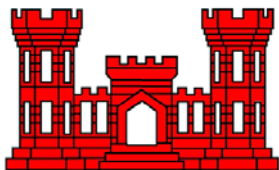


DRAFT ENVIRONMENTAL ASSESSMENT

Mississippi River Mainline Levee Miston Berm Construction and Levee Rehabilitation Dyer and Lake Counties, Tennessee

DRAFT



**U.S. Army Corps of Engineers
Mississippi Valley Division
Regional Planning and Environmental Division South**

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DRAFT ENVIRONMENTAL ASSESSMENT

Mississippi River Mainline Levee Miston Berm Construction and Levee Rehabilitation Dyer and Lake Counties, Tennessee

1.0 INTRODUCTION

The U.S. Army Corps of Engineers (USACE), Mississippi River Valley Regional Planning and Environmental Division South, has prepared this draft environmental assessment (EA) for the Memphis District (MVM) to evaluate the potential impacts associated with the construction of seepage control berms at four locations and repair of several levee slides along the Mississippi River mainline levee (MRL), located in Dyer and Lake Counties, Tennessee (Figure 1).

This draft EA has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969 and the Council on Environmental Quality's Regulations (40 CFR 1500-1508), as reflected in the USACE Engineering Regulation ER 200-2-2. This draft EA provides sufficient information on the potential adverse and beneficial environmental effects to allow the District Commander, USACE, MVM, to make an informed decision on the appropriateness of an environmental impact statement (EIS) or a finding of no significant impact (FONSI).

A 1998 final Supplemental EIS (SEIS), *Mississippi River Mainline Levees Enlargement and Seepage Control*, addressed seepage control measures to be implemented along the Mississippi River Levee (MRL). While berm construction in this area was covered under the SEIS, it was determined that additional rights of way were needed and potential environmental impacts were identified.

1.1 Proposed Action

The proposed project involves implementing seepage control measures and repair of levee slides along the MRL in Dyer and Lake Counties, Tennessee. The northern limit of the project begins at Lower Owl Hoot Road or Baseline Station 14/50+25 and extends to the southern limit of work which ends at Baseline Station 19/48+50 (Figure 1). The work would consist of constructing four separate earthen berms adjacent to the landside levee slope; excavating, repairing and flattening the damaged landside levee slopes. Borrow material would be excavated from an area adjacent to the existing riverside borrow pit. Other features would include replacing a 48-inch corrugated metal pipe to support the weight of equipment accessing the borrow pit, placing filter fabric and road gravel, removing an existing fence along the landside levee toe, replacing asphalt where required, placing bedding stone, establishing turf, providing traffic control, and establishing appropriate erosion controls and utilizing best management practices.

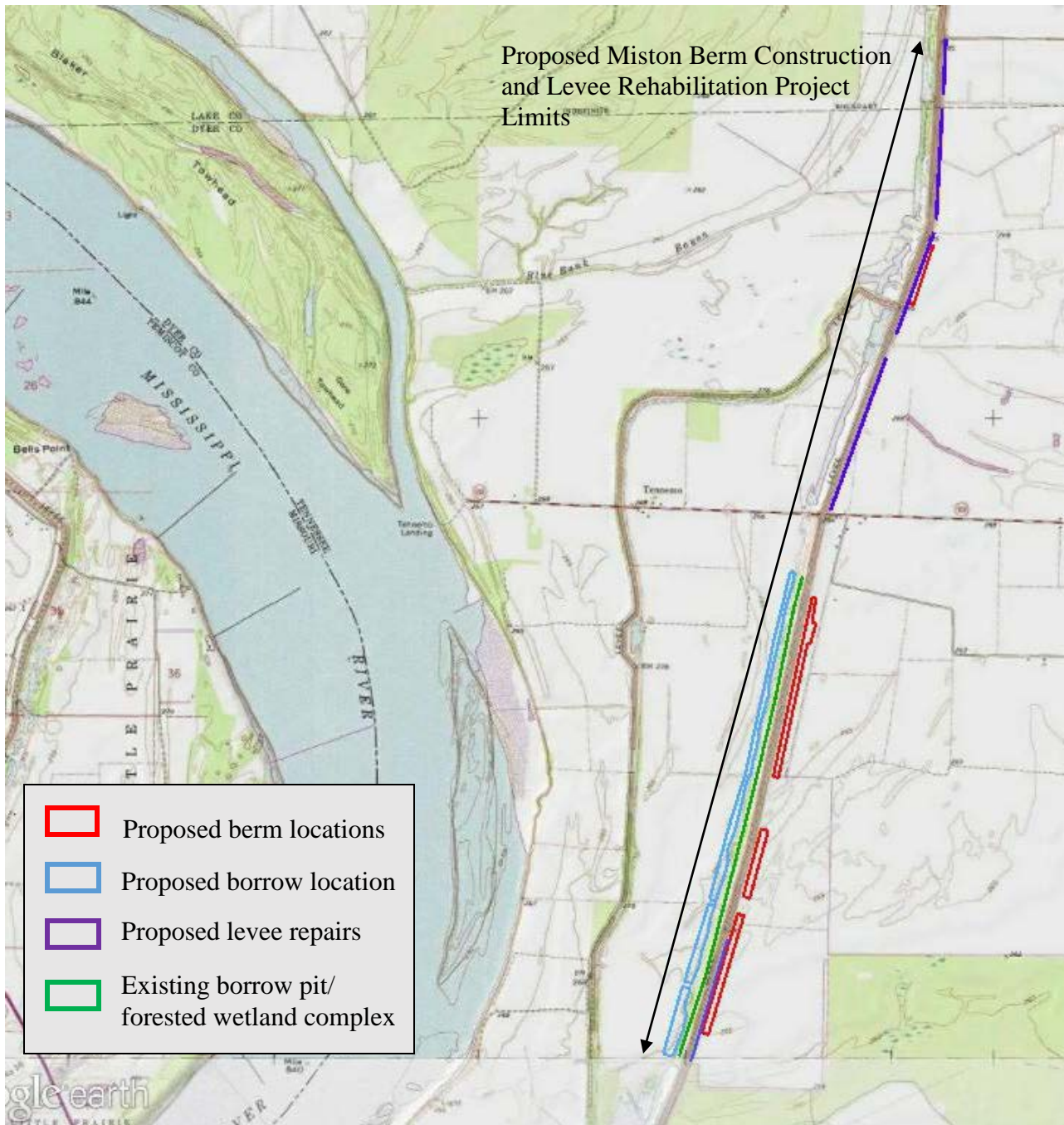


Figure 1. Topographic map indicating the proposed Miston project limits, berm locations and borrow location, Dyer and Lake Counties, Tennessee.

