Appendix O
CLEAN WATER ACT SECTION 404(B)(1) EVALUATION

UPPER MISSISSIPPI RIVER RESTORATION SYSTEM
DRAFT FEASIBILITY REPORT
WITH INTEGRATED ENVIRONMENTAL ASSESSMENT

CRAINS ISLAND HABITAT REHABILITATION
AND ENHANCEMENT PROJECT

MIDDLE MISSISSIPPI RIVER MILES 103.5 THROUGH 105.5
RANDOLPH COUNTY, ILLINOIS

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1. PROJECT DESCRIPTION

A. Location. The Middle Mississippi River National Wildlife Refuge (MMRNWR) is dispersed along 195 miles of the Mississippi River between the confluences of the Missouri and Ohio rivers; it includes approximately 7,000 acres of river islands and bottomland forest. The U.S. Fish and Wildlife Service (USFWS) manages the MMRNWR. The portion of the MMRNWR included in this Upper Mississippi River Restoration Program (UMRR) Habitat Rehabilitation and Enhancement Project (HREP) is Crains Island (553 Acres). Crains Island is located on the right descending bank of the Mississippi River between river miles 103.5 and 105.5, approximately 4 miles southeast of the City of Chester, in Randolph County, IL.

General Description. The need for rehabilitation of the Project is based on the following factors:

- The restoration and rehabilitation of these wetland and aquatic habitats would provide resting, feeding, nesting, breeding, and predator-escape cover for many forms of migrating and resident wetland wildlife. It would improve aquatic habitat for fishes and reptiles/amphibians, and improve woody and herbaceous plant diversity.
- The project would restore side channel habitat and improve the quality of existing secondary channel habitat, thus providing depth diversity and connectivity. It would also increase floodplain forest, bottomland hardwood forest, and emergent wetland habitat.

The following objectives and rehabilitation measures were considered in detail to achieve the project goal:

I. **Objective 1.** Increase connected aquatic side channel habitat with depth diversity for enhancement of fisheries habitat benefits
   - No action
   - Dredge side channel
   - Opportunistically place benches on slopes for bathymetric diversity

II. **Objective 2.** Restore wetland ecosystem resources
   - No action
   - Excavate depressional wetlands
   - Restore wetland habitat

III. **Objective 3.** Increase acreage protected from coarse sediment deposition and promote favorable fine sediment deposition in the Project Area
   - No Action
   - Construct sediment deflection berm

IV. **Objective 4.** Restore floodplain forest communities
   - No Action
   - Construct sediment deflection berm
   - Reforestation

B. Authority and Purpose. The Corps proposes to rehabilitate Crains Island through construction of measures which would increase floodplain forest community diversity, restore function of flowing side channels, increase emergent wetland habitat, and improve the overall structure and function of Crains Island habitat. The purpose of this Feasibility Report with Integrated Environmental Assessment (EA), is to evaluate the proposal for the UMRR-HREP at Crains Island. The Feasibility

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Report with Integrated EA meets Corps of Engineers planning guidance and National Environmental Protection Act (NEPA) requirements. This report presents a detailed account of the planning, engineering, construction, and environmental considerations which resulted in the Tentatively Selected Plan (TSP) and is being developed by the Corps of Engineers with the U.S. Fish and Wildlife Service (USFWS) serving as the Federal project partner.

The purpose of the evaluation portion of this document is to comply with Section 404 of the Clean Water Act pertaining to guidelines for the placement of fill material into waters of the United States. This evaluation, in conjunction with the *Feasibility Report with Integrated Environmental Assessment, Upper Mississippi River Restoration Program, Crains Island Habitat Rehabilitation and Enhancement Project, Randolph County, Illinois* would assist in analysis of alternatives for the proposed project, resulting in a designated Tentatively Selected Plan. Further, this evaluation would provide information and data to the state water quality certifying agency demonstrating compliance with state water quality standards.

C. General Description of the Excavated Material.

I. Side Channel

- *Side channel material:* The total dredged material from the side channel would be approximately 1,960,000 CY.
- *Removing remnant structures:* The total excavated material from seven remnant river training structures within the excavation and dredging area would be 60,700 CY of wood piling.

II. Sediment Deflection Berm

- *Sediment deflection berm material:* The sediment deflection berm would be constructed of 326,000 compacted CY of material dredged from the side channel.

