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Kansas City District

APPENDIX G

Environmental Permits and Clearances

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**US Army Corps
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**APPENDIX H
Clean Water Act
Section 404 (b)(1) Evaluation**

**Missouri River Recovery Program
Missouri River Bank Stabilization and Navigation
Fish and Wildlife Mitigation Project**

March 2012

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SECTION 404(b)(1) GUIDELINES EVALUATION

This Section 404(b)(1) Guideline Evaluation is for construction of a Missouri River shallow water habitat (SWH) restoration project by the U.S. Army Corps of Engineers (Corps) on the U.S. Fish and Wildlife Service's Jameson Island Unit – Big Muddy National Fish and Wildlife Refuge. The proposed activity would be carried out as part of the U.S. Army Corps of Engineers' Missouri River Recovery Program. This project would meet goals established for habitat restoration as part of the Missouri River Bank Stabilization and Navigation Project Fish and Wildlife Mitigation Project, as authorized by the Water Resources Development Acts of 1986 and 1999 (Public Law 99-662), and in compliance with measures set forth in the U.S. Fish and Wildlife Service's 2003 Amendment to the 2000 Biological Opinion (Bi-Op) on the Operation of the Missouri River Main Stem Reservoir System, Operation and Maintenance of the Missouri River Bank Stabilization and Navigation Project, and Operation of the Kansas River Reservoir System. This evaluation is based on the regulations found at 40 CFR 230, Section 404(b)(1): Guidelines for Specification of Disposal Sites for Dredged and Fill Material.

Project Description

- a. Location:** The project (Proposed Action) is located on existing public land at the U.S. Fish and Wildlife Service's Jameson Island Unit – Big Muddy National Fish and Wildlife Refuge, Missouri River, in and along the right overbank of the Missouri River, between river mile 210.5 and 211.7, in Sections 30 and 31, Township 50 North, Range 18 West, near the town of Arrow Rock, Saline County, Missouri. Howard County, Missouri is located on the opposite river bank with the nearest town being Petersburg, Missouri. Longitude/Latitude: 39°04'23.50" North, 92°55'45.75" West
- b. General Description:** As described in the Project Implementation Report (PIR) with Integrated Environmental Assessment (EA), the Corps proposes to implement Alternative 4 – Extend Chute, Block Existing Outlet, Mixing Dredged Materials with the Existing Missouri River Water and Sediment Load Alternative (Recommended Plan). The Recommended Plan would extend the existing chute approximately 1 mile to the west where another outlet to the Missouri River would be constructed. The proposed chute would be approximately 6,000-feet-long, approximately 100-feet-wide. The bottom of the chute would be excavated to a depth of 5 feet below the Construction Reference Plain. The existing Jameson Chute outlet would be blocked with approximately 700 cubic yards of clean rock riprap. The area between the block and the river would serve as backwater habitat. A band of woody vegetation 200-feet-wide, approximately 34.4 acres, would be cleared along the chute alignment using heavy equipment with woody vegetation stockpiled along the edge of the cleared zone or incorporated into the chute. Chute construction would involve the excavation of approximately 420,000 cubic yards of earthen material. Earthen material would be excavated using a hydraulic dredge and heavy construction equipment. Dredged earthen material would be placed into the Missouri River in

a location and manner that it would be integrated into the bedload. A 3-4-foot layer of soil along with existing woody debris would be moved to the edge of the chute alignment during clearing and grubbing. Over time, the chute would be expected to widen and deepen, adding approximately 547,000 cubic yards of additional earthen material and an undetermined amount of woody debris. This process would occur through a progression of natural river processes and incorporate the earthen material naturally into the Missouri River bedload. In addition, during high flows, river levels would be expected to overtop the channel block and flush accumulated sediment from the backwater area. This remobilization of sediment which has been locked in the bank by the BSNP back into the active bedload of the Missouri River would not result in the permanent conversion of an aquatic site to a non-aquatic site. The flow of sediment into versus out of the chute would be approximately balanced. Woody debris entering the river as the channel widened and meandered would provide additional fish and wildlife habitat. The proposed project would require the clearing of approximately 34.4 acres of riparian timber. Based on National Wetlands Inventory maps this area includes a total of 5.0 acres of wetlands (2.25 freshwater emergent marsh, 1.84 acre freshwater forested/shrub wetland, 0.89 freshwater pond) that would be impacted at completion of construction. At full chute development that area would be expected to extend to a total of 8.9 acres of wetland (3.74 acres freshwater emergent marsh, 3.45 acres freshwater forested/shrub wetland, 1.75 acres freshwater pond). This would result in approximately 16.77 (13.77-acre chute and 3-acre backwater) of SWH at completion of construction which would eventually be expected to develop through natural river processes to approximately 30 acres (27-acre chute and 3-acre backwater).

