



U.S. Army Corps
Of Engineers
St. Louis District

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

**Regulating Works Project - Dogtooth Bend Phase 7
Middle Mississippi River (RM 14.9-17.8)
Alexander County, IL**



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1. INTRODUCTION

1.1 OVERVIEW

The U.S. Army Corps of Engineers (Corps) St. Louis District (District) proposes to commence construction activities in the near-term to stabilize the bankline and pursue a long-term construction solution to reduce the risk of a channel cutoff forming in the Mississippi River along the left descending bank (LDB) of river miles (RM) 14.9-17.8 (Figure 1).

The District has drafted this Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) to evaluate the potential impacts associated with the Dogtooth Bend Phase 7 Project. This EA has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969 and the 2021 Council on Environmental Quality's Regulations (40 Code of Federal Regulations §1500-1508), as reflected in the USACE Engineering Regulation 200-2-2.

1.2 AUTHORIZATION

The Congress of the United States, through the enactment of a series of Rivers and Harbors Acts beginning in 1824, authorized the Secretary of the Army, by and through the District, to provide a safe and dependable navigation channel, currently 9-feet deep and not less than 300-feet wide, with additional width in the bends as required on the reach between the confluences of the Ohio and Missouri rivers (RM 0-195), known as the Middle Mississippi River (MMR). This ongoing effort is also commonly referred to as the Regulating Works Project. The Regulating Works Project utilizes bank stabilization and sediment management to maintain bank stability and ensure adequate navigation depth and width. Bank stabilization is achieved by revetments and river training structures, while sediment management is achieved by river training structures (also referred to as regulating works structures). The Regulating Works Project is maintained through dredging and any needed maintenance to already constructed features. The long-term goal of the Regulating Works Project, as authorized by Congress, is to reduce the amount of annual maintenance dredging needed to maintain the 9-foot navigation channel.

To the extent possible under existing authorities, environmental laws, regulations, and policies, the District considers the environmental consequences of its activities as it plans, constructs, and operates the Regulating Works Project and acts accordingly. An important component of each activity is the use of scientific, economic, and social knowledge to understand the environmental context and effects of District actions in a collaborative manner, employing an open, transparent process that respects the views of Federal and State stakeholders, individuals, and groups interested in District activities.

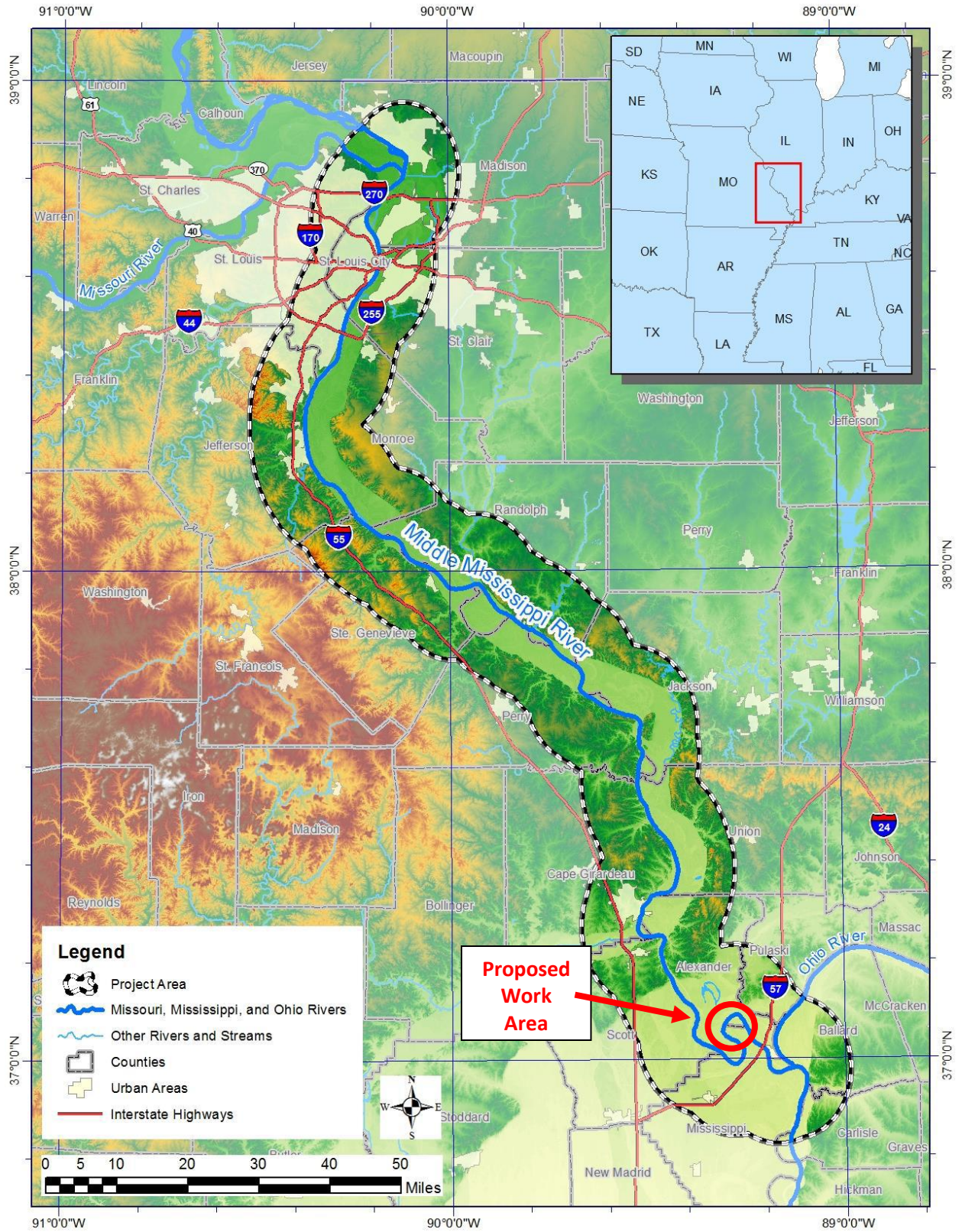


Figure 1. Proposed project location on the Mississippi River along the left descending bank (LDB) of river miles (RM) 15-18, Alexander County, IL.

1.3 PURPOSE AND NEED

Due to the high degree of sinuosity on the lower end of the MMR, the District monitors potential bank erosion areas that could result in a channel cutoff and takes appropriate action to prevent these catastrophic events from happening. In general, a channel cutoff occurs during overbank events at a bend in a river and the river connects the two closest parts of the channel, effectively cutting off the bend in the river. Cutoffs are a natural process for meandering rivers, but in terms of maintaining a safe and reliable navigation channel, a channel cutoff poses a detrimental risk to navigation and to adjacent lands. A channel cutoff would result in loss of the existing navigation channel and cause an increase in near-term high velocities, high levels of scour, and increased potential for a headcut to form. If any of these actions occurred, the Corps would have a high risk of losing the ability to maintain authorized channel dimensions for commercial navigation. Action is needed to ensure a safe and reliable navigation channel, as required by law.