1.2 Purpose and Need for the Proposed Action

The Miston Berm Project was designed in the early 1980's due to seepage issues discovered during floods in the late 1970's. Repairs were not completed at that time due to the lack of funding for the project. During the floods of 2011 and 2015, seepage issues were observed by Corps personnel. The purpose of the proposed action is to control seepage under the MRL during flood events on the Mississippi River to prevent levee damage or failure. The final *Mississippi River Mainline Levees Enlargement and Seepage Control*, SEIS was completed in 1998, and addressed seepage control measures to be implemented along the Mississippi River Levee (MRL) including this action. While berm construction in this area was covered under the SEIS, it has been determined that additional right of way is required and potential environmental impacts have been identified.

The MRL, which also serves as Tennessee Highway 181, is causing serious safety concerns for local traffic as well as the large amount of haul-truck traffic due to the significant levee embankment slides along approximately 2.7 miles of the highway. The levee embankment slides would be repaired with the proposed project. Failure due to levee embankment slides or uncontrolled seepage and piping (sands and silts being carried under the levee during flood conditions) would result in property damage and could cause human injuries and/or loss of life.

1.3 Authority for the Proposed Action

The proposed action is authorized as part of the Flood Control Act of 1928, as amended.

1.4 Prior Reports

The final *Mississippi River Mainline Levees Enlargement and Seepage Control*, SEIS was completed in 1998, and addressed seepage control measures to be implemented along the Mississippi River Levee (MRL) including this action. While berm construction in this area was covered under the SEIS, it was determined that additional rights of way were needed and potential environmental impacts were identified.

1.5 Public Concerns

Public concerns exist regarding the ability of the MRL to contain floodwaters during a flood event. Seepage and piping would eventually undermine the levee causing it to breach if unabated, thus posing a threat of flooding. A levee breach would flood the surrounding lands and residential areas, and threaten the lives and property of residents within the flooded areas. The record level flooding of the Mississippi River in May 2011 has heightened public concerns.

2.0 ALTERNATIVES TO THE PROPOSED ACTION

Three alternatives were considered for the proposed action. These alternatives were: 1) no-action; 2) installation of relief wells and associated drainage work; and 3) construct a landside berm.

2.1 Alternative 1 – Future without Project Condition (No-Action)

In the future without project condition (no-action), the proposed action would not be constructed. The no-action alternative would result in continued seepage and piping during flood conditions. Sands and silts would be carried under the levee, which could lead to levee breach. Also, levee slides would continue to worsen causing severe degradation along Great River Road and potentially adding to the risk of levee failure during a major flood event. Failure of the levee would result in property damage, human injuries and/or loss of life.

2.2 Alternative 2 – Install Relief Wells with Associated Drainage Work and Repair Levee Slides

This proposed alternative would excavate and repair levee slides along the MRL using approximately 450,000 cubic yards of material excavated from the agricultural land adjacent to the existing borrow pit on the riverside of the MRL. Through Geotechnical analysis, it has been determined that this material is more suitable than the highly plastic clays that currently are causing the levee to slide in several locations. The slopes would also be flattened to extent possible while staying within the existing right-of-way. Levee slopes would range between 3-3.5H:1V.

Relief wells and associated drainage ditches were considered to control seepage along the MRL in this area. However, relief wells would not prevent piping if backwater has entered the landside levee area; therefore, this alternative is not acceptable for this area due to the regular occurrence of backwater flooding from the Obion River.

2.3 Alternative 3 – Construct a Landside Berm and Repair Levee Slides

This proposed alternative would excavate and repair levee slides along the MRL using approximately 450,000 cubic yards of material excavated from the agricultural land adjacent to the existing borrow pit on the riverside of the MRL. Through Geotechnical analysis, it has been determined that this material is more suitable than the highly plastic clays that currently are causing the levee to slide in several locations. The slopes would also be flattened to extent possible while staying within the existing right-of-way. Levee slopes would range between 3-3.5H:1V. The material that currently constitutes the existing levee embankment would be excavated and used for construction of the proposed seepage berms described below.

This project feature was considered in the 1998 SEIS, and involves constructing four seepage berms along the landside toe of the MRL to control seepage and piping under the levee. Approximately 430,000 cubic yards of material would be required for construction of the seepage berms. This material would be excavated from the levee embankment during the repair of the levee slides and any additional material required would be excavated from the proposed borrow pit. Temporary impacts to local roadways and the public use of those roads would result, as haul trucks would be needed to transport the tons of material to the project site; however, a traffic plan is being developed with the Tennessee Department of Transportation.

The majority of work would occur concurrently and in sections to reduce the risk of levee failure during construction. For example, the excavation of the levee slopes must occur concurrently with borrow pit excavation as no more than 300 feet of levee excavation may occur without backfill and compaction, and no more than 1,000 feet of levee may be excavated at any time. Back fill of the levee slopes must be complete within 30 days of excavation. Material excavated from the levee slopes must be hauled to the berm locations and compacted as work is occurring.

A total of approximately 3.3 acres of forested wetlands, 0.85 acres of farmed wetland, 0.14 acres of mowed/maintained wetlands along the landside toe of the levee, and 8 acres of upland tree line area would be impacted by the proposed project. The 3.3 acres of forested wetlands would be converted to a borrow pit that would naturally revegetate with black willow and other wetland vegetation. It is expected that with time, the proposed borrow pit would resemble the existing adjacent borrow pit, effectively enlarging the areal extent of the open water/wetland complex. The approximately 0.85 acres of farmed wetland and 0.15 acres of mowed/maintained wetland would be permanently filled due to berm construction. To mitigate for the functional change of 3.3 acres of forested wetlands to an open water/wetland complex, the permanent loss of 0.85 acre of wetlands, and the permanent loss of 0.14 acre of mowed/maintained wetland, approximately 11 acres of prior converted cropland would be restored to bottomland hardwoods as described in the Mitigation Section (6.0) below. Compensatory mitigation would also occur concurrently with construction of the project.

2.4 Preferred Alternative for the Proposed Project

After careful consideration of all alternatives, it was determined that alternative 1 (no-action) was unacceptable because of risks to human life and property. If a seepage problem is not addressed, levee failure resulting in catastrophic impacts could ultimately result. Due to ineffectiveness of relief wells in this case due to backwater flooding, Alternative 2 is not practicable or reasonable. Alternative 3 is the only effective method for controlling seepage and piping in the identified seepage locations. All factors considered, alternative 3 is the most practical solution for seepage control and is the preferred alternative for the proposed project.

The Hickman Kentucky to Obion River Levee System portion of the MRL protects approximately 312,000 acres of land from damages during flood conditions. Approximately 6,900 structures exist in the protected segment and property is valued at \$1.3 billion. Should the MRL at these locations breach, the population at risk is approximately 15,390 people.