A detailed discussion of impacted waters can be found in the PIR/EA under Chapter 4 - Affected Environment, Section 4.4 Biological Resources . The Proposed Action, construction of SWH, is a water dependent activity. A detailed analysis of alternatives is discussed in the PIR/EA under Chapter 5 – Environmental Consequences.

- c. **Authority:** The project is part of the Missouri River Bank Stabilization and Navigation Fish and Wildlife Mitigation Project which is authorized in the Water Resources Development Acts of 1986 and 1999 (Public Law 99-662). This activity is regulated by the U.S. Army Corps of Engineers under Section 404 of the Clean Water Act (33 USC 1344).
- d. **General Description of Dredged or Fill Material:** As described in Public Notice No. 2011-1602, discharge associated with the project would include clean earthen fill material hydraulically dredged and/or mechanically excavated from the bed and banks of the Missouri River, clean rock riprap obtained from commercial sources, woody debris including tree root wads, large trunks and limbs. A detailed description of soil testing/results of the proposed fill material can be found in the PIR under Chapter 4 - Affected Environment, Section 4.3

Soils/Topography and Chapter 5 – Environmental Consequences, Section 5.3
Soils/Topography.

- e. **Description of the Proposed Discharge Sites:** The discharge sites would be the Missouri River and adjacent wetlands. Placement of fill material in wetland areas would be avoided to the greatest extent practicable but construction activity would be expected to displace a minimal amount of earthen material in adjacent wetland areas. Impacts to wetlands adjacent to the chute alignment would be avoided/minimized to the extent practicable by placement of erosion control measures. To construct the chute, earthen material would be excavated using a hydraulic dredge and heavy construction equipment. Heavy construction equipment would clear and grub the alignment, placing cleared vegetation and a minimal amount of soil along the outer edge of the cleared area. Dredged material would be placed directly into the Missouri River. Dredged material would be placed in a manner and at a location so that it would be quickly integrated through natural river processes into the active Missouri River bedload.

Additional information on project related impacts to waters of the U.S. can be found in Chapter 5 – Environmental Consequences of the PIR/EA.

- f. **Disposal Method:** Excavation would be performed by hydraulic dredging and mechanical excavation using appropriate heavy construction equipment. The fill would be placed in a location that avoids impacts to existing wetlands/ native riparian vegetation/SWH. Material would be placed in a manner (rate/location) that would allow it to become quickly integrated into the active Missouri River bedload through natural river processes.

Factual Determinations

a. Physical Substrate Determinations

- (1) **Substrate Elevation and Slope:** Existing wetlands adjacent to the proposed chute alignment would be avoided to the extent practicable. Only minor changes to substrate elevation in these adjacent wetland areas would be expected as erosion control measures would be in place during construction. The 34.4 acres of riparian timber, including a total of 5.0 acres of wetlands (2.25 freshwater emergent marsh, 1.84 acre freshwater forested/shrub wetland, 0.89 freshwater pond) that would be impacted at completion of construction and a total of 8.9 acres of wetland (3.74 acres freshwater emergent marsh, 3.45 acres freshwater forested/shrub wetland, 1.75 acres freshwater pond) that would eventually have the elevation lowered through excavation or natural river processes at full chute development. Approximately 27 acres of the 34.4 acre cleared area would be converted to shallow water habitat. The placement of excavated material into the Missouri River would avoid existing SWH areas. Excavated earthen material from chute construction would temporarily

change the bottom elevation of the river but material would be placed in a manner/location that it would be quickly integrated into the active Missouri River bedload through natural river processes. Placement of excavated earthen material would not result in the permanent conversion of an aquatic site to a non-aquatic site or permanent raising of the bed elevation. The Corps has taken actions in project design to adequately minimize adverse effects to the substrate elevation and slope. This is in compliance with the Guidelines.

