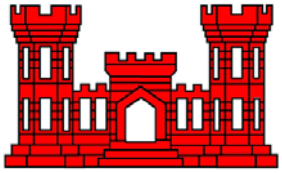
# ENVIRONMENTAL ASSESSMENT

## Mississippi River Levee Maintenance
## New Madrid to Sikeston Ridge (Farrenburg) Levee Rehabilitation
## New Madrid County, Missouri





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

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**1.0 INTRODUCTION.** The U.S. Army Corps of Engineers (USACE), Regional Planning and Environmental Division South, Memphis District (MVM) has prepared this environmental assessment (EA) to evaluate the potential impacts associated with the rehabilitation of the entire length of the New Madrid to Sikeston Ridge (Farrenburg) Levee in New Madrid County, Missouri (Figure 1). This draft EA has been prepared in accordance with the National Environmental Policy Act of 1969 (NEPA) and the Council on Environmental Quality's Regulations (40 CFR 1500-1508), as reflected in the USACE Engineering Regulation 200-2-2. This draft EA provides sufficient information on the potential adverse and beneficial environmental effects to allow the MVM District Commander to make an informed decision on the appropriateness of an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI).

1.1 Proposed Action. The proposed project would rehabilitate the entire length of the Farrenburg Levee in multiple phases of construction. Proposed work would include tree clearing within the 15-foot vegetation-free zone (VFZ) on each side of the levee and maintenance of existing culverts, both pursuant to USACE Levee Safety Program standards (USACE 2014, 2000, and 1998); repairing levee slides and sinkholes; and re-grading and/or raising the levee to the authorized elevation of 309' in low or eroded areas and at road crossings. A gap in the levee caused by a non-functional stop log structure at an old railroad crossing would be closed and the levee built to grade which may impact any traffic utilizing the unnamed, dead-end road (Figure 1). Gravel would be placed on the levee crown as part of the project to provide a 15-foot access road for inspections and routine maintenance. Gravel road construction and repair of sinkholes and levee slides would not impact wetlands or require tree clearing.

Eighteen culverts are located within the project area (Figure 1). Of those eighteen, one has been determined to be outside of USACE responsibility (culvert 2, not listed on Figure 1). Culverts (1, 5, and 6) are currently repairable to a functioning state until they are replaced sometime in the future; two require immediate replacement (3 and 4), and one has been replaced at Highway P which was previously cleared in the August 2014 "*Mississippi River Levee Maintenance, Farrenburg Levee Culvert Replacement, Near Levee Milepost 10 (LMP 10), New Madrid County, Missouri*" EA (Figure 1). The remainder of the culverts (7-17) are under investigation to determine the appropriate type of maintenance required to provide the required drainage. Eventually, every culvert (including those that are determined to be currently repairable) would be replaced with 36-inch, 48-inch, 60-inch or 72-inch reinforced concrete pipe (RCP) depending on the amount of flow expected at each site; therefore, compensatory mitigation is proposed for replacement of all eighteen culverts in Farrenburg Levee as well as tree clearing in the 15-foot VFZ, and the levee gap closure at the old railroad. Culvert repairs or removal would occur where it is determined in the best interest of the public. The remaining phases of construction would occur as the Corps receives sufficient funding and real estate rights of way until all culverts have been addressed.