3.0 AFFECTED ENVIRONMENT

3.0.1 Environmental Setting

The proposed seepage control project is primarily located in Dyer County, Tennessee. However, approximately 1,500-feet of the proposed project extends north into Lake County, Tennessee (Figure 2). During the spring of 2018, MVM biologists performed a site assessment of the proposed project area. Throughout the proposed project reach, properties on the landside of the levee are dominated by large, row crop agricultural production and a wet weather conveyance that parallels much of the landside project area. On the riverside of the levee, row crop

agricultural production is also dominant. However, beginning at the southern end of the project limits and continuing to approximately to Highway 103, an approximate 300-foot wide area of forested wetland is present between the levee toe and agricultural fields.. This wetland was likely used as a borrow source in the past. Noted tree species included cottonwood, black willow, sycamore, American elm, sugarberry, silver maple, bitter pecan, and various types of oaks. Also located on the riverside of the MRL, a private levee ties into the MRL approximately 0.75-miles north of Boothspoint Road, and continues for approximately 3.3-miles before tying into Highway 103. The private levee protects approximately 800 acres of agricultural land within the MRL batture area (Figure 1). North of Highway 103, on the riverside toe of the MRL, an approximate 250-foot by one mile long borrow pit exists. The remaining area adjacent to the riverside toe of the MRL to the northern project limits is occupied by an approximately 300-foot wide area of woody vegetation, with row crop agricultural land abutting the woody vegetation. Woody vegetation in this area is similar to that noted at the southern project limits.

3.0.2 Description of the Watershed

The project area lies within the Mississippi Alluvial Plain and sits in the shared floodplain between the Mississippi and Obion Rivers in Dyer County, Tennessee, with a small portion of the northern project limits extending into Lake County, Tennessee. The 8-digit Hydrologic Unit Code (HUC) for the proposed borrow pit is the Mississippi River Basin (TN08010100) and consists mainly of the Mississippi River channel and adjacent floodplain. The predominant land use is open water (Mississippi River) and the floodplain is a mixture of woody wetlands (vegetated islands and riparian vegetation) and agricultural row-crop production. The 8-digit HUC for the berm construction and levee slide repair area is the Obion River Basin (TN08010102) which encompasses approximately 1,313 square miles and drains into the Mississippi River. Land use in the area is dominated by agricultural production.

3.0.3 Climate

The average annual temperature for Dyer County is 61 degrees Fahrenheit. The average daily maximum temperature for the area is 70 degrees Fahrenheit with 2 years in every 10 having temperatures greater than 100 degrees Fahrenheit occurring in July. The average daily minimum temperature is 51 degrees Fahrenheit with 2 years in every 10 having temperatures less than 2 degrees Fahrenheit occurring in January. Yearly precipitation averages 51 inches. Rainfall will average less than 35 inches and greater than 58 inches 2 out of every 10 years. The month receiving the most rainfall is December with an average of 5.2 inches and the month receiving the least is September with an average of 2.9 inches. Most precipitation falls in the form of rain; however snow may fall in the months of November through March.

3.0.4 Geology

The proposed project area is located within the Mississippi Alluvial Valley, which formed by glacial melt waters carrying large amounts of water, silt, sand, and gravel from the country's interior down to the Gulf Coast. The alluvial valley is bordered on the east by bluffs and on the west by merging valleys of the principal tributaries and ranges in width from approximately 30 to 90 miles (Saucier 1994). Quaternary deposits within the alluvial valley consist of various

abandoned channels and point bar deposits of historic Mississippi River meander belts. The fluvial-geomorphic history determines the individual soil types at specific locations. The majority of the soils within the immediate project footprint are Bowdre and Tunica clays.

3.1 Relevant Resources

This section contains a description of relevant resources that could be impacted by the project. The relevant resources (Table 1) described in this section are those recognized by laws, executive orders, regulations, and other standards of National, state, or regional agencies and organizations; technical or scientific agencies, groups, or individuals; and the general public. The following resources have been considered and found to not be affected by the alternative under consideration: freshwater marshes, freshwater lakes, state-designated scenic streams, fisheries, municipal facilities, municipal utilities, roadways, recreation, aesthetics, socio-economic, and environmental justice.

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Table 1. Relevant Resources that could potentially be impacted by the project.

Resource	Institutionally Important	Technically Important	Publicly Important
Agricultural Lands	Food Security Act of 1985, as amended; the Farmland Protection Policy Act of 1981	The habitat provided for the provision or potential provision of human and livestock food products.	The present economic value or potential for future economic value.
Wetlands	Clean Water Act of 1977, as amended; Executive Order 11990 of 1977, Protection of Wetlands; EO 11988, and Fish and Wildlife Coordination Act.	They provide necessary habitat for various species of plants, fish, and wildlife; they serve as ground water recharge areas; they provide storage areas for storm and flood waters; they serve as natural water filtration areas; they provide protection from wave action, erosion, and storm damage; and they provide various consumptive and non-consumptive recreational opportunities.	The high value the public places on the functions and values that wetlands provide. Environmental organizations and the public support the preservation of wetlands.
Wildlife	Fish and Wildlife Coordination Act of 1958, as amended and the Migratory Bird Treaty Act of 1918.	They are a critical element of many valuable aquatic and terrestrial habitats; they are an indicator of the health of various aquatic and terrestrial habitats; and many species are important commercial resources.	The high priority that the public places on their esthetic, recreational, and commercial value.
Threatened and Endangered Species	The Endangered Species Act of 1973, as amended;; and the Bald Eagle Protection Act of 1940.	USACE, USFWS, NRCS, USEPA, and TWRA cooperate to protect these species. The status of such species provides an indication of the overall health of an ecosystem.	The public supports the preservation of rare or declining species and their habitats.
Cultural Resources	National Historic Preservation Act of 1966, as amended; the Native American Graves Protection and Repatriation Act of 1990; and the Archeological Resources Protection Act of 1979	State and Federal agencies document and protect sites. Their association or linkage to past events, to historically important persons, and to design and construction values; and for their ability to yield important information about prehistory and history.	Preservation groups and private individuals support protection and enhancement of historical resources.
Air Quality	Clean Air Act of 1963.	State and Federal agencies recognize the status of ambient air quality in relation to the NAAQS.	Virtually all citizens express a desire for clean air.
Hydrology and Water Quality	Clean Water Act of 1977, Fish and Wildlife Coordination Act.	State and federal agencies recognize value of fisheries and good water quality. The National and state standards are established to assess water quality.	Environmental organizations and the public support the preservation of water quality and fishery resources and the desire for clean drinking water.

3.1.1 Agricultural Lands

Existing Conditions

The predominant land use landside of the MRL proposed to be modified are agricultural fields currently in production. Utilizing the U.S. Department of Agriculture Web Soil Survey (<https://websoilsurvey.nrcs.usda.gov/app/>), it was determined that the area may be eligible for classification as prime farmland. The four primary crops grown are corn, cotton, soybeans, and wheat.

3.1.2 Wetlands

Existing Conditions

The riparian vegetation adjacent to the riverside toe of the MRL is comprised of bottomland hardwood species and is identified as Freshwater Forested/Shrub Wetlands and Freshwater Emergent Wetlands on the U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) maps. Additionally, the USFWS NWI maps also classify the borrow pit on the riverside toe of the MRL as Freshwater Pond wetlands. Approximately 3.3 acres of forested wetlands exist within the proposed project footprint. The Natural Resources Conservation Service (NRCS) was contacted regarding the presence of farmed wetlands in the project vicinity. The NRCS reported that the agency does not share wetland determinations with any other agencies as they are performed for the purposes of the 1985 Food Security Act, as amended. Therefore, USACE made a determination based on aerial imagery and a site visit that approximately 0.85 acres of farmed wetlands were present within the proposed project footprint and approximately 0.14 acres of mowed/maintained wetland exists along the toe of the levee.