- (2) **Sediment Type:** Sediment type is sand, silts, clays which have accreted on the Missouri River floodplain and are typical of material found in the Missouri River bedload. A detailed description of soil testing/results of the proposed fill material can be found in the PIR/EA under Chapter 4 - Affected Environment, Section 4.3 Soils/Topography. No change to sediment type is expected. This is in compliance with the Guidelines.
- (3) **Dredged/Fill Material Movement:** Large amounts of fill material associated with the construction activity would become integrated into the active Missouri River bedload through direct placement during construction and through natural erosion subsequent to construction completion. Large amounts of the Missouri River bedload have been locked in place by the structures completed as part of the BSNP. Excavation and placement of this material directly into the Missouri River during construction or through natural river processes subsequent to construction would restore a small portion of the historic bedload. Restoring the process of continual erosion and deposition on the floodplain along the chute alignment is critical to the success of the project. The Corps would employ water quality Best Management Practices (BMPs) such as silt fencing and revegetation to ensure that any sediment movement to existing adjacent wetlands is minimal. The Corps has adequately minimized dredged/fill material movement and the project is in compliance with the 404(b)(1) Guidelines.
- (4) **Physical Effects on Benthos:** Physical effects on the benthos would consist of a temporary increase in sediment levels associated with construction activities that could have an impact on benthos. Fill placement would avoid existing SWH where benthos would be most likely to occur. In areas where dredged/excavated earthen material would be placed in the river the substrate is constantly shifting dunes of sediment which are typically unsuitable for benthos. The potential physical effects on benthos are minor and the project is in compliance with the 404(b)(1) Guidelines.

b. Water Circulation, Fluctuation, and Salinity Determinations

- (1) **Water**

- (a) Salinity: Not applicable.
- (b) Water Chemistry: Minor, temporary, and localized effects to water chemistry (see below) would primarily include an increase in turbidity due to construction activities. This would be minimized by implementation of water quality BMPs.
- (c) Clarity: A minor temporary increase in turbidity would potentially occur during construction of the project that could impact clarity. This would be greatest at the discharge point and quickly fall within the existing baseline condition in the mixing zone. Even at the increased level within the mixing zone the clarity would be within baseline conditions of the pre and post-BSNP Missouri River and therefore not expected to adversely impact native species (see section 5.7 Water Quality of the PIR).
- (d) Color: A minor temporary change in color is possible due to the potential increased turbidity. Similar to Clarity above, any color change would be greatest at the discharge point and would quickly become unnoticeable within a short distance in the mixing zone. Any changes in color would be expected to be within the range that is typically found where natural erosion occurs along the river or out of tributaries during high flow events and therefore not expected to adversely impact native species or result in adverse aesthetic impacts.
- (e) Odor: No impacts are anticipated.
- (f) Taste: Not applicable.
- (g) Dissolved Gas Levels: No changes to dissolved gas levels are anticipated (see section 5.7 Water Quality of the PIR).
- (h) Nutrients: The alluvial sediments, and associated nutrients, being mobilized to create SWH in the restoration areas of the Missouri River, are materials deposited from river transport that are in temporary storage in the flood plain. Under natural conditions, the river would flood, rework, remove, and deposit these materials in a dynamic fashion. The sediment and phosphorus being remobilized now are thus not a net addition to the system. This material, or its equivalent, would have been transported through the system by natural geomorphic processes in an unaltered river. This activity will not adversely affect life forms in the immediate project area or in areas downstream. Even when compared to existing mainstem concentrations, nutrients mobilized to create SWH would have a

statically insignificant impact to the existing mainstem based on elutriate testing (see Section 5.7 Water Quality of the PIR).

