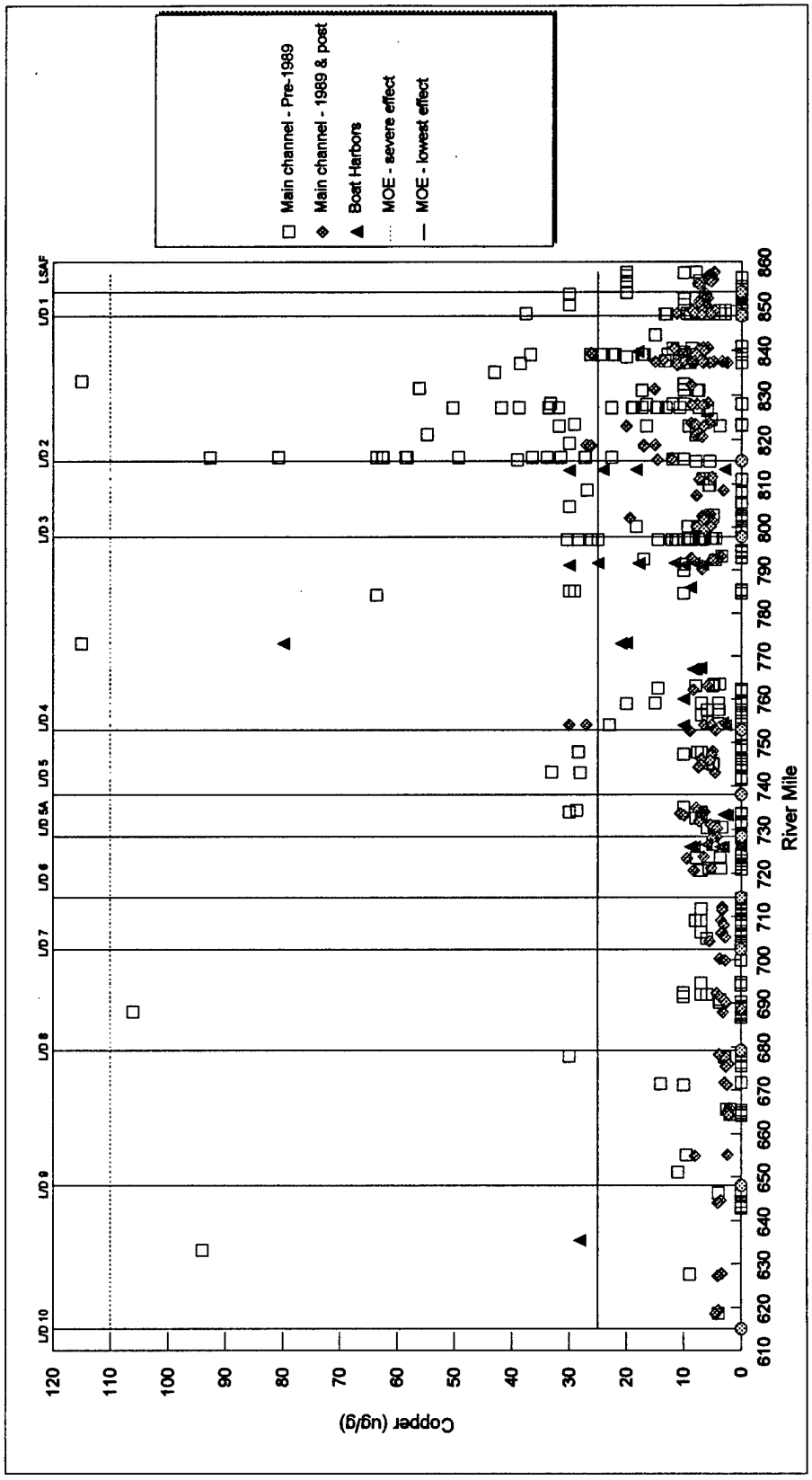


Figure 404-4. Copper Bulk Sediment Concentrations - Dry Weight

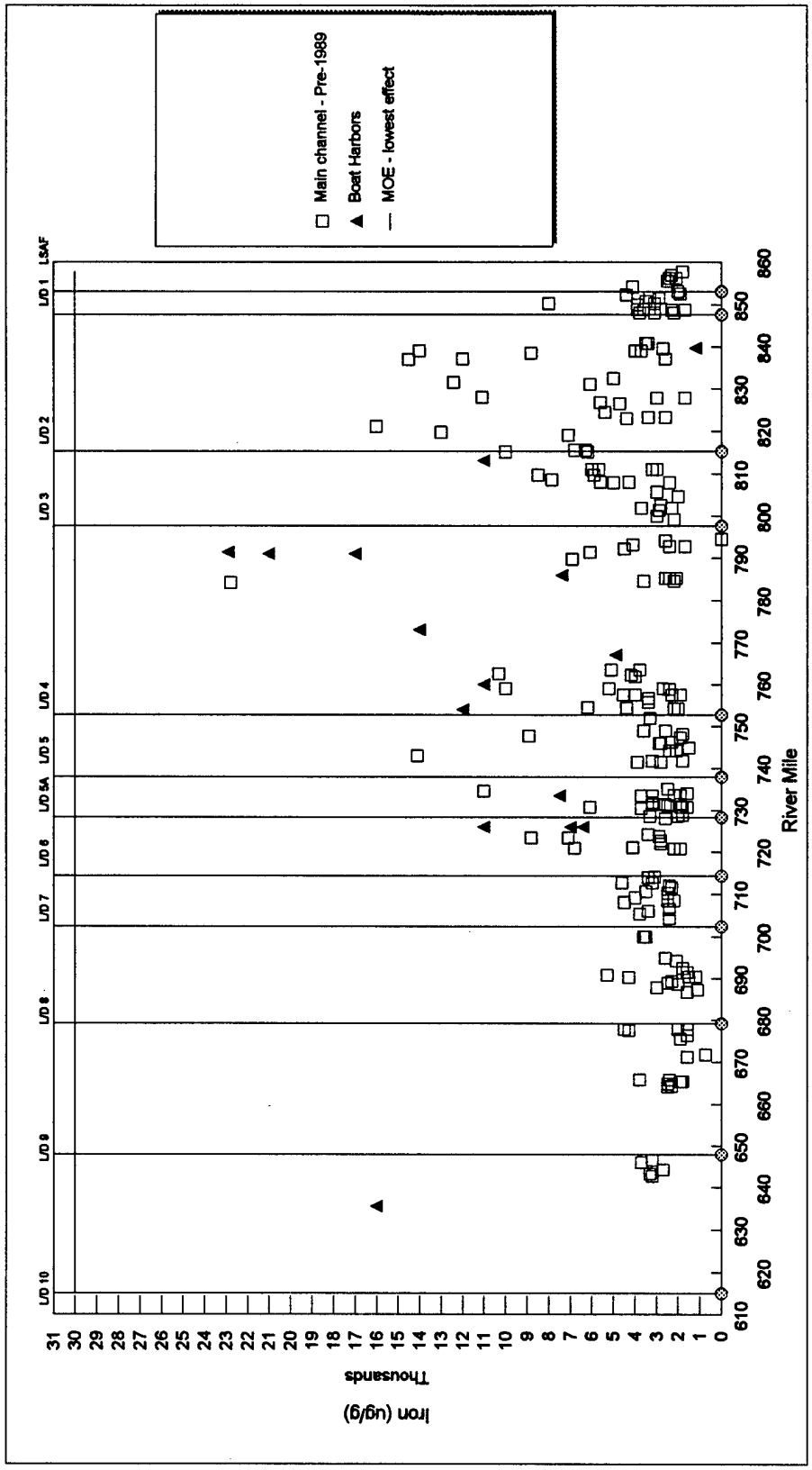


Figure 404-5. Iron Bulk Sediment Concentrations - Dry Weight

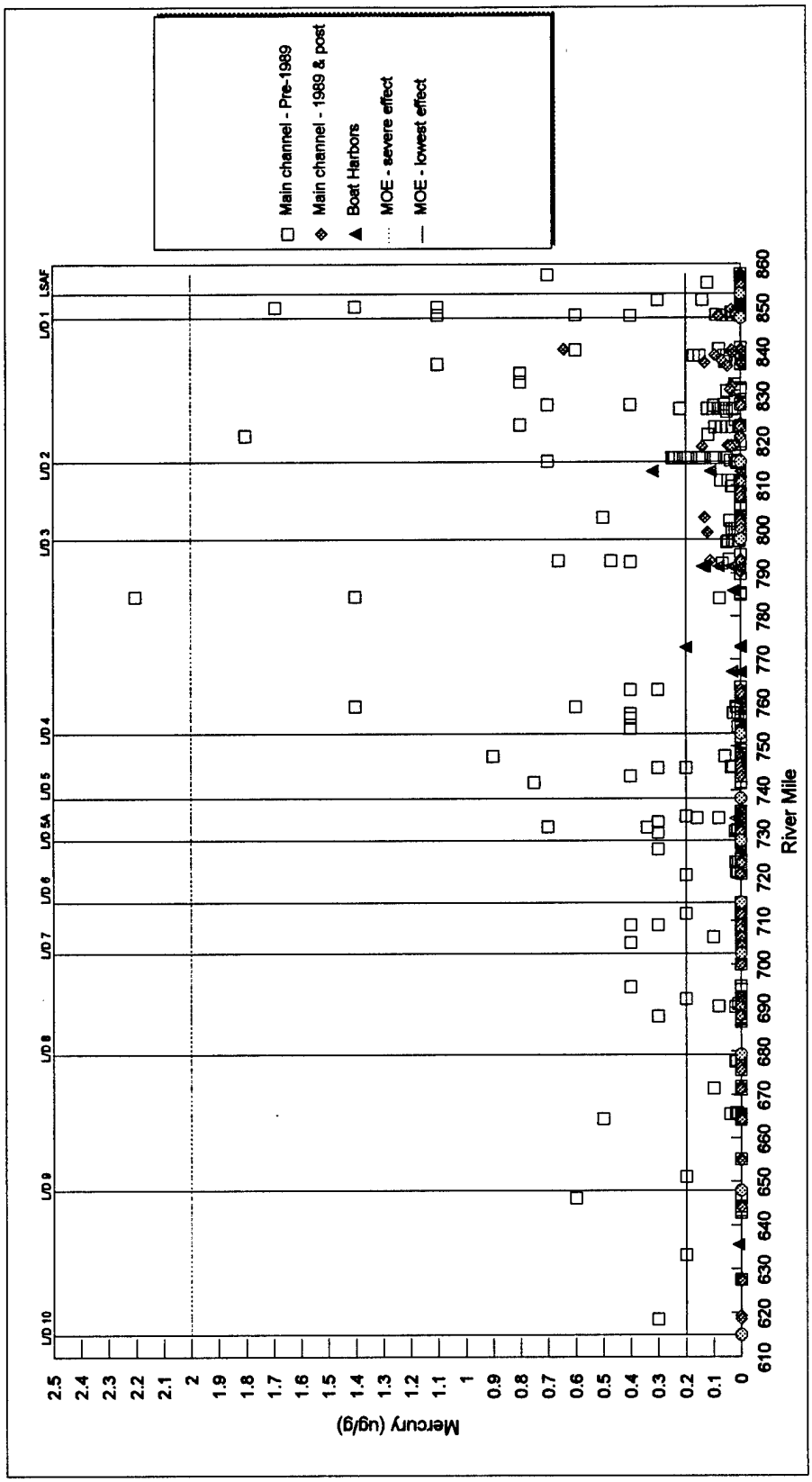


Figure 404-6. Mercury Bulk Sediment Concentrations - Dry Weight

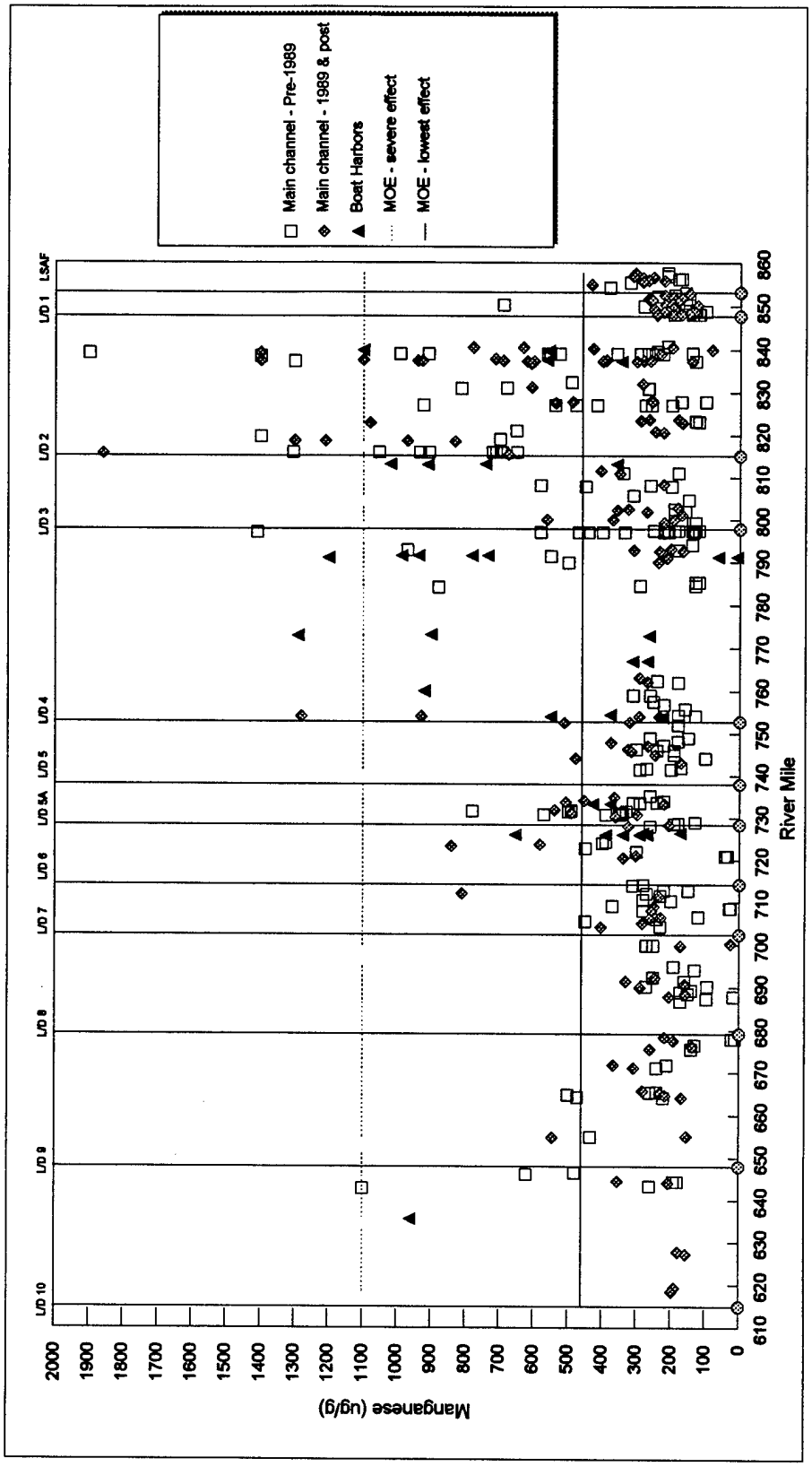


Figure 404-7. Manganese Bulk Sediment Concentrations - Dry Weight

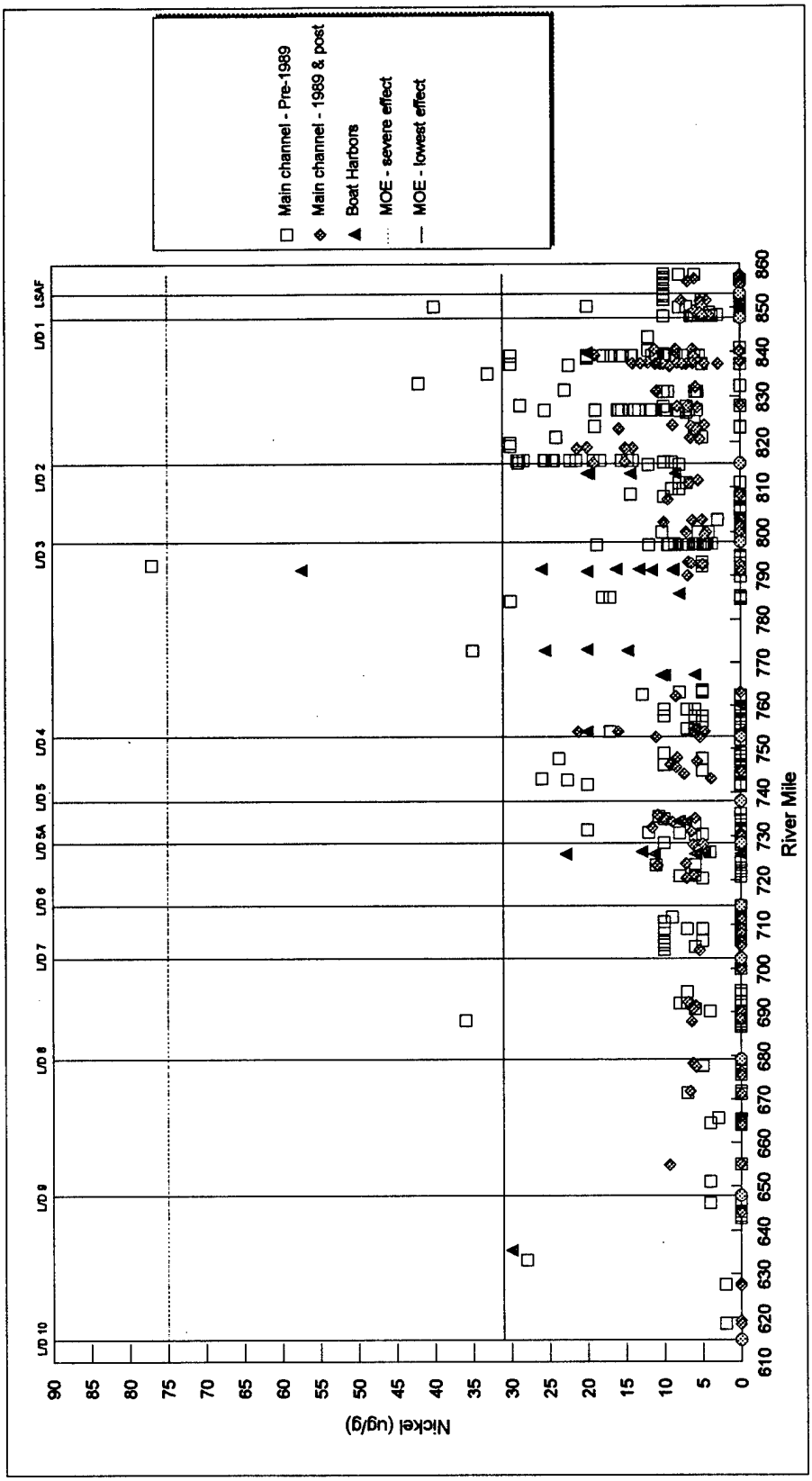


Figure 404-8. Nickel Bulk Sediment Concentrations - Dry Weight

Figure 404-9. Lead Bulk Sediment Concentrations - Dry Weight

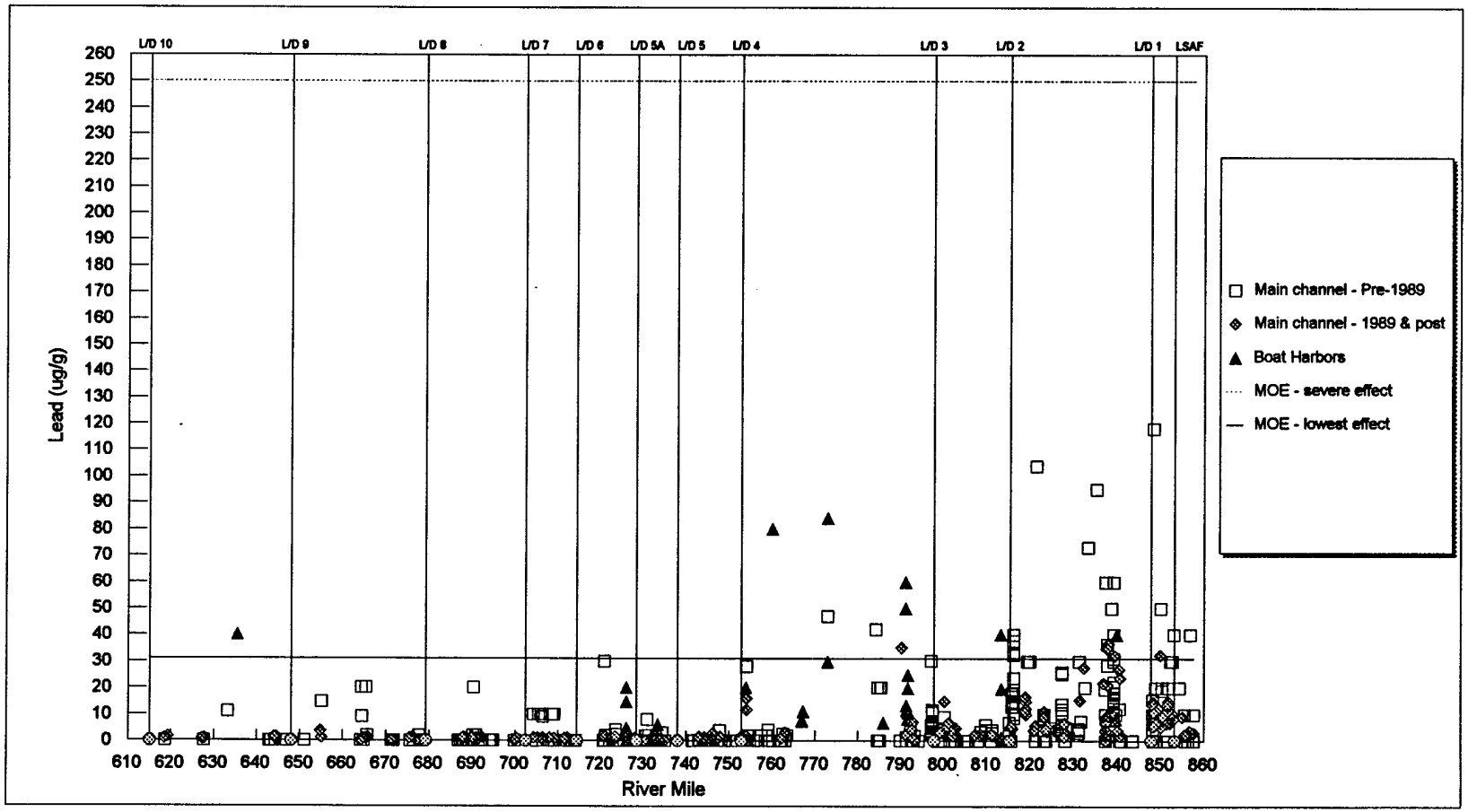


Figure 404-10. Zinc Bulk Sediment Concentrations - Dry Weight

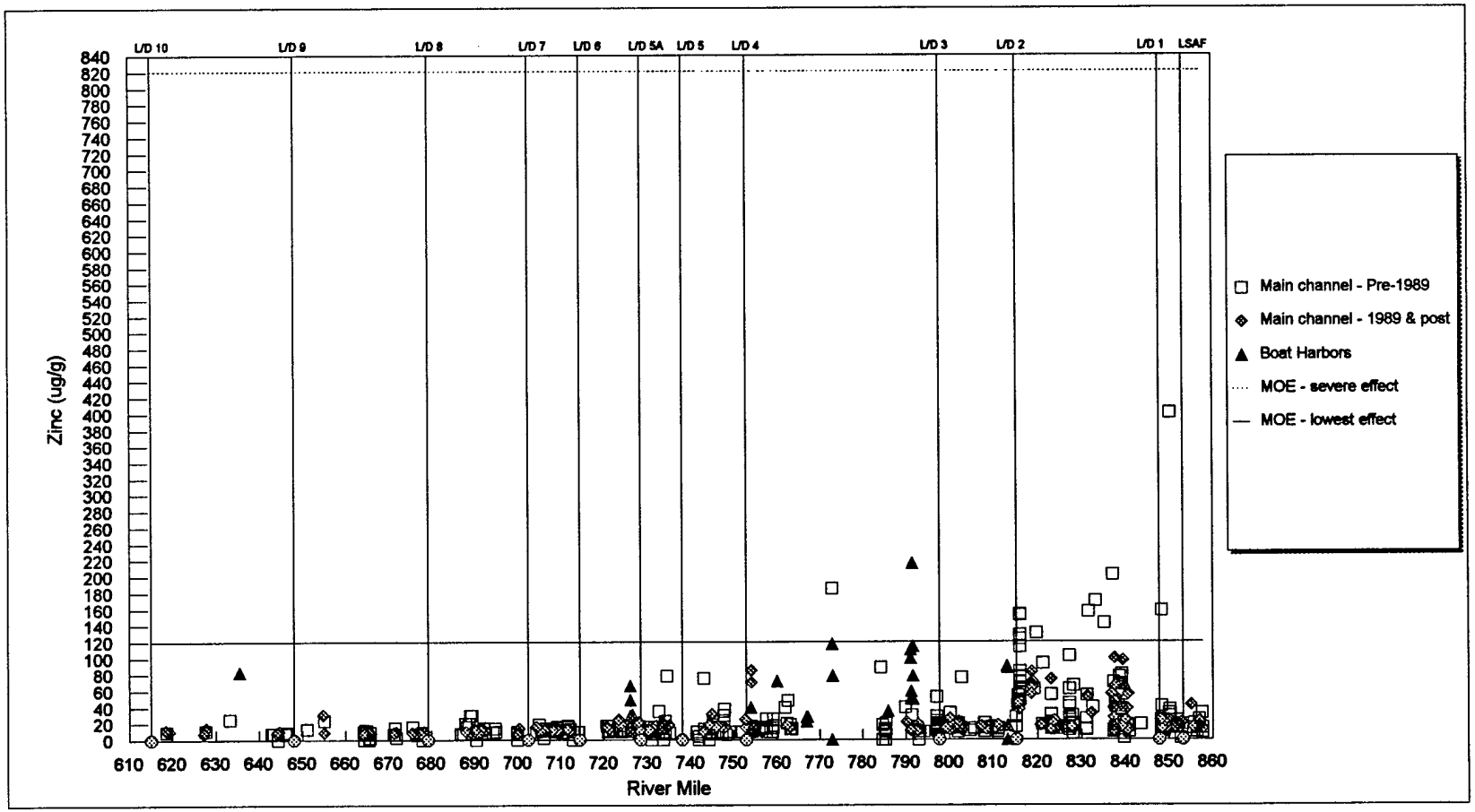


Figure 404-11. Dieldrin Bulk Sediment Concentrations - Dry Weight

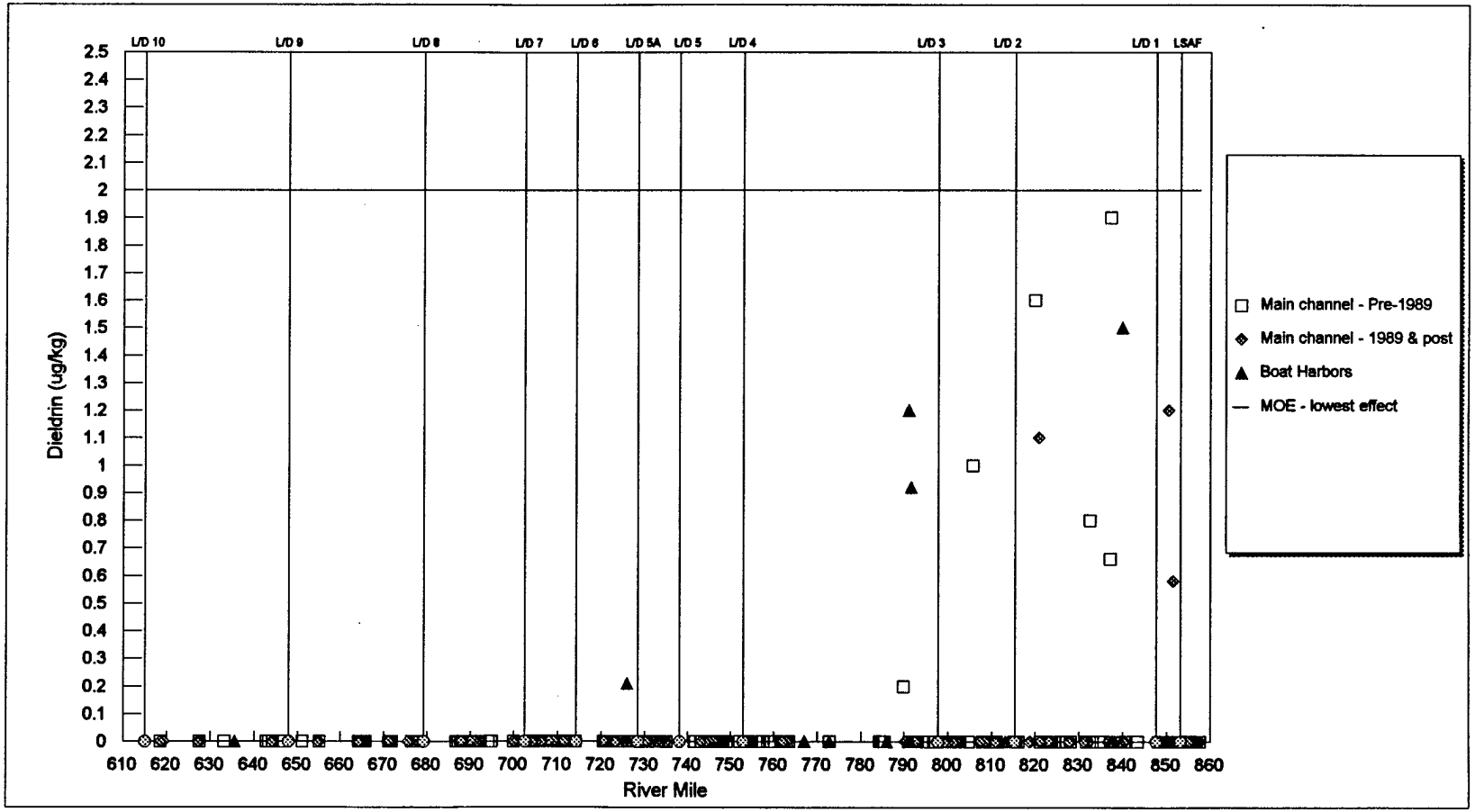
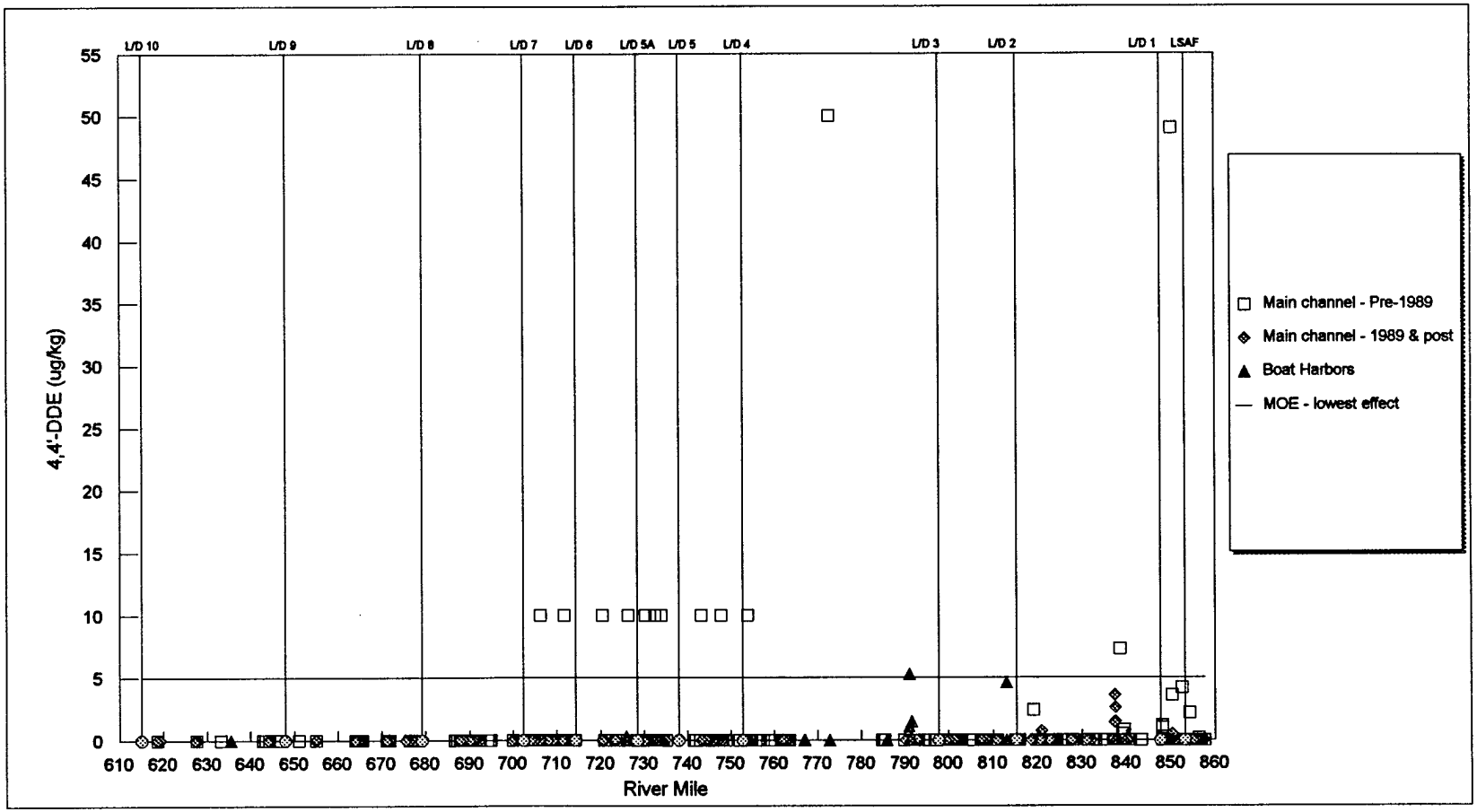


Figure 404-12. DDE Bulk Sediment Concentrations - Dry Weight



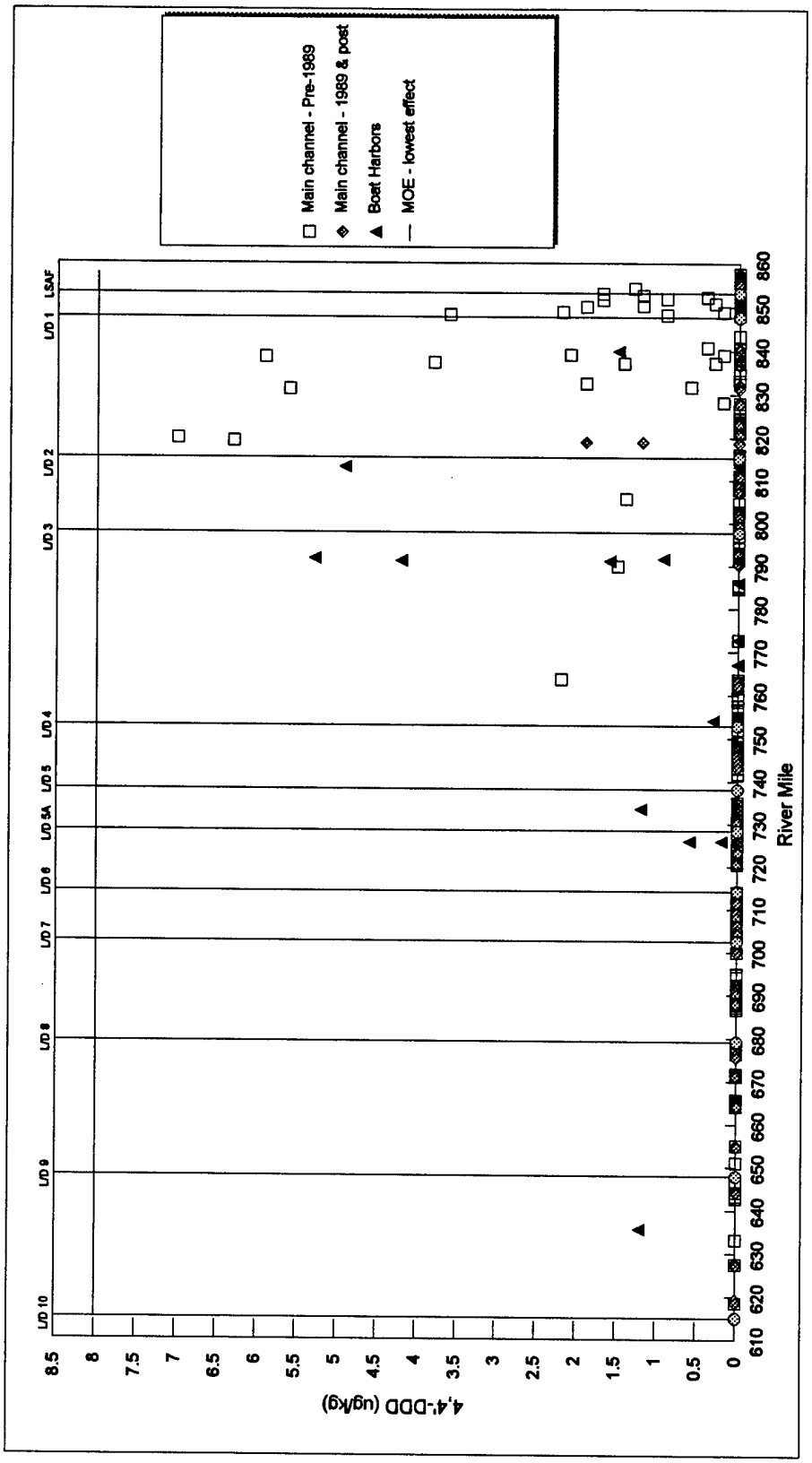
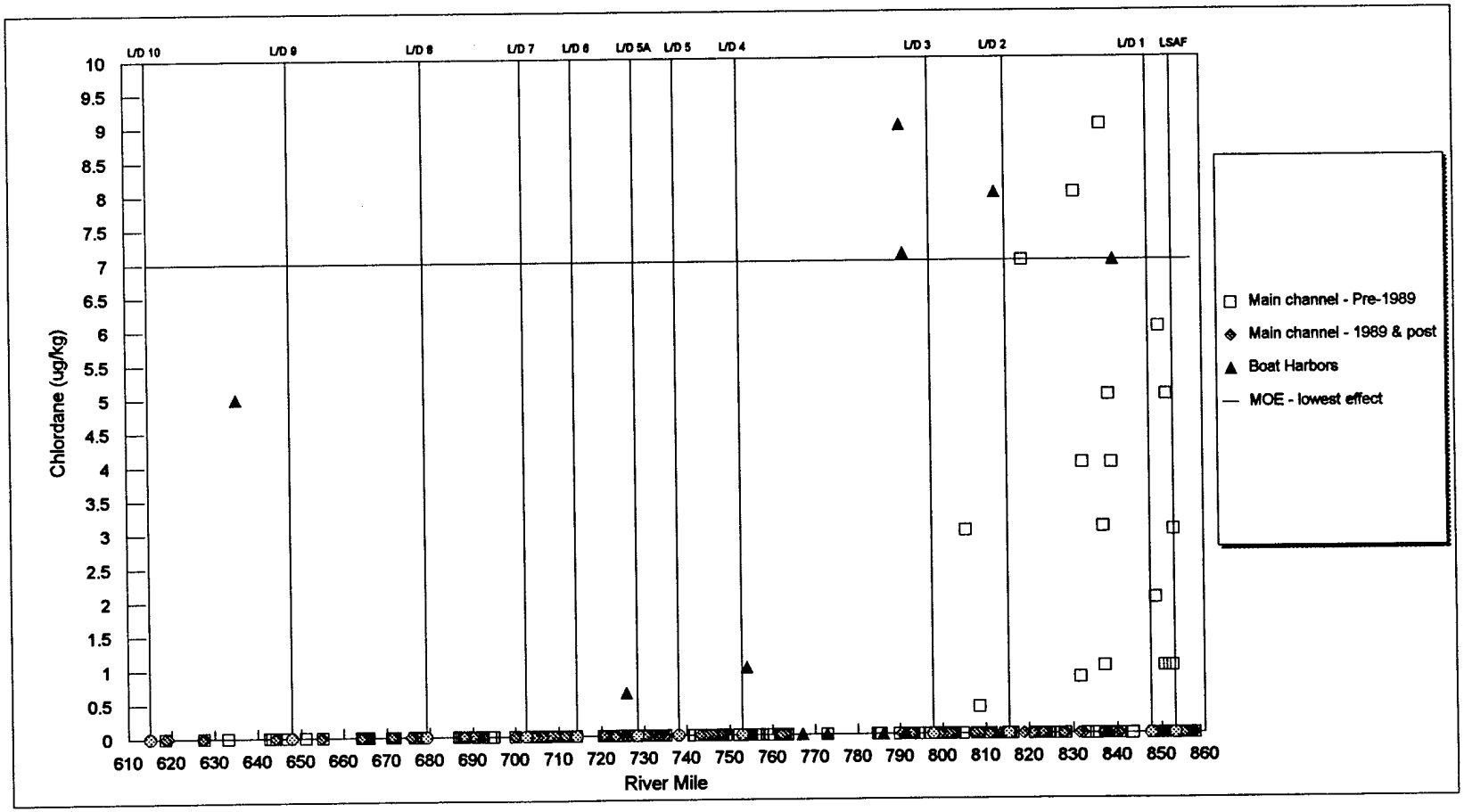


Figure 404-13. DDD Bulk Sediment Concentrations - Dry Weight

Figure 404-14. Chlordane Bulk Sediment Concentrations - Dry Weight



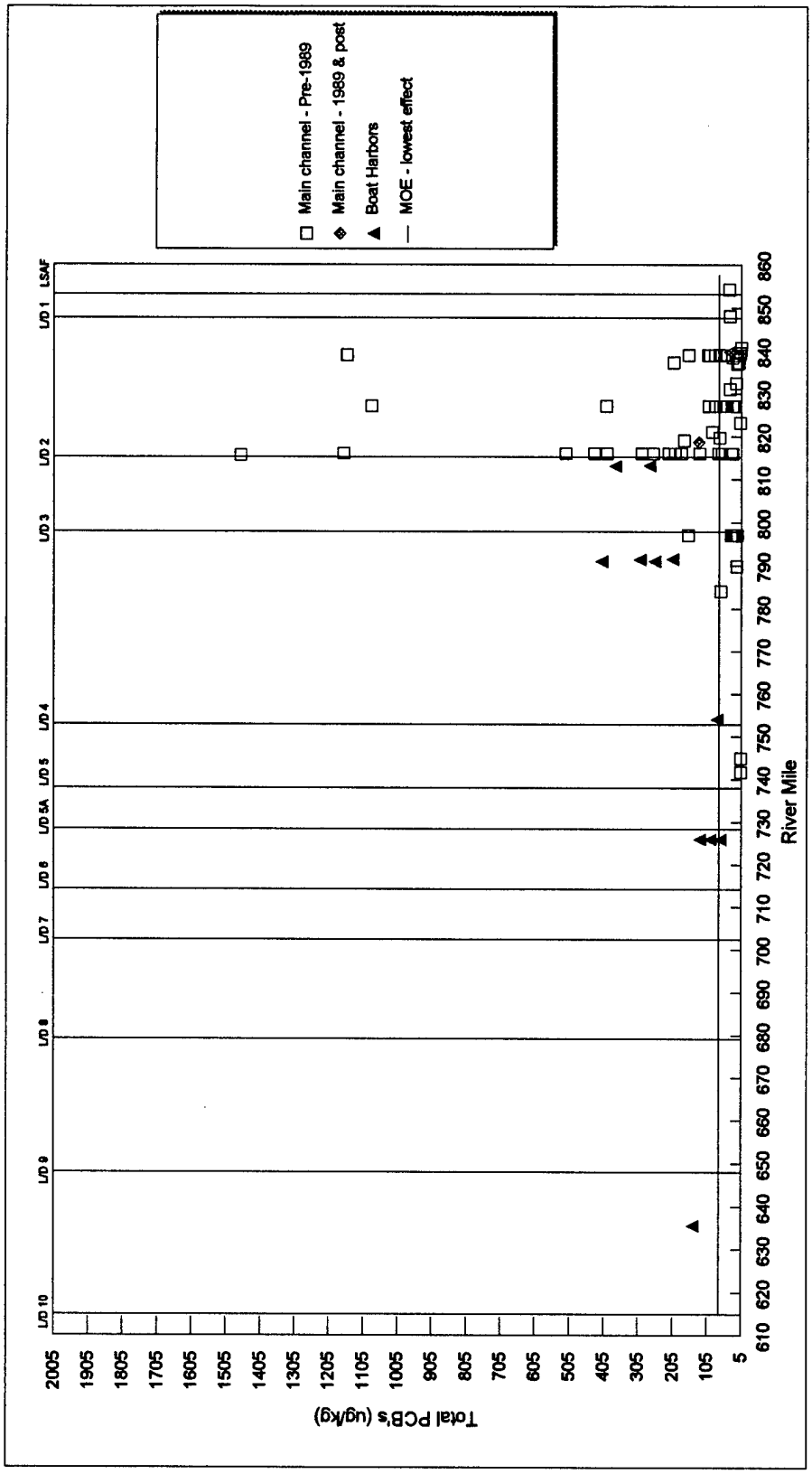


Figure 404-15. Total PCBs Bulk Sediment Concentrations - Dry Weight

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SCOPING/CORRESPONDENCE

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without hindering civilian or military tasking due to dual status.

C. *Authority for conducting the match*: Executive Order 11190, Providing for the Screening of the Ready Reserve of the Armed Services, contains the legal authority for conducting the matching program.

D. *Records to be matched*: The systems of records maintained by the respective agencies under the Privacy Act of 1974, as amended, 5 U.S.C. 552a, from which records will be disclosed for the purpose of this computer match are as follows:

1. This match will involve the Central Personnel Data File (CPDF) portion of the OPM/GOVT–1, General Personnel Records, system published at 55 FR 3838 (February 5, 1990). The disclosure from the OPM/GOVT–1 system of records will be made in accordance with routine use"hh". The CPDF contains information on approximately 2.2 million current non-Postal Federal civilian employees.

2. The DoD system of records is S322.10 DLA–LZ, Defense Manpower Data Center Base, published at 55 FR 42755 (October 23, 1990). The DMDC files contain information on 5 million active, retired, reserve military and civilian employees.

E. *Description of Computer Matching Program*: DMDC will compare information from the CPDF file with selected reserve files.

The CPDF extract to be provided by OPM contains the name, Social Security Number, date of birth, sex, annual salary rate (but not actual earnings), occupational series, service computation date of basic active service, veteran's preference, retirement plan, position occupied, work schedule (full time, part time, intermittent), agency identifier, geographic location of duty station, metropolitan statistical area, and personnel office identifier.

The data elements to be used from the DMDC files are Social Security Number, name, service, employment category and address.

Records matching on the Social Security Number will be sent to the applicable employing agency which will screen the initial data and verify that the matched data is consistent with the employing agency's files. The employing agency will verify the match results by reviewing the information in the acutal case file before an adverse action is taken.

Each individual identified as serving in the Reserve Forces and occupying a critical civilian position will be afforded all applicable due process standards including, but not limited to, being given an opportunity to contest the findings and proposed actions.

F. *Inclusive dates of the matching program*: This computer matching progam is subject to review by the Office of Management and Budget and Congress. If no objections are raised by either, and the mandatory 30 day public notice period for comment has expired for this Federal Register notice with no significant adverse public comments in receipt resulting in a contrary determination, then this computer matching progam becomes effective and the respective agencies may begin the exchange of data 30 days after the date of this published notice at a mutually agreeable time and may be repeated annually. Under no circumstances shall the matching program be implemented before this 30 day public notice period for comment has elasped as this time period cannot be waived. By agreement between OPM and DoD, the matching program will be in effect and continue for 18 months with an option to renew for 12 additional months unless one of the parties to the agreement advises the other by written request to terminate or modify the agreement.

G. *Address for receipt of public comments or inquiries*: Director, Defense Privacy Office, 400 Army Navy Drive, room 205, Arlington, VA 22202–2884. Telephone (703) 614–3027.

[FR Doc. 91–5588 Filed 3–8–91; 8:45 am]
BILLING CODE 3810–01–M

Corps of Engineers, Department of the Army

Environmental Statements: Upper Mississippi, MN

AGENCY: U.S. Army Corps of Engineers, DOD.

ACTION: Notice of intent to prepare a DEIS.

SUMMARY: The St. Paul District, Corps of Engineers, proposes modifications to the channel maintenance practices on the Upper Mississippi River to improve efficiency of channel maintenance, reduce projects costs, and minimize environmental impacts.

FOR FURTHER INFORMATION CONTACT: Questions about the proposed action and DEIS can be answered by: Gary Palesh, Environmental Resources Branch, St. Paul District, Corps of Engineers, 1421 U.S. Post Office and Custom House, St. Paul, Minnesota 55101–1479, (612) 220–0286.

SUPPLEMENTARY INFORMATION: The St. Paul District maintains a 9-foot navigation channel on the Upper Mississippi River from the head of navigation in Minneapolis, Minnesota, to Guttenberg, Iowa. The proposed action includes modified dredging practices to reduce costs and environmental effect, channel structure modifications to reduce dredging volumes, and long-term dredged material placement sites.

In addition to the No Action alternative, the following alternatives will be addressed:

a. Alternative dredging practices; e.g., dredging equipment, dredging depths, and channel modifications.

b. Alternative dredged material placement sites.

The scoping process for the DEIS will involve the distribution of a scoping letter. No formal scoping meeting is scheduled at this time.

Public involvement is expected to include public notices, public meetings during the DEIS review process, and newsletters. The participation of affected Federal, State, and local agencies, Indian tribes, and other private organizations and parties is invited in the scoping, planning and review of the DEIS. Significant issues identified to date that would be analyzed in depth in the DEIS include:

a. Dredging alternatives and channel modifications to reduce dredging requirements.

b. Disposal of dredged material at placement sites to minimize adverse environmental effects.

The DEIS is currently scheduled to be made available to the public in October 1991.

Kenneth L. Denton,
Alternate Army Federal Register Liaison Officer.

[FR Doc. 91–5639 Filed 3–8–91; 8:45 am]
BILLING CODE 3710–CY–M

DEPARTMENT OF EDUCATION

Advisory Council on Education Statistics; Meeting

AGENCY: Advisory Council on Education Statistics, Education.

ACTION: Change in agenda.

SUMMARY: This notice amends the notice of meeting of the Advisory Council on Education Statistics, published February 13, 1991, (56 FR 5808). The change is to add a session on the publication and data release policies for the National Assessment of Educational Progress on March 14 at 9 a.m. This session will replace the Commissioner's report, previously scheduled for that time. Notice of this meeting is required under section 10(a)(2) of the Federal Advisory Committee Act. This document is

DEPARTMENT OF THE ARMY
ST. PAUL DISTRICT, CORPS OF ENGINEERS
1421 U.S. POST OFFICE & CUSTOM HOUSE
ST. PAUL, MINNESOTA 55101-1479
March 5, 1991

REPLY TO
ATTENTION OF
Environmental Resources Branch
Planning Division

The St. Paul District, Corps of Engineers, is preparing a Channel Maintenance Management Plan (CMMP) describing proposed activities for maintenance of the 9-foot navigation channel on the Upper Mississippi River and associated navigable tributaries. In conjunction with the CMMP, the St. Paul District intends to prepare a draft environmental impact statement (DEIS) to address the environmental effects of the actions proposed in the CMMP. This letter initiates the scoping process for the DEIS.

In 1974, the St. Paul District completed an environmental impact statement for the 9-Foot Navigation Channel Project, Upper Mississippi River, Head of Navigation to Guttenberg, Iowa. Since that time, the Great River Environmental Action Team I (GREAT I) study and post-GREAT I studies have identified measures for improved management of the St. Paul District's channel maintenance program. The CMMP will describe how the St. Paul District proposes to conduct channel maintenance on the Upper Mississippi River and navigable tributaries in the future.

The CMMP will contain the following basic components:

a. How the District proposes to conduct actual channel maintenance; i.e., channel survey procedures, dredging equipment, hydrologic analyses, channel dimensions, structural and non-structural techniques, and interagency coordination.

b. A long-term plan for the disposal of dredged material.

The basic alternatives that are proposed to be addressed in the DEIS are discussed in attachment 1. As part of the initial scoping process, we ask that you review these alternatives and identify any other alternatives that you believe need to be addressed in the DEIS. Please include your reasons for believing the additional alternative(s) should be addressed.

As part of the scoping process, we wish to identify the significant resources of the project area that may be affected by proposed channel maintenance activities. Attachment 2 discusses the significant resources we have identified to date. We ask that you review this discussion and identify any other significant resources you believe are present in the project area that may be affected by channel maintenance activities, including why you believe these resources are significant and may be affected by channel maintenance activities.

In attachment 3, we have identified major issues to be addressed in the DEIS. We ask that you review these issues and identify any others you believe should be addressed in the DEIS.

Please provide any comments you may have to this office, attn: CENCS-PD-ER, by May 1, 1991. At present, we do not propose to hold scoping meetings for the DEIS. This is subject to change depending upon the responses received to this scoping letter. We do propose to include the DEIS as an agenda item at regular meetings of the interagency River Resources Forum throughout the EIS process. Public meetings would also be held during the EIS process.

Any Federal agency that wishes to participate in the preparation of this DEIS as a cooperating agency (40 CFR 1501.6) is hereby invited to forward such a request along with an explanation for seeking cooperating agency status.

We also ask Federal, State, and local agencies and private organizations to identify a point of contact for further coordination for the DEIS.

If you have any questions concerning the proposed DEIS and/or the scoping process, please contact Mr. Gary Palesh at (612) 220-0266.

Attachments

Roger L. Baldwin
Colonel, Corps of Engineers
District Engineer

ALTERNATIVES TO BE ADDRESSED IN THE DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR THE CHANNEL MAINTENANCE MANAGEMENT PLAN

The following are the basic alternatives that would be addressed in the draft environmental impact statement (DEIS).

NO ACTION

The no action alternative will be addressed.

ACTION ALTERNATIVES

Dredging Equipment

The DEIS will address the range of dredging equipment available to the District, including both Government and private contractor.

Dredging Depths

The DEIS will address the range of dredging depths employed on the Upper Mississippi River.

Channel Widths

The DEIS will address the range of channel width options available on the Upper Mississippi River.

Dredged Material Disposal

The proposed plan will include a recommended dredged material disposal site or plan for all active dredge cuts. Alternative disposal sites will be addressed. In most instances, this will include, as a minimum, the least cost disposal alternative and placement of the material at a beneficial use removal site. For some dredge cuts, up to four or five alternative disposal sites may be identified.

Channel Structures

The DEIS will address the modification or construction of new channel structures to reduce dredging requirements and/or improve channel reliability. Supplemental NEPA documents will likely be required when specific actions are proposed for implementation.

Beach Nourishment

The DEIS will address the use of dredged material for beach nourishment purposes. Supplemental NEPA documents will likely be required when specific beach nourishment plans are developed.

Attachment 1

SIGNIFICANT RESOURCES TO BE ADDRESSED IN THE DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR THE CHANNEL MAINTENANCE MANAGEMENT PLAN

The purpose of this effort is to identify those significant resources that may be affected by proposed channel maintenance activities. The DEIS impact discussion will then focus on those resources. For example, water quality is a significant resource that can be substantially affected by channel maintenance activities; thus, it will be an important topic of discussion in the DEIS. Air quality is also a significant resource. However, it is generally recognized that channel maintenance activities have little impact on air quality. Therefore, there would be little, if any, discussion in the DEIS concerning air quality.

The following are the significant resources of the Upper Mississippi River that would be expected to be impacted by channel maintenance activities. Significant resources unique to the navigable portions of the St. Croix and Minnesota Rivers are listed separately. The navigable portion of the Black River (lower 1 mile) will be addressed as part of the Upper Mississippi River.

UPPER MISSISSIPPI RIVER

Water Quality
Fish and Wildlife
Endangered Species
Recreation Resources
Archaeological and Historic Resources
Socioeconomic Resources
Upper Mississippi River Wildlife and Fish Refuge
Prairie Island Indian Reservation

ST. CROIX RIVER (lower 25 miles)

Water Quality
Fish and Wildlife
Endangered Species
Recreation Resources
Archaeological and Historic Resources
Socioeconomic Resources
Lower St. Croix National Wild and Scenic Riverway

Attachment 2

MINNESOTA RIVER (lower 14 miles)

Water Quality
Fish and Wildlife
Endangered Species
Recreation Resources
Archaeological and Historic Resources
Socioeconomic Resources
Minnesota Valley National Wildlife Refuge

Attachment 2

ISSUES TO BE ADDRESSED
IN THE DRAFT ENVIRONMENTAL IMPACT STATEMENT
FOR THE CHANNEL MAINTENANCE MANAGEMENT PLAN

Historically, there have been a number of issues associated with the maintenance of the 9-foot navigation channel. Many of these issues have been resolved to a great degree through coordination with Federal and State resource management agencies. The following are the issues that would be addressed in the DEIS along with the status of their resolution.

Dredging Depths - Dredging depths have historically been an issue because the depth of dredging can affect dredging costs, channel reliability, and the volume of material dredged, which in turn can affect the environmental impacts associated with dredged material disposal.

Dredged Material Disposal - The disposal of dredged material can have significant environmental impacts and has long been a controversial issue associated with channel maintenance. A major portion of the DEIS will be relegated to the discussion of alternative dredged material disposal options and their impacts.

Recreational Beach Nourishment - The use of dredged material to create and maintain recreational beaches is an issue. The beaches are highly valued by a portion of the recreating public who desire to see existing beaches maintained and new ones created. On the other hand, maintaining and/or creating beaches affects fish and wildlife habitat, and can influence recreational use patterns which also can have impacts on fish and wildlife resources.

State Regulatory Authority - The limits of State regulatory authority over a Federal navigation project have been an issue. The DEIS will address the Federal and State positions and the current agreements between the St. Paul District and the State regulatory agencies.

Attachment 3

7.0 LIST OF AGENCIES, ORGANIZATIONS AND PERSONS TO WHOM COPIES OF SCOPING LETTERS FOR THE CMMP EIS WERE SENT

CONGRESSIONAL

Honorable Steve Gunderson (WI)

FEDERAL

Bureau of Indian Affairs-Mpls, Mn
Federal Highway Administration-Homewood, IL
Minnesota Valley National Wildlife Reguge
National Park Service-St. Paul
U.S. Army Corps of Engineers-Rock Island, IL
U.S. Fish and Wildlife Service-Bloomington, Mn
U.S. Fish and Wildlife Service-Trempealeau, WI
U.S. Fish and Wildlife Service-Twin Cities, Mn
U.S. Fish and Wildlife Service-Winona, Mn
U.S. Environ. Protection Agency-Region V
U.S. Environ. Protection Agency-Region VII
U.S.D.A. Forest Service-Milwaukee, WI
U.S. Coast Guard-Keokuk, IA
U.S. Coast Guard-St. Paul, Mn
U.S. Coast Guard-St. Louis, MO
Soil Conservation Service-St. Paul
Soil Conservation Service-Madison, WI

INTERSTATE

+Minnesota-Wisconsin Boundary Area Commission
+Upper Mississippi River Basin Association
+Upper Mississippi River Conservation Commission

IOWA

City of Lanshing
City of Hudson
City of Marquette
City of New Albin
County of Allamakee
County of Clayton
IDNR-Des Moines
Iowa Dept. of Transportation-Ames
Iowa Dept. of Transportation-Ames
Pepin County Board
Village of Mc Gregor
State Archaeologist
State Historic Pres. Officer
St. Croix County Board

MN

City of Bloomington
City of Brownsville
City of Burnsville
City of Cottage Grove
City of Dakota
City of Hastings
City of Houston
Ctiy of Kellogg
City of La Crescent
City of Minneapolis
City of Red Wing
City of Savage
City of St. Paul
City of South St. Paul
City of Wabasha
City of Winona
County of Wabasha
Dakota County Engineer
Dakota County Parks
Dale Childs-Prairie Island Tribal Council
Goodhue County Highway Dept.
Metro Council
Metropolitan Council
Mpls. Park and Recreation Board
MN Dept. of Transportation
MDNR-Lake City
MDNR-St. Paul
MDNR-Rochester
Minnesota Historical Society
MPCA-St. Paul
St. Paul Port Authority
State Archeologist Office
Village of Hastings
Village of Minnesota City
Washington County Highway Dept.
Washington County Parks
Winona County Highway Dept.
Winona Port Authority

WI

Buffalo City
Buffalo County Highway Dept.-Alma
City of La Crosse
City of Onalaska
City of Prescott
City of Prairie Du Chien
County of Crawford
County of Grant
County of Vernon
La Crosse County Highway Dept.
Pierce County Highway Dept.
State Archaeologist
State Historical Soc of Wis.
Trempealeau County Hwy. Dept.
WDNR-Eau Claire
WDNR-La Crosse
WDNR-Madison
Wis. Dept of Transportation-Madison
Village of De Sota
Village of Ferryville
Village of Fountain City
Village of Genoa
Village of Stoddard

PRIVATE

Ducks Unlimited - Edina
Genoa Dock Corp.
Lambert Consultants
John W. Gorman, Inc
Izaak Walton League -Mpls .
Izaak Walton League-Elm Grove, WI
National Audubon Society
National Wildlife Federation
Environmental Defense Fund
Sierra Club - Madison
Sierra Club - Minneapolis
Upper Miss. Waterways Assoc

HIGHWAY COMMITTEE
Walter "Mike" Gilbert, Chairman
W. W. Hermanson
Donald Hammes
Donald Bina
Ambrose Marco

ROLAND GULLICKSON, HIGHWAY COMMISSIONER

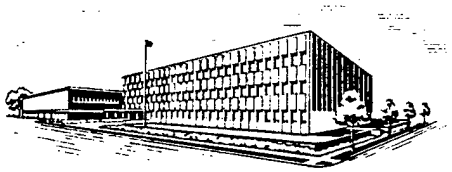
DENNIS OSGOOD, *Asst. Commissioner/Patrol Supt.*

Margaret Violette
Office Manager

Edward Reget
Shop Superintendent

Highway Department

LA CROSSE COUNTY, WISCONSIN



P.O. BOX 276, COURTHOUSE, LA CROSSE, WISCONSIN 54602-0276 Telephone 785-9631 Fax 785-9704

March 18th, 1991

Department of the Army
Environmental Resource Branch/ Planning Division
St Paul District, Corps of Engineers
1421 US Post office
St Paul, Minnesota 55101-1479

Attention: CENCS-PD-ER.

In response to your letter of 3-5-91 regarding preparation of Channel Maintenance Management Plan, and the draft environmental impact statement for this plan, we have the following comments:

LaCrosse County Highway Department would like to continue to obtain up to 20,000 Cubic Yards of dredged material for a stock-pile accessible to our trucks. Currently we pick up this (annually) material from your stockpile near the Trempealeau dam on the Wisconsin side.. We deposit this material in our sandpit in the Town of Onalaska, and use it for winter maintenance purposes.

We can be contacted at the above address.

Sincerely,

Roland Gullickson

Roland Gullickson
LaCrosse County Highway Department

An Equal Opportunity Employer

UPPER MISSISSIPPI WATERWAY ASSOCIATION

INCORPORATED 1932
P.O. Box 7006
St. Paul, Minnesota 55107
612-224-0057

Dedicated to navigation and sound water resource management.

March 20, 1991

Department of the Army
St. Paul District Corps of Engineers
1421 U.S. Post Office and Custom House
St. Paul, MN 55101-1479

Re: CENCS - PD - ER

Attention Mr. Gary Palesh

Gentlemen:

The Upper Mississippi Waterway Association has a number of comments regarding the Channel Maintenance Management Plan and the proposed D.E.I.S. that you sent us dated March 5, 1991.

Several of our members are dredging contractors, and we are sure they will want to attend any public meetings or discussions concerning the use of dredging equipment.

Channel widths and channel structures are of vital concern to our barge line and switch boat operator members. Discussions of these subjects should include these companies.

Beach nourishment is of concern to all recreational boaters.

In addressing significant resources in the D.E.I.S. there are three items that should be added to each of the rivers under discussion. They are:

1. Private Property
2. Commercial Navigation
3. Effects on the Economy of the Area

Under the seciton of authority, what is the authority of the National Park Service under the Mississippi River Recreational Area situation?

Thank you for your consideration.

Very truly yours,

Robert H. Hertzberg

INCORPORATED 1857

CITY OF HUDSON

505 Third Street
HUDSON, WISCONSIN 54016

DENNIS D. DARNOLD
Planner-Zoning Administrator
715-386-2822

MICHAEL J. WALLACE
Assessor-Building Inspector
715-386-2822

March 27, 1991

Mr. Roger L. Baldwin
Colonel, Corps of Engineers
District Engineer
1421 U.S. Post Office & Custom House
St. Paul, MN 55101-1479

Attn: Environmental Resources Branch - Planning Division

Re: Channel Maintenance Management Plan (CMMP)/CENCS-PD-ER

Dear Colonel Baldwin:

Thank you for giving the City of Hudson, WI an opportunity to review the 3-5-91 memorandum and attachments concerning the channel maintenance management plan. Loated on the Lower St. Croix Riverway, the City of Hudson welcomes an opportunity to review future efforts in this program. One particular effort that may come from the CMMP is the beach nourishment program plans and the potential use of this program in Hudson's Lakefront Park.

Please place my name concerning further DEIS coordination efforts on your mailing list as the local agency contact:

Dennis D. Darnold, City Planner
City of Hudson
505 Third Street
Hudson, WI 54016

Sincerely,

Dennis D. Darnold
Planner/Zoning Administrator

DDD/lm
cc: MN/WI Boundary Area Commission
Dan Roeglin, Director of Parks & Recreation

PORT AUTHORITY OF WINONA

Box 378 Winona, MN 55987-0378 (507) 457-8250 FAX (507) 457-8212

April 2, 1991

Mr. Gary Palesh
Department of the Army
St. Paul District, Corps of Engineers
1421 U.S. Post Office & Custom House
St. Paul, MN 55101-1479

Dear Mr. Palesh:

The Port Authority of Winona has received the March 5, 1991 communication from the Corps of Engineers regarding the draft environmental impact statement that is in conjunction with the Channel Maintenance Management Plan. The only comment the Port Authority of Winona has at this time is that Winona be considered as a site for the placement of dredge spoils.

