

**ENVIRONMENTAL ASSESSMENT  
WITH  
DRAFT FINDING OF NO SIGNIFICANT  
IMPACT**

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**LEVEE REPAIR (P.L. 84-99):  
STE. GENEVIEVE COUNTY LEVEE DISTRICT NO. 2  
STE. GENEVIEVE COUNTY, MISSOURI, and  
RANDOLPH COUNTY, ILLINOIS  
MISSISSIPPI RIVER, MILES 122 to 113**

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## **1. INTRODUCTION**

This document is an Environmental Assessment (EA) with an attached unsigned Finding of No Significant Impact (FONSI) for levee repairs to the Ste. Genevieve County Levee District #2. The purpose of this EA is to evaluate potential environmental impacts of proposed levee repairs, determine if the environmental impacts rise to the level of significant, and to serve as a record of interagency coordination for the emergency rehabilitation actions.

### **1.1 Project Authorization**

Emergency actions undertaken by USACE to repair flood control works damaged or destroyed by flooding are authorized by Public Law 84-99, as amended by Section 206 of the Flood Control Act of 1962 (hereafter referred to as P.L. 84-99). USACE regulations covering these and other emergency rehabilitation activities are contained in the Rehabilitation Code 910-300 of ER 500-1-1 (33 C.F.R. 203). The Code states that actions taken to *restore facilities to pre-disaster conditions* under P.L. 84-99 will not be construed to be either major federal actions or as having significant effects. However, the effect of rehabilitation on the environment must be considered. This includes the effects of construction on endangered species (P.L. 93-205 and Appendix B of ER 1105-2-50) and archeological and historic properties (Chapter 3 of ER 1105-2-50). Since the Ste. Genevieve County Levee District #2 is active in the USACE Rehabilitation and Inspection Program, they are eligible for Flood Control and Coastal Emergency funding authorized by P.L. 84-99.

### **1.2. Project Location and Scope**

The Ste. Genevieve County Levee District #2 is located about 63 miles south of St. Louis, Missouri, in Ste. Genevieve County, Missouri. A small portion of the levee district is located in Randolph County, Illinois, due to the shifting channel of the Mississippi River (See Figure 2). The Ste. Genevieve #2 levee system is adjacent to the right descending bank of the Mississippi River from approximately river mile 122 to mile 113 above the confluence with the Ohio River (Figure 1 and Figure 2). The northern flank of the levee borders Ste. Genevieve #3 levee near South Gabouri Creek and the south flank shares a border with the Kaskaskia Levee District (Figure 1). The leveed area provides flood risk reduction to approximately 7,859 acres used primarily for agricultural land. The levee system was designed for a 7% (15-year frequency) chance exceedance flood with two feet of freeboard.

If the levee is not repaired, Mississippi River waters will enter the levee district at approximately a 50% (2-year frequency) chance exceedance flood. The system is 11 miles long and consists of earthen levee with a representative crown width of 10 feet, a representative height of 20 feet, and representative water and land side slopes of 1:3. The system includes six gravity drains and two closure structures.

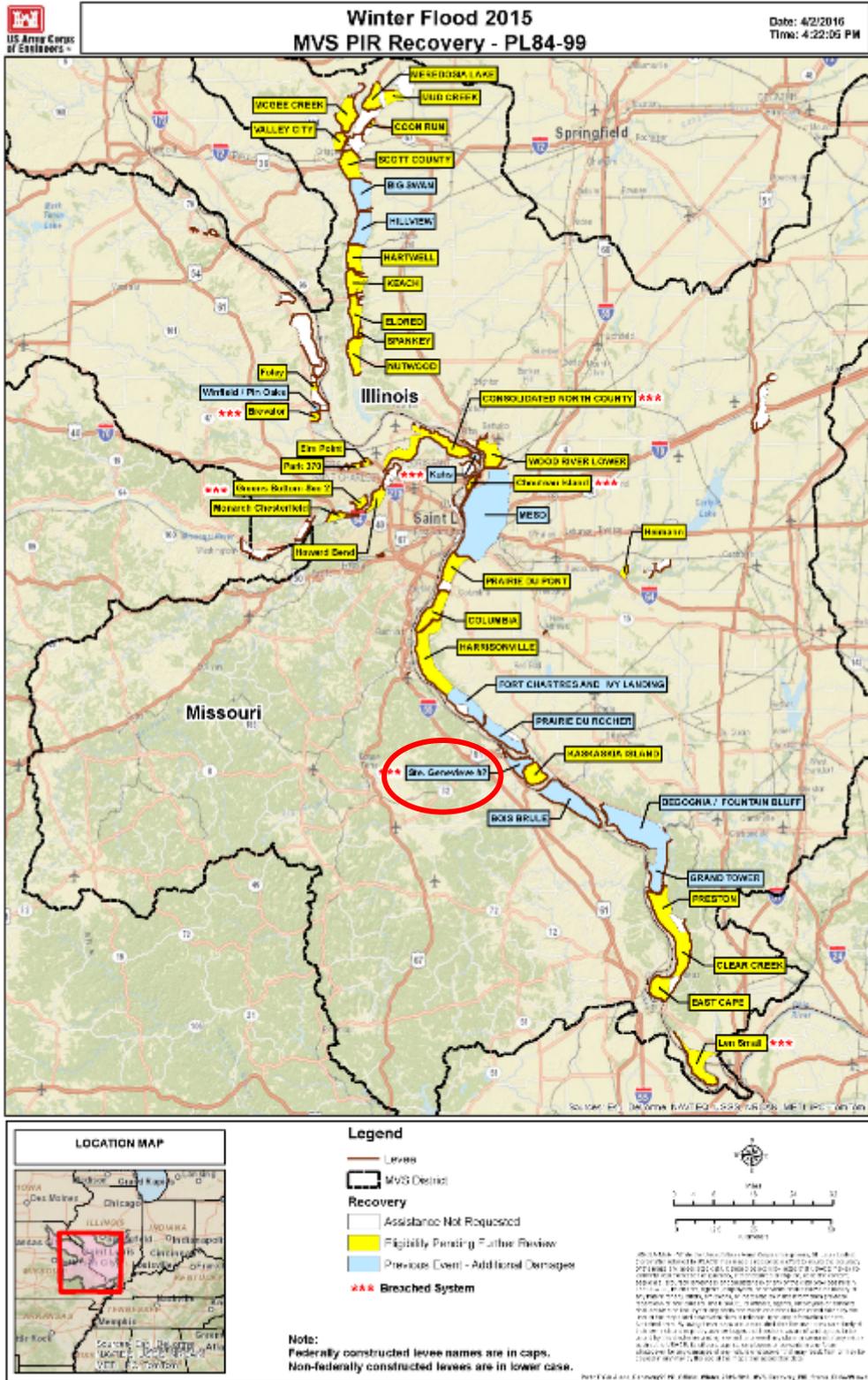


Figure 1. General Location Map of the Ste. Genevieve County Levee District #2.



Figure 2. Ste. Genevieve County Levee District #2 overview.

### 1.3. Project Purpose and Need

The Ste. Genevieve County levee system sustained damages as a result of high water events during the summer and winter of 2015. The purpose of this federal action is to restore the level of flood protection to that which existed prior to the 2015 flood events. There is a need for repairs, because flood damages reduced flood protection (from 15-year frequency flood protection to 2-year frequency flood protection) provided by the levee, making the district vulnerable to frequent flooding. Without federal involvement through the P.L. 84-99 program, it is unlikely that the Ste. Genevieve County Levee District #2 has the financial ability to restore the level of protection according to Corps of Engineers standards.

## 1.4. Damage Description

Damage location sites are shown on Figure 3. Damages consisted of Erosion Types I and III, slides, and levee breaches.