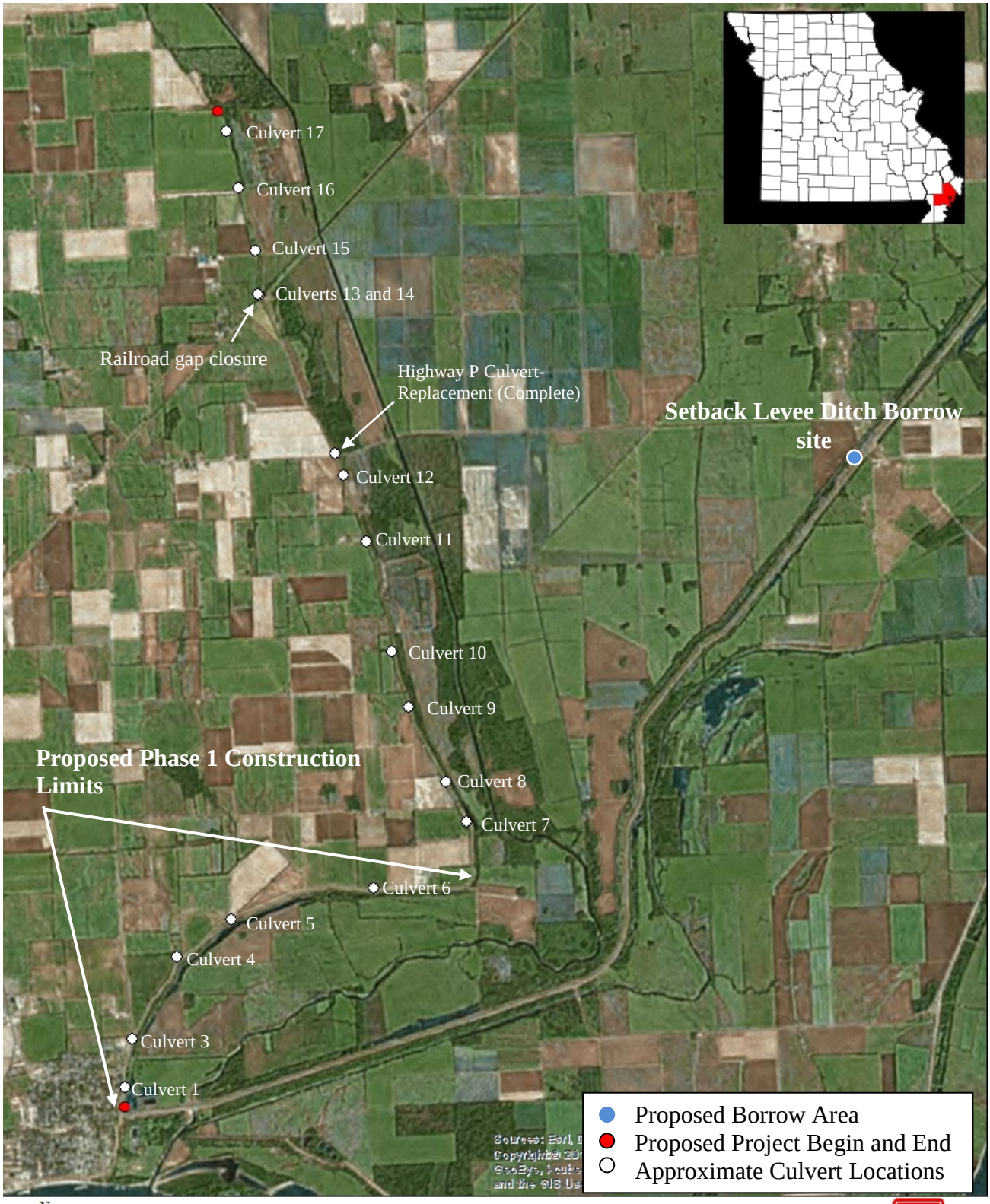


Figure 1. Aerial of proposed New Madrid-Sikeston Ridge (Farrenburg) Levee Rehabilitation Project showing approximate proposed project begin and end, Phase 1 Construction Limits, approximate culvert locations, and borrow area.

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The expected impacts from replacing the remaining 16 original culverts would include the tree clearing of a total of approximately 24.5 acres of BLH wetlands and an additional 1.3 acres of BLH forested wetland within the 15-foot VFZ. Culvert 3 would require approximately 1 acre and culvert 4 would require approximately 2.5 acres of tree clearing in BLH wetlands. Each of the remaining 14 culvert replacements are expected to impact approximately1.5 acres of BLH wetlands. A total of approximately 9.7 acres of BLH trees that were not determined to be wetlands would also be cleared. This would include approximately 7.7 acres of clearing within the 15-foot VFZ and up to 2 acres of tree clearing required to close the levee gap at the old railroad crossing.

Generally, culvert replacement sites would require a backhoe or other equipment to excavate a trench through the levee to accommodate the new culvert and remove the existing one. The proposed action would include several design features to reduce erosion and risks associated with culvert replacement. Concrete inlet and outlet structures would be constructed at the ends of the culvert pipes, and riprap and filter gravel would be placed around the inlet and outlet structures as well as within the landside drainage ditches to prevent erosion of the new structures. Silt fences would be placed along the boundary of the project work areas in compliance with Missouri regulations to contain runoff material during construction activities. When necessary, suitable earthen material would be obtained from material previously dredged and stockpiled on the left-descending bank of the Setback Levee Ditch (Figure 1). No tree clearing is expected within the approximately 5.3-acre stockpile area which was previously cleared in the August 2014 "*Mississippi River Levee Maintenance, Farrenburg Levee Culvert Replacement, Near Levee Milepost 10 (LMP 10), New Madrid County, Missouri*" EA. Temporary stockpile/staging areas would be required at each site. These are expected to total approximately 0.2 acres or less per culvert site, and would consist of adjacent non-wet farmed field or other upland area landside of the Farrenburg Levee Right-of-Way.

Phase 1 construction (Figure 1) is expected to occur during FY 2016, and would include tree clearing within phase 1 construction limits only, and replacement of culverts 3 and 4 (Figures 2 and 3), detailed below.

**Proposed Phase 1 Construction:** The Culvert 3 replacement site would require a backhoe or other equipment to excavate a trench through the levee to remove the existing culvert and to accommodate the replacement. Culvert 3 is a 72-inch square concrete culvert, and would be replaced with two 48-inch RCP. Concrete inlet and outlet structures would be constructed at the ends of the culvert pipes, and 360 tons of R400 riprap and 85 tons of filter gravel would be placed around the outlet structure. Approximately 1 acre of BLH tree clearing and temporary fill for construction of a coffer dam to prevent back-flooding during construction would be required (Figure 2). Less than 0.1 acre of the clearing would be permanently maintained by mowing. No permanent fill would occur at this location, and temporary fill would be removed post-construction.

Culvert 4 would require inlet channel realignment; therefore, impacts exceeding the typical culvert replacement impacts would be expected. Two levee trenches would be cut to remove the existing culvert and construct the replacement. A sinkhole has been identified at this location and would be repaired at the time of construction. Culvert 4 is currently a 72-inch square concrete culvert and would be replaced with two 72-inch RCPs. Concrete inlet and outlet structures would