The Port Authority of Winona has a 14 acre MOL site adjacent to the Commercial Harbor that could be used for the placement of dredge spoils. The Corps of Engineers has utilized the site previously for the same use.

We will appreciate your consideration of Winona in this matter. If you have any questions, please feel free to contact Judith Bodway, Director of Economic Development at 507/457-8250 or Robert Bollant, Director of Public Works at 507/457-8274.

Sincerely,

Kathie Coleman

Kathie Coleman
Economic Development Assistant

United States Department of the Interior

FISH AND WILDLIFE SERVICE

UPPER MISSISSIPPI RIVER NATIONAL WILDLIFE AND FISH REFUGE
51 E. Fourth Street - Room 101
Winona, Minnesota 55987

IN REPLY REFER TO:

TAKE PRIDE IN AMERICA

April 4, 1991

Colonel Roger L. Baldwin
District Engineer
Department of the Army
Corps of Engineers, St. Paul District
1421 U.S. Post Office & Custom House
St. Paul, Minnesota 55101-1479

ATTN: CENCS-PD-ER

Dear Colonel Baldwin:

Following are our comments regarding the development of a Channel Maintenance Management Plan accompanied by a draft environmental impact statement (DEIS).

It appears that you are covering most of the major points in the DEIS and we have only the following few comments:

--The proper name for the Refuge is Upper Mississippi River National Wildlife and Fish Refuge.

--Under issues to be addressed (Attachment 3) would it be appropriate to discuss the benefits of continuing to have the capability of hydraulic dredging by force account? In other words, what are the merits of replacing the Thompson as compared to contracting out all dredging?

--Also under this section, would a discussion of water injection dredging be appropriate?

Thank you for allowing us to comment on this upcoming planning effort. Please continue to keep us informed of your progress on this project.

If you have questions concerning these comments please call me at (507)452-4232.

Sincerely,

James R. Lennartson
Refuge Manager

United States Department of the Interior

FISH AND WILDLIFE SERVICE

TWIN CITIES FIELD OFFICE
4101 East 80th Street
Bloomington, Minnesota 55425-1665

IN REPLY REFER TO:

TAKE PRIDE IN AMERICA

FWS/AFWE-TCFO

APR 15 1991

Colonel Roger L. Baldwin
District Engineer
U.S. Army Engineer District
St. Paul
1421 U.S. Post Office and Custom House
St. Paul, Minnesota 55101-1479

Dear Colonel Baldwin:

This concerns the Notice of Intent to prepare an Environmental Impact Statement for channel maintenance activities on the Upper Mississippi River in the St. Paul District. The notice was published in the Federal Register on Monday, March 11, 1991.

The U.S. Fish and Wildlife Service (Service) has been involved in the St. Paul District's (District) channel maintenance program for many years. The existing Channel Maintenance Plan used by the District was developed as a product of an interagency planning effort (Great River Environmental Action Team). Implementation of the Plan by the District has resulted in benefits to commercial navigation, recreation and fish and wildlife.

The Service continues to participate in the District's channel maintenance program through involvement in the On-site Inspection Team and River Resources Forum. These interagency groups provide guidance to the District on channel maintenance and other River issues. The Service looks forward to participating in the development of the proposed Environmental Impact Statement for the District's channel maintenance program.

If you require additional information or have questions on the above subject, please contact Mr. Gary Wege at 612/725-3548.

Sincerely,

for Robert F. Welford
Field Supervisor

cc: BFA/ERT, Washington, D.C. (Attention: David Tilton)

METROPOLITAN COUNCIL
Mears Park Centre, 230 East Fifth Street, St. Paul, MN 55101-1634 612 291-6359 FAX 612 291-6550 TTY 612 291-0904

April 17, 1991

Gary Palesh
Department of the Army
St. Paul District, Corps of Engineers
1421 US Post Office & Customs House
St. Paul, MN 55101-1479

Dear Mr Palesh:

I have recently received a copy of a March 5, 1991 letter addressing the draft environmental impact statement (DEIS) your office will be preparing on the Channel Maintenance Management Plan for the Upper Mississippi River and associated navigable tributaries. While this document indicates the general areas you will be addressing in the DEIS, no specifics are given regarding what water quality issues will be addressed.

As both the regional planning agency for the metropolitan area and the designated 208 water quality planning agency, the Metropolitan Council is very concerned about water quality issues in the Mississippi, Minnesota and St. Croix Rivers. In addition to general concerns regarding water quality, two specific concerns need to be addressed in the DEIS. Regarding the Minnesota River, the Minnesota Pollution Control Agency and the U.S. Environmental Protection Agency have agreed on a goal to reduce nonpoint pollution in the river by 40 percent from 1980 levels by July 1, 1996. The main water quality consideration this goal is trying to alleviate is the effect nonpoint source pollution has on dissolved oxygen levels in the river. Therefore, the DEIS needs to consider how the dredging will comply with this goal.

Regarding the Mississippi River, there are several major studies currently underway that are addressing the effect phosphorus has on the water quality of Lake Pepin. Since some of the phosphorus in the river is associated with particulates, it will settle and be part of the benthic matter on the river bottom. The DEIS needs to consider the effect that resuspending this benthic-related phosphorus will have on the water quality in the river, and especially on Lake Pepin.

Thank you for this opportunity to comment on the issues that will be covered in the DEIS. If you would like to discuss this matter further, please let me know. My telephone number is 291-6519.

Sincerely,

James L. Frost
Senior Planner

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES
State Office Building, Room 104
3550 Mormon Coulee Road
La Crosse, WI 54601
(608) 785-9000

Carroll D. Besadny
Secretary

April 17, 1991

St Paul District, Corps of Engineers
Attn: Gary Palesh (CENCS-PD-ER)
1421 U. S. Post Office & Customs House
St. Paul, MN 55101-1479

Dear Mr. Palesh,

This letter is in response to your 5 March 1991 letter concerning the Draft Environmental Impact Statement (DEIS) for Channel Maintenance Management Plan (CMMP).

The basic action alternatives seem to cover the major river issues but the Department has one comment in regards to Dredging Equipment. When comparing the two sources of dredge equipment please factor in the added flexibility of a government contract. Environmental benefits are often realized from flexible dredging and disposal practices which are provided by the government. Private contractor are paid to follow project plans and specifications which provides little flexibility.

The significant resources list (Attachment 2) for the Upper Mississippi and the St. Croix River is missing state owned lands such as state parks, wildlife areas and natural areas. The State of Wisconsin has four state parks, three wildlife areas, and one natural area. Minnesota and Iowa will have many additional to the Wisconsin list.

Wisconsin Department of Natural Resources would like the DEIS to address specific concerns we have about the dredging and disposal (Attachment 3). The Department requests policy statements on the channel width, non-channel prevention dredging, non-channel maintenance dredging, and double pumping. Policy statements should also include beneficial use concerns of intergrating dredging projects with HREP projects needs and bathtub maintenance for restored reuse capacity. Policy guidelines on these issues should help determine the goals of the CMMP/DEIS.

Subject matter in attachment 3 should also include definations and procedures for several dredging and river issues. Clear definations should be provided for advance maintenance dredging, imminent closure dredging, and emergency dredging. Procedural guidelines should be established for groundings and associated spills. The Department would also like to know the expected use of sediment transport modeling and how it will predict dredging needs.

Thank you for providing the Wisconsin Department of Natural Resources with the opportunity to review and comment on the DEIS. An additional thank you for the sufficient review period which allowed for proper review on this important issue.

Sincerely,

Gretchen L. Benjamin
Western Boundary Rivers Planner

cc T. Lovejoy - WD

MINNESOTA HISTORICAL SOCIETY
FOUNDED IN 1849
Fort Snelling History Center, St. Paul, MN 55111 • (612) 726-1171

April 18, 1991

Colonel Roger Baldwin
St. Paul District, Corps of Engineers
1421 U. S. Post Office & Custom House
St. Paul, Minnesota 55101-1479

Dear Mr. Baldwin:

Re: Channel Maintenance Management Plan, 9-foot navigation channel on the Upper Mississippi River
MHS Referral File Number: 91-0975

Thank you for the opportunity to review and comment during the scoping process for the DEIS for the Channel Maintenance Management Plan. The project has been reviewed pursuant to the responsibilities given the State Historic Preservation Officer by the National Historic Preservation Act of 1966 and the Procedures of the Advisory Council on Historic Preservation (36CFR800).

You have appropriately included Archaeological and Historic Resources in each of the three segments of the project. We would urge that particular attention be given to issues involved with identifying, evaluating, and treating shipwrecks and deeply buried archaeological sites in the project area.

We look forward to continuing work with you in developing this plan.

Sincerely,

Dennis A. Gimmestad
Deputy State Historic Preservation Officer

DAG:dmb

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES
State Office Building, Room 104
3550 Mormon Coulee Road
La Crosse, WI 54601
(608) 785-9982

Carroll D. Besadny
Secretary

April 22, 1991

St Paul District, Corps of Engineers
Attn: Gary Palesh (CENCS-PD-ER)
1421 U. S. Post Office & Customs House
St. Paul, MN 55101-1479

Dear Mr. Palesh,

This is a short note following up on your request at the River Resources Forum for a main contact for the Channel Maintenance Management Plan / Draft Environmental Impact Statement. I will be your main contact for any review or comment needed for the Channel Maintenance Management Plan. I will coordinate with Wisconsin agencies for any necessary review.

If you have any questions, please call or write using the information above.

Sincerely,

Gretchen L. Benjamin
Western Boundary Rivers Planner

cc T. Lovejoy - WD

STATE OF IOWA

TERRY E. BRANSTAD, GOVERNOR

DEPARTMENT OF NATURAL RESOURCES
LARRY J. WILSON, DIRECTOR

April 30, 1991

Roger L. Baldwin
Colonel, Corps of Engineers
District Engineer, St. District
1421 U.S. Post Office and Custom House
St. Paul, MN 55101-1479

Dear Colonel Baldwin,

The Iowa Department of Natural Resources has reviewed your letter of March 5, 1991 regarding the Channel Maintenance Management Plan (CMMP) and the scoping process for the draft environmental impact statement (DEIS). IDNR would like to make the following comments:

Dredging Equipment - It is felt that the "range of dredging equipment" should extend beyond what is currently within the Corps and private contractors to include potential additions to the Corps' dredging equipment as a means of improving dredging and disposal capabilities.

Dredging Depth and Channel Width - It should be explored to standardize dredging depths where ever possible. As an example, 11-foot depths; widths of 400-feet on straight runs and 700-feet on river bends.

Dredge Material Disposal - It is not entirely clear what is meant by "active cuts" for which recommendations will be made and for suitable disposal including alternative disposal sites. Throughout this discussion, environmental acceptability of disposal sites is a critical component of site selection. This was not identified in Attachment 1 of your letter.

Beach Nourishment - It is questioned why beach nourishment was singled out in the Action Alternatives and other beneficial uses such as island creation , levee repair, etc. were not. A discussion of recreational interests should be included. Many EMP projects could be expanded to include such interests without impacting the goals of the project or affect channel maintenance activities.

Attachment 2 discusses significant resources to be addressed in the DEIS. It should be made clear in the discussion of fish and wildlife, that wildlife population and terrestrial habitat is included.

Attachment 3 deals with issues to be addressed and the following are issue-related comments.

1. Establish ownership of the water flowing in the river and ownership of the land beneath the flowing river.

2. Determine if sand spoils are pollutant waste materials and determine what effect sand spoils have when made in the water on benthic communities and the long-term impacts to the food chain of fish and other aquatic animals.

3. Rectify the legal conflicts between states and federal agencies regarding the disposal of spoil materials within the floodplain of the UMR.

Please consider myself, as your first point of contact regarding further coordination for the DEIS. My phone is 515-281-8673.

Thank you for the opportunity to be a part of this scoping process of the draft environmental impact statement for the CMMP.

Sincerely,

Thomas Anderson

Thomas Anderson
River Resource Coordinator
Outdoor Recreation Planner II

STATE OF MINNESOTA
DEPARTMENT OF NATURAL RESOURCES

Celebrate MINNESOTA 1990

PHONE NO. (612) 345-5601

FILE NO.

Route 2, Box 230
Lake City, Minnesota 55041
April 30, 1991

Gary Palesh
St. Paul District
Army Corps of Engineers
1421 U.S. Post Office
St. Paul, MN 55101

Dear Mr. Palesh:

The Minnesota Department of Natural Resources is pleased to be involved with the Upper Mississippi River Channel Maintenance Management Plan and its EIS. We look forward to reviewing the project documents as they are prepared.

You had asked that I provide you with two points of contact within our agency, one for technical matters and one for involvement with the EIS review.

For technical matters, your contact point is:

Scot Johnson
Mississippi River Hydrologist
Route 2, Box 230
Lake City, MN 55041

For EIS matters, your contact is:

Cheryl Heide
Office of Planning, Box 10
Minnesota DNR
500 Lafayette Road
St. Paul, MN 55155

Thanks again for contacting us about this project.

Very truly yours,

Steven P. Johnson
Mississippi River System Coordinator

cc: Scot Johnson
Cheryl Heide

STATE OF
MINNESOTA
DEPARTMENT OF NATURAL RESOURCES

DNR INFORMATION
(612) 296-6157

500 LAFAYETTE ROAD • ST. PAUL, MINNESOTA • 55155-40_____

Celebrate MINNESOTA 1990

May 2, 1991

Colonel Roger L. Baldwin
District Engineer
Attn: CEMCS-PD-ER
St. Paul District Corps of Engineers
1421 U.S. Post Office and Custom House
St. Paul, Minnesota 55101-1479

Re: Channel Maintenance Management Plan
Scoping Letter

Dear Colonel Baldwin:

The Minnesota Department of Natural Resources (DNR) has completed a review of the above-referenced letter concerning the preparation of an Environmental Impact Statement (EIS) on proposed activities for maintenance of a navigation channel on the Upper Mississippi River. The following comments are provided for your consideration in determining the scope of the EIS.

Attachment 1

It is not clear whether the "No Action" alternative means that no channel maintenance will be done or that there will be no change from existing maintenance activities. We assume it means no channel maintenance.

Dredging Equipment - The Corps requested that the DNR review the identified basic alternatives and identify any other alternatives that we believe need to be addressed. Perhaps the Corps should consider the use of water injection dredging equipment as an alternative in the EIS.

Dredging Depths - We recommend that this discussion include the Corps' interpretation of Congress' nine foot channel legislation and their working definition of the nine foot channel. Barges may draft nine feet, but it is our understanding that the tow boats draft ten feet and have props greater than nine feet in diameter. This suggests an incongruity between a strict interpretation of the nine foot channel and the actual navigation practices occurring on the river.

Channel Widths - We also suggest the inclusion of a discussion concerning the pros and cons of an established sailing line in Lake Pepin. An established sailing line would result in a smaller area of bottom disturbance thereby reducing the potential for reintroduction of contaminated sediments into the ecosystem.

Dredged Material Disposal - Perhaps this section should include the analysis of water injection dredging and thalweg disposal.

Attachment 2

It is difficult to comment on this attachment since the significant resources listed are so general and all encompassing. We do, however, recommend that Gores Pool Wildlife Management Area in Pool 3 be identified. Also, sites within Fort Snelling State Park on the Minnesota River are currently being evaluated for dredged material placement. The park should be listed as a significant resource as well.

In regard to endangered species, DNR Nongame Biologist Joan Galli is completing a four-year study of bald eagle use of the Upper Mississippi River. Because her findings could have considerable implication in the selection of dredged material disposal sites, Joan should be contacted during preparation of the Draft EIS. Her number is 297-2277.

The DNR recommends that a mussel survey be included in the EIS under the Fish and Wildlife and/or Endangered Species sections.

We also suggest that the EIS section entitled "Endangered Species" be expanded to include "Threatened Species" as well.

Attachment 3

Since maintenance of the nine-foot channel is done almost solely for the benefit of the commercial towing industry, there are several issues related to the regulation of this industry that we believe should be included in the Draft EIS. An issue which has been raised repeatedly over the years is the length of the navigation season. Very early and late season navigation has the potential for significantly affecting fish and wildlife resources. Since the length of the navigation season is related to certain channel maintenance activities, such as buoy placement and , timing of dredging activities, we believe it is appropriate to discuss this issue in the Draft EIS. Another issue which should be addressed is overdraft barges, which can wreak environmental havoc when grounded and necessitate more frequent and deeper dredging. Navigation during high flows

increases the potential for accidents and possible release of hazardous materials. The Draft EIS should include a discussion of the Corps' and other agencies' authority to regulate the towing industry, implementation of this authority, and the implications on channel maintenance activities.

Finally, we believe the Draft EIS should include information on the cost of conducting channel maintenance activities, including operation and maintenance of the locks and dams. The portion of the cost which is borne by the federal government and the portion paid for by the towing industry should be included in the discussion. Economic considerations should also be addressed in analysis of alternatives.

If you have questions regarding our comments, or if you require additional information from the DNR in the preparation of the EIS on the Channel Maintenance Management Plan, please contact Cheryl Heide from my staff at 296-9228.

Sincerely,

Thomas W. Balcom

Thomas W. Balcom, Supervisor
Natural Resources Planning and Review Services

c. Bill Johnson
Steve Colvin
Bonita Eliason
Karen Bowen
Tom Lutgen
Steve Johnson
Robert Welford--U.S. Fish and Wildlife Service

910171-1

Palesh

May 6, 1991

Environmental Resources Branch
Planning Division

Mr. Roland Gullickson
LaCrosse County Highway Department
P.O. Box 276, Courthouse
LaCrosse, Wisconsin 54602-0276

Dear Mr. Gullickson:

This is in response to your March 18, 1991, letter concerning our draft environmental impact statement and Channel Maintenance Management Plan for the 9-Foot Channel Navigation Project on the Upper Mississippi River and navigable tributaries.

At this time we fully expect to continue to have a dredged material stockpile site adjacent to Lock and Dam 6 at Trempealeau, Wisconsin. Dredged material would continue to be available to the public. We will factor your projected need for material into our planning for the site. We are also developing a site at Dakota, Minnesota, where material would be available.

If you have any specific questions concerning dredged material availability please contact Mr. Dan Krumholz at (608) 687-3011. Mr. Krumholz is located at our Fountain City Service Base in Fountain City, Wisconsin.

We thank you for participating in the scoping process for the draft environmental impact statement. We will continue to include you in our mailings for this project.

Sincerely,

Robert J. Whiting
Chief, Environmental Resources Branch
Planning Division

PALESH PD-ER ____
WHITING PD-ER ____

May 6, 1991

Environmental Resources Branch
Planning Division

Robert H. Hertzberg
Upper Mississippi River Waterway Association
P.O. Box 7006
St. Paul, Minnesota 55107

Dear Mr. Hertzberg:

This is response to your March 20, 1991, letter concerning our proposed draft environmental impact statement (DEIS) and Channel Maintenance Management Plan (CMMP) for the 9-Foot Channel Navigation Project on the Upper Mississippi River and navigable tributaries.

We will keep your organization informed of all public meetings or hearings that may be held concerning the CMMP and DEIS. The CMMP and the DEIS will address the subjects of dredging equipment, channel widths, and channel structures. Any specific recommendations your organization or its members have concerning these topics should be directed to Mr. Dan Krumholz at (608) 687-3011. Mr. Krumholz is located at our Fountain City Service Base in Fountain City, Wisconsin.

The topic of beach nourishment and its impact on recreational opportunities on the Upper Mississippi River will be addressed in the DEIS. In addition, the DEIS will address where applicable the impact of channel maintenance activities on private property, commercial navigation, and the economy of the study area.

Congress created the Mississippi National River and Recreation Area (MNRRA) in 1988 (PL 100-696), declaring that it was in the national interest to preserve, protect, and enhance the resources of the Mississippi River corridor within the Twin Cities Metropolitan Area. One of the provisions of the enabling legislation called for the preparation of an integrated resource management plan for the unit, the development which has recently begun. We will be coordinating our planning efforts with the MNRRA staff to insure that our channel maintenance program is not in conflict with the goals of the MNRRA.

We appreciate your participation in the scoping process for the DEIS. We will continue to include you in our mailings for this project.

Sincerely,

Robert J. Whiting
Chief, Environmental Resources Branch
Planning Division

PALESH PD-ER ____
WHITING PD-ER ____

May 6, 1991

Environmental Resources Branch
Planning Division

Dennis D. Darnold
City Planner
City of Hudson
505 Third Street
Hudson, Wisconsin 54016

Dear Mr. Darnold:

This is in response to your letter of March 27, 1991, concerning our proposed draft environmental impact statement and Channel Maintenance Management Plan for the 9-Foot Channel Navigation Project on the Upper Mississippi River and navigable tributaries.

Channel maintenance dredging has not been required at Hudson since the early 1970's, and based on historic evidence, we expect future dredging requirements at this location to be low or non-existent. Therefore, it is unlikely that we would be able to provide any material for use at Lakefront Park in the foreseeable future. If you have any questions concerning past and projected dredging requirements at Hudson, please contact Mr. Dan Krumholz at (608) 687-3011.

We thank you for participating in the scoping process for the draft environmental impact statement. We will continue to include you in our mailings on this project.

Sincerely,

Robert J. Whiting
Chief, Environmental Resources Branch
Planning Division

PALESH PD-ER ____
WHITING PD-ER ____

May 6, 1991

Environmental Resources Branch
Planning Division

Ms. Kathie Coleman
Economic Development Assistant
Port Authority of Winona
Box 378
Winona, Minnesota 55987-0378

Dear Ms. Coleman:

This is in response to your letter of April 2, 1991, concerning our proposed draft environmental impact statement and Channel Maintenance Management Plan for the 9-Foot Channel Navigation Project on the Upper Mississippi River and navigable tributaries.

The 14-acre site you reference is one of our primary alternatives for dredged material placement for pool 6. Mr. Dan Krumholz of our Navigation Section has been in contact with your agency concerning the long term use of this site. As indicated in our letter of July 11, 1989, we are still interested in a lease or agreement for use of that site.

We thank you for participating in the scoping process for the draft environmental impact statement. We will continue to include you in our mailings for this project.

Sincerely,

Robert J. Whiting
Chief, Environmental Resources Branch
Planning Division

PALESH PD-ER ____
WHITING PD-ER ____

May 6, 1991

Environmental Resources Branch
Planning Division

James R. Lennartson
Refuge Manager
Upper Mississippi River National Wildlife Refuge
51 E. Fourth Street, Room 101
Winona, Minnesota 55987

Dear Mr. Lennartson:

This is in response to your April 4, 1991, letter concerning our proposed draft environmental impact statement (DEIS) and Channel Maintenance Management Plan (CMMP) for the 9-Foot Channel Navigation project on the Upper Mississippi River and navigable tributaries.

The CMMP and DEIS will address the options of government versus contract dredging and the merits of a mixed package of equipment versus total contract dredging.

At present we do not propose to discuss water injection dredging in the CMMP and DEIS, as this dredging technique is still in the experimental stage as far as applicability to the Upper Mississippi River. If, at some time in the future, the District were to propose including water injection dredging as a normal part of channel maintenance operations, a NEPA document would be required to address the effects of using this type of equipment on a regular basis.

We thank you for participating in the scoping process for the DEIS. We will continue to coordinate with you on a regular basis during the preparation of the CMMP and DEIS.

Sincerely,

Robert J. Whiting
Chief, Environmental Resources Branch
Planning Division

PALESH PD-ER ____
WHITING PD-ER ____

May 6, 1991

Environmental Resources Branch
Planning Division

Ms. Gretchen L. Benjamin
Western Boundary Rivers Planner
Wisconsin Department of Natural Resources
State Office Building, Room 104
3550 Mormon Coulee Road
La Crosse, Wisconsin 54601

Dear Ms. Benjamin:

This is in response to your April 17, 1991, letter concerning our proposed Draft Environmental Impact Statement (DEIS) and Channel Maintenance Management Plan (CMMP) for the 9-Foot Channel Navigation Project on the Upper Mississippi River and navigable tributaries.

The CMMP and DEIS will address the dredging equipment options that are available to the District. These currently include government hydraulic equipment and contract hydraulic and mechanical equipment. Current policy is to not use government mechanical equipment for channel maintenance dredging except under emergency conditions.

At present we do not intend to consider all state parks and wildlife areas as significant resources within the context of this DEIS, unless it is becomes evident that there is a potential impact from channel maintenance activities on these resources. To date we have identified one such area, the Kinnikinnic River State Park on the St. Croix River. In this instance there is potential impact because the park abuts directly on the navigation channel and there are alternative dredged material placement sites located within the park. We will identify all state parks and wildlife management areas in the general description of the study area.

We do not propose to develop "policy statements" per se relative to the topics contained in the fourth paragraph of your letter. The CMMP will contain the District's proposed course action relative to these topics and the DEIS will address the impacts of the proposed course of action. The topics contained in the fifth paragraph of your letter will be addressed in the CMMP and DEIS. Our basic position regarding these topics is also described in our GREAT I Implementation Status Report and Future Program. In addition, many of these topics are addressed in our joint memorandum of understanding with your agency.

We thank you for responding to our scoping letter and participating in the scoping process for the DEIS. In the near future we will be sending you, for review, a preliminary draft of the dredged material placement sites and alternatives we propose to address in the DEIS.

Sincerely,

Robert J. Whiting
Chief, Environmental Resources Branch
Planning Division

PALESH PD-ER ____
WHITING PD-ER ____

May 7, 1991

Environmental Resources Branch
Planning Division

James L. Frost
Metropolitan Council
Mears Park Centre
230 Fifth Street
St. Paul, Minnesota 55101-1634

Dear Mr. Frost:

This is in response to your letter of April 17, 1991, concerning our proposed Draft Environmental Impact Statement (DEIS) and Channel Maintenance Management Plan (CMMP) for the 9-Foot Channel Navigation Project on the Upper Mississippi River and navigable tributaries.

The DEIS will address the water quality effects of both dredging and dredged material placement. As part of the impact assessment we will be addressing impacts on both dissolved oxygen and nutrients, including phosphorus.

We thank you for participating in the scoping process for the DEIS. We will continue to include you in our mailings on this project.

Sincerely,

Robert J. Whiting
Chief, Environmental Resources Branch
Planning Division

PALESH PD-ER _____
WHITING PD-ER _____

May 7, 1991

Environmental Resources Branch
Planning Division

Ms. Lynn M. Lewis
Field Supervisor
Twin Cities Field Office
U.S. Fish and Wildlife Service
4101 East 80th Street
Bloomington, Minnesota 55425-1665

Dear Ms. Lewis:

We wish to acknowledge receipt of your April 15, 1991, response to our scoping letter concerning our proposed Draft Environmental Impact Statement and Channel Maintenance Management Plan for the 9-Foot Channel Navigation Project on the Upper Mississippi River and navigable tributaries. We look forward to working with you and will be coordinating with your office on a regular basis.

In the near future we will be forwarding for your review, a preliminary draft of the alternative dredged material placement sites and plans that we propose to address i n the draft environmental impact statement.

Sincerely,

Robert J. Whiting
Chief, Environmental Resources Branch
Planning Division

PALESH PD-ER ____
WHITING PD-ER ____

May 16, 1991

Environmental Resources Branch
Planning Division

Mr. Thomas Anderson
River Resource Coordinator
Iowa Department of Natural Resources
Wallace State Office Building
Des Moines, Iowa 50319

Dear Mr. Anderson:

This is in response to your April 30, 1991, letter concerning our proposed draft environmental impact statement (DEIS) and Channel Maintenance Management Plan (CMMP) for the 9-Foot Channel Navigation Project for the Upper Mississippi River and navigable tributaries.

We will be addressing dredging equipment capabilities and availability within the statutory, fiscal, and other limitations placed on us.

In the CMMP, we will address the issue of dredging depths and widths. However, at this time, we are not in favor of standardizing depths. The use of standardized dredging depths and widths was the historical approach to dredging when our analytical and predictive capabilities were not what they are today. A standardized approach is more likely to result in excessive dredging in certain instances because options to reduce dredging volumes will not be looked at as carefully. We currently are more in favor of a flexible approach that allows us to tailor dredging depths and widths to the situation at hand.

Environmental acceptability will be one of the major criteria in selection of long-term dredged material placement sites.

Beach nourishment is singled out as a unique action item because we are proceeding in the direction of developing long-term beach nourishment plans for most, if not all, of the Upper Mississippi River within our District. Therefore, it is an action we are proposing as part of the 9-Foot Channel Navigation Project. Most other beneficial uses of the type you mention are site specific and will be discussed in the CMMP. Our policy is to take advantage of those one-time opportunities for beneficial use whenever possible.

Our discussion of impacts on fish and wildlife resources in the DEIS will address all facets of the resource. Our impact evaluations will tend to focus on the impacts to fish and wildlife habitat. It is very difficult if not impossible to make any quantitative projections of impacts on fish and wildlife populations from dredging and dredged material placement actions. These actions generally have short-term localized impacts in locations scattered up and down the river which, in turn, have little or no population level effects. The only really measurable effect is the cumulative long-term loss of habitat at dredged material placement sites.

We do not propose to address the questions of ownership of the water flowing in the river and ownership of the land beneath the flowing water in the CMMP or DEIS. We believe these questions are beyond the scope of our planning effort. In addition, at the present time, we do not believe an answer to these broad questions is necessary for the channel maintenance decisions we are currently considering. We recognize the role the States have in regulating water quality and the uses of the water in the river, and we will work to insure that our channel maintenance activities are in compliance with all applicable regulations.

Our program of testing of river sediments has indicated that sand sediments in the St. Paul District reach of the Upper Mississippi River are relatively uncontaminated. We will address sediment quality and the impacts of dredged material placement on the aquatic community in the DEIS.

The CMMP and DEIS will address the potential effects of dredged material placement on the regulatory floodplain. We will also address any Federal/State issues regarding floodplain impacts.

We thank you for participating in the scoping process for the DEIS. We will continue to coordinate with you on a regular basis during the preparation of the CMMP and DEIS.

Sincerely,

Robert J. Whiting
Chief, Environmental Resources Branch
Planning Division

PALESH PD-ER ____
WHITING PD-ER ____

May 16, 1991

Environmental Resources Branch
Planning Division

Mr. Thomas W. Balcom
Natural Resources Planning and Review Services
Minnesota Department of Natural Resources
500 Lafayette Road
St. Paul, Minnesota 55155

Dear Mr. Balcom:

This is in response to your letter of May 2, 1991, concerning our proposed draft environmental impact statement (DEIS) and Channel Maintenance Management Plan (CMMP) for the 9-Foot Channel Navigation Project on the Upper Mississippi River and navigable tributaries.

The no action alternative is difficult to define for an ongoing project that has been going through progressive changes over the last 15 to 20 years. We are proposing to use the GREAT I plan as the no action alternative because it represents the last formally agreed upon Federal-State plan for channel maintenance on the Upper Mississippi River. It also provides a finite frame of reference for reviewers against which to measure the plan that will be contained in the CMMP. We gave consideration to using "no channel maintenance" or project abandonment as the no action alternative as was done in the 9-Foot Channel Navigation Project EIS in 1974. However, we believe no channel maintenance is not a realistic no action alternative because abandonment of the project is far beyond the level of planning we are currently involved in.

At present, we do not propose to discuss water injection dredging in the CMMP and DEIS, as this dredging technique is still in the experimental stage as far as applicability to the Upper Mississippi River. If, at some time in the future, the District were to propose including water injection dredging as a normal part of channel maintenance operations, a NEPA document would be required to address the effects of using this type of equipment on a regular basis.

The CMMP will discuss the interpretation of the definition of the "9-foot" channel which in its simplest form is to provide a channel of at least 9 feet in depth. The CMMP will discuss the reasons for dredging greater than 9 feet, many of which are primarily safety related. It will also discuss towboat draft and the District's position on that issue.

Because of more than adequate water depths in most locations, no channel maintenance is required in Lake Pepin. Therefore, we have no authority over the sailing line in Lake Pepin, and we do not propose to address it in the CMMP and DEIS. If this is a serious concern, we suggest that it be brought to the attention of the U.S. Coast Guard and the commercial transportation industry to determine if a mutually agreed upon sailing line can be developed for Lake Pepin.

We propose to discuss thalweg placement of dredged material in the CMMP and the DEIS. We do not propose to evaluate thalweg placement in any detail because we are currently not proposing it in any location in the St. Paul District.

Our proposed method for addressing State parks and wildlife areas in the DEIS is that, if channel maintenance activities will have a direct impact such as through dredged material placement, we will then identify them as separate significant resources. If there are no direct impacts, we will discuss them only in the more general resource descriptions. We currently are evaluating single placement sites in both the Gores Wildlife Management Area and Fort Snelling State Park so they would be treated as significant resources for pool 3 and the Minnesota River, respectively.

We will contact Ms. Galli concerning information she has on bald eagle use on the Upper Mississippi River.

At the present time, we do not propose to conduct a general mussel survey on the Upper Mississippi River for the DEIS. We have completed Section 7 consultation with the U.S. Fish and Wildlife Service regarding the potential effects of channel maintenance on the Higgins' eye pearly mussel (Lampsilis higginsi). We believe sufficient information exists concerning the distribution of the Higgins' eye to evaluate the effects of dredging and dredged material placement on this species. If further analysis indicates the need for mussel surveys in specific locations to evaluate effects on protected species, we will conduct them.

The primary purpose of the CMMP is to outline how the St. Paul District proposes to conduct channel maintenance activities in the future. The DEIS will address the impacts of our proposal and all reasonable alternatives. Navigation issues such as the length of the navigation season, overdraft barges, navigation during high flows, and regulation of the towing industry are issues that we consider outside the purview of this planning effort. Therefore, we do not propose to address these issues in any detail in the CMMP and DEIS unless there is an obvious direct linkage to our channel maintenance activities.

We will be including information concerning the costs of channel maintenance activities as it relates to the evaluation of alternatives. We do not propose to include information such as the cost of operation and maintenance of the locks and dams, and that portion borne by the Federal Government and the towing industry. This information would be of interest if we were conducting an overall evaluation of the 9-Foot Channel Navigation Project. However, we are only addressing the channel maintenance aspects of the project and we do not believe this information is germane to the decision-making process on channel maintenance activities.

We thank you for participating in the scoping process for the DEIS. We will continue to coordinate with you on a regular basis during preparation of the CMMP and DEIS.

Sincerely,

Robert J. Whiting
Chief, Environmental Resources Branch
Planning Division

PALESH PD-ER ____
WHITING PD-ER ____

May 16, 1991

Environmental Resources Branch
Planning Division

Mr. Tom Anderson
Iowa Department of Natural Resources
Wallace State Office Building
Des Moines, Iowa 503196

Dear Mr. Anderson:

The St. Paul District is preparing a Channel Maintenance Management Plan and accompanying draft environmental impact statement (EIS) for the 9-Foot Channel Navigation Project on the Upper Mississippi River and navigable tributaries. A scoping letter initiating the scoping process for the draft EIS was distributed on March 5, 1991. As a continuation of the scoping effort, we are providing information and requesting comments to assist us in delineating the dredged material placement sites and alternatives to be addressed in the draft EIS.

To assist in this process, we are first providing information on the dredge cuts and placement sites we are proposing to exclude from further evaluation for the draft EIS. Attachment 1 lists the historic dredge cuts that we are proposing to eliminate from further consideration. Based on historic records and current channel maintenance practices, it is highly unlikely that dredging will ever be required at these locations in the future. The dredge cut numbering system corresponds to that used during the GREAT I study.

Attachment 2 lists the GREAT I sites that we propose to eliminate from further consideration in the draft EIS, accompanied by the rationale for their exclusion.

Attachment 3 displays the dredged material placement sites and alternatives we are proposing at this time to evaluate in detail in the draft EIS.

We ask that you please review this material and provide us with any comments you may have by June 21, 1991. Depending upon the responses received, there may or may not be any additional pre-draft EIS coordination on dredged material placement alternatives. We will report on the results of this scoping of dredged material placement alternatives at the August 1991 meeting of the River Resources Forum.

If you have any questions concerning the information being provided, please contact Mr. Gary Palesh at (612) 220-0266.

Sincerely,

Enclosures

Robert J. Whiting
Chief, Environmental Resources Branch
Planning Division

Identical letters furn:

Cheryl Heide, MDNR
Scot Johnson, MDNR
Gretchen Benjamin, WDNR
Robert Hertzberg, UMWA
Gary Wege, USFWS
James Lennartson, USFWS
Al Fenedick, USEPA
James Harrison, MWBAC

PALESH PD-ER ____
WHITING PD-ER ____

winona county planning department

- Planning
- Zoning
- Inspections
- Emergency Numbering Syste

courthouse, winona, minnesota 55987 (507) 457-6335

May 24, 1991

Roger L. Baldwin
Colonel, Corps of Engineers
District Engineer
1421 U.S. Post Office and Custom House
St. Paul, Minnesota 55101-1479

Re: DEIS Coordination

Dear Sir:

In response to your request, please note that I will be Winona County's point of contact for further coordination for the DEIS relative to proposed activities for maintenance of the 9-foot navigation.

Very truly yours,

Arthur Persons

Arthur Persons
Planning Director

AP:ls

May 29, 1991

Environmental Resources Branch
Planning Division

Mr. Anthony Andersen
Superintendent
Lower St. Croix River National Scenic Riverway
National Park Service
P.O. Box 708
St. Croix Falls, Wisconsin 54024

Dear Mr. Andersen:

The St. Paul District is preparing a Channel Maintenance Management Plan (CMMP) for the 9-Foot Channel Navigation Project on the Upper Mississippi River and navigable tributaries. We are also preparing a draft environmental impact statement (DEIS) that will accompany the CMMP.

As you may be aware, the authorized 9-foot navigation channel extends 24.5 miles up the St. Croix River. The only active dredging location on the St. Croix River is at the mouth of the Kinnickinnic River at river mile 6.6. We dredge there on a frequency of about 4 years out of 10. Historically, we have placed the dredged material on sandbars of the Kinnickinnic River delta, both above and below the river.

As part of the CMMP, we will be identifying the long-term dredged material sites we propose to use at the various dredging locations in the project area. This is in essence an outgrowth of the Great River Environmental Action Team I (GREAT I) study completed in 1980. We are currently scoping the DEIS and identifying and delineating the dredged material placement alternatives we will be evaluating.

Because you are the management agency for the Lower St. Croix River National Scenic Riverway, we are seeking your input into this process. The enclosed list indicates those locations we are currently considering as potential placement sites for material dredged from the area of the Kinnickinnic River mouth. All of these sites were recommended for dredged material placement by the GREAT I study for material dredged from the St. Croix River. All of the sites are in essence beach nourishment or development sites. We ask that you please review this list of sites, provide comments as to any sites you believe should be removed from consideration, and note any other sites you believe we should add to the list.

We are also responsible for maintaining a 3-foot channel up to mile 51.8. Historically, this has involved removal of snags. As evidenced by our most recent snag removal operation, we rely upon your agency's recommendations before conducting these activities. We plan to address the snag removal operation in the DEIS.

We also ask that you provide us with any other concerns you may have about snag removal or maintenance of the 9-foot navigation channel on the St. Croix River.

We would appreciate receiving any comments you may have by June 28, 1991. If you have any questions, please contact Mr. Gary Palesh at (612) 220-0266.

Sincerely,

Enclosure

Roger L. Baldwin
Colonel, Corps of Engineers
District Engineer

cf:

James Harrison
Executive Director
Minnesota-Wisconsin Boundary
Area Commission
619 Second Street
Hudson, Wisconsin 54016

KRUCHTEN PD ____
PALESH PD-ER ____
WHITING PD-ER ____
KRUMHOLZ CO-M ____
KNOTT PD ____
KOWALSKI PD ____
MAHONEY DD ____
BALDWIN DE ____

ALTERNATIVE DREDGED MATERIAL PLACEMENT SITES
ST. CROIX RIVER

The first number is the Corps of Engineers designation. SC means St. Croix River, the number is the river mile, and the last two letters designate the side of the navigation channel, e.g., "left Wisconsin" or "right Minnesota." The number in parenthesis is the GREAT I site designation.

SC-0.5-RM (SC.16) - creation of a new 10-acre island off Point Douglas Beach for recreational use

SC-6.5-LW (SC.12) - the lower lobe of the Kinnickinnic River delta

SC-6.7-LW (SC.13) - the upper lobe of the Kinnickinnic River delta

SC-8.5-RM (SC.27) - the public beach at Afton State Park

SC-13.5-RM (SC.21) - the public beach at Lake St. Croix Beach

SC-16.5-LW (SC.01) - the island south of the dike road at Hudson

SC-16.9-LW (SC.03) - the lower of the three islands between the dike road and the railroad bridge at Hudson

SC-17.0-LW (SC.22) - the existing and/or any new beach at Lakefront Park in Hudson

SC-17.1-LW (SC.04) - the middle of the three islands between the dike road and the railroad bridge at Hudson

SC-17.2-LW (SC.06) - the upper of the three islands between the dike road and the railroad bridge at Hudson

SC-17.5-LW (SC.28) - the island above the railroad bridge at Hudson

MINNESOTA-WISCONSIN BOUNDARY AREA COMMISSION
619 SECOND STREET, HUDSON, WISCONSIN 54016-1576
Serving Our Sponsor States on the St. Croix and Mississippi Rivers since 1965
Office Hours: 8 A.M. - 5 P.M. Monday-Friday
Minnesota Telephone (612) 436-7131
Wisconsin Telephone (715) 386-9444

June 18, 1991

Gary Palesh
Environmental Resources Branch
Department of the Army
St. Paul District, Corps of Engineers
1421 USPO and Custom House
St. Paul, MN 55101-1479

RE: Channel Maintenance Management Plan Draft EIS
St. Croix River

Dear Mr. Palesh:

Thank you for the copy of the letter to Tony Andersen, National Park Service, and the supplemental memo dated May 24, regarding disposal sites for dredge material at Kinnickinnic River narrows, River Mile 6.6 on the St. Croix River and the removal of snags to river mile 51.6.

Dredge Material Disposal Sites/Alternatives

We have no objection to Alternate B, which would provide for disposal of dredge material at public beaches and islands in the Afton to Hudson vicinity in the event the Kinnickinnic State Park beach does not provide adequate area for placement of dredged material.

In fact, in the City of Hudson, the City is currently relocating the city beach upstream to above the old bridge dike road and the beach may be a viable site for material, consistent with the GREAT I report.

Snag Removal

Regarding snag removal up to river mile 51.8, we recognize the need to maintain a navigation channel, but we are also aware that snags in the river provide habitat for aquatic species. Beginning in July, 1991, we are participating in a two year study of land and water changes on the Lower St. Croix River to determine what physical, biological, and aesthetic changes have occurred since 1976 (when the Lower St. Croix Master Plan was adopted) and what the impacts of those changes have been.

As part of this study Nels Troelstrup of the North Central Forest Experiment Station/University of Minnesota, will be doing an analysis of snag habitat changes on the lower 52 miles of the St. Croix River (at selected transects) based on review of our aerial photographs from 1977 to 1991.

We would ask that you provide Mr. Troelstrup with access to your snag removal records and that you advise us of any snag removal proposals in advance of such activity in the future.

Until such time as we know more about the value of snag habitat on the St. Croix, we ask that you provide us with an opportunity to comment on such activity and we ask that you consider the habitat value of snags in your determinations for the need to remove them.

Sincerely,

Dan McGuiness
Associate Executive Director

cc: Anthony Andersen, NPS
Cheryl Heide, MDNR
Scot Johnson, MDNR
Gretchen Benjamin, WDNR
Gary Wege, USFWS
Jim Harrison, MWBAC
Nels Troelstrup, U of M/NCFES

STATE OF IOWA

TERRY E. BRANSTAD, GOVERNOR

DEPARTMENT OF NATURAL RESOURCES
LARRY J. WILSON, DIRECTOR

June 27, 1991

Robert J. Whiting, Chief
Environmental Resources Branch
St. Paul Corps of Engineers
1421 U.S. Post Office and Custom House
St. Paul, MN 55101-1479

Dear Bob:

Iowa Department of Natural Resources staff have the following comments on the preliminary information associated with preparation of the Channel Maintenance Management Plan.

1. Dredge Cuts Proposed for Exclusion - We do not have problems with the proposed dredge cut exclusions. However, if projections prove inaccurate and dredging is required at any of these sites, full coordination of material disposal will be necessary and reevaluation of the site relative to the Channel Maintenance Management Plan must be conducted.

2. Placement Sites Proposed for Exclusion - We do not have problems with the proposed placement site exclusions. Any new site that becomes required or available should be able to merge with the Channel Maintenance Management Plan quickly with appropriate agency review and approval.

3. Other Suggested Placement Sites - We would like to see an evaluation of barging material from the McMillan Island cut through Lock and Dam #10 to a beneficial use site adjacent to the river access at the south end of Guttenberg. This site is included in the Rock Island District's Pool 10 Dredged Material Placement plan, and it has not be used to date.

4. Other Alternatives - We do not have any suggested alternatives at this time. We assume however, there will be flexibility so sites from one alternative may be included with the selected alternative if warranted. The ALTERNATIVE method of planning is convenient at this state (as opposed to individual site review), but it should not be rigid. Later amendments that are justified and properly coordinated should be possible.

WALLACE STATE OFFICE BUILDING / DES MOINES, IOWA 50319 / 515-281-5145 / TDD 515-242-5967

5. Sites of Strong Concern or Reservation - We have concerns and reservations with the following sites:

a. 10-618.7-RI McMillan Island cut, head of McMillan Island disposal: We oppose any future use of this site.

b. 10-644.5-RI Jackson Island cut, Jackson Island disposal.

c. 9-664.3-RI Lansing Upper Light and 9-665.8RI Indian Camp Light: Consideration of using these sites for temporary/emergency purposes may be warranted, but not for permanent placement use.

d. 9-671.3-RI

6. Need for On-Site Inspections - Any new sites or sites that have not recently been reviewed may require an on-site inspection to assess applicability of general and specific disposal techniques.

7. General Prohibitions/Concerns - We oppose all disposals on rip-rapped heads of islands and other critical habitat areas at any site.

Thank you for the opportunity to review preliminary information for the Channel Maintenance Management Plan. We will continue to work with you as the plan develops.

Sincerely,

Kevin R. Szcodronski

Kevin R. Szcodronski
Mississippi River Coordinator
Coordination and Information Division

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES
State Office Building, Room 104
3550 Mormon Coulee Road
La Crosse, WI 54601
(608) 785-9982

Carroll D. Besadny
Secretary

June 27, 1991

Mr. Gary Palesh
U.S. Army Corps of Engineers
St. Paul District Office
1421 USPO & Custom House
St. Paul, MN 55101-1479

Dear Mr. Palesh:

District and Mississippi River Work Unit personnel have reviewed the first draft of the site plan for the Channel Maintenance Management Plan. We would like the Corps to consider the following comments.

Attachment A shows main channel dredging requirements are decreasing in the Mississippi and St. Croix Rivers. The GREAT process appears to be working and we find this very encouraging. However we hope these non-active dredge sites are not overlooked and create an emergency dredging situation or increase groundings which may lead to spills. A monitoring plan for these dredge cuts should be developed so emergency conditions do not arise.

Attachment B reduces a substantial number of disposal sites. There is variety of reasons these sites are eliminated but in some cases alterative sites should be considered. OSIT and MOU procedure must be followed for any replacement site so the process for looking for new sites should begin soon. Replacement sites will minimize the possibility of looking for disposal site in an emergency situation.

ATTACHMENT C

Four comments pertaining to Attachment C encompass most of the department's general concerns with these sites.

General

- The Corps should actively pursue purchasing private disposal sites. On occasion private landowner decide not to accept the disposal material or decide to develop the site. This forces the OSIT to look for other options, often without proper time to assess new sites, which replace GREAT approved sites.

- The department would like to minimize (preferably eliminate) any inwater rehandling of disposal material. Although the habitat alteration may be temporary, the lose of species in the rehandling area is permanent. If rehandling is absolutely necessary we prefer the use of "bathtubs" as a rehandling site.

- The department would like the Corps to maximize beneficial use whenever possible. A number of disturbed upland sites can be reclaimed and material can also be used for construction and road sanding.

- The department is anxious for the Corps to begin revegetation of disposal sites. Disposal piles measuring 20 to 30 feet are extremely susceptible to wind erosion. This wind erosion can creates additional dredging for the Corps, along with further damaging important aquatic habitats.

Individual pool comments pertaining to Attachment C.

St. Croix

St. Croix River

Alternative B appears to be the best option for the St. Croix River. Site SC.05-RM could be added to the alternative B sites if pile is not greater than 5 feet.

Mississippi River

Upper Pool 3

Alternative B appears to be the best option for upper pool 3. The department would prefer mechanical dredging to hydraulic dredging at site 3-808.4-LW to eliminate the need for inwater rehandling.

Lower Pool 3

Alternative A appears to be the best option for lower pool 3. The site in alternative A is privately owned and the Corps should actively seek the purchase of this land. Sites 3-802.3T-RM, 3-800.5-LW,and 3-801.7-LW need further analysis as disposal sites.

Upper Pool 4

Alternative A or C deserve equal consideration. Site 4-791.3-LM will require further analysis. This site borders Pierce County Islands State Wildlife and Hunting Grounds and we are opposed to developing the area.

No description was included for site 4-791.5-RM.

Reads Landing

Alternatives B and H should be dropped because we do not want to expand the containment area.

We will consider the Highway 35 site under the proper OSIT procedures. The area you have proposed for a new disposal site is known to have the Endangered Massauga Rattlesnake so this site will receive careful consideration.

Crats Island

Alternative B is the best option for Crats Island. However, if the Corps would like to continue using Crats Island, they must look at methods to stabilize the island. The back side of the island is washing into Indian Slough, an important aquatic habitat and the site of a HREP project.

How important is capacity in the Crats Island area? It is my understanding that the placement of sediment traps at the mouth of the Chippewa River has minimized (almost eliminated) the need for dredging at Crats Island.

Lower Pool 4

Alternative A and B are the best options for lower pool 4. We will not accept any expansion of Grand Encampment. We are also not in favor of expansion at 4-757.5-LW, Teepoota point. If expansion is necessary we would prefer to use site 4-754.0-LW, the Alma Marina.

Site 4-753.8-LW was not described with this information.

Upper Pool 5

Alternative B appears to be the best option for upper pool 5. Site 5-748.0(T)-RM is in close proximity to the Pool 5 bank stabilization project. Expansion of this disposal site would receive careful consideration.

Careful analysis should be done at the site adjacent to the Dairyland Power railloop 5-751.5A-LW. The diverse habitats are valuable and deserve protection. We also do not like the idea of filling site 5-751.5-LW (Dairyland Power Railloop), but due to possible contaminants we are more willing to fill this site than 5-751.5A-LW.

Pool 5A

Alternative C is the best option for pool 5A. However, we are not in favor of the use of site 5A-731.8-LW. Alternate capacity should be found in an area other than shallow aquatic habitat/marsh.

Pool 6

All four sites and both alternatives are acceptable. We would like further analysis of inwater rehandling at site 6-723.3-RM.

Pool 7

Alternative D is the best option for pool 7. This alternative maximizes beneficial use and minimizes the number acres affected by the disposal material.

Upper Pool 8

Alternative A is the best option for upper pool 8. The department is against the expansion of site 8-690.4-LW. Expansion into the 6 acres of secondary channel is not acceptable.

Lower Pool 8

Alternatives A or B are acceptable options for lower pool 8. Turtle Island is recovering from the 1963 disposal material placement. The area is very productive turtle and waterfowl nesting habitat so we do not want new disposal material placed on Turtle Island.

Upper Pool 9

Alternative C is the best option for upper pool 9. Alternative C maximizes the benefit use site at the Genoa Power Plant. Site 9-670.5-LW will require additional analysis. Past flooding has transported disposal sediments from this site into adjacent backwaters. We believe the area should be stabilized before additional material could be added to this site.

Lansing Upper Light

Alternative B1 is probably the best option for Lansing Upper Lights. But a number of sites deserve additional review. Site 9-663.5-LW may not be a good site because of concerns with filling valuable habitat. We will need to look at alternatives to this site.

Pool 10

Alternatives A or C are acceptable options for pool 10. Information for site 10-646.5-LW is not provided so we will need additional information to completely accept alternative A. I assume it is a beneficial use site close to the Gordon's Bay boat landing.

Thank you for the extra time to prepare the department's response. This portion of the CMMP is very important to the department so the response had to be cover all of our concerns.

Sincerely,

Gretchen L. Benjamin
Mississippi River Planner

STATE OF MINNESOTA
DEPARTMENT OF NATURAL RESOURCES

DNR INFORMATION
(612) 296-6157

500 LAFAYETTE ROAD • ST. PAUL, MINNESOTA • 55155-40_____

July 2, 1991

Mr. Gary Palesh
Environmental Resources Branch
Department of the Army
St. Paul District, Corps of Engineers
1421 U.S. Post Office and Custom House
St. Paul, Minnesota 55101-1479

Re: Channel Maintenance Management Plan
Draft Environmental Impact Statement
Dredged Material Placement Sites

Dear Mr. Palesh:

The Minnesota Department of Natural Resources (DNR) has completed a review of information provided concerning alternative dredged material placement sites associated with the Channel Maintenance Management Plan Draft Environmental Impact Statement (EIS) which is being prepared by the Corps. The following comments are provided for your consideration.

The DNR believes that it would be more appropriate for the Corps to first evaluate each site on its own merit. Unacceptable sites should be removed from consideration, and the best sites combined into grouped alternatives for pool maintenance.

The current DNR position on projects in Pool 2 is that the project cannot raise the 100 year flood stage. Disposal sites in the floodplain in Pool 2, and possibly at other metropolitan area locations, may require reevaluation because of the possible effect they may have on the 100 year flood stage.

In addition to general comments we have specific comments regarding the preliminary Draft EIS document:

Attachment 2

Site U.03. The Corps may want to consider retaining this site in the event that the privately owned site becomes unavailable for placement in the future.
Site 2.13. The document states that "This site is being removed from consideration at this time because it is a wetland and alternative non-wetland sites are currently available". This sentence suggests that the Corps may

consider using this site alternative in the future. We agree that non-wetland sites are generally preferred over wetland sites and that this site should be removed from further consideration.

Site SC.26. The DNR wonders whether there is a possibility that beach nourishment may be needed at this site in the future. If so, it may be better to retain it for evaluation through the EIS.

Attachment 3

The introduction to this attachment notes that the proposed number of alternative plans has been reduced for some pools from what appeared in earlier reconnaissance reports. The purpose for this reduction was to focus on the most feasible and practical alternatives. Many of the following comments are provided to assist the Corps in further refining the list of feasible and practical site alternatives to be reviewed in the EIS.

The development of alternative plans should stress the use of historic dredged material placement sites and previously disturbed sites. The environmental consequences of creation of new islands (i.e. site SC-0.5-RM) and placement of material in floodplain forests and wetlands should be thoroughly explored in the EIS. Alternatives that involve placement in wetlands, including bottomland forests, should only be included if there are clearly no feasible alternatives. Any placement that will affect new areas of river bottom should require mussel surveys. New on-land placement should require an assessment of the type and quality of existing plant communities, including whether habitat is present for state-listed rare or endangered plants, and the nature of the impacts for spoils placement.

Upper St. Anthony Falls Pool:

Site 1-853.1-RM and Site 1-853.2-LM. The Minneapolis Park Board has plans for major land use changes at these two sites and will probably have extensive comments on these alternatives. We agree with the decision to further evaluate these alternatives in the EIS, but the Corps may need to identify another permanent site in Pool 1.

Minnesota River:

The Lower Minnesota River Watershed District has identified several dredged material placement sites that are not included in the Corps' list (see attached map). This discrepancy should be explained.

Site MN-4.5-RM. Although this site is currently owned by the U.S. Fish and Wildlife Service, the DNR Division of Parks is planning to obtain the land through a land exchange.

Site MN 11.2-RM. This site is the planned location for an amphitheater. This activity may be considered incompatible with disposal of dredge materials.

Upper Pool 2:

Site 2-841.3-RM. Northern States Power Company no longer owns this property. The land is already being used for some other purpose. Since both sites 2-841.3-RM and 2-840.4-RM have other uses and are the only sites identified for the Smith Avenue Bridge dredge cut, we suggest that an additional site for this dredge cut be evaluated in the EIS.

Site 2-840.4-RM (Highbridge). The City of St. Paul's plans for this site may preclude it from future dredge disposal site use. However, we believe this alternative should be retained for evaluation in the EIS.

Lower Pool 2:

Site 2-832.5-LM. This site was given low marks under GREAT, but we believe it should be retained for evaluation in the EIS. This is the first site in the list of sites that suggests the need for in-water rehandling of dredge material. Potential impacts that might result from alternatives which include in-water rehandling and filling of wetlands or possible degradation of the riverine ecosystem would need to be mitigated. The EIS should include a discussion of mitigation required for each site or alternative.

Site 2-832.5-RM. This site also requires in-water rehandling.

Site 2-822.8-RM (Spring Lake). The amount of material to be placed at this site should remain flexible since the design of the Spring Lake habitat rehabilitation project has not been finalized.

Site 2-824.1(T)-LM. We believe that the Minnesota DNR owns this island. Disposal of dredge material on the island should be contingent on its later use in the Spring Lake project. Because use of the island for disposal is not compatible with the DNR's intended use of the island, we recommend that this alternative dredge disposal site be dropped from consideration in the EIS.

Site 2-827.8(T)-RM. This island is owned by the National Park Service. The National Park Service is in the process of planning the Mississippi National River and Recreation Area, and in all probability, will have other ideas on how to use this island. We recommend that it be deleted from the EIS.

Site 2-820.5(T)-LM (Lower Boulanger). There is some question whether this island is federally owned. It may belong to Paul Schilling of PAS Associates. The current

disposal site on this island is completely full. The only way this site could be used is if the Corps mines the material from the island site to build the Spring Lake Dike (Site 2-822.8-RM) or uses it in some other way. The DNR Division of Waters will be reviewing the expansion of the site into open water in accordance with the Memorandum of Understanding and the DNR's Protected Waters Permit procedures. We are opposed to the expansion of this site into open water.

Site 2-819.4(T). We do not support the use of this alternative site because it includes open water disposal of dredged materials. We recommend that it be deleted from further consideration.

Site 2-823.1 (T)-LM (Lower Boulanger). Use of this site includes plans to dispose of material in open water. We recommend this alternative also be deleted from review in the EIS.

St. Croix River:

Site SC-0.5-RM. The creation of an island in this location in the St. Croix River will bury a valuable mussel bed and will also involve in-water disposal of materials. We oppose inclusion of this alternative in the EIS.

Upper Pool 3:

Site 3-814.7-RM. This is a DNR boat access that is quite busy and now includes a paved parking lot. We believe that this site is no longer a viable alternative site and should be dropped from further consideration.

Site 3-808.4-LW (Dry Run Slough). This site requires in-water rehandling of materials. In addition, the filling of this valley could cause flooding problems for the area. The area to be filled may be a wetland.

Site 3-801.7(T)-LW. This site should be coordinated with the beach enhancement plan under development for the pool.

Site 3-801.0-LW (Diamond Bluff Pit). This alternative is not a GREAT alternative but should be included in the EIS evaluation.

Upper Pool 4:

Alternative sites for Upper Pool 4 encompass a reach of the river from Lock and Dam 3 to the head of Lake Pepin that receives heavy use by wintering bald eagles. Any placement on alternative sites that involves the clearing of large trees or woodland should be evaluated for potential impacts on wintering eagles.

Site 4-788.5-RM (Covill Park). In our estimation, the amount of material designated in the plan would bring the

area up above the natural grade of the rest of the park. The Corps material estimate needs to be reviewed so that the amount of material designated for the park is consistent with the City of Red Wing's plans for the park.

Site 4-789.6-RM. We believe that the Red Wing Conservation Club referenced as the owners of the site may officially be named the Red Wing Wildlife Protection League. The site is actively eroding and has already been used for spoils in the past. Island elevation is already higher than normal island elevation. Placement of materials on the island may end up back in the river. This site needs to be coordinated with the beach enhancement plan being developed for the pool.

Site 4-791.3-LM. Wisconsin's or Pierce County's Floodplain Rules or Ordinance may prevent development of this site.

Site 4-793.6-RM. This site should be coordinated with the beach enhancement plan under development for the pool. Because there are not many cottages or areas of cleared land at this site, it is doubtful that the designated material could ever be used in the area. This site is also actively eroding.

Read's Landing:

Site 763.3-LW. Because material can first be stored in the existing bathtub and then pumped to Site 761.0-RM, the DNR does not believe that the expansion of this site by 66 acres is justified.

The discussion of alternatives mentions this site but it is not listed in the table nor is there a description of it. The DNR's annual bald eagle surveys have identified the Reads Landing area, including site 4-762.7(T)-LW and the Highway 35 site as important winter roosting areas. Any expansion of these sites that would involve the loss of large trees or wooded areas used by roosting eagles should be avoided. The U.S. Fish and Wildlife Service should be consulted for Endangered Species Act compliance. Given the importance of this area to wintering eagles, we recommend that the Corps consider discontinuing the use of site 4-762.7 and restoring it to bottomland hardwoods.

Highway 35 Site. This site is within the Nelson-Trevino Bottoms Wilderness Area. It is probably not a very good alternative and is not GREAT site.

Crat's Island:

Site 4-756.5(T)-LW. The existing site is acceptable as an alternative to be reviewed in the EIS, but we would oppose expansion of the site into 9 acres of wetland.

An alternative site that was not reviewed but that the Corps may wish to consider is an upland 90 acre pine plantation

located at river mile 755.5 in Minnesota. This acreage is for sale and could accommodate years of dredging.

Upper Pool 5:

The DNR has identified a winter eagle roost on the Zumbro River near its confluence with the Mississippi River. Again, placement alternatives that involve clearing of trees along the channel should be evaluated for potential impacts to foraging eagles.

The following sites are located in close proximity to known bald eagle nests:

4-756.5-LW (Grand Encampment)
4-757.5-LW (Teepeeota Point)
5-749.0-RM
8-692.6-RM
9-676.5(T)-RM

The EIS should carefully evaluate potential impacts on nesting eagles resulting from the use or expansion of these sites.

Site 5-748.0(T)-RM and Site 5-479.0-RM. The Island 42 Habitat Rehabilitation and Enhancement Project, as well as other environmental restoration projects have been completed or are planned for Island 42. Placement of dredge materials must not encroach or negatively impact completed, on-going, or planned environmental restoration or field tests on the island.

Sites 5-749.8-RM, 5-751.5-LW, 5-751.5A-LW and 5-747.5-LW are all GREAT selected sites, but all are listed as requiring in-water rehandling of dredge materials. We do not understand the need for in-water rehandling.

Pool 5A:

Site 5A-731.8-LW. Use of this site would require extensive filling of wetland acreage. We believe this site should be dropped from further consideration.

Site 5A-737.5-RM. This site is adjacent to the Thorp Wildlife Area and may negatively impact the area by facilitating a proposed campground development.

Site 5A-733.5-LW (Fountain City Service Base). This alternative calls for open water disposal of all materials in the river in order to expand the service base. This is not an alternative we would support.

Pool 7:

Site 7-713.1-RM. The DNR considers the fish storage ponds at the site to be worth preserving.

Upper Pool 8:

Site 8-690.4(T) (Above Brownsville). This alternative includes the filling of 6 acres of side channel aquatic habitat. This is unacceptable to the DNR. We recommend it be deleted from further consideration or modified to exclude expansion into the side channel.

Site 8-692.6-RM. This alternative would bury flood plain forest wetlands. It is also close to Lawrence Lake and a bald eagle nest.

Lower Pool 8:

Site 8.686.8-LW. Through the Pool 8 Island Habitat Rehabitation Enhancement Project (HREP) coarse-grained materials will be dredged from the area near Turtle Island for island construction and the creation of additional deep water fisheries habitat in the area. The use of Turtle Island for dredged material disposal may not be compatible or may negatively impact the HREP fisheries deepwater habitat.

If you have questions regarding our comments or if you require additional information from the DNR, please contact Cheryl Heide from my staff at 296-9228.