D. Description of the Excavation and Placement Site. Material would be dredged from the existing side channel. A portion would be used to construct the sediment deflection berm and the remaining would be deposited at six locations in the river downstream of river training structures along the right descending bank. See map at the end of this document.

I. Side Channel: The proposed project feature is located along the Mississippi River on the right descending bank. Existing side channel bottom elevation is approximately 357 ft. NAVD88 and proposed excavated depth of the bottom of the side channel would be approximately 20 ft. deeper with an elevation of 337ft NAVD88. The water depth of the proposed side channel would be approximately 5 ft. deep 85% of the time and have water approximately 98% of the time. The bottom width would be approximately 80 ft. with side slopes of 1 ft. vertical on 3 ft. horizontal, extending approximately 120 ft. on each side. Seven wooden pile remnant river training structures would be removed prior to the side channel excavation. The material would be let dry and be deposited or chipped on site to be utilized during post construction seeding and mulching or deposited on site. If the material would be deemed as having contaminants, the material would be disposed of off-site at an approved location. A total of approximately 1,960,000 CY of material would be excavated by land-based equipment and dredged from the side channel to achieve the above design. Clearing and grubbing of 43 acres of riparian forest would be required within the side channel footprint. A portion of the excavated material would be transported to the Sediment Deflection Berm construction site for later use. The side channel would be excavated in an area that is approximately 43 acres that is currently riverfront forest.

II. **Sediment Deflection Berm:** Approximately 468,000 CY of excavated material from within the depressional wetlands and additional material from the side channel using land-based excavation equipment would be used to construct the sediment deflection berm. The material would be placed within the Project Area toward the upstream portion, connecting perpendicular to the current Bois Brule levee, then extending downstream along the landward side of the dredged side channel. The proposed feature would have a 4:1 slope on the exterior with a 8:1 slope on the interior to minimize scouring when overtopped by flood events. The top of the berm would be constructed to a 5-year flood frequency elevation of 374.48 NAVD 88 at a length of 13,500 feet long. The cross-sectional width of the sediment deflection berm would be approximately 150 feet wide at the base. The berm would be constructed on approximately 38 acres that is currently open recently converted agricultural area or early successional willow forest.

III. **Material Disposal Sites:** The remaining material not utilized for the construction of the sediment deflection berm will be placed on an existing dredge disposal site located at RM 103.3 (494,000 CY) and behind 4 existing chevron dikes at RM 103.4 (65,000 CY), RM 103.7 (76,000 CY), RM 104.0 (174,000 CY), and RM 104.4 (162,000). Additionally a new disposal site would be constructed at RM 105.5 (521,000 CY). In total this would include approximately 1,492,000 CY of material. See attached map for reference.

E. Description of the Placement Method. Placement for the sediment deflection berm would be done with dozers, agricultural scrapers, and self-propelled sheepsfoot roller (to compact soil). Placement for the dredge disposal locations would be done with a flexible dredge pipe.

2. FACTUAL DETERMINATIONS

A. Physical Determinations

I. **Elevation and Slope.** Construction specifications are provided in the full report.

II. **Sediment Type.** The soil in the project area has been characterized by the Natural Resource Conservation Service, Illinois as Darwin silty clay, Blake silty clay loam, Haynie silt loam, and Fluvaquents-Orthents complex, frequently flooded, long duration soils. The soil is typically very deep, with moderately well drained to poorly drained permeability. Hydric soil characteristics were observed within the top 10 inches in various areas where the proposed land based activities would be occurring. At which point, the material would be used to construct the sediment deflection berm by using dozers and agricultural scrapers.

III. **Actions Taken to Minimize Impacts.** All excavated and filled areas would be planted with suitable native vegetation as soon as possible after disturbance. Additionally, Best Management Practices for construction would be enforced.