A high-water event in late December 2015 to early January 2016 created undesirable conditions within the Dogtooth Bend area. The Len Small Drainage and Levee District (D&LD) levee near Miller City, IL sustained significant damage which extended across the peninsula, causing a failure of the parallel, LDB Mississippi River bankline. Maintenance of the navigation channel in this reach of river requires additional action to reduce the risk of a channel cutoff that would result in a loss of 13.5 miles of river (Figure 2). There is an imminent need to pursue federal action under the Regulating Works Project, which is intended to ensure the stability of the navigation channel. Unstable bankline conditions are highly undesirable from a navigation standpoint, and threatening the stability of the navigation channel. The District proposes to address 1) stabilizing the degraded bankline in the near-term and 2) reducing the risk of a channel cutoff forming in the long-term, within the proposed work area.



Figure 2. Water flow potential (blue arrow) to cut off channel from Len Small Levee breach (red line) to Dogtooth Bend proposed project area (yellow line), resulting in 17 miles reduced to 3.5 miles.

1.4 PRIOR REPORTS

This site-specific EA is tiered off of the 1976 Environmental Impact Statement (1976 EIS) for the project *Mississippi River between the Ohio and Missouri Rivers, Regulating Works* (USACE 1976), and the supplement to that document completed in 2017 (2017 SEIS): *Final Supplement I to the Final Environmental Statement, Mississippi River between the Ohio and Missouri Rivers (Regulating Works)* (USACE 2017). Information on the 1976 EIS, 2017 SEIS, and other background information and documentation can be found here and are hereby incorporated by reference into this EA: (<http://www.mvs.usace.army.mil/Missions/Navigation/SEIS.aspx>).

In addition to the above reports, additional NEPA reviews were prepared for project in the vicinity of the proposed work area:

- U.S. Army Corps of Engineers. 2012. Environmental Assessment with Finding of No Significant Impact. Levee Repair (PL 84-99): Len Small Drainage and Levee District, Alexander County, Illinois. Prepared by USACE, St. Louis District.
- U.S. Army Corps of Engineers. 2016. Environmental Assessment with Finding of No Significant Impact. Regulating Works Project. Dogtooth Bend Phase 6, River Miles 34-33 Left Descending Bank on the Middle Mississippi River, Alexander County, Illinois. Prepared by USACE St. Louis District.
- U.S. Army Corps of Engineers. 2018. Memorandum for Record. Revised environmental compliance for Dogtooth Bend Phase 6, Mississippi River Miles (RM) 34-33 Left Descending Bank, Alexander County, Illinois. Prepared by USACE St. Louis District.
- U.S. Army Corps of Engineers. 2020. Environmental Assessment with Finding of No Significant Impact. Regulating Works Project. Dogtooth Bend Emergency Construction, Mississippi River, River Mile 36 to 15, Alexander County, Illinois. Prepared by USACE St. Louis District.

1.5 SCOPING SUMMARY

Scoping is an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action. Scoping was conducted early in the planning process using a variety of communication methods with affected public, agencies, organizations, and tribes.

1.5.1 Tribal Scoping

The United States government has a unique legal relationship with federally recognized American Indian Tribes, based on the inherent powers of Tribal sovereignty and self-government. The District will uphold this special relationship and implement its activities in a manner consistent with it. Communication with 26 federally recognized tribes affiliated with the St. Louis District was initiated by the District's tribal liaison with a letter dated 20 January, 2023.

1.5.2 Public and Partner Involvement

This EA was coordinated with the US Fish and Wildlife Service (USFWS), the Missouri Department of Conservation (MDC), Illinois Department of Natural Resources (IDNR), Illinois Department of Agriculture, and the United States Department of Agriculture Natural Resources Conservation Service (NRCS). This EA was made available to the public on the District's website for a 30-day public review period (31 January – 2 March 2023). A notice of the available report will be sent to interested members of the public providing information on where to find the report and how to provide comments. A project notice would be posted to the Notices to Navigation Interests webpage prior to construction.

2. ALTERNATIVES INCLUDING THE PROPOSED ACTION

This chapter describes the alternatives in detail and compares the alternatives in terms of their environmental impacts and their achievement of objectives outlined in Section 1.3. The following sections describe the No Action Alternative and one action alternative in detail.

2.1 ALTERNATIVE 1: NO ACTION

Under No Action, the District would neither stabilize the degraded bankline nor reduce the risk of a channel cutoff forming within the proposed work area. The current situation as described in Chapter 1 would continue. Maintenance of existing navigation structures and revetment in the vicinity of the

proposed work area would continue. See Chapter 3 for a more detailed profile of the current environmental situation within the proposed work area.

2.2 ALTERNATIVE 2: BANKLINE REVETMENT

The Action Alternative would include reshaping and placement of stone revetment along the LDB in multiple locations from RM 14.9-17.8. This would include approximately 224,000 tons across 4600 yards riverside, and 128,000 tons across 1730 yards landside (Figure 3). The riverside bankline would be smoothed to create a 1:2.5 slope. The landside bankline would have the crown width of 20ft and bankline slope of 1:3 feet where landside revetment would be placed. The areas with increased crown width and slope are areas that are in flow paths where previous head cuts have led to a loss of material behind the bankline protection. All construction work would be river based and would not require land access roads or staging areas.



Figure 3. Proposed locations for landside (green) and riverside (yellow) bankline revetment within the proposed project area on Dogtooth Bend, Alexander County, Illinois.

3. AFFECTED ENVIRONMENT & ENVIRONMENTAL CONSEQUENCES

This section describes existing conditions and potential environmental consequences in the potential project area, which are referred to under the NEPA process as the Affected Environment and Environmental Consequences, respectively. The resources described in this section are those recognized as significant by laws, executive orders, regulations, and other standards of national, state, or regional agencies and organizations; technical or scientific agencies, groups, or individuals; and the general public.

3.1 HYDROLOGY & HYDRAULICS

3.1.1 Existing Conditions

The project area consists of a segment of main channel border situated on the MMR along the LDB between RM 14.9-17.8. The main channel adjacent to the project area is similar to other main channel areas with river training structures in the MMR, with characteristic rolling sand waves and high velocity current. The existing river training structures used for managing sediment produce areas of high velocity flow and subsequent scour, as well as slower velocity areas downstream of the structures along the bankline, often creating areas of deposition. In addition to the river training structures, bankline revetment is used throughout the reach to maintain channel width and bankline stabilization. Due to recent damages, there has been a loss in crown elevation and material behind the bankline and revetment leaving it more vulnerable to damage during events where water is present on the peninsula. LiDAR surveys conducted by the District in 2022 show that elevations of the project area range between 302 and 326 ft NGVD (+14 ft to +38 ft LWRP). Based on the monthly water surface elevation of the Mississippi River from 2002-2021, agricultural land between the D&LD and proposed project area is inundated on average 8 months out of the year, when water surface elevations are above 302 ft NAV88 which equates to an approximate Birds Point gage reading above 20.72 ft (Figure 4).