Sincerely,

Thomas W. Balcom

Thomas W. Balcom, Supervisor
Natural Resources Planning and Review Services

Attachment

c. Bill Johnson
Karen Bowen
Steve Colvin
Tom Lutgen
Bonita Eliason
Steve Johnson
Lynn Lewis--U.S. Fish and Wildlife Service

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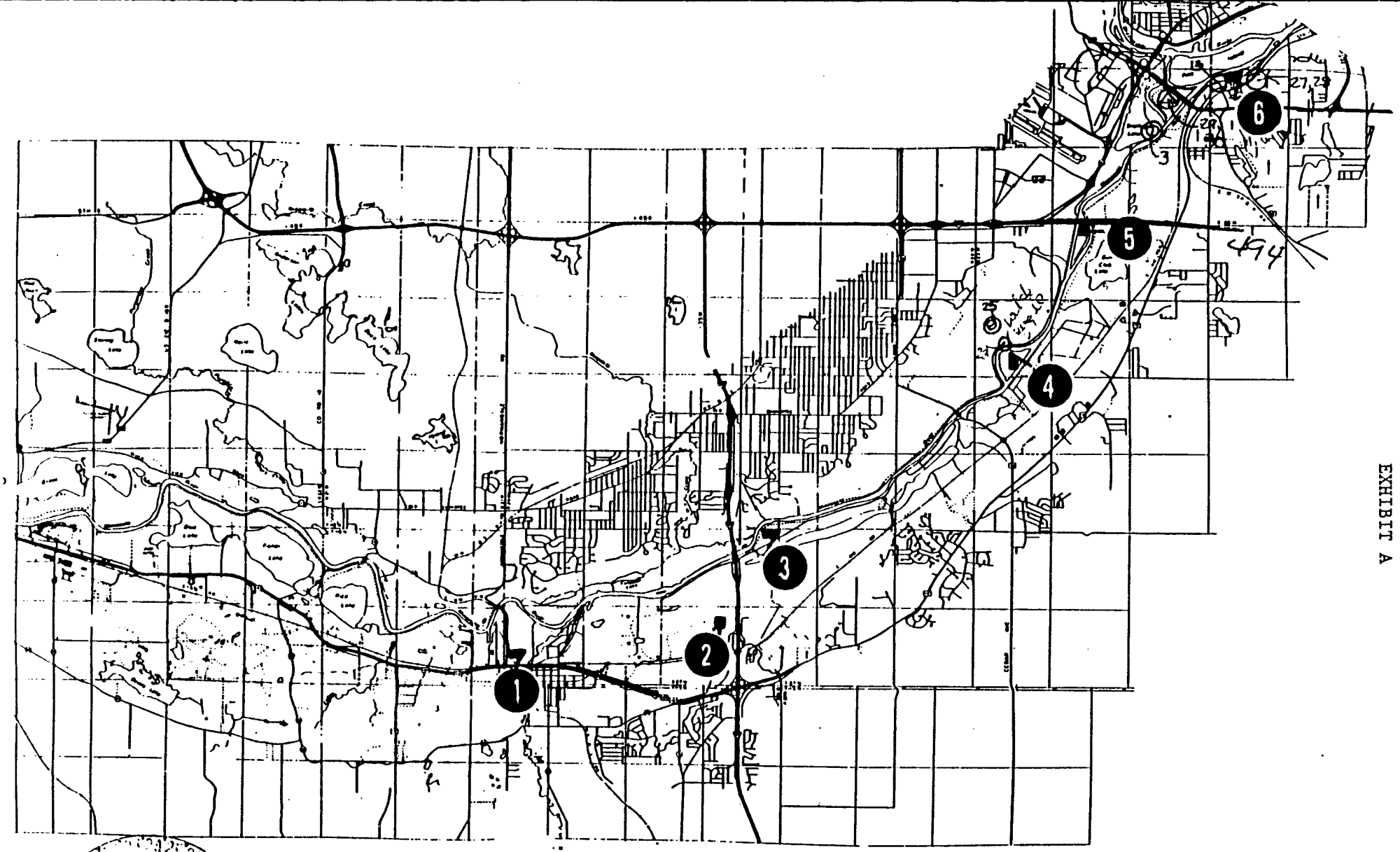

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NOV 1990

Lower Minnesota River Watershed District

WARRIOR OFFICE BUILDING
BURNSVILLE MINNESOTA 55378

fig. 1

DREDGE SITES

EXHIBIT A

United States Department of the Interior

FISH AND WILDLIFE SERVICE

TWIN CITIES FIELD OFFICE
4101 East 80th Street
Bloomington, Minnesota 55425-1665

TAKE PRIDE IN AMERICA

IN REPLY REFER TO:

FWS/AFWE-TCFO

JUL 09 1991

Mr. Robert J. Whiting
Chief, Environmental Resources Branch
Planning Division
St. Paul District, Corps of Engineers
1421 U.S. Post Office & Customs House
St. Paul, Minnesota 55101-1479

Dear Mr. Whiting:

This replies to your May 16, 1991, letter requesting U.S. Fish and Wildlife Service (Service) comments on dredged material placement sites to be addressed in the draft Environmental Impact Statement (EIS) for the Channel Maintenance Management Plan on the Upper Mississippi River.

The Service supports the St. Paul District's efforts to essentially update the original Channel Maintenance Plan (CMP). There have been many changes along the River since the CMP was prepared. Several dredged material placement sites under private ownership have been filled, developed, or otherwise altered so that they are no longer available for use. This illustrates an important concern in providing for long-term disposal sites on the River, especially in regards to beneficial use of material. Attention must be given to critical disposal sites which are privately owned to provide for long-term use. This issue and possible solutions should be addressed in the EIS.

The following Service comments are somewhat general in nature and reflect this early stage of EIS scoping in identifying alternative placement sites. Site-specific comments will be provided to the District at a later stage of planning. Once dredged material placement sites have been selected for evaluation in the EIS, we recommend the District consider conducting a field review of these sites with agency personnel. This will facilitate agency review and comment on specific placement sites, especially for state and federal field personnel who are relatively new to the River.

1. St. Anthony Falls Pool

   The proposed alternative plans are acceptable for evaluation.

Pool 1

The proposed alternative plans are acceptable for evaluation.

Minnesota River

Site MN-13.5-RM (MN. 03) (Cargill) is in an area that includes wetlands. The impact to these wetlands should be evaluated.

Site MN-4.5-RM (MN.28) is currently owned by the Service as part of the Minnesota Valley National Wildlife Refuge. Plans are being developed to trade this island for an island upstream that is currently owned by the State of Minnesota. The island currently under Service ownership is to become part of Fort Snelling State Park. This island is vegetated with trees and shrubs and is reverting to floodplain forest. The impact of dredged material on the vegetation of this island and the issues of State Park/Refuge purposes needs to be evaluated in the EIS.

Site MN-14.8-RM (Continental Grain) is currently an agricultural field which borders on the Rice Lake unit of the Refuge. The Service has submitted plans to include this area within the refuge boundary and purchase the property. It is likely that the area would be managed as a floodplain forest restoration, but unit development plans are not finalized for this area. If the purchase is successfully pursued, the use of this site for dredged material may be inconsistent with refuge objectives.

Site MN-12.1-RM (Kraemer Site) is an existing dredged material placement site located across the River from open space currently owned by the City of Bloomington which is part of the Minnesota Valley Wildlife Recreation Area. The Service has plans to acquire these lands. The aesthetic impact of a dredged material placement site located across the River from a high-use natural area should be evaluated in the EIS.

Site MN-10.1-RM (NSP Site) is located adjacent to the Black Dog Unit of the Refuge. The Service would like to expand our lease with Northern States Power to include the proposed disposal site. In addition, the site contains a two-acre palustrine emergent wetland. If the site is included within the Refuge, the use of the area for dredged material placement may be inconsistent with refuge objectives.

Upper Pool 2

We have no additional sites to recommend for the evaluation. However, it is unlikely that the Service would support development of Site 2-837.5-RM involving conversion of river habitat to fast land. This reach of the River is already constricted due to its location on a sharp bend. While we support the concept of beneficial use of dredged material, filling this area for commercial development purposes may conflict with Section 404(b)(1) guidelines.

Lower Pool 2

Lower Pool 2 continues to be a challenge in terms of securing long-term placement sites. While the Spring Lake Habitat Rehabilitation Project has been proposed as a combined channel maintenance/habitat project, recent discussions with District staff indicate that this project may not be feasible due to flood stage impacts.

There are several sand and gravel mining operations (Shiely Sand and Gravel Co.) in lower Pool 2. We recommend that the District evaluate use of these operations for long-term disposal of dredged material. While some dredge cuts may be of some distance to these sites, they would be closer than transporting material to Site 2-832.5-LM.

St. Croix River

The Service has no objection to the evaluation of dredged material placement alternatives identified, including the new Alternative B referenced in the District's May 24, 1991, memorandum.

Upper Pool 3

We have no additional placement sites to recommend for evaluation in the EIS.

Lower Pool 3

Like Lower Pool 2, this reach of the River lacks long-term disposal sites which are currently owned or otherwise controlled by the Corps of Engineers. We are hopeful that the District can secure appropriate placement sites currently located on private property to provide long-term capacity. We have no additional sites to recommend.

Upper Pool 4

We have no additional placement sites to recommend for evaluation in the EIS.

Lower Pool 4

We have no additional placement sites to recommend for Lower Pool 4. However, the Service is concerned with proposed expansion at Site 4.763.3-LW since it involves approximately 66 acres adjacent to the Nelson-Trevino Scientific and Natural Area.

Pools 5, 5A and 6

We have no additional placement sites to recommend for these pools. However, with respect to Site 5A-734.5 (T)-LW, is the River Mile designation correct? The designation on the Land Use Allocation Plan appears to be 733.7.

Pool 7

We have no additional placement sites to recommend for evaluation in the EIS.

Pool 8

Site 8-694.7-LW. The Service and State of Wisconsin are proposing a new Environmental Management Program (EMP) project involving the Running Slough/Sand Slough area. Plans developed for use of this placement site should be consistent with the EMP project objectives to control erosion and sedimentation in the Goose Island Complex.

Site 8-686.8-LW (Turtle Island). The Service is concerned with using this island for dredged material placement. The island is currently used by nesting waterfowl. A research project is underway to monitor waterfowl nesting activity and study the effects of predator control. Dredged material placement may promote additional public use on the island and conflict with nesting activity.

Pool 9

We have no additional placement sites to recommend for evaluation in the EIS.

Pool 10

The Service recommends the District evaluate establishment of a

beneficial use site near Gordon's Bay due to its proximity to Highway 35. We also continue to recommend close cooperation between the District and the Esmann Island Association for continued use of Site 10-618.8-RI. This site is a critical disposal area for this reach of Pool 10 and is important for beneficial use of dredged material.

Endangered Species Act

The project area is located within the range of the Federally endangered Higgins' eye pearly mussel (Lampsilis higginsi), endangered Peregrine falcon (Falco peregrinus), and the Bald eagle (Haliaeetus leucocephalus) which is classified as threatened in Minnesota and Wisconsin, and endangered in Iowa. The District should evaluate project-related impacts to these species and provide this information in the draft EIS. In addition to the above referenced Federally listed species, we recommend the District also contact the Wisconsin, Minnesota and Iowa Departments of Natural Resources concerning the presence of any State listed species within the project area.

These comments have been prepared under the authority of the Fish and Wildlife Coordination Act (16 U.S.C. 661 et seq.), the National Environmental Policy Act of 1969 (42 U.S.C. 4321-4327), the Endangered Species Act of 173, (16 U.S.C. 1531-1543), as amended, and the U.S. Fish and Wildlife Service's Mitigation Policy. Please contact Mr. Gary Wege at 725-3548 if you have any questions concerning these comments.

Sincerely,

Lynn M. Lewis

Lynn M. Lewis
Field Supervisor

cc: Minnesota Department of Natural Resources, St. Paul, MN
Minnesota Department of Natural Resources, Lake City, MN
Minnesota Pollution Control Agency, St. Paul, MN
Wisconsin Department of Natural Resources, Madison, WI
Wisconsin Department of Natural Resources, LaCrosse, WI
Iowa Department of Natural Resources, Des Moines, IA
Iowa Department of Natural Resources, Guttenberg, IA
Minnesota/Wisconsin Boundary Area Commission

Comments and Responses to March, 1995
Channel Maintenance Management Plan
Corps of Engineers, St. Paul District

General Comments

Iowa Department of Natural Resources letter dated June 5, 1995.

IDNR 1: Temporary sites should be off-loaded when no longer needed. All dredged material and berms should be removed and area restored to original condition.
Response: We agree in concept to restoring these sites if it is determined that they are no longer needed. It is something that would have to be addressed in future planning for that particular location, i.e. where will the material be transferred to, how should the site be restored, etc. Section 6.3.2 is being changed to include a discussion of what measures will be considered if a transfer site is no longer needed.

IDNR 2: Generally opposed to permanent sites on islands without access for removal. Should maintain the potential to unload these sites.
Response: We agree, and as stated in 6.3.6 it is one of our major objectives to place the material at locations where it can be used productively. We believe that our dredged material placement planning has been very successful in selecting non-island sites where land access is available. We are open to any beneficial use removal of material from island sites both temporary and permanent. At this time we are considering options for advertising the availability of this material and where justified, subsidizing the removal cost.

IDNR 3: Definition of aquatic resources in the Mitigation Policy is too narrow. All aquatic resources should be protected under the policy.
Response: Agree. From the standpoint of 404 and the mitigation policy, both aquatic areas and wetlands are covered. We will use the term aquatic resources but not include a definition for it.

IDNR 4: If thalweg placement becomes an option, the standard elutriate test must be used rather than the modified procedures.
Response: Concur. Either the modified or standard elutriate would be used, depending on what type of disposal operation is trying to be simulated.

IDNR 5: Placement site dimensions and descriptions need to be defined, surveyed, and agreed upon for each site.
Response: That information is contained on the placement site maps and information sheets.

Fish and Wildlife Service letter dated May 5, 1995.

FWS 1: Section 4.5 - The Upper Miss R. Refuge is briefly mentioned in the CMMP and the Minnesota Valley Refuge is not referenced. Channel maintenance activities and their associated effects on these national wildlife refuges should be included in the CMMP and EIS.
Response: That section will be expanded to include a reference to the Minnesota Valley Refuge and the need to address the effects on these refuges. The EIS will address the effects of the channel maintenance activities.

FWS 2: Section 4.7 - Comments with respect to endangered species have been provided for use in the CMMP/EIS.
Response: Thank you for that information.

FWS 3: Section 4.0 & App A, Section 3.0 - No reference to specific state legislation. How does the Minnesota Wetland Conservation Act or other state statutes affect channel maintenance operations?
Response: We do not believe it is appropriate to include specific state legislation in this document as it varies greatly from state to state. We have recognized that the United States has waived its sovereign immunity by virtue of the Clean Water Act and is required to obtain state permits or water quality certification for some placement operations.

FWS 4: Appendix A, Sections 4.21 & 4.22 - Confusion exists on designation of placement sites in Appendix A. Suggest having the RRF endorse all sites and eliminate the GREAT I reference. There should be only two classifications: RRF approved sites (permanent and temporary) and new sites not yet endorsed by the RRF.
Response: Those sites should be included in the CMMP and if the RRF endorses the plan the reference can be eliminated. Ultimately it depends on the state regulatory agency to approve the site if use of it comes under their jurisdiction.

FWS 5: Appendix B - Mitigation policy comments have been provided under separate cover.
Response: Comments have been received and incorporated into the August, 1995 version of the policy.

FWS 6: Appendix C - Support WDNR comments 7 thru 10.
Response: See response to WDNR comments 7 thru 10.

FWS 7: Appendix D - Continue to use revised matrix for evaluating new dredged material placement sites.
Response: We agree that the matrix should continue to be used and refined as necessary to compare alternative plans. It is a helpful tool but is not the complete answer to selecting long term placement sites.

FWS 8a: Part III - It is very important to delineate placement site boundaries on good aerial photo based maps.
Response: We agree and have been preparing placement site maps and information sheets.

FWS 8b: Part III - Need uniform definitions for temporary and permanent sites, historical evidence concerning past approval and need to resolve the mitigation policy.
Response: We agree with uniform definitions of temporary and permanent sites. We believe that this document will eliminate much of the confusion that presently exists concerning placement sites and that the mitigation policy will be helpful in future planning.

FWS 9: Support having an interagency workshop and suggest agenda items and format.
Response: Your comments and ideas have been very helpful in developing the CMMP site data and preparing for the workshop.

Minnesota Department of Natural Resources letter dated April 17, 1995.

MDNR 1: Scoping should have been reopened due to changes since the process was accomplished, including the initiation of the navigation study. Preparation of an EIS on only channel maintenance for the St. Paul District is an unacceptable fragmentation of the NEPA process.
Response: We disagree. We believe that the scope of the EIS is appropriate in addressing the effects of the CMMP and that it satisfies NEPA requirements.

MDNR 2: Section 3.0 - Objectives should include minimizing the amount of material entering the system and maximizing the amount of material removed for beneficial use.
Response: Section 3.0 states our objectives for the document and the planning process. Section 6.3.6 states our objective for beneficial use of the material and section 7.0 states our objectives for minimizing the amount of material dredged.

MDNR 3: Section 3.1- Does not mention the need to obtain RRF endorsement for revisions to the CMMP.
Response: The RRF is an interagency advisory group. We do not consider RRF endorsement a requirement for revising the CMMP. As indicated in the referenced section we will coordinate changes with the RRF. If necessary we will then obtain the appropriate regulatory approval.

MDNR 4: Section 4.2 - What existing EIS will be supplemented with the CMMP EIS? Support supplementing the 1974.
Response: The statement will be changed to clarify the relationship of the EIS.

MDNR 5: Section 4.3 - Delete the last portion of the sentence and revise as recommended.
Response: This statement is based on our headquarters guidance and reflects the Corps of Engineers nationwide position. We will delete "and without overly burdensome permit conditions", however it still remains a part of our official agency position.

MDNR 6: Section 6.1 - MDNR needs copies of the previously endorsed reconnaissance reports.
Response: Multiple copies of those reports have been previously furnished to your agency during

the interagency review process. The MDNR participated in this process through the CMF/RRF and supported the plans that were developed. The CMMP consolidates results of the previous planning and describes the background and parameters of the individual placement sites. This information will be reviewed in the workshop and the previous reports will be available for review. At this time we have no extra copies of the reconnaissance reports. Collectively they are large and would require a significant effort to reproduce in their entirety. If it is determined through the workshop process that portions of the individual reports are needed we will attempt to accommodate your request.

MDNR 7: Section 6.3.2 - Discussion of temporary placement should be consistent with the MDNR permit and MOU language.
Response: We anticipate further discussion of temporary sites at the interagency workshop. We will consider any suggestions for specific changes that would assure consistency between the documents. See response to MDNR 13.

MDNR 8: Section 6.3.4 - Should include a commitment to placing topsoil and revegetating permanent sites after they have been filled. Impacts of placement on bottomland sites is not fully addressed.
Response: We agree with the concept of placing topsoil and revegetating sites no longer needed or even restoring through excavation. We do not believe that it is appropriate to make a binding commitment to these future measures at this time because of the many related variables and unknowns.

MDNR 9: Section 6.4 - There are significant environmental impacts associated with thalweg placement and Minnesota does not allow it.
Response: We believe that our position is well stated in this section.

MDNR 10: Section 6.5 - Concur with level of detail on recreational beach discussion. Beach plans are to focus on beach maintenance activities and not be alternative placement sites. Process needs to be flexible. Conditions change and preapproved sites may become unacceptable.
Response: We agree with your statements. We also believe that recreational beach opportunities need to be adequately considered and plans developed that are implementable within the legal and operational restrictions and limitations that exist.

MDNR 11: Section 6.5 - Recommended wording changes to the discussion of recreational beach plan implementation.
Response: The suggested wording changes are basically acceptable, however the RRF endorses the sites and the approval if necessary would come from the appropriate regulatory agency.

MDNR 12: Section 7.6 - Forum endorsement is necessary for channel control structure projects.
Response: RRF endorsement of a proposed project is highly desired but the Corps does not recognize it as a requirement. It is recognized that it may be linked with a state's regulatory approval process to simplify procedures and we support that approach.

MDNR 13: Section 10.1 - Language concerning OSIT needs review for consistency with Mn permit/MOU.
Response: We have attempted to make the CMMP generic in nature so that it applies to all agencies and situations without conflicting or contradicting agreements that we have with individual agencies. We are open to considering any specific suggestions to make the documents consistent provided it would not create a conflict somewhere else.

MDNR 14: Section 10.4 - Reference to "us" should perhaps be changed to "District".
Response: We agree, it will be changed.

MDNR 15: App A, Section 1.2 - Info needs to be provided by May 1 each year.
Response: Yes our agreement with MDNR is to provide that information by May 1.

MDNR 16: App A, Section 2.1 - No mention of site evaluation procedures from App D.
Response: This section will be changed to reference the evaluation procedures outlined in section 6.1 of the main document and Appendix D.

MDNR 17: App A, Section 2.2 - Same as MDNR 13.
Response: See response to MDNR 13.

MDNR 18: App A, Section 3.21 - Review text with Mn permit/MOU. Change designated to endorsed.
Response: We agree, "designated" will be changed to endorsed. See MDNR 13.

MDNR 19: App A, Section 3.3 - Replace designated with endorsed.
Response: Agree.

MDNR 20: App A, Section 4.2 - Replace recommended with endorsed.
Response: The term "recommended" is appropriate in this context, however "endorsed" would also work.

MDNR 21: App A, Section 4.22 - There should be an explanation that approved sites are those approved through GREAT or a subsequent Forum approval and new sites are any other sites in the context of this section.
Response: We believe that this explanation already is in Section 4.21, which discusses sites that have been endorsed or "recommended" by the RRF or the GREAT study. The first sentence in section 4.22 indicates that new sites are those not endorsed or "recommended". We will change the term recommended to endorsed for clarification purposes and consistency.

MDNR 22: App A, Section 4.4 - Emergency dredging language needs to reviewed for consistency with Mn permit/MOU.
Response: Ideally it is desirable to work with one consistent definition for emergency dredging with all agencies. At this time there are some slight differences between our agreements with

agencies. The first sentence acknowledges that differences exist. The definition presented in this section is intended to describe the general intent and the common procedures. We are actually bound by our individual agreements with the appropriate regulatory agency. We are open to consideration of any suggested specific changes.

MDNR 23: App A, Section 5.3 - List of information needs to be reviewed for consistency with Mn permit/MOU.
Response: We are open to specific suggestions.

MDNR 24: App A, Exhibit D - Needs review for consistency with Mn permit/MOU.
Response: See response to MDNR 13.

MDNR 25: Appendix B - Comments on mitigation policy are being provided under separate cover. The final policy should become part of the final CMMP.
Response: We have received your comments and incorporated them into the mitigation policy. The final policy will be included in the CMMP.

MDNR 26: Appendix C - There is a disparity between agencies reporting sediment data for the same river reaches. Sampling dates should be reported for metals data. It would be helpful to report the sediment concentration guidelines with the data. MPCA should review closer.
Response: The data has been screened to some extent and clearly bad data has been excluded from the tables. However, users of the data base should be cautioned that there are disparities between the years and different analytical laboratories, especially for the chlorinated hydrocarbon. In general, we do feel that we need to achieve better and more consistent results from our analytical laboratories, especially regarding chlorinated hydrocarbons.

There is no set numerical quality criteria or standards for sediment quality. A couple of different attempts to set sediment quality guidelines for the Great Lakes and a statistical summary of backwater sediments are provided to assist reviewers in interpreting the sediment quality data base. We are reluctant to add these to the actual data tables, because 1. we don't know which of the numerical guidelines to use and 2. we feel that by incorporating them in the tables it would provide more credence in these numbers than was intended; they were only included to provide the reviewer some degree of perspective.

The format for the sediment data tables has been revised, to provide greater clarification.

MDNR 27: Appendix D - It is clear how Relative Habitat Units are converted to Index Values.
Response: Noted.

MDNR 28: Part III, Tab 1 - The table of placement sites by dredge cuts can only be checked once the information sheets have been thoroughly reviewed.
Response: Please provide us any comments after you have completed your review.

MDNR 29: Part III, Tab 3 - List of sites cannot be completely checked for accuracy without all 15 of the endorsed reports. Colville Park is an example of a site not endorsed.

Response: See response to MDNR 6. RRF endorsement is desired but not necessarily a requirement to use a site. Approval to use a site comes through the state regulatory process. The Colville Park site is above the ordinary high water mark and placement is mechanically. Our position is that state approval is not required to use the site.

MDNR 30: Part III, Tab 3 - Include a space for checking whether a site has not been endorsed by the RRF. All conditions for approval should be explicitly listed.
Response: We do not see the value of adding another space for noting that a site has not been endorsed. If the site has not been endorsed the space will not be checked and the background for the site will be described in the remarks section. We have tried to list any relevant conditions on the information sheets.

MDNR 31: Part III, Tab 3 - Record of Dredged Material Placement table should be updated for 1994 and the original and remaining capacity columns completed.
Response: This table will be updated when the next version goes out. It should be recognized that the stated capacities are estimates based on the best information that we have available. The real capacity will be determined through actual practices, both dredge material placement operations and beneficial use removal.

MDNR 32: Part III, Tab 3 - Record of Beneficial Use table needs more explanation regarding what the Corps considers ben use and the definitions for the categories should be provided. Perhaps Forum should agree on a single definition of beneficial use.
Response: We agree that the category definitions should be included with the beneficial use table in Tab 3. In general the District credits beneficial use at any location where it is obviously used productively or the potential exists for it to be used. The recreational beneficial use indicated is based on the results of OSIT review and acknowledgement that the material as placed would provide recreational benefits.

MDNR 33: Part III, Tab 5 - Placement site classifications should include floodway and flood fringe to differentiate those sites from true upland sites.
Response: We do not see a need or value for further categorization of the sites. We will conduct a floodplain impact analysis of all sites in the plan and will add a discussion of that analysis.

MDNR 34: Part III, Tab 6 - There are numerous OSIT meetings needed that are not explicitly listed in the plan.
Response: We acknowledge that this list may not be all inclusive.

MDNR 35: Part III, Tab 7 - Interagency coordination may need to be explained with greater specificity. Example - Diamond Island has not been coordinated and Forum endorsement could not occur before August 1995.
Response: The Diamond Island work has been suspended for 1995 because the scope has not been finalized and other work has taken precedent. This project involves repair of existing shoreline protection. It is not something that requires RRF endorsement. If it would have been

pursued this year, a notice would have been issued to the OSIT. If a State permit is appropriate that action would also be pursued. Coordination procedures are described at other locations in the document.

MDNR 36: Part III, Tabs 10-21 - Understand that the final CMMP will include current aerial photos and maps.
Response: The final CMMP will have better site maps and information sheets.

Wisconsin Department of Natural Resources letter dated April 5, 1995.

WDNR 1: Section 6.3.2 - Description of temporary sites should be changed back to November 1994 version and not the one contained in the March 1995 report.
Response: The new version is based on discussions with the WDNR and the need to clarify our position relative to removal of material.

WDNR 2: Section 6.3.2 - Four categories of temporary site should be defined - Interim, Emergency, Undefined, and Inwater Rehandling. Recommended definitions are provided.
Response: Your recommendations have merit and should be discussed at the workshop. We will defer our response until that discussion takes place.

WDNR 3: Section 6.4 - Wisconsin does not approve thalweg placement. A number of supporting reasons are provided
Response: We believe that our position is well stated in this section. We need to remain open to new information and technology as it is developed. We see no value in arguing the merits or effects of thalweg placement on a general basis. It needs to be evaluated site specifically. For the record we believe that it is important to clarify several statements made in the WDNR letter which include assumptions and generalizations. The first paragraph states that dredging practices are continually destroying riverine habitats. Our studies and experience indicate that the areas where dredging occurs are very dynamic and subject to constant change due to natural sedimentation and scouring. It is hard to believe that dredging these areas is destroying them. During the WID study the area of environmental concern was not in the predicted impact zone and results of the study indicated that capability to predict the impact zone was very high. Paragraph 3 makes an assumption on how the material would be introduced into the thalweg. Equipment, methods and practices can be used to alleviate the concern of introducing a slug of material back into the system. The Corps is likewise concerned about the fate of the material and the concerns expressed in paragraph 4 are addressed in Section 6.4. The final paragraph makes a comparison of the economics of thalweg vs traditional placement. That is an inappropriate comparison. The actual comparison would be made against other available alternatives and would include all of the evaluation criteria (environmental, economic, cultural, social) that have been established.

WDNR 4: App A, Section 4.4 - The new language in the last paragraph is considered to be correct with the removal of the words "consideration of".

Response: Within the 30 day period following an emergency situation it will not always be possible to determine what specific follow up action should be accomplished. The statement as written does not diminish the District's commitment to rectifying the effects of an emergency action. We anticipate developing the follow-up plan in consultation with the other resource agencies.

WDNR 5: Appendix B - Mitigation policy comments will be furnished separately.
Response: We have received your comments on the mitigation policy and incorporated them into the latest version.

WDNR 6: Past mitigation work needs to be verified.
Response: We need more specific information to fully address this request. The Reads Landing situation was rectified in 1980. An on-site inspection team meeting was held to coordinate this work and develop a plan of action. WDNR representatives participated in this process. The work was accomplished that year and reported in our 1980 season summary which your agency received a copy.

WDNR 7: App C, Table 1 - A footnote indicating that the numbers may change with new data should be added. The table should be divided into two segments - pools 1-4 and pools 5-10.
Response: Concur. The table has been modified to reflect the two proposed changes.

WDNR 8: App C, Table 2 - It is essential to include information about acid volatile sulfides in table 2 if it will be used as a method to determine metal uptake availability.
Response: There is controversy in the scientific community on the usefulness of AVS for assessing the potential for metal uptake and therefore, is not being proposed for use on the Upper Mississippi River. However, if the agencies feel strongly that AVS should be analyzed on a routine basis as another tool to assist in the interpretation of the bulk metals data, we would have no problem adding it to the standard list, if you could provide an acceptable analytical citation.

WDNR 9: App C, Table 2 - What is meant by the first footnote?
Response: Thank you, the footnote has no relevancy to table 2 and has been removed.

WDNR 10: App C, Section 4.4 - How does the TBP model factor in differing partitioning coefficients for different organic compounds? Lake Pepin PCB data shows TBP to be high by a factor of 2 to 3 times - How does this compare with other systems?
Response: Most work that we have seen has focused on PCB's. However, theoretically all non-polar organics should behave in a similar fashion. The TBP is intended to be a worst case screening tool to determine if bioaccumulation studies are warranted and therefore was designed to be conservative, over predicting the bioaccumulation potential. Your observations on the Lake Pepin PCB data is consistent with what we have heard from other Corps Districts. If you feel that we have enough information to refine the predictive equation to more accurately predict the bioaccumulation potential on the Upper Mississippi River, we would welcome and adopt any proposed changes you may have to the equation.

WDNR 11: Appendix D - Further comments on this appendix may be provided after problems with the pools 3 and 10 reports are rectified.
Response: Noted.

WDNR 12: Part III - This is a valuable section of the plan. Need to have good information and maps.
Response: We agree.

WDNR 13: Part III, Tabs 10-21 - Include all the site history on the information sheets. Note any conditions or controversy with site selection.
Response: We agree with your comments and have attempted to include this information.

WDNR 14: Part III - Site sheets for temp sites should indicate the permanent site that material will be transferred to and also the capacity of the permanent site.
Response: The placement site by dredging location table in Tab 1 has the temporary sites listed and the permanent site. The capacities of all the sites is available in Tab 3. The information sheets contain some of this infomation also. We recommend a closer review of this at the workshop.

WDNR 15: Part III - Site sheets should include the date the MOU was signed for a site.
Response: We would like to discuss this request further.

WDNR 16: Part III - Support use of high quality aerial photo based site maps. Will not endorse CMMP until new maps are reviewed and approved.
Response: New maps have been developed as we have indicated from the start of this process.

MINNESOTA-WISCONSIN BOUNDARY AREA COMMISSION
619 SECOND STREET, HUDSON, WISCONSIN 54016-1576
Serving Our Sponsor States on the St. Croix and Mississippi Rivers since 1965
nesota Telephone
(612) 436-7131
Wisconsin Telephone
(715) 386-9444
Office Hours: 8 A.M. - 5 P.M. Monday-Friday
FAX (715) 386-9571

REPORT ON PUBLIC MEETINGS FOR THE CHANNEL MAINTENANCE MANAGEMENT PLAN OF THE CORPS OF ENGINEERS, ST. PAUL DISTRICT October, 1995

Prepared by the Minnesota-Wisconsin Boundary Area Commission

This report is presented in response to a request for assistance on this project, as described herein. Information provided for use in this report by Dan Krumholz, Steve Tapp and Shelley Shafer of the Corps of Engineers St. Paul District Mississippi River Project Office is acknowledged with appreciation.

1. INTRODUCTION

In order to carry out its mission of providing a safe, reliable 9-foot commercial navigation channel on the Upper Mississippi River and segments of several of its tributary rivers, the U. S. Army Corps of Engineers St. Paul District has been using a channel maintenance plan formulated in the period from 1974 through 1980. This plan, which was a product of a large-scale study by several federal and state agencies acting in concert as the "Great River Environmental Action Team" (GREAT), established locations for placement of dredged material from channel maintenance work done by or for the Corps throughout the navigable river system in the District.

Over the years, the Corps has coordinated implementation plans for the channel maintenance program with the other river managing agencies through the interagency successor to the GREAT Team, now called the River Resources Forum. Many changes have been made through this mechanism to the original GREAT Channel Maintenance Plan, and the Corps also conducts its dredging and material placement activities under bi-lateral agreements or permits with the States of Iowa, Minnesota and Wisconsin.

Now, the Corps has consolidated the incremental decisions that have been agreed to in and subsequent to the GREAT Study, and updated the plan to reflect new Federal laws, Corps regulations and public attitudes and concerns about the river system. This new guidance mechanism is called "The Channel Maintenance Management Plan," or "CMMP". The overall schedule for its preparation and adoption, as proposed by the Corps, is shown on the following page of this report.

CMMP Status & Schedule

November, 1994	Preliminary Draft CMMP was released.
March, 1995	Draft CMMP released. Comment letters received from: Wisconsin DNR - April 5, 1995 Minnesota DNR - April 17, 1995 Fish & Wildlife Service - May 5, 1995 Iowa DNR - June 5, 1995 L.St.Croix Mgt Commission - Nov. 29, 1995
Sep/Oct, 1995	CMMP Interagency 3-Day Workshop.
October, 1995	CMMP Public Meetings at Prescott, Winona and Lansing.
April, 1996	Final Draft CMMP and Draft EIS released.
September, 1996	Final EIS released.
November, 1996	Record of Decision signed and Final CMMP released.

2. REQUEST FOR ASSISTANCE OF THE MINNESOTA-WISCONSIN BOUNDARY AREA COMMISSION

The original GREAT I Study process included a very active public involvement program to provide knowledgeable input and recommendations to the new interagency partnership group that was formed to create the precedent-setting cooperative channel maintenance plan. Because of its citizen membership and its charge to assist in coordinating management programs and policies on the Mississippi and St. Croix Rivers, the Minnesota-Wisconsin Boundary Area Commission (MWBAC) was instrumental in fostering and moderating the early GREAT I Public Town Meetings and the subsequent formation of a formal Public Involvement Work Group. Its work was coordinated by the consulting firm of Dan McGuiness & Associates under contract by the Corps St. Paul District. (Dan McGuiness is now the Administrative Director of the MWBAC.)

The current CMMP process to update the 1980 Plan again involved the MWBAC as a public participation facilitator. The River Resources Forum, of which the MWBAC is an ex-officio member, asked the agency to provide support services for three CMMP Public Meetings to be held in October of 1995. Under the leadership of Dan Krumholz, Chief of the Waterways Section of the Corps St. Paul District Mississippi River Project, an agreement was reached with the MWBAC for its assistance. This involved participation in the initial interagency workshops on the Draft CMMP; aiding in planning, announcing and publicizing the three CMMP Public Meetings; serving as moderator of the meetings; and assisting with documentation of the meeting results. The MWBAC accepted and approved the recommendation of its Mississippi River Regional Committee for this arrangement in August of 1995. MWBAC Public Affairs Director Jim Harrison, who was a member of the original GREAT I Team, was assigned to the project. Shelley Shafer of the Corps staff was detailed to coordinate the meeting arrangements and materials.

3. MEETING PLANNING PROCESS

The following people from River Resources Forum member organizations met in Red Wing, Minnesota, on August 21, 1995 to develop plans for scheduling, publicizing and conducting the three CMMP Public Meetings:

Corps of Engineers - Dan Krumholz, Steve Tapp and Shelley Shafer
Minnesota DNR - Steve Johnson
MN-WI Boundary Area Commission - Jim Harrison
Wisconsin DNR - Gretchen Benjamin

It was agreed that there would be one evening meeting in each of the three States affected by the CMMP, as follows:

Monday, October 23 - Prescott, Wisconsin
Wednesday, October 25 - Winona, Minnesota
Thursday, October 26 - Lansing, Iowa

Each principal River Resources Forum member agency was slated to be involved in the open house format with several stations in each meeting hall for attendees to visit with Forum representatives about particular dredging and material placement sites in nearby river navigation pools. A one-hour period was set aside for an interagency panel to present an overview of the CMMP proposal, including the results of implementing the original cooperative channel maintenance plan since 1980. This part of the meeting, moderated by the MWBAC, would also allow for public input or inquiries on general CMMP features and strategies.

The planning group also agreed on a collaborative MWBAC-Corps process for issuing meeting announcements and advance publicity (described in Section 5), and on the nature of maps and written materials to be provided to the attending public (described in Section 6).

4. INTERAGENCY CMMP WORKSHOPS

In order to come to the CMMP Public Meetings with as much of a consensus as possible on CMMP proposals, the Corps hosted three interagency workshops at its Mississippi River Project Headquarters in Fountain City, Wisconsin, on September 29, October 2 and October 6, 1995. While substantial agreement was reached on many points that had been raised by other agencies on Corps CMMP proposals, there were some unresolved issues remaining when the Public Meetings were held. Where it seemed appropriate in the context of a meeting, such issues were openly discussed.

5. MEETING ANNOUNCEMENTS AND ADVANCE PUBLICITY

In accordance with the plans agreed to on August 21, the MWBAC issued a public announcement of the three CMMP Public Meetings. It was reviewed and approved by representatives attending the September 29 interagency workshop and mailed the same day as part of the MWBAC mailing of its own meeting minutes and notices to its service area. This included about 300 recipients ranging from State Governors and Legislators and agencies to local officials, news media, businesses and interested citizen groups and individuals.

A news release publicizing the meetings was drafted by Jim Harrison of the MWBAC staff and provided to Corps St. Paul District Public Information Chief Ken Gardner who, in turn, edited and issued it to media outlets in the river region on October 6, 1995. Follow-up contacts were made with key media personnel by Harrison and Commissioner Robin Grawe, MWBAC Chair from Winona.

Copies of the announcement and the news release are provided in Appendix A of this report.

6. CONDUCT AND RESULTS OF CMMP PUBLIC MEETINGS

The three meetings were held as scheduled and announced. The Corps provided excellent displays and ample supplies of the following materials for distribution to the public:

- an Executive Summary of the CMMP, including historical perspectives on channel maintenance and cooperative river management activities;

- maps of each navigation pool with depictions of historic dredging locations and existing or proposed dredge material placement sites; and

- comment forms for written public comments and recommendations on the proposed CMMP.

Copies of these materials are provided in Appendix B of this report.

The following summaries of each of the three meetings include a general statement by Jim Harrison as the moderator, followed by a list of specific comments recorded by Corps of Engineers staff from one-on-one consultations with attendees or from statements made in the meeting itself.

Monday, October 23 - Prescott, Wisconsin

Participation: Agency Representatives - 20; Agency Representative Spouses - 2; News Reporters - 1; General Public - 4.

The format was very conducive to the meeting purpose. The first threat of bad winter weather occurred that day and evening. The slide show by Dan Krumholz of the Corps for the formal CMMP presentation was very informative and showed very positive results from the last 15 to 20 years of cooperative effort, emphasizing the multi-purpose values of the river. The discussion, limited though it was, centered around reduction of material entering the navigation channel that required dredging by applying upland soil erosion control measures. The subject was responded to by several agency personnel from the Corps and Minnesota and Wisconsin DNR's. The moderator encouraged people to take literature and comment sheets with them to share with others for broader public participation and information.

Public Comments:

- Fill in openings on the upper end of Spring Lake to stop sedimentation in the lake. Filling in the upper portion would prevent water and material from flowing into Spring Lake.

- Re-route the main channel closer to the right bank in Lower Pool 2, from Boulanger Bend to Lock and Dam 2.

- Need to dredge St. Paul Barge Terminal; no room for fleeting on right bank. Stabilize this site with sheetpile wall on right bank to improve barge fleeting.

- Spend money on preventing erosion and sedimentation from the farm fields rather than continually spending it on dredging each year. Stop drainage of farmland which results in uncontrolled runoff and drastic fluctuations in river levels. Solve the root of the problem.

- Disappointed that it took two years for King's Cove Marina to get a permit while it took Prairie Island Indian Reservation less than one year to get a permit for the same purpose. The person making this statement claimed it only took ten days for the Prairie Island permit.

Wednesday, October 25 - Winona, Minnesota

Participation: Agency Representatives - 19; News Reporters - 4; General Public - 20.

The same format and slide show was used here. The weather was better than the first meeting, but the Baseball World Series was also on at the same time as this meeting. Those attending from the general public were well-informed, and the discussion in the general session ranged widely on issues from upland erosion and sediment control to side channel restoration and habitat improvements. The discussion was stimulating, but most of it went beyond the scope of the CMMP, which the moderator felt was fine because it amplifies the need for a broader response to river needs, like ecosystem management. There seemed to be a fair amount of input during the open house on specific disposal sites.

Public Comments:

- Three "bad" disposal sites identified:
    * Pool 5A - Floodplain forest just downstream from Bass Camp; it doesn't seem advisable to destroy this ecosystem.
    * Pool 5A - Floodplain forest by Fountain City; no point in damaging this habitat.
    * Pool 6 - Homer Site area should be reduced and avoid wetland and pool.

- If dredging had decreased by 50 percent, but amount of material entering the system has not, where is it all going?

- Concerned with Minnesota side of Pool 6 - sedimentation above dike at Lock and Dam 6 is causing loss of wildlife habitat. The KOA Campground near this site can no longer use its boat ramp. Recommend deepening the channel to the spillway.

- This country cannot afford to cover up valuable farmland to protect wetlands. Farmers are doing a better job of keeping their soil on their land. Interested in keeping channel open to get agricultural products down river to feed people. Complimented the beneficial use aspects of the maintenance program and recommended not placing sand on the islands.

- Wetland laws must be repealed because the 1993 flood report showed that wetlands did very little to control flood waters and new diseases and weeds growing in wetlands carried by insects and birds will cause great harm to humans.

- Is the Corps doing anything to lessen the silting in of the backwater areas? By closing off the backwater areas with wing dams and closing dams, they can no longer clean themselves out. Wing dams are more detrimental to the backwaters than the Locks and Dams, depriving the rest of the river of its natural flows. It is more important to save backwaters than provide means for commercial navigation. Hope expressed that the Corps is flexible enough to consider more than special interests.

- What have we gotten from the money we invested in Weaver Bottoms? Is it a success or a failure? Physical changes have occurred, but not improvements in habitat.

- We need a plan to deal with sand now, but also need to address the main problem and search for a solution. A comprehensive erosion control plan is needed.

- Trempealeau River sedimentation.

- Is commercial navigation really the best method for transporting goods, given the overall impacts? Maybe the Corps should go back to Congress and say we have been doing this for years and it's time to stop.

- The Corps needs to put more material on islands in Pool 6 to improve beaches.

- Has the Corps considered reducing the channel to less than nine-foot depth?

- The Fountain City dredge material placement site is a good site for development by the city.

- Beach enhancement by dredge material placement in small quantities may be somewhat inefficient for Corps maintenance dredging, but it stimulates local economic benefits from increased recreational use opportunities in Pools 5, 5A and 6. It is not harmful to the environment if done properly; more people should support this approach.

Thursday, October 26 - Lansing, Iowa

Participation: Agency Representatives - 12; News Reporters - 1; General Public - 13.

The same format that proved successful at the first two meetings was used here. This was another World Series game night, which may have cut down attendance. However, this was another knowledgeable group that, though small, had a lot of good comments and questions. The challenge of sediment control is well-known and called out as the pervasive problem that it is. The Corps staff made a strong point of the fact that as much as 80 percent of the material dredged is put to beneficial use away from the channel. The protection of backwaters is a big concern.

Public Comments:

- What are our priorities when it comes to managing the river - navigation, recreation, environment? Concerned that the Mississippi River will result in a barge canal like the Rhine in Germany.

- There will be a problem with drainage on the Varo property (north of Prairie du Chien).

- Are there any plans to restore wing dams that have silted in?

- Several positive comments were made on the use of the Lansing Bridge site for beneficial uses. They cannot get enough sand. The sand should be shared by everyone that wants it, not just the land-owner. One recommendation to use the area upstream of the bridge instead of the downstream area was offered.

- Concern was expressed regarding island erosion and filling of backwaters.

- Build sediment traps at certain points on the main channel to provide beneficial use, reduce dredging at many locations, and stop silting of backwaters. Catch the silt in the tributaries before it reaches the main channel.

- Extend the life of the backwaters.

- Congratulations to the Corps and agencies that cooperated as a team on the recommended CMMP sites. Some sites need to be acquired outright. Where implementation problems occur, come to local people and they will help find the right answers to meet the needs.

NOTE: Written notes, public comment sheets and attendance lists are available for review at the Corps Mississippi River Project Office in Fountain City, Wisconsin, upon request. Contact Dan Krumholz or Steve Tapp at (608) 687-3011.

7. PROJECT SUMMARY BY MWBAC ASSIGNED STAFF

The Corps has done such a good job on this channel maintenance program for the past 15 years since the GREAT Study was completed that many people have accepted the change as positive and not all that controversial, as it once was. The MWBAC and Corps staff personnel did the best they could to publicize the meetings, as did MWBAC Commissioners Robin Grawe and Bill Howe. The subject of the river is addressed in so many ways now that it could be somewhat overdone, depending on the community and the issue. Nevertheless, the moderator concludes that it was a good program providing well-organized, easily-accessible opportunities for the public and the river management partner agencies to work closely together again. It would have been better had more people been present to hear the good news on the success of the program so far, and to be involved in the future planning of this important aspect of river use and care. The MWBAC was pleased to have been able to assist in this effort. The public should be notified of the CMMP and related EIS when they are available.

APPENDIX F

COMMENTS ON DRAFT ENVIRONMENTAL IMPACT STATEMENT AND RESPONSES

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United States Department of the Interior F-135

United States Department of the Interior

OFFICE OF THE SECRETARY
Office of Environmental Policy and Compliance
Custom House, Room 244
200 Chestnut Street
Philadelphia, Pennsylvania 19106-2904

IN REPLY REFER TO:

January 17, 1997

ER-96/732

Colonel J.M. Wonsik
District Engineer
St. Paul District, U.S. Army Corps of Engineers
Army Corps of Engineers Centre
190 Fifth Street East
St. Paul, Minnesota 55101-1638

Dear Colonel Wonsik:

The Department of the Interior (Department) has reviewed the Draft Environmental Impact Statement (DEIS), Channel Maintenance Management Plan (CMMP) for the 9-Foot Channel Project, Upper Mississippi River, Head of Navigation at Minneapolis, Minnesota to Guttenberg, Iowa. The Department offers the following comments for your consideration.

GENERAL COMMENTS

The U.S. Fish and Wildlife Service (FWS) has been actively involved for many years in interagency planning efforts associated with operation and maintenance of the 9-Foot Navigation Project on the Upper Mississippi River within the St. Paul District (District). The most notable planning effort was the Great River Environmental Action Team (GREAT I) studies that were completed in 1980. The interagency partnership created during GREAT I continues today in the form of the River Resources Forum.

1 The DEIS describes the latest planning effort by the District, the CMMP, which consolidates previous planning efforts into a comprehensive long-term management plan for channel and harbor maintenance related activities. The CMMP is an informative reference document for navigation-related dredging and disposal sites. It provides important definitions and policies (including wetland mitigation policy for dredged material disposal sites) and is the culmination of many years of negotiations and discussions during GREAT I and in later years through the River Resources Forum. The Department supports most elements in the CMMP, because the proposed actions will minimize habitat impacts in comparison to GREAT I and past dredging and disposal practices by the District. The FWS and Department

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COMMENT 1 - Comment noted. We appreciate the partnering attitudes developed in recent years between the Corps and Federal, State and local resource management agencies. We look forward to future cooperative efforts.

1 commend the District for producing a more environmentally sensitive long-term channel maintenance plan which will be used by all agencies to improve River management activities. The FWS advises that they look forward to working with the District and other agencies on the River Resources Forum on future channel maintenance activities.

A portion of the Mississippi River covered by the CMMP is within the boundary of the National Park Service's (NPS) Mississippi National River and Recreation Area (MNRRA). Additionally, the NPS's St. Croix National Scenic Riverway (St. Croix NSR) is included in the St. Croix River portion of the CMMP. Pursuant to 16 U.S.C. § 460zz-3(b)(1), the NPS is required to review all Federal actions within the MNRRA corridor to ensure the consistency of those actions with the MNRRA Comprehensive Management Plan. Additionally, the NPS considers the proposed project component involving the St. Croix NSR a water-resources project under Section 7(a) of the Wild and Scenic Rivers Act (Public Law 90-542). Potential actions described in the DEIS for both of these areas are of concern to the NPS and the Department and are discussed in more detail below.

SPECIFIC COMMENTS

Recreation Resources

St. Croix National Scenic Riverway

The NPS believes that proposed action has the potential to have direct and adverse impacts on the values for which the St. Croix NSR was established. These values include, among other things, biological diversity, scenic character, and water quality.

2 The Kinninkinnic Narrows area of the St. Croix River may contain a significant population of mussels, including the federally listed Higgin's eye pearly mussel (Lampsilis higginsi), as well as State-listed mussel species. The substrate above and below the confluence with the Kinninkinnic River could be conducive habitat for the Higgin's eye (Dr. Dan Hornbach, Macalaster College, personal communication, December 12, 1996). Unfortunately, little is known about the mussel population in this segment of the river.

3 The NPS disagrees with the assessment (Page B-54, Table B-15) that only minor adverse effects will occur to aquatic habitat, biological productivity, and surface water quality. These impacts could be substantial or significant. The NPS also believes that the impacts on the mussel population have not been addressed adequately by the DEIS. Loss of this population, and habitat alteration, aggravates the continued threat to mussel species in the St. Croix River. A thorough investigation of the riverbed to inventory the mussel population is warranted before

COMMENT 2 - Past and recent surveys of the Kinnickinnic Narrows dredge cut and surrounding areas indicate a rather unimpressive mussel assemblage exists in the area. Fuller (1980) reported, "*The Kinnickinnic River delta at its confluence with the St. Croix forms most of this Site, which, because of the resulting unstable sands, probably has never been hospitable to mussels. Recurrent dredging doubtless has contributed additionally to the poor fauna indicated by the Academy's samples.*" Hornbach (1995) in 1994 and 1995 surveys generally confirmed the earlier findings of Fuller (1980) and reported, "*No living Lampsilis higginsi were found at the Kinnickinnic Narrows or in lower Lake St. Croix, apart from the Prescott site (above). One possible relict L. higginsi was collected at Kinnickinnic Narrows. No areas of high mussels density or species richness (compared to primary sites) were indicated by transects or bed delineation surveys.*" We contacted Dr. Dan Hornbach, Macalester College to further discuss the results of his surveys. Dr. Hornbach confirmed *L. higginsi* could be found in places where the channel narrows on the St. Croix River. He based this conclusion on sampling efforts at his Hudson railroad bridge and Prescott sites where he collected *L. higginsi* populations. However, Dr. Hornbach confirmed no *L. higginsi* were collected from his Kinnickinnic Narrows sampling locations. He further stated his 1995 data was the most recent and best available information he was aware of for this site. We find little evidence to support the claim the Kinnickinnic Narrows may contain a significant population of mussels, including *L. higginsi*. The Kinnickinnic River can transport substantial amounts of sediment during high runoff events which tend to settle out near the confluence with the St. Croix. This sediment is generally unstable and not apparently suited to colonization by large numbers of native mussels as evidenced by the above cited surveys. While the site may support some mussel species, we do not believe *L. higginsi* are present.

COMMENT 3 - The Kinnickinnic dredge cut is located at the confluence of the Kinnickinnic River. The reason dredging is needed in this area is due to the formation of a large sand shoal which can narrow or block upstream passage of vessels. As mentioned in our response to COMMENT 2, the Kinnickinnic River can transport substantial amounts of sediment during runoff events. This material rapidly settles out upon entering the lower velocity conditions of the St. Croix. Additionally, some continuous settlement of sediments carried into the St. Croix by the Kinnickinnic occurs. We believe this continuous deposition in conjunction with large deposition events from high river discharge conditions produces conditions in the dredge cut, in particular, which are relatively unfavorable for use by most aquatic species.

We agree if a significant population of mussels existed in the Kinnickinnic Narrows dredge cut, dredging would affect this resource and would aggravate the continued threat to mussels. However, given the results of recent mussel surveys (Hornbach 1995) at the Kinnickinnic narrows, we conclude the mussel resources in this location are limited if not impoverished. We believe the impacts on freshwater mussels resulting from dredging the Kinnickinnic Narrows cut have been adequately assessed in the EIS. However, we have revised the Biological Assessment (BA; Appendix C) in response to comments provided in this letter by the U.S. Fish and Wildlife Service (USFWS). In the revised BA we have not made a determination of the impacts of dredging the Kinnickinnic cut on Federally-listed threatened and endangered mussel species, preferring to complete a mussel survey of the cut and coordinate the survey results with the USFWS prior to dredging. The results of this survey would determine if Section 7 consultation is necessary.

3 this project proceeds. The FWS should be consulted to determine if consultation under Section 7 of the Endangered Species Act is appropriate.

4 The threat of the exotic zebra mussel (Dreissena polymorpha) is mentioned only briefly in the DEIS. It is not mentioned that the vessels used for the project could be potential vectors for this exotic species. If dredging does occur at the Kinninkinnic Narrows, we recommend that the equipment used be removed from the Mississippi River and rinsed with hot, pressurized water prior to the vessel entering the St. Croix River. Overland transport of the vessels would be acceptable provided that they were cleaned or were out of the water for over 7 days. It should be pointed out that the proposed dredging would allow upstream travel for barges, other large commercial vessels, and large private vessels, all of which could be carriers of zebra mussels.

5 The impacts to water quality probably are understated in the DEIS. Although the majority of the material proposed for dredging consists of medium-to-coarse sands, the remaining fine silts and clays could be resuspended into the water column, with resulting adverse effects on off-site habitat, water quality, and fish and other aquatic organisms. The fine material could remain in suspension for weeks or months because of the slow-moving nature of the St. Croix River below this section.

6 The NPS is opposed to the project component involving the St. Croix NSR based on perceived direct and adverse impacts to the values for which the Riverway was established (Section 7(a) of the Wild and Scenic Rivers Act). Until the impacts to the native mussel population and water quality are more thoroughly addressed, and an adequate plan is developed to prevent the introduction of the exotic zebra mussel, the NPS and Department believe that the St. Croix River component of the CMMP should be held in abeyance. Depending on the results of further evaluation of these issues, it may be appropriate to consider removing the St. Croix from the dredging program.

Mississippi National River and Recreation Area

7 The St. Paul Barge Terminal site would convert 28 acres of open water from river bottom to fast land using a sheet pile wall and dredged material. The NPS believes that development of the St. Barge site constitutes a significant and environmentally destructive modification of the river. Moreover, given the development of the Southport location, the St. Barge terminal site does not appear to be necessary and should not be considered as an alternative.

The NPS has determined that development of the St. Paul Barge Terminal site for dredge material disposal is inconsistent with and would not conform to the goals and policies of the MNRRA

COMMENT 4 - As a member of the St. Croix River Zebra Mussel Task Force, the District is well aware of actions taken by the NPS to prevent the spread of zebra mussels to the St. Croix River. We are supportive of these actions. The District has implemented a Standard Operating Procedure to prevent the contamination of uninfested waters by District equipment. These procedures would be followed if dredging were required on the St. Croix. Upstream travel of barges, large commercial vessels, and large private vessels is currently not restricted by shoal conditions at the Kinnickinnic delta. Large vessels are currently able to travel as far upstream as the NPS allows (i.e., the Arcola Sandbar). Dredging would not increase access of these larger vessels to the St. Croix River; it would, however, maintain access. A 9-foot channel to Stillwater, MN is legislated by the Rivers and Harbors Act of 1935 and has been continuously maintained since authorization (see Section 2.2.3 *St. Croix River* of the EIS). We disagree that maintenance dredging of the St. Croix would increase the threat of contamination by zebra mussels.

COMMENT 5 - The sediments dredged from the Kinnickinnic dredge cut originate mostly from the Kinnickinnic River watershed. During high flow runoff events on the Kinnickinnic River, sediments enter the St. Croix in suspension or as bedload. As stated in Section 5.1.1 *Effects of Dredging and Dredged Material Placement on Water Quality*, numerous studies have shown that increases in turbidity and suspended solids as a result of dredging are generally local and short-term in nature. We would not expect increases in turbidity as a result of dredging to exceed those produced during high runoff events on the Kinnickinnic River. Also, we believe the slow-moving nature of the river would hasten the settlement of fine materials rather than resuspending materials for weeks or months. Sediments remain in suspension as long as flow capacity supports them; areas exhibiting low flow are most prone to sedimentation.

COMMENT 6 - We have noted your opposition, based on "perceived impacts," to the St. Croix River component of the CMMP in Section 1.2 *AREAS OF CONTROVERSY* of the Final EIS. We continue to believe dredging would result in only minor impacts on water quality and freshwater mussels for the reasons discussed in our responses to COMMENTS 2 through 5. We have procedures in place to prevent the spread of zebra mussels to uncontaminated waters by District equipment. We would follow those procedures if and when dredging is required on the St. Croix.

The St. Paul District is responsible for maintaining a 9-foot channel to Stillwater, MN and a 3-foot channel to Taylors Falls, MN (see Section 2.2.3 *St. Croix River* of the EIS). We have completed planning, as described in the CMMP, to accomplish maintenance of this project. The District will continue to monitor channel conditions at the Kinnickinnic Narrows. If the monitoring indicates a need for dredging to maintain the 9-foot channel, an evaluation of the level of use of the project would be completed. If the level of use of the project did not support maintenance of the St. Croix River, we would defer dredging until the level of use justified maintenance. If the level of use justified maintenance, the District would begin the process of implementing the site specific plan as outlined in the CMMP. Prior to implementing the plan, required coordination with the NPS and USFWS would be completed. At that time, Section 7 consultation would be completed if required. The District does not have the authority to remove the St. Croix River from the 9-foot channel project. This would require Congressional action. However, as discussed above, we can defer maintenance of the St. Croix River if the level of use does not justify dredging.

7 Comprehensive Management Plan, and that unless this proposed component is deleted from the CMMP, they will initiate measures provided by 16 U.S.C.Section 460zz-3(b)(1). Consequently, the NPS and the Department request that the District remove this component from the CMMP.

Channel Control Structures

The DEIS notes on Page 3-22, Section 3.6.2, that "The District has prioritized several reaches in which channel control structures could be employed to reduce dredging requirements." It also mentions that the GREAT I study identified locations where modifications to channel structures would realign the navigation channel, thereby improving safety or reduce dredging requirements. Further, the DEIS states that in the 1980's and 1990's some of these structures were modified or constructed to accomplish the above objectives.

Statements are found throughout the DEIS that construction or modification of control structures would achieve environmental, as well as economic benefits. The DEIS contends these structures would restore and enhance natural river processes to the greatest extent possible as well as restore and enhance habitat quality and diversity.

8 The NPS and the Department question whether the installation of channel control structures generally enhances the river environment and uniformly decreases environmental effects when compared to dredging. While we understand these structures could reduce the need for the time and expense involved in dredging and could increase channel speed and depth, the DEIS should more clearly identify how increasing the number of structures constricting the Mississippi River would provide environmental benefits.

In the discussion on Pages 5-28 through 5-31, Section 5.2, "Environmental Effects of Channel Structures," numerous environmental impacts are mentioned, but there is no real indication as to whether these impacts are positive or negative, what the consequences of these impacts may be, or how the impacts compare to the environmental impacts of dredging. We question Table 5-7, Page 5-29, which shows both positive and negative effects on the same three environmental variables, with the positive outweighing the negative. The Final EIS should more fully illustrate how this determination was made.

On Page 5-64, Section 5.7.2.2.3, it is stated that control structures can contribute to the occlusion of backwater circulation channels, and that these impacts need to be evaluated in the context of channel control structures. Page 3-22, Section 3.6.2, notes that the reaches in which control structures might be employed would be studied following the procedures

COMMENT 7 - A primary concept emphasized during development of the CMMP was flexibility. The CMMP is written to provide latitude in selecting new sites or adjusting configurations of proposed sites. As such, the District remains flexible in deviating from the CMMP if warranted. We believe it will not be necessary for the National Park Service to "initiate measures" to have site 2-837.5-RMP (St. Paul Barge Terminal) removed from the CMMP. The District will continue to pursue development of site 2-836.3-RMP (Southport) as an alternative to site 2-837.5-RM; however, the capacity of site 2-836.3-RMP is not sufficient to contain the projected 40-year quantities of dredged material from this portion of the river. Therefore, we look forward to working with the NPS as well as all other Federal, State and local partnering agencies in finding an additional, environmentally acceptable placement site in this section of the UMR to replace site 2-837.5-RMP. If site 2-837.5-RMP were ever used, a number of permits and other requirements would need to be obtained and/or met. When an acceptable, alternative site is found, we will consider dropping site 2-837.5-RMP from the CMMP.

We have noted the Department of Interior, National Park Service's concerns and objections to use of site 2-837.5-RMP in Section 1.2 *AREAS OF CONTROVERSY.*

COMMENT 8 - The assessment of the impacts of the Channel Control Structures program provided in the EIS serves as a programmatic assessment. As such, the impacts of channel control structures are only addressed in general terms. The program includes both construction and removal or modification of channel structures. Installation of channel structures could result in significant environmental enhancement in several ways. For example, in many of the navigation pools a significant loss of islands has occurred in the lower portion of the pool. Channel structures could be used to move sediments to appropriate locations in the lower pools to build islands. If deemed appropriate, channel structures could be breached or removed to allow flow into backwaters to facilitate delta formation. At the same time, construction of channel structures could have adverse impacts. For example, allowing flows to backwaters would increase sedimentation and filling of deepwater habitats. We will not know the actual impacts of any proposed channel structures projects until more site specific information is available, however, through the planning process outlined in Section 3.2.2.3 *Channel Structures,* we believe a balanced plan to achieve both environmental and channel maintenance benefits can be achieved. We agree more work will be required to fully assess the site specific impacts of a channel structures project. These assessments will be completed in full compliance with NEPA as projects are more fully planned.

8 outlined in the CMMP. These findings suggest that more work is needed to support the DEIS findings about channel control structures.

The NPS and Department recommend that the Final EIS include a thorough examination and comparison of all environmental effects resulting from channel structures versus dredging.

Transportation Cost Savings

9 Comments regarding the cost savings realized through the use of barge transportation, as opposed to other means of transport, are made throughout the document, including on Pages 3-12 and 5-77. However, these reported monetary savings are not supported by any empirical data. The EIS should be revised to include supporting data with a comparison between the different modes of commodity transport. Such a comparison should consider public subsidies associated with various modes of transportation.

Fish and Wildlife Resources

Dredged Material Placement Sites

Page 3-13, Section 3.3.2, Dredged Material Placement - Implementation of the CMMP will result in the unavoidable loss of approximately 215 acres of wetland habitat. While the FWS acknowledges that these losses are substantially less than losses associated with the GREAT I plan, these wetlands are valuable fish and wildlife habitats, many of which are located on the Upper Mississippi River National Wildlife and Fish Refuge (UNRNWFR).

We support the District's intent to minimize wetland losses during implementation of specific dredged material placement sites by avoiding the filling of wetland habitat for as long as possible. We also support the District's Wetland Mitigation Policy which will be used to replace wetland losses which are in excess of the 1996 CMMP.

10 Pages 4-10 through 4-18, Fish and Wildlife Resources of UMR - Tables 4-2 through 4-8 identify a variety of state and federally protected species which the District believes may occur within the project area. While the DEIS assesses project impacts to federally listed species in subsequent sections, it does not provide a similar assessment of potential impacts to state-listed species. The FWS recommends that the District assess such impacts in the Final EIS.

11 Page 4-14, Section 4.1.9.3, Freshwater Mussels - While we agree that water pollution and siltation have adversely impacted mussels populations upstream of Lake Pepin, mussels have not been "eliminated" from the system. For example, the FWS reports that

COMMENT 9 - Additonal information on the cost savings associated with barge transportation and the costs of conducting channel maintenance activities and operation of the locks and dams has been provided in Section 3.3 *COMPARISON OF ALTERNATIVES* and Section 5.1.7 *Effects of Dredging and Dredged Material Placement on Socioeconomic Resources*.

COMMENT 10 - Concur, Appendix G of the Final EIS contains an assessment of the impacts of the CMMP on State-listed threatened or endangered species.

COMMENT 11 - Concur. This section has been modified as suggested.

11 a recent mussel survey for a proposed natural gas pipeline in Lower Pool 2 found a diverse assemblage of freshwater mussels. We suggest that this sentence be modified to indicate that freshwater mussels are found in the upstream pools in spite of past water quality problems.

12 Page 5-6 through 5-8, Table 5-2, Dredged Material Placement Sites for the Channel Maintenance Management Plan (CMMP) - The FWS compared acreages from this table and Table A-2 of the DEIS to similar information in the April 1996 Channel Maintenance Management Plan, Tabs 9 through 20, and found no substantive differences. However, we note that the following dredged material placement sites described in the DEIS are not included in the CMMP: Northport Site 2-838.2-RMP, MDNR2 Site 4-760.2-RMP, Site 4-759.5-RMP, Site 4-759.3-RMP.

13 Page A-9 through A-13, Table A-2, Dredged Material Placement Sites - We recommend that the following dredged material placement sites be eliminated from the final CMMP and EIS:

a. St. Paul Barge Terminal Site 2-837.5-RMP. As previously mentioned, use of this site would require filling approximately 28 acres of the River in an area of downtown St. Paul which already has a constricted navigation channel. While use of this site would undoubtedly be convenient for the Corps, it would result in a significant river modification which we believe is totally unnecessary and very destructive to river processes. The NPS considers the proposal for development of the site for dredge deposition to be inconsistent with the MNRRA Comprehensive Management Plan, and will initiate measures provided for by 16 U.S.C. § 460zz-3(b)(1), if the proposal proceeds. This site has also been opposed by the State of Minnesota. As discussed at the December 5, 1996, meeting of the River Resources Forum, the District is developing an alternative disposal site called the Southport Site to provide suitable capacity and beneficial use of materials for this dredge cut.

b. Morgans Site 3-802.3-RME. While habitat impacts have been reduced in the CMMP, we recommend that this site be eliminated in the Final EIS and CMMP. This site contains valuable habitat and lies within the Gores Wildlife Management Area. An acceptable alternative site is Coulter's Site 3-801.7-LWE.

c. Bass Camp Site 5A-737.5-RMP. We understand that this site has been eliminated as a dredged material placement site, which will avoid the loss of approximately 7 acres of bottomland hardwoods. We recommend that an appropriate statement be added to the end of Table A-2.

d. Fountain City 2 Site 5A-731.8-LWP. Although wetland

COMMENT 12 - These sites are part of the 40-year plan, but are footnoted in Tab 3-1 of the CMMP as "completed" sites. Dredged Material Placement Site Information Sheets were not prepared for completed sites, since they will not be used in the future. The effects of use of these sites are included in the EIS to ensure compliance with NEPA and to establish an acreage baseline for future reference.

COMMENT 13 - In reference to site 2-837-RMP, see response to COMMENT 7.

Site 3-802.3-RME is considered a second priority site. As stated in the CMMP, this site would only be used if site 3-801.7-LWE is not available or cannot be reached by hydraulic pipeline.