B. Water Circulation, Fluctuation, and Salinity Determinations

I. **Water.**
   a. Salinity – Not applicable.
   b. Water Chemistry - Mechanical excavation or hydraulic dredging is expected to have a short-term temporary effect on water chemistry. Increased turbidity in areas where dredging occurs and dredge placement sites are expected; however, turbidity levels are not expected to significantly affect any aquatic organisms or downstream habitat. The removal of material in the side channel area would improve depth and flow, thus

improving water chemistry. The side channel would have on average flow rates of 1-2.5 feet per second and gradual side slopes of 1 ft. vertical on 3 ft. horizontal, which would allow it to be self-maintaining into the future, limiting erosion, sedimentation, and woody debris deposition.

c. Clarity – Elevated suspended sediment levels are expected to occur in a localized nature within the side channel and in the vicinity of the dredge placement sites during dredging. Decreased water clarity is expected to be short-term.
d. Color – No change is expected.
e. Odor – The project is not expected to have an impact on water odors.
f. Taste – The project is not expected to impact water taste.
g. Dissolved Gas Levels – Construction activities associated with the project are not expected to have a significant adverse impact on dissolved gas levels.
h. Nutrients – Nutrients would be released to the water column during dredging; however, this would represent a temporary increase and is not considered significant.
i. Eutrophication – The project is not expected to contribute toward eutrophication of the water column.
j. Water Temperature – Temperatures are expected to improve with increased depth and flow, thus allowing for the side channel to support a larger diversity of aquatic life.

II. **Current Patterns and Circulation.** The main purpose of this project is to increase depth and flow to the side channel and beneficially reuse the material to construct a sediment deflection berm. The sediment deflection berm would decrease sand deposition throughout the island and simultaneously increase the deposition of fine silt behind the sediment deflection berm with increased water backing during high water events. Overall, the project would slightly alter circulation and flow patterns; however, these alterations are not expected to significantly change river hydraulics.

a. Velocity – There should be no detectible changes in current velocity in the Mississippi River.
b. Stratification – Stratification does not occur within the project area because of shallow depths. Stratification may occur after construction completion with increased depths throughout the side channel. This would likely only occur during temperature extremes, i.e., hot ambient temperatures during the summer and cold ambient temperatures during the winter.
c. Hydrologic Regime – The project would not alter the hydrologic regime or the flood profile of the Mississippi River.

III. **Normal Water Level Fluctuations.** Normal water level fluctuations in the Mississippi River would be unaffected. Restoration features would not detrimentally increase flood heights or adversely affect private property or infrastructure. Refer to Appendix C, Hydrology and Hydraulics for details on 2-dimensional modeling.

IV. **Actions That Will Be Taken to Minimize Impacts.** Best Management Practices for construction would be enforced. Refer to Chapter 8, Environmental Effects in the main report for more details.

C. Suspended Particulate/Turbidity Determinations

V. **Expected Changes in Suspended Particles and Turbidity Levels in Vicinity of Placement Site.** Increases in suspended particulates and turbidity due to construction activities are expected to be greatest within the vicinity of the side channel dredging and placement locations. This would cease after construction completion. Refer to Chapter 6 Schedule for

Design and Construction in the main report for more details pertaining to the timeline. The improved side channel depth and flow as well as the improved soil composition throughout the Crains Island Project Area would increase benefits to fish and wildlife resources over the 50 year evaluation period. Stabilization of the side channel would be realized upon construction completion. Refer to the Habitat Evaluation and Quantification Appendix G for more details.

VI. **Effects on Chemical and Physical Properties of the Water Column**

a. Light Penetration. There would be a temporary reduction until sediments suspended as part of the project activities settle out of the water column. Refer to Chapter 6, Schedule for Design and Construction in the main report for more details pertaining to the timeline of the construction activities.
b. Dissolved Oxygen. No adverse effects expected.
c. Toxic Metals and Organics. No adverse effects are expected. Hazardous material surveys would be completed during Plans & Specs.
d. Aesthetics. Aesthetics of work sites are likely to be adversely affected during construction, but are expected to be temporary and improve after construction. Increased aesthetics would likely be realized soon after construction when cleared areas have been revegetated. Refer to Chapter 6, Schedule for Design and Construction in the main report for more details pertaining to the timeline of the construction activities.

II. **Effects on Biota.** The project would likely result in some short-term displacement of biota in the immediate vicinity of construction activities due to temporary decreases in water quality and disturbance by construction equipment. Long-term beneficial effects should occur as aquatic species, especially riverine fishes, benefit from the improved habitat within Crains Island. Bottomland and floodplain forests would also benefit in the long term with the improved soil composition, thus allowing the successful establishment of hard mast trees with regeneration occurring. Refer to Chapter 8, Environmental Effects and Chapter 9, Cumulative Effects for more details.