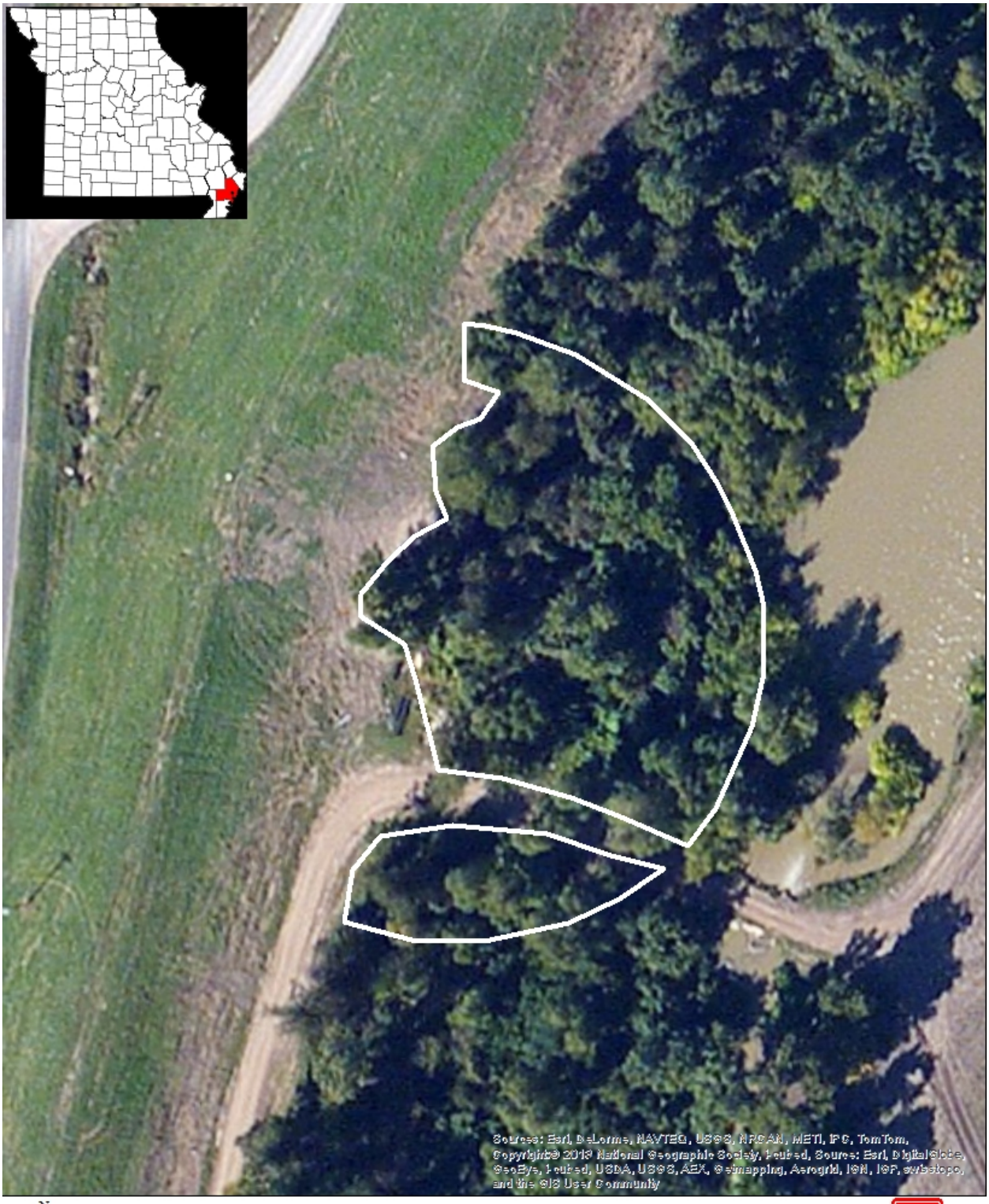


Figure 2. Proposed Culvert 3 tree clearing for the New Madrid-Sikeston Ridge (Farrenburg) Levee Rehabilitation in New Madrid County, Missouri.

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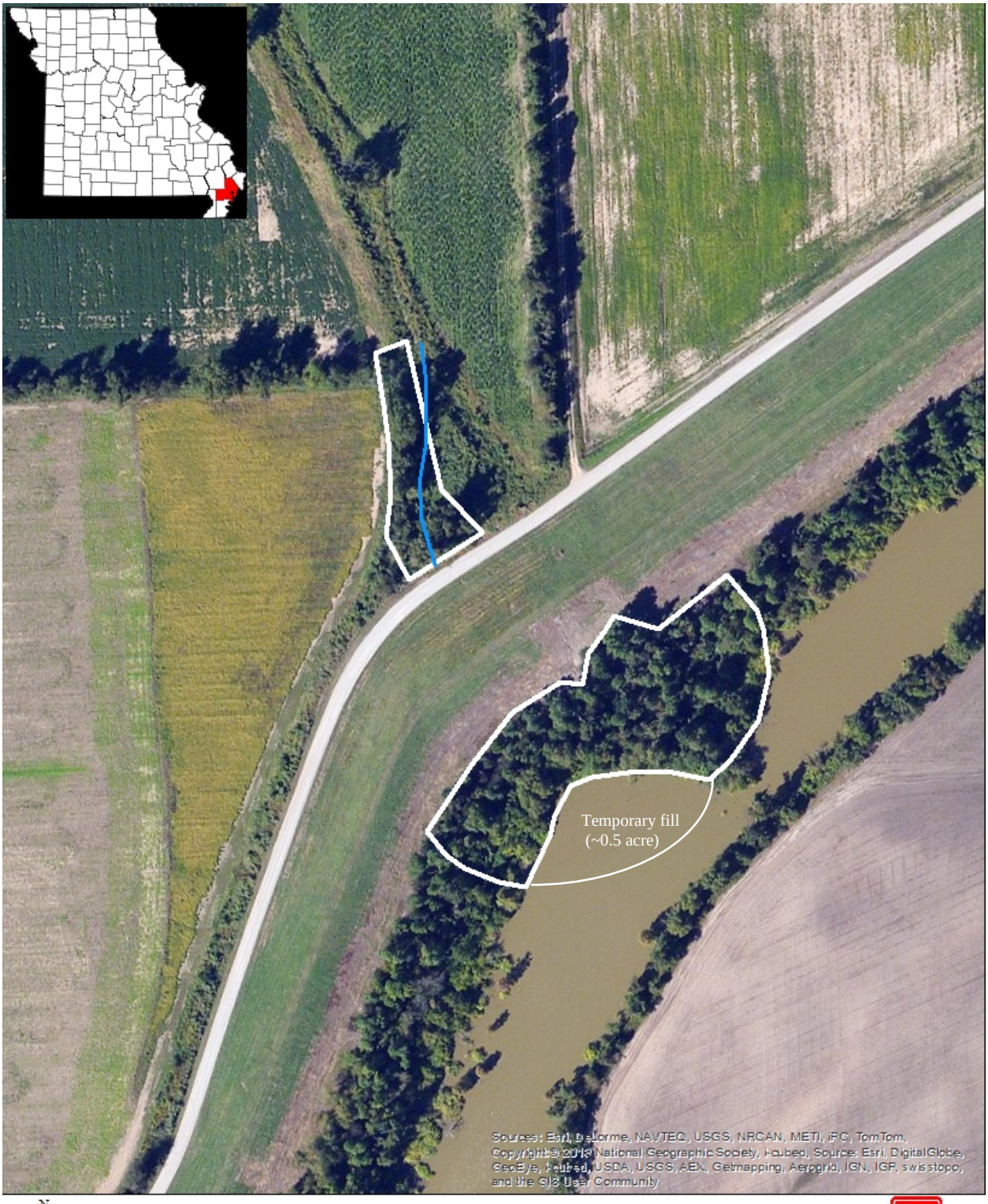