3.1.3 Wildlife

Existing Conditions

Wildlife species that could be expected to be found within the project area include coyotes, deer, raccoons, opossums, rabbits, gray and fox squirrels, muskrats, mice, rats, shrews, songbirds, turtles, snakes, amphibians, and other small animals typically found along the Mississippi River levees.

3.1.4 Threatened and Endangered Species

Existing Conditions

According to results obtained from the USFWS Information, Planning, and Conservation (IPaC) conservation planning tool, there are a total of four threatened, endangered, or candidate species known to be found within the proposed project area. These species are the Indiana bat (*Myotis sodalis*), northern long-eared bat (*Myotis septentrionalis*), least tern (*Sterna antillarum*), and pallid sturgeon (*Scaphirhynchus albus*). Of these four species, only the endangered Indiana bat and threatened northern long-eared bat would potentially utilize the forested habitat within the project area. In the lower Mississippi River (LMR), interior least terns typically nest on large

isolated sandbars from late May to August, depending on timing and duration of low river stages, and are not found within the proposed project area. As sturgeon are limited to the nearby Mississippi River, they are not found within the proposed project area.

In the spring of 2018, MVM biologists conducted a site assessment of the proposed project area. Vegetation proposed to be cleared was examined for the presence, as well as suitable/potential habitat, of the Indiana and northern long-eared bats. Dominant tree species include sugarberry, black willow, cottonwood, sycamore, box elder, and various oak species. USACE determined that potentially suitable summer roosting habitat is present within the proposed project area.

3.1.5 Cultural Resources

Existing Conditions

A literature review supplemented by a cultural resources survey within the project's Area-of-Potential-Effect (APE) was completed by American Resources Group, Inc. in 1982. The investigation identified three ineligible cultural resources within the APE, sites 40DY48, 40DY49, and 40DY50. 40DY48 and 40DY49 are small late 19th century and early 20th century historic scatters which are not culturally or historically unique. 40DY50 is small Tchula prehistoric scatter (1000 BC-400 BC) with no subsurface cultural features present.

3.1.6 Air Quality

Existing Conditions

The proposed project area is in attainment for all air quality standards. As equipment to be used during construction is a mobile source, the project is exempt from air quality permitting requirements. Although air emissions would not require a permit, best management practices shall be used throughout the construction to minimize air pollution.

3.1.7 Hydrology and Water Quality

Existing Conditions

According to the Tennessee Department of Environment and Conservation (TDEC), the Mississippi River in this area supports recreation, industrial water supply, fish and aquatic life, livestock watering and wildlife, irrigation and navigation; however, it does not support domestic water supply. The Mississippi River in Dyer and Lake Counties is listed as impaired on the final 2016 303(d) list because it was not fully supporting designated use classifications due to habitat alterations, sedimentation and siltation, elevated levels of chlordane, dioxins, and polychlorinated biphenyls (PCBs) in sediment samples (TDEC 2017).

The Obion River supports fish and aquatic life, recreation, livestock watering and wildlife and irrigation; however, it does not support domestic water supply, industrial water supply, or navigation. The Obion River in Dyer and Lake Counties is listed as impaired on the final 2016 303(d) list because it was not fully supporting designated use classifications due to elevated

levels of E. coli, loss of biological integrity due to siltation, habitat alterations, and low dissolved oxygen (TDEC 2017).

4.0 ENVIRONMENTAL CONSEQUENCES

4.1 Agricultural Lands

Future Conditions with No Action

Without implementation of the proposed action, agricultural lands (prime and unique farmland) within the project area are expected to remain as noted in Existing Conditions, provided that the adjacent levee remains stable. However, continued seepage could lead to a levee failure during a major flood event. Floodwaters could negatively impact existing agricultural lands through excess deposition of sand and gravel.

Future Conditions with the Proposed Action

The NRCS was contacted regarding the presence of prime and unique farmland in the project vicinity, and is currently determining the acreage that would be impacted by the construction of this project.

4.2 Wetlands

Future Conditions with No Action

Without implementation of the proposed action, wetland habitats within the project area are expected to remain as noted in Existing Conditions, provided that the adjacent levee remains stable. However, continued seepage could lead to a levee failure during a major flood event. Floodwaters could negatively impact the existing farmed wetland through excess deposition of sand and gravel.

Future Conditions with the Proposed Action

With implementation of the proposed action, approximately 3.3 acres of forested wetlands, 0.85 acres of farmed wetlands, and 0.14 acres of mowed/maintained wetlands along the toe of the levee on the landside would be impacted. The 3.3 acres of forested wetlands would be converted to a borrow pit that would naturally revegetate with black willow and other wetland vegetation. It is expected that with time, the proposed borrow pit would resemble the existing adjacent borrow pit, effectively enlarging the areal extent of the open water/wetland complex. The approximately 0.85 acres of farmed wetland and 0.15 acres of mowed/maintained wetland would be permanently filled due to berm construction. To mitigate for the functional change of 3.3 acres of forested wetlands to an open water/wetland complex, the permanent loss of 0.85 acres of wetlands, and the permanent loss of 0.14 acres of mowed/maintained wetland, approximately 11 acres of prior converted cropland would be restored to bottomland hardwoods as described in the Mitigation Section (6.0) below.

4.3 Wildlife

Future Conditions with No Action

Without implementation of the proposed action, the wildlife resources within the project area are expected to remain as noted in Existing Conditions.

Future Conditions with the Proposed Action

With implementation of the proposed action, impacts to wildlife resources would include the loss of approximately 8 acres of non-wet trees that would need to be cleared to facilitate construction, and conversion of 3.3 acres of forested wetland into a borrow pit (open water/wetland complex). Post-construction, the borrow pit would revegetate naturally as noted in above in Section 4.2. This would more than replace the acreage that is impacted, but likely with species that are more tolerant to inundation and saturation, which would attract a different assemblage of wildlife. Additionally, disturbance and noise from the construction equipment would temporarily disperse wildlife species from the project area. However, once the project is completed, wildlife species would be expected to return to the project area. The loss of habitat and temporary disturbance would not adversely impact the general populations of wildlife species within the region, as extensive forested areas and suitable habitat is readily available within the vicinity of the project area. To mitigate for the loss of 8 acres of non-wet forested habitat, an additional 16 acres of prior converted cropland would be restored to bottomland hardwoods as described in the Mitigation Section (6.0) below.

4.4 Threatened and Endangered Species

Future Conditions with No Action

Without implementation of the proposed action, threatened and endangered species within the project area are expected to remain as noted in existing conditions.