D. Contaminant Determinations. The Phase I Hazardous, Toxic, and Radioactive Waste survey conducted for this study did not identify contaminant sources or migration pathways from surrounding properties that would adversely impact surrounding environments (human and ecological receptors). The project is located in the Mississippi River floodplain, which is primarily natural habitat with minimal cropland. There is little evidence that the land has been used for other purposes. It does not appear that there is a risk of HTRW contamination within the project area.

E. Aquatic Ecosystem and Organism Determinations

I. **Effects on Plankton.** The project could have a temporary adverse effect on the plankton in the immediate vicinity of the project area. This would cease after construction completion.

II. **Effects on Benthos.** The dredging of the side channel area would temporarily disrupt the aquatic environment. Benthos present in these areas would be adversely affected by dredging during excavation. However, the benefits gained from improved aquatic habitat and water transport capacity would far outweigh any loss in benefits during the time of construction.

III. **Effects on Nekton.** Temporary adverse effects may be experienced by free-swimming aquatic life during construction, as with the benthic community; the long-term impact would be beneficial.

IV. **Effects on Aquatic Food Web.** The project would improve side channel habitat and increase habitat diversity (terrestrial and aquatic) throughout the Crains Island Project Area which currently lacks side channel depth and flow. The increase in water transport capacity and habitat diversity would improve the overall health and food web of the Crains Island Project Area. Fishery and forestry resources are expected to increase as habitat diversity is improved by the project.

V. **Effects on Special Aquatic Sites.** Although wetlands within the project area would be impacted with the construction of the sediment deflection berm, this would account for approximately 38 acres. However, the impacts would be offset by both the restoration of approximately 21 acres of constructed wetlands as well as enhancing approximately 109 acres of abandoned agricultural fields and early successional floodplain forest. In addition, 61 acres of hard mast trees would be planted on the sediment deflection berm (38 acres) and within the Project Area (23 acres). Overall, the wetland impacts would be outweighed by improvement of 191 acres that otherwise would continue to persist as degraded habitat.

VI. **Threatened and Endangered Species.** Presence of, or use by, endangered and threatened species is discussed in the Feasibility Report with an integrated Environmental Assessment. No adverse impacts are expected to result from this project. Refer to Chapter 8, Environmental Consequences and Chapter 9, Cumulative Effects for details.

Indiana Bat

Indiana bats roost in living, injured (e.g., split trunks and broken limbs from lightning strikes or wind), dead or dying trees. Maintaining quality maternity colony roost trees (those trees used by female Indiana bats and their young) is essential to reproductive success and long-term recovery goals for this endangered species. Indiana bat roost trees tend to be greater than 9 inches diameter at breast height (DBH) (optimally greater than 20 inches DBH) with loose or exfoliating bark. Most important are structural characteristics that provide adequate space for bats to roost. Preferred roost sites are located in forest openings, at the forest edge, or where the overstory canopy allows some sunlight exposure to the roost tree, which is usually within 0.6 miles of water. Indiana bats forage for flying insects (particularly moths) in and around the tree canopy of floodplain, riparian, and upland forests. Indiana bats are known to use forested and riparian areas for foraging and roosting. Summer habitat requirements for the species are not well defined, but the following are considered important: 1) dead or live trees and snags with peeling or exfoliating bark, split tree trunk and/or branches, or cavities, which may be used as maternity roost areas; 2) live trees (such as shagbark hickory and oaks) that have exfoliating bark; 3) stream corridors, riparian areas, and upland woodlots which provide foraging habitat.

Impact of No Action Alternative - Under the No Action Alternative, the forest community with limited age structure and diversity in the Project Area would persist into the near future. However, given the even-aged forest community limited in species and structural diversity, available suitable Indiana bat habitat would not persist into the future. Given the proximity to adjacent upland forest habitat, Indiana bats that could be present in the Project Area would likely relocate to suitable habitat within the proximity. Therefore, this alternative "may affect but is not likely to adversely affect" the Indiana bat.