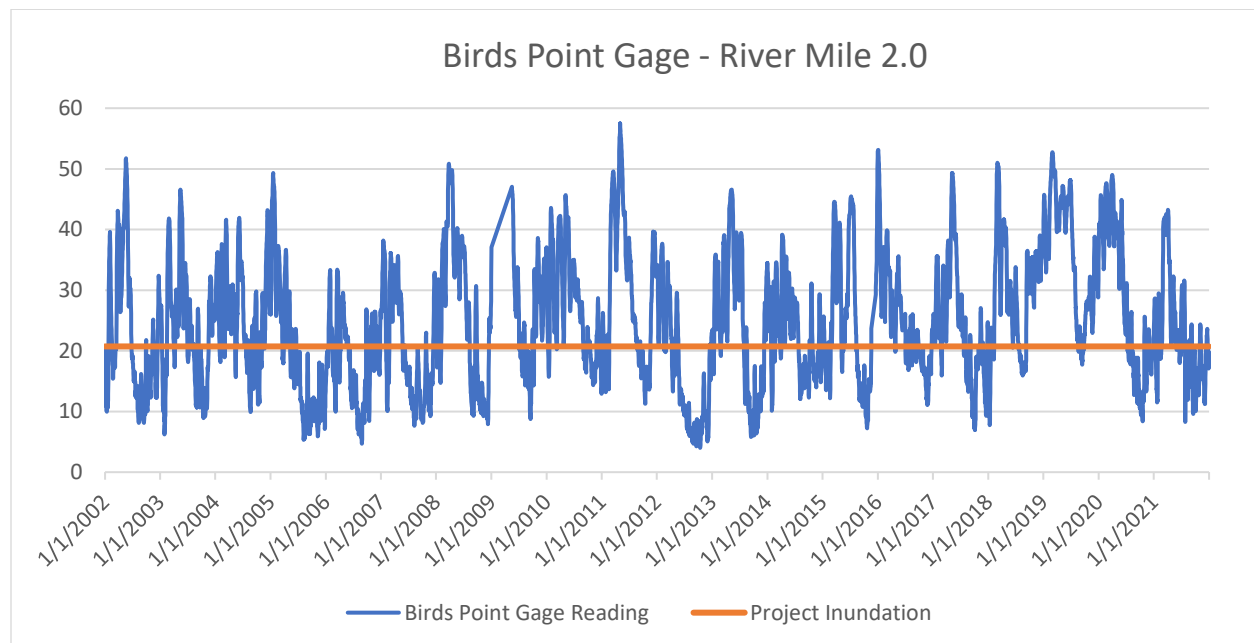


Figure 4. Birds Point Gage Readings, 1/1/2002-12/31-2021.

River stages and hydrology of the Dogtooth Bend area are primarily driven by flows from upstream, and river conditions on the Ohio River. The U.S. Geological Survey (USGS), along with other Federal

agencies, maintain and monitor gage stations along the Mississippi River, which record river stage data.

The closest rated gage on the Mississippi River is approximately 10 RM upstream at Thebes, IL. Flood stage for this region is 33 ft on the Thebes, IL gage. The majority of the historic floodplain in this portion of the Mississippi River is protected from flooding by a series of earthen levees and floodwalls. However, the Len Small Levee is not connected to high ground on the downstream end, which makes Dogtooth Bend prone to backwater flooding. On the downstream end of the peninsula, the bankline elevation is essential in controlling the slope across the peninsula. By maintaining sufficient bankline elevations, the slope across the peninsula is controlled, reducing velocities and shear stresses when flows are present on the peninsula. The Len Small levee near Miller City, Illinois sustained significant damage, most notably a nearly mile-long levee breach with associated floodplain scouring as a result of the late December 2015-early January 2016, which also included a failure of the adjacent Mississippi River bankline. Emergency bankline repairs at the site consisted of re-establishing the bankline immediately adjacent to the levee breach, and was completed on 16 February 2016. Additional, larger protection measures appear to have stabilized the remaining levee; however, the Dogtooth Bend peninsula remains vulnerable to high water from upstream flows at river stages lower than the established flood stage.

3.1.2 Alternative 1: No Action

Under the No Action Alternative, the hydrology and hydraulic setting of the project area is expected to remain similar to its existing condition in the near-term. The existing river training structures would continue to maintain the navigation channel. Bankline erosion would continue increasing the slope across the peninsula and reducing bankline stability. Under the No Action Alternative, it is anticipated that future channel maintenance would be required by means of dredging in addition to river training structure and revetment operation and maintenance repairs.

A high-water event is likely to result in additional damages across the peninsula leading to the formation of a channel cutoff. Since the 2015/2016 Len Small levee breach, flow splits have been measured numerous times, and flow across the peninsula ranged between 23% and 39% of the total Mississippi River flow. It is expected future high-water events would produce a similar outcome.

3.1.3 Alternative 2: Bankline Revetment

Under the Action Alternative, the District would use a barge to place stone revetment both riverside and landside in the project area. Placement of riverside revetment would eliminate localized eddies forming along the riverside bankline. Eddies cause existing revetment to degrade and launch into the river, decreasing bankline stability. The Action Alternative would also improve slope conditions on both the land and riverside banklines. Currently, the steep bank slopes are unstable and lead to narrowing of the bankline cross section, particularly in previous repair areas. The Action Alternative would maintain a more gradual slope and decrease pressure from water flows crossing the peninsula during flood events, reducing the chance of bankline failure, leading to a reliable navigation channel.