Future Conditions with the Proposed Action

Pursuant to Section 7 of the Endangered Species Act, USACE coordinated with the USFWS, and will conduct a mist-net survey in the project area beginning May 15, 2018. Results would be coordinated with USFWS prior to finalizing the NEPA process. Every effort would be made to conduct tree clearing between November 1 and March 31, even if no threatened or endangered bats are captured. If Indiana bats are captured, radio-tracking would commence per 2018 Summer Survey Guidance (<https://www.fws.gov/midwest/endangered/mammals/inba/surveys/pdf/2018RangewideIBatSurveyGuidelines.pdf>), and formal consultation would begin. USACE has determined that there would be no effect to the interior least tern or pallid sturgeon.

4.5 Cultural Resources

Future Conditions with No Action

Without implementation of the proposed action, cultural resources are expected to remain as noted in Existing Conditions. However, continued seepage could lead to a levee failure during a major flood event, potentially impacting cultural resources.

Future Conditions with the Proposed Action

With implementation of the proposed action, sites 40DY748, 40DY49, and 40DY50 would be impacted but they are not significant sites nor are they eligible for the National Register of Historic Places. Coordination with the federally recognized Native American Tribes within MVM, as well as with the Tennessee State Historic Preservation Office is being conducted with the circulation of this draft EA. No additional cultural resources investigations are recommended prior to the project's implementation.

4.6 Air Quality

Future Conditions with No Action

Without implementation of the proposed action, no change in air quality would occur.

Future Conditions with the Proposed Action

With implementation of the proposed action, project-related equipment would produce small amounts of engine exhaust during construction activities. The temporary, minor impacts to air quality would be localized to the project area, and would not affect area residents. The project area would still be in attainment for all air quality standards. Since the equipment to be used is a mobile source, the project is exempt from air quality permitting requirements. Although air emissions would not require a permit, best management practices shall be used throughout the construction to minimize air pollution.

4.7 Water Quality

Future Conditions with No Action

Without implementation of the proposed action, hydrology and water quality within the project area would be as noted in Existing Conditions.

Future Conditions with the Proposed Action

With implementation of the proposed action, hydrology riverside of the levee would remain as noted in Existing Conditions. Impacts to water quality to the Mississippi and Obion River Basins would be minimal and temporary or have no effect. Water provided through seepage of the MRL occurs only during high water periods and the site is in active agricultural production during dry conditions. Thus, no significant impacts to water quality would occur as a result of the proposed project. A Section 404(b)(1) evaluation was prepared for the proposed project action and is included as an appendix. A state water quality certification was requested from the State of Tennessee, Department of Environment and Conservation.

4.8 Hazardous, Toxic, and Radioactive Waste (HTRW)

USACE is obligated under Engineer Regulation (ER) 1165-2-132 to assume responsibility for the reasonable identification and evaluation of all Hazardous, Toxic, and Radioactive Waste (HTRW) contamination within the vicinity of proposed actions. ER 1165-2-132 identifies that HTRW policy is to avoid the use of project funds for HTRW removal and remediation activities. A record search was conducted on the Environmental Protection Agency's (EPA) EnviroMapper for Envirofacts web site (<https://www.epa.gov/emefdata/em4ef.home>). The web site was checked for any superfund sites, toxic releases, or hazardous waste sites within the vicinity of the proposed project area. Additionally, a site inspection of the proposed project was conducted by MVM personnel during the fall of 2017. Environmental record search and the site survey conducted did not identify the presence of any hazardous or suspected hazardous wastes in the project area. As a result of these assessments, it was concluded that the probability of encountering HTRW is low. If any hazardous waste/substance is encountered during construction activities, the proper handling and disposal of these materials would be coordinated with the EPA and applicable state agencies.

4.9 Cumulative Impacts

The Council on Environmental Quality's (CEQ) regulations (40 CFR 1500-1508) implementing the procedural provisions of the National Environmental Policy Act (NEPA) of 1969, as amended (42 U.S.C. 4321 et seq.) define cumulative effects as "the impact on the environment which results from the incremental impact of the action when added to other past, present, or reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions (40 CFR 1508.7)". Cumulative Effects can result from individually minor but collectively significant actions taking place over a period of time."

A final SEIS, *Mississippi River Mainline Levees Enlargement and Seepage Control*, was completed in July 1998 to address all remaining work on the levee enlargement and seepage control project. The seepage problems at the proposed project locations were anticipated when the SEIS was completed. Benefits resulting from cumulative effects documented in the SEIS included: 1) the mitigation plan and borrow area reforestation which resulted in a net gain of 4,070 acres of bottomland hardwoods; 2) incremental impacts which resulted in a net gain in nationally significant habitat and environmental values; 3) the action would not improve or worsen any cumulative effects associated with the existing Mississippi River Levees; 4) the project did not affect the hypoxia zone in the Gulf of Mexico; and 5) the environmental design and compensation features result in a net increase in terrestrial, wetland, waterfowl, and aquatic

resource values such that no significant cumulative environmental impact resulted in an ecosystem, landscape, or regional scale.

Impacts of the proposed project action were evaluated during the preparation of this EA on the natural and human environment. A total of approximately 3.3 acres of forested wetlands, 0.85-acre farmed wetlands, 0.14 acre of mowed/maintained wetlands and approximately 8 acres of non-wet forested habitat would be impacted by the proposed project action. The proposed mitigation would include restoring approximately 27 acres of agricultural land to high quality bottomland hardwood forest. The impacts associated with the proposed project activities should not have any significant adverse cumulative effects on the environment in addition to those reported in the 1998 SEIS.

5.0 COORDINATION

Preparation of this draft EA and draft FONSI was coordinated with the project interagency environmental team. The team is comprised of representatives from USACE, USFWS, Tennessee Department of Environment and Conservation, and the Tennessee Wildlife Resource Agency. In addition, this draft EA is being coordinated with the Tennessee State Historic Preservation Office, federally recognized tribes, and other interested parties.

6.0 MITIGATION

The Clean Water Act, the Water Resources Development Act, Rule 33 CFR §332, the 2008 Compensatory Mitigation Rule, et al. require that compensatory mitigation is completed to offset unavoidable impacts incurred due to a water resources project. The appropriate application of compensatory mitigation is to formulate an alternative that first avoids, then minimizes, and lastly, compensates for unavoidable adverse impacts. This draft EA evaluates the potential impacts associated with the proposed construction of the seepage berms and associated borrow site.

A total of approximately 3.3 acres of forested wetlands, 0.85 acres of farmed wetland, 0.14 acres of mowed/maintained wetlands along the landside toe of the levee, and 8 acres of non-wet treed area would be impacted by the proposed project. Compensatory mitigation requirements entail creation of 27 acres of forested BLH wetlands (11 acres due to wetland impacts and 16 acres due to non-wet tree clearing). Actions include planting bottomland hardwood species and restoring hydrology, if necessary, within tracts of cleared agricultural land. The mitigation site is anticipated to be located in Dyer County, Tennessee as the USACE has proposed two tracts of land totaling approximately 36.5 acres (Figure 2) to mitigate for the unavoidable impacts that would be incurred due to these project actions. A detailed, site-specific mitigation plan is being drafted, and will be coordinated with the interagency team. Compensatory mitigation would occur concurrently with construction of the proposed project.