- (i) **Eutrophication:** The Corps concurs with conclusions reached by the National Research Council that the increased phosphorus load from SWH projects are not enough to significantly increase the areal extent of the Gulf hypoxic zone nor is it appropriate to suggest that within any given year, Corps SWH creation efforts contribute to the areal extent of the hypoxic zone (NRC 2011).
- (2) **Current Patterns and Circulation:** Current patterns and circulation would be altered from the existing conditions. As with the existing chute, construction of the extension would still be designed to only allow up to a maximum of 10% of the base flow to move through the chute. The existing chute outlet would be blocked and the chute would rejoin the river approximately 6,000 linear feet from the current location. The existing chute outlet downstream of the proposed block would develop as a backwater habitat which typically has minimal flow and less turbid water. This backwater area would only be expected to experience flows when high river levels overtopped the block. High flows would be expected to flush accumulated sediment from the backwater area. Excavated or dredged material placed into the Missouri River would not alter flow or circulation patterns substantially as the material would be placed in a manner and location that it would be integrated into the Missouri River bedload. As the chute banks would not be stabilized the natural river processes of the river would be restored along the chute alignment. This would allow the dynamic cut and fill process to create cut banks which would integrate additional sediment and woody debris into the river and create depositional areas where sand bars would form. Restoration of this dynamic process is critical element of the project purpose. Fish and wildlife resources would not be adversely impacted by the resulting change in current patterns and circulation. The project is designed to ensure that flows and sediment transport on the main channel of the Missouri River would not be adversely impacted.
- (3) **Normal Water Level Fluctuations:** Normal water level fluctuations should remain similar to existing conditions.
- (4) **Salinity Gradients:** Not applicable.
- (5) **Actions to Minimize Impacts:** The Corps has taken steps to minimize impacts that include implementation of project appropriate construction BMPs. Several measures would be implemented during facility construction to minimize water quality impacts that would include both structural and non-structural BMPs. Structural BMPs include: perimeter controls that may include straw bales and/or silt fencing and earthen

berms. Non-structural BMPs would include: keeping heavy construction equipment out of the waterway whenever possible, protecting construction materials from precipitation/ flooding, and stabilizing bare soil by mulching, re-vegetating exposed soil. Utilizing erosion control to prevent sediment from entering existing wetlands adjacent to the chute alignment and preventing deleterious material from entering the adjacent wetlands or the Missouri River are examples of BMPs that would be used to reduce the amount of potential pollutants that reach the water resources adjacent to / downstream of the project area.

c. Suspended Particulate/Turbidity Determination

- (1) Change at Placement Site:** Discharge associated with the project would be located in the Missouri River with some incidental discharge of material from the construction activity and subsequent displacement of earthen material as the natural cut and fill erosion process is restored. The fill to be placed in the river during construction activities is clean earthen material and should not violate any general criteria of the Water Quality Standards, 10 CSR 20-7.037 (3) (A)-(H). Suspended particulates and turbidity would increase with highest levels during the actual construction activity; however, any increases in suspended particulate matter and turbidity resulting from construction activities would quickly fall within baseline levels of the Missouri River within the mixing zone. Once construction has been completed additional earthen material incorporated into the bedload as a result of the natural river processes of the river would be within baseline conditions.
- (2) Effects on Chemical and Physical Properties of the Water Column:** The clean fill excavated during chute construction and placed in the Missouri River would not violate any general criteria of the Water Quality Standards, 10 CSR 20-7.037 (3) (A)-(H). 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. System wide monitoring of existing chutes which are currently developing indicate little if any difference from baseline conditions in the adjacent main river channel. The Corps will continue to monitor water quality at this site during construction and as it develops post-construction. No significant adverse impacts to the chemical and physical properties of the water column were identified.
- (3) Effects on Biota:** Suspended particulates and turbidity would increase during construction activities; however, any increases in suspended particulate matter and turbidity resulting from construction activities would be well within the baseline conditions of the Missouri River.