Site 5A-737.5-RMP is no longer proposed for use under the CMMP. Table A-2 of the EIS and Tab 3-1 of the CMMP list the site under the GREAT I plan, but not under the CMMP. However, an assessment of the impacts of using this site is contained in Appendix B of the Final EIS, because it was considered under the GREAT I plan.

Site 5A-731.8-LWP will remain in the CMMP and be used as outlined in the CMMP. Use of this site was previously endorsed by the agencies under the GREAT I planning effort and by the River Resource Forum under the Lower Pool 5A Reconnaisance Report planning effort. If beneficial use removal continues at the present rate from site 5A-731.9-LWP, it is unlikely the site would be needed during the 40-year planning timeframe. Additionally, to avoid using site 5A-731.8-LWP, the District is pursuing excavation of the Wild's Bend containment site (site 5A-730.5-LWT) and transferring this material to gravel pits near Winona, Minnesota. However, at this point, the District's position is that site 5A-731.9-LWP alone does not provide the 40-year projected capacity, therefore, site 5A-731.8-LWP needs to be part of the selected plan. We have noted the USFWS opposition to using this site in Section 1.2 *AREAS OF CONTROVERSY* and Appendix B of the Final EIS.

13 impacts have been reduced by 12 acres in the CMMP, this site still contains valuable wetland habitat. To date, there has been no need to consider filling this site based on past dredging quantities and beneficial use of dredged material in the immediate area.

As discussed at the December 5, 1996, meeting of the River Resources Forum, we understand that the District is proposing to eliminate Fountain City Site 2. We also recommend that this site be eliminated from consideration as a dredged material placement site. An appropriate statement(s) should be included in the Final EIS at the end of Table A-2. We agree that implementation of Fountain City I Site 5A-731.9-LWP will be adequate for disposal and beneficial use of dredged material.

14 Appendix B, Site-Specific Assessment of Dredging and Dredged Material Placement of GREAT I Plan and CMMP - We compared placement site acreages from Table 5-2, Pages 5-6 through 5-8, to site acreages in Appendix B. We find site descriptions to be somewhat confusing in Appendix B with respect to the total acreage of identified placement sites. For example, Appendix B indicates that Kinnickinnic Bar Upper Site SC-6.7-LWP is 9 acres in size while Table 5-2 shows it to be 4 acres (the actual acreage needed for disposal). The reader may wrongly conclude that an additional 5 acres will be used for disposal at this location sometime in the future. Similar examples between site descriptions in Appendix B and Table 5-2 are Northport Site 2-838.2-RMP (25 acres versus 6 acres) and Lower Boulanger Site 2-821.1-LMT (10 acres versus 8); there are numerous other examples of these differences.

We recommend that site descriptions in Appendix B of the EIS be revised to describe only the acreage needed for disposal at each site (Table 5-2 of the DEIS, or Tabs 9 through 20 of the April 1996 CMMP) to eliminate confusion with respect to the actual size of each dredged material placement site in the CMMP.

Endangered Species Act

15 Page 4-18 through 4-22, Section 4.1.10, Federal Threatened and Endangered Species - A stated objective of the DEIS is to assess project-related impacts to federally listed threatened and endangered species that use, or that might be found on, the Upper Mississippi River (UMR) floodplain. However, many of the species listed on this and following pages of the DEIS do not occur on or use UMR floodplain habitats, or do not occur in UMR counties in the St. Paul District. The FWS suggests that federally listed species in the Final EIS be limited to the bald eagle (*Haliaeetus leucocephalus*), peregrine falcon (*Falco peregrinus*), Higgins' eye pearly mussel (*Lampsilis higginsi*) and winged mapleleaf mussel (*Quadrula fragosa*).

COMMENT 14 - In Appendix B of the Draft EIS, the introductory description of a site generally included an acreage estimate for the largest dimensions evaluated, not necessarily selected, under the GREAT I planning process and/or interim reconnaissance reports for dredged material placement. Often these descriptions were extracted in whole or in part from the GREAT I Environmental Impact Statement (Volume 9 of the GREAT I Technical Appendixes). In the Draft EIS, we attempted to identify the actual acreage proposed for use under the GREAT I plan or CMMP in bullet "b" of each impact summarization paragraph. We apologize for the confusion these descriptions obviously caused. In the Final EIS, throughout Appendix B we have clearly stated in bold print the acreages proposed for use under the CMMP and/or GREAT I. These acreages should be consistent with those presented in the CMMP.

COMMENT 15 - Concur. The evaluation of potential impacts on Federally-listed species is limited to these four species in the Final EIS.

16 In addition, Table 4-8 incorrectly identifies Reniform sullivantia as a federally listed species. Also, the giant carrion beetle, also called American burying beetle (Nicophorus americanus), is not federally listed in Wisconsin.

17 Page 4-23 and 24, Section 4.1.11, Upper Mississippi River National Wildlife and Fish Refuge - On Page 4-23, federally listed species using the UMRNWFR within the floodplain of the Upper Mississippi River should be limited to the bald eagle, peregrine falcon, and Higgins' eye pearly mussel.

18 Page 4-48 and 4-49, Section 4.2.10, Federal Threatened and Endangered Species of St. Croix River - While the DEIS correctly identifies the northern wild monkshood (Aconitum novaboracense) and prairie bush-clover (Lespedeza leptostachya) as federally listed species, we are unaware of their occurrence in the floodplain of the St. Croix River. The FWS suggests they be eliminated from discussion in the Final EIS.

19 Page 4-54, Section 4.3.11, Minnesota Valley National Fish and Wildlife Refuge - The correct title of the refuge is Minnesota Valley National Wildlife Refuge. Please correct this and other portions of the text in the Final EIS. Also, federally listed species occurring in the floodplain of the Minnesota River on the refuge should be limited to the bald eagle and peregrine falcon; the FWS is unaware of any occurrence of northern wild monkshood and prairie bush clover within the floodplain of the Minnesota River in the project area.

20 Page 5-18 and 5-19, Section 5.1.3, Effects of Dredging and Dredged Material Placement on Federal Threatened and Endangered Species - Placement of dredged material at the Colvill Park Site 4-788.5-RMP would facilitate development of park facilities by the City of Red Wing in the vicinity of an important bald eagle wintering roost located immediately across the navigation channel in Wisconsin. The FWS understands that the roosting area will be monitored by the Minnesota Department of Natural Resources this winter, which will provide additional information for use in evaluating project impacts. At this time, we recommend that the Colvill Site 4-788.5-RMP be included in the list on Page C-37 of the Biological Assessment which identifies actions that could affect bald eagles.

21 Also, while the FWS agrees that continued use of the Read's Landing Site 4-762.7-LWT is not likely to affect bald eagles, the disposal site is located in an area of the UMR which is important to eagles, especially during winter months. The Read's Landing Site is classified as a transfer site for dredged materials. While the CMMP indicates that habitat conditions at transfer sites would be restored after use, the FWS anticipates that this site will be used for many years beyond the 1996 CMMP. The shoreline of the disposal site is currently unvegetated. The FWS

COMMENT 16 - Tables 4-7 and 4-8 have been corrected/revised.

COMMENT 17 - Section 4.1.11 *Upper Mississippi River National Wildlife and Fish Refuge* has been revised as suggested.

COMMENT 18 - These species have been eliminated from discussion in the Final EIS.

COMMENT 19 - Section 4.3.11 *Minnesota Valley National Wildlife Refuge* has been revised as suggested. The title of the Minnesota Valley National Wildlife Refuge has been corrected throughout the Final EIS.

COMMENT 20 - Concur. The Final EIS has been revised to indicate bald eagle habitats are present in the vicinity of site 4-788.5-RMP and further investigation of potential impacts and coordination with the USFWS will be necessary.

COMMENT 21 - We recognize the importance of the Reads Landing area for bald eagles. As indicated in the Dredged Material Placement Site Information Sheet in Tab 14 of the CMMP, a vegetative screening plan will be implemented. This will include planting of trees to create future bald eagle perches. The dredged material at the transfer site will also be protected against erosion. Development and implementation of a planting plan has been added for 1997 to the 5-year Placement Site Plan in Tab 6 of the CMMP and Table A-3 of the Final EIS. We look forward to working with the Wisconsin DNR and U.S. Fish and Wildlife Service in developing a plan to restore, enhance and preserve this valuable area for bald eagles.

21 recommends that the District consider implementing a revegetation plan now for the shoreline area. In addition to stabilizing slopes and improving aesthetics, planting trees will also provide future eagle perching sites.

22 Page C-23 and C-24, Section V.A.2.d., Non-structural - The FWS agrees with statements on Page C-24 of the Biological Assessment that proposed reductions of channel dimensions would have a neutral to beneficial effect on freshwater mussels by reducing the area of bottom substrate affected by future dredging activities. However, under this same logic, proposed increases in channel dimensions as shown on Page C-23 could have a negative effect on freshwater mussels.

We acknowledge that these locations are upstream of Pool 5A. However, since the entire River has not been investigated for the presence of federally endangered and threatened mussels, and the fact that main channel and main channel border habitats are often used by L. higginsi in other navigation pools, the FWS recommends that mussel surveys be conducted at these locations before project implementation. The FWS recommends that projects involving increases in channel dimensions be added to Section VI, Summary and Conclusions, Actions that Could Affect Higgins' Eye Pearly Mussels, of the Biological Assessment and final EIS.

Also, several historic dredge cuts identified in Table A-1, Pages A-6 through A-8, have not been routinely maintained. Information from the DEIS and also Final EIS for Barge Terminal Facilities in the East Channel at Prairie du Chein illustrate the concept that freshwater mussels may recolonize dredge cuts over time in the absence of routine maintenance. For example, it has been estimated that L. higginsi would recolonize dredge cuts in the East Channel to densities of approximately 1.66 mussels/m^2 in approximately 8 to 12 years in the absence of routine maintenance dredging. Since the Fuller surveys are nearly 20 years old, we simply do not know the status of freshwater mussels in many of the historic dredge cuts which have not been recently maintained. Also, freshwater mussels have been found in the upstream pools including those in the Twin Cities Metro Area. Given water quality improvements in the UMR since the Fuller surveys nearly 20 years ago, the FWS believes the potential exists for recolonization by freshwater mussels of dredge cuts which are not routinely maintained by the District.

23 The FWS found 28 historic dredge cuts which were last maintained in 1987 or earlier (approximately 10 years). Sites having fine sediments in the Minnesota River were eliminated (Cargill Slip, Below Peterson's Bar) from the list. Also eliminated were those six sites which the District already agreed to collect additional information on concerning potential impacts to freshwater mussels (Gravel Point, Richmond Island, Hay Point, Jackson Island,

COMMENT 22 - Concur, channel width changes (increases) have been added to the list of actions which could potentially affect threatened or endangered species (see Appendix C of the Final EIS).

COMMENT 23 - Concur, with the following exceptions:

The Hudson and Lower Approach to L/D 5A cuts are considered inactive under the CMMP. No maintenance dredging is anticipated in these cuts over the next 40-years.

The Biological Assessment (Appendix C) has been substantially revised in response to your comments. The revised Biological Assessment includes all the sites listed in your comment as sites where at this time we cannot make a determination of the effects of the CMMP on Federal threatened or endangered species.

23 Mississippi Gardens, Wyalusing). The FWS added the Kinnickinnic Bar cut due to the presence of L. higginsi in the Lower St. Croix River and the fact that the cut has not been maintained since 1989. Therefore, the FWS recommends that the following 21 sites be added to the list of Actions That Could Affect Higgins' Eye Pearly Mussels on Page C-36 of the Biological Assessment contained in the draft EIS:

MN River	Above 35W Bridge
MN River	4Mile Cut-Off
SC River	Hudson
SC River	Kinnickinnic Bar
Pool 1	Washington Ave. Br.
Pool 1	Upper Appch. L/D 1
Pool 2	Robinson Rocks
Pool 3	Prescott
Pool 3	Truedale Slough
Pool 3	Four Mile Island
Pool 4	Trenton
Pool 4	Above Red Wing Hwy. Br.
Pool 4	Below Red Wing Hwy. Br.
Pool 5	Lower Appch. L/D 4
Pool 5A	Island 58
Pool 5A	Fountain City
Pool 6	Lower Appch. L/D 5A
Pool 8	Sand Slough
Pool 8	Picayune Island
Pool 9	Twin Island
Pool 9	Battle Island

24 Page C-36, Section VI, Summary and Conclusions - Based on information contained in the DEIS and the nature of the specific projects proposed, their locations, and the habitat requirements of the federally threatened bald eagle (Haliaeetus leucocephalus), endangered peregrine falcon (Falco peregrinus), endangered winged mapleleaf mussel (Quadrula fragosa), and endangered Higgins' eye pearly mussel (Lampsilis higginsi), the FWS concurs with your determination that specific actions identified in the Biological Assessment are not likely to affect federally listed threatened or endangered species. Exceptions to the FWS's concurrence are noted below. Should these individual actions be modified or new information indicates that listed species may be affected, consultation with the FWS's Twin Cities, Minnesota, Field Office should be reinitiated.

The FWS also concurs with the District's intent to separately evaluate the potential impacts on federally listed species for actions identified on Page C-36 and C-37 of the draft EIS. The FWS also recommends that projects involving increases in channel dimensions be included in this category (Grey Cloud Slough, Boulanger Bend, Truedale Slough, Four Mile Island, Head of Lake Pepin, Reads Landing, Below Reads Landing, Mule Bend, Betsy

COMMENT 24 - The Biological Assessment (Appendix C) has been substantially revised based on your comments. Site specific surveys and/or collection of additional information concerning potential effects on Federal threatened or endangered species would be completed at all the sites listed in your comment. This information will be coordinated with the USFWS prior to implementation of proposed actions at these sites.

24 Slough Bend). In addition, the Colvill Park Site 4-788.5-RMP should also be included due to the location of a nearby bald eagle wintering area. The following dredge cuts should also be separately evaluated based on the potential for recolonization of mussels in the absence of maintenance dredging over the past 10 years: Above 35W Bridge, 4Mile Cut-Off, Hudson, Kinnickinnic Bar, Washington Ave. Br., Upper Appch. L/D 1, Robinson Rocks, Prescott, Truedale Slough, Four Mile Island, Trenton, Above Red Wing Hwy. Br., Below Red Wing Hwy. Br., Lower Appch. L/D 4, Island 58, Fountain City, Lower Appch. L/D 5A, Sand Slough, Picayune Island, Twin Island, and Battle Island. If these future evaluations conclude that these actions may affect federally listed threatened and endangered species, formal consultation under Section 7 of the Endangered Species Act should be initiated with the FWS's Twin Cities, Minnesota, Field Office.

SUMMARY COMMENTS

The Department supports most elements in the CMMP because the proposed actions will minimize habitat impacts in comparison to GREAT I and past dredging and disposal practices by the District. We commend the District for producing a more environmentally sensitive long-term channel maintenance plan which will be used by all agencies to improve River management activities. Although the Department is supportive of most CMMP elements, we are concerned about the environmental impacts of certain proposed actions, the most serious of which pertain to the Mississippi National River and Recreation Area and the St. Croix National Scenic Riverway. We request that the Corps give careful consideration to these comments.

The Department has a continuing interest in working with the District on the proposed action. Please address any questions concerning the MNRRA portion of these comments to the NPS's Ms. Nancy Duncan at 612-290-4160. Questions concerning the St. Croix NSR should be directed to the NPS's Mr. Randy Ferrin at 715-483-3284. Questions concerning fish and wildlife resources should be directed to Mr. Gary Wedge at the FWS Twin Cities Field Office, Bloomington, MN at 612-725-3548.

We appreciate the opportunity to provide these comments.

Sincerely,

Don Henne

Don Henne
Regional Environmental Officer

c:\wp51doc\er96-732.fin

No comments.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF:

B-19J

JAN 21 1997

Mr. Robert Whiting
United States Department of Army
Corps of Engineers St. Paul District
190 Fifth Street East
St. Paul, Minnesota 55101-1638

Dear Mr. Whiting:

In accordance with Section 309 of the Clean Air Act, and the National Environmental Policy Act (NEPA), the United States Environmental Protection Agency, has reviewed the Draft Environmental Impact Statement (DEIS) for the 9 Foot Navigation Channel Project Channel Maintenance Management Plan Upper Mississippi river Head of Navigation to Guttenberg, Iowa. The purpose of the DEIS is to analyze the environmental impacts of actions that are proposed in the Channel Maintenance Management Plan (CMMP)) for maintaining a 9 foot on the Upper Mississippi River between Guttenberg, Iowa, and the head of navigation at Minneapolis, Minnesota. The CMMP also has proposed actions for maintaining the navigable portions of the lower Minnesota and lower St. Croix Rivers. The DEIS provided analysis for dredging, dredging material placement, recreational beach maintenance and development, repair, construction, modification, and /or removal of channel structures, clearing and snagging operations, and future site planning for dredge material placement.

1 Based on our review of the DEIS we have two concerns. These concerns center on specific site assessments and determination of additional NEPA documentation. In terms of specific site evaluation, the DEIS should give special attention to sites that may have unique environmental features. For example, due to the potential for threaten musselsto be present, the Jackson Rehandle, and McMillan Island sites are locations that may require site reassessments prior to use as dredging disposal sites. This would ensure that potential adverse impacts to threaten mussel could be avoided. The Final Environmental Impact Statement (FEIS) should identify and discuss the procedures that will be done prior to the use of these dredging disposal sites.

2 The DEIS indicated that additional NEPA compliance may be necessary for site specific assessments. The DEIS does not identify or discuss the circumstances that would trigger additional NEPA documentation. The FEIS should discuss the types of conditions would need to be present to require additional assessment under NEPA.

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Responses to January 21, 1997, United States Environmental Protection Agency letter - page 1

COMMENT 1 - Section 5.8 *Compliance with Other Laws and Statutes* of the Final EIS summarizes actions that would be required prior to implementation of site specific plans.

COMMENT 2 - Section 2.4 *Content and Scope of EIS* of the Final EIS discuss the conditions that would trigger the preparation of additional NEPA documents. In this Section we have also discussed minor modifications to a site specific plan, where additional NEPA documentation would not be required.

Based on our concerns, we have rated the document an "EC-2". The "EC" indicates that we have environmental concerns regarding the propose activities. The "2" indicates that additional information is required. This rating will be published in the Federal Register. Our concerns will be satisfied if the FEIS satisfactorily addresses the process used to reassess unique specific site and the circumstances that would require additional NEPA documentation.

Thank you for the opportunity to comment on the DEIS for channel maintenance. If you have any questions or comments, please contact Al Fenedick at 312/886-6872.

Sincerely yours,

Michael M. MacMullen, Manager
Federal Activities Program

No responses.

U.S.Department
of Transportation

United States
Coast Guard

Commander
Eighth Coast Guard District

501 Magazine Street
New Orleans, LA 70130-3396
Staff Symbol: (oan)
Phone: (504) 589-2353

16500
FEB 5 1997

U.S. Army Corps of Engineers District, St. Paul
Attn: Mr. Robert Whiting
190 Fifth Street East
St. Paul, MN 55101-16381

Re: DRAFT ENVIRONMENTAL IMPACT STATEMENT

Dear Mr. Whiting:

Thank you for the opportunity to comment on the draft environmental impact statement for the nine foot Navigation Channel Project Channel Maintenance Management Plan for the Upper Mississippi River from the head of navigation to Guttenberg, IA.

Our comments focus on the identified channel width changes, your comments in 5.6.1.2 Channel Monitoring and Marking, and the St. Croix River.

1 We support the nine bend width increases and seventeen bend width decreases and will adjust our aids to navigation as appropriate to mark the navigation channel. A tentative schedule on when you anticipate the changes to occur would allow us to adjust our operational schedule.

2 Your comments found on page 5-49 indicate that dredging contractors are routinely repositioning buoys after completing dredging. We desire to continue this practice, but would like to ensure that the USCGC WYACONDA, the tender which services that area, is notified that the buoys have been moved. Also, we appreciate and support the continued use of Corps of Engineers vessels and personnel in the Spring opening run. As noted in your comments, our river tenders cannot break ice with the tender/barge and must wait until spring thaw to resume setting aids to navigation. We realize that commercial tow boats are not similarly constrained and begin to operate prior to the Coast Guard completely marking the river.

The Coast Guard marks the St. Croix River with approximately 25 steel buoys. We have stopped servicing those buoys with the CGC WYACONDA to avoid transporting Zebra Mussels. The buoys are now serviced from a small, 20 foot boat. We are researching the use of lighter, foam buoys to improve our servicing effectiveness with small boats.

Sincerely,

C. T. BOHNER
Captain, U. S. Coast Guard
Chief, Aids to Navigation Branch
By direction of the District Commander

Copy: Director, Western Rivers Operations, St. Louis
Commander, Group Upper Mississippi River

COMMENT 1 - The District has been following the recommendations for bend widths since they were developed during the GREAT I study. The recommended widths along with interaction from project users contribute to determining appropriate widths. The District will continue to follow the practices that have been established.

COMMENT 2 - We will notify the USCG WYACONDA of any changes in buoy locations which occur as a result of our maintenance of the 9-foot channel project. We likewise appreciate the cooperative efforts established between the St. Paul District and the U.S. Coast Guard in marking the channel, and we volunteer our continued services in early season buoy setting.

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Tommy G. Thompson, Governor
George E. Meyer, Secretary
Scott A. Humrickhouse, Acting Regional Director

State Office Building, Room 104
3550 Mormon Coulee Road
La Crosse, WI 54601
TELEPHONE 608-785-9000
FAX 608-785-9990

January 16, 1997

Colonel J. M. Wonsik
Corps of Engineers, St. Paul District
190 Fifth Street, East
St. Paul, Minnesota 55101-1638

Subject: Channel Maintenance Management Plan -
Draft Environmental Impact Statement

Dear Col. Wonsik:

The Wisconsin Department of Natural Resources has reviewed the Draft Environmental Impact Statement (DEIS), 9-Foot Channel Maintenance Management Plan (CMMP), Upper Mississippi River, Head of Navigation to Guttenberg, Iowa. Our comments are contained within the following letter.

CMMP ACCOLADES

1 First and foremost, we would like to thank the St. Paul District staff for their hard work in completing the CMMP. The CMMP is a tremendous account of all the past GREAT I and Pool Reconnaissance Reports for the St. Paul District plus the final negotiated site dimensions for all dredged material placement sites in the District. As a Mississippi River partner agency much of our time has also been dedicated to the completion of CMMP, and with the completion we can see our time was well spent. The completion of the CMMP means field staff will have more time to work on other important river issues.

DEIS GENERAL COMMENTS

2 The Wisconsin Department of Natural Resources has a number of comments about the DEIS. Until the site specific discrepancies are corrected, we cannot approve this DEIS. The site sizes are essence of the CMMP and any future mitigation, so the numbers must be consistent and clear so that we and any future staff know the exact basis of the agreement.

DEIS COMMENTS ON THE MAIN BODY

3 Section 1.5.3 describes potential future action that may be pursued depending on additional information and thalweg "placement" is mentioned as a possible action that could be pursued. We would like to point out the facts contained within Table 5.5 which indicates that an average of 24.2 % of the main channel is impacted by dredging activities and the range of main channel impacts differ from 11.4% to a whopping 53.5%. No other habitat within the Mississippi River floodplain is besieged by impacts of this magnitude which makes it foolhardy to look at thalweg disposal as a legitimate alternative.

4 The fourth and fifth sentences under section 3.1.1 should be eliminated. These sentences are trying to imply that there is a significant biological benefit from dredging activities, and by not dredging, the environment will suffer. We do not agree, and we believe it is best to eliminate this portion of the paragraph.

COMMENT 1 - Comment noted. We value the partnering attitude established between the St. Paul District and the Wisconsin Department of Natural Resources, and we look forward to future cooperative efforts on management of the Upper Mississippi River.

COMMENT 2 - Site sizes have been thoroughly checked for consistency with the CMMP. All acreages presented in the final EIS are consistent with those presented in the CMMP. See response to comment 13 for further discussion of this topic.

COMMENT 3 - Thalweg disposal is not considered an alternative to current dredged material placement activities in this EIS nor is it proposed in the CMMP. As stated in Section 1.5.3 *Actions Being Deferred Which May Be Pursued in Future*, "*There is a great deal of environmental concern and many unknowns concerning this placement method. It is not being pursued under this planning effort.*" However, we find thalweg disposal an intriguing potential alternative to current practices. We are primarily interested in thalweg disposal because of the potential savings associated with leaving sediments in the river rather than hydraulically pumping or mechanically moving them to a placement site. Additionally, the ecological significance of using the river's natural sediment transport capabilities and sediment storage capacities to maintain a navigation channel is of interest. We understand the Wisconsin DNR is opposed to thalweg disposal; however, we hope you will keep an open mind on this alternative as well as other alternatives for maintaining the 9-foot channel project.

COMMENT 4 - Concur. Cessation of dredging would have substantial benefits to main channel habitats and would eliminate the need for placement of dredged materials on upland, wetland and/or aquatic habitats. Additionally, although sediments which would normally be removed from the river by dredging could contribute to filling of backwaters (a significant ecological problem according to most natural resource management agencies), this is a natural river process which over decades would likely result in diversification of habitats.

5 The first sentence in the third paragraph within section 3.3.1 should read, "Most wildlife species endemic to the river do not make extensive use of the main channel." The main channel of the river probably was and is used by a number of endemic riverine fish species.

6 The second paragraph within section 4.1.10 and the entire portion of Appendix C. outlines the protocol for a biological assessment for federally threatened and endangered species living within the CMMP boundaries. However, a similar outline is not provided for state endangered and threatened species. Simply acknowledging that the species exists within the state boundaries of the CMMP area does not provide any documentation that you will minimize dredging activities that impact state endangered and threatened species. The state endangered and threatened species are of equal importance to those states in which they inhabit and deserve similar consideration to the federal species.

7 Table 4-3 requires three corrections. The yellow sandshell is found in Crawford County. We believe you mean the black sandshell and not the bland sandshell. And finally, the sheepnose is endangered in Wisconsin, and it can be found in Crawford County.

8 The first sentence of the third paragraph within section 4.1.13 should read "Recreational beach sites are an important recreational resource on the river." Fishing is usually cited at the most popular activity and, therefore, the most popular recreational resource in the St. Paul District.

9 In section 5.1.2 the discussion on the impacts to freshwater mussels is conjecture. Although post dredging situations do not provide ideal habitat for freshwater mussels there are often fresh dead, young mussel shells found in recently placed dredged material. We would speculate that these fresh dead young shells are the freshwater mussels that have begun to recolonize the dredge cut. If that site was not dredged, the recolonizing mussels would have a chance to recover in the vicinity of the dredge cut and this may be occurring in as little as four years. (That is the nice trait about mussels. They do not lie about age; they show it off on their shells) Back in section 5.7.2.4.4 you do suggest that . . . "in some locations, continual dredging probably prevents the establishment of mussel beds." We would suggest that similar wording make it into section 5.1.2.

10 In section 5.7.2.1.1 the beginning date of the feasibility study is incorrect. It began in April of 1993.

DEIS COMMENTS ON APPENDIX B - SITE SPECIFIC IMPACT ASSESSMENT

11 Each pool has a general discussion on impacts before the specific impacts of each site is described. Under the "Impacts from Dredging" section, item b. requires some clarification. Take Pool 3 for instance. The impacts to fish and wildlife under the GREAT I was considered to be "Substantial adverse impacts . . ," but under the CMMP they are considered to be ". . . minor adverse impacts." Granted the impacted acreage under the CMMP is a 101.8 acre reduction from GREAT I, but dredging activities will still impact 375.8 acres of main channel habitat. When you consider that is in just one pool and comprise 44.5% of the main channel habitat in that one pool, we find it very hard to say that is a minor adverse impact. We suggest you reword item b. to reflect the true impact to fish and wildlife from main channel dredging.

Similar to the above comments is the fact that item c. lists the impacts to freshwater mussels as minor. Again, if the Corps dredges 44.5% of the main channel it is difficult to say the impacts are minor. The dredging would physically displace any mussels that are recolonizing the dredge cut and displace the fish

COMMENT 5 - Concur. This sentence has been revised as suggested.

COMMENT 6 - We recognize that State listed species are important, but disagree they present the same level of concern, either legally or ecologically, as Federally listed species. Many State listed species are extralimital, with robust populations thriving throughout their normal historic range. Other State listed species are declining throughout their historic range because of habitat alterations. These species should be and hopefully are being evaluated for their status on a Federal level. The information necessary to evaluate the impacts of any actions on these species is frequently lacking. The research on distribution and habitat requirements has not been completed for many of these species. The research that has been completed is frequently in "gray literature" or in the minds of State endangered species personnel. The sheer number of State listed species also makes any impact assessment difficult to complete. Further complicating impact assessments is the inconsistent listing of species between different States. State boundaries bisect the floodplain of the UMR and the various State threatened and endangered species lists are often not the same. Keeping in mind these difficulties, Appendix G of the Final EIS provides an assessment of the impacts of the CMMP on State listed threatened and endangered species.

COMMENT 7 - Table 4-3 has been revised to include the yellow sandshell mussel recorded from Crawford County, the "black" rather than "bland" sandshell and the sheepnose mussel found in Crawford County and listed as endangered.

COMMENT 8 - Concur. This sentence has been revised as suggested.

COMMENT 9 - Concur. This paragraph has been revised to reflect your concerns. A sentence has been added indicating that dredging likely precludes establishment of mussel beds in some locations.

COMMENT 10 - Concur. The date of the feasibility study has been corrected.

COMMENT 11 - Concur. The effects of dredging main channel habitats on fish and wildlife resources and freshwater mussels would be substantial under both the GREAT I and CMMP. However, the CMMP does reduce the total acreage dredged by 906 acres (3,894 acres under GREAT I vs. 2,988 acres under CMMP), a significant reduction in area and impacts. We have revised appropriate sections of Appendix B to better relate the relative impacts of the GREAT I plan in comparison to the CMMP.

11 host from the area until it recovers to a state that supports habitat for the host fish. These are not minor impacts nor are they minor amounts of area impacted.

12 In a number of cases, the specific site impact section on recreation (e.) states that recreational activities receive a minor benefit from dredged material. This benefit may be realized when a small amount of dredged material is placed onsite, but when the material is 40 plus feet high and all the shade trees are buried the benefit is neutralized. In cases of large stockpiles it would be more appropriate to list letter e. as "Stockpile sites provide neither a benefit nor impact to river beach recreation."

13 Below is a table that contains a comparison of all the sites' sizes within the CMMP and DEIS for the Wisconsin side. These numbers are often contradictory and as such must be changed to reflect the actual contents of the CMMP because that is what we have agreed to during negotiations and the basis for all future mitigation actions. We assume there is some logical explanation for these discrepancies, and a revised EIS will clearly and accurately notify EIS readers of the approved site size.

SITE NAME	CMMP SIZE	DEIS SIZE	COMMENT
SC-6.7-LWP	4 ACRES	9 ACRES	CORRECT DEIS TO AGREE WITH CMMP.
SC-6.5-LWP	7 ACRES	17 ACRES	CORRECT DEIS TO AGREE WITH CMMP.
3-808.4-LWP	13 ACRES	8 ACRES	WE ASSUME 13 ACRES INCORRECT. CORRECT DEIS TO AGREE WITH CMMP ACREAGE.
3-801.7-LWE	3 ACRES	12 ACRES	3 ACRE EMERGENCY SITE! CORRECT DEIS TO AGREE WITH CMMP ACREAGE.
3-799.3-LWP	10 ACRES	10 ACRES	CORRECT BUT SITE WILL BE ABANDONED.
3-799.2-RMT	7 ACRES	15 ACRES	MN SITE BUT WHAT IS THE TRUE SIZE OF SITE?
4-762.7-LWT	22 ACRES	55 ACRES	WOW, WHAT A DIFFERENCE! CORRECT DEIS TO AGREE WITH CMMP ACREAGE
4-759.3-LWT	22 ACRES	17 ACRES	IS THIS ADJUSTED FOR REDUCTION DUE TO HREP?
4-757.5-LW	46 ACRES	70 ACRES	THE SITE WILL NEVER BE 70 ACRES. CORRECT DEIS TO AGREE WITH CMMP.
4-756.5-LWT	8 ACRES	8 ACRES	BOTH DOCUMENTS AGREE.
4-754.0-LWP	7 ACRES	21 ACRES	MUST MITIGATE BEYOND THE 7 ACRES. CORRECT DEIS TO AGREE WITH CMMP ACREAGE.
5-744.7-LWT	18 ACRES	18 ACRES	ACREAGE LISTED IN PARENTHESIS. SHOULD BE UP FRONT AND CLEAR.
5A-734.5-LWE	3 ACRES	32 ACRES	3 ACRE EMERGENCY! CORRECT DEIS TO AGREE WITH CMMP ACREAGE.
5A-733.5-LWP	2 ACRES	18 ACRES	DESCRIBING THE ENTIRE SERVICE BASE. CORRECT DEIS TO AGREE WITH CMMP ACREAGE.

COMMENT 12 - Concur. However, when large "stockpile" or temporary sites are excavated, the "bathtub" created within the site becomes a desirable recreational site. We have revised appropriately throughout Appendix B to indicate that stockpile sites generally have little or no impact on recreation.

COMMENT 13 - In Appendix B of the Draft EIS, the introductory description of a site generally included an acreage estimate for the largest dimensions evaluated, not necessarily selected, under the GREAT I planning process and/or interim reconnaissance reports for dredged material placement. Often these descriptions were extracted in whole or in part from the GREAT I Environmental Impact Statement (Volume 9 of the GREAT I Technical Appendixes). In the Draft EIS, we attempted to identify the actual acreage proposed for use under the GREAT I or CMMP in bullet "b" of each impact summarization paragraph. We apologize for the confusion these descriptions obviously caused. In the Final EIS, throughout Appendix B we have clearly stated in bold print the acreages proposed for use under the CMMP and/or GREAT I. These acreages should be consistent with those presented in the CMMP.

In reference to site 4-759.3-LWT, the containment site originally occupied 22 acres. The Indian Slough HREP project permanently filled approximately 4.5 acres at the southern end of this 22 acres. However, to compensate for this lost acreage, an additional 4.5 acres on the northern end of the containment area was included in the CMMP. The site is considered 22 acres in size in both the CMMP and DEIS.

In reference to site 5A-731.8-LWP, use of this site was previously endorsed by the agencies under the GREAT I planning effort and by the River Resource Forum under the Lower Pool 5A Reconnaissance Report planning effort. The site is still being proposed for use under the CMMP. If beneficial use removal continues at the present rate from site 5A-731.9-LWP, it is unlikely use of site 5A-731.8-LWP will be needed during the 40-year planning timeframe. Additionally, to avoid the need to use site 5A-731.8-LWP, the District is pursuing excavation of the Wilds Bend containment site (site 5A-730.5-LWT) and transferring this material to gravel pits near Winona, Minnesota. However, at this point, the District's position is that site 5A-731.9-LWP alone does not provide the 40-year projected capacity and that site 5A-731.8-LWP needs to be part of the selected plan. We have noted the Wisconsin DNR's opposition to using this site in Section 1.2 *AREAS OF CONTROVERSY* and Appendix B of the Final EIS. Approximately 22 acres would be affected at this site if used for dredged material placement under the CMMP.

In reference to site 9-670.5-LWP, the correct figure is 68.5 acres which we rounded up to 69 acres in the Draft EIS.

SITE NAME	CMMP SIZE	DEIS SIZE	COMMENT
5A-731.9-LWP	6 ACRES	8 ACRES	2 ACRES ARE USED TO STOCKPILE CORPS ROCK AND SHOULD BE A PART OF TOTAL ACREAGE IMPACTED.
5A-731.8-LWP	22 ACRES	34 ACRES	SITE NOT AVAILABLE.
5A-730.5-LWT	8 ACRES	15 ACRES	CORRECT DEIS TO AGREE WITH CMMP ACREAGE.
7-714.1-LWP	5 ACRES	21 ACRES	CORRECT DEIS TO AGREE WITH CMMP ACREAGE.
7-708.7-LWE	2 ACRES	59 ACRES	CORRECT DEIS TO AGREE WITH CMMP ACREAGE.
8-695.7-LWP	9 ACRES	44 ACRES	CORRECT DEIS TO AGREE WITH CMMP ACREAGE.
8-690.4-LWT	14 ACRES	14 ACRES	BOTH DOCUMENTS AGREE.
9-677.7-LWP	2 ACRES	1 ACRES	HERE WE HAVE PREFERRED YOUR ERROR ON THE SIDE OF LARGER ACREAGE AND IT IS SCALED BACK FROM CMMP.
9-670.5-LWP	68.5 ACRES	67 ACRES	WHICH IS RIGHT?
9-663.5-LWP	5 ACRES	5 ACRES	BOTH DOCUMENTS AGREE.
10-647.1-LWP	4 ACRES	4 ACRES	BOTH DOCUMENTS AGREE.
10-643.5-LWI	3 ACRES	3 ACRES	BOTH DOCUMENTS AGREE.
10-642.4-LWP	4 ACRES	4 ACRES	THE "4 ACRE PORTION OF A 26 ACRES AGRICULTURAL FIELD . . . IS THE BEST DESCRIPTION IN THE DEIS. WE ASSUME THAT MOST OF THE OTHER SITES SHOULD HAVE BEEN DESCRIBED IN A SIMILAR FASHION.

DEIS COMMENTS ON APPENDIX D

14 On page D-10, under the section on the Hastings Small Boat Harbor, we believe there is an error in the reporting of PCB concentrations. The numbers are listed as ug/g which means part per million, and they should be ug/kg or part per billion. If not, these numbers are very high.

We believe the CMMP is a good document and that the errors contained within the DEIS are relatively easy to correct. We look forward to a corrected EIS and the endorsement of the CMMP and EIS within a short period of time.

Sincerely,

Gretchen L. Benjamin
Mississippi River Planner

c: Steve Johnson - MNDNR, St. Paul, MN
Kevin Szcodronski - IADNR, Des Moines, IA
Dan Krumholz - USACOE, Fountain City, WI
Gary Wege - USFWS, Bloomington, MN
Robert Whiting - USACOE, St. Paul, MN
Harold Taggatz - USACOE, St. Paul, MN
Hal Meier - WDNR, Fitchburg, WI
Ellen Fisher - WISDOT, Madison, WI
Jim Fisher - USFWS, Winona, MN

COMMENT 14 - Concur. The correct concentrations are 74.0 ug/kg and 54 ug/kg, respectively.

STATE OF IOWA

TERRY E. BRANSTAD, GOVERNOR

DEPARTMENT OF NATURAL RESOURCES
LARRY J. WILSON, DIRECTOR

January 17, 1997

Colonel J. M. Wonsik
Corps of Engineers, St. Paul District
190 Fifth Street East
St. Paul, MN 55101-1638

Dear Colonel Wonsik:

1 *Iowa Department of Natural Resources staff reviewed the April 1996 Channel Maintenance Management Plan for the Nine-Foot Navigation Channel Project for the Upper Mississippi River from the head of navigation to Guttenberg, Iowa and its associated October 31, 1996 draft environmental impact statement (EIS). We commend your agency for preparing these documents. We also appreciate the advanced interagency coordination on the placement sites that were incorporated into the plan. This work in itself can serve as a partial supplement to the 1974 EIS on operation and maintenance of the nine-foot channel and exemplifies the need for a supplement that addresses all aspects of operation and maintenance.*

Accurate descriptions of the placement sites and documentation of the acres involved are very important for the long-term success of the plan. The plan and EIS appear to have some inconsistencies in acres. Clarification of acres is needed for the following sites:

2
- *Indian Camp Light, Site 9-665.8-RIE -- The EIS on page B-147 references that this is a 23-acre site and the plan presents site dimensions for three acres. The reference to three acres is correct and the EIS needs to be changed to clearly state that the site is three acres.*

- *Lansing Containment Area, Site 9-664.3-RIT -- The plan states that GREAT selected the use of four acres for temporary placement of dredged material. However, the site has been developed to be nine acres, as presented in the site dimensions. The EIS on page B-148 introduces the site as being four acres. This needs to be changed to nine acres.*

- *Jackson Island, Site 10-644.5 RIE -- The plan presents this as a three-acre site. The EIS on page B-158 introduces it as a 20-acre site. Three acres are correct.*

- *McMillan Island, Site 10-618.7 RIT -- The plan presents this as a five-acre site. The EIS on page B-162 states that four acres on the site have already been used and an additional three acres could be developed. This totals seven acres, which is not possible on the site without filling a wetland. The intent of the plan is to keep sand out of the wetland. The EIS needs to be changed to reflect the agreed-upon five acres.*

WALLACE STATE OFFICE BUILDING / DES MOINES, IOWA 50319 / 515-281-5145 / TDD 515-242-5967 / FAX 515-281-8895

Responses to January 17, 1997, Iowa Department of Natural Resources letter - page 1

COMMENT 1 - Comment noted. We value the partnering attitude established between the St. Paul District and the Iowa Department of Natural Resources, and we look forward to future cooperative efforts on management of the Upper Mississippi River. We agree with your conclusion this EIS could serve as a partial supplement to the 1974 EIS.

COMMENT 2 - In Appendix B of the Draft EIS, the introductory description of a site generally included an acreage estimate for the largest dimensions evaluated, not necessarily selected, under the GREAT I planning process and/or interim reconnaissance reports for dredged material placement. Often these descriptions were extracted in whole or in part from the GREAT I Environmental Impact Statement (Volume 9 of the GREAT I Technical Appendixes). We attempted to identify the actual acreage proposed for use under the GREAT I or CMMP in bullet "b" of each impact summarization paragraph. We apologize for the confusion these descriptions obviously caused. In the Final EIS, throughout Appendix B we have clearly stated in bold print the acreages proposed for use under the CMMP and/or GREAT I. These acreages should be consistent with those presented in the CMMP.

2

- ***Buck Creek, Site 10-618.0-RIP -- The site dimensions in the plan present a ten-acre site. The EIS on page B-162 states that eight acres have been identified. Which acreage is correct?***

3

We also reviewed placement sites in Iowa relative to state listed threatened and endangered species. The following are the listed species that are associated with the Mississippi River valley in Allamakee and Clayton Counties. We are not aware of any direct impacts on listed species, but they should be kept in mind during channel maintenance activities.

Common Name	Scientific Name	Status
Bald Eagle	Haliaeetus leucocephalus	Endangered
Higgin's-eye Pearly Mussel	Lampsilis higginsii	Endangered
Pirate Perch	Aphredoderus sayanus	Special concern
Strange Floater	Strophitus undulatus	Threatened
Slough Sandshell	Lampsilis teres teres	Endangered
Pugnose Minnow	Notropis emilae	Special concern
Bluntnose Darter	Etheostoma chlorosomum	Endangered
Western Sand Darter	Ammocrypta clara	Threatened
Stinkpot Turtle	Sternotherus odoratus	Threatened

Thank you for the opportunity to review and provide comments on the plan and EIS. We look forward to continued coordination with your agency on Mississippi River matters.

Sincerely,

LARRY J. WILSON
DIRECTOR

COMMENT 3 - We have updated the listings of threatened and endangered species in Section 4.0 *Affected Environment* to include these species. We have assessed the impacts of the CMMP on State listed threatened or endangered species in Appendix G of the Final EIS.

Minnesota Department of Natural Resources

500 Lafayette Road
St. Paul, Minnesota 55155-40__

January 17, 1997

Col. J.M. Wonsik
St. Paul District
Corps of Engineers
190 Fifth St. E.
St. Paul, MN 55101-1638

Re: Upper Mississippi River System Channel Maintenance Management Plan and Draft Environmental Impact Statement

Dear Col. Wonsik:

The Minnesota Department of Natural Resources has completed its review of the Upper Mississippi River System Channel Maintenance Management Plan (CMMP) and Draft Environmental Impact Statement (DEIS). This letter contains our comments on both documents.

EIS Adequacy

1 We are disappointed that the Corps of Engineers has not responded positively to our comments of April 17, 1995 concerning fragmentation under the National Environmental Policy Act (NEPA). It is obvious that the Final EIS on Operation and Maintenance of the Nine-Foot Channel, completed in 1974, is outdated and inadequate. A Supplemental EIS on operation and maintenance of the entire Upper Mississippi River Navigation System is needed. To move forward at this time with an EIS on the "maintenance" portion of "operation and maintenance" for only one of three Corps districts involved in management of the Upper Mississippi River is clearly an unacceptable fragmentation of the NEPA process.

2 By narrowing the scope of the study, the Corps has attempted to avoid addressing the serious environmental consequences of creating, operating and maintaining a nine-foot navigation channel between St. Louis and Minneapolis. By focusing on individual dredged material disposal sites, the significant cumulative impacts of operating and maintaining the navigation system are not being addressed. While most of our comments on the CMMP and DEIS must necessarily focus on the details of those documents, it should be underscored that this agency is deeply troubled by the profound negative changes that have occurred and continue to occur in the riverine ecosystem. We are also very concerned about the Corps' unwillingness to acknowledge those impacts and to begin to reverse the damage done to this magnificent resource.

Navigation pool operations are an integral part of maintaining the navigation channel. Eliminating pool operations from the DEIS takes all other activities out of context with the river as a hydrologic

Responses to January 17, 1997, Minnesota Department of Natural Resources letter - page 1

COMMENT 1 - We disagree that this EIS fragments the NEPA process. The St. Paul District's position on this issue is stated in Section 1.2 *Areas of Controversy*. As discussed in Section 1.2 and further described in Section 2.1 *Project Background*, the Channel Maintenance Management Plan (CMMP) is an outgrowth of and an alternative to the long-term dredged material placement plan and other dredging recommendations made by the Great River Environmental Action Team (GREAT I) study and Environmental Impact Statement (EIS) completed in 1980. As such, the CMMP focuses on describing the District's proposed "maintenance" of the 9-foot channel project. Neither the GREAT I study nor the CMMP discusses or presents alternatives to current "operation" of the 9-foot channel project. By necessity, the CMMP EIS discusses and contrasts the environmental impacts of the GREAT I plan and CMMP. It is the St. Paul District's position the CMMP EIS is not fragmentation, but a continuation or "tiering" of the efforts of the GREAT I study and EIS. Tiering is permitted under Council on Environmental Quality (CEQ) guidelines at 1508.28.

COMMENT 2 - We have not narrowed the scope of the study. Scoping has been an ongoing iterative process since publication of the GREAT I study in 1980. Actually, the GREAT I study was a continuation or tiering of the channel maintenance plan described in the 1974, 9-foot channel operation and maintenance EIS. As discussed in Section 1.2 *Areas of Controversy*, and further described in Section 2.1 *Project Background,* the CMMP is a continuation of the channel maintenance planning process initiated by the GREAT I study. Since the completion of the GREAT I study and accompanying EIS in 1980, planning for implementation of the GREAT I recommendations has focused on development of plans for maintenance of the 9-foot channel. The scope of the study, beginning with GREAT I and culminating with the CMMP, has always been focused on maintenance of the 9-foot channel. Operation of the 9-foot channel project was never considered under GREAT I or the CMMP. Corps of Engineers dredging regulations require that the District develop a long-term management strategy for dredged material disposal. The CMMP is the District's long-term management strategy.

Alternatives have been continuously investigated since the 1974 EIS through GREAT I through pool level reconnaissance reports to the CMMP. The CMMP represents an intensively coordinated program for approaching future channel maintenance. Only two alternative programs are included in the EIS because that is the decision to be made; i.e., proceed with implementation of the CMMP or revert to the GREAT I plan (No Action). Maintenance of the 9-foot channel is mandated by Congress. Various alternative placement locations are evaluated in Appendix B of the Final EIS.

Section 5.7 *Cumulative Impacts* of the EIS discusses the cumulative impacts of maintaining the 9-foot channel in relation to other factors, including operation of the project. We believe the CMMP significantly reduces the impacts of channel maintenance activities on the riverine ecosystem compared to the GREAT I plan.

We disagree that the EIS has fragmented the NEPA process as discussed in our response to comment 1. The CMMP is clearly a continuation of the planning process initiated by the GREAT I study. The proposed use of an extensive number of GREAT I recommended sites within the CMMP establishes a clear link to GREAT I. The impacts of the CMMP (including cumulative impacts) compared to the GREAT I plan are clearly documented and disclosed in the EIS. We disagree that the EIS is inadequate. We believe the purpose of NEPA is clearly achieved.

2 system and therefore renders the DEIS inadequate in disclosing the environmental impacts of channel maintenance and management. The Corps' approach fragments consideration of impacts into multiple planning efforts and documents that are not clearly linked. This creates an atmosphere for review that dilutes the ability of public agencies to provide meaningful, complete and coherent input to plans that will have a profound effect on future ecological resilience (health) of the Mississippi River. This omission of system-level oversight constitutes a fragmented approach to disclosing impacts. The purpose of NEPA is therefore not achieved.

3 Our CMMP scoping letter of May 2, 1991 asked that the DEIS include information on the cost of conducting channel maintenance activities, including the operation and maintenance of the locks and dams. We asked for an accounting of the portion of the cost of operation and maintenance that is paid by the federal government and the portion paid by the benefiting industry. The DEIS fails to address those important issues, and only identifies the savings affording the shipping industry. The tone of the documents suggests costs of channel maintenance are important only when there is increased costs associated with reducing environmental damage. While the documents give importance to avoiding increased costs in order to reduce environmental damage, they downplay negative environmental impacts and discount them as "minimal" (DEIS, page 3-12, 5-14, 5-72, 5-73). This sets a tone for the documents that implies something much different than a balanced analysis of the environmental impacts of alternatives.

4 The biological assessment relative to threatened and endangered species is fundamentally inadequate. It focuses exclusively on bald eagles and mussels, and fails to adequately assess the impacts to both. It fails to address impacts to other protected species, except to list them on Tables 4-2, 4-4, 4-5, 4-6, 4-7 and 4-8 on pages 4-13 to 4-21; impacts to those plant and animal species need to be discussed. With respect to bald eagles, the DEIS ignores negative impacts and concentrates on justifying current conditions rather than honestly assessing impacts and opportunities for remediation. With respect to mussels, the DEIS uses data collected in the 1970s to suggest mussels are absent from large sections of the river, while more current data is available that documents mussel populations. Changing habitat conditions and improved water quality in the river since the 1970s, and the now-outdated collection methods used in the 1970s, confirm the clear need for a comprehensive mussel survey in the Mississippi River.

5 On the whole, we find the DEIS unacceptable and we urge the Corps to prepare a Supplemental EIS to the 1974 document and provide a comprehensive analysis of the cumulative environmental impacts of operation and maintenance of the nine-foot navigation channel between St. Louis and Minneapolis. Will the Corps of Engineers agree to supplement the inadequate 1974 EIS?

Technical comments follow and are divided into three segments: comments on the CMMP, comments on the DEIS, and comments on specific dredged material placement sites.

COMMENT 3 - Information on the cost of conducting channel maintenance activities and operation of the locks and dams has been provided in Section 3.3 *COMPARISON OF ALTERNATIVES*. Negative environmental impacts are documented throughout the EIS. We believe most of the impacts of proposed channel maintenance activities under the CMMP are indeed minimal and for the most part less than those proposed under the GREAT I plan. We believe the EIS provides full and fair disclosure of the environmental impacts of the CMMP.

COMMENT 4 - The Biological Assessment has been revised based on your comments and comments received from the United States Department of the Interior (see pages F-1 through F-22). It is important to recognize this assessment evaluates the "potential" for impacts to threatened and endangered species. Where this assessment has determined a threatened or endangered species could be affected or where there is inadequate information at this time to make a determination, surveys and site specific information will need to be collected before an assessment of impacts can be completed. If site specific surveys identify the presence of threatened or endangered species in the vicinity of a project component, more detailed impact assessments would be completed and coordinated with the appropriate agencies. Additionally, an assessment of the potential to affect State listed threatened and endangered species has been prepared and is included as Appendix G.

COMMENT 5 - The adequacy of the 1974 EIS is an issue separate from development of the CMMP and completion of the CMMP EIS. At this time, we have not made a determination on the need for updating the 1974 EIS. No changes in the operational aspects of the 9-foot navigation channel are being proposed at this time. The District will be evaluating the adequacy of the 1974 EIS on operation and maintenance of the 9-foot channel within the St. Paul District to determine if it should be revised/updated to reflect the changing conditions of the Upper Mississippi River (UMR) environment.

We are disappointed that the Minnesota Department of Natural Resources finds the Draft EIS unacceptable. We will make the necessary corrections and changes detailed in the remainder of your letter to improve the EIS. However, it appears your condemnation of the Draft EIS is based largely on your desire to have the 1974 EIS updated prior to implementation of the CMMP. We do not agree with this position.

Col. J. M. Wonsik
Jan. 17, 1997
Page 3

Channel Maintenance Management Plan (CMMP)

6 **Page 4, Section 4.9, and page 13, Section 6.3.7:** Consistent with these sections, Minnesota DNR has identified those placement sites that need additional floodplain impacts analysis (please refer to the letter of Nov. 8, 1996 to Dean Peterson signed by Dale Homuth and James F. Cooper).

7 **Page A-4 of Appendix A** contains a statement in the first paragraph that "A permit does exist which covers all previously endorsed permanent and temporary placement sites." That is incorrect; the Minnesota DNR permit for placement lists the approved sites in Appendix A of that permit (it is incorrectly referred to as Appendix B in this same paragraph).

8 **Appendix D, page D-9:** A table to convert relative habitat units (RHU) to matrix values should be included here, but isn't. This table was developed initially for the revised Pool 3 Reconnaissance Plan, but was to be applied throughout the system and should be included here.

Tab 1, Table 1-3 Designated Placement Sites by Dredging Location: Please refer to the section of this letter that addresses placement sites for more information about individual sites.

9 With respect to Cut 2-7, the third-priority placement site (2-837.5-RMP) is not an acceptable placement site and must be removed from this table. This is the St. Paul Barge Terminal site, which would involve filling a portion of the main channel, permanently converting aquatic habitat to dry land and providing unacceptable flood impacts. We have had lengthy discussions of this site with the Corps in the past. Footnote 1 is no longer relevant and should be removed from this table, as should the first-priority site (2-836.8-RMP), since it has been filled and material will not be placed there again. Site 2-836.3-RMP (Southport) should be listed as the first-priority placement site.

10 While we do not object to the table continuing to list site 2-822.5-LMP as the first priority permanent placement site for cuts 2-5B, 2-5A, 2-4, 2-3 and 2-2, we feel the potential for the Corps to acquire rights to use that site are slim and other alternatives beyond the limited capability of the CF Industries site (2-823.8-RMP) need to be explored sooner rather than later.

11 With respect to cut 3-3 and the emergency placement site 3-802.3-RME, it is not appropriate to list this as having potential for hydraulic placement since it is only three acres in size and the scenario developed to justify this site focused exclusively on an emergency in which only limited mechanical equipment would be available.

12 It appears that site 4-794.7-RMP is not an acceptable site; if that is the case, it should be removed from this table as the first-priority placement site for cut 4-10. (See page 18 of this letter for more detailed comments.

COMMENT 6 - The District has evaluated many of the sites in the CMMP for floodplain impacts. The District has begun an evaluation of floodplain impacts for previously unevaluated sites in the CMMP. The CMMP will be revised when appropriate to reflect the results of that evaluation. The sites identified in the Minnesota Department of Natural Resources letter dated November 8, 1996, are included in that evaluation.

COMMENT 7 - Concur. This paragraph has been corrected.

COMMENT 8 - Recent reconnaissance reports have used different conversion tables. The lower pool 2 reconnaissance report used a conversion table commensurate with all past reconnaissance reports prepared since the mid-1980's. The pool 3 conversion table was developed for the unique characteristics of the pool 3 planning effort and was approved only at a staff level basis. In retrospect, we feel it was inappropriate to have used the pool 3 conversion table and do not support the inclusion of this conversion table in the CMMP as a standard for future planning efforts. Rather than include any table in the CMMP, we would prefer to work with the agencies in the future to develop a mutually acceptable conversion table.

COMMENT 9 - Site 2-837.5-RMP (St. Paul Barge Terminal) is an approved GREAT I site and is included in the CMMP because no other suitable sites have been identified. We are working on development of Site 2-836.3-RMP (Southport) as an alternative to site 2-837.5-RMP; however, at this time it is uncertain whether the Southport site has adequate capacity to contain the projected dredging needs for this section of the UMR. Therefore, the St. Paul Barge Terminal site will remain in the CMMP until another site is identified. We look forward to working with the Minnesota Department of Natural Resources in identifying environmentally acceptable alternative sites in this part of the UMR.

Site 2-836.8-RMP and footnote 1 have been deleted from Table 1-3. Site 2-836.3-RMP is listed as the first-priority placement site.

COMMENT 10 - Comment noted. We have initiated actions to obtain rights to use site 2-822.5-LMP and believe a more positive approach to use of the site is appropriate. We are confident use of this site will be confirmed in the near future.

COMMENT 11 - We disagree. The greatest likelihood for use of this site would involve hydraulic disposal. If an emergency occurred where only mechanical equipment was available, we would likely barge the material to either site 3-799.2-RMT (Corps Island) or site 3-801.7-LWE (Coulters). In any case, site 3-802.3-LWE is considered a second priority site. As stated in the CMMP, we will only use this site if site 3-801.7-LWE is not available or cannot be reached by hydraulic pipeline.

COMMENT 12 - Before this site is considered for removal from the CMMP, we would like to discuss the ramifications of site use with the Minnesota Department of Natural Resources. We understand the site is apparently located in a posted fish spawning area and, therefore, materials cannot be placed on the site. We would like to discuss the possibility of enhancing the area for fish spawning through the use of dredged material. Walleye and sauger species are known to prefer gravel/cobble or coarse sand substrates for spawning. Perhaps placement of materials on this site could improve conditions.

13 Site 4-757.5-LW should be labeled 4-757.5-LWT.

14 Cut 4-4 does not appear to have a selected placement site, other than sites 4-760.2-RMP, 4-759.5-RMP, and 4-759.3-RMP, all of which were filled to capacity and diverted to other uses in 1987; these three sites are referenced here, but are not found in the CMMP site listing itself. The Corps needs to develop a permanent placement site for material coming from this cut and include it in the CMMP.

Cut 4-3 does not list a permanent placement site. The Corps needs to develop a permanent placement site for material coming from this cut and include it in the CMMP.

We have serious concerns about a 40-year dredged material placement plan that contains no plans at all for two dredge cuts in Lower Pool 4, one of the busiest areas on the entire Mississippi River for dredging. These two cuts were both last dredged in 1995, have a frequency of 73.1 and 53.8 percent, respectively, and average annual volumes of 66,500 cubic yards and 30,100 cubic yards, respectively.

Tab 3, Dredged Material Placement Site Information, Table 3-1, Dredged Material Placement Sites: As will be discussed in a later section, acreage figures shown on this table are questioned in a number of cases where there are inconsistencies between GREAT, CMMP and DEIS.

15 DEIS *Table A-2, Dredged Material Placement Sites (April 1996)*, and CMMP *Tab 3, Table 3-1, Dredged Material Placement Site Information*, are identical. Both list the four placement sites in Lower Pool 2 as having been endorsed by the RRF in April 1996; that endorsement has not occurred and both tables should be corrected. The Corps has tied all its placement plans in lower Pool 2 to the Shiely Pit, but it is unclear if it will ever obtain the rights to place material at that site. Both tables also list the Ag. Land South placement site in lower Pool 3, which the Corps has now agreed not to acquire or develop, opting instead for a gravel pit site for which it has not yet received landowner permission or RRF endorsement. Both tables should be corrected to include this more current information.

16 A comparison of these tables with individual placement sites shows these tables seriously misuse the terms "wetland" and "upland". The 1987 Corps of Engineers manual for wetland delineation should be consulted in revising these tables. The three characteristics of wetlands---hydrology, hydrophytic vegetation and hydric soils---are present at many sites described in these tables as upland, or were present prior to recent disturbance, or would (in the case of vegetation) return over time following disturbance. Many sites where dredged material was placed in the past are described in these tables as upland even though they have revegetated as floodplain forests. For example, the four island sites grouped in the table as SC-16-17-LWP are proposed as placement to control willow growth; these islands flood annually and contain wetland vegetation, and cannot be described as

COMMENT 13 - No designation of site type is provided for site 4-757.5-LW (Teepeeota Point) in accordance with an agreement between the St. Paul District and the Wisconsin Department of Natural Resources not to list this site as permanent or temporary. For the 40-year planning window of the CMMP, the site will be a permanent site; however, beyond the 40-year window, the site may be excavated and could be considered a temporary site. We have agreed to disagree on the designation of this site as permanent or temporary; therefore, no site designation is provided.

COMMENT 14 - Material for cut 4-4 (Above Crats Island) will be placed in site 4-759.3-LWT (Crats Island) which was excavated in 1987 and transferred to the referenced sites. Material from cut 4-3 (Above Teepeeota Point) will be placed at site 4-757.5-LW (Teepeeota Point) which will be expanded to 46 acres. We do have plans for these two cuts and these plans are detailed in the CMMP.

COMMENT 15 - We have corrected both tables concerning RRF endorsement of the four placement sites in lower pool 2. See response to comment 10 in reference to the Shiely Pit site. The Ag. Land South site has been removed from both tables and the quarry sites inserted with appropriate notation of RRF endorsements.

COMMENT 16 - We disagree with your upland/wetland designations for several reasons.

Habitat descriptions, to the extent practical, were described as they existed immediately post GREAT I. To be as consistent as possible with GREAT I, habitat types have been described in the CMMP and EIS using the GREAT I habitat descriptions. Some of the wetland impacts associated with the CMMP have already occurred in the 16 intervening years since GREAT I. For example, Reads Landing is described as it existed prior to the construction and use of the containment site, not as it existed last year as an excavated containment site (as the MDNR would describe it) or as a containment site with a 60-foot pile height (which it was two years ago). Over one-third of the acres of wetlands described as being affected by the CMMP in the EIS have already been impacted, assessed under individual site-specific environmental assessments at the time of the impact, and permitted by your agency and/or other appropriate State agencies.

The 1974 Operation and Maintenance EIS (Exhibits 174 - 186) and the GREAT I report (Sediment and Erosion Control Work Group Appendix) describe historical wetland impacts resulting from channel maintenance activities. These past studies have accounted for all historical wetland impacts and are incorporated by reference and discussed in Section 5. 7 *CUMULATIVE IMPACTS* of the EIS. Many of the wetlands historically impacted were identified either as recreational beaches or as old dredged material habitats in the GREAT I Plan and CMMP. Table 4-1 of the EIS identifies the approximate acres of old dredged material/recreational beach habitat (sand) present in the floodplain of the UMR based on studies by Olson and Meyer (1976). Re-counting these previously filled wetlands as affected in the EIS would be double-counting the impacts.

We believe placement of dredged or fill materials in a wetland above a certain elevation permanently converts this habitat from wetland to upland. However, at least a portion of some of the placement sites

16 "upland". Many sites described in the CMMP as old dredged material placement sites exhibit all the characteristics of wetlands. Likewise, the containment sites like Reads Landing may have been extensively disturbed, but they cannot be described as "upland". In 1996, fish could be found in the Reads Landing site---that's not upland. These tables need extensive revision. We have revised page 6 of Tab 3-1 based on our understanding of wetland definitions and our knowledge of the disposal sites. It is enclosed as **Attachment A.**

17 **Table 3-2, Recreation Beach Sites:** All sites in Pools 2, 3, 4 and 5 as listed in the table should be deleted. The beach planning process currently being coordinated by the Corps provides a better and more coordinated field inspection and interagency review than efforts undertaken in the GREAT studies. A draft plan for Pool 3 and Upper Pool 4 is still under review by federal and state agencies. Beach planning for Lower Pool 4 and Pool 5 is scheduled for Summer 1997. It would be presumptuous to assume sites, particularly in Lower Pool 4 and Pool 5, that were last reviewed in 1978 or earlier are still appropriate sites for beach development.

18 Sites 8-694.6R, 8-690.8R, 8-690.5R, and 8-688.5R, all located in Minnesota, must have under the column titled "estimated capacity (cy)" a modifier that reads "Final TBD by OSIT". Any placement of material at these sites must first be approved by the On-Site Inspection Team in keeping with conditions Minnesota placed on its approval of the Pool 8 Beach Plan in 1988.

With respect to site 7-711.7R, under the column titled "estimated capacity (cy)" the text should be changed to "Reshape, TBD by OSIT or Emerg".

The notation "Emerg" that appears in this table needs to be defined. We are not aware that any recreation beach sites have been identified as emergency placement sites.

19 **Table 3-4, Record of Beneficial Use:** We do not think it is appropriate to credit material as having gone to a beneficial use when only "the potential exists for it to be used" beneficially. Could dredged material be placed *anywhere* without the *potential* that it might be beneficially used sometime in the future?

Tab 4, Dredging Location (Cut) Information: There are a number of inconsistencies between DEIS *Table A-1, Dredge Cuts Within the St. Paul District (Locations, Status and Frequency of Maintenance)*, and CMMP *Tab 4, Table 4-1, Summary of Dredging Locations*:

20 DEIS Table A-1 lists the north-point of the Hudson dredge cut on the St. Croix at mile 17.8, while CMMP Table 4-1 lists it at mile 17.6; Table A-1 lists the south-point at mile 16.2, while CMMP Table 4-1 lists it at mile 16.1. DEIS Table A-1 is consistent with GREAT I, Volume 8, Part II.

21 CMMP Table 4-1 has misspelled the word "Plymouth" in listing USAF cuts.

COMMENT 16 (continued) - defined as old dredged material or recreational beaches in the CMMP could likely be classified as disturbed bottomland forest (type 1-2 wetlands) under the 1987 wetlands manual. In the 1987 manual, wetlands are defined by three characteristics: vegetation, soils, and hydrology. Some CMMP proposed sites have remnant stands or are being colonized by facultative wetland species, such as cottonwood, elm, silver maple, poison ivy, nettles, etc. These species are characteristic of bottomland forest wetlands, within the District. However, being facultative wetland species, they also occur in upland conditions. The presence of these species at a site does not dictate that the site is a wetland; hydric soils and hydrology also must be present. Many of these sites have been elevated 5 to 60 feet above normal pool through past dredged material disposal and are only inundated under low frequency flood events (greater than a 10-year flood event). The dredged material placed at most of these sites was predominantly sand, and as a result, hydric soils are not likely to have developed. A majority of these old placement sites do not have the necessary hydrology or hydric soils to be classified as wetlands. However, some or a portion of these areas which did not receive as much dredged material could be delineated as disturbed wetlands. We believe performing site specific wetland delineations for all sites in the CMMP would not appreciably change the total number of acres of wetlands identified as impacted under the CMMP in the EIS. In addition, since GREAT I did not clearly mark the boundaries of their proposed sites, a similar wetland delineation effort for the GREAT I plan to provide comparison would be virtually impossible. While we recognize that there is some potential for GREAT I sites to contain wetlands, we believe it would not serve the purpose of this document to redefine the habitat classifications of GREAT I. Sites were not surveyed for wetlands using current wetland classification manuals under the GREAT I Study and our best information is that there has not been any significant change in the character of sites subsequent to the GREAT I Study. Since this document compares the GREAT I plan to the CMMP plan, we believe that redesignation of the GREAT I sites would skew the comparison between the two alternatives and would not serve the NEPA process. In the Final EIS we have removed the simple wetland/upland distinction in favor of identifying the specific habitat type affected. New sites (sites not presently included as part of the CMMP) would be delineated according to the criteria established in the 1987 wetlands manual or most current manual being used in the Corps of Engineer's 404 regulatory program.

