

APPENDIX 3

PRELIMINARY SECTION 404(b)(1) EVALUATION

Table of Contents

SECTION 404(b)(1) EVALUATION.....	1
-----------------------------------	---

PRELIMINARY

SECTION 404(b)(1) EVALUATION

MISSISSIPPI RIVER AND TRIBUTARIES PROJECT MISSISSIPPI RIVER MAINLINE LEVEES ENLARGMENT AND SEEPAGE CONTROL PROJECT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT II

I. Introduction

- a. As required by Section 404(b)(1) of the Clean Water Act, this evaluation assesses the short and long-term impacts associated with the discharge of dredged and fill materials into the waters of the United States resulting from the preferred alternative, Alternative 3 (Avoid and Minimize).

II. Project Description

a. Location

The proposed project lies within the lower Mississippi River Valley and extends from Cape Girardeau, Missouri (approximately 50 river miles north of the confluence with the Ohio River) south to the Head of Passes (approximately 10 river miles south of Venice, Louisiana) on the lower extremity of the Mississippi River.

b. General Description

The proposed project includes remedial measures needed to control seepage and/or raise and stabilize deficient sections of the Mississippi River levees (MRL) and floodwalls to protect the lower Mississippi River Valley against the project design flood (PDF) and maintain the structural integrity of the MRL system at 143 Work Item locations. The MRL levees would be constructed to the design grade as determined by the Refined 1973 Project Design Flowline. Reaches of the MRL with seepage concerns would be addressed with berms or relief wells to lower risks of levee failure. Reaches of levee with stability concerns due to persistent levee slides would be addressed with flattening of levee slopes. Reaches of floodwalls with stability concerns would be replaced or repaired to lower risks of failure. Material used for the levee enlargements, slope flattenings, and berms would come from borrow areas near the MRL. The preferred alternative includes siting of the associated borrow areas into less environmentally sensitive areas, when practicable, to avoid and minimize impacts to bottomland hardwood forest and associated wetlands and other special aquatic sites.

Features of the avoid and minimize plan subject to the Clean Water Act and addressed in this evaluation are those construction activities involving the discharge of dredged or fill

material into waters of the United States, including forested wetlands, farmed wetlands, and open water.

c. Authority and Purpose

The project is authorized as part of the Flood Control Act of 1928, as amended. The Flood Control Act of 1928 has been amended by numerous acts, including the Flood Control Acts of 1934, 1936, 1938, 1941, 1946, 1950, 1954, 1962, 1965, and 1968, and the Water Resources Development Act of 1986. As prescribed by Congress, the purpose of the proposed project is to reduce the likelihood and effects of flood-related damage, disruption, and dislocation in the project area by improving the means and methods of preventing and controlling destructive floodwaters.

d. General Description of Dredged or Fill Material

1) General Characteristics of Material

Fill material used in levee enlargement, slope flattening, berm construction, and the associated haul roads would predominantly consist of clays from borrow areas interbedded with layers of silts and sands from proposed borrow areas riverside and landside of the MRL.

2) Quantity of Material

The total estimated quantity of dredged and fill material that would be deposited into waters (and wetlands) of the United States regulated by Section 404 guidelines is approximately 3,988,299 cubic yards.

Table 1 presents an estimated quantity of these materials by State.

<u>State</u>	<u>Material (cubic yards)</u>
Arkansas	255,943
Illinois	16,788
Kentucky	-
Louisiana	1,343,167
Mississippi	347,547
Missouri	198,789
Tennessee	1,826,074
TOTAL	3,988,307

3) Source of Material

Fill material would be obtained from landside and riverside borrow areas and some old levees near the MRL.

e. Description of the Proposed Discharge Site(s)

- 1) Location – The discharge of fill material would be at levee enlargement, slope flattening, and berm construction sites. Locations and descriptions of the various project features for each Work Item are found in Appendix 1.
- 2) Size – It is anticipated fill would be placed in approximately 876 acres of waters (and wetlands) of the United States regulated by Section 404 guidelines. Tables 2 and 3 display impacted acreage by State and USACE district, respectively.