3.2 NAVIGATION & CHANNEL MAINTENANCE

3.2.1 Existing Conditions

The MMR is a critically important navigation corridor that provides for movement of a wide variety of commodities of local, national, and international importance. The navigation channel in the vicinity of Dogtooth Bend Peninsula is uniquely positioned in that it is a short distance upstream of the Mississippi River's confluence with the Ohio River. Because of this proximity, the depth required for successful navigation can be supported by either headwater flows from the Mississippi River or backwater flooding

from the Ohio River. The depth achieved as a result of the flows from the two rivers is supplemented by two different channel maintenance actions taken by the St. Louis District: river training structure construction and repetitive channel maintenance dredging. Multiple types of river training structures are used along both banks of the Mississippi River in the vicinity of Dogtooth Bend Peninsula for the purpose of achieving navigable depths in the channel. Most of the structures used are traditional stone dikes that constrict the channel, increasing the bed shear stress to achieve self-scour of the channel bed. Bendway weirs are also used along outside bends to re-align flow, and increase depth towards the center of the channel. The banklines of the river within the Dogtooth Bend reach have largely been locked in place by rock revetment. Repetitive channel maintenance dredging is also used in the Dogtooth Bend reach to maintain the necessary depth in the authorized navigation channel. Dredged material is primarily placed on off-channel areas in close proximity to the dredged location to be mobilized downstream during subsequent flood events; some material is placed in-channel for more immediate transport downstream. Use of the thalweg for dredge disposal retains the sediment within the system, and contributes to improved regional sediment management. Recent high-water events have caused revetment failure leading to a loss in crown elevation, inconsistent and inadequate slopes, and gaps in the bankline protection. At some of the bankline failures, a large amount of landside material was lost adjacent to the bankline due to headcutting that had advanced landward over 1,000 ft.

3.2.2 Alternative 1: No Action

Under the No Action Alternative, the channel maintenance needs within the project areas are expected to remain like its existing condition in the short term. The existing river training structures and revetment in the area combined with routine dredging would continue to maintain the navigation channel.

However, a high-water event could result in continued damage to the bankline, specifically in areas where the elevation or cross section had already been compromised from previous events, leading to an increased chance of the formation of a channel cutoff, and loss of the existing navigation channel. Since the 2015/2016 Len Small levee breach, flow splits have been measured numerous times, and flow across the peninsula ranged between 23% and 39% of the total Mississippi River flow. It is expected that future high-water events would produce a similar outcome. Loss of the navigation channel would result in severe national and regional economic losses due to disruption in navigation, further interrupt the supply of commodities nationally and regionally, and require an enormous expenditure of funds for associated repairs.

3.2.3 Alternative 2: Bankline Revetment

Under the Action Alternative, The District would use a barge to place stone revetment both riverside and landside within the project area. Areas where revetment would be placed to increase crown width and slope are areas in flow path areas where previous head cuts have led to a loss of material and bankline protection. When these areas have failed previously, navigation was impacted by the flows exiting the peninsula at such a concentrated rate that barges would be pushed towards the Missouri bankline. This alternative would help reduce the loss of material from existing bankline stabilization projects, ensuring stable banklines with more gradual slopes leading to a more reliable navigation channel within the project area.

3.3 WATER QUALITY & WETLANDS

3.3.1 Existing Conditions

Dogtooth Bend peninsula has a few unnamed waterbodies that drain the peninsula. Most of the interior drainage for the peninsula is transported via agricultural ditches or surface runoff directly to the

Mississippi River. The Illinois Environmental Protection Agency (IEPA) reviews surface water quality within HUC12 watersheds on a 2-year rotation to meet Section 303(d) requirements of the Clean Water Act (1976). IEPA reports the resource quality of its waters in terms of the degree to which the beneficial uses of those waters are supported and the reasons (i.e., causes and sources) beneficial uses may not be supported. According to the IEPA (2022), impaired uses and causes for impairment (listed within parentheses) for the Mississippi River include fish consumption (aldrin, dieldrin, endrin, heptachlor, mercury, mirex, PCBs, and toxaphene) and primary contact (fecal coliform) (IEPA 2022). The Mississippi River is also listed on the MDNR Section 303(d) list for lead and zinc pollution from industrial point source discharge upstream of the project vicinity in Jefferson County (MDNR 2020).

National Wetland Inventory data (USFWS 2023) show that wetland areas across Dogtooth Bend are largely concentrated at the tip of the peninsula riverside of the Len Small Levee System with most of the forested wetland areas within Bumgard Island. In addition, there are linear emergent wetlands scattered throughout the peninsula. These areas are likely either agricultural drainage ditches that drain surface runoff, or natural swales or scars from former river channels. However, much of the peninsula has been farmed since before 31 December 1986. These areas may display some wetland characteristics but are considered as “prior converted cropland” by NRCS and are not regulated by USACE under Section 404 of the Clean Water Act.

3.3.2 Alternative 1: No Action

Under the No Action Alternative, bankline erosion would continue, increasing total suspended solids concentrations in the Mississippi River downstream of Dogtooth Bend. Frequent water flow over the peninsula could lead to the distribution of waterborne chemicals onto the floodplain and an influx of agricultural chemicals into the Mississippi River, including historic agricultural chemicals. All channel maintenance activities would continue to abide by the conditions outlined in the Water Quality Certifications issued by Missouri and Illinois under the Clean Water Act.

Areas considered as “prior converted cropland” may temporarily benefit water quality and wetlands due to frequent inundation. These areas would be expected to develop more wetland characteristics during years of frequent or long duration flooding when farming would not be able to occur.

3.3.3 Alternative 2: Bankline Revetment

Implementation of this Alternative would require discharge of approximately 353,000 tons of stone revetment. No wetland areas would be impacted by placement of stone revetment (USFWS 2023). The stone specified for this Alternative would be considered as a clean fill. Rock fill material used for construction is intended to be stable and resistant to the erosive forces of the river. Nonetheless, some erosion may occur during high flow events. This alternative would comply with Nationwide Permit 3 for Maintenance Activities under Section 404 of the Clean Water Act, and the permit’s associated Clean Water Act Section 401 Water Quality Certification. No violations of state water quality standards are anticipated. Temporary impacts would include minor increases to turbidity, pH, alkalinity, and hardness. No impacts to nutrient levels, dissolved oxygen, temperature, color, odor, or salinity are expected.

3.4 TERRESTRIAL RESOURCES & PRIME FARMLAND

3.4.1 Existing Conditions

The proposed project area is within the D&LD which operates and maintains the Len Small Levee System, a non-federal levee system that reduces risk to primarily agricultural lands. The bankline riparian zones are sparsely vegetated due to agricultural use of the surrounding land, however some trees characteristic

of riverfront forests along the MMR, likely dominated by species such as eastern cottonwood (*Populus deltoides*), sycamore (*Planatus occidentalis*), silver maple (*Acer saccharinum*), and willows (*Salix* spp). A variety of animal species adapted to human disturbance or tolerant of habitats fragmented by agricultural practices use the project vicinity. Agricultural areas serve as resting and feeding areas for some migratory ducks and geese. Wild turkey (*Meleagris gallopavo*) may also be seen as well as red-winged blackbirds (*Agelaius phoeniceus*). Larger mammals in the area include raccoon (*Procyon lotor*), Virginia opossum (*Didelphis virginiana*), and white-tailed deer (*Odocoileus virginianus*).