Impact of Tentatively Selected Plan – The hard mast forest restoration portion of the Project would improve habitat for the Indiana bat over the long-term. Although approximately 38 acres of trees would be cleared for construction, which could serve as potential roost and foraging habitat for the Indiana bat, approximately 61 acres would be reforested. In addition, the sediment deflection berm should improve soil conditions for approximately 109 acres of forested areas to allow for successful recruitment of hard mast trees over time, thereby improving the overall forest community over a longer period with increased species, age, and structural diversity to yield suitable roost habitat through time and into the future. Further, during clearing, dead trees, split trees, trees that have cavities, and trees with exfoliating bark

would be favored for retention. Tree clearing associated with the project would occur during the non-roost season, thus following clearing restrictions between April 1 and September 30. Areas that have known roosts would be delineated and avoided. Several components of the Proposed Actions could have site-specific impacts on Indiana bats and Indiana bat habitat but are not anticipated to individually or cumulatively have an adverse impact on the population as a whole. Therefore, the Proposed Action "may affect but is not likely to adversely affect" the Indiana bat.

Northern Long-Eared Bat

The northern long-eared (*Myotis septentrionalis*) bat is a federally threatened bat species. The northern long-eared bat is sparsely found across much of the eastern and north central United States, and all Canadian provinces from the Atlantic Ocean west to the southern Yukon Territory and eastern British Columbia. Northern long-eared bats spend winter hibernating in large caves and mines. During summer, this species roosts singly or in colonies underneath bark, in cavities, in crevices of both live and dead trees. Foraging occurs in interior forests. Forest fragmentation, logging and forest conversion are major threats to the species. One of the primary threats to the northern long-eared bat is the fungal disease "white-nose syndrome", which has killed an estimated 5.5 million cave-hibernating bats in the Northeast, Southeast, Midwest and Canada. Suitable northern long-eared bat summer habitat may occur in the forested areas within the Project Area.

Impact of No Action Alternative - Under the No Action Alternative, the forest community with limited age structure and diversity in the Project Area would persist into the near future. However, given the even-aged forest community limited in species and structural diversity, available suitable northern long-eared bat habitat would not persist into the future. Given the proximity to adjacent upland forest habitat, northern long-eared bats that could be present in the Project Area would likely relocate to suitable habitat within the proximity. Therefore, this alternative "may affect but is not likely to adversely affect" the northern long-eared bat.

Impact of Tentatively Selected Plan – The hard mast forest restoration portion of the Project as discussed in the Indiana bat Impact of Tentatively Selected Plan section, the project area overall would improve habitat for the Indiana bat and thereby, the northern long-eared bat. All dead trees, split trees, trees that have cavities, and trees with exfoliating bark would be favored for retention. Several components of the Proposed Actions could have site-specific impacts on northern long-eared bats and northern long-eared bat habitat, but they are not anticipated to individually or cumulatively have an adverse impact on the population as a whole. Areas that have known roosts would be delineated and avoided. Tree clearing associated with the project would occur during the non-roost season, thus following clearing restrictions between April 1 and September 30. Therefore, the Proposed Action "may affect but is not likely to adversely affect" the northern long-eared bat.

Gray Bat

The gray bat (*Myotis grisescens*) occupies a limited geographic range in limestone karst areas of the southeastern United States, including Missouri. With rare exception, the gray bat roosts in caves year-round. In winter, most gray bats hibernate in vertical (pit) caves with cool, stable temperatures below 10 degrees Celsius. Summer caves, especially those used by maternity colonies, are nearly always located within a kilometer (0.6 mile) of rivers or reservoirs over which bats feed. The summer caves are warm with dome ceilings that trap body heat. Most gray bats migrate seasonally between hibernating and maternity caves, and both types of caves are located in Missouri. Gray bats are active at night, foraging for insects over water or along shorelines, and they need a corridor of forest riparian cover between roosting caves and foraging areas. They can travel as much as 20 kilometers (12 miles) from their roost caves to forage.

Impact of No Action Alternative – No caves would be impacted under the No Action Alternative. Given the even-aged forest community limited in species and structural diversity, available foraging habitat may be impacted in the future. However, these impacts would be localized and foraging habitat would exist outside of the Project Area. Therefore, there would be no effect on the gray bat.

Impact of Tentatively Selected Plan – Under the Tentatively Selected Plan, no caves would be impacted. However, several components of the Proposed Actions could have site-specific impacts on gray bat foraging habitat but are not anticipated to individually or cumulatively have an adverse impact on the population as a whole. Therefore, the Proposed Action "may affect but is not likely to adversely affect" the gray bat.