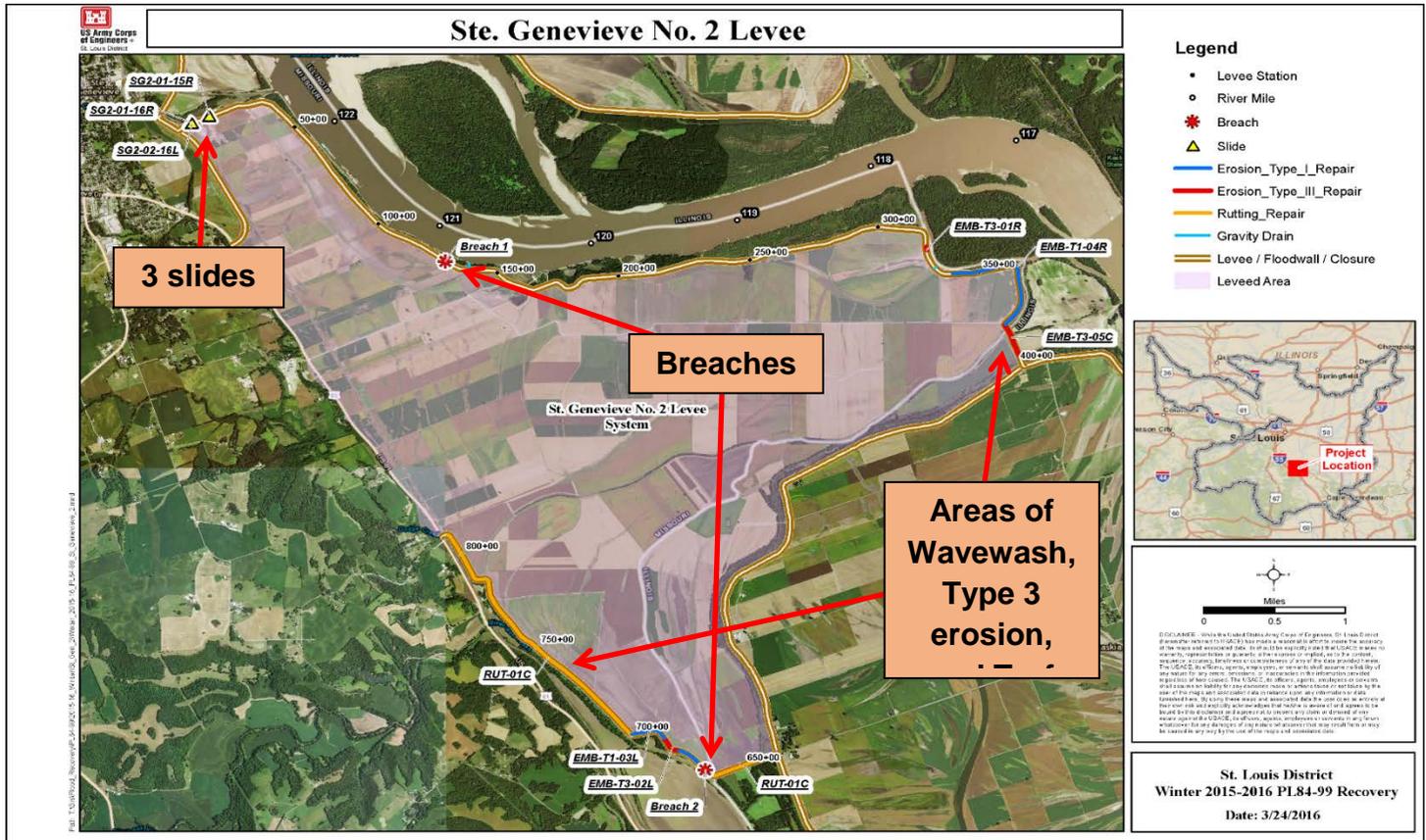


Figure 3. Map of Damages to the Ste. Genevieve County Levee District #2.

### 1.4.1. Classification of Damage Types

- Erosion Type I - Wave wash / minor erosion less than 12 inches deep, measured in linear feet. Repaired by disking and compacting.
- Erosion Type III - Major erosion greater than 18 inches deep, measured in cubic yards. Repaired by stripping, preparing, placing embankment, and compacting in lifts.
- Slide - A movement of soil down the levee slope where the levee cannot support its own saturated weight. Caused by a local embankment stability failure rather than a global stability failure as the limits or extent of the failure plane end above the foundation. Measured in length and distance from the levee crown. Repairs require excavation of the damaged area, and then replacement and re-compaction of the

embankment in lifts; measured in terms of the volume of material to be excavated, treated, and re-compacted necessary to restore the levee to its previous grade and slope.

- Breach: A rupture, break, or gap in the levee system, measured in cubic yards. Repaired by stripping, preparing, placing embankment, and compacting in lifts.

#### **1.4.2. Damages**

- Erosion Type I - Approximately 2,400 feet of interior wave wash damage near the pump station on the south flank and another 4,900 feet along the riverside of the north flank. The equivalent of 18 acres of turf would need restoring.
- Erosion Type III - Three areas sustained severe erosion due to high flows or overtopping. One 150 feet long section was scoured into the levee toe along the north flank. The second area is 1,350 feet long across the crown of the levee along the north flank. The third area is 780 feet long along the landside toe of the south flank. The levee also sustained rutting along the levee crown. Figure 4 shows typical Type III erosion.
- Slides - There was one slide on the riverside of the northwest flank following the summer flood event. The winter flood event added two additional slides, also along the northwest flank on Marina Rd. The shortest slide is 60 feet long and the longest is 230 feet in length. Figure 5 shows an example of a slide.
- Breaches - The levee system sustained two breaches, one on the mainline levee and one on the back levee. (See Figure 6 and Figure 7).

The mainline levee breach is approximately 1,990 feet wide and eroded a 50-foot deep scour hole. The back levee breach is approximately 610 feet wide and eroded a 30-foot deep scour hole.

The site of the linear (north) breach along the Mississippi River contained a 24-inch gravity drain prior to the flood event. The breach completely destroyed the gravity drain to include the inlet and outlet structures and piping (There are no photos of the damage because of the complete destruction (breach) of the section of the levee that contained the gravity drain.).

The levee is authorized to provide a 7% (15-year frequency) chance exceedance flood level of risk reduction; however, given the nature of the damages, the levee currently provides an estimated 50% (2-year frequency) chance exceedance flood level of risk reduction. If not repaired, the damages could lead to further degradation of the levee further reducing the level of flood risk reduction.



Figure 4. Typical Type III Erosion Damage (02-SEP-15).



Figure 5. Typical Slide (03-MAR-16)



Figure 6. Breach #1 (3 March 16).