Figure 3. Proposed Culvert 4 tree clearing and temporary fill for the New Madrid-Sikeston Ridge (Farrenburg) Levee Rehabilitation in New Madrid County, Missouri including proposed inlet ditch realignment.

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be constructed at the ends of the culvert pipes. Approximately 636 tons of R400 riprap and 153 tons of filter gravel would be placed around the inlet ditch and structure, and approximately 424 tons of riprap and 102 tons of filter gravel would be placed at the outlet structure ditch to prevent erosion of the new structures. Approximately 2 acres of BLH wetland tree clearing and temporary fill for construction of a coffer dam and removal of the existing culvert would be required on the flood side of the levee. Post-construction temporary fill would be removed, and less than 0.1 acre would be permanently maintained by mowing. The inlet realignment would require approximately 0.5 acre of BLH wetland tree clearing on the land side of the levee, construction of a new inlet ditch, and permanent fill of approximately 250 feet (1,900 cubic yards) of the existing inlet ditch (Figure 3).

Phase 1 tree clearing within the 15-foot VFZ would total approximately 0.25 acres, which would be mitigated as described below in section *"6.0 Mitigation"*. The majority of the tree clearing in the VFZ proposed for Phase 1 Construction would include isolated trees that grow on the levee proper. Approximately 0.1 acre has been determined to be within BLH forested wetland. No permanent fill would be required for this action. Gravel road construction and repair of levee sinkholes and slides would not impact wetlands or require tree clearing.

**Stockpiled Dredged Material:** When required, earthen material to repair the Farrenburg Levee would be obtained from material previously dredged from the Setback Levee Ditch and stockpiled within an area approximately 2,300 feet by 100 feet (5.3 acres) located between the ditch and the adjacent Birds Point-New Madrid Setback Levee (Figure 1). Project activities would be conducted during dry or low water periods as practicable. Bulldozers would be utilized to clear and grub the 5.3-acre stockpile site as needed to obtain sufficient quantities of earthen material necessary to repair the Farrenburg Levee. Excavation of suitable earthen material would start at the existing top of bank and extend no closer than 50 feet from the toe of the levee. The vegetation and unsuitable earthen material removed would be temporarily stockpiled on-site. The cleared area would then be excavated to an elevation no lower than natural ground, approximately 295 feet NAD83 (North American Datum of 1983). From this point, the excavation would continue towards the levee at a 1.0% grade. The tie-in to existing grade would be made at a 1V:6H slope and would tie-in to the existing grade no more than 50 feet from each toe of the levee. Should seepage occur, the water would drain with the slope of the excavated area. Excavators would then remove the earthen material deemed suitable, which would be processed on site to reduce the moisture content within the soil. The moisture content processing would be performed by mechanical methods such as utilizing bulldozers to stockpile materials and disks to further reduce the moisture content of the soil.

1.2 Purpose And Need For The Proposed Action. This levee was constructed in the 1930's, and the culverts placed at that time have exceeded their expected project life. Also, lack of maintenance has degraded the levee at the several sites, causing a potential for hazardous conditions. Continued erosion from heavy rains and Mississippi River flood conditions may lead to a levee failure, which could result in human injuries and/or loss of life as well as damage to residential and agricultural properties.

1.3 Authority For The Proposed Action. The renovation of the Farrenburg Levee is authorized and would be funded as part of the Mississippi River Levees (MRL) portion of the Mississippi River

and Tributaries (MR&T) Project. The MR&T Project is authorized by the Flood Control Act of 15 May 1928, as amended.

1.4 Prior Reports. An EA entitled **"***Mississippi River Levee Maintenance, Farrenburg Levee Culvert Replacement, Near Levee Milepost 10 (LMP 10), New Madrid County, Missouri***"** was completed in August 2014 to evaluate the potential impacts associated with emergency replacement of a severely damaged culvert passing through the Farrenburg Levee. The Farrenburg Levee was constructed by the USACE in the 1930s prior to NEPA implementation. The location for the proposed culvert replacement was investigated and cleared for cultural resources and endangered species in 1996; however, the action required clearing wetland habitat and a search within MVM records did not locate NEPA documentation directly pertaining to the culvert replacement or utilizing the stockpiled dredged material. The emergency action, related impacts, and endangered species coordination were addressed in the 2014 EA.

1.5 Public Concerns. The safety and stability of the Mississippi River Levee (MRL) System to contain floodwaters during a flood event is a significant public concern. Continued degradation of the Farrenburg Levee (a segment of the MRL system) could cause levee failure and flood the surrounding lands, risking human life and property.

## 2.0 ALTERNATIVES TO THE PROPOSED ACTION

Five alternatives were considered for the proposed action: 1) no-action; 2) remove the existing culverts and repair the levee without installing new culverts and clear existing trees within the 15-foot VFZ; 3) remove some culverts, construct drainage ditches, and repair/replace remaining culverts and clear existing trees within the 15-foot VFZ; 4) repair all existing culverts in place and clear existing trees within the 15-foot VFZ; 5) replace or repair existing culverts, repair levee slides and sinkholes, close the levee gap, and clear existing trees within the 15-foot VFZ.