Least Tern

The least tern (*Sterna antillarum*) nests along the Missouri, Mississippi, Ohio, Red, and Rio Grande river systems. They winter along coastal areas of Central and South America and the Caribbean Islands. Least terns nest on barren to sparsely vegetated sand bars along rivers and lake and reservoir shorelines. Breeding season occurs from April through August while nesting in small colonies. Nests consist of shallow depressions scraped in open sandy areas, gravelly patches, or exposed flats. Foraging occurs over standing or flowing water to capture small fish, of which they solely feed upon.

Impact of No Action Alternative – No sandbars exist within the Project Area. Therefore, it is anticipated that the No Action Alternative would have no effect on the least tern.

Impact of Tentatively Selected Plan – Although no sandbars exist within the Project Area, sandbars upstream and downstream are present within the vicinity. No least tern nesting has been documented in this area. However, least terns could utilize these areas during migration. Effects associated with construction activities such as increased noise and turbidity, are localized and temporary in nature. Therefore, the Proposed Action "may affect but is not likely to adversely affect" the least tern.

Grotto Sculpin

The grotto sculpin (*Cottus specus*) live in cave streams, springs, and surface streams. Individuals migrate between underground and aboveground habitats, with adults found more often in the cave portions and juveniles in surface springs and streams. Grotto sculpin use stream pools as well as areas under rocks that offer more protection. Both pool and riffle areas with a variety of substrates are used, including silt, gravel, cobble, and bedrock.

Impact of No Action Alternative – No caves, cave streams, or springs would be impacted under the No Action Alternative. Therefore, it is anticipated that there would be no effect on the grotto sculpin.

Impact of Tentatively Selected Plan - No caves, cave streams, or springs would be impacted under the No Action Alternative. Therefore, it is anticipated that there would be no effect on the grotto sculpin.

Pallid Sturgeon

The pallid sturgeon (*Scaphirhynchus albus*) is a big-river fish species that is distributed in the Mississippi, Missouri, Yellowstone, and Atchafalaya Rivers. Pallid sturgeons live close to the bottom of large, silty rivers with preferred habitat of a diversity of depths and velocities formed by braided channels, sand bars, sand flats, and gravel bars. Loss of habitat has occurred due to anthropogenic changes which has ultimately decreased the availability of spawning habitat, reduced larval and juvenile rearing habitat, availability of seasonal refugia, and availability of foraging habitat.

Impact of No Action Alternative – Under the No Action Alternative, connectivity between the main-channel of the MMR would not be improved. The side channel would continue to become isolated and disconnected, other than during high flow events, which would limit the pallid sturgeon from accessing this off-channel habitat. Although under this scenario, the pallid sturgeon would be further limited in its habitat availability, overall it is anticipated that this alternative would have no effect on the pallid sturgeon.

Impact of Tentatively Selected Plan – The Tentatively Selected Plan was developed to directly benefit fisheries resources, which would thereby improve pallid sturgeon habitat. The increased connectivity to the main channel of the MMR would improve pallid sturgeon access to this important off-channel habitat for longer durations throughout its lifecycle. Increased depth, flow, and improved temperatures during the growing season, as well as overwintering opportunities, would increase pallid sturgeon habitat in the MMR, which is currently extremely limited. The Proposed Alternative, specifically side channel excavation and dredge disposal placement, may have temporary short-term adverse impacts during

construction on water quality and increased turbidity. However, overall these adverse impacts would likely not have a cumulative negative effect on the pallid sturgeon and would likely improve pallid sturgeon habitat. Therefore, the Proposed Action Alternative "may affect, but is not likely to adversely affect" the pallid sturgeon.

Small Whorled Pogonia

The small whorled pogonia (*Isotria medeoloides*) is distributed in 18 states in the eastern United States and Ontario, Canada and grows in older hardwood forests consisting of beech, birch, maple, oak, and hickory that have an open understory. The small whorled pogonia prefers acidic soils with a thick layer of dead leaves.

Impacts of No Action Alternative – Suitable habitat does not exist within the Project Area. Therefore, it is anticipated that there would be no effect on the small whorled pogonia.