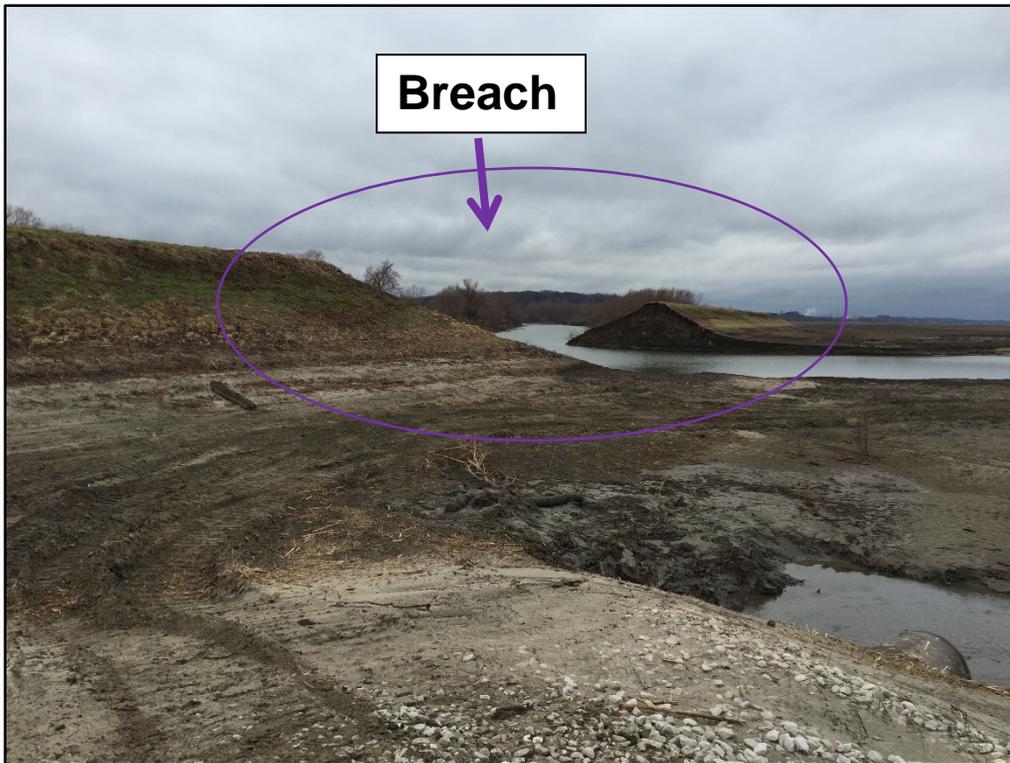


Figure 7. Breach #2 (3 March 16).

## 2. PROJECT ALTERNATIVES CONSIDERED

This section describes and compares the alternatives based on their geotechnical, engineering design, economic, and environmental impact and achievement of project objectives for the damaged Ste. Genevieve County Levee District #2. NEPA requires that in analyzing alternatives to a proposed action, a federal agency must consider an alternative of “No Action.” Likewise, Section 73 of the WRDA of 1974 (P.L. 93-251) requires federal agencies to give consideration to nonstructural measures to reduce or prevent flood damage.

### 2.1. Alternative 1 - No Action (Future without Project)

Under the No Action Alternative, the federal government would not repair the damages to the Ste. Genevieve levee. It is possible that the Drainage District would make repairs without federal assistance. Environmental impacts of repairs made by the Drainage District would be similar to the tentatively selected alternative, except that the repair duration may differ and the environmental protections may be reduced. However, due to the uncertainty of the Drainage District making all necessary repairs, **the environmental impacts of allowing the damage to remain unrepaired are regarded as the No Action Alternative.** This would presumably perpetuate a state of reduced levee structural integrity. The levee would be susceptible to further erosion at the damaged sites. The current damages would decrease flood protection, thereby increasing risks to individuals, structures, businesses, and agricultural activities within the leveed areas.

### 2.2. Alternative 2 - Nonstructural Measures

Section 73 of the WRDA of 1974 (P.L. 93-251) requires federal agencies to give consideration to non-structural measures to reduce or prevent flood damage. Nonstructural measures reduce flood damages without significantly altering the nature or extent of flooding. Damage reduction from nonstructural measures is accomplished by changing the land use within the floodplains, or by accommodating existing uses to the flood hazard. Examples include flood proofing, relocation of structures such as levees, flood warning and preparedness systems, and regulation of floodplain uses. A flood warning system would do little to reduce structural and agricultural damages. Flood proofing or relocation is not desirable to the Ste. Genevieve County Levee District #2, would have large costs, and result in loss of numerous acres of prime farmland.

Under P.L. 84-99, the Corps has the authority to pursue a non-structural alternative only if the project sponsor requests such an alternative.

*“There is hereby authorized an emergency fund to be expended in preparation for emergency response to any natural disaster, in flood fighting and rescue operations, or in the repair or restoration of any flood control work threatened or destroyed by flood,*

*including the strengthening, raising, extending, or other modification thereof as may be necessary in the discretion of the Chief of Engineers for the adequate functioning of the work for flood control, or in implementation of **nonstructural alternatives to the repair or restoration of such flood control work if requested by the non-federal sponsor.***”

Additionally, ER 500-1-1, dated 30 September 2001, states that:

*“Under P.L. 84-99, the Chief of Engineers is authorized, **when requested by the non-Federal public sponsor, to implement nonstructural alternatives (NSA’s) to the rehabilitation, repair, or restoration of flood control works damaged by floods or coastal storms. The option of implementing an NSA project (NSAP) in lieu of a structural repair or restoration is available only to non-Federal public sponsors of flood control works (FCW’s) eligible for Rehabilitation Assistance in accordance with this regulation, and only upon the written request of such non-Federal public sponsors. The principal purposes of an NSAP are for floodplain restoration, provision or restoration of floodways; and/or reduction of future flood damages and associated (FCW) repair costs. [NOTE: Habitat restoration is recognized as being a significant benefit that can be achieved with an NSAP, and may be a significant component of an NSAP, but is not considered to be a principal purpose under this authority.]***”

The Ste. Genevieve County Levee Drainage District #2 declined to request the pursuit of a non-structural alternative; therefore, this alternative was eliminated from further analysis in this EA.

### **2.3. Alternative 3 – Structural Repair of Levees with Federal Assistance**

Under this alternative, at the request of the Ste. Genevieve County Levee District #2, the federal government would repair the damaged areas to the pre-flood level of protection. Since the Ste. Genevieve County Levee District #2 is active in the USACE Rehabilitation and Inspection Program, it is eligible for Flood Control and Coastal Emergency funding authorized by P.L.84-99.

*Repairs* - The damaged areas of the levee would be reconstructed with suitable semi-compacted impervious material until the original slope and grade of the levee is attained. In areas where filling is required or breached areas, impervious borrow material and pervious sand would be added to the repair sites to restore areas to pre-flood grade. All repair areas would then be reseeded when conditions are suitable for grass germination to prevent or minimize erosion.

- The equivalent of 18 acres of turf would need restoring due to Erosion Type I.
- Erosion Type III - Three areas sustained severe type III erosion due to high flows or overtopping. All total, approximately 15,126 cubic yards of additional borrow

material and 11,100 tons of stone and crushed rock are required for the erosion and rutting repairs. Figure 4 shows typical Type III erosion.

- Slides - An estimated 8,900 cubic yards of additional borrow material would be required to restore the levee to its original grade and section. Figure 5 shows an example of a slide.
- Breaches - The levee system sustained two breaches, one on the mainline levee and one on the back levee. (See Figure 6 and Figure 7). The mainline levee breach is approximately 1,990 feet wide and eroded a 50-foot deep scour hole. Two alignments were evaluated for this breach. The first alignment was a ring levee around the scour hole leaving the scour hole unfilled. The second alignment restored the levee along the existing alignment which would require filling the existing scour hole. The levee in this location is near a major bend in the Mississippi River. Restoring the levee with a ring levee would create eddies which would erode the repaired levee overtime. Underseepage concerns are also an issue due to the deep scour hole which formed during the breach. Offsetting the levee far enough from the scour hole to prevent underseepage issues would require a long offset. The impervious fill material needed to fill the scour hole along the original alignment is in the fields adjacent to the breach. Furthermore, there are interior ponds and dredge spoil areas in the vicinity of the breach. In order to avoid these areas, more fill material would be required than along the existing alignment. Thus, the ring levee was ruled out due to economic, hydraulic, and underseepage concerns. Nonetheless, the alignment would be further evaluated during the P&S stage to minimize the amount of fill required.

The back levee breach is approximately 610 feet wide and eroded a 30-foot deep scour hole. Two alignments were also evaluated for this breach. The first was a ring levee and the second was restoring the levee along the existing alignment. Less impervious material is needed to repair the levee along the existing alignment; thus, it is the least costly alternative. Furthermore, the impervious material needed to fill the breach is available in the field adjacent to the breach. Total estimated volume to repair the breaches and restore the levee is 184,767 cubic yards of pervious material and 113,097 cubic yards of impervious material.