2.1 Alternative 1 – No-action alternative. The no-action alternative would result in the continued degradation of the Farrenburg Levee as no project features would be constructed. Continued erosion of the culverts from heavy rains and during flood conditions would eventually lead to levee failures. Sinkholes and levee slides would worsen and continue to endanger the levee and the areas it protects. Additionally, woody vegetation encroachment would continue to increase the risk of seepage through the levee and prevent proper inspections and maintenance of the levee. Failure of this flood protection levee would result in potential human injuries and/or loss of life and damage to residential and agricultural properties. Therefore, the MVM has determined that this alternative would not effectively address the active degradation of Farrenburg Levee; and the levee would continue to not meet the USACE Levee Safety Standards.

2.2 Alternative 2 – Remove the existing culverts and repair the levee without installing new culverts and clear existing trees within the 15-foot VFZ. This alternative would remove all culverts from the Farrenburg Levee, eliminating the existing drainage of water from the landside areas to the floodside of the levee. Tree clearing within 15-foot VFZ would impact approximately 1.3 acres of BLH forested wetlands and approximately 7.7 acres of BLH trees that were determined not to be wetlands. Minimal environmental impacts due to culvert removal would occur as work would be completed almost exclusively from the levee proper. Total culvert removal would result in repeated

flood damage to the City of New Madrid and residential areas, rural and agricultural areas, and roadways, potentially resulting in human injuries and/or loss of life. Once it was determined that this alternative would create adverse unanticipated impacts by worsening landside flooding, MVM determined this alternative was not practicable and removed this alternative from further consideration.

2.3 Alternative 3 – Remove some culverts, construct drainage ditches, and repair/replace remaining culverts and clear existing trees within the 15-foot VFZ. This alternative would remove a number of culverts from the Farrenburg Levee, construct new drainage ditches throughout the project area, and repair or replace remaining culverts. This alternative would result in additional hydrologic studies, construction time, and real estate costs. Construction would depend on willing sellers to provide land in the appropriate places. Environmental impacts, such as impacts to farmed wetlands and increased tree clearing would add additional mitigation requirements. MVM determined this alternative was not practicable and removed it from further consideration based on the costs and additional environmental impacts of this alternative versus the remaining alternatives.

2.4 Alternative 4 – Repair all existing culverts in place, repair levee slides and sinkholes, and clear existing trees within the 15-foot VFZ. Alternative 4 would repair all culverts located within the Farrenburg Levee, regardless of current state, by coating the inside of each culvert using bituminous materials. An estimated total of approximately 1.6 acres (approximately 0.1 acre per culvert) of tree clearing in forested wetlands would occur to allow for access to repair the culverts. With the construction of this alternative, erosion of the inlet and outlet structures would continue and all culverts would still require replacement in the future as all culverts have exceeded their project life. Some of the culverts, such as 3 and 4, are currently beyond the point of repair in place. MVM determined this alternative was not practicable as it could not be used to repair culverts 3 and 4, would not effectively provide a satisfactory level of protection as the culverts have exceeded their project life, and would not, by itself, address continuing erosion issues at the inlets and outlets of the culverts.

2.5 Alternative 5 – Replace, repair or remove existing culverts as needed throughout project area, repair levee slides and sinkholes, and clear existing trees within the 15-foot VFZ. This alternative, as described under section "*1.1 Proposed Action*", would comply with the USACE Levee Safety Program requirements, maintain drainage from landside areas to the floodside of the levee, and improve the integrity and stability of the Farrenburg Levee by incorporating erosion control features as part of the construction design.

A total of approximately 35.5 acres of tree clearing would occur to address the 15-foot VFZ, all currently planned and future culvert replacements and temporary coffer dam construction, and closure of the levee at the old railroad crossing. The expected impacts from replacing the remaining 16 original culverts would include the tree clearing of a total of approximately 24.5 acres of BLH wetlands and an additional 1.3 acres of BLH forested wetland within the 15-foot VFZ. Culvert 3 would require approximately 1 acre and culvert 4 would require approximately 2.5 acres of tree clearing in BLH wetlands. Each of the remaining 14 culvert replacements are expected to impact approximately1.5 acres of BLH wetlands. A total of approximately 9.7 acres of BLH trees that are not wetlands would also be cleared. This would include approximately 7.7 acres of clearing within

the 15-foot VFZ and up to 2 acres of tree clearing required to close the levee gap at the old railroad crossing.

Compensatory mitigation is discussed in detail in section "*6.0 Mitigation*", but consists of the restoration of approximately 99.5 acres of prior converted or non-wet agricultural land to bottomland hardwoods, or a comparable amount of forested wetland mitigation credits would be purchased from an approved mitigation bank. All factors considered, Alternative 5 is the most practicable solution for flood risk reduction and is the preferred alternative for the proposed project assessed in this EA. No significant adverse environmental impacts are associated with this alternative.

## 3.0 AFFECTED ENVIRONMENT

3.0.1 Environmental Setting. The Farrenburg Levee is primarily covered by grasses and other plant species such as poison ivy, green briar, pokeweed, Japanese honeysuckle, and balloon vine. Mowing of the levee usually occurs biannually, although in the upper (northern most) reach the levee is covered by row crops. Some trees have encroached within the VFZ, and a few isolated trees are growing on the levee proper. Trees within the forested wetlands include hackberry, oak, honey locust, cottonwood, American elm, cypress, and willow. The land side of the levee is highly developed, beginning at the southern end where it protects the City of New Madrid, Missouri. The northern portion of the levee protects agricultural fields and rural homes and roadways.

3.0.2 Climate. New Madrid County, Missouri, has a humid, warm-temperate climate characterized by moderately cold winters, warm or hot summers, and generally abundant rainfall. The average annual temperature for New Madrid County is 58.5 degrees Fahrenheit, which is higher than the Missouri average temperature of 54.7 degrees Fahrenheit. Total annual precipitation for New Madrid County averages 47.2 inches, which is slightly higher than the Missouri average of 45.2 inches. In contrast, annual snowfall average of 4.8 inches within New Madrid County is less than the annual state average of 12.7 inches.