Figure 2. Aerial photograph indicating the proposed Miston compensatory mitigation sites totaling approximately 36.5 acres of farmed land in Dyer County, Tennessee.

7.0 COMPLIANCE WITH ENVIRONMENTAL LAWS AND REGULATIONS

Environmental compliance for the proposed action would be achieved upon: coordination of this draft EA and draft FONSI with appropriate agencies, organizations, and individuals for their review and comments; completion of coordination with the USFWS regarding Federally listed endangered or threatened species; receipt of a Water Quality Certificate from the State of Tennessee; public review of the Section 404(b)(1) and Public Notice; signature of the Section 404(b)(1) Evaluation; and concurrence with the Determination of No Effect on cultural resources by the State Historic Preservation Officer. The draft FONSI will not be signed until the proposed action achieves environmental compliance with applicable laws and regulations, as described above.

7.1 Threatened and Endangered Species

Pursuant to Section 7 of the Endangered Species Act, coordination began with the USFWS in November of 2017 regarding threatened and endangered species in the project area. It was determined that the proposed project is within the range of both the Indiana and northern long-eared bat. Through coordination, it was determined that a mist-net survey would be conducted and Phase 2/4 Study Proposal was submitted by USACE and accepted by USFWS. Mist-netting is scheduled to occur beginning May 15, 2018, weather-permitting. The results would be coordinated with USFWS prior to finishing the NEPA process and signing the FONSI.

7.2 Cultural Resources

A literature review supplemented by a cultural resources survey within the project's APE was completed by American Resources Group. The investigation identified three non-significant cultural resources within the APE, sites 40DY48, 40DY49, and 40DY50. Furthermore, no historic properties are listed in or determined eligible for inclusion in the NRHP within the project's APE. Therefore, no additional cultural resources investigations are recommended prior to the project's implementation and the proposed project action would have no effect on cultural resources.

7.3 Water Quality, State Certification

No significant impacts to water quality would occur as a result of the proposed project. A Section 404(b)(1) evaluation was prepared for the proposed project action and is included as an appendix. A state water quality certification was requested from the State of Tennessee, Department of Environment and Conservation on 16 April 2018. The NEPA process would not be considered complete and the FONSI would not be signed until the Alteration of Aquatic Resources Permit is received by the USACE.

8.0 CONCLUSION

The proposed action involves implementing seepage control measures and levee slope repair along the MRL. A total of approximately 3.3 acres of forested wetlands, 0.85-acre farmed wetlands, 0.15 acres of mowed/maintained wetlands, and approximately 8 acres of non-wet

forested habitat would be impacted by the proposed project action. The proposed mitigation would include restoring approximately 27 acres of agricultural land to high quality bottomland hardwood forest. The impacts associated with the proposed project activities would not have any significant adverse cumulative effects on the environment in addition to those reported in the 1998 SEIS.

This office has assessed the environmental impacts of the proposed action and has determined that the proposed work is expected to have only minor impacts on agricultural lands, wildlife, air quality, and hydrology. Impacts to wildlife and air quality would be temporary, and would be expected to return to existing conditions after completion of the project action. The proposed project would have no impacts upon freshwater marshes, freshwater lakes, state designated scenic streams, prime and unique farmlands, cultural resources, municipal facilities, municipal utilities, roadways, recreation, aesthetics, socio-economic, or environmental justice. Also, no significant adverse impacts would occur to wetlands, aquatic resources/fisheries, wildlife, threatened and endangered species, hydrology/water quality, air quality, or the human environment. Therefore, a supplemental EIS is not required.

9.0 PREPARED BY

This draft EA and draft FONSI were prepared by Ms. Andrea Carpenter, MVM biologist, with cultural resources information provided by Ms. Pam Lieb, MVM archeologist. For additional information, contact Ms. Andrea Carpenter at (901) 544-0817, or by email at Andrea.L.Carpenter@usace.army.mil, or by mail at USACE Memphis District, Attn: Andrea Carpenter, 167 North Main St., RM-B202, Memphis, TN 38103-1894.

10.0 Literature Cited

TDEC. 2017. Proposed Final 2018 List of Impaired and Threatened Waters in Tennessee. <https://www.tn.gov/environment/program-areas/wr-water-resources/water-quality/water-quality-reports---publications.html>

Saucier, R. T. 1994. Geomorphology and quaternary geological history of the Lower Mississippi Valley. Volumes 1 and 2. U.S. Army Corps of Engineers, Waterways Experiment Station, U.S. Department of the Army, Vicksburg, Mississippi.

DRAFT

Appendix 1. Draft 404(b)(1) Evaluation

DRAFT 404(b)(1) EVALUATION
Mississippi River Mainline Levee
Miston Berm Construction and Levee Rehabilitation
Dyer and Lake Counties, Tennessee

I. Project Description

a. Location

The proposed project involves implementing seepage control measures and repair of levee slides along the Mississippi River Mainline Levee (MRL) in Dyer and Lake Counties, Tennessee. The northern limit of the project begins at Lower Owl Hoot Road or Baseline Station 14/50+25 and extends to the southern limit of work which ends at Baseline Station 19/48+50 (Figure 1).

b. General Description

Levee slide repairs. Excavation and repair of levee slides along the MRL would use approximately 450,000 cubic yards of material excavated from the agricultural land adjacent to the existing borrow pit on the riverside of the MRL. Through Geotechnical analysis, it has been determined that this material is more suitable than the highly plastic clays that currently are causing the levee to slide in several locations. The slopes would also be flattened to the extent possible while staying within the existing right-of-way. Levee slopes would range between 3-3.5H:1V. The material that currently constitutes the existing levee embankment would be excavated and used for construction of the proposed seepage berms described below.

Seepage berms. This project feature was considered in the 1998 SEIS, and involves constructing four seepage berms along the landside toe of the MRL to control seepage and piping under the levee. Approximately 430,000 cubic yards of material would be required for construction of the seepage berms. This material would be excavated from the levee embankment during the repair of the levee slides, any additional material required would be excavated from the proposed borrow pit. Temporary impacts to local roadways and the public use of those roads would result, as haul trucks would be needed to transport the tons of material to the project site; however, a traffic plan is being developed with the Tennessee Department of Transportation.