The north levee repairs would reinstall a 24-gravity drain through the levee at a location very near the location of the original gravity drain. The original gravity drain pipe was a corrugated metal pipe; however, the replacement pipe would be a reinforced concrete pipe in accordance with EM 1110-2-2902 (Conduits, Culverts, and Pipes). Construction would require excavation of 580 cubic yards of material from the levee and backfilling 430 cubic yards of that material around the pipe. The

area would be revetted with 99 tons of 400-pound stone to provided erosion protection at the gravity drain.

*Borrow Material* – All repair impervious borrow material would be excavated from existing agricultural land and from four borrow sites (Figure 8 and Figure 9) within the levee district (sites 4, 5, 6a, and 6b). No tree or vegetation clearing are required. All borrow material sites are located on the Mississippi River floodplain and exhibit wetland characteristics, but all areas are currently being farmed. After borrow material is removed, usually to a depth of no greater than 2-4 feet, the areas would be graded and put back into agricultural production. Impervious material would be taken from large sand deposits that accumulated at several locations on agricultural fields during the flood.

*Construction Limits* - Construction limits have been established in the immediate vicinity of the erosion, turf repair or breach repair areas. No emergent or forested wetlands exist within the construction limits.

*Access and Staging Areas* - Staging areas and access routes to the repair sites would be established to avoid and minimize environmental impacts. Existing access points such as roads, rights of way, and levees located within a reasonable distance to the construction sites would be utilized. Haul road locations and staging areas would be restored to their pre-project condition after project completion.

*Final Plans and Specifications* - Following review of comments and the signing of the FONSI (should that be the decision), plans & specs would be finalized for construction. Construction would commence as soon as possible thereafter and would be completed within one construction season.



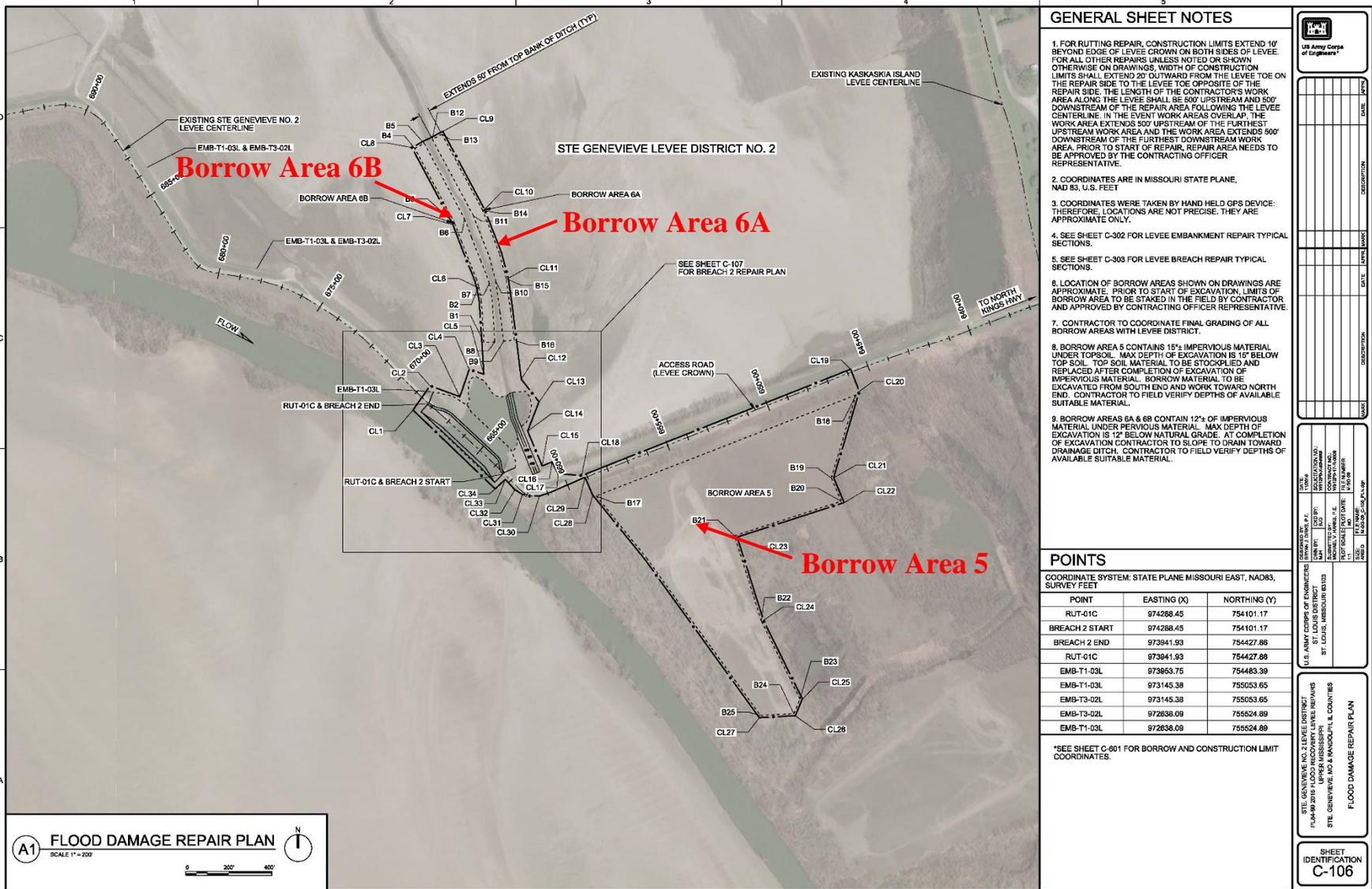


Figure 9. Location and dimensions of borrow areas #5, 6a, and 6b for Ste. Genevieve County Levee District #2.

## 4. AFFECTED ENVIRONMENT AND ENVIRONMENTAL IMPACTS

### 4.1. Physical Resources

The Ste. Genevieve County Levee Drainage District #2 is located on the floodplain of the Mississippi River. Because of the fertility of the soil and moisture, the land is prized for its agricultural productivity. Levees have been constructed to the federal standard to reduce the likelihood of inundation within the leveed area to a 14-year return period; and to provide a reasonable amount of certainty of producing crops in most years. Much of the area within the levee is considered prime farmland.

St. Genevieve County, Missouri, is currently in attainment for all U.S. Environmental Protection Agency air quality criteria (USEPA 2016). Ambient noise in the study area is generated by wildlife, human activities, agricultural activities, and vehicular traffic.

*Alternative 1 – No Action (Future without Project)* - If the Ste. Genevieve County Levee District #2 levee is not repaired to the federal standard there would be an increased flood risk and more physical damages would occur within the Drainage District, such as erosion and sedimentation. If the levee is not repaired, Mississippi River waters would enter the levee district at approximately a 50% (2-year frequency) chance exceedance flood. Air quality and noise pollution would not be anticipated to be altered by this alternative.

*Alternative 3 – Repair of Levees with Federal Assistance* – Repairs would be returned the levee system to a 7% (15-year frequency) chance exceedance flood level of flood protection. The proposed project would be expected to temporarily increase noise levels near the repair and associated worksites. The U.S. Environmental Protection Agency has set a limit of 85 decibels on the A scale (the most widely used sound level filter) for eight hours of continuous exposure to protect against permanent hearing loss. Based upon similar construction activities conducted in the past, noise above this level would not be expected to occur for periods longer than eight hours. Noise levels would return to normal after construction completion.

Construction activities would cause a slight increase in suspended particulates (i.e., dust). Emissions from construction equipment would increase the ozone, carbon monoxide and carbon dioxide levels in the vicinity of the construction site. The expected increases would be very negligible and would cease after construction.