Prime farmland, as defined by NRCS, is land that has the best combination of physical and chemical characteristics for producing economically sustained high yields of crops when treated and managed according to acceptable farming methods, including water management. Prime farmlands are not excessively erodible or saturated with water for a long period of time, and they either do not flood frequently or are protected from flooding. Much of the land within Dogtooth Bend is actively farmed (Jin et al. 2019). However, most of the peninsula has been classified as “not prime farmland” likely due to long-duration or frequent flooding, or a soil type (i.e., orthents) unsuitable for agriculture (USDA 2023).

3.4.2 Alternative 1: No Action

Under the no action alternative, bankline erosion would continue increasing the slope across the peninsula and reducing bankline stability. Erosion associated with headcutting and the establishment of a river channel across the Dogtooth Bend peninsula would eliminate bankline riparian zones and farm fields within the new river channel, bisecting existing farm fields thereby limiting access to and land available for agricultural production and local wildlife.

3.4.3 Alternative 2: Bankline Revetment

Stone revetment placement would not impact any designated Prime farmland areas. No land-use changes are anticipated under this Alternative. Ideally, vegetation, likely dominated by willow species (*Salix* sp.), would naturally establish on revetment areas to add additional roughness, improving bank stability and the habitat available for terrestrial species.

3.5 BALD EAGLE & MIGRATORY BIRDS

3.5.1 Existing Conditions

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 USFWS developed the National Bald Eagle Management Guidelines (USFWS 2007) 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. USACE eagle database review identified nine eagle nests within a 5-mile radius of the proposed project location, however, none were located within a 2-mile radius of the proposed project area.

The USFWS identified nine Birds of Conservation Concern that may be present within the proposed project areas (Table 1). According to public sourced bird count data, several of the Birds of Conservation Concern, as well as many species of waterfowl, have been documented at Dogtooth Island such as the Bald Eagle, Lesser Yellowlegs, Prothonotary Warbler, and Red-headed Woodpecker (ebird, 2022).

Table 1. List of migratory birds, habitat, and breeding information for species potentially occurring in the vicinity of the proposed project.

Common Name (Scientific Name)	Habitat	Breeding
Bald Eagle (<i>Haliaeetus leucocephalus</i>)	Nests in large, mature, accessible trees within 2.5 miles of a body of water.	Breeds in IL & MO 1 September to 31 July
Chimney Swift (<i>Chaetura pelagica</i>)	Nests in caves, hollow trees, chimneys, and other artificial sites with vertical surfaces and low light.	Breeds in 15 March to 25 August
Kentucky Warbler (<i>Oporornis formosus</i>)	Prefers deep shaded woods with dense, humid thickets, bottomlands near creeks and rivers, ravines in upland deciduous woods, and edges of swamps.	Breeds in 20 April to 20 August
Lesser Yellowlegs (<i>Tringa flavipes</i>)	Forages in very shallow water in marshes, mudflats, and edges of lake and ponds.	Breeds everywhere
Little Blue Heron (<i>Egretta caerulea</i>)	Marshes, swaps, rice fields, ponds, shores.	Breeds in 10 March to 15 October
Prothonotary Warbler (<i>Protonotaria citrea</i>)	Breeds in flooded river bottom hardwoods or wetlands with bay trees surrounded by cypress swamp. Nests near borders of lakes, rivers and ponds, normally only in areas with slow moving or standing water.	Breeds in IL & MO. 1 April to 31 July
Red-headed Woodpecker (<i>Melanerpes erythrocephalus</i>)	Cavity nesting species found in clearings in woods, forest edges, orchards, oak savannahs.	Breeds in IL & MO 10 May to 10 September
Rusty Blackbird (<i>Euphagus carolinus</i>)	Overwintering habitat may include river bottoms and wooded swamps. Forages by wading in shallow water	Breeds everywhere
Wood Thrush (<i>Hylocichla mstelina</i>)	Breeds in the understory of woodlands, mostly deciduous but sometimes mixed, in areas with tall trees. More numerous in damp forest and near streams	Breeds in parts of IL & MO 10 May to 31 August

3.5.2 Alternative 1: No Action

Under the no action alternative, the bird communities would be expected to remain similar to the existing conditions. Erosion associated with headcutting and the establishment of a river channel across the Dogtooth Bend peninsula would eliminate bankline riparian zones and farm fields within the new river channel. There is the possibility of the natural loss of potential nest trees due to erosion or in extended inundation. However avian species would still have access to remaining habitat on what would be the newly formed island. No impacts to existing bald eagles or their nests are anticipated.

3.5.3 Alternative 2: Bankline Revetment

The bird communities would be expected to remain similar to the existing conditions. Ideally, vegetation, likely dominated by willow species (*Salix* sp.), would naturally establish on revetment areas to add additional roughness, improving bank stability and the habitat available for smaller avian species. No tree

removal is anticipated under this alternative and no bald eagle nests are within 660 feet of the project area, therefore, no impacts to bald eagles, their nests, or those of migratory songbirds are anticipated.

3.6 THREATENED & ENDANGERED SPECIES

3.6.1 Existing Conditions

The IDNR was contacted via the Ecological Compliance Assessment Tool (EcoCAT) website on 26 October 2022, for a list of Illinois State threatened and endangered species that could potentially be located in the vicinity of the proposed project location (IDNR project number: 2305760). This natural resource review identified four protected species which may be in the vicinity of the proposed project area: Illinois Chorus Frog (*Pseudacris illinoensis*), Indiana Bat (*Myotis sodalis*), Rafinesque's Big-Eared Bat (*Corynorhinus rafinesquii*), and Southeastern Myotis (*Myotis austroriparius*).

A Natural Heritage Review initiated with MDC on 25 October 2022 resulted in a Level Three Report (MDC project number: 11647). The report indicated that there are records of 15 species listed by the State of Missouri and/or Natural Communities of Conservation Concern that may be in the vicinity of the proposed project area. Species include the American Eel (*Anguilla rostrata*), Bald Eagle (*Haliaeetus leucocephalus*), Flier (*Centrarchus macropterus*), Interior Least Tern (*Sterna antillarum athalassos*), Lake Sturgeon (*Acipenser fulvescens*), Mississippi Silvery Minnow (*Hybognathus nuchalis*), Ohio Shrimp (*Macrobrachium ohione*), Pallid Sturgeon (*Scaphirhynchus albus*), Plains Minnow (*Hybognathus placitus*), Pugnose Minnow (*Opsopoeodus emiliae*), River Darter (*Percina shumardi*), Skipjack Herring (*Alosa chrysochloris*), Striped Mullet (*Mugil cephalus*), Sturgeon Chub (*Macrhybopsis gelida*), and Swamp Rabbit (*Sylvilagus aquaticus*).

In compliance with Section 7(c) of the Endangered Species Act of 1973, as amended, official lists of species and critical habitats potentially occurring in the vicinity of the proposed project was acquired from the USFWS Information for Planning and Conservation (IPaC) website on 25 January 2023 (Project Code: 2023-0008641; Table 2).