- (4) **Actions to Minimize Impacts:** The Corps has adequately minimized negative impacts through avoidance and minimization. The proposed alignment was designed to avoid existing wetland resources to the greatest extent practicable. Placement of dredged/excavated material would be in a manner (rate/location) that would integrate the material quickly into the active Missouri River bedload and avoid SWH where early aquatic life forms and benthos would typically be found. Several measures would be implemented during SWH construction to minimize water quality impacts that would include both structural and non-structural BMPs. Structural BMPs include: perimeter controls that may include straw bales and/or silt fencing, check dams, earth dikes, and spill containment. Non-structural BMPs would include: keeping equipment out of the waterway whenever possible, protecting construction materials from precipitation, and stabilizing bare soil by mulching, and re-vegetating exposed soil.
- d. **Contaminant Determination:** Only clean fill material would be placed in the Missouri River. The earthen material excavated during chute construction is part of the Missouri River bedload which has been immobilized by the Corps' BSNP / was previously deposited by the Missouri River as a result of construction of the BSNP . Soil testing at the project site identified no contaminants. The fill material would be of local earthen materials, clean rock obtained from commercial quarries and should not violate any general criteria of the Water Quality Standards, 10 CSR 20-7.037 (3) (A)-(H).
- e. **Aquatic Ecosystem and Organisms Determination:** Organisms present in the 34.4 acre construction area would be most affected by the initial clearing/grubbing activity as they would be killed or displaced from the area. For reptiles and amphibians relocation would be highly unlikely during fall/winter. Those organisms that were able to relocate would typically be more susceptible to predation. Clearing of wetland and riparian vegetation would result in a permanent conversion of habitat from riparian/wetland to shallow water. Considering the extent of natural riparian/wetland habitat on the Jameson Unit these impacts would be minor long term. Earthen material excavated/dredged during chute construction would be placed in a manner/location that would avoid/minimize adverse impacts to aquatic organisms of the Missouri River and adjacent wetlands. Placement sites would avoid wetlands and SWH and the majority of dredged/excavated material would be placed where it would quickly become integrated into the active Missouri River bedload through natural river processes. These areas typically have unstable bottoms with shifting dunes of sediment making them unsuitable for benthos.
- f. **Proposed Disposal Site Determination:** The discharge sites would include the Missouri River and adjacent wetlands. While some wetlands would be converted to SWH and some minor amount of sediment would be deposited in adjacent wetlands through natural river processes, the overall project would not result in the net loss of aquatic habitat. Discharge of earthen material into the

Missouri River would not convert the area to an upland/non-aquatic site as the material would be integrated into the active Missouri River bedload. As the chute further develops some earthen material would be expected to be deposited in adjacent wetlands through the natural river processes of the river. Restoration of the side channel would also allow some of the natural erosion and deposition to occur along its length. The process where river scouring creates aquatic habitat while at the same time sediment deposition decreases the amount or changes the type of aquatic habitat on the floodplain is a desired condition that was typical of the highly diverse and dynamic pre-regulated Missouri River. The project will increase the amount and quality of aquatic habitat in the project area.

- g. Determination of Cumulative Effects on the Aquatic Ecosystem:** No significant negative cumulative effects would be anticipated as a result of the Proposed Action. A description of the cumulative effects of all Corps SWH restoration projects which involve direct placement of sediment in the Missouri River on water quality is provided in Section 5.13 of the PIR. In addition to SWH projects undertaken as part of the MRRP, the Corps has authorized other projects under Section 404 of the Clean Water Act to reintroduce flood deposited sediment into the Missouri River. These have typically included routine dredging of casino boat embayments and clearing of flood deposited sediments from farm lands and areas of public infrastructure. Remobilizing Missouri River sediment trapped within the structures of the BNSP or recently deposited by floodwaters on the adjacent flood plain makes a small contribution towards restoring the historic conditions in which native species evolved. Remobilizing Missouri River sediment trapped by construction of the BSNP also makes a small contribution towards alleviating the sediment deficit at the Gulf of Mexico.
- h. Determination of Secondary Effects on the Aquatic Ecosystem:** The Proposed Action should not result in significant secondary effects on the aquatic ecosystem. The Corps has taken appropriate steps to avoid and minimize potential secondary effects or indirect effects by including a pre and post construction monitoring plans for water quality, biological response and engineering performance, and implementing Best Management Practices during construction. Additional information on the secondary or indirect effects can be found in Chapter 5.13 of the PIR.

Findings of Compliance or Non-compliance

- a.** There are no less environmentally damaging practicable alternatives that would fulfill the overall project purpose.
- b.** Our review of Water Quality Standards established by the State of Missouri indicates that the proposed discharge would not violate any applicable state water quality standards or effluent standards.

- c. The Proposed Action would not result in significant adverse impacts on human health and welfare, including municipal and private water supplies, recreational and commercial fishing, plankton, fish, shellfish, wildlife and special aquatic sites.
- d. All appropriate steps to minimize adverse environmental impacts have been taken.
- e. The Proposed Action would not jeopardize the existence of Federally listed endangered or threatened species or their habitat.
- f. No significant adaptations of the guidelines were made relative to this evaluation.

Conclusions

Based on all of the above, the Proposed Action is determined to be in compliance with the Section 404(b)(1) Guidelines.

This evaluation was:

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