Table 2. Acreages of wetland and open waters to be filled from levee enlargements, slope flattenings, and berms by State.

<u>State</u>	<u>Forested¹</u>	<u>Farmed²</u>	<u>Open Water</u>	<u>TOTAL</u>
Arkansas	75.3	0.7	0.01	76.0
Illinois	7.0	3.5	-	10.5
Kentucky	-	-	-	-
Louisiana	153.9	205.9	3.7	363.4
Mississippi	45.9456	38.28405	-	84.2
Missouri	65.0222	49.06807	0.4	114.5
Tennessee	18.483	208.8673	-	227.4
TOTAL	365.5	506.3	4.1	876.0

¹Includes forested, tree plantation, scrub/shrub, and other wetland cover types.

²Includeds cropland and pasture/old field cover types.

Table 3. Acreages of wetland and open waters to be filled from levee enlargements, slope flattenings, and berms by District.

<u>USACE District</u>	<u>Forested¹</u>	<u>Farmed²</u>	<u>Open Water</u>	<u>TOTAL</u>
Memphis (MVM)	165.7	262.1	0.4	428.3
Vicksburg (MVK)	164.9	116.0	2.5	283.4
New Orleans (MVN)	35.0	128.2	1.1	164.3
TOTAL	365.5	506.3	4.1	876.0

¹Includes forested, tree plantation, scrub/shrub, and other wetland cover types.

²Includeds cropland and pasture/old field cover types.

- 3) Type(s) of Habitat – Habitat types predominantly include forested and agricultural lands located near the MRL.
- 4) Timing and Duration of Discharge – Discharge timing would depend on preconstruction planning and construction activities. Each of the 143 Work Items is a separate item of work and would be designed and constructed incrementally, subject to funds availability and priority. Presently, construction is scheduled to begin in 2021, and extend for approximately 50 years.

f. Description of Disposal Method

The borrow material would be used in levee enlargement, slope flattening and berm construction. Minimal discharges into riverside wetlands are anticipated. To the extent practicable, efforts would be made to avoid and minimize adverse impacts to forested wetland areas. Clean fill material would be transported by land-based equipment.

III. Factual Determinations

a. Physical Substrate Determinations

- 1) Substrate Elevation and Slope – The mainline flood control levees in the lower Mississippi Valley are founded on the Quaternary alluvium of the Mississippi River system. The flood plain has a typical downstream slope of 0.6 foot per mile. Relief is generally less than 10 feet. The greatest relief is associated with natural levees and point bar ridges. Ground slope ranges from 300 feet, National Geodetic Vertical Datum (NGVD), in the northern part of the valley to sea level on the delta. No significant effects to these existing slopes are anticipated to result from the proposed project.
- 2) Sediment Type – Soils within borrow areas comprised of primarily clay, silt and sand materials.
- 3) Dredged/Fill Material Movement – Placement of fill material into wetland areas would occur when material is removed from borrow areas and placed on and adjacent to the levee during levee enlargement and berm construction. Temporary and permanent erosion control measures would be conducted according the storm water pollution prevention plans (SWPPs) at each construction site. Thus, there would be no foreseeable movement of fill or excavated material upon completion of construction. No open water discharges, which would be subject to current or wave action, are expected.
- 4) Physical Effects on Benthos – Physical destruction of benthic macroinvertebrate community would occur during the removal of borrow material and placement of fill

in wetlands adjacent to the levee. Colonization of benthic organisms would occur in the newly constructed borrow areas created by the project over time.