Table 2. List of federally threatened and endangered species and habitat potentially occurring in the vicinity of the proposed project.

Common Name (Scientific Name)	Classification	Habitat
Gray bat (<i>Myotis grisescens</i>)	Endangered	Caves year-round; riparian areas along rivers, lakes, and creeks (foraging)
Indiana bat (<i>Myotis sodalis</i>)	Endangered	Caves, mines; upland forests; small stream corridors with well-developed riparian woods
Tricolored bat (<i>Perimyotis subflavus</i>)	Proposed Endangered	Caves, mines; roost in trees, crevices in cliffsides, and human-made structures
Northern long-eared bat (<i>Myotis septentrionalis</i>)	Threatened	Caves, mines; forests adjacent to rivers and reservoirs

Common Name (Scientific Name)	Classification	Habitat
Alligator Snapping Turtle (<i>Macrochelys temminckii</i>)	Proposed Threatened	Large rivers, major tributaries, bayous, canals, swamps, lakes, ponds, and oxbows
Rabbitsfoot (<i>Quadrula cylindrica cylindrica</i>)	Threatened	Streams and rivers with bottom substrates of sand and gravel mixtures
Pallid sturgeon (<i>Scaphirhynchus albus</i>)	Endangered	Mississippi and Missouri Rivers
Monarch butterfly (<i>Danaus plexippus</i>)	Candidate	Variety of habitats where host plant (milkweed, <i>Asclepias sp.</i>) is found

Gray Bat

The gray bat (*Myotis grisescens*) is listed as endangered and occurs in several Illinois and Missouri counties. Typically, gray bats roost in caves year-round, with most wintering caves being vertical and deep. During the spring and fall transient periods, a much wider variety of cave types are used. During the summer, maternity colonies prefer caves that provide restricted rooms or domed ceilings that act as warm air traps. This species forages in riparian forest canopy and over rivers and reservoirs adjacent to forests. Population decline has been attributed primarily to human disturbance of bats and alteration of their habitat, as well as white-nose syndrome, caused by the fungus *Pseudogymnoascus destructans*. The fungus grows best in cold, humid conditions that are typical of many bat hibernacula. Suitable gray bat foraging habitat may occur in and adjacent to the forested areas near the project area.

Indiana Bat

The range of the Indiana bat (*Myotis sodalis*) includes much of the eastern half of the United States. Indiana bats migrate seasonally between winter hibernacula and summer roosting habitats. Winter hibernacula include caves and abandon mines. Females emerge from hibernation in late March or early April to migrate to summer roosts. During the summer, the Indiana bat frequents the corridors of small streams with well-developed riparian woods, as well as mature upland forests. It forages 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 fencerows, and over farm ponds in pastures. Females form nursery colonies under the loose bark of trees (dead or alive) and/or cavities in June or early July. 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 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 leading causes of the Indiana bat population decline includes disturbance, vandalism, improper cave gates and structures, natural hazards such as flooding or freezing, microclimate changes, land use changes in maternity range (i.e., tree clearing), and chemical contamination. Suitable Indiana bat summer habitat may occur in the forested areas adjacent to the project area.

Tricolored Bat

Tricolored bats are wide ranging across the eastern and central United States and portions of southern Canada, Mexico and Central America. During the winter, tricolored bats are often found in caves, abandoned mines, and road-associated culverts. During the spring, summer, and fall, tricolored bats are found in forested habitats where they roost in trees, primarily among leaves of live or recently dead deciduous hardwood trees, but may also be found in Spanish moss, pine trees, and occasionally human structures. Tricolored bats face extinction due primarily to the rangewide impacts of White Nose Syndrome. Other stressors include mortality from tree removals associated with a variety of activities (logging, energy extraction, forest management, and development), closure of occupied hibernacula, deaths from other diseases, losses at wind energy sites, and environmental contaminants. Suitable tricolored bats summer roosting and foraging habitat may occur in and adjacent to the forested areas near the project area.

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 hibernate in caves or mines during the winter months. During the summer they roost in a wide variety of suitable habitats, such as forested/wooded areas, emergent wetlands, adjacent edges of agricultural fields, old fields, and pastures. Roosting habitats for this species include live trees and/or snags at least 3 inches dbh and have exfoliating bark, cracks, crevices, and/or hollows. Tree species used as roosts often include, but are not limited to, shagbark hickory, white oak, cottonwood, and maple trees. Northern long-eared bats have also been observed roosting in human-made structures such as buildings, barns, bridges, and bat houses. There are countless stressors affecting the northern long-eared bat, however, the primary factor is White Nose Syndrome. Other primary factors include wind energy mortality, effects from climate change, and habitat loss. Suitable northern long-eared bat summer roosting and foraging habitat may occur in and adjacent to the forested areas near the project area.

Alligator Snapping Turtle

The alligator snapping turtle is the largest species of freshwater turtle in North America and is among the most aquatic. Alligator snapping turtles are associated with deeper water (usually large rivers, major tributaries, bayous, canals, swamps, lakes, ponds, and oxbows), with shallower water occupied in early summer and deeper depths in late summer and mid-winter. They do not appear to be particularly selective about nest sites, but nests have been observed across a range of distances, approximately 8 to 656 ft landward from the nearest water. Most nesting occurs from May to July. Temperature of the nest site is important because this species also exhibits temperature dependent sex-determination. Alligator snapping turtles are also associated with structure (e.g., tree root masses, stumps, submerged trees, etc.), and may occupy areas with a high percentage of canopy cover or undercut stream banks. Alligator snapping turtles are opportunistic predators and foragers and consume a variety of foods, including fish, crayfish, mollusks, smaller turtles, insects, nutria, snakes, birds, and vegetation. Movements can be highly variable, where daily distance traveled can range from 91 to 377 ft per day. Extensive commercial and recreational harvesting in the last century resulted in significant declines to many alligator snapping turtle populations. Currently, the primary negative influences on viability of alligator snapping turtles are: legal and illegal intentional harvest (including for export), bycatch associated with commercial fishing of catfish and buffalo, habitat alteration, and nest predation. Suitable alligator snapping turtle foraging and nesting habitat may occur in and adjacent to the riverbank within the project area.

Rabbitsfoot

The rabbitsfoot mussel (*Quadrula cylindrica*) is a federally threatened freshwater mussel species. The rabbitsfoot mussel is primarily an inhabitant of small to medium-sized streams and some larger rivers, occurring in shallow areas along the bank and adjacent runs and shoals where the water velocity is reduced. Specimens may also occupy deep water runs, having been reported in 9-12 feet of water. Bottom substrates generally include sand and gravel. This species occurs in the lower 20 miles of the St. Francis River in Missouri, and in the Ohio River in Alexander County, Illinois, and therefore is not anticipated to be located within the project area.