Construction activities would occur on the mowed grass levee berms adjacent to streams and water areas. Levee repairs could cause a short-term increase in turbidity in the waterways at the immediate construction site if flooding or heavy rains occurred during construction. However, the Contractor shall comply with all applicable federal, state, and local laws and regulations. The Contractor shall provide environmental protective measures and procedures to prevent and

control pollution, limit habitat disruption, and correct environmental damage that occurs during construction. All disturbed areas would be reseeded following construction to reduce the potential for erosion.

## **4.2. Biological Resources**

### **4.2.1. Fish and Wildlife**

Fish and wildlife habitats located in and near the leveed area include permanent water, temporary water, bottomland forest / wooded swamp, old fields, and agricultural cropland. These habitats provide food and cover for a variety of fish and wildlife, including largemouth bass, bluegill, carp, crappie, warmouth, channel catfish, bullfrog, snapping turtle, muskrat, rabbits, squirrel, red fox, white-tailed deer, and many species of waterfowl, shorebirds, songbirds. Typical tree species include pecan, eastern cottonwood, American elm, box-elder, silver maple, pin oak, shagbark hickory, and river birch. The levees are mowed grass areas that are managed to prevent shrub and tree growth and animal damage. All impervious borrow material would be excavated from existing agricultural land and from a dredged material disposal site located at four borrow sites within the levee district. Impervious material would be taken from large sand deposits that accumulated at several locations on agricultural fields during the flood.

### **4.2.2. Bald Eagle**

Although the Bald Eagle (*Haliaeetus leucocephalus*) was removed from the Federal list of threatened and endangered species in 2007, it continues to be protected under the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act (BGEPA). The BGEPA prohibits unregulated take of bald eagles, including disturbance. The U.S. Fish and Wildlife Service developed the National Bald Eagle Management Guidelines (USFWS 2007, 2007b, 2007c) to provide landowners, land managers, and others with information and recommendations regarding how to minimize potential project impacts to Bald Eagles, particularly where such impacts may constitute disturbance. On 8 April 2016, Ken Cook conducted a field inspection of the levee district to determine the presence of Bald Eagle nests/nesting within the levee district. No Bald Eagle nests were observed.

*Alternative 1 – No Action (Future without Project)* – If the Ste. Genevieve County Levee District #2 levee is not repaired to the federal standard, and agriculture use diminish, a more diverse and dynamic terrestrial and aquatic habitat may develop. The terrestrial habitat could be inundated by high water more frequently, and the vegetative composition may be altered. During high water events, water could pond on the landside of the levee and deposit sediment, decreasing flood water turbidity, filling wetlands, killing vegetation as flood water ponds on typically dry areas currently dominated by agriculture. However over time, wetland vegetation would become established. During high water events, terrestrial fauna would be displaced as their habitat is

inundated. Conversely, fishes and other aquatic organisms would gain access to a large area of floodplain habitat, which would benefit the spawning and rearing of many fish species.

*Alternative 3 – Repair of Levees with Federal Assistance* – Impervious borrow material would be excavated from four borrow areas and pervious material would be excavated from large deposits that were left after the flood. With the exception of weedy vegetation growing on the dredged material disposal site, no tree or vegetation clearing are required. All borrow material sites are located on the Mississippi River floodplain and exhibit wetland characteristics, but all areas (with the exception of the dredged material disposal site) are currently being farmed. After borrow material is removed, usually to a depth of no greater than 2-3 feet, the areas would be graded and put back into agricultural production.

If heavy rain occurs during construction, washing soil into the river and other waterways, there could be a short-term increase in turbidity in the immediate area, temporarily displacing fish and other mobile organisms. Following construction, aquatic species would be expected to return. However, the Contractor is required to comply with all applicable federal, state, and local laws and regulations. The Contractor is required to provide environmental protective measures and procedures to prevent and control pollution. This includes the condition that the Contractor shall keep construction activities under surveillance, management and control to minimize interference with, disturbance to, and damage of, fish and wildlife. Therefore, no more than short-term limited impacts to fish and wildlife resources are anticipated.

#### 4.3. Biological Assessment

In compliance with Section 7(c) of the Endangered Species Act of 1973, as amended, a list of species and critical habitat was acquired from the USFWS IPaC website (USFWS 2016) (<https://ecos.fws.gov/ipac/project/RTI5QGDAZRBFXMGSSNZIQ4S62Q/overview>) on 31 October 2016 Ste. Genevieve County Levee District #2 project area (Table 1). Habitat requirements and impacts of the federal action are discussed for each species below.

Table 1. List of Federally threatened and endangered species and their habitat potentially occurring in Ste. Genevieve County, MO and Randolph County, IL.

Common Name (Scientific Name)	Classification	County/State	Habitat
Indiana Bat ( <i>Myotis sodalis</i> )	Endangered	Ste. Genevieve Co., MO Randolph Co., IL	Caves, mines (hibernacula); small stream corridors with well- developed riparian woods; upland forests (foraging)

Northern Long-eared Bat ( <i>Myotis septentrionalis</i> )	Threatened with 4(d) rule	Ste. Genevieve Co., MO Randolph Co., IL	Caves and mines; rivers and reservoirs adjacent to forests
Gray Bat ( <i>Myotis sodalis</i> )	Endangered	Ste. Genevieve Co., MO	Caves
Least Tern ( <i>Sterna antillarum</i> )	Endangered	Randolph Co., IL	Bare alluvial and dredged spoil islands
Pallid Sturgeon ( <i>Scaphirhynchus albus</i> )	Endangered	Ste. Genevieve Co., MO Randolph Co., IL	Mississippi and Missouri Rivers
Small Whorled Pogonia ( <i>Isotria medeoloides</i> )	Threatened	Randolph Co., IL	Dry woodlands

### **Indiana Bat**

This species has been noted as occurring in several Illinois and Missouri counties. Indiana Bats are considered to potentially occur in any area with forested habitat. Indiana Bats migrate seasonally between winter hibernacula and summer roosting habitats. Winter hibernacula include caves and abandoned mines. Females emerge from hibernation in late March or early April to migrate to summer roosts. Females form nursery colonies under the loose bark of trees (dead or alive) and/or in cavities, where each female gives birth to a single young in June or early July. A maternity colony may include from one to 100 individuals. A single colony may utilize a number of roost trees during the summer, typically a primary roost tree and several alternates. Some males remain in the area near the winter hibernacula during the summer months, but others disperse throughout the range of the species and roost individually or in small numbers in the same types of trees as females. The species or size of tree does not appear to influence whether Indiana bats utilize a tree for roosting provided the appropriate bark structure is present. However, the use of a particular tree does appear to be influenced by weather conditions, such as temperature and precipitation (USFWS 2007a, USFWS 1999).

During the summer, Indiana Bats frequent the corridors of small streams with well-developed riparian woods, as well as mature bottomland and upland forests. They forage for insects along stream corridors, within the canopy of floodplain and upland forests, over clearings with early successional vegetation (old fields), along the borders of croplands, along wooded fence rows, and over farm ponds and in pastures. It has been shown that the foraging range for the bats varies by season, age and sex and ranges up to 81 acres (33 ha). Suitable Indiana Bat summer habitat may be located in the forested areas in and adjacent to the Ste. Genevieve County Levee District #2.

*Alternative 1 - No Action (Future without Project)* - Current status anticipated to remain the same. If the levee district remained unrepaired, habitat conditions would improve over time. However, it is likely that the Levee District would initiate some level of repairs; although, not to Corps' standards.

*Alternative 3 - Repair of Levees with Federal Assistance* - The proposed project would not affect any caves or foraging habitat. As currently planned, this project involves no tree clearing. Therefore, the St. Louis District has determined that the Tentatively Selected Plan will have “no effect” on the Indiana Bat.