A total of approximately 3.3 acres of forested wetlands, 0.85 acres of farmed wetland, 0.14 acres of mowed/maintained wetlands along the landside toe of the levee, and 8 acres of non-wet treed area would be impacted by the proposed project. The 3.3 acres of forested wetlands would be converted to a borrow pit that would naturally revegetate with black willow and other wetland vegetation. It is expected that with time, the proposed borrow pit would resemble the existing

adjacent borrow pit, effectively enlarging the areal extent of the open water/wetland complex. The approximately 0.85 acres of farmed wetland and 0.15 acres of mowed/maintained wetland would be permanently filled due to berm construction. Compensatory mitigation requirements entail creation of 27 acres of forested BLH wetlands (11 acres due to wetland impacts and 16 acres due to non-wet tree clearing). Compensatory mitigation would also occur concurrent with construction of the project. The proposed mitigation site totals approximately 36.5 acres and is located near the Moss Island Wildlife Management Area in Dyer County, Tennessee approximately 13 miles south of the proposed project area (Figure 2).

c. Authority and Purpose

The proposed action is authorized as part of the Flood Control Act of 1928, as amended. The Miston Berm Project was designed in the early 1980's due to seepage issues discovered during floods in the late 1970's. Repairs were not completed at that time due to the lack of funding for the project. During the floods of 2011 and 2015, seepage issues were again observed by Corps personnel. The purpose of the proposed action is to control seepage under the MRL during flood events on the Mississippi River to prevent levee damage or failure. The final *Mississippi River Mainline Levees Enlargement and Seepage Control*, SEIS was completed in 1998, and addressed seepage control measures to be implemented along the MRL including this action. While berm construction in this area was covered under the SEIS, it has been determined that additional right-of-way is required and potential environmental impacts have been identified.

The MRL, which also serves as Tennessee Highway 181, is causing serious safety concerns for local traffic as well as the large amount of haul-truck traffic due to the significant levee embankment slides along approximately 2.7 miles of the highway. The levee embankment slides would be repaired with the proposed project. Failure due to levee embankment slides or uncontrolled seepage and piping (sands and silts being carried under the levee during flood conditions) would result in property damage and could cause human injuries and/or loss of life.

d. General Description of Dredged or Fill Material

1) General Characteristics of Material

Earthen material removed from the borrow pit would be comprised of clays. Material would be processed and woody debris removed prior to placement in levee embankment or seepage berms.

2) Quantity of Material

This proposed action would excavate and repair levee slides along the Levee (MRL) using approximately 450,000 cubic yards of material excavated from the agricultural land adjacent to the existing borrow pit on the riverside of the MRL. Approximately 430,000 cubic yards of material would be required for construction of the seepage berms.

- 3) Source of Material – The earthen material would be excavated from the proposed borrow pit which is currently in agricultural production. The proposed borrow pit lies adjacent to the existing pit on the riverside of the MRL (Figure 1).

e. Description of the Proposed Discharge Site(s)

- 1) Location – The excavated material would be used to create the new levee embankment and to construct the seepage berms along the landside of the MRL (Figure 1).
- 2) Size – It is anticipated that approximately 0.85 acres of farmed wetlands and approximately 0.14 acres of mowed/maintained wetland along the toe of the levee would be impacted by fill of earthen material to construct seepage berms and reconstruct levee embankments.
- 3) Type(s) of Habitat – The farmed and mowed/maintained wetlands which would be permanently impacted by placement of fill material likely provides temporary habitat for small aquatic species such as insects and amphibians. Also, it likely serves as a temporary foraging area for waterfowl and other species.
- 4) Timing and Duration of Discharge – Construction is scheduled to commence in the spring of 2019 and would be complete in the fall of 2022. Every effort would be made to construct during periods of low water and dry conditions, and best management practices would be applied.

f. Description of Disposal Method

Excavated material from the borrow pit would be placed and graded with conventional earth moving equipment (e.g., bulldozers and excavators) to reconstruct the levee embankment slopes and seepage berms. Any stockpiling of material that is required would occur in non-wet agriculture fields.

II. Factual Determinations

a. Physical Substrate Determinations

- 1) Substrate Elevation and Slope – Slopes along the proposed borrow pit would be constructed at a slope of 3-foot horizontal to 1-foot vertical.

- 2) Sediment Type –The dominant soil types within the project area are Bowdre and Tunica clays.
- 3) Dredged/Fill Material Movement – Material would be excavated from the existing ditches and transported, via haul trucks, to the placement sites.
- 4) Physical Effects on Benthos – N/A
- 5) Other Effects – N/A
- 6) Actions Taken to Minimize Impacts - The following actions would be implemented during construction to minimize impacts:
 - Effective erosion control would be in place prior to construction and maintained throughout the construction period.
 - Construction would take place during periods of low rainfall and low water stages.
 - Vegetation to be cleared would be the minimum necessary to allow for construction access.
 - All disturbed areas would be seeded within 30 days after construction is completed.
 - Construction debris would be kept from entering the existing wetland complex (historic borrow pit) 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. No change in water quality is expected due to this action.
 - a) Salinity – No expected change.
 - b) Water Chemistry – The water chemistry of the project area would not be expected to change as a result of the excavation of material or placement of earthen material.
 - c) Clarity – No expected change.
 - d) Color – No expected change.
 - e) Odor – No expected change.
 - f) Taste – No expected change.
 - g) Dissolved Gas Levels – No expected change.

- h) Nutrients – No expected change.
 - i) Eutrophication – No expected change.
 - j) Others as appropriate – N/A
- 2) Current Patterns and Circulation
- a) Current Patterns and Flow – No expected change.
 - b) Velocity – No expected change.
 - c) Stratification – No expected change.
 - d) Hydrologic Regime – No expected change.
- 3) Normal Water Level Fluctuations – No expected change.
- 4) Salinity Gradients – N/A
- 5) Actions Taken to Minimize Impacts – Actions that would be implemented during construction to minimize impacts have been previously described in the Factual Determinations section above.

c. Suspended Particulate/Turbidity Determinations

- 1) Expected Changes in Suspended Particulates and Turbidity Levels in Vicinity of Disposal Site – The farmed and mowed/maintained wetlands would be filled and permanently impacted.
- 2) Effects on Chemical and Physical Properties of the Water Column
- a) Light Penetration – No expected change.
 - b) Dissolved Oxygen – The farmed and mowed/maintained wetlands would be filled and permanently impacted. No DO would be available.
 - c) Toxic Metals and Organics – No effect on toxic metals and organics are expected.
 - d) Pathogens – N/A
 - e) Aesthetics – Aesthetics would be temporarily impacted during construction due to the presence of construction equipment. Post-

construction, berms would stand where land was once farmed. The berms are expected to be seeded with grasses to prevent erosion.

f) Others as Appropriate – None noted.

2) Effects on Biota

a) Primary Production – Project activities would remove approximately 0.85 acres of farmed wetlands and 0.14 acres of mowed/maintained wetland. Aquatic vegetation is limited within the existing ditches. The proposed work should have little effect on primary production post-construction. The 3.3 acres of forested wetlands would be converted to a borrow pit that would naturally revegetate with black willow and other wetland vegetation. It is expected that with time, the proposed borrow pit would resemble the existing adjacent borrow pit, effectively enlarging the areal extent of the open water/wetland complex.

b) Suspension/Filter Feeders – N/A.

c) Sight Feeders – N/A

d) Actions taken to Minimize Impacts – Actions that would be implemented during construction to minimize impacts have been previously described in the Factual Determinations section above.

d. Contaminant Determinations – It is not expected that any contaminants will be introduced or translocated due to construction. A hazardous, toxic, and radioactive waste survey has been conducted on the area. No potential sources of contamination were found.

e. Aquatic Ecosystem and Organism Determinations

1) Effects on Plankton – N/A

2) Effects on Benthos – N/A.