Pallid Sturgeon

The pallid sturgeon is native to the Mississippi River and are adapted to the pre-development habitat conditions that existed in these large river systems. Floodplains, backwaters, chutes, sloughs, islands, sandbars and main channel habitat formed the large-river ecosystem that provided the macrohabitat requirements for all life stages of pallid sturgeon. They are known to make long distance movements between the Upper Mississippi River and Missouri River during spawning migrations. In the Mississippi River, pallid sturgeon are found downstream of Melvin Price Locks and Dam, with the entire stretch of river below this point is considered potential habitat. Pallid sturgeon are most frequently caught over a sand bottom, which is the predominant bottom substrate within the species' range on the Missouri and Mississippi rivers. Pallid sturgeons have been found in water 1.2 to 7.6 meters deep with velocities of 0.33 to 90 centimeters per second. Early developmental stages of pallid sturgeon spawned upstream potentially drift with the current through the project area and may settle out in shallow sand habitat located downstream of river training structures. Regardless of the specific configuration of the river training structures utilized, rock structures can provide improved habitat for fish by providing areas of reduced flow, a more diverse substrate, and additional cover. In addition, they can provide suitable substrate for a wide variety of benthic organisms, upon which many juvenile pallids feed. Pallid sturgeon feed primarily on aquatic invertebrates as juveniles, and transition to a diet composed primarily of fishes as adults. Suitable pallid sturgeon habitat may occur in the vicinity of the project area.

Monarch Butterfly

Much of the monarch butterfly's life is spent migrating between Canada, Mexico, and the U.S. Even though Monarchs do not overwinter in Missouri or Illinois (USFWS 2021), they spend the breeding season foraging and searching for suitable habitat to lay eggs. The main monarch host plant is Common Milkweed (*Asclepias syriaca*). Other common hosts include Swamp Milkweed (*Asclepias incarnata*), Butterflyweed (*Asclepias tuberosa*), Whorled Milkweed (*Asclepias verticillata*), and Poke Milkweed (*Asclepias exaltata*) (USFWS 2021). Three factors appear most important to explain the decline of Monarchs: loss of milkweed breeding habitat and native prairie foraging habitat, habitat destruction at overwintering sites, and climate change and extreme weather. In addition, diseases, predators, and parasites, as well as insecticides used in agricultural areas may also contribute to the decline. Recent public awareness of the decline of the Monarch and suitable milkweed habitat has led to an increase in public and private efforts to plant and grow pollinator habitats, which include milkweed. Because of these efforts, the Monarch can be found in a variety of areas, from rural to urban centers, where it searches for its host plant, milkweed (*Asclepias* sp.), and suitable foraging plants. Most milkweed species are typically found along roadsides and in fields, prairies, and pastures, and therefore could provide habitat for the monarch butterfly within the project vicinity.

3.6.2 Alternative 1: No Action

Under the no action alternative, the habitat of avian species (bats and monarch butterfly) may be impacted due to erosion associated with headcutting and the resultant elimination of bankline riparian

trees and farmland during the establishment of a the new river channel across the Dogtooth Bend peninsula. However, this would result in increased aquatic habitat available for the alligator snapping turtle and pallid sturgeon.

3.6.3 Alternative 2: Bankline Revetment

The proposed project would not impact any caves or human-made features that may be suitable habitat for the Gray bat. Revetment placement would all be completed by river-based equipment and would not require the removal of any trees. However, incidental effects from construction activities (e.g., noise, vibration), could potentially disturb bats roosting or foraging in the project vicinity. Therefore, the proposed action *may affect, but is not likely to adversely affect the Gray, Indiana, and Northern long-eared bats*, and *is not likely to jeopardize the continued existence* of the Tricolored bat.

The proposed action may increase structured habitat for the Alligator Snapping Turtle. Monarch butterfly habitat may exist along agricultural and riparian areas within the project area and could be impacted by the revetment placement. Due to the mobile nature of the species, the proposed action *is not likely to jeopardize the continued existence of the Alligator Snapping Turtle and Monarch Butterfly*.

Research on pallid sturgeon habitat use suggests this relatively long-lived species requires multiple habitat types throughout its life, and that habitat utilization may be different for populations inhabiting different river systems, which may be related to the severity and type of anthropogenic modifications that afflict these different systems. There may be minor and short-term impacts associated with the construction of the proposed project, therefore, the proposed project *may affect, but is not likely to adversely affect the Pallid Sturgeon*.

Mussel abundance and diversity is extremely low in main channel border habitat on the MMR, and no true mussel beds are known to exist in the MMR (Keevin et al. 2013). Therefore, the project would have *no effect* on the Rabbitsfoot mussel.

3.7 AQUATIC ORGANISMS & HABITATS

3.7.1 Existing Conditions

Aquatic habitat types in the project area include the main channel and unstructured main-channel borders. Bendway weirs near RM 17 are used along outside bend to re-align flow, and increase depth, towards the center of the channel. The banklines of the river within the Dogtooth Bend reach have largely been locked in place by rock revetment. Recent high-water events have led to revetment failure due to bankline scour and result in existing revetment being displaced and entering the river. Stretches of main channel and unstructured main channel border areas provide the preferred habitat of MMR fluvial specialists and fluvial dependents: moderate depths of flowing water over a sandy substrate.

The proposed project area likely contains the habitat requirements for the major habitat guilds of large river fishes: fluvial specialists, fluvial dependents, and macrohabitat generalists. Fluvial specialists are species found almost exclusively in lotic (flowing water) habitat and require flowing water for all of their life cycles. Examples of fluvial specialist common in the MMR and likely in the project areas include Channel shiner (*Notropis wickliffi*) and Blue catfish (*Ictalurus furcatus*). Fluvial dependent species occur in both lentic (non-flowing water) and lotic habitats but require flowing water during one or more life stages. Examples of fluvial dependent species include White bass (*Morone chrysops*) and Silver carp (*Hypophthalmichthys molitrix*). Macrohabitat generalist species are also commonly found in both lentic and lotic habitats, but do not require flowing water for any particular life stage. Examples of macrohabitat

generalist species include Gizzard shad (*Dorosoma cepedianum*), Emerald shiner (*Notropis atherinoides*), Freshwater drum (*Aplodinotus grunniens*), and buffalo species (*Ictiobus* sp.) amongst others.

Regarding freshwater mussels, surveys conducted by Keevin et al. (2013) on the MMR demonstrate that mussel abundance and diversity is extremely low in main channel border habitat, and that no true mussel beds are known to exist in the MMR. They attribute this to unstable sand substrate, the continuous downstream movement of sand waves, and the high level of turbidity that enters the MMR from the Missouri river.