COMMENT 17 - While we agree the current beach planning process is an improvement on the GREAT I studies, we believe the identified beaches in pools 2, 3, 4, and 5 should remain in the CMMP to provide some perspective on what the Recreational Beach program includes and entails. These sites have been footnoted in the CMMP and DEIS to indicate that these sites would be reviewed as part of the current beach planning process and may be modified and/or eliminated. Additionally, rather than being presumptuous it is far-sighted to assume sites in these pools will likely be a part of future plans for beach development. Also, including these sites provides a more complete disclosure of the level of impacts associated with beach development.

COMMENT 18 - We have removed the notation of Emerg. from Table 3-2. The OSIT designation has been added to the pool 8 sites. The table contains many abbreviations to ensure the table is readable. We feel the OSIT designation is sufficient to convey the message that the On-site Inspection Team will be used to determine the quantity of dredged material placed at the sites for the purposes of beach development/enhancement.

22 DEIS Table A-1 assigns dredge cut numbers to each cut, while CMMP Table 4-1 does not. For ease in understanding, the two should be consistent.

23 DEIS Table A-1 lists all historic dredge cuts, while CMMP Table 4-1 lists only cuts dredged since 1970. DEIS Table A-1 does not provide any data about these inactive cuts, stating there is "no data available." DEIS Table A-1 should either eliminate listing the inactive cuts for consistency with CMMP Table 4-1, or include pre-1970 dredging data, which is available in the *Final EIS for Operation and Maintenance of the Nine-Foot Navigation Channel (August 1974)*. For example, CMMP Table 4-1 lists two dredge cuts on the St. Croix, while DEIS Table A-1 lists three. The third listing is Catfish Bar (mile 11.5-12.2), but DEIS Table A-1 provides no data about historic dredging activity. Catfish Bar was dredged twice since construction of the nine-foot channel: in 1937 (20,000 cy) and 1968 (33,000 cy). Historic information is similarly available for the four inactive cuts in Pool 2 that are listed in DEIS Table A-1 but not in CMMP Table 4-1 (and for inactive cuts in the other pools). If a cut has not required dredging since 1970 (26 years), it would seem appropriate to conclude it is not going to require future dredging and delete it from the list. If it is going to be listed, though, it should be listed with complete information.

24 CMMP Table 4-1 lists the La Crosse cut (mile 698.6-698.7) as last being dredged in 1989; DEIS Table A-1 fails to list that cut. Similarly, CMMP Table 4-1 lists the McMillan Island cut (mile 618.4-619.6) as last being dredged in 1995; DEIS Table A-1 fails to list that cut. The two tables should be consistent.

Tab 5, Sediment Quality and Characteristic Data: We did not review this section, preferring to depend on the Minnesota Pollution Control Agency for its analysis.

25 **Tab 7, Channel Management Plan:** Despite the title, Tab 7 does not contain a Channel Management Plan, but merely a description of the Channel Management Plan development process. Individual channel management plans will be developed for each pool; CMMP approval would not imply approval of individual channel management plans.

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26 **Section 1.3, page 1-3:** As noted elsewhere in this letter, there are many unresolved issues the CMMP does not address, beyond those described in this section. There are dredge cuts for which no placement site has been identified; there are areas where long-term placement goals are unlikely to be met due to the inability to obtain permission from private landowners; there are inconsistencies concerning site acreage; there are numerous issues that this plan does not resolve.

COMMENT 19 - Section 6.3.6 and Tab 3-4 of the CMMP explains our policy and practices on beneficial use of dredged material. Material is used beneficially either directly at the site where it is placed or where there is land access available so that it can be removed and used beneficially elsewhere. Designation of beneficial use is well established and documented in annual reports for over 20 years.

COMMENT 20 - Table A-1 in the Draft EIS has been corrected to conform with CMMP Table 4-1.

COMMENT 21 - The spelling of Plymouth has been corrected in CMMP Table 4-1.

COMMENT 22 - Generally, the CMMP only discusses actions proposed under the CMMP and does not cover actions proposed under the GREAT I plan. The DEIS compares and contrasts the CMMP plan and the GREAT I plan; as a result, some minor differences in the way the two documents present information exists. Many historic dredge cuts, included in the GREAT I plan, were excluded from the CMMP because it was determined they would not likely be dredged under the CMMP. The dredge cut numbers were included in the DEIS to assist the reader in understanding the GREAT I plan and to provide a link back to the GREAT I EIS, which used dredge cut numbers extensively. Since Table 4-1 in the CMMP lists only dredge cuts covered under the CMMP, we feel it may be confusing to put dredge cut numbers in CMMP Table 4-1.

COMMENT 23 - Table A-1 of the Final EIS lists all historic dredge cuts with complete information on dredging frequency, volume and year last dredged. The CMMP identifies the most likely future dredging locations based on recent (post 1970) experience.

COMMENT 24 - The La Crosse cut has been added to Table A-1 of the Final EIS. The McMillan Island cut was listed in Table A-1 of the Draft EIS (see page A-8) and is listed in Table A-1 of the Final EIS.

COMMENT 25 - We consider the title of Tab 7 to be appropriate. Approval of the CMMP does not imply approval of individual channel management plans.

COMMENT 26 - The major areas of concern identified by various commenters have been treated in several different ways. Some of the issues raised by the Minnesota DNR and other commenters have been identifed in either Section 1.2 *Areas of Controversy* or Section 1.3 *Unresolved Issues*. Issues where we agree to disagree with one or more of the commenters were added to Section 1.2 *Areas of Controversy*, along with statements why we feel our position is justified. Issues that were identified, but which the District does not have a position, have been added to Section 1.3 *Unresolved Issues*. Some remaining major issues have been clarified by responding to individual comments and/or by changes in the Final EIS and/or CMMP. Another way we have treated some of the major issues was to agree with the comment and add more information or make modifications as appropriate in the Final EIS and/or CMMP. The final way we treated some of these concerns were to incorporate them into Section 1.5 *Further Studies* or Section 2.4 *Content and Scope of EIS.*

27 **Section 3.2, Alternatives, page 3-3:** We question the validity, under NEPA guidelines, of an Environmental Impact Statement that looks only at the no-action alternative (continued implementation of GREAT) and the proposed course of action. It seems clear that a broader range of alternatives must be evaluated. We raised this point in our letter of Sept. 23, 1996. A NEPA-compliant document must look at a reasonable range of alternatives; this DEIS does not.

28 **Section 3.3.1, page 3-12:** The discussion in the last paragraph of this page of the socioeconomic benefits of channel maintenance is inadequate. While making a vague reference to the costs savings benefitting the transportation industry, the document fails to discuss economic costs of operating and maintaining the system, the environmental costs of the navigation system, and the economic costs to natural resources and recreation.

29 **Section 3.3.5, page 3-17:** The statement that recreational beaches "have little impact on fish and wildlife and other resources" appears to contradict the statement in **Section 5.4.4 on page 5-42** that beach development increases human use, and "due to increased human usage, wildlife use of developed areas would be eliminated or substantially reduced."

Section 4.1.7, page 4-5: Minnesota's fish consumption advisories are prepared and distributed by the Minnesota Department of Health, not DNR. Current fish consumption advisories for the Mississippi River cover a larger area than described in this section, for some species extending throughout the commercially navigable Mississippi, Minnesota and St. Croix rivers in Minnesota. Under no circumstances, however, does the advisory cover "all" species as stated in the DEIS. Most of the advisories are in response to PCB contamination, although mercury contamination is noted in some areas.

30 **Section 4.1.9, page 4-10:** This description of the fish and wildlife resources of the Upper Mississippi River profoundly understates the importance of the largest floodplain river ecosystem in the Northern Hemisphere. By ignoring the global importance of these resources in this document, the DEIS has the effect of blunting the values of this biological system.

31 **Section 4.1.9.3, page 4-14:** Two errors are noted in the first paragraph: Unionids do thrive in water more than six feet deep, and the listing should note that unionids are also important food items for fish. In the second paragraph, it should be noted that the main channel was---and in some areas still is---important mussel habitat, as are side channels.

Table 4-3, page 4-15: Our letter of Sept. 23, 1996, was incomplete in the listing of protected mussels. The Elktoe *(Alasmidonta marginata)* was found in the Mississippi River in Wabasha County in 1996. The Washboard *(Megalonaias nervosa)* was found in the Mississippi River in

COMMENT 26 (continued) - The first comment concerning the lack of a placement plan for certain dredge cuts can be clarified through additional information. The CMMP and Draft EIS identified a placement site for every dredge cut the District anticipates dredging during the 40-year planning period. For the second concern, it is presumptuous for the Minnesota DNR to assume it is unlikely that long-term goals can be met due to the inability to obtain permission from private landowners. We recognize parts of the CMMP do not have all the details worked out concerning implementation. The channel management plan only identifies a planning process that would be used. Cultural resources surveys and coordination would be needed for many sites. Endangered species surveys and further coordination would be required for actions in the CMMP identified as "no determination" or only treated programmatically in the Biological Assessment. Real estate agreements or acquistions have not been obtained for all sites. In all cases, we have identified a process to treat these issues. We have identified many factors in Section 5.8 *Compliance with Other Laws and Statutes* required to implement the selected plan.

COMMENT 27 - See response to comment 2.

COMMENT 28 - See response to comment 3.

COMMENT 29 - These sections have been revised as suggested in your comment to either clarify a statement or correct an error.

COMMENT 30 - We have revised Section 4.1.9 *Fish and Wildlife Resources of UMR* to clearly state the global significance of the UMR.

COMMENT 31 - These sections have been revised as suggested in your comment to either clarify a statement or correct an error.

31 Wabasha and Goodhue counties in 1996. The Round pigtoe *(Pleurobema coccinium)* was found in the Mississippi River in Wabasha County in 1996. The Ellipse *(Venustaconcha ellipsiformis)* was found in the Mississippi River in Wabasha County in the 1930s. The preceding four species are listed as threatened in Minnesota; the following two are listed as special concern. The Fluted shell *(Lasmigona costata)* was found in the Mississippi River in Wabasha County in 1990. The Hickorynut *(Obovaria olivaria)* was found in the Mississippi River in Wabasha, Winona and Houston counties in 1995-96.

Table 4-6, page 4-19: The Eastern Massasauga Rattlesnake is listed in Minnesota as endangered; this was noted in our letter of Sept. 23, 1996.

Section 4.1.13, page 4-23: The statement that "Recreational beach sites are perhaps the most popular recreational resource on the river" appears to contradict the statement in **Section 5.7.2.1 on page 5-59**, which states that "more than half the people using the river's recreation areas say aesthetic appeal and quality of fishing and hunting are the primary reasons they use the area."

Section 4.2.9.2, page 4-48: The Fuller data is dated. Thirty-one species of mussel were identified at Hudson in 1990 ("Results of Base-Line Sampling of Freshwater Mussel Communities for Long-Term Monitoring of the St. Croix National Scenic Riverway, Minnesota and Wisconsin," David Heath and Paul Rasmussen, Wisconsin Department of Natural Resources, 1990).

Section 4.2.10, page 4-49: The information on bald eagle nesting on the St. Croix is eight years old and is dated. There are currently bald eagle nesting territories at Stillwater, Bayport and Afton.

32 **Section 4.3.9.2, page 4-53:** Recent surveys by Bright, et.al., and Havlik, show that mussels are not extinct in the navigable portion of the Minnesota River. The impoverished mussel habitat and populations described by Fuller are no longer valid. Changing habitat conditions, improved water quality in the river and the now-outdated collection method Fuller used, indicate a need for reassessing mussels in the St. Paul District.

33 **Section 5.1.2, page 5-13:** Part of the instability of the bottom substrates is due to the actual dredging activity itself; benthic colonization may be more likely than stated here if dredging activity ceased.

34 **Section 5.1.3, page 5-19:** The listing of actions that could affect threatened and endangered species should include the Winters Landing dredge cut in Pool 7.

35 **Section 5.2, page 5-28:** Local effects of channel structures are discussed, but what of the totality of these effects on the morphology of the Mississippi River? Over a greater spatial and temporal scale,

COMMENT 32 - We have requested copies of the cited surveys from your Lake City field office. As of this time, we have not recieved the requested information. However, we agree adequate mussel populations have returned to the Minnesota River as a result of recent improvements in water quality. We have revised Section 4.3.9.2 *Aquatic Invertebrates/Freshwater Mussels* to indicate this conclusion. As noted in our response to comment 24 of the January 17, 1997, United States Department of the Interior letter, we have agreed to complete mussel surveys at selected dredge cuts in the Minnesota River.

COMMENT 33 - Concur. This section has been revised by adding a statement that dredging likely precludes establishment of mussel beds at some locations.

COMMENT 34 - We disagree. As evaluated in the Biological Assessment (Appendix C), the Winter's Landing cut has a high dredging frequency (57.7 percent) which we believe is indicative of unstable substrates. We believe maintenance of this cut would not affect *Lampsilis higginsi*. The U.S. Fish and Wildlife Service concurs with this assessment (see U.S. Department of the Interior letter).

COMMENT 35 - Section 5.7.2.3.3 discusses the cumulative impacts of channel structures on the river environment.

35 the river is being canalized. This geomorphic trend goes undisclosed in this document, yet it portends dramatic transitions in the physical and biological identity of the river.

36 **Section 5.2.1, page 5-30:** The statement at the top of the page that channel training structures have an overall positive effect on water quality is a distortion. Another example is found on **page B-124**, where the utter destruction of five acres of floodplain forest habitat is described as a "minor adverse impact."

37 **Table 5-10, page 5-41:** This table is the same as Table 3-2 of the CMMP, and our comments (noted above) are the same.

38 **Section 5.5, page 5-44:** The discussion of irreversible and irretrievable commitments of resources should include a discussion of the loss of natural hydrologic rhythms, floodplain connectivity, hydrodynamics and geomorphic processes.

39 **Section 5.7, page 5-57:** The cumulative impacts discussion is good, but could be much better if it included materials from the outcome of the 1994 International Large Floodplain Rivers Conference and Upper Mississippi River Workshop. Much more is known today about large rivers than in 1974 or 1980, when previous environmental documents were prepared, underscoring the need for a supplement to the 1974 EIS.

40 **Section 5.7.2.1.1, page 5-60:** We disagree with the conclusion that "significant changes in navigation pool regulation are not projected." Congressional authorization for large-scale drawdowns may not be required. This section would be improved by a discussion of the activities of the Water Level Management Task Force.

41 **Section 5.7.2.1.4, page 5-61:** We disagree with the conclusion that "significant changes in management strategies are not projected." Indeed, the riverine ecosystem will not long survive in its present form unless there are significant changes. This section could be improved by a discussion of the Big River Partnership and other initiatives that are looking at large-scale change in the way in which the Mississippi River is managed.

42 **Section 5.7.2.2.1, page 5-62:** The statement that the main channel of the river has not moved for the last 200 years should be modified by noting that human actions have fixed the channel in one place for the last 130 years.

43 **Section 5.7.2.2.2, page 5-62:** The reference is to the 1880s, not the 1980s. This section fails to discuss the rapid sediment deposition in main channel border habitat caused by wing dam construction.

COMMENT 36 - Section 5.2.1 has been revised to identify the potential adverse impacts of channel training structures on water quality. On an ecosystem scale, the conversion of 5 acres of floodplain forest to dredged sand habitat in a UMR floodplain which contains 71,255 acres of floodplain forest (see Section 4.1.8 *Aquatic, Wetland and Terrestrial Habitats of UMR*) is certainly a minor adverse impact. On a pool scale, the conversion of 5 acres of floodplain forest in a pool with 4,375 acres of floodplain forest is a minor adverse impact. We continue to believe the impacts of converting 5 acres of floodplain forest to dredged sand habitat at site 7-707.3-RMP (Dakota Boat Ramp) are minor.

The proposed use of site 7-707.3-RMP has previously been supported by the Minnesota Department of Natural Resources. The 5-acre parcel referenced in this comment was purchased by the Parks and Trails Section of the Minnesota DNR for development of a boat ramp and parking facility using dredged materials provided by the District on 2 of the 5 acres. The remaining 3 acres were to be used as a beneficial use dredged material stockpile site. The tone of your comment (i.e. "utter destruction of 5 acres of floodplain forest"), has us wondering if the Parks and Trails Section of the Minnesota DNR is still interested in developing this site. We are proceeding with planning for the use of site 7-707.3-RMP under the assumption the Minnesota DNR's plans have not changed. Planning for excavation of the Dakota Island site in 1998 has been initiated, with the use of site 7-707.3-RMP proposed. We believe the use of site 7-707.3-RMP is the best option available, and we will soon begin the process of obtaining permission or acquisition of the property as outlined in Section 5.9.6 of the Final EIS.

COMMENT 37 - See response to comment 17.

COMMENT 38 - With the emphasis placed on "natural" we have added a discussion in Section 5.5 *IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES.*

COMMENT 39 - Comment noted. See response to comment 5.

COMMENT 40 - We have revised the potential for water level management actions to portray a slightly more optimistic future. However, we have taken a conservative approach, portraying the future somewhat pessimistically to put the impacts of the CMMP into context. We do hope the water level management effort, along with watershed management initiatives, a continuation of EMP, the Upper Mississippi River Summit, etc. goes forward to create a healthier and sustainable environment on the UMR. It is not our intent to belittle the importance of these initiatives. We have portrayed them in a slightly pessimistic fashion only for the purpose of this cumulative impact assessment.

COMMENT 41 - We have added some additional information on the Upper Mississippi River Summit. However, we know of no concrete proposals which would significantly change the current management of the UMR. As with water level management, we have chosen to take a conservative approach.

COMMENT 42 - This section has been revised to indicate that, beginning in 1878 with the 4½-foot navigation channel project, channel structures were constructed in the UMR, ensuring the channel did not migrate across the floodplain.

COMMENT 43 - The date has been corrected. Additional discussion has been added to Section 5.7.2.2.2.

44 **Section 5.7.2.4.3, page 5-71:** Lotic refers to moving water, not lake-like conditions.

Table 5-13, pages 5-80-81: MDNR permit status for Carrels Pit should say "May 1996". GREAT site 4.19 is listed in GREAT as mile 759.3, not 759.5. GREAT site 4.17 is listed in GREAT as most-probable-future-without-GREAT and is not described in the GREAT report appendix; that hardly constitutes GREAT endorsement as cited in the table. The last note at the end of the table defines the shaded boxes, but the shading has been removed from this version of the document.

Section 5.9.5, page 5-84: The listing of state managed areas is incomplete. Site MN-7.3-RMP is within Fort Snelling State Park. Site 3-802.3-RME is within the Gores Wildlife Management Area. Site 7-707.3-RMP is owned and managed by the Minnesota DNR Trails and Waterways Unit.

45 **Table A-2, pages A-9-12:** This table is identical to Table 3-1, Tab 3 of the CMMP; please note our comments above concerning both tables.

46 **Section III.A.3, page C-3:** The statement that most bald eagle nests are in "dead or dying hardwood trees" is incorrect; most nests are in live hardwoods.

Section III.B.3, page C-6: The Mossman reference is dated; the peregrine falcon is breeding at St. Croix River mile 21; one falcon was fledged there in 1996.

Section III.C.2, page C-7: A pair of peregrine falcons successfully nested and raised young on the Mendota Bridge over the Minnesota River in 1996.

Section III.D.3, page C-9: A pair of peregrine falcons successfully nested and raised young on the Ford Bridge over the Mississippi River in 1996.

47 **Section V.B.1.a, page C-25:** Evidence from studies on the Columbia River indicate that boating activity does affect eagles. Studies close in the Mississippi River Valley (Reno Bottoms) are incomplete and inconclusive (two years of study showed opposite results). The conclusion that dredging which facilitates increased boating activity has no affect on nesting bald eagles is unsubstantiated.

48 **Section III.A.2, page D-19:** Upland disposal is dismissed too easily here. Removal from the floodplain was one of five alternatives evaluated in the 1974 EIS on operation and maintenance, and it should be given a full evaluation in this DEIS. Without a full evaluation of this distinct alternative, this DEIS remains inadequate.

49 **Section E, page E-71:** This section contains responses to comment letters, but does not contain the comment letters themselves.

COMMENT 44 - These sections have been revised as suggested in your comment to either clarify a statement or correct an error. Concur that site 4.17 was not endorsed by GREAT I: however, this site was endorsed by the RRF in October 1983.

COMMENT 45 - See response to comments 15 and 16.

COMMENT 46 - The Biological Assessment (Appendix C) has been substantially revised and your comments have been incorporated into the new version.

COMMENT 47 - Dredging maintains a 9-foot channel. Your conclusion that dredging of and in itself facilitates increased boating activity is erroneous. If dredging ceased on the UMR, boating activity would not also cease. Our conclusion that boating activity has little or no effect on bald eagles is based on the fact bald eagle use is increasing on the UMR in spite of boating.

COMMENT 48 - As stated in our response to comment 2, alternatives have been continuously investigated since the 1974 EIS through GREAT I to the current CMMP. Removal from the Floodplain was one alternative evaluated in the 1974 EIS but ultimately not selected. On a site specific basis, sites located out of the floodplain were/have been investigated/evaluated in the GREAT I study, pool level reconnaissance reports and the CMMP. Sites located out of the floodplain have been considered during development of the CMMP (some are included in the plan) and many are evaluated in Appendix B of the EIS. We do not agree this EIS is inadequate.

COMMENT 49 - The major issues brought out in comment letters on the draft CMMP are contained in this section, frequently verbatum, but occasionally paraphrased. We feel this provides a briefer, yet acceptable, way of presenting the comments/responses on the draft CMMP.

Dredged Material Placement Sites

It should be noted that the DEIS contains an Environmental Assessment Matrix at the end of the text evaluating placement sites in each pool. Due to time limitations, we did not review those matrices; we hope our comments on the placement sites and other text cover any concerns we may have about the content of the matrices.

50 The general discussion of dredging the **Minnesota River** that appears on page B-17 of the DEIS includes a statement that "freshwater mussels have been extirpated from the Minnesota River...." Considering the recent discovery of freshwater mussels in lower Pool 2, this statement cannot be made without substantiation. The statement should be deleted, and mussel surveys need to be undertaken in the Minnesota River.

51 **MN-12.1-RMP, Kraemer Site:** The statement in the CMMP that floodplain impact analysis has been completed by MDNR is incorrect. MDNR, by letter of Nov. 8, 1996, has requested that the Corps conduct a hydraulic analysis to determine flood stage impact. This site appears to be wetland and should be shown as such in Tab 3-1.

52 **MN-12.0-RMP:** The DEIS (p. B-20) describes the site as "wetland in character" and as "disturbed terrestrial habitat." GREAT describes it as upland "disturbed meadow". The inconsistent statement should be corrected. This site should be shown as wetland in Tab 3-1.

53 **MN-11.4-RMP:** The DEIS (p. B-21) incorrectly describes this as 65 acres of open water; GREAT describes it as 32.5 acres of open water and 32.5 acres of upland.

54 **MN-10.1-RMP, NSP Site:** The statement in the CMMP that floodplain impact analysis has been completed by MDNR is incorrect. MDNR, by letter of Nov. 8, 1996, has requested that the Corps conduct a hydraulic analysis to determine flood stage impact. The CMMP and DEIS, page B-21 both state there would be no impact on threatened or endangered species, but bald eagles do use trees adjacent to the river. The plan should be modified to retain the trees along the river's edge.

55 **MN-7.3-RMP, Highway 77 Bridge:** The statement in the CMMP that floodplain impact analysis "will be analyzed if necessary" should be changed. MDNR, by letter of Nov. 8, 1996, has requested that the Corps conduct a hydraulic analysis to determine flood stage impact. The statement in the DEIS (page B-21) that the site is a "previously used dredged material disposal site" is incorrect; the more accurate statement is in the CMMP: "The exact location and other site dimensions have not been determined." It appears the final placement site will be a former agricultural field immediately downstream of the Highway 77 bridge, but the exact location has not yet been finalized. The statement on page B-22 of the DEIS that the site has "low" potential for cultural resource impacts

COMMENT 50 - See response to comment 32. Appendix B has been revised to indicate that, based on recent surveys, some restoration of mussel populations is occurring in the Minnesota River. Mussel surveys would be performed at selected dredge cuts, as specified in the revised Biological Assessment (Appendix C).

COMMENT 51 - The District has begun an evaluation of floodplain impacts (see response to comment 6). We disagree with your designation of wetlands (see response to comment 16).

COMMENT 52 - We have investigated this inconsistency and corrected the site description appropriately. We disagree with your designation of wetlands (see response to comment 16).

COMMENT 53 - The site description in the DEIS has been corrected.

COMMENT 54 - The District has begun an evaluation of floodplain impacts (see response to comment 6). The Biological Assessment (Appendix C) determined the use of site MN-10.1-RMP (NSP site) would not affect bald eagles because of high human activity levels in the area. The U.S. Fish and Wildlife Service agrees with this determination (see U.S. Department of the Interior letter); however, we will consider modifying the planned use of this site to retain trees along the river's edge.

COMMENT 55 - The District has begun an evaluation of floodplain impacts (see response to comment 6). The description of site MN-7.3-RMP (Highway 77 Bridge) in the Final EIS has been revised as suggested. The airphoto site plan will be updated once site boundaries are determined.

55 should be changed to "high" potential; evidence of important cultural resources have already been found at the site. The airphoto site plan will need to be redrawn once the site boundaries are determined.

56 **MN-4.5-RMP:** The DEIS (p. B-22) describes the site as 18 acres of upland, as does CMMP Tab 3-1, but dredged material was last placed there in 1968 and the site has reverted to floodplain forest vegetation. It should be shown as wetland in Tab 3-1.

57 The general discussion of the **St. Croix River** on page B-44 of the DEIS contains the statement that no threatened or endangered species would be affected by dredging in the St. Croix River. That statement is incorrect; there is significant potential to impact the federally listed Higgin's eye pearly mussel (Lampsilis higginsi). The statement needs to be corrected on page B-44, on page B-52, and in Table B-15 on page B-54.

58 **SC-22.0-RMP:** The DEIS (p. B-46) describes this site as a "disturbed coal pile" and also as a "floodplain forest wetland"; GREAT describes it as floodplain forest; the coal pile reference should be deleted.

59 **SC-18.0-RMP:** The DEIS (p. B-46) lists this as site 18.0, but CMMP Tab 3-1 lists it at mile 18.2. GREAT lists it as mile 18.2; the DEIS should be corrected. The initial description says it is a four-acre site, then goes on to describe six acres; it is a six-acre site, according to all other references. It should be shown in Tab 3-1 as wetland.

60 **SC-17.5-LWP, Above Hudson Railroad Bridge:** The DEIS (p. B-47) incorrectly describes this as a 10-acre site; all other references are to four acres. It should be shown as wetland in Tab 3-1.

61 **SC-17.4-LWP, SC-17.1-LWP, SC-17.1-LWP, SC-16.9-LWP, Barrier Islands:** These islands are described by GREAT as 3, 2, 1, and 1 acres, respectively, but the DEIS (p. B-47) incorrectly describe them as 7, 1, 1 and 1 acres. They contain wetland vegetation and should be described as seven acres of wetland, not upland, in CMMP Tab 3-1.

62 **SC-16.6-LWP, Beer Can Island:** This site involved a GREAT proposal to place material in seven acres of open water to connect it with the nearby dike. It is described correctly in CMMP Tab 3-1, but not in DEIS (p. B-47).

63 **SC-6.7-LWP, Kinnickinnic Bar Upper:** GREAT described a nine-acre beach site. The description of 10 acres of wetland in the DEIS (p. B-49) and in CMMP Tab 3-1 should be corrected. The description of the CMMP-selected site on page B-49 is consistent with the airphoto site plan in the CMMP. The CMMP Site Information Sheet and CMMP Tab 3-1 need to be corrected to reflect the site contains three acres of sand and one acre of floodplain forest wetland. The statement in the

COMMENT 56 - We disagree with your designation of wetlands (see response to comment 16).

COMMENT 57 - We disagree there is significant potential to affect *Lampsilis higginsi* by dredging the Kinnickinnic River cut (see response to U.S. Department of the Interior comment 2), however, we will conduct surveys of the dredge cut location and complete any necessary coordination with the U.S. Fish and Wildlife Service prior to dredging this cut.

COMMENT 58 - The description of site SC-22.0-RMP has been revised as suggested.

COMMENT 59 - The description of site SC-18.2-RMP in the Final EIS has been revised as suggested, however, we disagree with your designation of wetlands (see response to comment 16).

COMMENT 60 - In Appendix B of the Draft EIS, the introductory description of a site generally included an acreage estimate for the largest dimensions evaluated, not necessarily selected, under the GREAT I planning process and/or interim reconnaissance reports for dredged material placement. Often these descriptions were extracted in whole or in part from the GREAT I Environmental Impact Statement (Volume 9 of the GREAT I Technical Appendixes). We attempted to identify the actual acreage proposed for use under the GREAT I or CMMP in bullet "b" of each impact summarization paragraph. We apologize for the confusion these descriptions obviously caused. In the Final EIS, throughout Appendix B we have clearly stated in bold print the acreages proposed for use under the CMMP and/or GREAT I. These acreages should be consistent with those presented in the CMMP. We disagree with your designation of wetlands (see response to comment 16).

COMMENT 61 - The descriptions of sites SC-17.4-LWP, SC-17.1-LWP and SC-16.9-LWP in the Final EIS have been revised as suggested. We disagree with your designation of wetlands (see response to comment 16).

COMMENT 62 - The description of site SC-16.6-LWP (Beer Can Island) in the Final EIS has been revised as suggested.

COMMENT 63 - The Wisconsin Department of Natural Resources developed a Master Plan in 1980 for the Kinnickinnic State Park. In a letter to the St. Paul District dated March 12, 1985, the Wisconsin Department of Natural Resources outlined the specific areas on the Upper and Lower Kinnickinnic Bar they would like filled. The acres of each habitat type in Tab 3-1 and the EIS for the GREAT I plan were derived from these plans. However, to keep the descriptions consistent with the original GREAT I plan, the descriptions in the Final EIS and CMMP have been corrected. We disagree with your designation of wetlands (see response to comment 16).

63 CMMP Site Information Sheet Special Condition section on forming a connection to a private island should be removed; there are no islands near this site. Note SC-1 in CMMP Tab 3-1 is incorrect. GREAT did recommend nine acres at this site; the four-acre figure was developed for the CMMP. This site should be shown as wetland in Tab 3-1.

64 **SC-6.5-LWP, Kinnickinnic Bar Lower:** GREAT described a 17-acre beach site. The description of 11 acres of sand and 2 acres of wetland in the DEIS (p. B-50) and in CMMP Tab 3-1 should be corrected. The statement in the CMMP Site Information Sheet Special Condition section on forming a connection to a private island should be removed; the adjacent island is no longer in private ownership and this site involves placement on existing beach, not in the water. Note SC-1 in CMMP Tab 3-1 is incorrect: GREAT did recommend 17 acres; the seven-acre figure was developed for the CMMP. This site should be shown as wetland in Tab 3-1.

65 **SC-0.2-RMP, Point Douglas Beach:** This site is incorrectly identified as SC-0.4-RMP in CMMP Tab 3-1. It should also be identified as wetland in Tab 3-1.

66 The comparison of plans for the St. Croix on page B-52 of the DEIS concludes with the following statements: "Beneficial use removal of materials under the GREAT I plan would essentially be nonexistent. Under the CMMP, beneficial use removal would occur." The only beneficial use proposed under either plan is recreation beach enhancement; that does not constitute "removal" (removal from the river channel with placement in the floodway can hardly be considered "removal"), and it would be difficult to conclude that the GREAT I plan to place material on several beaches is somehow not removal while the CMMP plan to place on just two beaches is removal. The sentence preceding the two noted above states the CMMP would involve placement on only one beach is incorrect; the CMMP shows placement on two beaches, one north and one south of the mouth of the Kinnickinnic River.

67 The discussion of the **Upper St. Anthony Falls Pool** on page B-3 of the DEIS asserts that freshwater mussels have been extirpated from this pool. As discussed in comments on the Minnesota River (above), that assertion cannot be made without first completing mussel surveys. The same is true for the discussion of **Pool 1** on page B-9 of the DEIS. The same discussion also holds for the description of conditions in **Pool 2** on page B-28 of the DEIS, especially in light of recent study findings in lower Pool 2.

68 **1-851.3-LME, Below Franklin Ave.:** GREAT describes this site at mile 851.2. This site should be shown in Tab 3-1 as wetland.

69 **1-849.5-RME, Below Lake St.:** This site should be shown as wetland in Tab 3-1.

COMMENT 64 - The descriptions in the EIS and CMMP have been corrected, as noted in our response to comment 63. We disagree with your designation of wetlands (see response to comment 16).

COMMENT 65 - GREAT I, Volume 8, Part II, page 53 identifies the location of the site as mile 0.4. The description in the CMMP is correct. The description in the EIS has been corrected. We disagree with your designation of wetlands (see response to comment 16).

COMMENT 66 - The GREAT I projected volume of dredged material for the Kinnickinnic Bar dredge cut is 461,000 cubic yards. To meet the needs of the State Park, an estimated 48,500 cubic yards would be placed at the Kinnickinnic Upper and Lower Bar Placement sites. The remainder of the 40-year projected volume of dredged material would be transported to Point Douglas (3-811.5-LMP). GREAT I projected a beneficial use demand of 240,000 cubic yards at Point Douglas. Most of the material would be used as landfill on-site, although a stockpile can be developed for beneficial use removal. We have revised Appendix B to reflect the above conditions on beneficial use.

COMMENT 67 - We concur that mussel populations are returning/have returned to the upper pools, however, we continue to believe the impacts of dredging on freshwater mussels in Pools Upper St. Anthony Falls, 1, 2 and the Minnesota River would be minimal. We have aggreed to survey some of the dredge cuts in these areas (see the revised Biological Assessment).

COMMENT 68 - The site description in the CMMP is what we believe to be a more accurate location for the site. We disagree with your designation of wetlands (see response to comment 16).

COMMENT 69 - We disagree with your designation of wetlands (see response to comment 16).

70 **1-848.0-LME:** GREAT describes this site at mile 848.3, while CMMP Tab 3-1 describes it at mile 848.5. GREAT described a 5.5 acre site, but the DEIS (p. B-13) and CMMP Tab 3-1 refer to it as a 4.5 acre site. It should be shown in Tab 3-1 as wetland.

71 **2-843.3-RMP:** The DEIS (p. B-22, B-29) refers to this as a 17-acre site, while CMMP Tab 3-1 attributes no acreage to it at all. GREAT also attributes no acreage to the site, since material would be removed from barges by a private company and placed elsewhere. This inconsistency should be corrected.

72 **2-840.4-RMP, Highbridge:** The DEIS (p. B-23, B-30) says this is a five-acre site, then describes four acres; the five-acre reference should be corrected. GREAT approved 3.4 acres, but the site was later enlarged without RRF approval.

73 **2-838.2-RMP, Northport:** The DEIS (p. B-31) describes this site as 25 acres and as 5.5 acres; the 5.5 figure is correct. CMMP Tab 3-1 uses the correct 5.5 acre figure in describing the GREAT plan, but identifies 6 acres recommended by CMMP. This site was filled prior to 1980 and is no longer available, and is not found in the CMMP.

74 **2-837.5-RMP, St. Paul Barge Terminal:** The CMMP correctly notes the adverse impacts on flood stages likely from implementing this placement site. Minnesota DNR, by letter of Nov. 8, 1996, has requested the Corps complete a hydraulic analysis to determine flood stage impacts. Permanently converting aquatic habitat to dry land is not acceptable. The Minnesota DNR requests that this disposal site be removed from the CMMP.

75 **2-837.2-LM** is described in GREAT at mile 836.5.

76 **2-836.8-RMP, Holman Field:** Since this site was filled in 1996 and will be used for airport expansion, it will not be available for placement in the future. Shouldn't it be removed from the CMMP and handled in the same manner as sites 4-760.2-RMP, 4-759.5-RMP and 4-759.3-RMP? Those were also one-time placement sites that are no longer available; they are described in the DEIS, but are not part of the CMMP. The DEIS (p. B-32) correctly identifies this 110 acre site as wetland, but CMMP Tab 3-1 lists the 110 acres as neither wetland nor upland. Just because the Corps is not responsible for mitigation, it is still wetland impacted by dredged material placement and should be shown as such in Tab 3-1.. The situation on the Minnesota River is the same (impacted wetlands are the mitigation responsibility of another party), and those wetlands are listed. The CMMP airphoto site plan shows only 48 acres.

77 **2-836.3-RMP, Southport:** The CMMP statement that no further floodplain impact analysis is necessary is incorrect. Minnesota DNR, by letter of Nov. 8, 1996, has requested the Corps complete a hydraulic analysis to determine flood stage impacts.

COMMENT 70 - The site description in the CMMP is a more accurate location for the site. The discrepancy in acreage appears to exist within the GREAT I report. The GREAT I EIS (page 62, Vol. 9 of the Technical Appendices) describes a 4.5-acre site on the left bank of the river. The GREAT I Pool Plan for Pool 1 (pages 158 and 159, Vol. 8, Part II of the Technical Appendices) describes both a 4.5-acre site (area at base - page 158) and a 5.5-acre site (upland - page 159). We believe the 4.5-acre figure is correct. We disagree with your designation of wetlands (see response to comment 16).

COMMENT 71 - The description of site 2-843.3-RMP has been corrected in the Final EIS.

COMMENT 72 - Site descriptions in the Draft EIS described a much larger area than needed under the CMMP (see response to comment 60). These descriptions have been revised in the Final EIS.

COMMENT 73 - Site descriptions in the Draft EIS often described a larger area than needed under the CMMP (see response to comment 60). Descriptions have been revised in the Final EIS to clearly identify proposed acreages used under both plans. GREAT I sites less than 5 acres were rounded up for the CMMP to remove decimals. Sites greater than 5 acres were rounded to the nearest whole number. This was discussed and agreed to at the interagency workshop held on 29 September, 2 October and 6 October 1995 to review details of the District's CMMP. The site is part of the 40-year plan, but will be footnoted in Tab 3-1 in the CMMP as a "completed" site. Dredged Material Placement Site Information Sheets were not prepared for completed sites, since they will not be used in the future. The impacts of use of this site are included in the EIS to ensure compliance with NEPA and to establish an acreage baseline for future reference.

COMMENT 74 - The District has begun an evaluation of floodplain impacts (see response to comment 6). Site 2-837.5-RMP (St. Paul Barge Terminal) will remain in the CMMP (see response to comment 9). Your opposition to use of this site is noted in the Final EIS.

COMMENT 75 - The site description in the CMMP is a more accurate location for the site.

COMMENT 76 - This site is part of the 40-year plan, but will be footnoted in Tab 3-1 in the CMMP as a "completed" site. Dredged Material Placement Site Information Sheets were not prepared for completed sites, since they will not be used in the future. The filling of 110 acres of wetlands at Holman Field is the responsibility of the Metropolitan Airports Commission and has been mitigated. By including the acreage as wetlands impacted in the CMMP we would be double-counting the impacts, which would be a distortion. If we included these wetland acres in the CMMP, then by the mitigation policy described in Appendix B of the CMMP and Section 5.6.4 of the EIS, these and similar areas would be included in the baseline and exempt from compensatory mitigation by the St. Paul District or others. The wetland acreages impacted at the Minnesota River sites are provided by the local sponsor specifically for the purposes of dredged material placement. The use of these sites, in contrast to Holman Field, is not linked to additional development plans although once filled these areas could be developed. Because the local sponsor has provided these sites specifically for dredged material placement, the impacts of site use are appopriately included in EIS.

COMMENT 77 - The District has begun an evaluation of floodplain impacts (see response to comment 6).

78 **2-832.5-LMP, NSP:** This site is described in the DEIS (p. B-33) but does not appear in CMMP Tab 3-1.

79 **2-827.2-RMP, Grey Cloud Slough:** This site is described in the DEIS (p. B-34) as a nine-acre site, but GREAT described it as 2.75 acres. It does not appear at all in CMMP Tab 3-1.

80 **2-823.8-LMT, Pine Bend:** The statement in the CMMP that the site was endorsed by the RRF in April 1996 is incorrect. The statement that material excavated from this site may be used for the Spring Lake environmental enhancement project is also incorrect; the DEIS (page B-36) correctly notes that the Spring Lake project is not feasible. The statement in the CMMP concerning floodplain impacts should be modified: Minnesota DNR, by letter of Nov. 8, 1996, has requested the Corps complete a hydraulic analysis to determine flood stage impacts. The statement in the CMMP that the site is owned by the federal government is also incorrect: the site is owned by the Minnesota DNR. The DEIS (p. B-35) describes this as a 12-acre site and as an 8-acre site; GREAT said it was a 9-acre site; CMMP Tab 3-1 describe it as an 8-acre site, as does the CMMP Site Information Sheet. It is a floodplain forest wetland and should be listed as such, not as upland.

81 **2-823.8-RMP, C.F. Industries:** The statement in the CMMP about floodplain impacts needs to be revised: Minnesota DNR, by letter of Nov. 8, 1996, has requested the Corps complete a hydraulic analysis to determine flood stage impacts. The DEIS(p. B-35) correctly describes this as two sites totaling seven acres (1 and 6 acres); the CMMP and CMMP Tab 3-1 should be corrected accordingly.

82 **2-822.5-LMP, Shiely Pit:** The statement in the CMMP that this site was endorsed by the RRF in April 1996 is incorrect; it has not been endorsed. While we find this a very promising site from an environmental perspective, the landowner's conditions for use at this time appear unacceptable; we recommend the Corps begin seeking another permanent site in lower Pool 2.

83 **2-821.5-LMT, Upper Boulanger:** The statement in the CMMP that the site was endorsed by the RRF in April 1996 is incorrect. The statement that material excavated from this site may be used for the Spring Lake environmental enhancement project is also incorrect; the DEIS (page B-36) correctly notes that the Spring Lake project is not feasible. The statement in the CMMP concerning floodplain impacts should be modified: Minnesota DNR, by letter of Nov. 8, 1996, has requested the Corps complete a hydraulic analysis to determine flood stage impacts. This site should be shown as wetland in Tab 3-1.

84 **2-821.1-LMT, Lower Boulanger:** The statement in the CMMP that the site was endorsed by the RRF in 1995 is incorrect. The statement that material excavated from this site may be used for the Spring Lake environmental enhancement project is also incorrect; the DEIS (page B-36) correctly notes that the Spring Lake project is not feasible. The statement in the CMMP concerning floodplain

COMMENT 78 - This site was considered as an alternative in the dredged material placement reconnaissance report for lower pool 2. It is not included in the CMMP because the site was not recommended by GREAT I nor was it selected by the CMMP. The site is included in the EIS to provide perspective on the availability of alternative sites to those selected by GREAT I or the CMMP.

COMMENT 79 - Site descriptions in the Draft EIS often described a much larger area than that needed under the GREAT I plan or CMMP (see response to comment 60). These descriptions have been revised in the Final EIS to clearly identify proposed acreages used under both plans. This site was considered as an alternative in the dredged material placement reconnaissance report for lower pool 2. It is not included in the CMMP because the site was not recommended by GREAT I nor was it selected by the CMMP. The site is included in the EIS to provide perspective on the availability of alternative sites to those selected by GREAT I or the CMMP.

COMMENT 80 - The CMMP has been corrected in reference to RRF endorsement, Spring Lake EMP feasibility, and site ownership. The District has begun an evaluation of floodplain impacts (see response to comment 6). Site descriptions in the Draft EIS often described a much larger area than that needed under the GREAT I plan or CMMP (see response to comment 60). These descriptions have been revised in the Final EIS to clearly identify proposed acreages used under both plans. Finally, we disagree with your designation of wetlands (see response to comment 16).

COMMENT 81 - The District has begun an evaluation of floodplain impacts (see response to comment 6). The site description in the CMMP has been corrected.

COMMENT 82 - The CMMP has been corrected in reference to RRF endorsement. We are that confident use of site 2-822.5-LMP (Shiely Pit) will be confirmed in the near future (see response to comment 10).

COMMENT 83 - The CMMP has been corrected in reference to RRF endorsement and Spring Lake environmental enhancement feasibility. The District has begun an evaluation of floodplain impacts (see response to comment 6). We disagree with your designation of wetlands (see response to comment 16).

COMMENT 84 - The CMMP has been corrected in reference to RRF endorsement and Spring Lake environmental enhancement feasibility. The District has begun an evaluation of floodplain impacts (see response to comment 6). We disagree with your designation of wetlands (see response to comment 16).

84 impacts should be modified: Minnesota DNR, by letter of Nov. 8, 1996, has requested the Corps complete a hydraulic analysis to determine flood stage impacts. The DEIS (p. B-37) incorrectly identifies this as a 10-acre site, then goes on to correctly describe 3 acres of wetland and 5 acres of sand, which totals 8 acres. This should be shown as wetland in Tab 3-1.

85 **2-821.0-LMP, Lower Grey Cloud Island Field:** This site is described in CMMP Tab 3-1 as being at mile 820.0, and in GREAT at mile 820.4. The DEIS (p. B-38) incorrectly says this site is 14 acres; all other references, including another on that page, are to 25 acres.

86 **2-819.4-RMT, Freeborn Island:** The DEIS (p. B-38) says this is GREAT site 2.75, but GREAT does not list the Freeborn Island site and does not carry that number on any site in the GREAT plan. The three acres listed as dredged material are covered with wetland vegetation. This site is not listed in CMMP Tab 3-1.

87 In a discussion of lower **Pool 2** on page B-40 of the DEIS, there is a statement that three placement sites have been approved by the SHPO, but the table on that page lists four sites.

88 In a discussion of dredging in **Pool 3** on page B-55 of the DEIS is a statement that there would only be minor impacts to mussels; as discussed above with reference to several other areas upstream of Lake Pepin, it appears that statement is incorrect.

89 **3-815.1-RMP, Hastings:** There are significant inconsistencies between the DEIS and CMMP. The CMMP describes it as "a disturbed upland site," but the CMMP's aerial photograph shows about half the site is forested. The DEIS (page B-57) calls the site a "previously used beneficial use stockpile site" but concludes there is no potential for future beneficial use. The CMMP states the potential for future beneficial use is high. The DEIS states there would be no adverse fish and wildlife impacts, but that's based on the assumption that the site is disturbed; half of it has not been disturbed. It is a one-acre site; the statement on page B-57 that it is 6 acres is incorrect. Tab 3-1 should clarify that the site is 0.5 acre wetland and 0.5 acre upland.

90 **3-814.5-LMP:** Note 3-1 in CMMP Tab 3-1 is incorrect. GREAT correctly identified the site as 4 acres wetland and 4.5 acres open water, totaling 8.5 acres of wetland impacted (GREAT, Vol. 8, Part III, p. 97).

91 **3-814.3-RMP:** There are two separate sites here, each comprising 1.5 acres. This is explained correctly in the DEIS (pp. B-58-59), but one site is omitted in CMMP Tab 3-1.

92 **3-813.2-RMP, Hastings Harbor:** The statement in the CMMP concerning floodplain impacts should be modified: Minnesota DNR, by letter of Nov. 8, 1996, has requested the Corps complete a hydraulic analysis to determine flood stage impacts. Both the CMMP and DEIS (page B-59) state

COMMENT 85 - The site description in the CMMP is a more accurate location for the site. Site descriptions in the Final EIS have been revised to reflect acres proposed for use under both plans.

COMMENT 86 - A task force identified many potential sites during the GREAT I study, giving each site identifying numbers. Some of the sites were selected and included in the GREAT I study documents but many were not. Several sites are not referenced in the GREAT I study but have been evaluated in post-GREAT I Reconnaissance reports using the site numbers assigned during the GREAT I study. These numbers have been used in many documents including the CMMP and will remain for reference. This site was considered as an alternative in the dredged material placement reconnaissance report for lower pool 2. It is not included in the CMMP because the site was not considered by GREAT I nor was it selected by the CMMP. The site is included in the EIS to provide perspective on the availability of alternative sites to those selected by GREAT I or the CMMP.

COMMENT 87 - The table has been corrected.

COMMENT 88 - We concur that mussel populations are returning/have returned to the upper pools of the UMR, however, we continue to believe the impacts of dredging on freshwater mussels in Pools Upper St. Anthony Falls, 1, 2 and the Minnesota River would be minimal.

COMMENT 89 - Site 3-815.1-RMP (Hastings) is indeed a previously used beneficial use stockpile site. As described in the CMMP, "the endorsed area is 6.1 acres but development of the L/D 2 access road has significantly reduced the size to 1 acre usable only for emergency placement." If the site were used for emergency placement, all materials would likely be removed for beneficial uses. Site descriptions in the Draft EIS often described a much larger area than needed under the GREAT I plan or CMMP (see response to comment 60). These descriptions have been revised in the Final EIS to clearly identify proposed acreages used under both plans. Site 3-815.1-RMP is located immediately below L/D 2. Human activity levels in the surrounding areas limit the potential impacts of site use on fish and wildlife species. Additionally, the entire site has been disturbed by past placement activities and development of the L/D 2 access road. We continue to believe use of the site would have minimal or no impacts on fish and wildlife. We disagree with your designation of wetlands (see response to comment 16).

COMMENT 90 - Note 3-1 has been deleted from Tab 3-1 (CMMP) and Table A-1 (EIS).

COMMENT 91 - Tab 3-1 of the CMMP and Table A-1 of the EIS have been corrected.

COMMENT 92 - The District has begun an evaluation of floodplain impacts (see response to comment 6). Actual site boundaries will be determined by the On-Site Inspection Team. Once boundaries have been clearly established by the OSIT, the airphoto map will be redrawn. Comment noted on obtaining long-term real estate agreements. Access problems are identified in the Final EIS.

92 the site is an agricultural field, but the site drawing on the airphoto shows encroachment into the adjacent floodplain forest. Past experience has shown such a site drawing gains value once a plan is endorsed, and it is difficult to return to a plan's intent when the drawing shows exactly what will be filled. The drawing needs to be corrected to include only the agricultural field. The Corps needs to accelerate acquisition of long-term real estate agreements at this and many other sites; far too many sites are rendered infeasible by the lack of real estate agreements. The CMMP correctly describes the access problem faced by any effort to remove material from this site for beneficial use; the DEIS overlooks that significant problem.

93 **3-811.5-LMP, Point Douglas:** The confluence of the St. Croix and Mississippi here is an important winter feeding area for bald eagles and both the DEIS (page B-51 and Table 9, page C-29) and CMMP need to be corrected to recognize the potential negative impact. The forested portion of this site is floodplain forest, not upland forest, and the wetland acreage figures should therefore be corrected in CMMP Tab 3-1 to reflect 10 acres of affected wetland under both GREAT and CMMP.

94 **3-808.5-LWP:** This 8-acre wetland site is not listed in CMMP Tab 3-1.

95 **3-808.4-LWP, Dry Run Slough:** The DEIS (p. B-61) describes 13 acres of impacted wetlands under CMMP, but the CMMP Site Information Sheet says 19 acres will be impacted. CMMP Tab 3-1 should be changed to reflect the 19 acres impacted.

96 **3-802.3-RME, Morgans:** The DEIS on page B-62 states "Morgans is a 10.5-acre site..." and that is incorrect; it is a 3-acre site. While GREAT originally proposed this as a 10.5 acre site, that is not what is currently being evaluated and the statement should be clarified. The "special conditions" section of the CMMP should provide an explanation of the limited conditions that would require use of this site (not only is this an emergency site, but it would need to be used only when certain equipment limitations occur). Dredging has occurred in this cut only twice since 1930 (1968 and 1992) and placement occurred here only once (1968). This would appear to be a strong candidate for removal from the plan, especially since the site is within the Gores Wildlife Management Area and has significant habitat value. We have requested, in a letter dated Nov. 8, 1996, that the Corps conduct a hydraulic analysis to determine flood stage impacts. The CMMP airphoto site plan shows the Corps plans to use an undisturbed portion of this site rather than the area where sand was placed in 1968; the impacts of using this site could be minimized by using the previously disturbed site. Tab 3-1 should be modified to acknowledge that all of this site is wetland.

97 **3-801.7-LWE, Coulter's:** The 3-acre site proposed in the CMMP is entirely wetland and should be described as such in CMMP Tab 3-1.

98 **3-800.0-LWP, Diamond Bluff Pit:** This is listed in the DEIS (p. B-63) as GREAT site 3.50, but the GREAT report does not list a site with that number or in that location.

COMMENT 93 - The Biological Assessment (Appendix C) determined the use of site 3-811.5-LMP (Point Douglas) would not affect bald eagles. The site is located more than 0.25 mile from the primary winter feeding area, which precludes potential impacts (see pages C-26 through C-34 of Appendix C). The U.S. Fish and Wildlife service agrees with this determination. We disagree with your designation of wetlands (see response to comment 16).

COMMENT 94 - This site was considered as an alternative in the dredged material placement reconnaissance report for middle pool 3. It is not included in the CMMP because the site was not recommended by GREAT I nor was it selected by the CMMP. The site is included in the EIS to provide perspective on the availability of alternative sites to those selected by GREAT I or the CMMP.

COMMENT 95 - Only 13 acres would be used for dredged material placement at this site. An additional 6 acres would be disturbed as a result of relocation of the Dry Run Slough channel, however, this 6-acre area would not be used for dredged material placement and, therefore, is not considered as part of the total acres used under the CMMP.

COMMENT 96 - Site descriptions in the Draft EIS often described a much larger area than that needed under the GREAT I plan or CMMP (see response to comment 60). These descriptions have been revised in the Final EIS to clearly identify proposed acreages used under both plans. A statement is currently in the CMMP identifying the conditions under which this site would be used. The District has begun an evaluation of floodplain impacts (see response to comment 6). We welcome the Minnesota Department of Natural Resources input into locating the undisturbed portions of this site. We believe the site, as depicted in the airphoto, is on previously placed dredged material. We disagree with your designation of wetlands (see response to comment 16).

COMMENT 97 - We disagree with your designation of wetlands (see response to comment 16).

COMMENT 98 - A task force identified many potential sites during the GREAT I study, giving each site identifying numbers. Some of the sites were selected and included in the GREAT I study documents but many were not. Several sites are not referenced in the GREAT I study but have been evaluated in post-GREAT I Reconnaissance reports using the site numbers assigned during the GREAT I study. These numbers have been used in many documents including the CMMP and will remain for reference.

99 **3-799.9-LWP, Diamond Bluff Beach:** This site is listed in the DEIS (p. B-63) as 12 acres, but it is listed in GREAT (Vol. 8, Part III, page 99) as 14 acres. This site is not listed in CMMP Tab 3-1.

100 **3-799.4-RMP:** The DEIS (p. B-65) lists this as a one-acre site, but GREAT (Vol. 8, Part III, p. 99) lists it as 33 acres. It is not listed in CMMP Tab 3-1.

101 **3-799.3-LWP, Ag. Land South:** Since this site is no longer being considered for dredged material placement, it should be removed from the CMMP and its deletion documented in the DEIS.

102 **3-799.2-RMT, Corps Island:** Minnesota DNR has requested, in a letter dated Nov. 8, 1996, that the Corps conduct a hydraulic analysis to determine flood stage impacts. The DEIS (p. B-66) lists the site as 15 acres, consisting of 3 acres of sand, 2 of old dredged material and 2 of willow (for a total of 7 acres). On the same page, the site is described as 2 acres of floodplain forest and 5 acres of old dredged material. The CMMP site information sheet lists it as 7 acres ("3 acres of sand, 2 acres of old dredged material with bottomland hardwoods, and 2 acres of willows"). The airphoto site plan says the whole island is 7 acres, but based on the map scale it appears to be over 11 acres. CMMP Tab 3-1 needs to be corrected to show the site as 7 acres of wetland.

103 **4-794.7-RMP, Red Wing Yacht Club:** This site is apparently located in a posted fish spawning area. Under Minnesota Rules 6115.0190, Subpart 3G, placement of material in a posted fish spawning area is prohibited. We were unaware of this limitation during discussions that led to development of the CMMP, and the Minnesota DNR permit that allows dredged material placement includes this site. We will need to initiate further discussions of this issue with the Corps. This site is described in the CMMP Site Information Sheet as "moderately dense woods with dense underbrush" and is obviously a floodplain forest wetland type. CMMP Tab 3-1 should be corrected to show the entire site as wetland.

104 **4-793.6-RMP:** This site is identified in the DEIS (p. B-73) as 26 acres, but GREAT (Vol. 8, Part III, p. 237) identifies it as only 6 acres. It is not described in CMMP Tab 3-1.

105 **4-791.6-RMP, Red Wing Commercial Harbor:** Any portions of this site that are prone to flooding are located in a posted fish spawning area. Under Minnesota Rules 6115.0190, Subpart 3G, placement of material in a posted fish spawning area is prohibited. It appears that much of this site would not be in a posted fish spawning area, but some parts of the site may be and an on-site meeting will be required to determine final boundaries of the area that could be filled.

The actual shape of this site is very unclear. The CMMP notes a plan for this site was endorsed by the RRF in 1985; our copy of that plan does not contain a drawing of the site, but the description calls it 13 acres, including a two-acre "strip of bottomland forest" adjacent to Hay Creek. While that description is consistent with the text of the CMMP, it is not totally consistent with the site drawing

COMMENT 99 - Site descriptions in the Final EIS clearly identify acreages proposed for use under both plans. This site was considered as an alternative in the dredged material placement reconnaissance report for lower pool 3. It is not included in the CMMP because the site was not recommended by GREAT I nor was it selected by the CMMP. The site is included in the EIS to provide perspective on the availability of alternative sites to those selected by GREAT I or the CMMP.

COMMENT 100 - There is a discrepancy between Volume 8 of the GREAT I reports which you cite in your comment and the GREAT I EIS (page 66 of Volume 9 of the Technical Appendices). Volume 8 does not describe the site, but only lists it as a 33-acre site considered, but not selected, by GREAT. The GREAT I EIS describes site 3-799.4-RMP as a secondary 1-acre site on the right bank of the river at RM 799.4. Regardless, use of the site would not be necessary if the GREAT I plan were implemented, therefore, site 3-799.4-RMP is not included in Tab 3-1 nor in Table 5-1 of the Final EIS.

COMMENT 101 - Site 3-799.3-LWP (Ag. Land South) has been removed from the CMMP. The site is listed as "considered, but not selected by CMMP" in Appendix B of the Final EIS.

COMMENT 102 - Site descriptions in the Final EIS clearly identify acreages proposed for use under both plans. The scale identified on the air photo site plan in the CMMP is not correct. The correct scale is 1" = 400'. A revised drawing will be completed for the CMMP. The District has begun an evaluation of floodplain impacts (see response to comment 6). We disagree with your designation of wetlands (see response to comment 16).

COMMENT 103 - Please see response to comment 12 for discussion of use of this site. We disagree with your designation of wetlands (see response to comment 16).

COMMENT 104 - Site descriptions in the Final EIS clearly identify acreages proposed for use under both plans, however, in this case the acreage proposed for use is somewhat irrelevant, considering the site was neither recommended by GREAT I nor selected under the CMMP. This site was considered as an alternative in the dredged material placement reconnaissance report for upper pool 4. It is not included in the CMMP because the site was not recommended by GREAT I nor was it selected by the CMMP. The site is included in the EIS to provide perspective on the availability of alternative sites to those selected by GREAT I or the CMMP.

COMMENT 105 - As noted in our response to comment 12, we would like to investigate the possibility of enhancing fish spawning habitat on this site through use of dredged materials. We concur further discussions with your agency are necessary. The April 1996 version of the CMMP describes the correct plan for this site. The Final EIS describes the proposed use of this site, according to the April 1996 version of the CMMP. The plan as described in the CMMP and Final EIS involves mechanical unloading at the commercial harbor bulkheads and trucking to the placement site.

105 on the aerial photo, which shows the stockpile site some distance away from Hay Creek. The March 1995 draft of the CMMP shows creation of an access channel from the harbor, shows the stockpile site moved significantly east of the current version of the CMMP, and describes the site as only three acres. The September 1995 version of the CMMP shows creation of an access channel from the harbor, shows the stockpile site expanded northerly and westerly (from the March 1995 version), and describes the site as 13 acres (11 acres upland, two wetland). The September 1995 version states that wetland impacts will be mitigated. The DEIS (page B-74) describes the access channel that would be dredged from the harbor; while that description is consistent with two earlier drafts of the CMMP, it is not consistent with the April 1996 version of the CMMP, which is the document the DEIS purports to describe. Some clarification is badly needed here.

106 **4-791.3-LWP:** This is described in the DEIS (p. B-75) as 33 acres, but GREAT (Vol. 8, Part III, p. 233) describes it as 35 acres. This site does not appear in CMMP Tab 3-1.

107 **4-789.6-RMP, Carlson Island:** This is described in the DEIS (p. B-75) as a 9-acre site and as an 8-acre site; all other descriptions are 8 acres.

108 **4-789.3-RMT:** This site is listed in Tab 3-1 and note 4-2 explains that it is not described in GREAT. Tab 3-1 lists it as 1 acre. GREAT (Vol. 8, Part III, p. 230) lists it as an 8-acre site. Since there's no clear description of it, shouldn't it be deleted entirely?

109 **4-788.5-RMP, Colvill Park:** Minnesota DNR has requested, by letter dated Nov. 8, 1996, that the Corps conduct a hydraulic analysis to determine flood stage impacts. The CMMP incorrectly states that no further floodplain analysis is necessary; the DEIS (page B-76) states there would be adverse floodplain impacts. The DEIS incorrectly states that all 11 acres have been previously used for dredged material disposal; the CMMP correctly states that six acres of the site is wetland and five acres is upland (where previous disposal occurred). The beneficial use discussion in the CMMP appears to be partially incorrect: our understanding of the city's plans are that the site would be filled and then fully developed for an aquatic center, which would appear to preclude a beneficial use stockpile site. CMMP Tab 3-1 shows the 6 wetland and 5 upland acres under GREAT, but shows only the 5 upland acres under CMMP; under the CMMP, the 6 wetland acres would be filled and that fact should be acknowledged in the CMMP, regardless of who is responsible for mitigation.

110 We are particularly concerned with the potential impact on bald eagles at this site. There is a winter roost site in this mile of the river and eagles use the trees in Colvill Park during the day for foraging and resting. Filling this site and developing an aquatics center would destroy the value of this property for bald eagles. It is difficult to emphasize how important this site is to bald eagles: feeding eagles need trees adjacent to open water and those conditions don't occur everywhere; they occur here because of the warm-water discharge from the power plant, but removing the trees would significantly degrade the value of this reach of river for bald eagles. The DEIS (page B-76) contains

COMMENT 106 - Site descriptions in the Final EIS clearly identify acreages proposed for use under both plans, however, in this case the acreage proposed for use is somewhat irrelevant, considering the site was neither recommended by GREAT I nor selected under the CMMP. This site was considered as an alternative in the dredged material placement reconnaissance report for upper pool 4. It is not included in the CMMP because the site was not recommended by GREAT I nor was it selected by the CMMP. The site is included in the EIS to provide perspective on the availability of alternative sites to those selected by GREAT I or the CMMP.

COMMENT 107 - Site descriptions in the Final EIS clearly identify acreages proposed for use under both plans.

COMMENT 108 - Site 4-789.3-RMT would be required as a material rehandling site if the GREAT I plan were implemented. The site was identified as an 8-acre site under GREAT I, however, considering the site would be used for rehandling of materials, only 1 acre would be needed for dredged material placement. One acre of floodplain forest habitat would be affected at this site if the GREAT I plan were implemented.

COMMENT 109 - The District has begun an evaluation of floodplain impacts (see response to comment 6). The beneficial use discussion in the CMMP is correct. If the city chooses not to develop the aquatic center, they "could" develop a beneficial use stockpile site. As discussed in our response to comment 76, wetland acres filled by another party using dredged materials are the responsibility of that party. Including these acres as affected acres in the EIS would be double-counting the impacts, which we believe would be distorting the facts. In addition, if we included these acres in the CMMP then by the policy described in Appendix B of the CMMP and Section 5.6.4 of the EIS these and similar areas would be exempt from compensatory mitigation by the St. Paul District or others.

COMMENT 110 - We have substantially revised the Biological Assessment (Appendix C) in response to the United States Department of the Interior comments. We agree that the use of the Colvill Park site could affect threatened and endangered species (see response to comment 24 of the United States Department of the Interior letter). The Final EIS has been revised to indicate the potential for affecting bald eagles at this site.

110 the statement that no threatened or endangered species would be affected at this site; that statement is incorrect. DEIS Table 9, page C-29 is likewise wrong. The site description in the CMMP concluding there are no threatened or endangered species at this site is also wrong.

111 **4-785.0-RMP:** The statement in the DEIS (p. B-76) that this is a 5-acre site is incorrect; all other references in DEIS, CMMP and GREAT consistently refer to this as a 13-acre site.

112 **4-762.7-LWT, Reads Landing:** The CMMP incorrectly states there are no impacts to threatened or endangered species at this site. The similar statement in the DEIS (page B-77) is also incorrect. Development of the Reads Landing transfer site has had profound negative impacts on bald eagles through the destruction of shoreline trees needed for foraging and resting. This is an exceptionally important location to bald eagles. The Corps should be acknowledging impacts and developing a remediation plan. The channel shoreline should be riprapped and planted in trees. Bald eagles need trees adjacent to open water and those conditions should be protected wherever they exist and restored where they have been destroyed. Eagle use of the river valley is increasing and actions are needed now to restore and sustain these critical winter sites.