### **Northern Long-Eared Bat**

The Northern Long-eared Bat is sparsely found across much of the eastern and north central United States, and all Canadian provinces from the Atlantic Ocean west to the southern Yukon Territory and eastern British Columbia. Northern long-eared bats spend winter hibernating in large caves and mines. During summer, this species roosts singly or in colonies underneath bark, in cavities, in crevices of both live and dead trees. Foraging occurs in interior upland forests. Forest fragmentation, logging and forest conversion are major threats to the species. One of the primary threats to the northern long-eared bat is the fungal disease, white-nose syndrome, which has killed an estimated 5.5 million cave hibernating bats in the Northeast, Southeast, Midwest and Canada. Suitable northern long-eared bat summer habitat may be located in the forested areas in and adjacent to the Ste. Genevieve County Levee District #2.

*Alternative 1 - No Action (Future without Project)* - Current status anticipated to remain the same. If the levee district remained unrepaired, habitat conditions would improve over time. However, it is likely that the Levee District would initiate some level of repairs; although, not to Corps' standards.

*Alternative 3 - Repair of Levees with Federal Assistance* - The proposed project would not affect any caves or summer roost / foraging habitat (i.e.; trees). As currently planned, this project involves no tree clearing. Therefore, the St. Louis District has determined that the Tentatively Selected Plan would have “no effect” on the Northern Long-Eared Bat.

### **Gray Bat**

The Gray Bat occurs in several Illinois and Missouri counties where it inhabits caves during both summer and winter. This species forages over rivers and reservoirs adjacent to forests (USFWS 2016a).

*Alternative 1 - No Action (Future without Project)* - Current status anticipated to remain the same.

*Alternative 3 - Repair of Levees with Federal Assistance* - No caves would be impacted by the project and no trees (potential foraging habitat along the river) will be cut down for the levee slide and turf repairs. Work will occur during daylight hours, so foraging will not be affected. Therefore, the St. Louis District has determined that the proposed project will have “no effect” on the Gray Bat.

### **Interior Least Tern**

Interior Least Tern historic breeding range includes the Mississippi River system (Jones, 2000, USFWS 1990). Surveys of the Mississippi River have found the majority of breeding colonies occur south of Cairo, IL. However, breeding birds have been found in Scott and Mississippi counties. The characteristics required for suitable breeding grounds include “bare alluvial islands or sandbars”, food, and appropriate water regime. Least terns arrive at breeding grounds in late April and the breeding season is complete by early September (USFWS 1990).

*Alternative 1 - No Action (Future without Project)* - Current status anticipated to remain the same.

*Alternative 3 - Repair of Levees with Federal Assistance* - Levee repairs would take place within the footprint of the levee and would not impact any interior least tern habitat. Therefore, the St. Louis District has determined that the Tentatively Selected Plan would have “no effect” on the Interior Least Tern.

### **Pallid Sturgeon**

The Pallid Sturgeon is found in the Mississippi River downstream of its confluence with the Missouri River. Pallid Sturgeon forage for insects, crustaceans, snails, clams, and fish along the bottom of large rivers (USFWS 2014). These fish are most frequently caught over a sand bottom, which is the predominant bottom substrate within the species' range on the Mississippi River. Tag returns have shown that the species may be using a range of habitats in off-channel areas and tributaries of the Mississippi River.

*Alternative 1 - No Action (Future without Project)* - Current status anticipated to remain the same.

*Alternative 3 - Repair of Levees with Federal Assistance* - Levee repairs would take place within the footprint of the levee and designated work areas and would not impact any Pallid Sturgeon habitat. Therefore, the St. Louis District has determined that the Tentatively Selected Plan would have “no effect” on the Pallid Sturgeon.

### **Small Whorled Pogonia**

The small whorled pogonia, an orchid, was added to the U.S. List of Endangered and Threatened Wildlife and Plants in 1982 as an endangered species. In 1994 it was reclassified to threatened. This orchid grows in older hardwood stands of beech, birch, maple, oak, and hickory that have an open understory. Sometimes it grows in stands of softwoods such as hemlock. It prefers acidic soils with a thick layer of dead leaves, often on slopes near small streams. The primary threat to the small whorled pogonia is the past and continuing loss of populations when their habitat is developed for urban expansion. Some forestry practices eliminate habitat. Also, habitat may be degraded or individual plants lost because of recreational activities and trampling. As with all rare orchids, the small whorled pogonia is vulnerable to collecting for commercial or personal use (USFWS 2016b).

*Alternative 1 - No Action (Future without Project) - No Action (Future without Project) -* Current status anticipated to remain the same.

*Alternative 3 - Repair of Levees with Federal Assistance -* The proposed project area does not include suitable habitat for this species. Therefore, the St. Louis District has determined that the proposed project would have “no effect” on the small whorled pogonia.

## **4.4. Socioeconomic Resources**

### **4.4.1. Economic**

The Ste. Genevieve County Levee District #2 encompasses 7,859 acres (7,699 cropland acres). The levee system is a non-federal project that is active in the USACE Rehabilitation and Inspection Program. Therefore, Ste. Genevieve #2 is eligible for Flood Control and Coastal Emergency funding authorized by P.L. 84-99. The main occupation in the Ste. Genevieve County Levee District #2 is farming, and levees are of regional economic importance to maintain the agricultural productivity occurring in the floodplain. 2013 USDA NASS aerial imagery provided an estimation of the crop allocation inside the levee district, which was used to determine a distribution of 45% corn, 50% soybean, and 5% wheat. If the levee is not repaired, Mississippi River waters will enter the levee district at approximately a 50% (2-year frequency) chance exceedance flood. The repair project will provide flood risk reduction against a 7% (15-year frequency, pre-flood design) chance exceedance flood. The total rehabilitation project cost would be approximately \$9,029,560 with a benefit to cost (b/c) ratio of 1.03 to 1. The non-federal cost share would be \$1,705,380.

*Alternative 1 – No Action (Future without Project) –* If the Ste. Genevieve County Levee District #2 levee is not repaired to the Federal standard, Mississippi River waters will begin flooding the levee district at approximately a 50% (2-year frequency) chance exceedance flood. The

previously leveed area would continue to be subject to flooding, making the area less suitable and possibly unsuitable for agriculture. This would result in a negative economic effect on the Drainage District and the local economy.

*Alternative 3 – Repair of Levees with Federal Assistance* – Local agricultural and agri-businesses would benefit from levee repair and subsequent flood damage reduction. The repair project would provide flood risk reduction against a 7% (15-year frequency, pre-flood design) chance exceedance flood. The proposed levee repairs would not require residential displacement. No adverse impacts to life, health, or safety would result from levee repair.

#### **4.4.2. Cultural Resources (Historic and Archaeological)**

The repair site locations are composed of areas of erosion in recently deposited material or recently-placed levee berm material. There are no recorded archaeological sites in the repair site and borrow material locations. A survey of borrow areas found no evidence of cultural materials. No historic properties would be affected.

*Alternative 1 – No Action (Future without Project)* – Without flooding, there would be no change from current conditions. With flooding, there is the potential for damage to culturally significant sites protected by the levee.

*Alternative 3 – Repair of Levees with Federal Assistance* – The proposed repairs to the levee within the Ste. Genevieve County Levee District #2 would have no effect upon significant historic properties (archaeological remains or standing structures). The repairs consist of repairs of erosion damage and slides on the levee itself. The two breaches will be repaired with borrow material excavated from agricultural fields. A survey of borrow areas found no evidence of cultural materials. No historic properties will be affected.

In the unlikely event that earthmoving activities associated with the proposed repairs did impact potentially significant archeological/historic remains, all construction activities and earthmoving actions in the immediate vicinity of the remains would be held in abeyance until the potential significance of the remains could be determined. The precise nature of such investigations would be developed by the Saint Louis District in concert with the professional staff of the Missouri and Illinois State Historic Preservation Offices (SHPO).