3.0.3 Geology. The soil composition adjacent to the Farrenburg Levee includes Sharkey clay soils on the floodside of the levee, and Dubbs silty loam soils adjacent to the landside of the levee with Basket fine silty loam soils further out into the landside farmed field. All three soil types are fertile, but Dubbs and Basket soils are well drained and more suited for agriculture uses. Sharkey soils are poorly drained and more suitable for wetland vegetation such as bottomland hardwoods.

## 3.1 RELEVANT RESOURCES

This section contains a description of those resources that could be impacted by the proposed project. The important resources described in this section and Table 1 are those recognized by laws, executive orders, regulations, and other standards of National, state, or regional agencies and organizations; federally recognized tribes; technical or scientific agencies, groups, or individuals; and the general public. The following resources have been considered and found not to be affected by the alternative under consideration: freshwater marshes, freshwater lakes, state-designated scenic streams, prime and unique farmlands, aquatic resources/fisheries, cultural resources,

municipal facilities, municipal utilities, roadways, recreation, aesthetics, socio-economic, environmental justice, and water quality.

**Table 1: Relevant Resources**

| Resource | Institutionally Important | Technically Important | Publicly Important |
|---|---|---|---|
| **Forested Wetlands** | Section 906 of the Water resources Development Act of 1986 and the Fish and Wildlife Coordination Act of 1958, as amended. | Provides necessary habitat for a variety of plant, fish, and wildlife species; it often provides a variety of wetland functions and values; it is an important source of lumber and other commercial forest products; and it provides various consumptive and non-consumptive recreational opportunities. | The high priority that the public places on its esthetic, recreational, and commercial value. |
| **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; the Marine Mammal Protection Act of 1972; and the Bald Eagle Protection Act of 1940. | U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, Environmental Protection Agency, and Illinois Department of Natural Resources 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. |
| **Hydrology** | 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 the desire for clean drinking water. |
| **Air Quality** | Clean Air Act of 1963 | State and Federal agencies recognize the status of ambient air quality in relation to the National Ambient Air Quality Standards. | Virtually all citizens express a desire for clean air. |

### 3.1.1 Forested Wetlands

Existing Conditions: Tree species found within the forested wetland habitat include oak, hackberry, honey locust, cottonwood, box elder, American elm, cypress, willow, etc. Understory species observed included immature trees of the same species, blackberry, greenbrier, poison ivy, and ferns.

### 3.1.2 Wildlife

Existing Conditions: Wildlife species that could potentially be found within the project area include coyotes, deer, raccoons, opossums, rabbits, squirrels, mice, rats, songbirds, neo-tropical migratory birds, raptors, turtles, snakes, and amphibians.

### 3.1.3 Threatened and Endangered Species

Existing Conditions: USACE biologists conducted a survey for threatened and endangered species within the proposed Farrenburg Levee project area. Potential summer roosting habitat for the federally endangered Indiana bat (*Myotis sodalis*) and threatened northern long-eared bat (*Myotis septentrionalis*) was observed within proposed project limits. An acoustic survey of the phase 1 construction limits was conducted by MVM staff from 10-14 August 2015. The survey indicated the likely presence of northern long-eared and gray bats. Upon coordination with the U.S. Fish and Wildlife Service it was determined that all tree clearing for phase 1 construction could be completed during the winter hibernation period while these species are not present in the area to avoid the potential for direct take of any federally threatened or endangered bats. Based on the project location, amount of habitat to be disturbed and the survey provided, the proposed work may affect, but is not likely to adversely affect the gray and northern long-eared bats, if implemented with seasonal tree-cutting restrictions (November 1-March 31). No other habitat suitable for federally threatened or endangered species was observed within the project area.

### 3.1.4 Hydrology

Existing Conditions: The flow of inlet ditches landside of the Farrenburg Levee is dependent on rainfall and often run dry in times of low precipitation. Flow within the floodside wetlands is also dependent upon rainfall, but this area lies within the St. Johns Bayou Basin. Floodwaters diverted from the Mississippi River could potentially overflow drainage ditches within the Basin and flood the low lying areas, including the wetlands floodside of the levee.

### 3.1.5 Air Quality

Existing Conditions: The proposed project area is in attainment for all air quality standards.

## 4.0 ENVIRONMENTAL CONSEQUENCES

### 4.1 Forested Wetlands

Future Conditions with No Action: Without implementation of the proposed action, no trees within the forested wetlands would be cleared, no temporary fill in wetlands would occur, and wetland habitats within the project area would be expected to remain as noted in Existing Conditions.

Future Conditions with the Proposed Action: With the proposed project action, a total of approximately 25.8 acres of forested wetland habitat would be cleared of trees. Approximately 0.1 acres per culvert would be maintained by mowing around structures, the rest would be allowed to revegetate naturally. To offset the 25.8 acres of tree clearing in forested wetlands, approximately 77.4 acres of prior converted or non-wet agricultural land would be restored to bottomland hardwoods or a comparable amount of forested wetland mitigation credits would be purchased from an approved mitigation bank.

### 4.2 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 unless the levee failed during a flood event. In that case, displacement and some mortality of terrestrial organisms would be expected to occur.

Future Conditions with the Proposed Action: With implementation of the proposed action, impacts to wildlife resources would include the clearing of approximately 25.8 acres of forested wetlands and approximately 9.7 acres of trees determined to be outside of wetlands (although largely the same species and associated wildlife habitat provided). Compensatory mitigation would occur at a ratio of 3:1 to offset the impacts of clearing 25.8 acres of BLH forested wetlands, resulting in approximately 77.4 acres of prior converted or non-wet agricultural land being restored to BLH forested wetland, and the 9.7 acres of tree clearing outside of wetlands would be offset by 19.4 acres of BLH planting. The majority of the trees that would be cleared on the landside of the levee are a ‘single row’ tree line overgrown with various woody vines. Disturbance and noise from project-related activities would temporarily displace most wildlife species from the project work areas. Project impacts are not expected to adversely impact the general population of wildlife species within the region as other forested wetlands and comparable habitat is readily available.