113 Acreage totals remain unclear at this site. GREAT approved impacting 9.5 acres of this floodplain forest wetland. The River Resources Forum added "5-8 acres" in 1982, making the approved site somewhere between 14.5 and 17.5 acres. The DEIS (p. B-77) describes this as a 55-acre site with a 25-acre containment area, while all other references in the DEIS and CMMP are to a 22-acre site. Even at 22 acres the site is clearly larger than approved. To describe as "upland" a site that currently is a diked containment area that is open to the river and contains aquatic life is incorrect; it should be described as wetland in Tab 3-1.

114 **4-761.0-RMP, Wabasha Gravel Pit:** The "Future Plans" discussion in the CMMP states a survey will be completed following the 1995 placement to determine remaining capacity. This statement should be changed to reflect the results of that survey. This site is described in the DEIS (p. B-78) as 70 acres, which is incorrect; the site is 60 acres under GREAT and 86 under CMMP.

115 **4-760.2-RMP:** The DEIS (p. B-78) lists this site as 23 acres and later as 30 acres; other documents show it as 30 acres. This site was filled in 1987 and closed; why is it listed as a CMMP-selected site in CMMP Tab 3-1?

116 **4-759.7-RMP:** GREAT lists this site at mile 760.2. The DEIS (p. B-79) lists this as a 10-acre site containing 6.4 acres. It appears the 6.4-acre figure is correct, but it should be shown in Tab 3-1 as wetland, not upland.

COMMENT 111 - The referenced acreage has been revised to 13 acres in the Final EIS.

COMMENT 112 - We disagree development of the Read's Landing site has had "profound negative impacts" on bald eagles. We assessed the impacts of the CMMP on Federal threatened and endangered species in the Biological Assessment (Appendix C) and determined continued use of the Read's Landing site would not affect bald eagles. The U.S. Fish and Wildlife service concurs with this determination (see United States Department of the Interior letter). The loss of shoreline trees at this site may have had some minor adverse impacts on bald eagles, however, bald eagle use of the Read's Landing area has steadily increased in the last 10 years irrespective of continued use of the Read's Landing placement site. In recognition of the importance of the Read's Landing area for bald eagles, a vegetative screening plan, as indicated in the Dredged Material Placement Site Information Sheet in Tab 14 of the CMMP, will be implemented for this site. This plan will include planting of trees to create future bald eagle perches. Development and implementation of the planting plan has been added to the 5-year Placement Site Plan in Tab 6 of the CMMP and Table A-3 of the Final EIS. We look forward to working with the Wisconsin DNR and USFWS in developing a plan to restore, enhance and preserve this valuable area for bald eagles.

COMMENT 113 - Site descriptions in the Final EIS clearly identify acreages proposed for use under both plans (22 acres under the CMMP and 9.5 acres under the GREAT I plan). There are 22 acres of disturbed area at the site. The District will continue past practice of using the entire area. This is explained in the CMMP and was discussed and agreed to at the interagency workshop held on 29 September, 2 October and 6 October 1995 to review details of the District's CMMP. We do not agree with your designation of wetlands (see response to comment 16).

COMMENT 114 - The CMMP has been revised to reflect the results of the 1995 survey. Site descriptions in the Final EIS clearly identify acreages proposed for use under both plans (60 acres for GREAT I and 86 acres for the CMMP). As stated in the CMMP, acreages were revised based on real estate purchased by the District.

COMMENT 115 - Site descriptions in the Final EIS clearly identify acreages proposed for use under both plans (30 acres under the CMMP). The site is part of the 40-year plan, but is footnoted in Tab 3-1 in the CMMP as a "completed" site. Dredged Material Placement Site Information Sheets were not prepared for completed sites, since they will not be used in the future. The impacts of use of this site are included in the EIS to ensure compliance with NEPA and to establish an acreage baseline for future reference.

COMMENT 116 - The site description in the CMMP more accurately reflects the location of this site. Site descriptions in the Final EIS clearly identify acreages proposed for use under both plans. We disagree with your designation of wetlands (see response to comment 16).

117 **4-759.5-RMP:** The DEIS (p. B-79) describes this as a 6-acre site; GREAT selected 5.7 acres, and CMMP Tab 3-1 shows it as 5.7 GREAT and 6 CMMP. Even though it is described as a CMMP-selected site, it does not appear in the CMMP---there is no map or site information sheet.

118 **4-759.3-RMP:** This is described in the DEIS (p. B-80) as a CMMP-selected site, but it does not appear in the CMMP. It is described as a 7-acre site and a 3-acre site. CMMP Tab 3-1 describes the 3-acre site as "upland", but the description clearly is of wetland-type vegetation; this should be described as wetland.

119 **4-759.3-LWT, Crats Island:** The DEIS (page B-81) describes the site as 60 acres, but the CMMP describes it as only 22 acres, and the drawing on the airphoto shows 22 acres. The DEIS describes the site as a diked containment area, but the 4.5 acre segment on the west end is not diked. It should be listed in Tab 3-1 as wetland.

120 **4-757.5-LW, Teepeeota Point:** The Corps needs to develop a permanent disposal site for material from this area and designate this site as 4-757.5-LWT, a transfer site. It is a significant flaw in the 40-year Channel Maintenance Management Plan that there is no permanent disposal plan for such a frequently dredged area. We have not received an airphoto site plan for this site. This site is 46 acres, not 70 acres as incorrectly described in the DEIS (page B-81). It should be shown as wetland in Tab 3-1.

121 **4-756.5-LWT, Grand Encampment:** This is a small site, it is full of material waiting to be transferred elsewhere, and there is no clearly identified permanent place to take the material. It is a significant flaw in the 40-year Channel Maintenance Management Plan that there is no long-term plan for such a frequently dredged area. It should be shown as wetland in Tab 3-1.

122 **4-754.0-LWP, Alma Marina:** The CMMP correctly describes this site as being 7 acres (having been reduced from 10.3 acres in 1983), but the DEIS (page B-82) incorrectly describes the site as 21 acres and extending out into the river down to the Beef Slough Daymark. This text needs to be corrected.

123 **5-751.8-LWP:** This site is described in the DEIS (p. B-91) as a 2-acre site, but GREAT describes it as 0.2 acres. It is not described in CMMP Tab 3-1.

124 **5-751.5-LWP, Alma Power Plant:** This site is described in the DEIS as 23.6 acres of wetland (p. B-91) and as 20 acres of wetland (p. B-92), while GREAT describes it as 15 acres. CMMP Tab 3-1 lists the site as zero acres. These inconsistencies need to be corrected.

COMMENT 117 - GREAT I sites less than 5 acres were rounded up for the CMMP to remove decimals, and sites greater than 5 acres were rounded to the nearest whole number. This was discussed and agreed to at the interagency workshop held 29 September, 2 October and 6 October 1995 to review details of the District's CMMP. Site descriptions in the Final EIS clearly identify acreages proposed for use under both plans. The site is part of the 40-year plan, but is footnoted in Tab 3-1 in the CMMP as a "completed" site. Dredged Material Placement Site Information Sheets were not prepared for completed sites, since they will not be used in the future. The impacts of use of this site are included in the EIS to ensure compliance with NEPA and to establish an acreage baseline for future reference.

COMMENT 118 - Site descriptions in the Final EIS clearly identify acreages proposed for use under both plans. The site is part of the 40-year plan, but is footnoted in Tab 3-1 in the CMMP as a "completed" site. Dredged Material Placement Site Information Sheets were not prepared for completed sites, since they will not be used in the future. The impacts of use of this site are included in the EIS to ensure compliance with NEPA and to establish an acreage baseline for future reference. We disagree with your designation of wetlands (see response to comment 16).

COMMENT 119 - Site descriptions in the Draft EIS often described a much larger area than needed under the GREAT I plan or CMMP (see response to comment 60). These descriptions have been revised in the Final EIS to clearly identify proposed acreages under both plans. Before use of area "C" on the site map in the CMMP, the District will coordinate with the OSIT and construct a dike to contain dredged material. We disagree with your designation of wetlands (see response to comment 16).

COMMENT 120 - See response to comment 13 for a discussion of why this site is not delineated as temporary or permanent. A permanent placement site is designated for this dredge cut (see response to comment 14). Site descriptions in the Draft EIS described a much larger area than needed under the GREAT I plan or CMMP (see response to comment 60). Descriptions have been revised in the Final EIS to clearly identify proposed acreages used under both plans. The Teepeeota Point site map will be provided with the next set of revised pages. We disagree with your designation of wetlands (see response to comment 16).

COMMENT 121 - A permanent placement site has been designated for this dredge cut (see response to comment 14). We disagree with your designation of wetlands (see response to comment 16).

COMMENT 122 - Site descriptions have been revised in the Final EIS to clearly identify proposed acreages used under both plans.

COMMENT 123 - Site descriptions have been revised in the Final EIS to clearly identify proposed acreages used under both plans. This site was considered as an alternative in the dredged material placement reconnaissance report for pool 5. It is not included in the CMMP because the site was not considered by GREAT I nor was it selected by the CMMP. The site was included in the EIS to provide perspective on the availability of alternative sites to those selected by GREAT I or the CMMP.

COMMENT 124 - Site descriptions in the Draft EIS described a larger area than needed under the GREAT I or CMMP (see response to comment 60). Descriptions have been revised in the Final EIS. Footnote 5-1 of Tab 3-1 explains why no acres are identified at this site.

125 **5-751.5A-LWP:** This site is listed in the DEIS (p. B-92) as site 5-751.5A-LWP, while CMMP Tab 3-1 lists it as 5-751.2-LWP. The DEIS lists the site as both 33 acres of wetland and 25 acres of wetland, while GREAT lists it as 15 acres of wetland and CMMP Tab 3-1 lists it as having zero acres. These inconsistencies need to be corrected.

126 **5-749.8-RMP, West Newton Chute:** The CMMP text states that 158 acres have been acquired, while the airphoto site plan shows 160 acres. The CMMP text states the site is 39 acres; why not identify all of the acreage as being available? The DEIS (page B-93) states incorrectly that the site is still privately owned. The DEIS also contributes to confusion about total acreage, describing it as both a 36-acre site and a 39-acre site.

127 **5-749.0-RMP:** This site is described in the DEIS (p. B-93) as containing both 16 and 13 acres. This inconsistency needs to be corrected. GREAT had described 16 acres, all wetland. This site is not listed in CMMP Tab -1.

128 **5-748.0-RMT, Above West Newton:** The CMMP identifies this site as 14 acres and the airphoto site plan shows a 14-acre containment area. But the DEIS (page B-94) describes the site as 22 acres. GREAT described the site as 27.5 acres, all old dredged material. These inconsistencies need to be corrected and Tab 3-1 should list the site as wetland, not upland.

129 **5-747.5-LWP, Buffalo City:** This site is identified in the DEIS (p. B-94) as 26 acres and in GREAT as 15 acres, while CMMP Tab 3-1 says it contains zero acres. These inconsistencies need to be corrected.

130 **5-746.6-RMP:** The DEIS (p. B-95) describes this site as 21 acres, but GREAT describes it as 16 acres. It is not displayed in CMMP Tab 3-1.

131 **5-745.8-RMT, Above Fisher Island:** The CMMP contains a typographical error, incorrectly identifying this site as 5-754.8-RMT. GREAT recommended 5.5 acres at this site, but it is currently a 14-acre containment site. This expansion was apparently unauthorized. The CMMP airphoto plan shows the site largely to be open water, even though CMMP Tab 3-1 describes the site as "upland"; it should correctly be described as wetland.

132 **5-744.7-LWT, Lost Island:** The statement in the CMMP under "future plans" that this site "will continue" to be used as a borrow area for the Weaver project should be changed to "may continue." It is unlikely that additional islands will be constructed at Weaver Bottoms. The DEIS (p. B-96) describes this as GREAT site 5.08, but GREAT doesn't have a site 5.08, nor any other site in that area. Much of this site is currently open water and could not be properly described as "upland"; it should be described in Tab 3-1 as wetland.

COMMENT 125 - The Final EIS has been corrected to be consistent with the CMMP. Site descriptions in the Draft EIS often described a larger area than needed under the GREAT I plan or CMMP (see response to comment 60). These descriptions have been revised in the Final EIS. Footnote 5-1 of Tab 3-1 explains why no acres are identified at this site. GREAT I listed 4 sites, only one of which was to be used. After further study, the District selected site 5-749.8-RMP.

COMMENT 126 - The District acquired 155.5 acres in 1994 and will acquire an additional 3.46 acres in 1997. The total 159 (rounded) acres will be used for dredged material placement if necessary. The site will be developed in stages beginning with approximately 39 acres. The CMMP information sheet and site map will be revised to show this change. Site descriptions have been revised in the Final EIS to clearly identify proposed acreages used under both plans and site ownership.

COMMENT 127 - Site descriptions have been revised in the Final EIS to clearly identify proposed acreages used under both plans. This site is not included in the CMMP because the site was not recommended by GREAT I nor was it selected by the CMMP. The site was included in the EIS to provide perspective on the availability of alternatives to sites selected by GREAT I or CMMP.

COMMENT 128 - Site descriptions have been revised in the Final EIS to clearly identify proposed acreages used under both plans. As noted in our response to comment 16, we disagree with your designation of wetlands.

COMMENT 129 - Site descriptions have been revised in the Final EIS to clearly identify proposed acreages used under both plans. Footnote 5-1 of Tab 3-1 explains why no acres are identified at this site. GREAT I listed 4 sites, only one of which was to be used. After further study, the District selected one of the other sites, site 5-749.8-RMP.

COMMENT 130 - Site descriptions have been revised in the Final EIS to clearly identify proposed acreages under both plans. This site is not included in the CMMP because the site was not recommended by GREAT I nor was it selected by the CMMP. The site was included in the EIS to provide perspective on the availability of alternatives to sites selected by GREAT I or CMMP.

COMMENT 131 - The CMMP has been revised. Site expansion occurred in 1977 when a dike was constructed. The entire area was used during excavation of the site as a borrow source for the Weaver Bottoms project. This expansion was covered in the EIS supplement for that project. We disagree with your designation of wetlands (see response to comment 16).

COMMENT 132 - The CMMP has been changed. We disagree with the statement "It is unlikely that additional islands will be constructed at Weaver Bottoms." Phase II of the project included construction of additional islands and this remains a strong possibility. A task force identified many potential sites to evalute during the GREAT I study and assigned an identifying number to each. Some of the sites were selected and included in the GREAT I study documents but many were not. Several sites not referenced in the GREAT I study have been evaluated in post-GREAT I Reconnaissance Reports using site numbers assigned during the GREAT I study. These numbers have been used in many other documents and will remain in the CMMP and EIS for reference. We disagree with your designation of wetlands (see response to comment 16).

133 **5-744.0-RMP, Weaver Bottoms:** There is a growing probability that additional islands will not be constructed in Weaver Bottoms, and both the CMMP and DEIS should be modified to reflect that uncertainty. The Corps also needs to begin to assess alternatives for unloading the transfer sites that were designated for placement at Weaver. GREAT originally recommended alteration of 76 acres of wetland for island construction, and final action converted 108 acres of wetland. CMMP Tab 3-1 notes the acreages correctly, but fails to describe them as wetland.

134 **5A-738.2-RMP, L/D 5 Site:** The CMMP Site Information Sheet states there has been no RRF endorsement, but in the next sentence gives the date of RRF endorsement. The two-acre site is wetland and should be described as such in CMMP Tab 3-1.

135 **5A-734.5-LWE, Island 58:** The DEIS (p. B-104) describes the site as 32 acres and states GREAT recommends 7 acres of wetland and CMMP recommends 3 acres of old dredged material, which should correctly be described as wetland. GREAT actually recommended 32 acres at this site, which it described as 16 acres of wetland and 16 acres of old dredged material (also actually wetland). CMMP Tab 3-1 should be corrected to describe 32 acres of wetland under GREAT and 3 acres of wetland under CMMP.

136 **5A-733.5-LWP, Fountain City Service Base:** The CMMP correctly describes this 2-acre site, but the DEIS (page B-104) incorrectly describes this site as containing 18 acres. The 18-acre description comes from GREAT, which was actually describing two sites---one at the service base and one across the backwater; GREAT did not recommend either site.

137 **5A-731.9-LWP, Fountain City 1:** The CMMP correctly describes this 6-acre site, but the DEIS (page B-105) incorrectly describes this site as containing 8 acres. The site should be described in CMMP Tab 3-1 as 5 acres of wetland and one upland.

138 **5A-731.8-LWP, Fountain City 2:** The CMMP correctly describes this 22-acre site, but the DEIS (page B-105) incorrectly describes this site as containing 34 acres.

139 **5A-730.5-LWT, Wilds Bend:** The CMMP correctly describes this 8-acre site, but the DEIS (page B-106) incorrectly describes this site as containing 15 acres. GREAT recommended 9 acres. The site is entirely wetland.

140 **6-726.0-LMP:** This site should be described as wetland, not upland. GREAT approved 0.5 acres and it apparently grew to 1 acre without further authorization.

141 **6-723.3-RMP, Winona Industrial Park:** This site is described in the DEIS (p. B-114) as wetland, but is not properly identified as wetland in CMMP Tab 3-1.

COMMENT 133 - We recognize the current "uncertainty" associated with construction of additional islands in the Weaver Bottoms; however, for planning purposes, construction of islands remains the proposed action for placement of dredged materials in this portion of the UMR. The effects of the Weaver Bottoms project on wetlands have been assessed under the project supplemental EIS (see Section 1.5.1 *Actions Covered Under Separate Environmental Impact Statements*). Including those impacts in this document would be double-counting.

COMMENT 134 - The CMMP Site Information Sheet has been revised in reference to RRF endorsement. The site is described as 1 acre of floodplain forest (type 1-2 wetland) and 1 acre of old dredged material in the Final EIS and Tab 3-1.

COMMENT 135 - GREAT I was very inconsistent in characterizing habitat conditions of this site. First, on pages 145-147 of Volume 8, Part IV of the GREAT I Technical Appendices, 7 acres of type 1 wetlands are identified as filled under Wildlife Habitat Impacts. Next, on pages 157-159 of Volume 8, Part IV of the GREAT I Technical Appendices, 16 acres of type 1 wetlands and 16 acres of old dredged material are identified as filled/altered under Wildlife Habitat Impacts. Finally, on page 129 of Volume 9 of the GREAT I Technical Appendices (the GREAT I EIS), use of this site is projected to disturb 25 acres of type 1 bottomland hardwoods and 7 acres of previously used disposal site habitat. Under GREAT I, the site is recommended as a temporary/emergency site. We do not believe 32 acres would be necessary for emergency/temporary placement of materials at this site; therefore, we reduced the acreage to a more realistic figure of 7 acres. The site would be located on old dredged material habitat if the GREAT I plan were implemented. Again, as noted in our response to comment 16, we disagree with your designation of wetlands.

COMMENT 136 - Concur. GREAT I described a different site(s). Appendix B of the Final EIS has been revised to reflect site 5A-733.5-LWP (Fountain City Service Base) as a CMMP selected site with no reference to GREAT I.

COMMENT 137 - The site is described as 6 acres of old dredged material in the Final EIS and Tab 3-1. This description is consistent with the GREAT I description (page 71, Volume 9 of the Technical Appendices).

COMMENT 138 - Site descriptions have been revised in the Final EIS to clearly identify proposed acreages used under both plans (see response to comment 60).

COMMENT 139 - Site descriptions have been revised in the Final EIS to clearly identify proposed acreages under both plans (see response to comment 60). We disagree with your designation of wetlands (see response to comment 16).

COMMENT 140 - GREAT I sites less than 5 acres were rounded up for the CMMP to remove decimals. Sites greater than 5 acres were rounded to the nearest whole number. This was discussed and agreed to at the interagency workshop held on 29 September, 2 October and 6 October 1995 to review details of the District's CMMP. We disagree with your designation of wetlands (see response to comment 16).

COMMENT 141 - Note 6-1 of CMMP Tab 3-1 identifies the site as entirely wetland (type 3-4-5) and

142 **6-720.5-RMP, Homer:** The CMMP identifies 10 acres, while the DEIS (page B-114) identifies 7 acres but describes 10 acres. It would appear the 7-acre figure is an error. Minnesota DNR has requested, by letter dated Nov. 8, 1996, that the Corps conduct a hydraulic analysis to determine flood stage impacts.

143 **7-714.1-LWP, Trempealeau:** The CMMP correctly describes this 5-acre site, but the DEIS (page B-121) incorrectly describes this site as containing 21 acres.

144 **7-713.1-RMP, Hot Fish Shop:** This site contains three acres; the DEIS (page B-122) incorrectly states that it is a 12-acre site. GREAT (Vol. 8, Part IV, p. 281) described the site as 10 acres of wetland and 2 acres of "bottomland hardwoods," which is a wetland type. The three acres that have since been disturbed and are now described in the CMMP should still be classified as wetland.

145 **7-712.0-LWP:** The DEIS (p. B-122) describes this as a 32-acre site, but then goes on to depict the characteristics of only 16 acres.

146 **7-708.7-LWE, Winters Landing:** This site contains two acres; the DEIS (page B-123) incorrectly states that it is a 59-acre site, then describes 36 acres.

147 **7-707.3-RMP, Dakota Boat Ramp:** Plans for this site are currently in the process of being changed and we are waiting to review new material. Once new plans for this site have been agreed to, the CMMP and DEIS will need to be corrected. This is listed in the DEIS (p. B-123) as GREAT site 7.25A, but GREAT has no site by that number and doesn't show a site in this location.

148 **7-706.5-RMT, Dakota Island:** This site contains 8 acres; the DEIS (page B-124) incorrectly states that it is a 15-acre site. GREAT approved this as a 6.4-acre site, but it has since grown to 8 acres without authorization. CMMP Tab 3-1 should show both the 6.4-acre and 8-acre figures as wetland, not upland.

149 **8-695.7-LWP, Isle La Plume:** This 9-acre site is described in the DEIS (page B-132) as a 44-acre site. We understand the source of the 44-acre figure, but to describe it as a 44-acre site in the introductory paragraph is misleading.

150 **8-688.7-RMP, Brownsville Containment:** The airphoto site plan in the CMMP shows a 36-acre site, with the current disturbed area covering 13 acres, plus 3 acres that were previously filled and developed. That filled area may be described as upland, but the remaining 33 acres should be described as wetland in CMMP Tab 3-1. GREAT described 33 acres of wetland and 22 acres of "old dredged material," which is also wetland; CMMP Tab 3-1 should show 55 acres of wetland under GREAT. The DEIS (p. B-135) should not describe the site as containing 55 acres; that is misleading. The statement that the current stockpile is 10 acres is incorrect.

COMMENT 141 (continued) - further explains the landowner plans on filling the site. The EIS correctly states the St. Paul District would provide material if the landowner obtains all necessary permits. Including these wetland acres in the total filled under the GREAT I plan would be double-counting the impacts. This site is not included in the CMMP.

COMMENT 142 - Site descriptions have been revised in the Final EIS to clearly identify proposed acreages used under both plans (see response to comment 60). The District has begun an evaluation of floodplain impacts (see response to comment 6).

COMMENT 143 - Site descriptions have been revised in the Final EIS to clearly identify proposed acreages used under both plans (21 acres under GREAT and 5 acres under CMMP).

COMMENT 144 - Site descriptions have been revised in the Final EIS to clearly identify proposed acreages used under both plans (see response to comment 60). We disagree with your designation of wetlands (see response to comment 16).

COMMENT 145 - Site descriptions have been revised in the Final EIS to clearly identify proposed acreages used under both plans (see response to comment 60).

COMMENT 146 - Site descriptions have been revised in the Final EIS to clearly identify proposed acreages used under both plans (see response to comment 60).

COMMENT 147 - A task force identified many potential sites to evalute during the GREAT I study and assigned an identifying number to each. Some of the sites were selected and included in the GREAT I study documents but many were not. Several sites not referenced in the GREAT I study have been evaluated in post-GREAT I Reconnaissance Reports using site numbers assigned during the GREAT I study. These numbers have been used in many other documents and will remain in the CMMP and EIS for reference. See response to comment 36 for further discussion of this site.

COMMENT 148 - Site descriptions have been revised in the Final EIS to clearly identify proposed acreages used under both plans (see response to comment 60). There are 8 acres of disturbed area currently at this site. The District will continue past practice of using the entire disturbed area. This is explained in the CMMP and was discussed and agreed to at the interagency workshop held on 29 September, 2 October and 6 October 1995 to review details of the District's CMMP. We disagree with your designation of wetlands (see response to comment 16).

COMMENT 149 - Site descriptions have been revised in the Final EIS to clearly identify proposed acreages used under both plans (see response to comment 60).

COMMENT 150 - Site descriptions have been revised in the Final EIS to clearly identify proposed acreages used under both plans (see response to comment 60). We disagree with your designation of wetlands (see response to comment 16).

151 **8-686.6-LW:** The DEIS describes this site as 7 acres on p. B-135 and 8 acres on p. B-136. The GREAT report shows the correct figure is 7 acres.

8-684.7-LWP, Stoddard: The DEIS (p. B-136) incorrectly refers to this site as 14 acres. All other references (same page, CMMP Tab 3-1, and GREAT Vol. 8, Part V, p. 12) are to 4 acres.

152 **9-678.0-RME, Island 126:** The DEIS (p. B-142) describes this site as 80 percent bottomland forest and 20 percent old dredged material, then describes the site as all old dredged material. This inconsistency should be corrected. The entire 10 acres should be described as wetland in CMMP Tab 3-1.

153 **9-677.7-LWP, Genoa Power Plant:** The CMMP describes this as a 2-acre site but the DEIS (page B-143) describes it as a 1-acre site. This needs clarification.

154 **9-676.5-RME, Twin Island:** All 30 acres of this site should be described as wetland in CMMP Tab 3-1.

155 **9-670.5-LWP, Blackhawk Park:** The DEIS (p. B-146) says the site is 67 acres, then describes 69 acres. The CMMP Site Information Sheet says it is 68.5 acres, the airphoto site plan displays 71.5 acres, and CMMP Tab 3-1 says it is 69 acres. The statements should all be consistent. The DEIS and CMMP both say this is GREAT site 9.55, but GREAT does not have a site with that number. Based on the description in the DEIS, Tab 3-1 should identify 48 acres of wetland and 21 acres of upland.

156 **9-665.8-RIE, Indian Camp Light:** This is a 3-acre site, but the DEIS (page B-147) incorrectly describes it as a 23-acre site. The 3 acres should be described as wetland in CMMP Tab 3-1.

157 **9-664.3-RIT, Lansing:** This was selected by GREAT as a 4-acre site and it is identified in the DEIS (page B-148) as such, but the CMMP identifies it as a currently bermed 9-acre site. How did this growth occur without RRF endorsement? The two documents should be consistent in their acreage descriptions. Note 9-2 of CMMP Tab 3-1 is not correct. GREAT described the site as 4 acres at the outer base of the containment dike. All of the site is wetland and should be so described in CMMP Tab 3-1. GREAT defined the site as 4 acres, not 8 as shown in CMMP Tab 3-1. GREAT (Vol. 8, Part V, p. 106) also described the site as having a capacity of 39,000 cubic yards, far from the 208,000 cubic yards the CMMP Site Information Sheet says is the current capacity.

158 **9-663.5-LWP, Lansing Highway Bridge:** The DEIS (p. B-149) and the CMMP Site Information Sheet both describe this as GREAT site 9.50, but GREAT did not have a site 9.50 and did not have any site at this location.

COMMENT 151 - Site descriptions have been revised in the Final EIS to clearly identify proposed acreages used under both plans (see response to comment 60).

COMMENT 152 - Site descriptions have been revised in the Final EIS to clearly identify proposed acreages used under both plans (see response to comment 60). We disagree with your designation of wetlands (see response to comment 16).

COMMENT 153 - Site descriptions have been revised in the Final EIS to clearly identify proposed acreages used under both plans (see response to comment 60).

COMMENT 154 - We disagree with your designation of wetlands (see response to comment 16).

COMMENT 155 - A task force identified many potential sites to evalute during the GREAT I study and assigned an identifying number to each. Some of the sites were selected and included in the GREAT I study documents but many were not. Several sites not referenced in the GREAT I study have been evaluated in post-GREAT I Reconnaissance Reports using site numbers assigned during the GREAT I study. These numbers have been used in many other documents and will remain in the CMMP and EIS for reference. Site descriptions have been revised in the Final EIS to clearly identify proposed acreages used under both plans (see response to comment 60). We disagree with your designation of wetlands (see response to comment 16).

COMMENT 156 - Site descriptions have been revised in the Final EIS to clearly identify proposed acreages used under both plans (see response to comment 60). We disagree with your designation of wetlands (see response to comment 16).

COMMENT 157 - There are 9 acres of disturbed area currently at the site. The District will continue past practice of using the entire area. This is explained in the CMMP and was discussed and agreed to at the interagency workshop held on 29 September, 2 October and 6 October 1995 to review details of the District's CMMP. Site descriptions have been revised in the Final EIS to clearly identify proposed acreages used under both plans (4 acres of old dredged material under GREAT I and 9 acres of old dredged material under the CMMP; see response to comment 60). We disagree with your designation of wetlands (see response to comment 16).

COMMENT 158 - A task force identified many potential sites to evalute during the GREAT I study and assigned an identifying number to each. Some of the sites were selected and included in the GREAT I study documents but many were not. Several sites not referenced in the GREAT I study have been evaluated in post-GREAT I Reconnaissance Reports using site numbers assigned during the GREAT I study. These numbers have been used in many other documents and will remain in the CMMP and EIS for reference.

159 **9-662.1-RIP:** This site is listed at mile 662.1 in the DEIS (p. B-150) and at mile 662.2 in CMMP Tab 3-1.

160 **10-644.5-RIE, Jackson Island:** This 3-acre site is incorrectly described in the DEIS (page B-158) as a 20-acre site. It should be listed in Tab 3-1 as wetland, not upland.

161 **10-635.0-LWP, Prairie Municipal Dock:** The DEIS fails to contain a description of this site.

162 **10-634.6-RIP:** This is incorrectly described in the DEIS (p. B-160) as a 5-acre site; it is 4.5 acres.

163 **10-627.8-LWP, Wyalusing Beach:** This site should be listed in Tab 3-1 as wetland, not upland.

164 **10-618.8-RIP, Esmann Island:** This is incorrectly described in the DEIS (p. B-161) as a 9-acre site; it is 8.2 acres.

165 **10-618.7-RIT, McMillan Island:** This is a 5-acre site, and describing it in the DEIS (page B-162) as a 7-acre site is misleading. The airphoto in the CMMP shows the 5-acre site will extend to the water's edge on the north and east sides of the island, eliminating the existing vegetative buffer adjacent to the water. That is inconsistent with the description of plans for the site presented to the RRF during an on-site visit in August 1996. This site is entirely wetland and should be described as such in CMMP Tab 3-1.

166 **10-618.0-RIP, Buck Creek:** This site is described as 10 acres in the CMMP and 8 acres in the DEIS (page B-162). This inconsistency needs to be corrected.

167 **10-616.3-RIP:** The DEIS (p. B-163) locates this site at mile 616.3, while CMMP Tab 3-1 locates it at mile 616.0. GREAT and CMMP Tab 3-1 both list this as a 10-acre site, but the DEIS lists it as 4 acres---3 upland and 1 acre of wetland. These inconsistencies need to be corrected.

Thank you for this opportunity to review these documents. If you have any questions regarding these comments, please contact either Ken Wald at (612) 296-4790 or Steve Johnson at (612) 296-4802.

Sincerely,

Thomas W. Balcom, Supervisor
Natural Resource Environmental
Review Section
Office of Planning

Steven P. Johnson
River Management Supervisor
Division of Waters

COMMENT 159 - These inconsistencies have been corrected.

COMMENT 160 - Site descriptions have been revised in the Final EIS to clearly delineate acreages proposed under both plans (see response to comment 60). We disagree with your designation of wetlands (see response to comment 16).

COMMENT 161 - A description of site 10-635.0-LWP (Prairie Municipal Dock) is provided in the Final EIS. The impacts of using this site have been covered under a separate EIS (see Section 1.5.1 *Actions Covered Under Separate Environmental Impact Statements*).

COMMENT 162 - Site descriptions have been revised in the Final EIS to clearly delineate acreages affected under both plans (see response to comment 60).

COMMENT 163 - We disagree with your designation of wetlands (see response to comment 16).

COMMENT 164 - Site descriptions have been revised in the Final EIS to clearly delineate acreages affected under both plans (see response to comment 60).

COMMENT 165 - An OSIT meeting will be held in 1997, at which time site boundaries will be established. The air photo map of the site will be redrawn as necessary following the OSIT meeting. The site is described as 1acre of floodplain forest (type 1-2 wetland), 1 acre of shallow marsh (type 3-4-5 wetland) and 3 acres of old dredged material in the Final EIS and Tab 3-1.

COMMENT 166 - This inconsistency has been corrected. Site descriptions have been revised in the Final EIS to clearly delineate acreages affected under both plans (see response to comment 60).

COMMENT 167 - These inconsistencies have been corrected in the Final EIS; the site covers 10 acres and is located at river mile 616.0.

Col. J. M. Wonsik
Jan. 17, 1997
Page 27

cc: Ron Nargang, CMO
John Linc Stine, DOW
Kathleen Wallace, Region VI
Wayne Barstad, Region VI
Jim Cooper, Region V
Scot Johnson, Lake City
Tim Schlagenhaft, Lake City
Ken Wald, OOP
Bill Penning, Ecological Services
Gretchen Benjamin, Wisconsin DNR
Gary Wege, USFWS
Randy Ferrin, NPS-LSC
Kent Lokkesmoe, DOW
Alan Robbins-Fenger, DOW
Dale Homuth, Region VI
Larry Nelson, Region V
Mark Heywood, Region V
Mike Davis, Lake City
Nick Gulden, Winona
Joan Galli, Wildlife
Jack Enblom, Ecological Services
Kevin Szcodronski, Iowa DNR
Mike Madell, NPS-MNRRA

ATTACHMENT A **Revision OF Tab 3-1, Page 6, CMMP**

COMPARISON OF ACRES

CMMP vs GREAT

	CMMP	**CMMP**	**CMMP**	**GREAT**	**GREAT**	**GREAT**	
POOL	**WETLAND**	**UPLAND**	**TOTAL**	**WETLAND**	**UPLAND**	**TOTAL**	**WET.DIFF.**
MN	12	11	23	81.5	32.5	114	-69.5
SC	11	0	11	82	2.5	83.5	-71
USAF	0	7	7	0	10	10	0
1	9	2	11	22	3.5	25.5	-13
2	148	32	180	159.5	134.9	294.4	-11.5
3	42.5	28.5	71	107	12.5	119.5	-64.5
4	128	150	278	75.7	115.7	191.4	+52.3
5	154	39	193	165.6	62	227.6	-11.6
5A	42	1	43	89	1	90	-47
6	9	8	17	30.5	7	37.5	-21.5
7	21	0	21	40.9	2.9	43.8	-19.9
8	47	12	59	67.5	48	115.5	-20.5
9	65	23	88	103.7	14.6	118.3	-38.7
10	17	25	42	24.7	44	68.7	-7.7
TOTAL	705.5	338.5	1044	1049.6	490.1	1539.7	-344.1

Minnesota Pollution Control Agency

February 20, 1997

Colonel J.M. Wonsik
St. Paul District, U.S. Army Corps of Engineers
190 Fifth Street East
St. Paul, Minnesota 55101-1638

RE: U.S. Army Corps of Engineers Upper Mississippi River System Channel Maintenance Management Plan
Comments on the Draft Environmental Impact Statement

Dear Colonel Wonsik:

The Minnesota Pollution Control Agency (MPCA or Agency) has reviewed the Draft Environmental Impact Statement (DEIS) for the U.S. Army Corps of Engineers (COE) Upper Mississippi River System Channel Maintenance Management Plan (CMMP) and apologizes for the delay in submitting these comments. The MPCA appreciates the generosity of the COE for affording us the additional time.

1 The MPCA agrees with the COE's assessment (in section 1.2 on page 1-2) that the EIS written in 1974 is outdated and in need of revision to reflect the changes in the conditions *and uses* (MPCA's addition) of the Mississippi River. The MPCA suggests that, if they have not already done so, the COE develop a schedule for the regular review and update of the CMMP and the final EIS to identify changes in an effort to prevent either document from becoming outdated or obsolete again. The identification or awareness of a technological advance (referred to in item 5 Phase V - Periodic Review and Update on page 3-8) could be used as a trigger for reviews that fall between those on the regular schedule. An in-depth evaluation of either the advances or the CMMP may not be necessary, but, at the very least, an assessment should be made of the applicability of those advances to the COE's operations.

2 While it is highly unlikely that the MPCA would grant approval for Thalweg placement of dredged material, the MPCA would not totally rule out such a proposal. Approval, if granted, would only come after an extremely in-depth evaluation. The same would hold true for dredged material placement at site 2-837.5-RMP. There is the distinct possibility, with both proposals, that MPCA approval would entail granting a variance to the original State Disposal System Permit to the COE. (MPCA staff must present the variance request to the Agency Board, which meets the fourth Tuesday of the month. All items before the Board must be placed on the agenda at least three weeks in advance of the meeting in order to be mailed to the Board members. At the meeting the Agency Board would then grant, or deny, the variance based on information both submitted in writing beforehand and presented at the meeting.).

520 Lafayette Rd. N.; St. Paul, MN 55155-4194; (612) 296-6300 (Voice); (612) 282-5332 (TTY)
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COMMENT 1 - At this time, the Corps of Engineers has not taken a position on the adequacy of the 1974 EIS. As stated in Section 1.2 *Areas of Controversy* "... some resource management agencies have petitioned that the 1974 EIS is outdated and should be revised/updated to reflect the changing conditions of the Upper Mississippi River (UMR) environment." We will be evaluating the need to update the Operational aspects of the 9-foot channel. We concur that the CMMP needs to be flexible in terms of identifying new potential placement sites, dredging methods or other techniques which could reduce the environmental effects of the channel maintenance program. As new sites or techniques are developed, environmental documentation of effects will be completed, as needed.

COMMENT 2 - Thalweg disposal is not considered an alternative to current dredged material placement activities in this EIS nor is it proposed in the CMMP. As stated in Section 1.5.3 *Actions Being Deferred Which May Be Pursued in Future*, "*There is a great deal of environmental concern and many unknowns concerning this placement method. It is not being pursued under this planning effort.*" However, we find thalweg disposal an intriguing alternative to current practices. We are primarily interested in thalweg disposal because of the potential savings associated with leaving sediments in the river rather than hydraulically pumping or mechanically moving them to a placement site. Additionally, the ecological significance of using the river's natural sediment transport capabilities and sediment storage capacities to maintain a navigation channel is of interest. We understand the MPCA is opposed to thalweg disposal; however, we hope you will keep an open mind on this alternative in the future as well as other alternatives for maintaining the 9-foot channel project. We have noted your concerns with the use of site 2-837.5-RMP (St. Paul Barge Terminal) in the Final EIS.

3 The COE stated in section 3.2.2.4 that snag removal on the Upper Mississippi River is rare. The MPCA believes, however, that the COE should outline their procedures for dealing with snags in the Mississippi in the final EIS. The MPCA strongly suggests that the COE drop landfilling of snags, removed from any of the rivers, as a disposal option - the COE should check with Shelley Burman of the MPCA's Groundwater and Solid Waste Division (612 297-1779) for the Agency's regulations governing such disposal practices.

4 The MPCA disagrees with the COE's statement, on page 3-13 (section 3.3.2 Dredged Material Placement), that the return flow (effluent) from the disposal/placement site for hydraulically dredged material has a relatively minor impact on water quality. While the discharge from such sites is limited in duration, increases in turbidity and suspended sediment are dependent on the particle size of the sediment and the river and effluent velocities at the outfall location. Adverse impacts may, therefore, go beyond being local and/or short-term. There is also the issue of cumulative impacts from several dredge cuts and placement sites in the same reach of the river in the same season - as occurred in 1996.

5 The MPCA was under the impression that the plan to create more islands in Weaver Bottoms had been abandoned. The MPCA is puzzled, therefore, as to why island creation is still mentioned in the DEIS (the first occurrence is on page 3-14).

6 The MPCA disagrees with three of the COE's statements, in section 4.1.7 Water Quality on page 4-5:

1. That the water quality of the Mississippi River in the metropolitan area is poor.
2. That the wastewater treatment plants contribute PCB's to the Mississippi River. and
3. That the lack of water-contact recreation is due to fecal coliform levels.

First, while poor water quality had been the case in the past, there is evidence that steps taken to improve the water quality of the Mississippi River (e.g. separation of the combined sewer system, pretreatment of industrial discharges to the Pig's Eye Wastewater Treatment Plant, etc.) have yielded gains in that area (e.g. improved Dissolved Oxygen levels, mayfly hatches, etc.). Secondly, the use of PCBs was banned in the late 1970s, therefore, the source of PCBs in the sediment is most likely: a) pre-ban deposition; b) dumping of equipment containing PCB-laden oil; and/or c) air deposition from the incomplete burning of plastics. And, thirdly, it is probably more accurate to say that the level of commercial use of the River as well as the River's velocity has more to do with the lack of swimming (water-contact recreation) than do the fecal coliform levels.

7 Several items that the MPCA would like to see the COE add in the final EIS are as follows:

- a column labeled *sediment deposition/erosion control benefit* to the table for snag removal on page 3-16;
- *changes in regulations (federal, state, local, etc.)* to the list of reasons why the plan is dynamic in section 3.6.2 on page 3-22;
- *swans* to the list of birds that use the river, even if only during migration, in section 4.1.9.5

COMMENT 3 - Section 3.2.2.4 *Snag Removal* has been revised to more clearly identify the procedures used to remove snags from the main channel of the UMR. Basically, snags are dragged from the channel and either left in the water off-channel, placed on the riverbank out of the water near the removal site, or removed from the river and hauled to an on-land collection point for disposal. Based on a discussion with Shelley Burman of the MPCA's Groundwater and Solid Waste Division, we have added language to Section 3.2.2.4 *Snag Removal* indicating the procedures necessary to landfill snags in Minnesota.

COMMENT 4 - Most studies of the impacts of dredging on water quality have detected no more than minor long-term impacts. Generally, turbidity and suspended solids concentrations are rapidly assimilated into the river and usually do not exceed ambient concentrations within several hundred feet downstream of the outfall location. From a mass balance perspective, the amount of material resuspended from dredging is negligible in comparison to the amount of material transported naturally and other resuspension factors, such as wind. The cumulative impacts on water quality of the CMMP are contained in Section 5.7 *CUMULATIVE IMPACTS* of the Final EIS. We assume the dredging you refer to in 1995 was completed at various locations in pool 2. In pool 2, dredging has been deferred for many years because of the lack of suitable placement sites. In 1995, the combination of a growing need and the availability of suitable placement sites, resulted in an abnormally high amount of dredging in pool 2 in 1995. With the development of the CMMP, suitable placement sites will be available in the future, which should allow us to dredge on a more consistent basis.

COMMENT 5 - We recognize the current "uncertainty" associated with construction of additional islands in the Weaver Bottoms. Phase II of the project included construction of additional islands. The decision to implement Phase II was deferred until a final report on the monitoring of the project is completed. That report will be completed in 1997. At this point there are no recommendations, but additional island construction remains a strong possibility.

COMMENT 6 - Using the information provided in your comment, we have revised Section 4.1.7 *Water Quality of UMR* to reflect the improving water quality conditions in pool 2.

COMMENT 7 - We have generally added this information to the Final EIS. In reference to groundwater, we have identified measures in Section 5.6.3.3 in the Final EIS that will be implemented to mitigate the potential or perceived impacts on private or public wells. We have also added discussions in Section 5 on the potential effects on groundwater of the CMMP. We have revised Table A-1 to include information for both plans. The GREAT and CMMP Pool-Cut #s are the same for both plans. For a comparison of the differences between the cuts maintained under the CMMP and those proposed for maintenance under GREAT I, you should review Appendix B and Table A-1 of the Final EIS.

7

on page 4-15;

- *pheasant and turkey* within the watershed, and *Canada goose* to section 4.2.9.4 on page 4-48;
- *construction* to the listing of sources sediment input to the river, at the end of the second paragraph on page 5-14;
- *perception of impact to groundwater and private wells* to section 5.6.3.3 on page 5-54;
- *Reinvest In Minnesota (RIM) and Minnesota River Assessment Plan (MNRAP)* to section 5.7.2.1.2 Watershed Management on page 5-60; and
- *CMMP and GREAT* names in the Pool-Cut # column of Table A-1 on pages A-6 to A-8.

8

The MPCA believes that the COE should update or verify, whichever is appropriate, the data in the following areas:

- section 4.1.15.3 Employment on page 4-40;
- section 4.1.15.7.1 Historic Trends on page 4-42;
- section 4.2.7 Water Quality on page 4-46;
- the acreages of wetland and upland for the disposal sites on page 5-16; and
- Table A-1 on pages A-6 to A-8 to include the "cuts" done in 1996.

9

The MPCA has a number of ambient monitoring stations throughout the Minnesota portion of the COE's jurisdiction for which data are available from the U.S. Environmental Protection Agency's STORET water quality database. A small portion of what is available is enclosed.

10

The MPCA favors the appropriate beneficial re-use (i.e. road base, building pad, etc. - but not in waters of the state) of dredged material since the re-use of that material also prolongs the "life" of a disposal/placement site. By prolonging the "life" of a disposal/placement site, the need for new/additional disposal sites can be reduced, or, hopefully, eliminated.

11

According to a citation on page 5-28, the COE is not planning to construct channel control structures on the Minnesota River to maintain the navigation channel. Continental Grain, on the Minnesota at Savage, however, is proposing structures to reduce sediment input from the river in order to reduce the need to dredge their barge slip. Even though the purpose of Continental Grain's structures is to reduce off-channel deposition, those structures will influence what happens in the navigation channel. The COE, therefore, should acknowledge all known existing or planned channel structures in the final EIS, whether those structures are maintained by the COE or another party, due to the impact of those structures on sediment transport and deposition patterns.

12

Although the rehabilitation and/or the new construction of channel control structures on the Mississippi River could reduce both the need to dredge the current number of "cuts" and the resulting adverse water quality impacts from the dredging and return flow, those structures accomplish that by forcing the transport of sediment to another segment of the river. The effect could be one of moving the problem around instead of reducing or solving it. This is especially true for "cuts" where contamination is a concern (e.g. moving the material to Lake Pepin where, currently, contaminants of concern are buried under "cleaner" sediment).

COMMENT 8 - We have reviewed these sections and updated/verified the information as appropriate.

COMMENT 9 - We have noted the MPCA's water quality monitoring presence on the UMR in Section 4.1.7 *Water Quality of UMR.*

COMMENT 10 - Concur. Although nearly all current beneficial uses of material involve on-land uses, we hope the MPCA will not look unfavorably on potential in-water beneficial uses, such as island construction, should such uses be considered in the future.

COMMENT 11 - A cumulative impact assessment of the Channel Structures program is included in Section 5.7 *CUMULATIVE IMPACTS.*

COMMENT 12 - Concur. The process outlined in the CMMP and summarized in the EIS (see Section 3.2.2.3 *Channel Structures* for identifying where and what types of channel control structures might be employed to reduce the impacts of maintaining the 9-foot channel provides opportunity for assessing the trade-offs of channel structures. Hydraulic modeling will be used to evaluate the fate of sediment that is maintained in the system through channel control structure modifications. We have expanded the discussion in Section 5.2.1 *Effects of Channel Structures on Water Quality* to identify potential negative impacts of channel structures on water quality.

13 Regardless of the source of effluent from dredging (e.g. return flow from a disposal/placement site, hydraulic or mechanical placement for beach development or nourishment, etc.), all effluent must be controlled to the maximum extent possible since Minnesota Statute 115.01, Subd. 9. defines dredged spoil as "other waste" and, subsequently, as a "pollutant" (MN Stat. 115.01, Subd. 12).

14 The MPCA believes that the COE overlooked an error on page 5-47 during editing of the DEIS - that 'dredge shallower' should be 'less than 11 feet' and that 'dredge deeper' should be 'greater than 13 feet'.

15 With regard to the issue of sediment quality, the MPCA would appreciate it if the COE would document their process, in the final EIS, for determining when sediment sampling will be conducted in a particular dredge "cut". In particular, the MPCA is interested in how much "weight" the COE assigns to the following factors:

1) the frequency of dredging a given "cut";
2) the volume dredged each occurrence;
3) the dredging method utilized; and
4) the grain size of sediment in the cut.

16 The MPCA would prefer to see only the most recent sediment data for the various dredge "cuts" in the final EIS. While the historical information is useful for detecting trends, the MPCA is more concerned about what is in the "cut" at the time the material is dredged and goes to a disposal/placement site. This is especially important for placement sites with a return flow back to waters of the state. The exception to this exclusion of historical information would be for those dredge "cuts" where contaminant levels have remained relatively unchanged in spite of dredging. The COE may be able to use the existing sediment data tables and cut and re-arrange the columns in them to produce a small table for each pool discussed. An example could look something like the following:

dredge cut	characterization of grain size	most recent year sampled	contaminant found	results
Hudson				
Catfish Bar				
Kinnikinnic Bar				

17 The COE gave the detection limits for the sediment analyses in their discussion of Pool # 9's sediment quality but did not mention whether those detection limits were utilized for all of the other Pools. The MPCA would appreciate it if the COE would include information on the detection limits for all of the data for all of the Pools in the final EIS.

18 Miscellaneous Comments:
Section 4.2.11.1 on page 4-49 seems to be a direct repetition of the section directly above it. Similarly, the last two columns of Table 404-5 on pages D-31 to D-33 appear to be a duplication of the two columns immediately preceding them. If the last two columns of Table 404-5 are not duplications, then the COE should clarify the differences.

COMMENT 13 - Effluent quality will be maximized to the extent practicable, irrespective of the placement methods.

COMMENT 14 - As stated in Section 5.6.1.1 *Channel Dimensions*, dredging depths on the UMR are generally 11, 12 or 13 feet below low control pool elevation. We would rarely, if ever dredge deeper than 13 feet or shallower than 11 feet. A decision on dredging depth is made across this 11 to 13 foot depth range. Therefore, a decision to "dredge shallower" would involve dredging either to 11 or 12 feet. A decision to "dredge deeper" would involve dredging either 12 or 13 feet. This paragraph is correct as stated in the Draft EIS.

COMMENT 15 - Appendix C *Sediment Analysis Procedures* of the CMMP outlines a procedure on how sediment quality data is updated. Updating of the sediment quality data base occurs periodically (normally every 5 years). The selection of dredge cuts to be updated is frequently done based on a concern that the quality of sediments in a particular dredging area may have been reduced from spills, new point dischargers, or other factors and for dredge cut areas where historical data have shown elevated levels of contaminants. Spot checking of historically clean areas is also done. The last partial sediment quality update was in 1994 and was based primarily on concerns with historic high values of contaminants. A partial update is scheduled to be performed in either 1997 or 1998. We will coordinate this updating with MPCA and the other appropriate Federal and State agencies.

COMMENT 16 - In the Final EIS, we have provided some additional summaries of the sediment data base.

COMMENT 17 - All of the sediment data that the District has is contained in Tab 5 of the CMMP, including detection limits.

COMMENT 18 - Sections 4.2.11 *Recreation Resources* and 4.2.11.1 *Lower St. Croix National Scenic Riverway* have been revised. Table 404-5 has been revised to remove the GREAT I plan. The first two referenced columns represented the GREAT I plan and the last two columns represented the CMMP.

19 The sentence on page 5-20 at the end of the paragraph at the top of the page, which was carried over from the previous page, seems to trail off.

20 The MPCA would like to suggest that the COE change the name of the column from Disposal Methods, in Table 404-1 on pages D-22 and D-23 to *Dredge Methods*.

21 The MPCA would prefer to see the Small Boat Harbors, and all accompanying information, listed in the Pool in which they reside rather than as a separate category.

If you have any questions about this matter, please call Judy Mader directly at (612) 296-7315.

Sincerely,

John N. Holck, Manager
Nonpoint Source Compliance Section
Water Quality Division

COMMENT 19 - This sentence has been revised to state, "Re-evaluation of parts of the channel maintenance plan will be done, as necessary, when new information is obtained indicating a proposed activity could affect a threatened or endangered species."

COMMENT 20 - Concur.

COMMENT 21 - The Small Boat Harbors are separate projects under different authorizations. Sediment quality is frequently very different than the rest of the pool. Therefore, we would prefer to keep them in a separate category. However, in the description of the sediment quality presented in Appendix D, we have added river miles and pool locations for quick cross-referencing.

State Historical Society of Wisconsin
Division of Historic Preservation
816 State Street • Madison, Wisconsin 53706-1488
☎ (608) 264-6500 • FAX (608) 264-6404

December 10, 1996

Mr. J.M. Wonsik
Colonel, U.S. Army Corps of Engineers
190 Fifth Street East
St. Paul, Minnesota 55101-1638

SHSW#: 96-0527/VA
RE: St. Paul District Channel Maintenance Management Plan

Dear Mr. Wonsik,

We have reviewed the Draft Environmental Impact Statement for the above referenced project. Chapter 4 of the Draft EIS provides a brief summary of the archeological and historical resources in the project area.

1 We are concerned that the Draft EIS does not consider the cumulative effects of the continued operation and maintenance of the 9-foot navigation channel. This shortcoming was also mentioned in your cover letter. In addition, the draft EIS does not consider the cumulative effects of maintaining the navigation channel at an artificially high level for the purposes of navigation. There has been and continues to be active erosion along the islands in the Mississippi River as well as along the mainland shorelines that is exacerbated by these high water levels.

2 The Draft EIS mentions that the Corps of Engineers is in the process of completing a geomorphological study for the upper Mississippi River. We recommend that this information be utilized to help determine what the long term effects on historic properties may be for the proposed operation and maintenance of the 9-foot navigation channel. The results of this study could provide useful information in locating dredge spoil sites where there is no potential to affect historic properties. This strategy could save the Corps of Engineers a substantial amount of time and money.

COMMENT 1 - The cumulative impacts of continued operation and maintenance of the 9-foot navigation channel project on cultural resources are discussed in Section 5.7.2.5.2 *Effects of Navigation Improvements - Past, Present and Future*. It is the intent of Section 5.7 *Cumulative Impacts* to provide at least a qualitative cumulative impacts assessment of all factors, including continued operation of the 9-foot navigation channel, that will ultimately dictate the future economic, cultural and environmental quality of the Upper Mississippi River (UMR). Section 5.7.2.5.2 provides a general overview of the cumulative impacts of operation and maintenance of the 9-foot channel project. A more detailed assessment is beyond the scope of this study. Until more geomorphological and archeological site data is collected, a systemic cumulative impact assessment cannot be completed. Some of this information will be collected as part of the Navigation Study, which is currently underway.

The second paragraph of Section 5.7.2.5.2 states, "*The 9-foot channel and the resulting permanent inundation of some floodplain lands created a new set of effects. Some low lying sites, which the river had seasonally inundated before the dams, are now permanently inundated. As a result, some shoreline sites are subject to greater erosion, from wind and from commercial and recreational boats.*" In the context of assessing the cumulative impacts of the Channel Maintenance Management Plan (CMMP) on cultural resources, we believe Section 5.7.2.5.2 provides an adequate assessment of the potential cumulative impacts of operation and maintenance of the 9-foot channel project.

COMMENT 2 - Detailed geomorphological studies have been completed in upper pool 4, pool 7 and pool 10. Section 5.1.6 *Effects of Dredging and Dredged Material Placement on Archeological and Historic Resources* discusses the results of these studies and how these studies have been used in identifying potential impacts on cultural resources. We concur that the results of these studies as well as any future geomorphological studies should be used to locate dredged material placement sites in areas with no potential to affect historic properties.

3 The Draft EIS also states that the District is preparing a Programmatic Memorandum of Agreement to deal with the effects of the operation and maintenance activities on cultural resources. Regardless of these plans, we recommend that the cumulative effects to cultural resources be addressed in the final EIS. The information obtained from the geomorphological study will also help to develop an effective Programmatic Memorandum of Agreement.

4 On a smaller, but potentially significant matter, we do not feel that the document adequately addresses the potential effects of snagging operations on submerged cultural resources. Archeological sites such as old docks and sunken wrecks will often accrete snags as these materials float downstream. Removal of these snags after they have become entangled in an archeological structure could result in significant damage to an archeological site. We recommend that snagging operations be more thoroughly evaluated in the final EIS.

5 We would also request a meeting with members of your staff and the State Historic Preservation Officers from the other affected states to discuss these matters in greater detail.

Sincerely,

Sherman Banker
Compliance Archeologist

COMMENT 3 - Comment noted. See responses to comments 1 and 2.

COMMENT 4 - Section 5.3.6 *Effects of Snag Removal on Archeological and Historic Resources* has been revised to reflect your concerns. Section 4.1.14.3.3 *River Improvement* discusses the history of channel improvements on the UMR and the potential for finding shipwrecks. This discussion demonstrates the extent to which the Corps cleared the main channel of any obstacles, including shipwrecks, early on in development of the UMR for navigation. The greatest potential for underwater historical archeological sites would be along the channel margins and in the backwaters, where snagging and dredging are typically not conducted.

COMMENT 5 - We believe a joint meeting of the State Historic Preservation Offices (SHPOs) of Iowa, Minnesota and Wisconsin is unnecessary for completion of the Environmental Impact Statement on the Channel Maintenance Plan (CMMP). Most of the effects of the CMMP are site specific in nature. Only the systemic cumulative impacts which encompass the entire Mississippi River are broader. As noted in our reply to COMMENT 1, a discussion of systemic cumulative impacts between State SHPOs would be most productive as part of the Navigation Study, which is currently underway. Additional geomorphological and archeological information will be gathered during this study which should help facilitate the discussion of systemic cumulative impacts you desire. We anticipate conducting a meeting of the Iowa, Minnesota and Wisconsin SHPOs to discuss potential changes in the navigation system and the effects of those changes on cultural resources.

State Historical Society of Iowa

The Historical Division of the Department of Cultural Affairs

December 9, 1996

In reply please refer to:
R&C#: 961122039

Col. J. M. Wonsik, District Engineer
Department of the Army
St. Paul District, Corps of Engineers
Army Corps of Engineers Centre
190 Fifth Street East
St. Paul, Minnesota 55101-1638

RE: COE - CLAYTON AND ALLAMAKEE COUNTIES - DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR 9-FOOT NAVIGATION CHANNEL PROJECT AND CHANNEL MAINTENANCE MANAGEMENT PLAN FOR THE UPPER MISSISSIPPI RIVER FROM THE HEAD OF NAVIGATION TO GUTTENBERG, IOWA

Dear Col. Wonsik,

We have received and reviewed the above referenced Draft Environmental Impact Statement that you have submitted to our office. Our comments are provided below.

In our opinion, this document adequately addresses cultural resources concerns and concisely states the current status and the remaining Federal compliance requirements for the proposed dredged material placement sites within Pools 9 and 10 in Iowa (River Miles 675 to 615) for both the GREAT I and CMMP management plans.

We noted two items in this draft which we think should be addressed and clarified within the final environmental impact statement.

1. We found that it was difficult to determine which dredge material placement sites were located within the State of Iowa boundaries. We recommend that a state designation be included for each site in the Site-Specific Impacts of Dredging sections in Appendix B to make it easier to determine which dredged material placement sites are located within each state.

2. We noted that some of the currently discussed dredged material placement sites will not be located on Federal property. We agree with the information provided in *3.5.3.2 Cultural Resource Mitigation Measures* and *5.6.3.2 Archeological and Historic Resources Mitigation Measures*. However, we feel that some additional information needs to be included in this section in regard to human remains or burial sites in dredged material placement sites on non-Federal property. Specifically, we think reference should be made to the fact that there are state laws in Wisconsin, Iowa, and Minnesota concerning both prehistoric and historic burial sites and human remains. These laws would have to be complied with on dredged material placement sites not located on Federal property. Coordination and consultation should include the appropriate state agency or agencies dealing with these burial concerns prior to and during any type of archaeological investigations.

☐ 402 Iowa Avenue
Iowa City, Iowa 52240-1806
(319) 335-3916

☒ 600 E. Locust
Des Moines, Iowa 50319-0290
(515) 281-6412

☐ Montauk
Box 372
Clermont, Iowa 52135-0372
(319) 423-7173

Responses to December 9, 1996, State Historical Society of Iowa letter - page 1

COMMENT 1 - Please see Section B-1 *Introduction* of Appendix B. As stated in the third paragraph of this section, "*Placement sites are identified by a 3-part alphanumeric code denoting the pool, river mile (RM), side of the navigation channel, and* ***State*** *where the site is located and the type of site. For example, Site 7-714.1-LWP is located in pool 7 at RM 714.1 on the left (L) descending bank of the navigation channel in the State of Wisconsin (W) and is a permanent (P) placement site. Sites located in Minnesota and Iowa are noted by the letters "M" and "I", respectively.*" All sites within State of Iowa boundaries should have the letter "I" in the alphanumeric descriptor of the site.

COMMENT 2 - Sections 3.5.3.2 *Cultural Resource Mitigation* and 5.6.3.2 *Archeological and Historic Resources Mitigation Measures* have been revised to reflect your concerns. We have referenced that State laws in Wisconsin, Iowa and Minnesota concerning both prehistoric and historic burial sites and human remains would have to be complied with prior to use of a dredged material placement site not located on Federal property. Coordination and consultation with the appropriate State agency would be completed.

As stated on page 4-24, previous historical and archaeological research conducted within the Upper Mississippi River Valley has documented the fact that this area has been heavily utilized and occupied both prehistorically and historically. The Upper Mississippi River area is an important and highly sensitive area because a large number of significant historic properties have been previously identified. Of particular concern, there is a very high density of previously recorded mounds, mound groups, and other human burial contexts within the Pool 9 and 10 areas of the Upper Mississippi River Valley. There remains a high potential for additional significant resources to be located within areas that have not been systematically investigated.

There is no doubt in the fact that channel maintenance activities along with other types of development activities in the Upper Mississippi River Valley will continue to have a significant effect on identified and unidentified cultural resources. For projects either undertaken or regulated by the United States Corps of Engineers, historic properties need to be considered in accordance with 33 CFR Part 330 and 33 CFR 325 Appendix C. We agree that a more comprehensive approach to the study of cultural resources within the Upper Mississippi River Valley would be quite beneficial for all parties involved because it would provide a mechanism for better management of cultural resources, and it should significantly expedite the Federal compliance process. Our office would be interested in working with your office to develop a comprehensive approach to the study of cultural resources in the Upper Mississippi River Valley.

Thank you for the opportunity to review these materials. We appreciate your agency's on-going efforts to address these issues, and we look forward to working with your office to help fulfill the United States Corps of Engineer's obligations within the Federal compliance process. Should you have any questions please contact me at the number below.

Sincerely,

Douglas W. Jones

Douglas W. Jones, Archaeologist
Community Programs Bureau
(515) 281-4358

cc: John Anfinson, Chief of Cultural Resources, St. Paul District COE
William Green, Iowa State Archaeologist, Office of the State Archaeologist
Shirley Schermer, Burials Program Director, Office of the State Archaeologist
Patricia Ohlerking, Iowa Deputy State Historic Preservation Officer
Ron Pulcher, Archeologist, Environmental Analysis Branch, Rock Island District COE

No comments.

MINNESOTA HISTORICAL SOCIETY

March 4, 1997

Mr. Robert Whiting
Environmental Resources Section
St. Paul District, Corps of Engineers
190 Fifth Street South
St. Paul, MN 55101

Dear Mr. Whiting:

RE: DEIS; Channel Maintenance Management Plan, Upper Mississippi River
Multiple Counties
SHPO Number: 97-0488

Thank you for the opportunity to review and comment on the above report. It has been reviewed pursuant to the responsibilities given the State Historic Preservation Officer by the National Historic Preservation Act of 1966 and the Procedures of the Advisory Council on Historic Preservation (36CFR800).

1 Discussions of cultural resources and potential effects on those resources are integrated throughout the document; we concur with the methods and approaches as described.

We note that the National Park Service has recently initiated several cultural resource studies for the St. Croix National Scenic Riverway and for the Mississippi National River Recreation Area. Integration of the results of these studies at the appropriate point in your planning process will be important.

If you have any questions regarding our review of this project, please contact our Review and Compliance Section at 612-296-5462.

Sincerely,

Dennis A. Gimmestad
Government Programs and Compliance Officer

cc: John Anfinson
St. Paul District, Corps of Engineers
190 Fifth Street East
St. Paul, MN 55101

Response to March 4, 1997, Minnesota Historical Society letter - page 1

COMMENT 1 - We will utilize the results of these studies in our planning process.

MINNESOTA-WISCONSIN BOUNDARY AREA COMMISSION
619 SECOND STREET, HUDSON, WISCONSIN 54016-1576
Serving Our Sponsor States on the St. Croix and Mississippi Rivers since 1965
Minnesota Telephone (612) 436-7131
Wisconsin Telephone (715) 386-9444
Office Hours: 8 A.M. - 5 P.M. Monday-Friday
FAX (715) 386-9571

February 10, 1997

Col. J. M. Wonsik, District Engineer
Corps of Engineers, Saint Paul District
190 East Fifth Street
Saint Paul, Minnesota 55101-1638

SUBJECT: Channel Maintenance Management Plan - Draft Environmental Impact Statement

Dear Col. Wonsik:

The Mississippi River Regional Committee of the Minnesota-Wisconsin Boundary Area Commission has developed a preliminary response to the above document, subject to final consideration and approval by the full Commission. This submittal has been delayed in order to be able to review the comments submitted by our sponsor states' resource management agencies, which has now been done by our staff.

Please consider the following general comments on the DEIS:

Sec. 1.3 "Unresolved Issues." The Commission has been directly involved in all policy deliberations, planning and legislation for multi-purpose management of the Upper Mississippi River System for the past 25 years. The controversy over channel maintenance in the early 1970's precipitated the first cooperative, interagency effort to resolve conflicts between public purposes and interests in the river, and led to a precedent-setting consensus on not only the channel maintenance management approach, but on several other river uses, like fish and wildlife and recreation purposes. These were embodied in the GREAT River Study Report of 1980, which is the foundation for this current plan and DEIS. The Commission generally views this document as being consistent with the scope and purpose of the GREAT River Study, which dealt with the 9-foot Channel Project as it has existed since the 1930's.