- 5) Other Effects – Additional effects, including impacts associated with project implementation on significant and cultural resources, are described in Section 4.0 of the SEIS.
- 6) Actions Taken to Minimize Impacts – Fill materials to be discharged are similar to the substrate at discharge sites. Open water discharge would be avoided to the extent possible. Wetlands and other waters would be avoided to the extent practicable in the design and construction of each item of work. In addition, the following best management practices will be implemented during construction to minimize impacts:
 - Effective erosion control (silt fences, etc.) will be in place prior to construction and maintained throughout the construction period.
 - When practicable, construction will take place during periods of low rainfall and low water stages.
 - Vegetation to be cleared will be the minimum necessary to allow for construction access.
 - All disturbed areas will be seeded within 30 days after construction is completed.
 - Construction debris will be kept from entering nearby channels and shall be disposed of properly.
 - Appropriate steps shall be taken to ensure that petroleum products or other chemical pollutants are prevented from entering the water.

b. Water Circulation, Fluctuation, and Salinity Determinations

- 1) Water – Water quality impacts resulting from project construction would primarily be short term and localized. Impacts to water quality at discharge sites are expected to be insignificant since most work will occur in the dry areas. Excavation at borrow areas would result in localized increases in turbidity and suspended solids adjacent to excavation operations. Increased turbidity levels and suspended solids would be expected to return to preconstruction levels upon completion of excavation operations. Water quality within newly constructed borrow areas would be affected by the soil concentrations of the surrounding area and from flushing the effects from seasonal high-water fluctuations on the Mississippi River. Landside borrow sites are located primarily in agricultural areas and would be affected by residual soil nutrient and pesticide loadings. Landside borrow areas would not experience flushing effects from seasonal high-water fluctuations on the Mississippi River.
 - a) Salinity – No impacts to existing salinity conditions are anticipated.
 - b) Water Chemistry – As reported in the Water Quality Analysis (Section 4.2.8 of the SEIS II and associated Appendix), operations associated with this project are not anticipated to significantly affect the water chemistry of either the Mississippi

River or the existing borrow areas. Newly constructed borrow areas would be affected by the surrounding soil conditions. Although after establishment and equilibrium conditions reached, water quality of the newly constructed riverside borrow areas is anticipated to be similar to those of the existing borrow areas.

- c) Clarity – No change in water clarity is anticipated with implementation of the proposed project.
 - d) Color – Any changes in color would be temporary and minor.
 - e) Odor – Construction operations would result in the release of odors otherwise contained. However, this condition is not expected to be hazardous and would be localized and temporary.
 - f) Taste – No potable water intakes are known to exist in the immediate vicinity of the proposed discharge sites.
 - g) Dissolved Gas Levels – There would likely be some short-term and localized reductions in dissolved oxygen (DO) associated with increased turbidity and suspended solids during construction. The decreases in DO will only occur during construction operations and are not anticipated to fall below State minimum standards.
 - h) Nutrients – Surface waters and sediments within the borrow areas are rich in nutrients, especially nitrogen and phosphorous. Sediment disturbance during construction would cause temporary increases in nutrient levels. However, such increases would be of short duration and nutrient levels would return to preconstruction levels following completion of proposed construction activities.
 - i) Eutrophication – No expected change.
 - j) Others as Appropriate – No expected change.
- 2) Current Patterns and Circulation
- a) Current Patterns and Flow – Current patterns are not expected to change.
 - b) Velocity – Water velocity is not expected to be change.
 - c) Stratification – Only borrow areas that are increased in size are likely to be impacted with regards to stratification. Short-term increases in turbidity are likely to occur during excavation and filling operations. This may affect water temperatures near construction areas. Since stratification is primarily dependent on temperature, short-term impacts in stratification are likely to occur during

excavation and filling operations. Any impacts resulting in a change in stratification processes would be minor and temporary.