### 4.3 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: With implementation of the proposed phase 1 construction activities, trees and snags within the proposed project work areas that may be potential roosting trees for federally listed bats would be removed. Upon coordination with the U.S. Fish and Wildlife Service, it was determined that all tree clearing for phase 1 construction could be completed during the winter hibernation period, while federally listed bats are not present in the

area, to avoid the potential for direct take of any federally threatened or endangered bats. Based on the project location, amount of habitat to be disturbed and the survey provided, the U. S. Fish and Wildlife Service determined on November 2, 2015 the proposed work may affect, but is not likely to adversely affect the gray and northern long-eared bats, if implemented with seasonal tree-cutting restrictions (November 1-March 31), pursuant to Section 7 of the Endangered Species Act, as amended.

Future phases of construction would be coordinated with USFWS prior to tree clearing and construction. Acoustic surveys would be expected to be completed as future phases of construction are developed. All future construction would be coordinated with USFWS to determine the appropriate measures to avoid impacts to federally threatened and endangered species.

### 4.4 Hydrology

Future Conditions with No Action: Without implementation of the proposed action, erosion and/or culvert failure on Farrenburg Levee could potentially cause a levee breach that would impact hydrology landside of the levee by flooding the surrounding lands and drainage ditches with turbid waters heavily laden with sediments from the levee. Tons of sediments within the floodwaters could raise elevations within the surrounding lands and fill in drainage ditches, thus altering the path of future water flow within the area.

Future Conditions with the Proposed Action: With implementation of the proposed action, replacement of the Farrenburg Levee culvert would allow for continued drainage from landside areas to the floodside of the levee while maintaining the stability of the Farrenburg Levee.

### 4.5 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, the project-related equipment would produce small amounts of engine exhaust during construction activities. Also, burning of cleared trees and woody debris would occur in localized areas; however, temporary, minor impacts to air quality would be localized to the project area, and would not affect area residents. The equipment to be used is a mobile source, thus the project is exempt from air quality permitting requirements. Although air emissions would not require a permit, best management practices would be used throughout the construction to minimize air pollution.

### 4.6 Hazardous, Toxic, and Radioactive Waste (HTRW)

The USACE is obligated under Engineer Regulation 1165-2-132 to assume responsibility for the reasonable identification and evaluation of all HTRW contamination within the vicinity of the proposed action. A record search has been conducted of the Environmental Protection Agency's (EPA) EnviroMapper Web Page (http://maps.epa.gov). The web site was checked for any superfund sites, toxic releases, and hazardous waste sites within the vicinity of the proposed project area. MVM biologists conducted site inspections of the length of Farrenburg Levee and the area

used to stockpile material dredged from the Setback Levee Ditch. The environmental records search and site survey conducted did not identify the presence of any hazardous or suspected hazardous wastes in the proposed 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 the proposed construction activities, the proper handling and disposal of these materials would be coordinated with the Missouri Division of Environmental Quality.

### 4.7 Cumulative Impacts

The Council on Environmental Quality's regulations (40 CFR 1500-1508) implementing the procedural provisions of the National Environmental Policy Act 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)."

For more than 100 years, the proposed project area has been highly altered from its original condition due to tree clearing and levee and drainage ditch construction, largely for agricultural purposes. Impacts of the proposed Farrenburg Levee project were evaluated during the preparation of this EA on the natural and human environment. Renovation would maintain the safety and integrity of the Farrenburg Levee and maintain the current drainage from the area and improve the integrity of the levee. Plans for phase 1 construction have been completed, and plans for future phases of construction are being developed. Proposed work would be restricted to the levee, levee toe, and temporarily, land immediately adjacent to the levee considered maintenance and would not change the existing function of the Farrenburg Levee. Based upon surveys of the existing conditions, analysis of future conditions with the proposed phase 1 construction actions and proposed future work, impacts would be minor in magnitude and duration, and should not have any significant adverse cumulative effects on the environment.

The USACE has proposed the St. John's Bayou New Madrid Floodway Project to lessen the risk of damage, dislocation, and disruption due to recurrent heavy flooding in portions of New Madrid, Mississippi, and Scott counties in southeast Missouri. This would be accomplished by constructing a flood risk reduction levee, two floodwater pumping stations, ditch modifications, and other related water features in the St. Johns Bayou Basin and the adjacent New Madrid Floodway.

If constructed, the St. John's Bayou New Madrid Floodway Project would not, in conjunction with Farrenburg Levee Rehabilitation, be expected to cause adverse cumulative impacts to the environment as appropriate compensatory mitigation for both projects would offset adverse impacts to the environment.

## 5.0 COORDINATION

Preparation of the draft EA and FONSI were coordinated with the representatives from USACE and the USFWS. In addition, the draft environmental assessment will be coordinated with the following agencies and stakeholders: Missouri State Historic Preservation Officer, Missouri Historic Preservation Program, Missouri Department of Natural Resources, Missouri Department of

Conservation, St. Johns Levee and Drainage District, federally recognized tribes, and other interested parties. Coordination with these agencies would continue as required throughout the planning and construction phases of the proposed project.