The Commission believes that broader, systemic river management issues relating to various scenarios for balanced ecosystem and navigation system management do need to be addressed. We are currently participating in the process of preparing the Upper Mississippi River Environmental Management

No responses.

Program Report to Congress and are reviewing products of the Upper Mississippi River-Illinois Waterway Navigation Study. The Commission is also committed to helping prepare a companion report on natural resource management needs and recommendations for submission with the latter study report, if those aspects of this "nationally-significant ecosystem" have not been adequately addressed therein or in the EMP Report to Congress. A first draft of this companion report will be available by March 15, 1997. These ongoing efforts in other areas of multi-purpose river management will address the issue of possible operational modifications or alterations to the lock and dam system more thoroughly.

1 **Sec. 3.2.2.4 "Snag Removal." The Commission recommends that snags be kept away from actively-used recreational traffic areas along the main channel, even though they may be outside of the marked navigation channel, to protect recreational boaters from such hazards.**

Sec. 3.2.2.5 "Recreational Beach Development." The Commission is very pleased to see that the Corps is continuing to prepare recreational beach development plans for each navigation pool, and that extensive placement of dredged material has been directed toward this need. It recommends that these plans be executed to the greatest extent possible as an important service to the public in accordance with ongoing pool plans.

2 **As noted in the Commission's report on the CMMP Public meetings, which it facilitated in October of 1995 at the Corps' request, the Corps' slide show for the CMMP presentation "was very informative and showed very positive results from the last 15 to 20 years of cooperative effort, emphasizing the multi-purpose values of the river." The District is to be commended for its innovative leadership in this historic process and the Commission looks forward to a continuation of this same approach in the same cooperative spirit through the adoption and implementation of the updated CMMP.**

3 **The Commission would appreciate having the opportunity to review the draft of the Final EIS.**

Thank you very much for your courtesy in providing this draft CMMP and EIS for our consideration and comment at this time.

Sincerely yours,

James M. Harrison

James M. Harrison, Public Affairs Director

COMMENT 1 - Comment noted. We plan on implementing the snag removal and beach enhancement programs as outlined in the CMMP.

COMMENT 2 - The Minnesota-Wisconsin Boundary Area Commission provided outstanding leadership in hosting the CMMP public meetings in October 1995. We appreciate the "partnering" relationships established between the Corps and local, State and Federal agencies and related organizations and look forward to continued cooperative efforts concerning management of water resources in Minnesota and Wisconsin.

COMMENT 3 - A copy of the Final EIS will be sent to your office as well as to commission members Mr. William Howe (Prairie du Chien, WI), Mr. Robert Mullally (Onalaska, WI) and Mr. Harold Craig (La Crosse, WI). Additional copies can be provided if necessary.

Metropolitan Council
Working for the Region, Planning for the Future

Environmental Services

January 6, 1997

Mr. Robert Whiting
U.S. Army Corps of Engineers District, St. Paul
190 East Fifth Street
St. Paul, MN 55101-1638

RE: CMMP, St. Paul
Metropolitan Council Referral File No. 16430-1

Dear Mr. Whiting:

Thank you for the opportunity to review the Draft Environmental Impact Statement for the Channel Maintenance Management Plan (CMMP). The Metropolitan Council has several concerns regarding the Plan. Our principal concern is the filling of wetlands without mitigation. While we acknowledge that this plan will result in less wetland filling than the original GREAT 1 plan, there is still a substantial amount in the metropolitan area. Based on the report there are 26 acres of Type 1 and 2, 4 acres of Type 3, 4 and 5 and 31 acres of open water filling. The draft EIS conclusion is that the impact upon the ecology of the watershed from the loss of wetland and aquatic habitats would probably be negligible due to the large amount of habitat present. This can be said for any wetland project in the upper Mississippi River watershed. This should not be the rationale for not mitigating the loss of these habitats.

1

The draft EIS also indicates that the District believes that the CMMP evolved from a previously approved plan which was prepared prior to the requirement for mitigation and therefore, the District is not required to prepare a mitigation plan. One only has to remember the summer of 1993 and the flooding that occurred in the upper Mississippi River watershed to see the importance that wetlands play in river hydrology. The incremental loss of wetlands is the problem which must be stopped. No single occurrence can be blamed for the flooding that occurred in 1993, but the small actions that have occurred over the last 100 hundred years were the cause.

In conclusion, the Council believes that the Corps has made a substantial effort in reducing the impacts of wetland and open water filling from its dredge operations. However, we strongly believe that the Corps should prepare a mitigation plan before it commences the dredging activities contemplated under this plan.

230 East Fifth Street St. Paul, Minnesota 55101-1633 (612) 222-8423 Fax 229-2183 TDD/TTY 229-3760
An Equal Opportunity Employer

COMMENT 1 - The St. Paul District, in cooperation with State and Federal resource management agencies, has developed a District-wide policy for mitigation of unavoidable filling of wetlands of the United States resulting from operation and maintenance activities (including dredged material placement). This policy is included as Appendix B of the Channel Maintenance Management Plan (CMMP). Within this policy, several exemptions from compensatory mitigation for unavoidable impacts on wetlands have been identified. The wetland filling identified under the current CMMP is considered exempt from mitigation planning for the following reason. The major product of the Great River Environmental Action Team I (GREAT I) planning effort was a channel maintenance plan describing the manner in which the navigation project should be operated and maintained through the year 2025. The GREAT I plan was approved by all State and Federal resource agencies, except the Federal Department of Transportation, and was endorsed by Congress in the 1986 Water Resources Development Act. In developing the GREAT I plan, an emphasis was placed on avoiding and minimizing impacts on aquatic and wetland habitats. The GREAT I plan would have affected aquatic and/or wetland habitat. Because the GREAT I plan is the last fully approved channel maintenance plan available to the District, it is considered the "no action" plan of this EIS.

The St. Paul District modified the GREAT I plan through a series of long-term management plans for dredged material placement. The District's 1996 CMMP reduces the impacts to wetlands and aquatic areas to approximately 213 acres. The recommended plan does include some locations where the impacts to aquatic areas or wetlands exceed the GREAT I plan. However, the overall recommended plan represents a significant reduction in the total number of acres to be affected. Therefore, a replacement plan for wetlands will not be prepared for implementation of the 1996 CMMP. The District will not take mitigation credit for the reduction in acres of affected wetlands from the GREAT I recommended plan. The CMMP will form the baseline from which all future operation and maintenance actions will be evaluated to determine compensatory mitigation requirements. The District will continue to plan and implement dredged material disposal operations to avoid or minimize the identified 213 acres of wetlands affected under the CMMP. Upland portions of sites containing both upland and wetland habitats would be filled first, prolonging the wetland characteristics of a site. Additionally, the District will continue to seek out long-term disposal sites on upland habitats and/or encourage beneficial use removal of materials from existing sites to minimize the need for additional sites.

U.S. Army Corps of Engineers
January 6, 1997

If you have any questions regarding these comments or wish to discuss them, you may contact Jack Frost, planner in the Council's Environmental Planning and Evaluation Department at 229-2078.

Sincerely,

Helen A. Boyer

Helen A. Boyer
Director, Environmental Services Divison

cc: Martha M. Head, Council District 6
Barbara Butts Williams, Council District 7
Carol A. Kummer, Council District 8
Charles Arnason, Council District 12
Diane Z. Wolfson, Council District 13
Stephen B. Wellington, Jr., Council District 14
Terrence Flower, Council District ~~15~~ 16 pc
Keith Buttleman, Director, MCES - Environmental Planning and Evaluation Dept.
Carl Schenk, Metropolitan Council Sector Representative
Richard Thompson, Metropolitan Council Sector Representative

No comments.

To: District Engineer
Office of J. W. Wonsik, Colonel
St. Paul District, Corps of Engineers
190 Fifth Street East
St. Paul, MN 55101-1638

From: Keith Larson
Concerned Citizens of Upper Sand Prairie
17 Deer Cove
Wabasha MN 55981

Date: January 2, 1997

Refer to : Environmental Resource Section
Management and Evaluation Branch
Attn: J. M. Wonsik, Colonel

Request for Public Hearing

1 This is a request on behalf of the Concerned Citizens of Upper Sand Prairie in Wabasha County and me, Keith Larson for a public hearing. The subjects of the hearing would bear on the suitability of the CMMP dredged material placement locations and the adequacy of the CMMP.

Written facts:

2 The Channel Maintenance Management Plan (CMMP) proposes to to describe the long-term dredged material placement plans of the district, and proposes to designate placement sites for active dredging. A review of the CMMP talks in terms of plans up to 40 years. Such long-term plans are not relevant to the short-term projects that have been proposed for dredge spoilage in sites like Steam Boat Pines in Wabasha County that will have ramifications for residents now and in the immediate future.

3 The CMMP plan that was sent to the Wabasha Public Library was missing information about the site plans for Teepeota, the nearest land base to Grand Embankment. We do not know if other information was missing. The plan does not describe the specific dredge sites, stating that the needs of the Corp of Engineers can not be determined on a long-term basis.

Arguments:

4 When the Corp of Engineers negotiated a contract with the City of Wabasha no resident wells were inspected before the dredge spoilage was placed at the north end of the city of Wabasha. Yet, when the wells became contaminated, rain was the reason given for the contamination. Therefore we would insist that surrounding resident wells of that area be monitored for one year.

Responses to January 2, 1997, Concerned Citizens of Upper Sand Prairie letter - page 1

COMMENT 1 - Coordination of the CMMP included three public information meetings in October, 1995, at Prescott, Wisconsin; Winona, Minnesota and Lansing, Iowa. We believe another public meeting at Wabasha, Minnesota to specifically address the CMMP for lower pool 4 and the issues raised by Concerned Citizens of Upper Sand Prairie is more appropriate than a formal public hearing. Several meetings with representatives of the group and county officials have already been held to address some of the concerns. A more comprehensive meeting will be held in the near future.

COMMENT 2 - The intent of the CMMP is to bring previous planning efforts together into a comprehensive long-term plan. By developing long-term plans, the District hopes to avoid proposing plans that are not endorsed by those individuals or agencies that will be impacted. However, the plans contained in the CMMP represent the Corps best options based on the information available at the time of the planning. A number of assumptions are made and there are many variables to consider. When a proposal is made that is not included in the CMMP (as is the case with the recent proposal to use land near Teepeeota Point), the Corps will coordinate with those impacted by the proposal and all applicable regulatory requirements will be met.

COMMENT 3 -The District is aware that the map for the Teepeeota Point placement site was not included in the version of the CMMP initially sent out. It was not completed at the time the CMMP was printed and distributed. The Teepeeota Point placement site map will be provided when the next revision of the CMMP is mailed to those who have copies. That map was the only item missing from the distributed CMMPs.

COMMENT 4 - The District has conducted pre- and during project well studies of all dredge material transfers at the Wabasha Gravel Pit. The results of these monitoring studies are summarized in Section 5.1.1 of the Final EIS. At the meeting to be held in the near future and referenced in comment 1 above, the District will orally present the results and provide copies of reports that have been prepared on these monitoring efforts. The District will be doing a follow-up well monitoring study at the Wabasha Gravel Pit this spring and summer to better characterize the normal existing variability in the private, monitoring, and Wabasha City wells. A report of this effort will be prepared and distributed to concerned individuals and agencies.

Public Hearing Page 2

4 On future dredge spoilage, sites the Corp should monitor private and commercial wells for a period one year prior to activities through one year after the completion of activities, especially for the health of children. The term activities is intended to include clearing, removal of top soils, the placing of dredge spoilage, monitoring, and through revegetation.

5 If the Corp of Engineers and the residents affected by dredge spoilage in Wabasha County can mutually reach a favorable resolution we could set a precedence for cooperation and understanding. This may prove to be helpful to all parties concerned about the river, like the efforts of Martin Lancaster A. C. of E. of the Midwest Area Rivers Coalition 2000, to maintain the Corps budget at the 1994 level.

6 The Concerned Citizens of Upper Sand Prairie have been working with the Corps' representatives from the LaCrosse District. Twice we have asked "how do we determine what a flood plain is and the date when the flood plain was determined." Also, "how do we remove land that no longer fits the flood plain designation from the flood plain designation?" We have also asked what percentage of the Corps' expenditures on dredging have been allocated for prevention of erosion in tributaries. To date our requests have not been acknowledged.

7 On 10/10/96 the Concerned Citizen group did contact people through out the Wabasha County for future dredge spoilage cites but we need a written comprehensive plan concerning the Corps' short-term needs.

The dredge company , L. M. Matteson, Inc. has done an extensive study of our local area and has identified all sites where they could pump dredge spoilage. The dredge company proposes that these sites could be mounded, which we argue is not ascetically acceptable , does not enhance the surrounding neighborhoods, nor does it fit any of the descriptive requirements within your public guidelines and the Wabasha County guidelines. We can't fill in all the uninhabited land in close to the Mississippi River in Wabasha County with mounds of dredge spoilage.

We will propose one site that could be a possibility as a trucking site. However our proposal may be long term while the need is now short term.

We are willing to work with the Corps of Engineers and the Midwest Area Rivers Coalition 2000, but we can't do all that is needed without cooperation.

Objections:

8 The CMMP is not adequate because it describes the plan in too general terms. The Concerned Citizens of Upper Sand Prairie need an opportunity to have the plan explained in layman terms so we can understand the immediate and long-term ramifications to our environment.

COMMENT 5 -Concur. The District is looking forward to working with the residents in Wabasha County to identify potential sites for dredged material placement.

COMMENT 6 -The Corps of Engineers does not designate floodplain boundaries. State and local agencies regulate activities that may have floodplain impacts. One of our objectives when selecting dredged material placement sites is to find sites that are out of the floodplain. This issue can be further addressed at the public information meeting discussed in COMMENT 1.

COMMENT 7 -The comprehensive plan identifying the Corps' needs, both short- and long-term is included in the CMMP. A dredging contractor, L. W. Matteson, Inc. was awarded a contract to excavate material from an island site the Corps refers to as Grand Encampment. In preparation of this contract, the Corps identified a number of potential placement sites for the dredged material. Bidders were allowed to investigate other potential sites and use them if they obtained all of the necessary regulatory agreements. L.W. Matteson, Inc. has investigated sites in the Teepeeota Point area and is working on plans and drawings to illustrate their proposed plan. The "mounding" they have proposed is over many acres and would be very gradual, much like the surrounding landscape features, leaving essentially the same aesthetic appearance. The Corps has been cooperating with local representatives on this project and will continue this effort into the future to ensure that local concerns are addressed.

COMMENT 8 - Overall, we believe that the CMMP does provide an adequate 40-year plan for lower pool 4. The adequacy of the CMMP should not be confused with the existing site excavation project at Grand Encampment and the challenges that have developed on that project. Details of the CMMP will be explained at the public meeting referenced in COMMENT 1. We agree that if additional long range planning is needed we will involve local representation in the process.

8 A 60-day window is not enough time to satisfy the request the Corps' representatives have placed on the citizen of Wabasha to a 40 year plan.

As Concerned Citizens of the Upper Sand Prairie we are aware that dumping of dredge spoilage is an on-going concern. We must work together to prevent emergency "ambulance" type situations to solve short-term problems. Wabasha County can not continue to solve the area's sand problems without remedies to the source of the sand erosion in the Mississippi River tributaries (Chippewa River).

Again, I request a Public Hearing.

Sincerely,

Keith B. Larsen

Keith Larson
Concerned Citizen of the Upper Prairie

c.c. Judy Kruger, Wabasha County Zoning
c.c. Gene Mahn, Wabash County Administrator
c.c. Craig Wainio
c.c. Steve Tapp, Corp of Engineers
c.c. L. M. Matteson Inc. Attn: David Guillot

See previous responses.

01-01-97
P.O. Box 233
Cochrane, WI.
54622

Dear Sirs,

This letter is a response to a Public notice dated 11-05-96 Regarding Channel maintenance management Plan (CMMP)

I have actively used the upper Mississippi River for over 30 years. Hunting Commercial fishing, Trapping. Recreational boating and work. Dredging for Robers Dredge D.F. Brennan and Lunnetti & Sons Inc. To name a few contractors.

IT seems that what congress gave to the Corps of Engineers in the Rivers & Harbors Acts of 1880 and 1930 & 32 The D.N.R. of Minnesota and Wisconsin took away. !

The Original CMMP or what it was referred to in the past, shore seemed to work quite well. The general piling of sand on the banks worked. Islands and shore lands stayed for tens of years created habitat for Deer, fox and many other critters. Some material ended up in adjacent back waters, but for the most, stayed in the river or piled up.

Whatever plan the Corps had prior to the mid 1970's for CMMP, it worked.

As your letter indicates, placement of dredged material prior to the mid-1970's, occurred in shallow backwater areas out of the main channel, on natural islands, or on newly created islands immediately adjacent to the main channel. Frequently, dredge material was placed in the wing dam dike fields that were constructed as part of the 4½- and 6-foot channel, further constricting the main channel and main channel border. The placement of this dredged material impacted valuable acres of productive fish and wildlife habitat.

Since the advent of the Great River Environmental Action Team I (GREAT I) study, material has been more confined to selected areas, with more emphasis on removal of the material from the floodplain, avoiding valuable fish and wildlife habitat, minimizing the footprint size, and incorporating erosion protection measures. The CMMP would continue this emphasis.

The amount of sand that normally is removed from the system by dredging, compared to total inflows from upstream pools and tributaries is highly variable depending on location along the river. It can be very substantial, over one third of the sand entering lower pool 4 from the Chippewa River is removed by dredging. Removal of this much of the bedload from the system, may be having both positive and negative effects on aquatic resources. It prevents this material from entering backwaters, thereby reducing the loss of these backwaters from sedimentation. However, it could also be starving the river for sediments in certain reaches leading to excess erosion.

The biological productivity of floodplain rivers depends in large part on the interaction between the channels and floodplain. Movement of water onto and from the floodplain transports sediment, organic materials, nutrients, and allows life to flourish in seasonally flooded habitats. Dredged material placement and secondary movement and structural modifications can contribute to the occlusion of backwater circulation channels through sedimentation. This can strongly influence sedimentation patterns, reducing current velocities and increasing the deposition of fine-grained sediments. Circulation to backwaters is also necessary to prevent stagnation. Erosion protection measures have been incorporated into the CMMP to minimize secondary movement of dredged materials from placement sites. In the future planning of channel control structures, the potential adverse impacts on water circulation and quality in backwaters and opportunities to enhance flow characteristics would be evaluated.

Sense the Enviromental introduction of Limited Dredging, and disposal only at designated areas, and only Emergency Dredging. Sand that could have been piled on Both sides of the channel has sense Smothered the back water.

If the CMMP you propose is to go back and Spill on the banks and islands I'm 100% percent for it. I can See that Sense the mid 1970's the Enviromental people were victoms of their own doing. By trying to Save a Little back waters from Dredge material, they Let the whole River Smother itself with sand that would have normally been placed on the banks, with your prior policy.

I personaly feel to maintane a CMMP material should be removed and placed insted of Letting the river scour itself.

See the general response provided on page F-130.

I know scouring is the environmental way to maintane the channel, but with shallowing conditions and wheel wash from tows, it makes turbidity conditions worse than any dredging condition. This just moves more dirt and gives Environmentalist a chance of finger pointing and Blame of destroyed habitat. Once again this makes them a victom of their own doing.

Respectfully yours

David G Becker

Life Long River person

P.S.

Please keep me informed.

Thank you.

See the general response provided on page F-130.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Twin Cities Field Office
4101 East 80th Street
Bloomington, Minnesota 55425-1665

MAR 05 1997

Mr. Harold Taggetz
St. Paul District, U.S. Army Corps of Engineers
Army Corps of Engineers Centre
190 Fifth Street East
St. Paul, Minnesota 55101-1638

Dear Mr. Taggetz:

The purpose of this letter is to clarify the January 17, 1997, Department of the Interior letter regarding the Channel Maintenance Management Plan (CMMP) and Draft Environmental Impact Statement (DEIS) as it relates to future maintenance dredging in the St. Croix River. Currently, the Corps is authorized to maintain a 9-foot navigation channel in the St. Croix River from its confluence with the Mississippi River upstream a distance of 24.5 river miles (RM) to the City of Stillwater, Minnesota. From Stillwater upstream to Taylor's Falls, Minnesota (RM 27.3), the Corps is authorized to maintain a 3-foot channel.

Maintenance dredging last occurred at RM 16.1 - 17.6 near Hudson, Wisconsin, in 1974. The Kinnickinnic Bar (RM 6.0 - 6.5) has a history of more frequent dredging than other parts of the St. Croix River and was dredged in 1978, 1980, 1985, and 1989.

1

In comments on the CMMP/DEIS, we indicated that certain areas, including the Kinnickinnic Bar, would require further surveys for threatened and endangered species and possible consultation pursuant to Section 7 of the Endangered Species Act (ESA) before channel maintenance activities could occur. We want to clarify in this letter that we are also concerned that any proposed channel maintenance in the St. Croix River may result in construction barges carrying zebra mussels from the Mississippi River to the St. Croix River, thus posing a threat to the federally-listed Higgins' eye pearly and winged mapleleaf mussels that inhabit the St. Croix River. In addition, future maintenance dredging in this area will allow increased commercial and recreational vessel access from the Mississippi River to the St. Croix River and may pose an additional threat to the endangered mussels if zebra mussels are introduced from the Mississippi River to the currently uninfested St. Croix River.

Because of the high value of the resources of the St. Croix River, including the presence of two federally-listed endangered species, we are requesting at this time that you consult with us informally pursuant to Section 7 of the ESA as soon as maintenance dredging activities are identified for the St. Croix River. In this way, we can work together toward resolution of endangered species issues associated with future maintenance in the St. Croix River.

Responses to March 5, 1997, United States Department of the Interior letter - page 1

COMMENT 1 - See response to COMMENTS 4 and 6 of the January 17, 1997, United States Department of the Interior letter. Informal consultation with your agency will be initiated if, and when, maintenance of the Kinnickinnic Narrows cut is required.

If you have specific questions, please call me or Nick Rowse at 725-3548. We are available to meet on maintenance dredging in the St. Croix River at your convenience.

Sincerely,

Lynn M. Lewis

Lynn M. Lewis
Field Office Supervisor

cc: Don Henne, Department of the Interior, Philadelphia, PA
Bob Whiting, Corps of Engineers, St. Paul, MN
Tony Anderson, National Park Service, St. Croix Falls, WI
Steve Johnson, Minnesota Department of Natural Resources, St. Paul, MN
Gary Montz, Minnesota Department of Natural Resources, St. Paul, MN
Bonita Eliason, Minnesota Department of Natural Resources, St. Paul, MN
Tom Lovejoy, Wisconsin Department of Natural Resources, Eau Claire, WI
Dave Heath, Wisconsin Department of Natural Resources, Rhinelander, WI
Dan McGuiness, Minnesota Wisconsin Boundary Area Commission, Hudson, WI

APPENDIX G

BIOLOGICAL ASSESSMENT OF THE IMPACTS ON STATE-LISTED THREATENED, ENDANGERED, AND SPECIAL CONCERN SPECIES FROM IMPLEMENTATION OF THE CHANNEL MAINTENANCE MANAGEMENT PLAN

Environmental Resources Section
U.S. Army Engineer District, St. Paul
190 Fifth Street East
St. Paul, Minnesota 55101-1638

March 1997

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I. INTRODUCTION

The St. Paul District (District) of the U.S. Army Corps of Engineers (COE) maintains a 9-foot navigation channel and various commercial and recreational harbor projects on the Upper Mississippi River (UMR) and several tributaries between Minneapolis, Minnesota, and Guttenberg, Iowa (Figure 1). The District has prepared a Channel Maintenance Management Plan (CMMP) which describes dredging, dredged material placement, snag removal and various structural and non-structural techniques of maintaining these projects. The purpose of this document is to assess the impacts of the activities described in the CMMP on Iowa, Wisconsin and Minnesota State threatened, endangered, and special concern species in the project area. A detailed discussion of the recommended channel maintenance plan can be found in Section 5 of the EIS.

Federally listed threatened or endangered species, which are also on the State lists, are addressed in a separate assessment (Appendix C).

II. BACKGROUND

Wisconsin, Minnesota, and Iowa have all developed lists of species that they consider rare within their respective States. The three States designate species on the list as either "Endangered" or "Threatened," which have similar definitions as the Federal definitions, except that the status is only at a State level. Many of the State-listed species are common over a much larger geographical area and are considered rare within a particular state because the area lies on the periphery of the species range. They are not threatened or endangered over the entire range of the species, just on the periphery. There are some species where the population decline is noted over the entire range of the species. In addition, all three States have another category that they list species in, called species of "Special Concern," which is an advisory category. Special concern species are those species for which some problem of abundance or distribution is suspected but with insufficient information to make a determination on their state status.

Wisconsin lists 34 fish, 19 freshwater mussel, 196 invertebrate, 9 mammal, 24 bird, 16 reptile and amphibian, and 381 plant species as endangered, threatened, or special concern. Minnesota lists 21 fish, 30 freshwater mussel, 99 invertebrate, 15 mammal, 28 bird, 14 reptile and amphibian, and 282 plant species as endangered, threatened, or special concern within the state. Iowa lists 18 fish, 15 freshwater mussel, 42 invertebrate, 9 mammal, 13 bird, 12 reptile and amphibian, and 316 plant species as endangered, threatened, or special concern. To focus this assessment effort to species present within the UMR, St. Croix River, and Minnesota River basin, an initial screening was completed looking at historical occurrences in counties bordering the 9-foot navigation channel project. For the species remaining from this initial screening, information was gathered on general habitat requirements. The CMMP will affect two land forms, the floodplain and glacial sand prairies. Species that do not at least partially depend at some point in their life history on floodplain or glacial sand prairies were screened from the list. The potential impacts on the remaining species were evaluated further.

III. AFFECTED ENVIRONMENT

III.A. GENERAL HABITAT USE AND DISTRIBUTION OF STATE-LISTED FISH

The species of State-listed fish that use or could use the floodplain of the navigable portions of the UMR, St. Croix River, and Minnesota River are listed in table G-1, including their State status and distribution. A synopsis of habitat requirements and distribution for each fish species is provided below.

Black Buffalo (*Ictiobus niger*). Distribution: Pools 4-10 (for pools 5-7 there are records of occurrence available, but no collections have been documented in the last ten years). UMR Habitat: "Although the black buffalo, a large river form, occurs in sloughs, silty backwaters, and impoundments, it appears to prefer stronger currents than either the smallmouth or bigmouth buffaloes, and it is occasionally taken in the main channel. Cross (1967) captured the black buffalo in deep, fast riffles where the channel narrowed. The black buffalo is taken from the main channel of the Mississippi River, hence its name 'buoy tender.' It occurs in water of varying turbidity over a wide variety of bottoms." (Becker 1983). It spawns over submerged terrestrial and probably aquatic vegetation (Yeager 1936).

Blue Sucker (*Cycleptus elongatus*). Distribution: Pools 2-10 (for pool 7 there is a record of occurrence available, but no collections have been documented in the last ten years). UMR Habitat: Blue suckers characteristically inhabit large, deep rivers, and the deeper zones of reservoirs. In rivers, they occupy narrow chutes where the current is moderate to swift. Juveniles occupy the broader, less turbulent riffles. The preferred bottom is gravel or rubble (Becker 1983). Reasons for the blue sucker's decimation include the construction of dams. The dams on the middle and upper Mississippi River have virtually eliminated riffle areas which may have been blue sucker spawning sites.

Bluntnose darter (*Etheostoma chlorosomum*). Distribution: Pools 8 and 9 (for pools 8-9 there are records of occurrence available, but no collections have been documented in the last ten years). UMR Habitat: The bluntnose darter inhabits quiet waters of oxbows, ponds, sloughs, pools, and sluggish currents over mud, clay, and mixed sand and mud, often overlaid with vegetation debris (Becker 1983). The bluntnose darters captured from the Mississippi River at the Iowa-Minnesota border were seined from small isolated ponds of unstained, stagnant water, over mud bottoms with scant or no vegetation (Forbes and Richardson 1920). Eggs are usually laid on plants or debris (Becker 1976).

Burbot (*Lota lota*). Distribution: Pools 2-5 and 7-10. UMR Habitat: Encountered most frequently at depths over 1.5 m (immature at lesser depths) over substrates of mud, sand, rubble, boulders, silt, and gravel (Becker 1983). Prefers vegetation/detritus when young, stony riffles when half-grown, and undercut banks when adult (Hubbs and Lager 1964). Spawning Habitat: Shallow water 0.3 to 1.3 m or 1.5 to 4.5 m deep (McCrimmon and Devitt 1954), on sand, hard clay, or coarse gravel, rubble and stones, in deep shoal areas (Fabricius 1954).

Table G-1. State protected fish of the navigable portions of the Upper Mississippi, St. Croix and Minnesota Rivers within the St. Paul District.

Species	Status			Occurrence by Pool(s)
	Minnesota	Wisconsin	Iowa	
Black buffalo	special concern	threatened	none	4-10
Blue sucker	special concern	threatened	none	2-10, St. Croix, and Minnesota
Bluntnose darter	none	endangered	endangered	8-9
Burbot	none	none	threatened	2-5, 7-10, and St. Croix
Chestnut lamprey	none	none	threatened	3-5, 7-10, and St. Croix
Crystal darter	special concern	endangered	none	4-6 and 8
Gilt darter	special concern	threatened	none	8
Goldeye	none	endangered	none	2-10
Grass pickerel	none	none	threatened	10
Greater redhorse	none	threatened	none	2-5, 8-10, and St. Croix
Lake sturgeon	special concern	none	none	3-6, 8-10, and St. Croix
Mud darter	none	special concern	none	4-10
Paddlefish	threatened	threatened	none	2-10
Pallid shiner	special concern	endangered	none	3-5, 7-10, and St. Croix
Pirate perch	none	none	special concern	7-10
Pugnose minnow	none	none	special concern	1-10, St. Croix, and Minnesota
River redhorse	none	threatened	none	2-5, 6-10, St. Croix, and Minnesota
Skipjack herring	special concern	endangered	none	1-6 and 8-10
Speckled chub	none	threatened	none	2-10, St. Croix, and Minnesota
Starhead topminnow	none	endangered	none	8
Weed shiner	none	none	endangered	3-10
Western sand darter	none	none	threatened	3-10
Yellow bass	special concern	none	none	4 and 6-10

Chestnut lamprey (*Icthyomyzon castaneus*). Distribution: Pools 3-5 and 7-10 (for pool 7 there is a record of occurrence available, but no collections have been documented in the last ten years). Habitat: Although occasionally found in impounded and other quiet water, this species generally inhabits flowing water (Becker 1983). Unlike its close relative, the silver lamprey, it is more common in medium-sized streams than in large rivers. These species show a strong tendency toward mutual avoidance (Hubbs and Trautman 1937). Spawning habitat: Small streams or rivers 6.5 to 43 m wide, approximately 0.4 to 0.9 m deep with a current velocity of about 1 m/s (Becker 1976; Morman 1979, Case 1970), eggs deposited in a gravel nest (0.6 m x 1 m x 5 cm) with long axis parallel to current (Case 1970). They sometimes build their nests under logs (Hall 1963).

Crystal Darter (*Ammocrypta asprella*). Distribution: pools 4, 5, 5A, 6, and 8. Habitat: Generally, the crystal darter is an inhabitant of extensive sandy riffles, bars, and pool bottoms. It usually occupies clear to slightly turbid waters of moderate to strong currents. The crystal darter prefers larger rivers and deeper waters than does the western sand darter (Becker 1983).

Gilt Darter (*Percina evides).* Distribution: Pool 8. Habitat: The gilt darter inhabits clear, medium-sized to large streams with clean, silt-free bottoms and permanently strong currents. It generally occurs in moderate to fast, deep riffles and pools, over gravel, rubble, and small boulders. In Black River (Jackson County, WI), the gilt darter inhabits clear but stained water 0.1-1.0 m deep and 18-30 m wide, over light-colored sand and fine gravel 6-12 mm diam, in a current of 0.6-1.2 m sec. Fewer individuals were captured downstream in a current of 0.3-0.6m/sec, which suggests that a faster current is preferred by this species (Becker 1983).

Goldeye (*Hiodon alosoides*). Distribution: Pools 2-10. Habitat: This species frequents quiet, turbid waters of large rivers, the small lakes, ponds, and marshes connected to them, and the muddy shallows of larger lakes. According to Scott and Crossman (1973), they overwinter in deeper areas of lakes and rivers and moves toward the shallow, firm-bottomed spawning sites as the ice breaks up in the spring.

Grass Pickerel (*Esox americanus*). Distribution: Pool 10. Habitat: This species prefers quiet water (lakes and sloughs), but it has occasionally been taken from fast currents in small streams (Becker 1983). The grass pickerel has appeared in clear to turbid water; highest population densities occur in shallow, weedy locations (Kleinert and Mraz 1966), containing such plants as leafy liverworts, water lilies, pondweeds, filamentous algae, and cattails. Becker (1983) reports encountering small populations of the species in sand-bottomed backwaters, sloughs, and landlocked pools, which were virtually devoid of all types of vegetation. Spawning habitat: Sloughs, temporary marshes and on grassy banks in water less than 0.3 m deep (Kleinert and Mraz 1966; Crossman 1962). Eggs are broadcast over vegetation, leaves, twigs, and various species of aquatic vegetation (Kleinert and Mraz 1966; Crossman 1962).

Greater Redhorse (*Moxostoma valenciennesi).* Distribution: Pools 2-5 and 8-10. Habitat: The greater redhorse inhabits mainly medium sized to large rivers, river reservoirs, and large

lakes (Becker 1983). Scott and Crossman (1973) suspected they occur in the mouths of tributary streams. Adults may occur throughout the year in streams as narrow as 5-9 m (18-30 ft) with an average depth of less than 1 m (3 ft). The greater redhorse prefers clear water over sand, gravel, or boulders. Spawning habitat: Spawns in streams with moderate to swift currents about 0.5 to 1 m deep (Jenkins and Jenkins 1980). They deposit eggs over large gravel mixed with rubble and sand (Jenkins and Jenkins 1980).

Lake Sturgeon (*Acipenser fluvescens*). Distribution: Pools 3-6 and 8-10 (for pools 6 and 8 there are records of occurrence available, but no collections have been documented in the last ten years). Habitat: It shows a preference for the deepest mid-river areas and pools (Kuehn et al. 1961). Spawning Habitat: Wave-washed rocky lake shores (Priegel and Writh 1971; Harkness and Dymond 1961; Baker 1980) in areas of upwelling currents, the outside bends (Priegel and Writh 1971) and rapid moving water of rivers and near dams Harkness and Dymond 1961; Baker 1980). Spawns in 1.0 to 5.0 m of water (Scott and Crossman 1973 and Harkness and Dymond 1961). Eggs and milt are scattered over large, clean rubble and abandoned (Harkness and Dymond 1961).

Mud darter (*Etheostoma asprigene*). Distribution: Pools 4-10 Habitat: The mud darter inhabits sloughs, overflow areas, sluggish riffles, and pools of large, low-gradient rivers, and the lower ends of tributaries (Becker 1983).

Paddlefish (*Polydon spathula*). Distribution: Pools 2-10. Habitat: Paddlefish utilize all five defined habitat types available in the Upper Mississippi River. Habitat preference changes with different seasons and river conditions. Main channel border, tailwaters, and backwaters are the most frequented habitats (Southall 1982). Pitman and Parks (1994) found that young paddlefish were found in river or tailwater habitat during the winter when water temperatures were below 16 degrees Celsius. During the spring and summer they found the paddlefish to be in reservoir or riverine habitat. Other researchers reported that paddlefish congregate in deep pools during winter when water temperature is about 10 degrees Celsius (Kallemeyn and Novotny 1977, Russel 1986) and move upstream to spawning habitat as waters warm from 10 to 17 degrees Celsius (Hubert et al. 1984). When upstream migration is blocked by a dam, spawning paddlefish congregate in tailwater areas (Rosen et al. 1982, Southall and Hubert 1984).

Moen (1989) reported that radio-tagged paddlefish occurred in tailwaters (39%), in the main channel border with wing dams (34%), and in the main channel border without wing dams (16%). Few encounters were made in the other habitat types: main channel 8%, backwaters 2%, and side channels less than 1%. Substrate type at most locations was a combination of sand and silt, which appeared to be dominant throughout the pool. Temperature varied only slightly between habitat types. The results did not suggest that paddlefish were particularly attracted to a specific level of a measured habitat variable (depth, current, velocity, substrate type or temperature). Paddlefish feeds primarily on zooplankton and immature aquatic insects. A photoperiod, water temperature, and river stage have been identified as factors which determine the timing of spawning. The paddlefish is an open water species of the UMR, Minnesota, and St.

Croix rivers. The pre-inundated habitat of the UMR with its extensive backwater areas, oxbow lakes, and braided channels provided optimal habitat and supported large populations of paddlefish. However, since the construction of locks and dams, paddlefish are now confined to discrete sections of river and subjected to regulated flows, abnormal temperatures and declining water quality and its population has subsequently decreased substantially. Paddlefish require fairly narrow range of river flows, temperature, and substrate conditions for reproduction and other life cycle stages (Russel 1986) and the changes through channelization and dams have, in a general, greatly reduced favorable paddlefish habitat. In addition to lock and dam construction, habitat changes such as pollution, dredging, and siltation have adversely affected paddlefish in recent years. In UMR, paddlefish concentrate in areas that deflect current and the velocity is reduced (Rosen 1976; Southdall and Hubert 1984). They congregate in deep pools during winter when water temperature is about 10 degrees Celsius (Kallemeyn and Novotny 1977, Russel 1986) and move upstream to spawning habitat as waters warm from 10 to 17 degrees Celsius (Hubert et al. 1984). When upstream migration is blocked by a dam, spawning paddlefish congregate in tailwater areas (Rosen et al. 1982, Southall and Hubert 1984). Paddlefish may occasionally be found in backwaters and side channels but these habitats seem to be of less importance except as feeding areas (Moen 1989).

Spawning habitat: Paddlefish spawn in flowing water over a gravel substrate. Three important factors the control spawning are water flow, water temperature, and photoperiod. Paddlefish may spawn from late March to late June when the water temperature reaches 10 degree C (Russel 1986). No spawning sites in the Upper Mississippi river have been identified.

Pallid Shiner (*Notropis amnis)*. Distribution: Pools 3-5a and 7-10 (for pools 3, 5, 5a, and 9 there are records of occurrence available, but no collections have been documented in the last ten years). Habitat: In Wisconsin, the pallid shiner has been taken over sand and mud in sloughs, over sandbars with slow moving water, and from impoundments without current (Becker 1983). In Iowa, it is reported in flowing water over sandbars (Harlan and Speaker 1956). Records indicate that the pallid shiner is tolerant of a wide range of turbidity (Hubbs 1951). In waters where the fish is found reports are about equally divided between "clear" or "almost clear" and "moderately turbid" or "muddy," with a few locales noted as "murky" or "very muddy." The delicate fins and skin and the moderately streamlined build of the pallid shiner indicate it is adapted best for slow currents (Becker 1983).

Pirate Perch (*Aphredoderus sayanus*). Distribution: Pools 7-10. Habitat: The pirate perch occurs in oxbows, overflow ponds, sloughs, marshes, ditches, and the pools of low-gradient (0.57 m/km, 3 ft/mi) streams. It is found over sand, or over soft muck bottoms covered with organic debris. Frequently it is associated with brush piles or dense aquatic vegetation. The streams generally are medium to large-sized rivers, but occasionally maybe be creeks less than 3 m wide. This species occurs mostly in quiet water, seldom in a sluggish or stronger current (Becker 1983).

Pugnose minnow (*Opsopoeodus emiliae).* Distribution: Pools 1-10. Habitat: It has been known to occur in quiet, weedy waters of lakes, reservoirs, and sloughs, and in rivers of low gradient, 12 m or more wide (Becker 1983). Records suggest that adults frequent deeper waters than are normally reached by minnow seines (Becker 1983).

River Redhorse (*Moxostoma carinatum*). Distribution: Pools 2-5 and 6-10. Habitat: The river redhorse prefers large rivers and the lower portions of their main tributaries. It inhabits reservoirs, pools, and moderate to swift water over clean gravel and rubble, and is seldom encountered in deeper waters with mud, silt, or sand bottoms (Becker 1983). Spawning habitat: Probably spawns in tributaries, 15 to 100 cm deep, in redd 1.3 to 2.7 m wide (Scott and Crossman 1973; Hackney et al. 1969). Spawning substrate: Spawns over gravel shoals (Hackney et al. 1969). Jenkins (1970) called attention to the fact that species of suckers which are essentially molluscan feeders, such as the river redhorse, have all apparently suffered a great loss of range within historical times, or have become extremely localized in their distribution compared to related species.

Skipjack Herring (*Alosa chrysochloris).* Distribution: Pools 1-6 and 8-10 (for pools 1-3,6, and 8-10 there are records of occurrence available, but no collections have been documented in the last ten years). Habitat: According to Becker (1983), the skipjack herring inhabits the open waters of large rivers, and early in the year it often congregates in large numbers in the swift currents below dams and in the vicinity of wing dams. Occasionally it becomes an inhabitant of large river lakes. It also appears to avoid turbid waters (Trautman 1957). Skipjack herring are supposedly unable to negotiate dams during the early spring migrations or to use canals bypassing the dams. At one time the skipjack herring represented a very distinct economic asset because it helped perpetuate the ebony shell clam (*Fusconaia ebena*). It is also host to the glochidia of the mollusk's *Megalonaias gigantea, Elliptio crassidens*, and *Anodonta grandis.*

Speckled Chub (*Macrhybopsis aestivalis).* Distribution: Pools 2-10. Habitat: In Wisconsin, the speckled chub were encountered most frequently in broad, shallow riffles over substrates of sand (62% frequency), mud (23%), clay (8%), and gravel (8%). Once it was taken from a hard, sand bottom slough. It occurs in rivers generally over 50 m wide; it has been found twice in streams 12-24 m wide. At collection sites, aquatic vegetation is generally lacking, and the water is slightly turbid to turbid (Becker 1983).

Starhead topminnow (*Fundulus dispar*). Distribution: Pool 7 (rare). Habitat: The characteristic habitat of the starhead topminnow is a quiet, shallow backwater having clear to slightly turbid waters and an abundance of submerged aquatic plants (Becker 1983).

Weed shiner (*Notropis texanus*). Distribution: Pools 3-10 (for pool 3 there is a record of occurrence available, but no collections have been documented in the last ten years). Habitat: The weed shiner is an inhabitant of sloughs, lakes, and the quiet or sluggish sections of medium-sized streams and larger rivers (Becker 1983). In Wisconsin, it was encountered most frequently in water 0.1-1.5 m deep over substrates of sand (37% frequency), mud (32%), clay (11%), silt

(5%) detritus (5%), gravel (5%), and boulders (5%). It occurs in waters of either slow or no current (Becker 1983). Despite the implication of its common name, "weed shiner," it is not always associated with weedy habitats (Becker 1983).
Spawning substrate: Possibly spawns over sand and gravel (Loos and Fuiman 1978).

Western sand darter (*Ammocrypta clara*). Distribution: Pools 3-10 (for pool 3 there is a record of occurrence available, but no collections have been documented in the last ten years). Habitat: The western sand darter occurs in medium-sized to large rivers in moderate to swift currents, over extensive sand flats, at depths of 0.2-0.9 m. It prefers clear to slightly turbid water (Becker 1983).

Yellow Bass (*Morone mississippiensis*). Distribution: Pools 4 and 6-10 (for pool 4 there is a record of occurrence available, but no collections have been documented in the last ten years) Habitat: The yellow bass is primarily an inhabitant of lakes and connecting lakes, sloughs, and reservoirs on large rivers. It prefers wide expenses of open water free of weeds, over substrates of sand, gravel, rubble, and silt, and over substrates overlaid with a thick layer of mud. It is found in clear to turbid water, up to at least 7 m deep (Becker 1983). Spawning habitat: Prefers shallow, 0.6 to 1.0 m, open, lacustrine areas with wave action (Bulkley 1970; Atchison 1967). Spawns over gravel, rocks, submerged vegetation, or sand (Atchison 1967). It commonly moves into tributary streams to spawn, or it may spawn in a lake over gravel or rock reefs in water 0.6-1.0 m deep. It is carnivorous and consumes cladocera, copepoda, chironomidae, chaobroinae, ostracoda, fish remains, ephermeroptera, hydracarina, and corixidae.

III.B. GENERAL HABITAT USE AND DISTRIBUTION OF STATE-LISTED FRESHWATER MUSSELS AND OTHER INVERTEBRATES

The species of State-listed freshwater mussels and other invertebrates that use or could use the floodplain of the navigable portions of the UMR, St. Croix River, and Minnesota River are listed in tables G-2 and G-3. A synopsis of habitat requirements and distribution for each invertebrate species are provided below.

III.B.1 Freshwater mussels

Black sandshell (*Ligumia recta*) Potential UMR Habitat: It occurs in medium to large rivers in riffles or raceways in gravel or firm sand (Cummings and Mayer 1992).

Buckhorn or Pistolgrip (*Tritogonia verrucosa*) Potential UMR Habitat: This speicies occurs in medium to large rivers in mud, sand, or gravel (Cummings and Mayer 1992).

Butterfly (*Ellipsaria lineolata)*: Potential UMR Habitat: It is found in large rivers in sand or gravel.

Table G-2. State protected mussels of the navigable portions of the Upper Mississippi, St. Croix and Minnesota Rivers within the St. Paul District.

Species	Status Minnesota	Wisconsin	Iowa	Occurrence by Pool(s)
Black sandshell	special concern	none	none	3-9, St. Croix
Buckhorn (Pistolgrip)	threatened	threatened	endangered	3, 4 & 9, St. Croix
Butterfly	threatened	endangered	none	5, 5A, 6, 7, 9 & 10, St. Croix
Ebonyshell	endangered	endangered	none	3, 4, 9 & 10, Minnesota
Elephant ear	endangered	endangered	none	3, 4, 9 & 10
Elktoe	threatened	none	none	4 & 5, St. Croix
Ellipse	threatened	none	none	4 & 5
Fluted shell	special concern	none	none	4 & 5, St. Croix
Hickorynut	special concern	none	none	4-8, St. Croix
Monkeyface	threatened	threatened	none	3-10, St. Croix
Mucket	threatened	none	none	1-7, St. Croix
Purple wartyback	threatened	endangered	threatened	3, 4, 5, 9 & 10, St. Croix
Rock pocketbook	endangered	threatened	none	5-10, Minnesota
Round pigtoe	threatened	none	none	3, 4 & 5, St. Croix
Salamander	threatened	threatened	none	9 & 10
Sheepnose	endangered	endangered	none	3, 4, & 5
Spectaclecase	threatened	endangered	endangered	9 & 10, St. Croix
Spike	special concern	none	none	3-7, St. Croix
Strange floater	none	none	threatened	9 & 10, St. Croix
Wartyback	endangered	threatened	none	8, 9 & 10
Washboard	threatened	none	none	2, 3, 8, 9 & 10, St. Croix
Yellow (slough) sandshell	endangered	endangered	endangered	3, 4, 9 & 10

Table G-3. State protected invertebrates of the navigable portions of the Upper Mississippi, St. Croix and Minnesota Rivers within the St. Paul District.

Species	Status Minnesota	Wisconsin	Iowa	Occurrence by County
Winged snaggletooth snail	none	threatened	none	Trempealeau, WI
Ottoe skipper butterfly	threatened	none	none	Wabasha, MN

Ebonyshell (*Fusconaia ebena*) Potential UMR Habitat: It is found in large rivers in sand and gravel (Cummings and Mayer 1992).

Elephant ear (*Elliptio crassidens*) Potential UMR Habitat: It is found in large rives in mud, sand, or fine gravel.

Elktoe (*Alasmidonta marginata*) Potential UMR Habitat: The elktoe occurs in medium-sized streams in gravel or mixed sand and gravel (Cummings and Mayer 1992).

Ellispe (*Vernustaconcha ellipsiformis)* Potential UMR Habitat: This species inhabits small to medium streams in gravel or mixed sand and gravel (Cummings and Mayer 1992).

Fluted-shell (*Lasmigona costata*) Potential UMR Habitat: The fluted shell inhabits medium to large rivers in sand, mud, or fine gravel in areas with slow to moderate flow (Cummings and Mayer 1992).

Hickory nut (*Obovaria olivaria*) Potential UMR Habitat: This species is found in large rivers (rarely in medium or small streams) in sand or mixed sand and gravel (Cummings and Mayer 1992).

Monekeyface (*Quadrula metanerva*) Potential UMR Habitat: The monkey face inhabits medium to large rivers in gravel or mixed sand and gravel (Cummings and Mayer 1992).

Mucket (*Actinonaias ligamentina*) Potential UMR Habitat: Muckets occur in medium to large rivers in gravel or mixed sand and gravel (Cummings and Mayer 1992).

Purple wartyback (*Cyclonaias tuberculata*) Potential UMR Habitat: This species is found in medium to large rivers in gravel or mixed sand and gravel (Cummings and Mayer 1992).

Rock Pocketbook (*Aridens confragosus*) Potential UMR Habitat: This species inhabits medium to large rivers in pools and areas of reduced flow in mud and sand (Cummings and Mayer 1992).

Round pigtoe (*Pleurobema coccineum*) Potential UMR Habitat: The round pigtoe is an inhabitant of medium to large rivers in mud, sand, or gravel (Cummings and Mayer 1992).

Salamander mussel (*Simpsonaias ambigua* Potential UMR Habitat: This species occurs in medium to large rivers on mud or gravel bars and under flat slabs or stones (Cummings and Mayer 1992).

Sheepnose (*Plethobasus cyphyus*) Potential UMR Habitat: This species is found in medium to large rivers in gravel or mixed sand and gravel (Cummings and Mayer 1992).

Spectaclecase (*Cumberlandia monodonta*) Potential UMR Habitat: The spectalcase occurs in large rivers with swiftly flowing water, among boulders in patches of sand, cobble, or gravel in areas where current is reduced (Cummings and Mayer 1992).

Spike (*Elliptio dilatata*) Potential UMR Habitat: This species is more common in small to large streams and occasionally lakes in mud or gravel (Cummings and Mayer 1992).

Strangefloater (Squawfoot) (*Strophitus undulatus*) Potential UMR Habitat: This species occurs in small to medium-sized streams and occasionally large rivers in mud, sand, or gravel (Cummings and Mayer 1992).

Wartyback (*Quadrula nodulata*) Potential UMR Habitat: The wartyback is an inhabitant of large rivers or in the lower sections of medium-sized rivers in sand or fine gravel (Cummings and Mayer 1992).

Washboard (*Megalonaias nervosa*) Potential UMR Habitat: Washboards primarily occur in large rivers with good current and occasionally in medium sized streams in mud, sand, or gravel (Cummings and Mayer 1992).

Yellow sandshell (*Lampsislis teres*) Potential UMR Habitat: This species is an inhabitant of medium to large rivers in sand or fine gravel (Cummings and Mayer 1992).

III.B.2. Other Invertebrates

Ottoe skipper butterfly (*Hesperia ottoe*) Potential UMR Habitat: **Bluff Prairie**. The Ottoe skipper occurs in a variety of well-drained, native grassland habitats, including dunes and sandy barrens, limestone bluff prairie, and short grass prairie (Coffin and Pfannmuller 1988). Larvae are known to feed on several grasses, but it is unknown whether preferences exist. The species has been reported to be intolerant of grazing (Linsey 1942).

Winged snaggletooth snail (*Gastrocopta procera*) Potential UMR Habitat: Unknown.

III.C. GENERAL HABITAT USE AND DISTRIBUTION OF STATE-LISTED MAMMALS

The species of State-listed mammals that use or could use the floodplain or sand terraces of the navigable portions of the UMR, St. Croix River, and Minnesota River are listed in table G-4. A synopsis of habitat requirements and distribution for each mussel species are provided below.

Bobcat (*Felis rufus*) Potential UMR Habitat: The bobcat can be found in the hardwood forest region of northeastern Iowa and occurs sparingly in heavily wooded parks and river bottoms throughout the remainder of the state (Bowles 1975).

Table G-4. State protected mammals of the navigable portions of the Upper Mississippi, St. Croix and Minnesota Rivers within the St. Paul District.

Species	Status Minnesota	Wisconsin	Iowa	Occurrence by County
Bobcat	none	none	endangered	Allamakee & Clayton, IA
Eastern pipistrelle	special concern	none	none	Hennepin, Houston, Ramsey, Wabasha, & Washington, MN
Least shrew	special concern	none	threatened	Winona, MN
Northern myotis	special concern	none	none	Ramsey, MN
Praire vole	special concern	none	none	Houston & Winona, MN
River otter	none	none	threatened	Allamakee & Clayton, IA
Southern bog lemming	none	none	special concern	Allamakee, IA
Woodland vole	special concern	none	none	Houston, MN

Eastern pipistelle (*Pispistrellus subfavus*) Potential UMR Habitat: They are found to occur regularly, albeit in low numbers, in a number of caves and mines in the southeastern portion of Minnesota during hibernation (Coffin and Pfannmuller 1988). During the summer, males sometimes roost singly in trees and maternity colonies have been found in buildings, trees, and rock crevices. The eastern pipistelle is a slow, erratic flyer, foraging over waterways and near forests. It emerges earlier in the evening than most bats and feeds over waterways and near forests primarily on small insects.

Least shrew (*Cryptotis parva*) Potential UMR Habitat: Least shrews have been discovered in a variety of habitat types, including some forested areas. In the northern portion of their distributional range, they are most commonly found in open areas, for example, upland prairie, weedy fencerows and fields, meadows, and grassy or brushy roadsides. They may be found in both moist and arid microhabitats, so are not dependent on mesic habitats. The broad range of habitats may be related to the variety of food items consumed, including most terrestrial insects and their larvae, small toads and frogs, and small lizards.

Northern Myotis (*Myotis septentrionalis*) Potential UMR Habitat: The northern myotis has been found to winter in Minnesota in natural caves, sand mines, and deep iron mines. Further south, the species may also use such man-made structures as attics and the cement supports of bridges and large buildings. During summer, it is often associated with forested habitats, where it forages for insects over trees, ponds, and streams. Summer roost sites include separate day and night roosts. Day roosts may be under tree bark, in buildings, and behind signs and shutters of buildings. The sexes tend to be segregated, with females forming small (30 individuals) maternity colonies in relatively warm sites to bear and rear their single offspring. In Minnesota, northern myotis apparently return to the hibernaculum in late August and September, with departure in May.

Prairie vole (*Microtus ochrogaster*) Potential UMR Habitat: The prairie vole is a widespread, often even common, denizen of relatively dry, upland prairies. On occasion, it may be found in swales and riparian grasslands, especially in areas where its congener, the meadow vole (M. pennsylvanicus), is absent. The presence of the meadow vole has been one factor in the demise of the prairie species when its preferred upland habitats were destroyed as a result of plowing and grazing. Green vegetation, especially grasses and sedges, and to a lesser degree legumes and composites, constitute the summer diet. During winter prairie voles consume roots, tubers, fruits, seeds, and bark.

River otter (*Lutra canadensis*) Potential UMR Habitat: The river otter is found near lakes, streams, and rivers. It is generally not common in heavily settled areas. They feed primarily on fish and aquatic invertebrates, particularly crayfish. The also prey upon frogs, tadpoles, salamanders, and muskrat. Otter are often associated with beaver or muskrats, occupying their bank burrows or old lodges, but also den under a log, an overhanging tree, or the exposed roots of a tree near water.

Southern bog lemming (*Synaptomys cooperi*) Potential UMR Habitat: The southern bog lemming is generally restricted to moist bluegrass habitat.

Woodland vole (*Microtus pinetorum*) Potential UMR Habitat: The woodland vole lives in habitat types ranging from closed-canopy beech maple forest to grassy fields with a brushy overgrowth. Well drained soils with a good ground cover of litter or vegetation are common in many habitat descriptions of the species. Orchards seems to provide ideal habitat, perhaps because of the combination of root networks formed by the trees, and the nutrient-rich young shoots of grass and forbs that result from the combination of fertilization and mowing. The diet is seasonally variable, including as major items grass roots and stems (spring and summer), fruits and seeds (autumn), and bark and roots (winter).

III.D. GENERAL HABITAT USE AND DISTRIBUTION OF STATE-LISTED BIRDS

The species of State-listed birds that use or could use the floodplain or sand terraces of the navigable portions of the UMR, St. Croix River, and Minnesota River are listed in table G-5. A synopsis of habitat requirements and distribution for each bird species are provided below.

Acadian Flycatcher (*Empidonax virescens*) Potential UMR Habitat: **Floodplain forest**. The preferred habitat used includes floodplain forest, upland forest, and marsh, respectively. They are found commonly in middle-aged silver maple stands. Their breeding habitat is heavily wooded deciduous bottomlands. The nests are on a horizontal limb of tree 8-20 feet above ground.

Bell's Vireo (*Vireo bellii*) Potential UMR Habitat: They are found in deciduous thickets along streams, ravines, forest edges and big willow thickets. It is very rare to the UMR corridor.

Bewick's Wren (*Thryomanes bewickii*) It is a very rare inhabitant to the UMR corridor, as it is north of the natural distribution. This species forages on or near the ground in a brush-covered, partly open area, including the edge of deciduous forest, coniferous woods with underbrush. They nest in natural cavities or in roots of upturned trees.

Caspian Tern (*Sterna caspia*) Potential UMR Habitat: They are present in the UMR during spring and fall migrations, and are absent during the breeding season. During migration, they are found in shallow marsh habitat throughout the UMR.

Cerulean warbler (*Dendroica cerulea*) Potential UMR Habitat: **Floodplain and bluffs**. This species needs contiguous stands of mature forest, and are often found to be associated with large tracts of mature cottonwoods. The specific habitat requirements for Cerulean warbler are not well known. The census data shows the northern population is declining.

Table G-5. State protected birds of the navigable portions of the Upper Mississippi, St. Croix and Minnesota Rivers within the St. Paul District.

Species	Status Minnesota	Wisconsin	Iowa	Occurrence by County
Acadian flycatcher	special concern	threatened	none	Goodhue & Houston, MN Crawford, La Crosse, Grant, & Vernon, WI
Bell's vireo	none	threatened	none	La Crosse, Trempealeau, WI Winona, MN
Bewick's wren	none	endangered	none	Buffalo, Pepin, & Trempealeau, WI
Caspian tern	none	endangered	none	Buffalo, Grant, La Crosse, Pepin, Pierce, & Trempealeau, WI
Cerulean warbler	none	threatened	none	Buffalo, La Crosse & Grant, WI Houston, Wabasha, & Winona, MN Allamakee, IA
Common Moorhen	special concern	none	none	Houston, Ramsey, Wabasha, Washington & Winona, MN
Forster"s tern	special concern	none	special concern	Ramsey & Wabasha, MN
Great egret	none	threatened	none	All
Henslow's sparrow	endangered	none	threatened	Winona, MN
Kentucky Warbler	none	threatened	none	Crawford, Grant, La Crosse, & Vernon, WI
King Rail	none	none	endangered	Houston, MN; Allamakee, IA
Loggerhead shrike	threatened	endangered	none	Dakota, Wabasha, Washington, MN Crawford, La Crosse, Pierce, St. Croix & Vernon, WI
Louisiana waterthrush	special concern			Houston, Washington, and Winona, MN
Osprey	none	threatened	none	Buffalo, La Crosse, Pierce, St. Croix, & Trempealeau, WI
Red-shouldered hawk	none	threatened	endangered	Dakota, Goodhue & Washington, MN; Allamakee & Clayton, IA
Worm-eating warbler	none	endangered	none	Grant & Vernon, WI
Yellow-throated warbler	none	endangered	none	Grant, WI

Common moorhen (*Gallinula chloropus)* Potential UMR Habitat: **Shallow water marshes**. It is associated with freshwater cattail-bulrush marshes with patches of *Phragmites, Carex, and Sparganium.* In some areas, they share similar habitat with the coot. Large expansive wetlands are not necessary; as this species will utilize small marshes along the edge of lakes (Coffin and Pfannmuller 1988).

Forster's tern (*Sterna forsteri*) Potential UMR Habitat: Its preferred habitat is large marshes with extensive areas of emergent vegetation or muskrat houses for nesting (Coffin and Pfannmuller 1988). The water level appears to be a crucial factor in selecting suitable nesting habitat as well as for overall nesting success. Previous nesting sites having unsuitable water levels when the birds return in the spring, may be quickly abandoned in favor of other more appropriate sites. This flexibility allows the species to adapt to unreliable water conditions.

Great Egret (*Casmerodius albus*) Potential UMR Habitat: This species prefers marshes where deeper water is edged with low, vegetated banks. The nesting colonies may be in reed or cattails, but more commonly in trees.

Henslow's sparrow (*Ammodramus henslowii)* Potential UMR Habitat: **Prairie**. The Henslow's sparrow nests primarily in uncultivated grasslands, wet meadows, and old fields with high forb and shrub composition (Coffin and Pfannmuller 1988). An area with appropriate habitat is generally used by this species for only a year or two. It is not known whether this is owing to a subtle change in the nature of the habitat or to the species' rare status.

Kentucky Warbler (*Oporomis formosus*) Potential UMR Habitat: This species is found in contiguous mature forests and ravines. The nests are usually made on the ground layer.

King Rail (*Rallus elegans*) Potential UMR Habitat: **Freshwater marshes**. The king rail accepts a wide variety of shallow, freshwater marshes. They are common in coastal saltwater and brackish marshes. Small potholes, such as those used by nesting ducks, appear attractive to the species. They are often associated with the muskrat, whose activities in the marsh help create openings (Coffin and Pfannmuller 1988).

Loggerhead shrike (*Lanius ludovicianus*) Potential UMR Habitat: The shrike primarily inhabits open country and dry upland prairie where hedgerows, shrubs, and small trees occur (Coffin and Pfannmuller 1988). Species composition of the vegetation appears to be less important than the structure, such as dense shrub or trees tops for concealing nests, suitable perch sites, and devices upon which to impale prey (Porter et al. 1975).

Louisiana waterthrush (*Seiurus motacilla*) Potential UMR Habitat: The Louisiana waterthrush is most commonly found along wooded ravines with swiftly flowing streams, or sometimes in wooded swamps (Coffin and Pfannmuller 1988). Preferred habitat is densely vegetated deciduous cover and fast moving water (Craig 1985).

Osprey (*Pandion haliaetus*) Potential UMR Habitat: They are associated with lakes and large rivers, nesting at the top of large trees, utility poles, or other structures near water (Coffin and Pfannmuller 1988).

Red-shouldered hawk (*Buteo lineatus*) Potential UMR Habitat: **Floodplain forest**. Red-shoulder hawks primarily use forested habitats, especially floodplains (Bednarz and Dinsmore 1981). The preferred habitat features surrounding red-shouldered nests in Iowa were floodplain forest, upland forest, and marsh, respectively. In order to maintain required habitat, Bednarz and Dinsmore (1981) recommend mature forests should be maintained at densities between 370 and 1000 trees/ha, with few understory trees.

Worm-eating warbler (*Helmitheros vermivorus)* Potential UMR Habitat: They typically inhabit steep hillsides and mature deciduous forests.

Yellow-throated warbler (*Dendroica dominica)* Potential UMR Habitat: They are associated with pine and open oak openings.

III.E. GENERAL HABITAT USE AND DISTRIBUTION OF STATE-LISTED REPTILES AND AMPHIBIANS

The species of State-listed reptiles and amphibians that use or could use the floodplain or sand terraces of the navigable portions of the UMR, St. Croix River, and Minnesota River are listed in table G-6, along with their State status and known distribution. A synopsis of habitat requirements for each amphibian and reptile species are provided below.

Blanding's Turtle (*Emydoidea blandingii*): UMR Potential Habitat: **Floodplain (deep water marshes, shallow water marshes, and floodplain prairie)**. Shallow, slow-moving waters with mud bottoms and abundant aquatic vegetation are preferred, as they are primarily marsh and pond inhabitants (Oldfield and Moriarty 1994). Vogt (1981) reports extensive marshes bordering rivers provide excellent habitat. Nesting occurs during the first two weeks and occurs in sandy fields and prairie.

Blue spotted salamander (*Ambystoma laterale*): UMR Habitat: **Floodplain (floodplain forest and shallow marshes).** This species is an inhabit of moist woodlands and boreal forests (Oldfield and Moriarty 1994). Small ponds and woodland potholes retaining water until late summer are used for breeding (Wilbur and Collins 1973) and are essential for their reproduction. Adults may be found in the summer under bark, logs, and moss. Rocks and logs at the edges of ponds are known to serve as overwintering sites (Vogt 1981). They breed in the same ponds as spring peepers, chorus frogs, wood grogs, and spotted salamanders. They are more tolerant of dry conditions than other salamander species, and are often found in areas with very sandy soil (Vogt 1981).

Table G-6. State protected reptiles and amphibians of the navigable portions of the Upper Mississippi, St. Croix and Minnesota Rivers within the St. Paul District.

Species	Status Minnesota	Wisconsin	Iowa	Occurrence by County
Blanding's turtle	threatened	threatened	none	Wabasha, Dakota, Ramsey, Goodhue & Winona, MN, Buffalo, Crawford, La Crosse, Pepin, & St. Croix, WI
Blue spotted salamander	none	none	endangered	Washington & Hennepin, MN Crawford & Grant, WI
Common musk (stinkpot) turtle	none	none	threatened	Clayton, IA
Eastern newt	none	none	threatened	Dakota, MN
Five-lined skink	special concern	none	none	Houston & Winona, MN Crawford, WI
Four-toed salamander	special concern	none	none	Houston, MN Vernon, WI
Gopher Snake	special concern	none	none	Dakota, Goodhue, Hennepin, Houston, Wabasha, Washington, & Winona, MN
Massasauga rattlesnake	endangered	endangered	endangered	Houston, & Wabasha, MN Buffalo, LaCrosse, Trempealeau & Crawford, WI
Mudpuppy	none	none	endangered	Goodhue & Houston, MN Grant, WI Allamakee, IA
Northern cricket frog	endangered	endangered	none	Houston, MN Buffalo, Crawford, Grant, La Crosse, Trempealeau, & Vernon, WI
Ornate box turtle	none	endangered	endangered	Crawford & Grant, WI
Racer	special concern	none	none	Dakota, Goodhue, Houston, Wabasha, Washington, & Winona, MN Buffalo, La Crosse, Grant, & Vernon, WI
Rat snake	special concern	none	none	Houston & Winona, MN Crawford, Grant, & Vernon, WI
Slender glass lizard	none	endangered	endangered	La Crosse, WI
Smooth green snake	none	none	threatened	unknown
Timber rattlesnake	threatened	none	none	Dakota, Wabasha & Winona, MN
Western hognose snake	special concern	none	endangered	Dakota, Wabasha, & Winona, MN
Wood turtle	threatened	threatened	endangered	Goodhue, Ramsey, & Wabasha, MN

Eastern Newt (*Notophthalmus viridescens*) Potential UMR Habitat: **Shallow water marshes.** Eastern Newts are found in temporary and permanent lakes, streams, and wetlands adjacent to woodlands. Most of Minnesota's records are from small, clear-flowing streams. They can be found in coniferous and deciduous forests where there is an understory with numerous logs and abundant leaf litter (Oldfield and Moriarty 1994).