#### **4.4.3. Environmental Justice**

Environmental justice refers to fair treatment of all races, cultures and income levels with respect to development, implementation and enforcement of environmental laws, policies and actions. Environmental justice analysis was developed following the requirements of:

- Executive Order 12898 ("Federal Actions to Address Environmental Justice in Minority Population and Low-Income Populations," 1994)
- "Department of Defense's Strategy on Environmental Justice" (March 24, 1995).

*Alternative 1 – No Action (Future without Project)* – If the Ste. Genevieve County Levee District #2 levee is not repaired to the Federal standard, the level of protection would be eliminated (due to the levee breaches) from that provided by the design (pre-2015 flood event) levee. This would not disproportionately affect low income or minority populations.

*Alternative 3 – Repair of Levees with Federal Assistance* – If the Ste. Genevieve County Drainage District #2 levee is repaired to the Federal standard, the level of protection would be that provided by the design (pre-2015 flood event) levee. This would not disproportionately affect low income or minority populations.

#### **4.4.4. Tribal Coordination**

The St. Louis District consulted with 27 tribes that have an interest in projects along all rivers within our district boundaries. Of the 27 tribes consulted, three responded and had no issues concerning the proposed project.

*Alternative 1 – No Action (Future without Project)* – Without flooding, there would be no change from current conditions. With flooding, there is the potential for damage to culturally significant sites protected by the levee.

*Alternative 3 – Repair of Levees with Federal Assistance* – The recovery and repair of these damaged levees, authorized under P.L. 84-99, will be coordinated with all tribes in the following manner: An initial letter to the tribes will describe the locations of existing flood damaged structures, lands and fills. Maps of the areas and a description of the types of impacts resulting from construction are also included. The tribes are requested to contact the USACE if there are known tribal areas of concern in any of the project areas and if they desire further consultation on each or any project. Depending on tribal response, the USACE continues the consultation process until the completion of the project.

## 5.0 HTRW

At this time, there are no recognized environmental conditions that would indicate a risk of HTRW contamination within the project area.

*Alternative 1 - No Action (Future without Project)* - Without flooding, there would be no change from current conditions. With flooding, there is the potential for flood water to spread some contaminants which may be in the area.

*Alternative 3 - Repair of Levees with Federal Assistance* - The likelihood of hazardous substances adversely affecting the project area due to the proposed construction activities is very low. The St. Louis District would conduct a modified Phase I assessment including a site investigation prior to construction to ensure that no HTRW contamination exists within the project area.

## 6.0 SUMMARY COMPARISON OF PROJECT ALTERNATIVES

Impacts of the tentatively selected alternative to natural resources, cultural resources, and other aspects and features of the human environment are summarized in Table 2 of this EA.

Table 2. Summary of the “No Action” and tentatively selective alternatives to physical, biological, and socioeconomic resources.

Resources	Alternatives	
	No Action	Tentatively Selected Alternative
Physical Resources	Flooding will occur if the levees are not repaired and the levee’s integrity is further compromised during a flood.	Erosion repairs, slide repairs, and breach repairs would meet the Federal standard.
	Increased potential for further erosion of levee and sedimentation within drainage district during flood events.	Temporary minor impacts to water and air quality during construction.
	Does not meet project objective of repairs to Federal standard.	Meets project design objective of 14-year protection level.

<b>Biological Resources</b>	If levee system is compromised, there is potential for beneficial impacts due to potential increase in floodplain wetland habitat.	Construction would be confined to the levee and borrow area which may result in minor temporary impacts.
	Federal T&E species would not be adversely impacted.	There would be no tree clearing; therefore, proposed action should have no adverse effects on listed species.
	Meets project objective of minimal environmental impacts.	Meets project objective of minimal environmental impacts.
<b>Socioeconomic Resources</b>	The drainage district would be susceptible to future floods and potential negative impacts to the drainage district and regional economy due to levee damages.	Repair of levee would result in the protection of croplands, businesses and structures from floods up to the design (14-year frequency) of the levee system.
	Does not meet project objective of protecting the socioeconomic value of the drainage district.	Meets project objective of protecting the economic value of the drainage district.

**7.0 CUMULATIVE IMPACTS**

The majority of the levee systems in the region have been in place for decades. Repairs would involve returning most of the damaged levee sections to the same alignment and level of protection as existed prior to the winter high water events of 2015. Temporary impacts from noise, air, and water pollution would occur; however, repair sites are widely scattered throughout the St. Louis District and therefore additive effects of these impacts would be negligible. These repairs are not anticipated to decrease the post-flood productivity of lands riverward or landward of the levee systems. The Ste. Genevieve County Levee District #2 P.L. 84-99 project along with several other levees would require borrow for levee repairs. Borrow sites have been examined and selected in order to avoid sensitive areas and resources. Borrow for the majority of these projects would come from agriculture areas, low quality farmed wetlands, and previously identified borrow areas. Pervious material (sand) would be Some P.L. 84-99 projects sustained damage that is infeasible to repair on the original levee alignment. For new levee alignments, some acreage would be removed from agricultural use causing a minor loss to overall farm production and increase in floodplain habitat. The widely scattered nature of repair sites and shallow excavation depth of borrow sites would reduce impacts and no long term

adverse cumulative impacts are expected. Borrow sites have been evaluated during field trips to reduce environmental impacts.

## 8.0 RELATIONSHIP OF TENTATIVELY SELECTED PLAN TO ENVIRONMENTAL REQUIREMENTS

The relationship of the tentatively selected plan (Alternative 3 – Repair of Levees with Federal Assistance) to environmental requirements, environmental act, and /or executive orders is shown in Table 3.

Table 3. Relationship of the tentatively selected plan to environmental requirements, environmental act, and /or executive orders.

<b>Environmental Requirement</b>	<b>Compliance</b>
Bald Eagle Protection Act, 42 USC 4151-4157	FC
Clean Air Act, 42 USC 7401-7542	FC
Clean Water Act, 33 USC 1251-1375	FC
Comprehensive Environmental Response, Compensation, and Liability Act, (HTRW) 42 USC 9601-9675	PC
Endangered Species Act, 16 USC 1531-1543	PC
Farmland Protection Policy Act, 7 (Prime Farmland) USC 4201-4208	FC
Fish and Wildlife Coordination Act, 16 USC 661-666c	PC
Food Security Act of 1985 (Swampbuster), 7 USC varies	FC
Land and Water Conservation Fund Act, (Recreation)16 USC 460d-4601	FC
National Environmental Policy Act, 42 USC 4321-4347	PC
National Historic Preservation Act, 16 USC 470 et seq.	PC
Noise Control Act of 1972, 42 USC 4901-4918	FC
Resource, Conservation, and Rehabilitation Act, (Solid Waste) 42 USC 6901-6987	FC
Rivers and Harbors Appropriation Act, (Sec. 10) 33 USC 401-413	FC
Water Resources Development Acts of 1986 and 1990 (Sec 906 – Mitigation; Sec 307 - No Net Loss - Wetlands)	FC

Floodplain Management (EO 11988 as amended by EO 12148)	FC
Federal Compliance with Pollution Control Standards (EO 12088)	FC
Protection and Enhancement of Environmental Quality (EIS Preparation) (EO 11991)	FC
Protection and Enhancement of the Cultural Environment (Register Nomination) (EO 11593)	FC
Protection of Wetlands (EO 11990 as amended by EO 12608)	FC

FC = Full Compliance, PC = Partial Compliance (on-going, will be accomplished before construction)

## 9.0 COORDINATION, PUBLIC VIEWS, AND RESPONSES

Notification of this Environmental Assessment and unsigned Finding of No Significant Impact were sent to the officials, agencies, organizations, and individuals listed in Table 4 below for review and comment. Additionally, an electronic copy will be available on the St. Louis District's website at

<http://www.mvs.usace.army.mil/Missions/ProgramsProjectManagement/PlansReports.aspx> during the public review period.