- d) Hydrologic Regime – The hydrologic regime of the Mississippi River would not be significantly impacted as a result of project construction. The addition of new borrow areas, and/or increasing existing borrow areas, would provide for additional water storage. Berm construction would result in the filling of some wetland areas, which would result in a reduction of water storage. No changes in existing drainage patterns that would result in a change in the hydrologic regime of the project area are anticipated.
 - 3) Normal Water Level Fluctuations – Normal water level fluctuations are influenced primarily by stages on the Mississippi River. Since project construction would not affect river stages, no impacts to normal water level fluctuations are anticipated, except where wetlands are filled for berm/levee construction.
 - 4) Salinity Gradients – Not applicable.
 - 5) Actions Taken to Minimize Impacts – Actions that will be implemented during construction to minimize impacts have been previously described in the Physical Substrate Determinations section above.
- c. Suspended Particulate/Turbidity Determinations
- 1) Expected Changes in Suspended Particulates and Turbidity Levels in Vicinity of Disposal Site – Minor increases in suspended particulates and turbidity levels are expected during construction. Best management practices will be used throughout the construction process to minimize the impact. Ambient conditions are expected to return shortly after completion of construction.
 - 2) Effects on Chemical and Physical Properties of the Water Column
 - a) Light Penetration – Minor impacts are expected to light penetration due to an expected increase in turbidity levels during construction. Ambient conditions are expected to return shortly after completion of construction.
 - b) Dissolved Oxygen – It is anticipated that excavation within borrow areas and the construction of berms within wetland areas would lead to increases in suspended solids and turbidity to occur adjacent to these sites, resulting in short-term and localized reductions in DO. The decreases in DO will only occur during construction operations and are not anticipated to fall below State minimum standards.
 - c) Toxic Metals and Organics – No effect on toxic metals and organics are expected.

- d) Pathogens – Not applicable.
- e) Aesthetics – Aesthetics will be temporarily impacted during construction due to the presence of construction equipment and would be expected to return to existing conditions of levees, berms, borrow areas, and forested wetlands upon project completion.
- f) Others as Appropriate – None noted.

3) Effects on Biota

- a) Primary Production – Project activities will fill approximately 876 acres of wetlands. Additionally, periodic reduction in light transmissions as a result of erosion associated with construction would reduce photosynthesis and primary production to a minor degree in portions of aquatic areas (*i.e.*, construction within existing open water). It is anticipated that new borrow areas created during this project will develop similarly to those present within the project area.
- b) Suspension/Filter Feeders – Increased turbidity will be of short duration, and any organisms that are impacted should repopulate the area after project completion.
- c) Sight Feeders – Resident fish are adapted to turbidity increases that occur after every rainstorm. Project-related turbidity increases will be minor compared to these natural events. Since fish and other sight feeders are highly mobile, project impacts to sight-feeding organisms will be insignificant and short term.
- d) Actions Taken to Minimize Impacts – Actions that will be implemented during construction to minimize impacts have been previously described in the Physical Substrate Determinations section above.

d. Contamination Determinations

Based on the analysis performed and documented in the Appendix 12 and within this evaluation, the risk of contamination of waters resulting from the placement of borrow material into waters located within the project area is low. As reported earlier, the water quality within the existing riverside borrow pits is of good quality and meets current water quality standards. Excavation and filling operations associated with this project are not anticipated to significantly affect the water chemistry of the Mississippi River, existing borrow areas, or wetlands affected by placement of fill material.

e. Aquatic Ecosystem and Organism Determinations

- 1) Effects on Plankton – Planktonic organisms may be temporarily disturbed during construction, as increases in turbidity are expected. However, turbidity levels will be

expected to return to pre-construction levels shortly after construction is completed. Waters and wetlands to be filled by levee enlargement, slope flattening, and berm construction would, unavoidably, no longer be available for use by plankton. However, the creation of borrow pits would provide new habitat.

- 2) Effects on Benthos – Some benthic organisms would be adversely impacted by deposition of fill material. Those waters and wetlands to be filled by levee enlargement and berm construction would, unavoidably, no longer be available for use by benthic organisms.
- 3) Effects on Nekton – No direct impacts are expected on free-swimming animals. Waters and wetlands to be filled by levee enlargement and berm construction would, unavoidably, no longer be available for use by nekton.
- 4) Effects on Aquatic Food Web – The aquatic food web would, unavoidably, be adversely impacted due to the loss of 365.5 acres of forested wetlands, 506.3 acres of farmed wetlands, and 4.1 acres of open water.
- 5) Effects on Special Aquatic Sites
 - a) Sanctuaries and Refuges – Not applicable.
 - b) Wetlands – Approximately 365.5 acres of forested wetlands and 506.3 acres of farmed wetlands will be filled by the proposed project. A wetland breakdown by State is provided in Table 2. The 1,447 acres of mitigation proposed for the project described in the draft SEIS would offset these impacts and fulfill mitigation requirements.
 - c) Mud Flats – Not applicable.
 - d) Vegetated Shallows – Not applicable.
 - e) Coral Reefs – Not applicable.
 - f) Riffle and Pool Complexes – Not applicable.
- g. Threatened and Endangered Species – The U.S. Fish & Wildlife Service (USFWS) listed the seven federally-listed threatened and endangered species within the project area, by letter dated March 5, 2019 (Table 4).