## 6.0 MITIGATION

A total of approximately 25.8 acres of forested wetlands would be impacted by the proposed project. Approximately 24.5 of those acres would be impacted due to planned and future culvert replacements, and 1.3 of those acres would be impacted due to tree clearing within the VFZ. Compensatory mitigation would occur at a ratio of 3:1 to offset the impacts of clearing 25.8 acres of BLH forested wetlands, resulting in approximately 77.4 acres of prior converted or non-wet agricultural land being restored to BLH forested wetland or a comparable amount of forested wetland mitigation credits would be purchased from an approved mitigation bank. The recently completed emergency replacement of the culvert at Highway P impacted 0.9 acres of forested wetland, and mitigation of 2.7 acres of compensatory mitigation is still required. This mitigation has not yet been completed as it was determined that all impacts for the Farrenburg Levee rehabilitation would be mitigated with the largest contiguous tract possible, and is included in the total acres of compensatory mitigation for this proposed project.

An additional 9.7 acres of tree clearing would occur on land that was determined not wet, based on higher elevations and a site visit conducted by USACE Memphis District Regulatory Branch and Environmental Compliance Section. Tree clearing in these areas would be mitigated at a lower ratio of 2:1 for a total of 19.4 acres, as they are not within wetlands, and are largely within a tree line that is overgrown with various woody vines, isolated on the levee, or are a very small part of the forested area on the flood side of the levee, and not providing a great deal of wildlife habitat. These areas would be mitigated due to the scarcity of forested habitat in the general area.

Plans for future construction phases are not complete, and some changes to expected impacts may occur. If changes occur that would alter the total impacts or required compensatory mitigation, additional coordination between agencies would occur. Based on expected activities, a total of 99.5 acres of compensatory mitigation would be completed to offset impacts to wetlands and wildlife. Bottomland hardwoods planted would include those species historically found within the St. Johns Bayou Basin and Birds Point-New Madrid Floodway such as oak, cypress, pecan, locust, and sycamore. Priority for mitigation sites would be given to land within St. Johns Bayou Basin and Birds Point-New Madrid Floodway. A search for appropriate land from willing sellers is underway and there is a potential for new mitigation bank construction in the area; however, no land has currently been identified. If no willing sellers are found in those areas, willing sellers would be sought within New Madrid County and the boot-heel area of southeastern Missouri.

## 7.0 COMPLIANCE WITH ENVIRONMENTAL LAWS AND REGULATIONS

Environmental compliance for the proposed Farrenburg Rehabilitation Project would be achieved upon coordination of the draft EA and draft FONSI with appropriate agencies, organizations, and individuals for their review and comments; and review of the Section 404 Public Notice.

## 7.1 Cultural Resources

A cultural resources survey of the project rights-of-way for the proposed Farrenburg Levee culvert replacement work area was conducted in March 2014 and August 2015 by an MVM archeologist. No cultural resources were found during the survey, and no previously recorded cultural resources were found in the State of Missouri data base. As earthen material to repair the levee would be obtained from previously stockpiled dredged material, no cultural sites would be disturbed to obtain the borrow material. No further archeological work is recommended. A Cultural Resource Assessment-Section 106 Review was received from the Missouri State Historical Preservation Officer on September 28, 2015, indicating that an adequate cultural resource survey was completed and no historic properties would be affected by the proposed actions.

## 7.2 Clean Water Act

The proposed project is authorized as part of the Flood Control Act of 1928, as amended, and the proposed project action to replace the existing Farrenburg Levee culvert is considered to be maintenance. Requirements for Section 404 of the Clean Water Act are fulfilled by the Nationwide Permit Section 3 Maintenance (a) as follows:

> 3. Maintenance. (a) The repair, rehabilitation, or replacement of any previously authorized, currently serviceable structure, or fill, or of any currently serviceable structure or fill authorized by 33 CFR 330.3, provided that the structure or fill is not to be put to uses differing from those uses specified or contemplated for it in the original permit or the most recently authorized modification. Minor deviations in the structure's configuration or filled area, including those due to changes in materials, construction techniques, requirements of other regulatory agencies, or current construction codes or safety standards that are necessary to make the repair, rehabilitation, or replacement are authorized.

The proposed project action also meets the requirements set forth in the State of Missouri, Clean Water Act Section 401 Water Quality Certification, 2012 General and Specific Conditions. The project does not trigger any new permit requirements set forth in the conditions noted in the Missouri Nationwide Permit Regional Conditions for all Nationwide Permits. In particular, the wetlands within the proposed culvert replacement project area are not designated as a priority watershed by the State of Missouri.

## 8.0 CONCLUSION

The proposed project involves rehabilitation of the entire length of the Farrenburg Levee in multiple phases of construction including tree clearing within 15 feet of each toe of the levee and repairing levee slides and sinkholes to conform with USACE Levee Safety requirements; replacement, repair or removal of existing culverts; and re-grading and/or raising the levee to an elevation of 309’ in low or eroded areas and at road crossings. Gravel would be placed on the levee crown as a part of the project to provide a 15-foot access road for inspections and routine maintenance.

Approximately 25.8 acres of forested wetlands would be impacted by the proposed action, and 0.9 acres of forested wetlands were impacted by the repair completed at the Highway P culvert. Compensatory mitigation for these impacts would occur at a 3:1 ratio, resulting in approximately 80.1 acres of prior converted or non-wet agricultural land being restored to forested wetland or a comparable amount of forested wetland mitigation credits would be purchased from an approved mitigation bank. An additional 9.7 acres of tree clearing in areas that were determined not wet would be required to accomplish the removal of trees from the Levee Safety vegetation free zone. Compensatory mitigation for these impacts would occur at a 2:1 ratio, resulting in approximately 19.4 acres of forested wetland restoration. A total of 99.5 acres of compensatory mitigation is proposed to offset impacts to wetlands and wildlife usage, and an active search is underway for appropriate land from a willing seller(s).

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 forested wetlands, wildlife, hydrology, and air quality. 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, aquatic resources/fisheries, cultural resources, municipal facilities, municipal utilities, roadways, recreation, aesthetics, socio-economic conditions, or environmental justice. No significant adverse impacts would occur to forested wetlands, wildlife, threatened and endangered species, hydrology, air quality, or the human environment. Therefore, an environmental impact statement would not be required.

## 9.0 PREPARED BY

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

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