Please note that the Finding of No Significant Impact is unsigned. These documents will be signed into effect only after having carefully considered comments received as a result of this public review.

To assure compliance with the National Environmental Policy Act, Endangered Species Act, and other applicable environmental laws and regulations, coordination with these agencies will continue as required throughout the planning and construction phases of the proposed levee repairs.

Table 4. Notification of Environmental Assessment and unsigned Finding of No Significant Impact.

U.S. Environmental Protection Agency,  
Region 5  
U.S. Environmental Protection Agency,  
Region 7  
U.S. Fish and Wildlife Service, Columbia  
Field Office

U.S. Fish and Wildlife Service, Marion  
Illinois Suboffice  
Federal Emergency Management Agency  
Senator Roy Blunt (Missouri)  
Senator Claire McCaskill (Missouri)  
Senator Richard Durbin (Illinois)

Senator Mark Kirk (Illinois)  
Representative Mike Bost (Illinois)  
Representative Jason Smith (Missouri)  
MO Representative Kevin Engler  
MO Senator Gary Romine  
Missouri Environmental Protection Agency  
Missouri Department of Conservation  
Missouri Emergency Management Agency  
Illinois Environmental Protection Agency  
Illinois Department of Natural Resources  
Illinois Department of Agriculture  
Illinois Historic Preservation Officer  
Illinois Natural Resources Conservation  
Service  
State Senator Wayne Wallingford (Missouri)

State Representative Kevin Engler  
(Missouri)  
State Senator Dave Luechtefeld (Illinois)  
State Representative Jerry Costello, II  
(Illinois)  
Sierra Club, Missouri Chapter  
Sierra Club, Illinois Chapter  
Sierra Club, Belleville Group  
Izaak Walton League of America  
American Bottoms Conservancy  
Heartlands Conservancy  
The Nature Conservancy, Missouri Office  
The Nature Conservancy, Illinois Office  
Ste. Genevieve County Levee District #2

## **10. ENVIRONMENTAL ASSESSMENT PREPARERS**

Rick Archeski, Environmental Engineer

Experience: 16 years USFWS, 16 years US Army, 19 years USACE-MVS

Role: Environmental Engineering, HTRW

James E. Barnes, District Archaeologist

Experience: 8 years private sector; 22 years Center of Expertise, Curation and Maintenance of Archaeological Collections

Role: National Historic Preservation Act Analysis and Compliance

Bryan Dirks, P.E.

Experience: 8 years Design Branch, USACE

Role: Technical Engineering Lead

Thomas M. Keevin, Ph.D., Aquatic Ecologist

Experience: 5 years private sector; 33 years Environmental Branch, USACE

Role: EA Coordinator, Environmental Impact Analysis, NEPA and Environmental Compliance

Sheila McCarthy, Project Manager

Experience: 8 years USACE-CERL; 8 years USACE-MVS

Role: Project Manager

Danny McClendon, Chief Regulatory Branch

USACE-MVS Regulatory Office

Role: Section 404/401 permit review; NEPA and Environmental Compliance Coordination

Evan Stewart, Economist

Experience: 3 years USACE-MVN

Role: Economist

## 11. REFERENCES

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- USFWS (U.S. Fish and Wildlife Service). 2007c. National Bald Eagle Management Guidelines. <https://www.fws.gov/southdakotafieldoffice/NationalBaldEagleManagementGuidelines.pdf>
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- USFWS (U.S. Fish and Wildlife Service). 2016a. Gray Bat (*Myotis grisescens*) Fact Sheet. [https://www.fws.gov/midwest/endangered/mammals/grbat\\_fc.html](https://www.fws.gov/midwest/endangered/mammals/grbat_fc.html) (Accessed: 21 November 2016).
- USFWS (U.S. Fish and Wildlife Service). 2016b. Small Whorled Pogonia Fact Sheet. <https://www.fws.gov/midwest/endangered/plants/smallwhorledpogoniafs.html> (Accessed: 21 November 2016).

## **DRAFT FINDING OF NO SIGNIFICANT IMPACT**

### **PUBLIC LAW 84-99**

### **STE. GENEVIEVE COUNTY LEVEE DISTRICT NO. 2**

### **STE. GENEVIEVE COUNTY, MISSOURI**

### **MISSISSIPPI RIVER, MILES 122 to 113**

1. I have reviewed the documents concerned with the proposed levee repairs to the Ste. Genevieve County Levee District #2. The purpose of this project is to repair levee sections damaged by an extended high water event during the summer and winter of 2015. Repairs would return the drainage district to pre-flood conditions in an expedient manner.

2. I have also evaluated pertinent data concerning practicable alternatives relative to my decision on this action. As part of this evaluation, I have considered the following alternatives:

- a. No Action Alternative: Under the no-action alternative, the federal government would not repair the flood damaged levees. It is assumed that, because of the cost of repairs, the levee district would not repair the levee.
- b. Nonstructural Alternative: Under P.L. 84-99, the Corps has the authority to pursue a non-structural alternative only if the project sponsor requests such an alternative. The Ste. Genevieve Drainage District #2 declined to request the pursuit of a non-structural alternative; therefore, this alternative was eliminated from further consideration.
- c. Repair of Levees with Federal Assistance (Tentatively Selected Plan): Under this alternative, the federal government would repair the damaged areas to the pre-flood level of protection. Since the Ste. Genevieve County Levee District #2 is active in the USACE Rehabilitation and Inspection Program, it is eligible for Flood Control and Coastal Emergency funding authorized by P.L. 84-99.

3. The possible consequences of the No Action Alternative and Levee Repair Alternative have been studied for physical, environmental, cultural, social and economic effect, and engineering feasibility. Major findings of this investigation include the following:

- a. The No Action Alternative was evaluated and subsequently rejected primarily based upon the higher potential for future flooding and damage to area agricultural fields, primary and secondary residences, outbuildings, and infrastructure.
- b. Borrow for the final levee repair would come from agricultural lands that would be contoured and returned to agriculture, a dredged disposal area, and large sand deposits left within the Levee District by the flood).

- c. No appreciable effects to general environmental conditions (air quality, noise, water quality) would result from the tentatively selected plan.
- d. The tentatively selected plan is not expected to cause significant adverse impacts to general fish and wildlife resources.
- e. The tentatively selected plan is not expected to cause unacceptable adverse impacts to riparian habitat, bottomland hardwood forest, or other wetlands.
- f. No Federally endangered or threatened species are anticipated to be adversely impacted by the tentatively selected plan.
- g. No prime farmland would be adversely impacted as a result of the tentatively selected plan.
- h. No significant impacts to historic properties (cultural resources) are anticipated as a result of the tentatively selected plan.
- i. Under the tentatively selected plan, local economies would benefit through an increased labor demand to carry out levee repairs. Agricultural land and structures within the drainage district would be provided with pre-2015 flood protection.
- j. The Contractor shall comply with all applicable federal, state, and local laws and regulations. The Contractor shall provide environmental protective measures and procedures to prevent and control pollution, limit habitat disruption, and correct environmental damage that occurs during construction. All disturbed areas would be reseeded following construction to reduce the potential for erosion.

4. Based upon the Environmental Assessment of the tentatively selected plan, no significant impacts on the environment are anticipated. The proposed action has been coordinated with appropriate resource agencies, and there are no significant unresolved issues. Therefore, an Environmental Impact Statement will not be prepared prior to proceeding with this action.

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Date

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Anthony P. Mitchell  
Colonel, U.S. Army  
District Commander