Table 4. List of threatened and endangered species that may occur in the project area.

<u>Species</u>	<u>Status</u>
Pallid sturgeon (<i>Scaphirhynchus albus</i>)	Endangered
Fat pocketbook mussel (<i>Potamilus capax</i>)	Endangered
Indiana bat (<i>Myotis sodalis</i>)	Endangered

Gray bat (<i>Myotis grisescens</i>)	Endangered
Northern long eared bat (<i>Myotis septentrionalis</i>)	Threatened
Wood stork (<i>Mycteria Americana</i>)	Threatened
Interior least tern (<i>Sterna antillarum</i>)	Threatened

Most of the listed species would have a very low likelihood to no likelihood of occurrence within the project footprints, as described in Section 3.2.5 and Appendix 9 of the SEIS. Overall, there would not likely be adverse effects to federally-listed species. In the letter dated March 5, 2019, USFWS proposed to address threatened and endangered species in a programmatic manner, consulting on impacts with individual Work Items after construction details (site-specific conditions, exact timing, etc.) are developed prior to the construction phases of each Work Item. This would ensure that any species or critical habitat designated in the future, and the best available scientific information is used during the consultation process. Pursuant to Section 7 of the Endangered Species Act, individual consultations would occur with each Work Item after congressional appropriations are received and detailed plans are being developed.

- 1) Other Wildlife – Wetland habitat and associated wildlife would experience unavoidable adverse direct impacts due to habitat loss. Although habitat would be lost, avoid and minimize measures have been incorporated into the preferred alternative and planned mitigation would provide similar habitat benefits, as described in Section 5.0 of the SEIS II.
- 2) Actions Taken to Minimize Impacts – Actions that will be implemented during construction to minimize impacts have been previously described in the Physical Substrate Determinations section above.

f. Proposed Disposal Site Determinations

- 1) Mixing Zone Determinations – Not applicable.
- 2) Determination of Compliance with Applicable Water Quality Standards – Changes to water quality conditions as a result of this project are not anticipated to cause long-term changes in the existing water quality within the project area. The water quality within the project area is in compliance with current water quality standards. Only temporary, short-term impacts to water quality are anticipated as a direct result of project construction. These impacts include temporary increases in suspended solids and increases in turbidity levels which would occur only during and adjacent to construction operations. Water quality certification would be obtained from applicable States prior to project construction.
- 3) Potential Effects on Human Use Characteristic
 - a) Municipal and Private Water Supply – No significant effects.

- b) Recreational and Commercial Fisheries – Approximately 1,402 acres of aquatic habitat would be created through the obtainment of fill material, although this would occur predominantly on private lands. This would provide additional opportunities for recreational fishing. Commercial fisheries are not anticipated to be adversely affected.
 - c) Water Related Recreation – Not applicable.
 - d) Aesthetics – Aesthetics will be temporarily impacted during construction due to the presence of construction equipment and would be expected to return to existing conditions of levees, berms, borrow areas, and forested wetlands upon project completion.
 - e) Parks, National and Historic Monuments, National Seashores, Wilderness Areas, Research Sites, and Similar Preserves – A full list of these sites in the vicinity of the proposed Work Items are located in the Recreation Appendix 17. There are no significant impacts anticipated to these sites as described in Section 4.2.15 of the SEIS.
- h. Determination of Cumulative Effects on the Aquatic Ecosystem

The requirement for deposition of fill material during construction would add a relatively minimal amount of pollutants to the proposed project area's ecosystem. Pollutants would primarily be in the form of temporarily increased sediment loads that would result in minor increases in both suspended solids and turbidity. The proposed construction would impact 876 acres of waters of the U.S., create 1,402 acres of fishery habitat through creation of new borrow pits, and result in the reforestation of 1,447 acres of agricultural land with implementation of compensatory mitigation to offset habitat losses caused by the project. Additional details on cumulative effects associated with the proposed actions are included in Section 4.3 of the SEIS II.