3) Effects on Nekton – N/A.

4) Effects on Aquatic Food Web – It is expected that with time, the proposed borrow pit would resemble the existing adjacent borrow pit, effectively enlarging the areal extent of the open water/wetland complex. No long term impacts are expected.

5) Effects on Special Aquatic Sites

a) Sanctuaries and Refuges – N/A

- b) Wetlands – A total of approximately 3.3 acres of forested wetlands, 0.85 acres of farmed wetland, and 0.14 acres of mowed/maintained wetlands along the landside toe of the levee would be impacted by the proposed project. Approximately 11 acres of mitigation is proposed to offset these impacts and fulfill mitigation requirements for wetland impacts.
 - c) Mud Flats – N/A
 - d) Vegetated Shallows – N/A
 - e) Coral Reefs – N/A
 - f) Riffle and Pool Complexes – N/A
- 6) Threatened and Endangered Species – Pursuant to Section 7 of the Endangered Species Act, USACE coordinated with the U.S. Fish and Wildlife Service (USFWS), and will conduct a mist-net survey for threatened and endangered bats in the project area beginning May 15, 2018. Results would be coordinated with USFWS prior to finalizing the NEPA process. Every effort would be made to conduct tree clearing between November 1 and March 31, even if no threatened or endangered bats are captured. If Indiana bats are captured, radio-tracking would commence per 2018 Summer Survey Guidance and formal consultation would begin. USACE has determined that there would be no effect to the interior least tern or pallid sturgeon.
- 7) Other Wildlife – Terrestrial wildlife would be impacted with the clearing of 8 acres of non-wet woody vegetation and may be temporarily displaced during project construction. To mitigate for the loss of 8 acres of non-wet forested habitat, an additional 16 acres of prior converted cropland would be restored to bottomland hardwoods.
- 8) Actions Taken to Minimize Impacts – Actions that would be implemented during construction to minimize impacts have been previously described in the Factual Determinations section above, chiefly construction will occur in low-flow periods and impact areas will be limited to the extent necessary for construction. Compensatory mitigation is described above in I. b. General Description.
- f. Proposed Disposal Site Determinations
- 1) Mixing Zone Determinations – N/A
 - 2) Determination of Compliance with Applicable Water Quality Standards – USACE-MVM, has requested water quality certification from the State of Tennessee, Department of Environment and Conservation. No project construction would occur until water quality certification is received.

3) Potential Effects on Human Use Characteristic

- a) Municipal and Private Water Supply – N/A
 - b) Recreational and Commercial Fisheries – N/A
 - c) Water Related Recreation – N/A
 - d) Aesthetics – Aesthetics would be temporarily impacted during construction due to the presence of construction equipment. Post-construction, berms would stand where land was once farmed. The berms are expected to be seeded with grasses to prevent erosion.
 - e) Parks, National and Historical Monuments, National Seashores, Wilderness Areas, Research Sites, and Similar Preserves – N/A
- g. Determination of Cumulative Effects on the Aquatic Ecosystem – Impacts of the proposed project action were evaluated during the preparation of the EA on the natural and human environment. A total of approximately 3.3 acres of forested wetlands, 0.85 acres farmed wetlands, 0.14 acres of mowed/maintained wetlands and approximately 8 acres of non-wet forested habitat would be impacted by the proposed project action. The proposed mitigation would include restoring approximately 27 acres of agricultural land to high quality bottomland hardwood forest. The impacts associated with the proposed project activities should not have any significant adverse cumulative effects on the environment in addition to those reported in the 1998 SEIS.
- h. Determination of Secondary Effects on the Aquatic Ecosystem – N/A

III. Findings of Compliance for MRL Seepage Control Measures

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

A draft environmental assessment has been completed that addresses alternatives to the proposed action. The recommended plan was determined to be the most cost effective and practicable of the alternatives studied in detail. The no action alternative was determined not to be practical. The proposed action would protect existing public infrastructure, and private homes and businesses. Without installation of seepage control measures, the integrity of the levee would be compromised. Seepage could potentially undermine the levee and cause fail during a flood event.

- b. Compliance with Applicable State Water Quality Standards

An application for State of Tennessee water quality certification has been submitted. A determination concerning water quality certification has not been made to date. Those making comments to this 404(b)(1) evaluation are asked to furnish a copy of their comments to the Tennessee Department of Environment and Conservation with permit number NRS18.117.

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

Dyer and Lake Counties, Tennessee are in attainment for all air quality standards. No significant impacts to air quality are expected. The equipment to be used is a mobile source. Therefore, the project is exempt from air quality permitting requirements.

d. Compliance with Endangered Species Act of 1973

Coordination with the Department of Interior, U.S. Fish and Wildlife Service is on-going.

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

1) Significant Adverse Effects on Human Health and Welfare

- a) Municipal and Private Water Supplies – N/A
- b) Recreation and Commercial Fisheries – N/A
- c) Plankton – N/A
- d) Fish – N/A.
- e) Shellfish – N/A
- f) Wildlife – No significant impacts are expected.
- g) Special Aquatic Sites – N/A

2) Significant Adverse Effects on Life Stages of Aquatic Life and Other Wildlife Dependent on Aquatic Ecosystems

No significant impacts are expected.

3) Significant Adverse Effects on Aquatic Ecosystem Diversity, Productivity, and Stability

No significant impacts are expected.

4) Significant Adverse Effects on Recreational, Aesthetic, and Economic Values

No significant impacts are expected.

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

Actions that would be implemented during construction to minimize impacts have been previously described in the Factual Determinations section above, chiefly best management practices will be implemented and unavoidable impacts mitigated, construction would occur during low-flow periods, and impact areas will be limited to the extent necessary for construction.

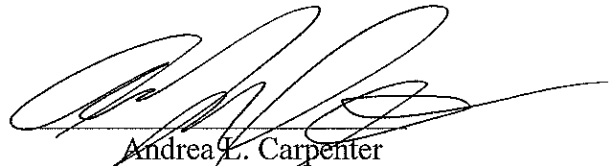
h. On the Basis of the Guidelines, the Proposed Disposal Site(s) for the Discharge of Dredged or Fill Material is:

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

All conditions from the Tennessee, Department of Environment and Conservation would be adhered to.

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

7 May 2018
Date



Andrea L. Carpenter
Biologist, USACE
CEMVN-PDC-UDC



Figure 2. Aerial photograph indicating the proposed Miston/Ridgely compensatory mitigation sites totaling approximately 36.5 acres of farmed land in Dyer County, Tennessee.