Five-lined Skink (*Eumecces fasciatus*): UMR Potential Habitat: **Bluff Prairies, Floodplain (floodplain prairies and forests).** The five-lined Skink is found in humid woodlands and wooded lots with decaying leaf litter, stumps, and logs (Conant and Collins 1991) . In Minnesota, it has been found on or near granite outcrops in the dissected terrain of the Minnesota River valley (Lang 1982). This species is found in southeastern Minnesota in association with limestone outcrops and bluff prairies in proximity to deciduous forest. Five-lined Skinks retreat to depths of 1.5 to 3 meters (5 to 10 feet) in rock fissures and cracks below the frost line to survive Minnesota winters.

Four-toed Salamander (*Hemidactylium scutatum*). UMR Potential Habitat: **Bluffs, Floodplain (floodplain forest).** This species is found in deciduous forests adjacent to springs, creeks, and small bogs (Oldfield and Moriarty 1994). During the spring, females can be found in sedge hummocks adjacent to or in the water. Adults spend the remainder of the year under logs, rocks, or sphagnum moss.

Gopher snake (Bullsnake) (*Pituophis catenifer*). UMR Potential Habitat: **Bluff prairies.** This species is an inhabitant of open county, preferring native prairies, old fields, pastures, oak savannas, and bluff prairies located on steep hillsides (Oldfield and Moriarty 1994). They thrive in sandy soil habitats where burrowing rodents are common. Overwintering occurs in mammal burrows well below the frost line or deep in rock fissures in bluff areas (Schroder 1950; Vogt 1981). They prefer south and west slopes of bluffs along the Mississippi River. They emerge from overwintering sites in late April or May and mate during May.

Massasauga (*Sistrurus catenatus*). UMR Potential Habitat: **Floodplain (floodplain prairies).** The massasuaga prefers moist habitats, such as bogs, marshes, swamps, and associated wetlands (Oldfield and Moriarty 1994). In Wisconsin, they are restricted to river bottom lowland forests and adjacent open fields (Vogt 1981). They are solitary occupants of overwinter dens located in mammal burrows, old tree stumps, and rocky crevices. They emerge in late April (Vogt 1981) and return to overwinter sites around Mid-October.

Mudpuppy (*Necturus maculosus*). UMR Potential Habitat: **Floodplain (deep water marshes and shallow water marshes.** The mudpuppy is found in large to medium rivers and large lakes. In Minnesota, mudpuppy habitat ranges from swift gravel bottom streams to slow, muddy rivers (Oldfield and Moriarty 1994). Rivers with high turbidity are used if silt-free gravel areas are present for nesting (Pfingsten and Downs 1989). Mudpuppies prefer some cover and may use

rocks, sunken logs, or submerged structure. Juveniles utilize shallow water or riffles, whereas adults use deeper water or riffles (Pfigsten and Downs 1989).

Northern Cricket Frog (*Acris crepitars*). UMR Potential Habitat: **Floodplain (deep water marshes and shallow water marshes).** Northern cricket frogs are often found along the shorelines of slow-flowing streams or ponds and prefer muddy shorelines with abundant emergent vegetation scattered with openings (Oldfield and Moriarty 1994). They are closely associated with water throughout the summer (Vogt 1981). This species emerges from dormancy in late April, breed from May to July, and stay active until August/September.

Ornate Box Turtle (*Terrapene ornata*). UMR Potential Habitat: **Prairie (Floodplain prairie).** Ornate box turtles are a prairie relict found only in sandy dry prairies and oak savannas. They are more common on south and west exposures where temperatures are higher and the soil is drier. The ornate box turtle is strictly a land dweller. Studies show that box turtles range over 51/2 acres with overlapping territories. Home construction, irrigation, cultivation, recreation and pine plantations drive ornate box turltles from sandy floodplain habitat. In June, females dig nest holes in open sandy areas.

Racer (*Coluber constrictor*). UMR Potential Habitat: **Bluffs, Floodplain (floodplain prairies and floodplain forests).** Racers occur in a variety of open dry habitats, such as brushy areas along the edges of deciduous woodlands, grass prairies, bluff prairies, and old fields (Oldfield and Moriarty 1994). Because they primarily hunt by sight, they avoid areas of dense vegetation. Racers overwinter in mammal burrows, rock crevices, gravel banks, stone walls, and abandoned wells. Mating generally takes place during May and early June. Racers are opportunistic feeders consuming a large variety of food items.

Rat Snake (*Elaphe obsoleta*). UMR Potential Habitat: **Bluffs, Floodplain (floodplain prairies and floodplain forests).** The rat snake is a woodland species of rocky, timbered upland, wooded valleys, and forests on the backside of south facing bluffs (Oldfield and Moriarty 1994). In Wisconsin, rat snakes are found in moist, wooded east and north slopes near bluffs along rivers (Vogt 1981). Records indicate suitable rat snake habitat in Minnesota occurs in the extreme southeastern counties, where forested hills are dissected by rivers and streams. Rat snakes overwinter in deep, rocky crevices below the frost line. Emergence from winter dormancy occurs in late April and May. Prey consists of small mammals, birds, bird eggs, and nestlings.

Slender glass lizard (*Ophisaurus attenuatus*). UMR Potential Habitat: **Floodplain (floodplain prairies).** Slender glass lizards are found in prairies, open woods, and on rocky hillsides. In Wisconsin they are found on bluff prairies. They prefer areas with loose soil or sand for burrowing such as oak savannas and sand prairies (Oldfield and Moriarty 1994). Declines have been attributed to habitat changes through natural succession to forest or by destruction from plowing for agricultural crops. This species is sensitive to insecticides.

Smooth green snake (*Opheodrys vernalis*). UMR Potential Habitat: **Floodplain (floodplain prairies and forests)**. The smooth green snake is found in prairies and meadows, along the edges of mixed hardwood and pine forests, near the edges of marshes and bogs, and on dry hillsides. They overwinter below the frost line (Oldfield and Moriarty 1994). Lang (1969) discovered large numbers of Smooth Green snakes using abandoned ant mounds as communal overwinter sites with other species including Red belly, Common Garter, and Plains Garter Snakes.

Common Musk (Stinkpot) Turtle (*Sternotherus odoratus*). UMR Potential Habitat: **Floodplain (side channel and shallow water marshes).** They are found in rivers, sloughs, lakes, and ponds with soft bottoms (Oldfield and Moriarty 1994).

Timber Rattlesnake (*Crotalus horridus*). UMR Potential Habitat: **Bluffs, Floodplain (floodplain forests)**. Timber rattlesnakes can be found in the steeply dissected hills and valleys of the Mississippi River drainage (Oldfield and Moriarty 1994). Forested hillsides, with south or southwestern facing rock outcrops and bluff prairies are critical habitat components. Overwinter dens are located in dolomite, limestone, or sandstone bluffs and outcrops. Nearby forests, forest edges, and occasionally croplands serve as summer feeding grounds. They emerge from overwintering in late April and May. Their main prey is small mammals.

Western Hognose Snake (*Heterodon nasicus*). UMR Potential Habitat: **(Floodplain prairies)** The Western hognose snake prefers open, sandy, or gravelly areas with well-drained, loose loam or sand for the snake's burrowing activities (Platt 1969). River floodplains and sand dunes are used in isolated locations in the southeastern corner of Minnesota. Smith (1961) indicated overwintering below the frost line in mammal burrows, but specific information concerning Minnesota wintering sites is unavailable. The activity period is from early May to late September. Food consists of toads, frogs, salamanders, lizards, small snakes, mice, shrews, and a variety of eggs.

Wood Turtle (*Clemmys insculpta*). UMR Potential Habitat: **Floodplain (Shallow-water marshes, floodplain prairies and floodplain forests)**. Oldfield and Moriarty (1994) describe optimum wood turtle habitat in Minnesota as rivers with a fairly narrow floodplain and distinct rises to uplands, with much of the floodplains and most of the uplands wooded. Ewert (1985) speculates appropriate habitat extends no farther than 366 meter (400 yards) inland from the river. Individual wood turtles overwinter in the water beneath the ice in bank undercuts and near log jams. The majority of their feeding activity occurs in upland habitat (Ewert 1985). They eat a little of everything: insects, clams, carrion, berries, dandelions and other succulent herbs. They mate in spring and fall, in or out of water. Females dig nests in June on communal gravel sites along banks or railroad beds.

III.F. GENERAL HABITAT USE AND DISTRIBUTION OF STATE-LISTED PLANTS

The species of State-listed plants that use or could use the floodplain or sand terraces of the navigable portions of the UMR, St. Croix River, and Minnesota River are listed in table G-7. A synopsis of habitat requirements and distribution for each plant species are provided below.

Beach Heather or Povertygrass (*Hudsonia tomentosa*) UMR Potential Habitat: Povertygrass is found on beaches, sand dunes, and sandy prairies.

Beaked (Black) snakeroot (*Sanicula trifoliata*) UMR Potential Habitat: North-facing slopes in deciduous forests. The only recent record is from O.L Kipp State Park (Winona County) where the species is reported to be locally abundant (Coffin and Pfannmuller 1988). Additional populations likely occur in the southeastern counties, but a recent decline is implied by the general loss of woodland habitat. The species is at the periphery of its range, and is not considered threatened over its entire range.

Bladder Pod (*Lesquerella ludoviciana*) UMR Potential Habitat: **Bluffs, Dry Prairie**. Known Minnesota locations are from dry prairie habitat on a series of south-facing bluffs (goat prairies). It prefers exposed, sandy soil derived from weathered limestone (Coffin and Pfannmuller 1988). The only known population is restricted to a single site, 500 km from the species main range.

Carolina anemone (*Anemone caroliniana*) UMR Potential Habitat: **Dry prairie**. This species can be found in dry prairies, sand prairies, gravel hillsides, and bluff prairies.

Cattail sedge (*Carex typhina*) UMR Potential Habitat: **Floodplain**. It is found in moist or wet woods and marshes.

Catchfly grass (*Leersia lenticularis*) UMR Potential Habitat: **Floodplain**. It appears to prefer wet soil in bottomland forests dominated by American elm (*Ulmus americana*), silver maple (*Acer saccharinum*), and swamp white oak (*Quercus bicolor*). Coffin and Pfannmuller (1988) theorized this species had successfully adapted to the habitat provided by the lock and dam system, but attribute dredging and wetland filling as continuing threats to the species.

Clasping Milkweed (*Asclepias amplexicaulis*) UMR Potential Habitat: It occurs most frequently in sand dune and sand barren habitats associated with major river valleys (Root, Whitewater, and UMR) in the driftless area. Minnesota is the northwestern limit of this species range, but it is locally common over much of the Eastern U.S. It also occurs in thin soil over sandstone outcrops.

Cliff goldenrod (*Solidago sciaphila*) UMR Potential Habitat: **Bluffs**. It generally occurs in crevices of sandstone or dolomite cliffs and outcrops. It also occurs in sandy or rocky soil, particularly on exposed, south-facing bluffs.

Table G-7. State protected plants of the navigable portions of the Upper Mississippi, St. Croix and Minnesota Rivers within the St. Paul District.

Species	Status Minnesota	Wisconsin	Iowa	Occurrence by County
Beach heather (povertygrass)	special concern	none	endangered	Wabasha, MN
Beaked (black) snakeroot	special concern	none	none	Winona, MN
Bladder pod	endangered	threatened	special concern	Goodhue, MN; Pierce, WI
Carolina anemone	none	endangered	none	La Crosse, Pepin, Pierce,& St. Croix , WI
Cattail sedge	special concern	none	none	Houston, Wabasha and Winona, MN
Catchfly grass	special concern	none	none	Houston, Wabasha & Winona, MN
Clasping milkweed	special concern	none	none	Houston, Wabasha, and Winona, MN
Cliff goldenrod	special concern	none	none	Houston, Wabasha & Winona, MN
Clustered broom-rape	special concern	threatened	endangered	Buffalo, WI
Davis' sedge	threatened	none	none	Houston & Wabasha, MN
Ebony spleenwort	special concern	none	none	Houston & Winona, MN
False mermaid	threatened	none	endangered	Winona, MN
Goat's-rue	special concern	none	none	Houston, Wabasha, & Winona, MN
Hairy meadow parsnip	none	endangered	none	Crawford, WI
Handsome sedge	endangered	none	none	Ramsey, MN
James' polanisia	endangered	none	none	Ramsey, MN
Kitten-tails	threatened	threatened	threatened	Pierce & St. Croix WI Dakota, Goodhue, & Washington, MN
Lance-leaved violet	threatened	none	special concern	Ramsey & Winona, MN
Marginal shield-fern	threatened	none	threatened	Houston, MN
Montia	endangered	none	none	Winona, MN
Narrow-leaved spleenwort	threatened	none	endangered	Winona, MN
Ovate-leaved skullcap	threatened	none	none	Goodhue, Houston, Wabasha & Winona, MN
Pale purple coneflower	none	threatened	none	Grant, WI
Plains wild indigo	special concern	none	none	Houston, Wabasha & Winona, MN
Plaintain leaved sedge	endangered	none	none	Winona, MN
Prairie indian plantain	none	endangered	none	Grant, WI
Prairie plum	none	endangered	none	Pierce & St. Croix, WI

Table G-7. State protected plants of the navigable portions of the Upper Mississippi, St. Croix and Minnesota Rivers within the St. Paul District.

	Status			
Species	Minnesota	Wisconsin	Iowa	Occurrence by County
Prairie thistle	none	threatened	none	Buffalo, Crawford, Grant, La Crosse, & Pierce, WI
Purple cliff-brake	special concern	none	endangered	Houston, MN
Purple milkweed	none	endangered	none	Crawford &Grant, WI
Purple rocket	endangered	none	none	Goodhue, MN
Purple sand-grass	special concern	none	none	Houston & Wabasha, MN
Raven's foot sedge	special concern	none	none	Goodhe & Wabasha, MN
Rhombic-petaled evening primrose	special concern	none	none	Wabasha, MN
Rock clubmoss	threatened	none	none	Houston & Winona, MN
Rough-seeded flameflower	endangered	none	endangered	Wabasha & Winona, MN
Sea-beach needlegrass	special concern	none	none	Wabasha, MN
Silver leaf grape	special concern	none	none	Winona, MN
Snowy campion	threatened	none	none	Winona, MN
Spreading sedge	threatened	none	none	Houston & Winona, MN
Squirrel corn	special concern	none	none	Houston & Winona, MN
Sweet-smelling indian-plantain	endangered	none	threatened	Houston & Wabasha, MN
Tubercled orchid	endanged	threatened	endangered	Ramsey, MN Buffalo & LaCrosse, WI
Upland boneset	threatened	none	none	Houston and Winona, MN
White lady's slipper	none	threatened	special concern	Buffalo, & Grant, WI
White wild indigo	special concern	none	none	Wabasha, MN
Wild petunia	none	endangered	none	Crawford, WI
Witch-hazel	special concern	none	none	Houston & Winona, MN
Yellow-fruited sedge	special concern	none	none	Wabasha, MN
Yellow gentian	none	threatened	none	Crawford & Grant, WI
Yellow giant hyssop	none	threatened	none	Crawford & Grant, WI

Clustered broom-rape (*Orobanche fasciculata*) UMR Potential Habitat: **Lake Dune, Dry Prairie, and Sand Prairie**. This species is found in the dry soils of gravel prairies and sand dunes. It is an obligate parasite on other vascular plant roots, primarily of *Artemisia* spp. It is widespread in the western U.S., but is considered rare east of the Missouri River.

Davis sedge (*Carex davisii*) UMR Potential Habitat: **Floodplain**. It occurs in wet, shaded habitat that is typically inundated each spring and remains wet or moist all year (Coffin and Pfannmuller 1988). It is a common sedge in the Midwest and east-central states, but becomes rare in the Mississippi River drainage north of Illinois.

Ebony spleenwort (*Asplenium platyneuron*) UMR Potential Habitat: The conditions this species is associated with includes woods, banks, and rocks in circumneutral soil.

False mermaid (*Floerkea proserpinacoides*) UMR Potential Habitat: Throughout most of its range, false mermaid occurs in moist, deciduous forests. In Minnesota it appears to be more selective, preferring wet springs such as hillside seeps. It has a discontinuous range the eastern and western U.S., separated by the great plains, and in Minnesota is at the very edge of the eastern range. It is an inconspicuous spring ephemeral with a short growing season so it is probably not as rare as the collection records indicate.

Goat's-rue (*Tephrosia virginiana*) UMR Potential Habitat: It seems to prefer (perhaps require) open, sandy or gravelly soil and direct sunlight. It does well in shifting sand dunes, but it is more abundant in partially stabilized sand. It is common in eastern portion of the continent, but found in Minnesota rarely as a result of occurring on the edge of its natural range.

Hairy meadow parsnip (*Thaspium barbinode*) UMR Potential Habitat: Found in relatively open dry-mesic woods and woodland edges. Associated with mixed oak forests, occurring in the southern dry-mesic forest. Known from only 2 sites in Crawford County, WI. Wisconsin is the northern limit of its range.

Handsome sedge (*Carex formosa*) UMR Potential Habitat: **Floodplain**. It is found in low moist woods and possibly prefers river valleys. It has not been found in the region since 1937 when it was recorded in the Twin Cities Metropolitan area.

James' polanisia *(Cristatella jamesii)* UMR Potential Habitat: The only known Minnesota record occurs in a sand dune complex, but may also be found in sand prairies and savannas. This species occurs frequently in the Great Plains, but only rarely in the UMR drainage where it is restricted to fluvial sand deposits.

Kitten-tails (*Besseya bullii*) UMR Potential Habitat: **Bluffs, Prairies**. The Minnesota populations are largely restricted to the bluffs and terraces of the St. Croix, UMR, and Minnesota river valleys, specifically where the three rivers converge near the Twin Cities area. The plants prefer gravelly soil in dry prairies, savannas, and open woods (Coffin and Pfannmuller 1988). In

Wisconsin they occur in prairies, barrens, and open woods. This species is considered rare throughout its range and its distribution is limited to an uncommon and frequently exploited habitat type.

Lance-leaved violet (*Viola lanceolata*) UMR Potential Habitat: This species occurs on wet, sandy shores, peaty meadows, and wetland margins. It occurs throughout the eastern U.S. and is present here at its western range limit.

Marginal shield-fern (*Dryopteris marginalis*) UMR Potential Habitat: **Woods and talus slopes**. The only Minnesota record of *D. marginalis* is from an east-facing sandstone bluff with a limestone cap, suggesting it occurs in a dry, open habitat (Coffin and Pfannmuller 1988). Its habitats are not threatened or exploited and it is rare in this area because it reaches the geographical limits of its range.

Montia (*Montia chamissoi*) UMR Potential Habitat: **Floodplain**. The single Minnesota population occurs on the west-facing exposure of a sandstone outcrop. The outcrop forms the east bank of small, intermittent streams in deciduous forests. The face of the sandstone is nearly vertical but retains a thin layer of mud in which *M. chamissoi* is shallowly rooted. This is a cool, moist, shaded habitat where there is little competition from other species (Coffin and Pfannmuller 1988). This species is to thought to be a relict of the Pleistocene flora that survived the most recent glacial advances in the driftless area. The population is stable and shows no sign of decline.

Narrow-leaved spleenwort (*Athyrium pycnocarpon*) UMR Potential Habitat: This species occurs on north and northeast facing wooded bluffs, often with such notable ferns as silvery spleenwort (*Athyrium thelypteriodies*) and Goldie's fern *(Dryopteriss goldiana*). It occurs in the UMR valley as the northwest limit of its continental range.

Ovate-leaved skullcap (*Scutellaria ovata*) UMR Potential Habitat: **Floodplain**. Most of the Minnesota records are from moist, bottomland forests in deep river valleys, but there is at least one record form a mesic site on a northeast-facing slope. This species is at the northern terminus of its range and seems to be limited to the UMR valley and select tributaries. There have been limited recent collections of this species, suggesting a relatively recent decline.

Pale purple coneflower (*Echinacea pallida*) UMR Potential Habitat: **Dry-Mesic Prairie, Mesic prairie, and dry prairie**. This species is often found in dry or dry-mesic prairies, roadsides, and railroad rights of ways.

Plains wild indigo (*Baptisia bracteata*) UMR Potential Habitat: **Goat prairies and sand dunes.** It is widespread in the Midwest, but reaches this area only along the northwest periphery of its range. Its decline in this area has been attributed to the rapid loss of prairie habitat, but is common and secure in the center of its range.

Plantain leaved sedge (*Carex plantaginea*) UMR Potential Habitat: Plantain leaved sedge seems to prefer moist, shaded woodlands dominated by sugar maple (*Acer saccharum*), basswood (*Tilia americana*), and American elm. Within these forests, it favors steep ravines or other cool, protected microhabitats. Its range is centered in the eastern Great Lakes region and reaches this area at the extreme western periphery of its range. It is common in the center of its range, but becomes sporadic south and west of that area.

Prairie (or tuberous) Indian plantain (*Cacalia tuberosa*) UMR Potential Habitat: **West-Mesic Prairie, Dry Prairie**. This species is found in wet or dry prairies. The historical records indicate this species was formerly common in the area but has suffered recent declines resulting from the conversion of prairies to agriculture.

Prairie plum (*Astragalus crassicarpus*) UMR Potential Habitat: **Bluffs, Oak savanna.** This species is found on bluffs and dry prairies. It is present in the UMR valley at the northern limit of its range.

Prairie thistle (*Cirsium hillii*) UMR Potential Habitat: **Dry-Mesic prairie**. This species is found in dry-prairies. Declines in this species is widespread throughout it range and is attributed to the conversion of prairies to agriculture.

Purple cliff-brake (*Pellaea atropurpurea*) UMR Potential Habitat: **Bluffs**. In Minnesota it occurs on dry, exposed ledges of sandstone or dolomite. It may also be found in talus or in thin, rocky soil among outcrops. These habitats are largely limited to steep, south and west facing bluffs bordering the Mississippi River.

Purple milkweed (*Asclepias purpurascens*) UMR Potential Habitat: **Oak savanna**. It is associated with open oak wood edges and roadsides over a range of soil moisture conditions. It is present in the UMR valley at the western limit of its range.

Purple rocket (*Iodanthus pinnatifidus*) UMR Potential Habitat: **Floodplain**. The Minnesota records of purple rocket are from alluvial forests (bottomlands) on the UMR and Root River valleys. These are seasonally flooded habitats typically dominated by silver maple, American elm and other deciduous trees. This is a southern plant that ranges northward in the UMR drainage to southern Minnesota. Its habitat has been impacted by the construction of the lock and dams, and continual dredging of the river.

Purple sand-grass (*Triplasis purpurea*) UMR Potential Habitat: It occurs on sandy beaches, riverbanks, and sand dunes. There is also a record from a five-year old dredge spoil island in the Mississippi River near Reno (Houston county). It is mainly a grass of the Atlantic and Gulf coasts, but its range is scattered in the Great Plains and Great Lakes region.

Raven's foot sedge (*Carex crus-corvi*) UMR Potential Habitat: **Floodplain**. Both Minnesota records are from forested wetlands in the floodplain of the UMR. It has been found to be

associated with American elm, black walnut (*Juglans nigra*), and silver maple. The plants probably occur in habitats flooded each spring and stay wet or moist all summer. This appears to be the typical habitat of this species throughout its range. This species may now be extirpated from Minnesota, but it may still survive along some of the major tributaries of the UMR, such as the Cannon, Root, or Whitewater rivers. It is a wide-ranging southern species of swamps and floodplains, but is rare and declining in the northern part of its range.

Rhombic-petaled evening primrose (*Oenothera rhombipetala*) UMR Potential Habitat: This species occurs in open, sandy habitats such as active blow-outs in sand dunes and, occasionally, in sandy, old fields where the topsoil has been lost to erosion. This is typically a xeric, sparsely vegetated habitat kept open by wind action. It is common in parts of the southern Great Plains, but its distribution is scattered in this northern extralimital range.

Rock clubmoss (*Lycopodium selago*) UMR Potential Habitat: **Bluffs**. In Minnesota specimens are found on limestone bluffs and ledges. The sites are typically north facing, wooded habitats that are moist and well shaded. This species is locally common in the mountainous regions of the east-central states. The northern range is centered in the driftless area along the UMR valley. The range and status of this species is uncertain due to taxonomic uncertainties.

Rough-seeded fameflower (*Tallinum rugospermum*) UMR Potential Habitat: All currently know populations occur on fluvial sand dunes associated with the UMR and major tributaries. These are xeric habitats where the vegetation is sparse and the substrate is continually shifting (Coffin and Pfannmuller 1988). The dunes sometimes support savannas dominated by black oak (*Quercus velunita*) or jack pine (*Pinus banksiana*). A secondary habitat is rock outcrops and dry rock ledges. This is believed to be the habitat type which historical populations in Goodhue and Chisago counties occurred (Coffin and Pfannmuller 1988). Its range is limited and strictly Midwestern, and within its range is rare and local.

Sea-beach needlegrass (*Aristida tuberculosa*) UMR Potential Habitat: It typically occurs on unstabilized dunes, but it also occurs in sandy prairies and savannas. It occurs frequently along the Gulf Coast, but has a secondary range in the Midwest where it is limited to the UMR and a few tributaries.

Silverleaf grape (*Vitis aestivalis*) UMR Potential Habitat: It is found in moist or dry soils, open forests, roadsides, and thickets. The UMR appears to be the western range limit of this species.

Snowy campion (*Silene nivea*) UMR Potential Habitat: **Floodplain**. This is a species of river valleys, where it occurs in alluvial forests and meadows. It has a scattered and discontinuous distribution limited to a few states in the Midwest. It is uncommon throughout most of its range and has been reported to be declining due to habitat loss and degradation.

Spreading sedge (*Carex laxiculmis*) UMR Potential Habitat: **Floodplain**. It is a spreading sedge and prefers north-and east facing slopes in mesic deciduous forests dominated by sugar maple

and basswood. It is a characteristic species of the deciduous forests in eastern North America, but is uncommon in the Midwest. In the upper UMR valley, it is rare because it is at its northwestern range limit.

Squirrel-corn (*Dicentra canadensis*) UMR Potential Habitat: It occurs in moist, deciduous forests, usually preferring north-facing slopes. It often grows in thin humus accumulated on sandstone talus or finely weathered sandstone soil. This is a forest species reaching its northwestern limit in the UMR valley. In this area, it has been found only in the driftless portion of the UMR valley.

Sweet-smelling Indian-plantain (*Cacalia suaveolens)* UMR Potential Habitat: **Wet meadows.** In Minnesota, it is found in wet meadows along streams and the perimeter of marshes (Coffin and Pfannmuller 1988). It reaches it northwestern limit in the UMR valley and was probably uncommon prior to settlement.

Tubercled orchid (*Platanthera flava* var. *herbiola*) **Wet-Mesic prairie.** This species prefers wet, acidic prairies and meadows. It also occurs in sand or peat habitats along lakeshores or in swales (Coffin and Pfannmuller 1988). It is widespread in northeastern U.S., but rare throughout its range. The UMR lies at the extreme northwestern periphery of its range where very little suitable habitat exists.

Upland boneset (*Eupatorium sessilifolium)* UMR Potential Habitat: It occurs in well drained, upland open woods and rarely in prairie remnants (Coffin and Pfannmuller 1988). The UMR valley is at the periphery of its range, and little is known about this species even at the center of its range.

White lady's-slipper (*Cypripedium candidum*) UMR Potential Habitat: **Fen, Wet-Mesic prairie.** This species is found mainly in fens and calcareous wet prairies, yet large populations do occur on goat prairies of the driftless region.

Wild indigo (*Baptisia bracteata*) UMR Potential Habitat: **Goat prairies and sand dunes.** This species is widespread in the Midwest and reaches the UMR along the northwestern periphery of its range (Coffin and Pfannmuller 1988).

Wild petunia (*Ruellia humilis*) UMR Potential Habitat: **Dry-Mesic prairie, oak opening.** Wild petunia is found in prairies and upland woods. This is a common species in the center of its range, but is considered threatened along the northern periphery.

Witch hazel (*Hammelis virginianna*) UMR Potential Habitat: The Minnesota populations occur in sheltered ravines in hardwood forests and on rocky, shaded stream banks. This species is widely distributed and common in many parts of its range, but is rare along the UMR, its extreme western range.

Yellow-fruited sedge (*Carex annectens*) UMR Potential Habitat: The population in Wabasha County occurs in sparsely vegetated sand dunes. It is widespread in North America, common in parts of the Midwest, and rare in the northwestern periphery of its range along the UMR.

Yellow gentian (*Gentiana alba*) UMR Potential Habitat: **Oak savanna, Mesic Prairie**. It is found on clay soils in wooded ravines, thin soils on dry, open woodlands and edges, ridges and bluffs, wet sandy prairies, railroad rights-of-way, and roadside ditches. It is associated with dry-mesic to mesic prairie and oak openings.

Yellow giant hyssop (*Agastache nepetoides*) UMR Potential Habitat: **Southern Wet-Mesic Forest**. It is found in open woods and woodland edges, and is associated with wet-mesic, mesic, and dry mesic forests and oak openings.

IV. BIOLOGICAL ASSESSMENT OF CHANNEL MAINTENANCE ACTIVITIES

Assessing the effects of implementation of the CMMP on State threatened and endangered species requires knowledge of the general mechanisms by which a project feature could affect a species. The ensuing discussion treats the general impact mechanism and assesses the effects on threatened and endangered species of the specific channel maintenance activities proposed in the CMMP. At this time, we are not aware that any State-listed species occurs at the disposal sites or within the dredge cuts proposed for use/maintenance under the CMMP. It is likely that some State-listed species do occur at some of the CMMP sites. Not enough information is available to determine the direct effects of the CMMP on State-listed threatened and endangered species; we simply do not know if any State-listed species are present at the impacted areas. However, a habitat-based assessment of the acres of different habitat types affected under the CMMP and the specific habitat requirements of State-listed species can be completed. The St. Paul District will continue to coordinate our activities with appropriate State resource agencies. We will utilize information about State listed species from these agencies in making decisions on future channel maintenance activities.

IV.A. IMPACTS TO STATE-LISTED FISH

IV.A.1. Use of Selected Disposal Sites

Placement of dredged materials on upland disposal sites would have little or no effect on fish, including threatened and endangered species. However, hydraulic placement of materials on upland disposal sites normally requires a ponding or settling basin from which an effluent is discharged. In areas with sediment contamination problems (i.e., the Twin Cities metropolitan area), effluent discharge from disposal sites could affect fish downstream of the effluent through reduced water quality.

In-water placement of dredged material (i.e. in-water rehandling, permanent placement) could affect fish population through direct burial of potential spawning substrate. Since spawning

areas for some species may be a limiting factor (i.e. paddlefish, blue sucker), any loss could directly affect overall recruitment for the population. Permanent in-water disposal of dredged material is proposed at site 2-837.5-RMP (St. Paul Barge Terminal), site 4-754.0-LWP (Alma Marina), site 5A-733.5-LWP (Fountain City Service Base) and site 9-670.5-LWP (Blackhawk Park). Also, site 10-643.5-LWI (Jackson Rehandle) is proposed as a temporary in-water rehandling site, where materials would be temporarily placed until transferred to a permanent site. In total, approximately 39 acres of open water (main channel border, side channel) habitat would be affected by dredged material placement under the CMMP. Additionally, approximately 40 acres of type 3-4-5 wetlands (shallow and deep marsh) and approximately 134 acres of type 1-2 wetlands (floodplain forest) would be used for dredged material placement under the CMMP. In total, approximately 213 acres of habitat potentially available to State-listed fish species would be disturbed. Compared to the total acres available for State listed fish sepcies, the incremental effects of dredged material placement of the CMMP on State-listed fish species would likely be minor.

IV.A.2. Dredging

Dredging usually has little effect on fish since it primarily affects the main channel of the river, a habitat not heavily used by most fish species because of high current velocities. A potential threat dredging poses is the removal or loss of spawning habitat. However, since channel maintenance dredging is normally required and conducted in areas of shifting/shoaling bedload, spawning substrate is unlikely to be affected. Dredging does remove or prevent the establishment of sand waves or dunes, which are habitat used by a variety of main channel fish species.

Fish can also be affected by turbidity, intake of resuspended pollutants, and reduced oxygen levels caused by dredging. Suspended solids and sedimentation due to dredging can cause clogging and abrasion of respiratory systems in fish. However, the disturbance created by mobilization of equipment would likely drive most fish species from the immediate vicinity of the dredging project. Increases in suspended solids tend to occur relatively near the dredging location and rapidly diminish downstream of the project. The avoidance of the project location in addition to the rapid reduction in water quality impacts downstream of the dredging operation greatly limit the potential impacts on State-listed fish species. Approximately 2,988 acres of main channel habitat would be affected under the CMMP. While this represents a fairly substantial percentage of the total main channel habitat present in the UMR, the use of this habitat type by a majority of State-listed fish species is likely very limited. Lotic state-listed species like the blue sucker, crystal darter, river redhorse, western sand darter, paddlefish, and lake sturgeon were undoubtedly affected by the creation of the series of impoundments with the 9-foot channel project. Fish movement was restricted, more lentic conditions were created, and substrate was altered. Dredging with the disruption of main channel habitat will add a small increment of impact to the State-listed lotic fish species and should have no effects on State-listed lentic species.

IV.A.3. Non-Structural Techniques

Adjusting channel dimensions, monitoring channel conditions, information sharing with users, and accurate marking of the channel are all non-structural channel maintenance techniques used to reduce dredging quantities. Another technique currently being used is sediment trap dredging. Of the non-structural techniques proposed in the CMMP, both sediment trap dredging and adjusting channel dimensions have the potential to affect State-listed threatened or endangered species. The impacts of dredging and dredged material disposal on fish are discussed in preceding sections of this document. Currently, one sediment trap, located at the mouth of the Chippewa River, is maintained in the District. Adjusting channel dimensions could affect fish species in two ways. By expanding the dredge cuts, more aquatic habitat could potentially be disturbed. Reducing the dredge cut dimension could benefit fish populations by lessening dredging in the area. However, both techniques would likely result in no more than minor impacts on State-listed fish species.

IV.A.4. Channel Control Structure Construction and Rehabilitation

The channel control structures program has the potential to affect State-listed fish species through disturbance of habitat during construction/rehabilitation of project features. Reduced dredging due to the construction of channel structures could affect both the fish and wildlife resources of the UMR. Wing dams and other in-water structures could provide improved habitat for fish by providing areas of reduced flow, a more diverse substrate, and additional cover. In addition, they could provide more suitable substrate for a wide variety of benthic organisms. However, during construction, the disturbance associated with placement of rock, sand or other construction materials would temporarily displace aquatic species from project locations. Reducing the requirements for dredged material placement sites could have positive impacts for wildlife, in that conversion of both upland and wetland habitats to dredged sand uplands through dredged material placement would be reduced.

In some circumstances the removal of channel control structures may be deemed desirable for improving fish and wildlife habitats. Removal of closing dams or wingdams could increase discharges to backwaters or side channels improving both chemical (primarily dissolved oxygen) and physical conditions in these areas. Placement of stone protection on shoreline areas or wing dams covers benthic habitats and organisms and thus could affect threatened and endangered fish species.

The planning process outlined in the CMMP for evaluating channel structures includes extensive review opportunities for State natural resource management agencies. As site specific plans are developed, review by State natural resource agencies should identify the potential for impacts on State-listed fish species. If and when, potential impacts are identified, appropriate measures to avoid, minimize or mitigate the impacts can be included in the planning process.

IV.A.5. Snag Removal

Snags provide important cover for fish and provide excellent habitat for invertebrate species. Removal of trees or other obstructions from the navigation channel could affect fish species by decreasing the amount of cover.

The majority of snagging occurs on the Minnesota River. Snag removal on the St. Croix River is completed only upon request of the National Park Service. Very limited snagging occurs on the UMR. At this time, there is no evidence to indicate snagging would affect State-listed threatened, endangered or special concern fish species. Additionally, the level of impact would likely be minor.

IV.A.6. Harbor Maintenance

Generally, dredging of harbors has the potential to affect State-listed fish species in the same ways as discussed in Section IV.A.2. Dredging. Recent tracking studies indicate that paddlefish can use boat harbors rather extensively, because of the deep water habitat they provide (Steingraeber and Runstrom 1997). However, because of the disturbed nature of the harbor substrate and the total area dredged to maintain existing harbors is much smaller than that maintained through main channel dredging, the impacts of harbor maintenance on State-listed fish species would be negligible.

IV.A.7 Recreational Beach Development/Maintenance

Placement of dredged materials on upland recreational beaches for the purposes of maintaining or upgrading these areas would likely have little to no impact on fish species. In-water placement of dredged material (i.e. in-water rehandling, permanent placement) could affect fish populations through direct burial of potential spawning substrate. Since spawning areas for some species may be a limiting factor (i.e. paddlefish, blue sucker), any loss could directly affect overall recruitment for the population.

Approximately 57 sites have been identified and endorsed for recreational beach development (Table 5-10). The actual area proposed for placement of materials for 26 of the sites remains to be determined by the On-Site Inspection Team. Site sizes have been identified for 26 sites. Five sites would be maintained in their existing condition without placement of dredged materials. For the sites with defined sizes the area impacted is normally less than 5 acres and usually only 1 or 2 acres. Nearly all sites identified for use are existing recreational beaches or previously used dredged material placement sites along the main channel. In total, 50 acres of dredged sand habitat with minor amounts of aquatic habitat would be affected at the sites with defined sizes. Assuming, the 26 sites with undefined areas would have approximately the same average sizes as those with currently defined areas it can reasonably be estimated that in total the recreational beach development program for the current stage of planning would affect 100 acres of mainly dredged sand habitat with very minor amounts of main channel border habitat.

Reshaping of recreational beaches could potentially impact fish if materials are pushed into the water to expand a site or reduce the slope of a beach.

The recreational beach development program would generally be focused on improving beaches which are currently used (some intensively) by recreationalists. Most of these areas are highly disturbed by human activities which tend to preclude or diminish use by fish and wildlife. Additionally, the habitat conditions (dredged sand) are not usually associated with diverse fish and wildlife assemblages. However, if not maintained as beach areas most of the sites would revegetate and eventually develop habitat characteristics similar to natural islands in the floodplain of the UMR. The maintenance of recreational beaches would have minor adverse impacts on fish and wildlife, however, the objective of the recreational beach program is to place materials at locations where the recreating public would benefit without significant impacts on other resources. By selecting sites which are already disturbed by human activities and past dredged material disposal, the impacts of recreational beach development on fish and wildlife would be minimized.

Placement of dredged materials on upland recreational beaches would have no impact on State-listed fish species. The planning process outlined in the CMMP for evaluating recreational beaches includes extensive review opportunities for State natural resource management agencies. As site specific plans are developed, review by State natural resource agencies should identify the potential for impacts on State-listed species. If and when, potential impacts are identified, appropriate measures to avoid and minimize these impacts could be included in the planning process

IV.B. IMPACTS TO STATE-LISTED MUSSELS AND OTHER INVERTEBRATES

To assess the impacts upon mussels, the same approach is used as that in Appendix C (Federal Biological Assessment):

1) Dredging operations at the site since 1987 indicates endangered mussel colonization at the dredge cut is not likely.

2) Dredging frequency exceeding 20% (once every 5 years) precludes endangered mussel colonization in the dredge cut.

3) Substrates in the project vicinity are unsuitable (i.e., silt/muck with particle size distribution of greater than 10 percent passing a U.S. standard mesh of 200) for endangered mussel species.

4) Historic and recent surveys by Fuller (1980), Thiel (1981), the St. Paul District, and others indicate the presence of a low quality or impoverished mussel bed containing no threatened and endangered mussel species.

Based on these criteria, our assessment of impacts to state threatened and endangered mussels follows the assessment found in Section V.A., Appendix C. Following is a synopsis of the impacts to mussels from the proposed channel maintenance activities.

IV.B.1. Use of Selected Disposal Sites Including Recreational Beaches

Placement of dredged materials on upland disposal sites would obviously kill any mussels contained within the dredged material through desiccation. Additionally, hydraulic placement of materials on upland disposal sites normally requires a ponding or settling basin from which an effluent is discharged. The quality of this effluent would depend largely on the quality, in terms of contaminants, of the sediments placed at the site. In areas with sediment contamination problems (i.e., the Twin Cities metropolitan area), effluent discharge from disposal sites could affect mussel species downstream of the effluent through reduced water quality. Generally, however, use of upland disposal sites would have little or no effect on freshwater mussels, including threatened and endangered species.

Use of temporary "bathtub" sites could affect endangered mussels through direct coverage. However, the likelihood of endangered mussels colonizing "bathtub" areas is quite low. Generally, the shifting sand substrates in these areas are poor habitat for freshwater mussels. Additionally, these areas are frequently disturbed either through placement of dredged materials, or excavation of materials during transfer operations.

In-water placement of dredged material (thalweg disposal) could affect endangered mussel species through direct burial. Mussels buried by in-water placement of dredged material would likely perish as a result of asphyxiation and/or starvation. Permanent in-water disposal of dredged material is proposed at site 2-837.5-RMP (St. Paul Barge Terminal), site 4-754.0-LWP (Alma Marina), site 5A-733.5-LWP (Fountain City Service Base) and site 9-670.5-LWP (Blackhawk Park). Also, site 10-643.5-LWI (Jackson Rehandle) is proposed as a temporary in-water rehandling site, where materials would be temporarily placed until transferred to a permanent site. Ten sites proposed for development/enhancement as recreational beaches could affect threatened and endangered mussel species (Table 4; Appendix C). These sites have not been surveyed and meet none of the "no effect" criteria:

Pool 9 - 678.2-RM, 677.8-LW, 676.7-LW, 676.0-RM and 665.3-RI
Pool 10 - 644.2-LW, 637.2-RI, 637.2-LW, 627.9-RI and 623.0-LW

In total, approximately 39 acres of open water (main channel border, side channel) habitat would be affected by dredged material placement under the CMMP. The impacts of dredged material placement on State-listed mussel species would be minor.

IV.B.2. Dredging

Dredging primarily affects the main channel of the river. However, it can also affect side channels, sloughs and backwater lakes and ponds through increased turbidity levels and resuspension of pollutants. Channel maintenance dredging is normally required and conducted in areas of shifting/shoaling bedload. The unstable substrates typically found in frequently dredged areas are generally inhospitable to mussels. As a result, dredging usually has little effect on freshwater mussels. However, dredging can result in the direct physical removal of freshwater mussels from dredge cut locations, and subsequent deposition at a disposal site.

Freshwater mussels, in addition to being susceptible to local extermination, can be affected by turbidity, intake of resuspended pollutants, direct coverage by settling sediments produced during the dredging process, and reduced oxygen levels. Suspended solids and sedimentation due to dredging can cause clogging and abrasion of gills and other respiratory surfaces in mussels.

Following dredging, bottom substrates in dredge cuts are often unstable or shifting for some time, providing poor habitat for recolonization of these areas by mussels. Also, the habitat conditions that exist after dredging may not be suitable for use by fish host species, further delaying recolonization efforts.

Miller and Payne (1992) collected mussels from a location in the East Channel of the UMR at Prairie du Chien, Wisconsin, which had been previously dredged, indicating that recolonization of dredge cut areas does occur. However, an interval of 8 years had occurred between the dredging operation and Miller and Payne's study.

The dredge cuts listed in Table 5 (Appendix C) meet none of the "no effect" criteria, supported relatively "adequate" mussel assemblages during Fuller's surveys, are areas where suitable mussel substrate exists but recent mussel surveys have not been completed, or are infrequently maintained. Approximately 2,988 acres of main channel habitat would be impacted by dredging under the CMMP. There is not enough data available to us at this time to conclude these sites would meet the no effect criteria. It is possible maintenance of these cuts could affect endangered mussel species but the affects of dredging main channel habitats on State-listed mussel species populations would be minor.

IV.B.3. Non-structural Techniques

A discussion of the non-structural techniques proposed and the general types of impacts resulting from implementation have been previously discussed in Section IV.A.3. Adjusting channel dimensions could affect mussels in two ways. By expanding the dredge cuts, more mussel habitat could potentially be disturbed. Reducing the dredge cut dimension could benefit mussel populations by lessening dredging in the area. Dredging of sediment traps and increases in channel widths are both likely to affect State-listed mussel species. However, the habitat conditions present in sediment traps are typically poor for colonization by freshwater mussels, in

part because of the continued maintenance dredging, but also because of the shifting, rapidly shoaling substrates which make the location a "problem" from a channel maintenance standpoint. While continued maintenance of sediment traps and increasing channel dimensions is likely to affect State-listed mussel species, the impacts would likely be minor.

IV.B.4. Channel Control Structure Construction and Rehabilitation

Channel structure modifications are designed to concentrate flows in the main channel and, therefore, primarily affect flow patterns along with sedimentation patterns. Construction of channel control structures would involve covering benthic habitat and could therefore affect threatened and endangered mussel species. The general impacts of wing dam construction/rehabilitation, closing dam construction/rehabilitation and shoreline riprapping are described below.

Wing dams would increase scouring of main channel areas in the vicinity of wing dams, resulting in increased channel depths and/or widths. Sedimentation patterns would be changed, with sediment transported through rehabilitated river reaches to downstream areas of lower velocity. Closing dams would be constructed to reduce flows into side-channel areas. Primary impacts such as reduced volume of flow, reduced current velocities, reduced sediment input, and increased water residence time in backwaters would occur in these habitats and could affect endangered mussel species inhabiting side channel areas. The increased flows in the main channel resulting from side channel closure would have an impact on main channel and channel border habitats as well. Placement of stone protection on shoreline areas or wing dams covers benthic habitats and organisms and thus could affect threatened and endangered mussel species.

The planning process outlined in the CMMP for evaluating channel structures includes extensive review opportunities for State natural resource management agencies. As site specific plans are developed, review by State natural resource agencies should identify the potential for impacts on State-listed mussel species. If and when, potential impacts are identified, appropriate measures to avoid, minimize or mitigate the impacts can be included in the planning process.

IV.B.5. Snag Removal

Removal of trees or other obstructions from the navigation channel could affect threatened mussel species through disturbance of bottom substrates. However, the majority of snagging occurs on the Minnesota River which currently has an impoverished mussel assemblage. Snag removal on the St. Croix River is completed only upon request of the National Park Service. Very limited snagging occurs on the UMR. At this time, there is no evidence to indicate snagging would affect State-listed threatened, endangered or special concern mussel species. However, if State-listed mussel species were affected, the impacts would likely be very minor.

IV.B.6. Harbor Maintenance

Harbor maintenance generally involves dredging and disposal of sediments from within established harbor boundaries. The potential impacts of dredging and dredged material placement on State-listed mussel species are discussed in preceding sections. Harbor maintenance dredging would have negligible or minor impacts on State-listed mussel species.

IV.B.7 Recreational Beach Development/Maintenance

Placement of dredged materials on upland recreational beaches for the purposes of maintaining or upgrading these areas would have similar potential impacts as those described in Section IV.A.7. Reshaping of recreational beaches could potentially impact endangered mussels if materials are pushed into the water to expand a site or reduce the slope of a beach. The planning process outlined in the CMMP for evaluating recreational beaches includes extensive review opportunities for State natural resource management agencies. As site specific plans are developed, review by State natural resource agencies should identify the potential for impacts on State-listed mussel species. If and when, potential impacts are identified, appropriate measures to avoid, minimize or mitigate these impacts would be included in the planning process.

IV.C. IMPACTS TO STATE-LISTED MAMMALS

IV.C.1. Use of Selected Disposal Sites

Placement of dredged material results in invasive and long-term conversion of the existing habitat of a site to relatively barren, unproductive sand. The specific impacts on fish and wildlife are largely related to the conditions present before material placement. For those sites with existing natural vegetative communities, the conversion to sand barrens can have substantial impacts on fish and wildlife usage of the site. For sites previously disturbed by human activities, the impacts on fish and wildlife usage are negligible or minor.

Placement of dredged materials at the sites selected under the CMMP would adversely impact the following acreages of habitat:

39 acres of open water (main channel border, side channel) habitat
40 acres of type 3-4-5 (shallow and deep marsh) wetlands
134 acres of type 1-2 (floodplain forest, wet meadow) wetlands
5 acres of recreational beach/sand habitat
287 acres of old dredged material
6 acres of upland meadow/brush habitat
74 acres of agricultural field habitat
98 acres of disturbed terrestrial habitat
182 acres of abandoned quarry habitat

In total, approximately 865 acres would be used for dredged material placement, converting existing habitats to dredged sand habitats.

State-listed mammal species could potentially be found using any of these habitats, however, the most likely areas would include the type 3-4-5 wetlands, the type 1-2 wetlands and the upland meadow/brush habitat; areas not previously disturbed by human uses. In total, approximately 180 acres of these habitat types would be disturbed by dredged material placement. Based on the habitat characteristics of the threatened and endangered species, the effects on these mammals would be minor.

IV.C.2. Dredging

Dredging primarily occurs in the main channel of the UMR, St. Croix or Minnesota Rivers. State-listed threatened, endangered or special concern mammal species typically do not utilize this habitat, as a result, dredging would have no affect on these species.

IV.C.3. Non-structural Techniques

Non-structural channel maintenance techniques involve actions in main channel habitats; areas typically not used by mammal species. Non-structural channel maintenance techniques would have no effects on State-listed threatened, endangered or special concern mammal species.

IV.C.4. Channel Control Structure Construction and Rehabilitation

Placement of stone protection on shoreline areas to "tie-in" structures could affect State-listed mammal habitats. However, the areas affected would be extremely small in comparison to the total area available in the UMR floodplain. The previously discussed planning process, would be used to avoid, minimize or mitigate the impacts.

IV.C.5. Snag Removal

Snags are an important habitat feature providing cover and velocity shelters for fish, sunning sites for turtles, feeding and resting platforms for furbearers and waterfowl and general habitat diversity. Placing snags on the riverbank could provide beneficial effects by providing additional habitat for wildlife. The following summarizes the general effects of the three placement methods considered for use.

Placement Method	Aquatic Habitat	Terrestrial Habitat
Leave in water	minor beneficial	no effect
Place on bank	minor adverse	minor beneficial
On-land placement	minor adverse	no effect

Overall, the removal of snags from the river and placement at any of the three identified options would have a very minor impact on mammal habitats in the floodplain of the UMR. The impacts on State-listed mammal species would be negligible.

IV.C.6. Harbor Maintenance

Harbor maintenance dredging occurs in open water areas with substantial amounts of disturbance (recreational navigation); areas not typically used by mammal species. Harbor maintenance dredging would have no effects on State-listed threatened, endangered or special concern mammal species.

IV.C.7 Recreational Beach Development/Maintenance

Placement of dredged materials on upland recreational beaches for the purposes of maintaining or upgrading these areas would have similar potential impacts as those described in Section IV.A.7.
Placement of dredged materials on upland recreational beaches would have no impacts on State-listed mammal species. The planning process would be used to avoid, minimize or mitigate these impacts.

IV.D. IMPACTS TO STATE-LISTED BIRDS

IV.D.1. Use of Selected Disposal Sites

A primary impact to state-listed bird species is the direct destruction of the existing habitat and from fragmentation resulting from dredged material placement under the CMMP. A number of birds have been shown to be associated with conditions existing in the interior of relatively large patches of mature vegetation. Fragmentation affects bird species in several ways; it changes types and quality of the food base, it changes availability of cover, and it bring species together which normally have little contact, and thus may increase the rates of nest parasitism, competition, and predation.

Although fragmentation generally has negative effects on forest-interior species, forest structure and species can be more important than patch size and isolation for many species. Other key factors include the presence of essential resources, such as food, water, and nest-building materials; diversity of environments; and occurrence of competitors, predators, and diseases.

The area impacted by dredged material disposal has been discussed in Section IV.C.1. While some fragmentation of floodplain forest would likely result from dredged material placement, the overall impact on State-listed species would be minor. Following, are the bird species most likely to be present in the impacted habitat types:

Open water/shallow marsh: Caspian tern, common moorhen, Forster's tern, great egret, and king rail.

Bottomland Forest: Acadian flycatcher, Bell's vireo, Cerulean warbler, Kentucky warbler, osprey, and red-shouldered hawk.

IV.D.2. Dredging

Dredging primarily occurs in the main channel of the UMR, St. Croix or Minnesota Rivers. State-listed threatened, endangered or special concern bird species typically do not utilize this habitat, as a result, dredging would have no affect on these species.

IV.D.3. Non-structural Techniques

Non-structural channel maintenance techniques involve actions in main channel habitats; areas typically not used by bird species. Non-structural channel maintenance techniques would have no effects on State-listed threatened, endangered or special concern bird species.

IV.D.4. Channel Control Structure Construction and Rehabilitation

Placement of stone protection on shoreline areas to "tie-in" structures could affect State-listed bird habitats. However, the areas affected would be extremely small in comparison to the total area available in the UMR floodplain.

The planning process outlined in the CMMP for evaluating channel structures includes extensive review opportunities for State natural resource management agencies. As site specific plans are developed, review by State natural resource agencies should identify the potential for impacts on State-listed mussel species. If and when, potential impacts are identified, appropriate measures to avoid, minimize or mitigate the impacts.

IV.D.5. Snag Removal

A discussion on snag removal has been described in Section IV.C.5. The removal of snags from the river and placement would have a very minor impact on bird habitats in the floodplain of the UMR, and negligible impacts on State-listed bird species.

IV.D.6. Harbor Maintenance

Harbor maintenance dredging occurs in open water areas with substantial amounts of disturbance (recreational navigation); areas not typically used by bird species. Harbor maintenance dredging would have no effects on State-listed threatened, endangered or special concern bird species.

IV.D.7 Recreational Beach Development/Maintenance

Placement of dredged materials on upland recreational beaches was described in Section IV.A.7, and would have no impacts on State-listed bird species. The planning process would be used to avoid, minimize or mitigate these impacts.

IV.E. IMPACTS TO STATE-LISTED REPTILES AND AMPHIBIANS

IV.E.1. Use of Selected Disposal Sites

The area impacted by dredged material disposal and general impacts of this action has been discussed in Section IV.C.1. Several state-listed reptile and amphibian species could potentially be found using any of these habitats, however, the most likely areas would include the type 3-4-5 wetlands, and the type 1-2 wetlands; areas not previously disturbed by human uses. Many of the turtle species require open sand areas for egg-laying and reproduction. The placement of dredged material would provide additional nesting sites for turtles. However, the beneficial impacts to turtle nesting sites is minor in comparison to the conversion of other habitats used by reptiles and amphibians for other life requisites to sand. A total of 180 acres of wetland habitat and 104 acres of terrestrial habitat currently used by reptiles and amphibians would be permanently converted to dredged material. Overall, the impacts of the CMMP on State-listed reptile and amphibian species would be minor.

Following, are the species most likely to be present in the impacted habitat types:

Open water/shallow marsh: Blanding's turtle, mudpuppy, northern cricket frog, common musk turtle, and wood turtle.

Bottomland hardwoods: Massasauga, northern cricket frog, smooth green snake, western hognose snake, and wood turtle.

IV.E.2. Dredging

Dredging primarily occurs in the main channel of the UMR, St. Croix or Minnesota Rivers. State-listed threatened, endangered or special concern reptile and amphibian species typically do not utilize this habitat, as a result, dredging would have no affect on these species.

IV.E.3. Non-structural Techniques

Non-structural channel maintenance techniques involve actions in main channel habitats; areas typically not used by reptile and amphibian species. Non-structural channel maintenance techniques would have no effects on State-listed threatened, endangered or special concern amphibian and reptile species.

IV.E.4. Channel Control Structure Construction and Rehabilitation

Placement of stone protection on shoreline areas to "tie-in" structures could affect State-listed reptile and amphibian habitats. However, the areas affected would be extremely small in comparison to the total area available in the UMR floodplain. The planning process would be used to avoid, minimize or mitigate the impacts.

IV.E.5. Snag Removal

A discussion on snag removal has been described in Section IV.C.5. The removal of snags from the river and placement would have a very minor impact on amphibian and reptile habitats in the floodplain of the UMR and negligible impacts on State-listed species.

IV.E.6. Harbor Maintenance

Harbor maintenance dredging occurs in open water areas with substantial amounts of disturbance (recreational navigation); areas not typically used by amphibian and reptile species. Harbor maintenance dredging would have no effects on State-listed threatened, endangered or special concern amphibian or reptile species.

IV.E.7 Recreational Beach Development/Maintenance

Placement of dredged materials on upland recreational beaches was described in Section IV.A.7, and would have negligible impacts on State-listed reptile and amphibian species. The planning process outlined in the CMMP for evaluating recreational beaches would be used to avoid, minimize or mitigate these impacts could be included in the planning process

IV.F. IMPACTS TO STATE-LISTED PLANTS

IV.F.1. Use of Selected Disposal Sites

The area impacted by dredged material disposal and general impacts of this action has been discussed in Section IV.C.1. State-listed plant species could potentially be found on any of these habitats, however, the most likely areas would include the type 1-2 wetlands and the upland meadow/brush habitat and other areas previously not disturbed by human uses. In total, approximately 140 acres of these habitat types would be disturbed by dredged material placement. Overall, the effects on State-listed plant species would likely be minor. Following, are the plant species most likely to be present in the impacted habitat types:

Open water/shallow marsh: Davis sedge, handsome sedge, lance-leaved violet, and sweet-smelling Indian-plantain.

Dry prairie, bluffs, and sand dunes: Povertygrass, bladderpod, Carolina anemone, clasping milkweed, cliff goldenrod, clustered broom-rape, goat's rue, James' polanisia, kitten-tails, montia, narrow-leaved spleenwort, pale purple coneflower, plains wild indigo, prairie Indian plantain, prairie plum, prairie thistle, purple cliff-brake, purple sand-grass, rhombic-petaled evening primrose, rock clubmoss, rough-seeded fameflower, sea-beach needlegrass, white lady's-slipper, wild indigo, wild petunia, yellow-fruited sedge, and yellowish gentian.

Bottomland hardwoods: Black snakeroot, cattail sedge, catchfly grass, ebony spleenwort, false mermaid, ovate-leaved skullcap, purple rocket, raven's foot sedge, silverleaf grape, snowy campion, spreading sedge, squirrel-corn, and yellow giant hyssop.

Due to the lack of disturbance to dry prairie, bluffs, and sand dune sites, there would be no impact to these state-listed species. Approximately 175 acres of bottomland forest and shallow and deep marsh habitats would be impacted by the dredged material disposal activities. Based on the acreage of wetlands affected by disposal activities, the impacts to the State-listed species that may be present in these habitat types, the impact would be negligible.

IV.F.2. Dredging

Main channel water depths generally preclude the presence of aquatic plants and no direct impacts on State-listed plant species are anticipated from main channel dredging.

IV.F.3. Non-structural Techniques

Main channel water depths generally preclude the presence of aquatic plants and no direct impacts on State-listed plant species are anticipated from main channel dredging.

IV.F.4. Channel Control Structure Construction and Rehabilitation

Placement of stone protection on shoreline areas to "tie-in" structures could affect State-listed plant habitats. However, the areas affected would be extremely small in comparison to the total area available in the UMR floodplain. The planning process could be used to avoid, minimize or mitigate potential impacts.

IV.F.5. Snag Removal

Placing snags on the riverbank or at upland locations could affect plant species. However, the likelihood of affecting a State-listed plant species is very remote, with the resulting impact being minor at most.

IV.F.6. Harbor Maintenance

Harbor maintenance dredging occurs in open water areas with substantial amounts of disturbance (recreational navigation); areas not typically vegetated. Harbor maintenance dredging would have no effects on State-listed threatened, endangered or special concern plant species.

IV.F.7 Recreational Beach Development/Maintenance

Placement of dredged materials on upland recreational beaches was described in Section IV.A.7. This activity would have negligible impacts on State-listed plant species. The species typically found in dry sand or sand dune habitats (Section IV.F.1) could benefit by this activity through maintenance of preferred habitat types. The planning process outlined in the CMMP for evaluating recreational beaches could be used to avoid, minimize or mitigate these impacts, or to enhance habitat conditions.

V. SUMMARY AND CONCLUSIONS

Wisconsin, Minnesota, and Iowa have all developed lists of species they consider rare within their respective States. They have listed over 400 species designated as either "Endangered", "Threatened", or "Special Concern." To focus this assessment effort to species present within the UMR, St. Croix River, and Minnesota River basin, an initial screening was completed looking at historical occurrences in counties bordering the 9-foot navigation channel project. For the species remaining from this initial screening, information was gathered on general habitat requirements. The CMMP will affect two land forms, the floodplain and glacial sand prairies. Species that do not at least partially depend on floodplain or glacial sand prairies were screened from the list. The potential impacts on the remaining species (see tables G-1 through G-7) were evaluated further.

If State-listed species are present at the placement sites or within the dredge cuts proposed for use/maintenance under the CMMP, use of these sites could result in death of the individuals. This is especially true for less mobile species or life stages like plants, mussels, herptofauna, and eggs and young of the year fish and birds. At this time, the District is not aware any State-listed species occurs at these sites or dredge cuts. It is likely some State-listed species occur at some of the CMMP sites. Because there is no direct evidence to indicate the presence of State-listed species, the main thrust of this assessment is a habitat-based assessment of the acres of different habitat types affected under the CMMP and the specific habitat requirements of State-listed species.

Dredging and dredge material placement, including recreational beach development, could affect habitat for State-listed protected species. The table below summaries the acres of habitat impacted by either dredging or placement of dredged material. For the placement sites, the greatest potential for impacting State-listed species is for the habitat types not previously disturbed. For the previously disturbed areas, use of these sites under the CMMP would prevent

the eventual re-establishment of vegetation and potential future use by State-listed species. Comparing the total acres of undisturbed habitat impacted by dredged material placement to the total available habitat within the Upper Mississippi River corridor possibly utilized by State-listed species, the impacts to potential habitat for State-listed species can be only viewed as negligible. The rarity of State-listed species decreases the likilihood they would utilize the proposed placement sites, but increases the importance if they actually do. Prior to the use of placement sites with un-disturbed habitat, an onsite will be held and the State natural resource agencies should identify the potential for impacts and measures to avoid and minimize impacts on State-listed species.

2,988	acres of open water (main channel) habitat
39	acres of open water (main channel border and side channel) habitat
40	acres of type 3-4-5 (shallow and deep marsh) wetlands
134	acres of type 1-2 (floodplain forest, wet meadow) wetlands
5	acres of recreational beach/sand habitat
287	acres of old dredged material
6	acres of upland meadow/brush habitat
74	acres of agricultural field habitat
98	acres of disturbed terrestrial habitat
182	acres of abandoned quarry habitat

Dredging primarily occurs in the main channel of the UMR, St. Croix or Minnesota Rivers. State-listed threatened, endangered or special concern mammal, bird, reptile, amphibian, and plant species typically do not utilize this habitat, as a result, dredging would have no affect on these species. Maintenance dredging and placement at aquatic sites, however, has the potential to affect State-listed mussel and fish species. Maintenance dredging results in at least a temporary and periodic disturbance of a substantial portion of the available main channel habitat. Dredging frequently occurs at relatively unstable substrate areas, which probably limits the value of these areas for State-listed fish and mussel species. Benthic structure, such as sand waves or dunes, which could be utilized by threatened and endangered lotic fish species, would be periodically destroyed. Because dredging results in only a short-term, periodic disruption to main channel habitat, the effects on State-listed lotic fish species is anticipated to be relatively minor. Dredging should have no effects on State-listed lentic species. Mussels have the ability to re-colonize a disturbed area rather quickly. Dredge cuts with a low frequency of maintenance, have not been dredged for a number of years, have good substrate conditions, and the results of historical surveys indicate a resonably diverse, abundant mussel assemblage in the general areas, have the greatest potential to affect threatened and endangered mussels. Appendix C, the Federal Biological Assessment, lists the dredge cuts and placement sites with the greatest possibility of affecting endangered mussels and which will be surveyed prior to implementation.

The recreational beach development program would generally be focused on improving beaches which are currently used (some intensively) by the recreating public. Most of these areas are highly disturbed by human activities, which tends to preclude or restrict vegetation. However, if

beach areas are not maintained, most of the sites would revegetate and eventually develop habitat characteristics similar to natural islands in the floodplain of the UMR. The objective of the recreational beach program is to place materials at locations where the recreating public would benefit without significant impacts to other resources. By selecting sites which are already disturbed by human activities and past dredged material disposal, the impacts of recreational beach development on State-listed species would be minimized.

Placement of dredged materials on upland recreational beaches would have negligible impacts on State-listed species. The planning process outlined in the CMMP for evaluating recreational beaches includes extensive review opportunities for State natural resource management agencies. As site specific plans are developed, review by State natural resource agencies should identify the potential for impacts on State-listed species. If and when, potential impacts are identified, appropriate measures to avoid and minimize these impacts could be included in the planning process.

Harbor maintenance dredging occurs in open water areas with substantial amounts of disturbance (recreational or commercial navigation) and are typically not vegetated. Harbor maintenance dredging would have no effects on State-listed threatened, endangered or special concern animal and plant species.

Snags are an important habitat feature providing cover and velocity shelters for fish, sunning sites for turtles, feeding and resting platforms for furbearers and waterfowl and general habitat diversity. Placing snags either in water near the shoreline or on the riverbank could reduce the adverse impacts of snagging by maintaining habitat for fish and wildlife. Overall, the removal of snags from the river and placement either in the water, on the bank, or at on-land placement site would have a very minimal impact on State-listed animals and plants.

The Channel Management Program has the potential to affect State-listed species. During the reach-specific planning effort conducted under this program, potential impacts and means to mitigate will be identified and included in appropriate NEPA documents.

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