Impacts of Tentatively Selected Plan - Suitable habitat does not exist within the Project Area. Therefore, it is anticipated that there would be no effect on the small whorled pogonia.

Other Wildlife. The project would likely result in some short-term displacement of wildlife in the immediate vicinity of construction activities. Fish and wildlife, especially the fisheries and aquatic resources would see benefit from the increased side channel habitat with increased depth and flow.

F. Proposed Placement Site Determinations

I. **Mixing Zone Determinations.** Suspended particulates and turbidity would increase during construction activities. These increases would be most evident at the discharge point and would quickly fall within baseline conditions in the mixing zone. No significant adverse impacts to the chemical and physical properties of the water column are expected.

II. **Determination of Compliance with Applicable Water Quality Standards.** This Clean Water Act Section 404(b)(1) provides the necessary compliance required by law. Section 401 Water Quality certification in compliance with the Clean Water Act, and all other permits necessary for the completion of the project, would be obtained prior to project construction.

III. **Potential Effects on Human Use Characteristics.** No long-term adverse impacts to municipal and private water supplies; water-related recreation; aesthetics; or parks, national and historic monuments, national seashores, wilderness areas, research sites or similar preserves would occur. During construction the area would not be available for recreational and commercial fishing. Following construction, the proposed project would enhance fishing and hunting opportunities in the area and improve the overall condition of the Crains Island Project Area. In addition, 2 dimensional modeling has shown that there would be no negative impacts to navigation and no impacts to flood heights. Refer to the Hydrology & Hydraulics Appendix C for more details.

E. Determinations of Cumulative Effects on the Aquatic Ecosystem. Although minor short-term construction-related impacts to local fish and wildlife populations are likely to occur, no negative cumulative impacts to fish and wildlife are identified. From a systemic approach, the tentatively selected plan would result in positive long-term benefits to wetland, floodplain forest, bottomland hardwood, and aquatic habitats located in and around the Crains Island Project Area and throughout the MMR. Refer to Chapter 9, Cumulative Effects in the Feasibility Report for more details.

H. Determinations of Secondary Effects on the Aquatic Ecosystem. No adverse secondary effects should result from the proposed action. Long-term benefits to aquatic habitat and wildlife are expected. Refer to Chapter 8, Environmental Effects and Chapter 9, Cumulative Effects in the Feasibility Report for more details.

3. FINDINGS OF COMPLIANCE OR NON-COMPLIANCE WITH THE RESTRICTIONS ON DISCHARGE

A. No significant adaptations of the 404(b)(1) guidelines were made relative to this evaluation.

B. Alternatives that were considered for the proposed action included fewer features than the tentatively selected plan. All feasible combinations of features, 10 final alternatives including the no action alternative were analyzed for environmental benefits and costs (Refer to Chapter 4, Alternative Plan Formulation, Evaluation & Comparison for more details). The tentatively selected plan provided a large number of environmental benefits and best met project objectives and the four plan formulation criteria of completeness, effectiveness, efficiency, and acceptability.

1. Certification under Section 401 of the Clean Water Act would be obtained from the Illinois Department of Natural Resources where applicable.

2. The proposed fill activity is in compliance with Applicable Toxic Effluent Standards of Prohibition under Section 307 of the Clean Water Act.

3. Prior to construction, full compliance with the Endangered Species Act would be documented.

4. The project is situated along an inland freshwater river system. No marine sanctuaries are involved or would be affected by the proposed action.

5. No municipal or private water supplies would be affected by the proposed action, and no degradation of waters of the United States is anticipated to result from the proposed action. The proposed construction activity would not have a significant adverse effect on human health and welfare, recreation and commercial fisheries, plankton, fish, shellfish, wildlife, or special aquatic sites. No significant adverse effects on life stages of aquatic life and other wildlife dependent on aquatic ecosystems are expected to result. The proposed construction activity would have no significant adverse effects on aquatic ecosystem diversity, productivity, and stability. No significant adverse effects on recreational, aesthetic, and economic values would occur.

6. The materials used for construction would be chemically and physically stable and non-contaminating.

7. No other practical alternatives have been identified. The proposed action is in compliance with Section 404(b)(1) of the Clean water Act, as amended. The proposed action would not significantly impact water quality.

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(Date)

Bryan K. Sizemore
Colonel, U.S. Army
District Commander

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