- i. Determination of Secondary Effects on the Aquatic Ecosystem

Secondary impacts to the aquatic ecosystem would be minimal and not significant.

IV. Findings of Compliance for Mississippi River Levees Construction

- a. Evaluation of Availability of Practical Alternatives to the Proposed Discharge Site Which Would have Less Adverse Impact on the Aquatic Ecosystem

A draft SEIS II has been completed that addresses alternatives to the proposed action. The recommended plan was determined to be the least environmentally damaging of the alternatives studied in detail. The no action alternative was determined not to be practical. The proposed action will protect life safety, existing public infrastructure, and private

homes and businesses. Deposition of fill material associated with construction requirements for the Mississippi River and Tributaries Project, Mississippi River Levees Project, would adversely impact 365.5 acres of forested wetlands, 506.3 acres of farmed wetlands, and 4.1 acres of open water. The proposed project features were designed to avoid to the extent practicable, wetlands and waters of the United States. Incorporated into the project's design were avoid, minimize, and environmental design measures that will lessen adverse impacts to wetlands. Project-induced adverse impacts to wetlands would be fully compensated.

b. Compliance with Applicable State Water Quality Standards

The planned deposition of fill material would not violate any applicable State water quality standards. Water quality certification would be obtained from applicable States prior to project construction.

c. Compliance with Applicable Toxic Effluent Standard or Prohibition Under Section 307 Of the Clean Water Act

The Toxic Effluent Standards of Section 307 of the Clean Water Act would not be triggered.

d. Compliance with Endangered Species Act of 1973

No endangered species or their critical habitat are likely to be adversely impacted by the proposed action (refer to section describing Endangered Species Act compliance). Section 7 consultations would occur programmatically, as recommended by USFWS.

e. Compliance with Specified Protection Measures for Marine Sanctuaries Designated by the Marine Protection, Research, and Sanctuaries Act of 1972

Not applicable.

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

The proposed disposal of fill material would not likely result in significant adverse effects on human health or welfare, municipal or private water supplies, recreational or commercial fishing, plankton, fish, shellfish, wildlife, or special aquatic sites. Further, in light of proposed mitigation, significant adverse effects would not likely occur to aquatic ecosystem diversity, to productivity and stability, or to recreational, aesthetic, and economic values.

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

The proposed disposal sites for the discharge of fill material comply with the requirements to include appropriate and practical conditions to minimize pollution and adverse effects on the aquatic ecosystem. Construction activities would cease in extreme flood events to minimize potential adverse impacts. Water quality impacts would be minimized with best management practices for nonpoint pollution at construction sites. A stormwater pollution prevention plan (SWPPP) would be prepared in compliance with EPA and associated State regulations with each construction contract. The SWPPP would outline temporary erosion control measures such as silt fences, retention ponds, and dikes. The construction contract would include permanent erosion control measures, such as turfing and placement of riprap and filter material.

h. On the Basis of the Guidelines, the Proposed Disposal Site(s) for the Discharge of Dredged or Fill Material is:

☒ Specified as complying with the requirements of these guidelines; or,

 Specified as complying with the requirements of these guidelines, with the inclusion of appropriate and practical conditions to minimize pollution or adverse effects on the aquatic ecosystem; or,

 Specified as failing to comply with the requirements of these guidelines.

Date

Prepared by:
U.S. Army Corps of Engineers,
Mississippi Valley Division,
Regional Planning and
Environmental Division South,
Memphis, Tennessee