3.7.2 Alternative 1: No Action

Under the no action alternative, the existing area would continue to provide habitats for macrohabitat generalists along the main channel border and some fluvial specialist in the main channel. Bankline erosion would continue increasing total suspended solids concentrations in the Mississippi River downstream of Dogtooth Bend. Frequent water flow over the peninsula could lead to an influx of agricultural chemicals into the Mississippi River, decreasing quality of available aquatic habitat.

A high-water event could result in additional damages across the peninsula leading to the formation of a channel cutoff, which would have a series of short- and long-term impacts to aquatic habitats and their associated fish and wildlife. In the short term, the erosion associated with the migrating headcuts and channel cut-off formation would lead to a high amount of sediment transport into the Mississippi River. Sediments would then be deposited in low flow areas reducing the amount of available aquatic habitat. In addition, the headcuts would likely continue migrating up the Mississippi River, creating a new and unstable river channel. The impacts to fish and wildlife from the upstream migrating headcuts are currently unquantifiable. In the long term, the formation of a new river channel through Dogtooth Bend may increase the total amount of aquatic and semi-aquatic habitat available for fish and wildlife.

3.7.3 Alternative 2: Bankline Revetment

Additional bankline stone revetment would provide additional habitat for macrohabitat generalists along the main channel border and some fluvial specialist in the main channel. The stone specified for this Alternative would be considered as a clean fill. Rock fill material used for construction is intended to be stable and resistant to the erosive forces of the river. This addition of rock structure along the bankline could provide a suitable substrate for diverse macroinvertebrate species, which provide a food source for a variety of other aquatic species. Nonetheless, some erosion may occur during high flow events. Impacts associated with revetment placement, such as construction noise; falling rock hazards; and minor increases to turbidity, pH, alkalinity, and hardness, may temporarily disturb aquatic life with the project area.

3.8 HAZARDOUS, TOXIC, & RADIOACTIVE WASTE

3.8.1 Existing Conditions

The U.S. Army Corps of Engineers Regulations (ER 1165-2-132 and ER 200-2-3) and St. Louis District policy require procedures be established to facilitate early identification and appropriate consideration of potential hazardous, toxic, or radioactive waste (HTRW) in feasibility, preconstruction engineering and design, land acquisition, construction, operations and maintenance, repairs, replacement, and rehabilitation phases of water resources studies or projects by conducting HTRW Initial Hazard Assessments (IHA). USACE specifies that these assessments follow the process/standard practices for conducting Phase I Environmental Site Assessments (ESA) published by the American Society for Testing and Materials (ASTM). This assessment was prepared using the following ASTM Standards:

- E1527-21: Standard Practice for Environmental Site Assessments – Phase I Environmental Site Assessment process
- E1528-14: Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process (interview questionnaires)
- E2247-16: Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process for Forestland or Rural Property

The purpose of a Phase I ESA is to identify, to the extent feasible in the absence of sampling and analysis, the recognized environmental conditions (RECs) in connection with a given property(s), within the scope of EPA Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and petroleum products. A preliminary review of available imagery and environmental databases was performed, and a Phase I ESA will be completed prior to the completion of the final EA to identify any possible RECs.

3.8.2 Alternative 1: No Action

Under the No Action Alternative, bankline erosion would continue increasing the slope across the peninsula and reducing bankline stability. Frequent water flow over the peninsula could lead to the distribution of waterborne chemicals onto the floodplain and an influx of chemicals into the Mississippi River, including historic agricultural chemicals.

3.8.3 Alternative 2: Bankline Revetment

Under the Action Alternative, the District would use a barge to place stone revetment both riverside and landside to the project area. Reducing the probability of continued bankline failure and the formation of head cuts across the peninsula would also reduce HTRW related issues by restricting additional sediment from entering the Mississippi River.

3.9 AIR QUALITY & NOISE

3.9.1 Existing Conditions

The Clean Air Act of 1963 requires the U.S. Environmental Protection Agency (EPA) to designate National Ambient Air Quality Standards (NAAQS). The EPA has identified standards for 6 pollutants: lead, sulfur dioxide, carbon monoxide, nitrogen dioxide, ozone, particulate matter (less than 10 microns and less than 2.5 microns in diameter), along with some heavy metals, nitrates, sulfates, volatile organic and toxic compounds (Table 3). Alexander County, IL is currently in attainment for all air quality pollutants (USEPA, 2022a).

Table 3. U.S. Environmental Protection Agency National Ambient Air Quality Standards for 6 standard pollutants.

Pollutant	Averaging time	Criteria	Form
Carbon monoxide	8 hours	9 ppm	Not to be exceeded more than once per year
	1 hour	35 ppm	
Lead	Rolling 3 month	0.15 µg/m ³	Not to be exceeded
Nitrogen dioxide	1 hour	100 ppb	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years
	1 year	53 ppb	Annual Mean
Ozone	8 hours	0.070 ppm	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
	1 year	12.0 µg/m ³	Annual mean, averaged over 3 years

Particle Pollution (PM _{2.5})	24 hours	35 µg/m ³	98th percentile, averaged over 3 years
Sulfur dioxide	1 hour	75 ppb	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years

The project area is in a more natural area with some noise from agricultural activities within the D&LD and from recreational and navigation boat traffic. Agricultural and open space areas typically have noise levels in the range of 34-70 decibels (dB) depending on their proximity to transportation arteries.

3.9.2 Alternative 1: No Action

Air quality and noise levels within the project areas would remain consistent with the existing conditions. The establishment of a river channel across the Dogtooth Bend peninsula would bisect existing farm fields thereby limiting access to and land available for agricultural production and reducing noise and air pollution associated with farming equipment.

3.9.3 Alternative 2: Bankline Revetment

Emissions from construction equipment may minimally increase ozone, carbon monoxide, suspended airborne particulates, and carbon dioxide levels in the vicinity of the construction site. Due to the limited duration of the construction the expected increases in emissions would be negligible and would cease after construction. EPA has set *de minimis* emission levels beneath which conformity to the state implementation plan (SIP) does not need to be demonstrated. Due to the relatively small scale of the work, emissions of particulate matter are *de minimis*; therefore, an emissions analysis was not performed. 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 dust and emissions, limit habitat disruption, and correct environmental damage that occurs during construction.

The proposed work under this alternative would be expected to temporarily increase noise levels near the project areas. The EPA 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.

3.10 CULTURAL & TRIBAL RESOURCES

3.10.1 Existing Conditions

Cultural resources are locations of past human activity, occupation or use and typically include archaeological sites such as prehistoric lithic scatters, villages, procurement area, rock art, shell middens; and historic era sites such as refuse scatters, homesteads, railroads, ranches, logging camps, and any structures or buildings that are over 50 years old. Cultural resources also include Traditional Cultural Properties (TCPs), which are aspects of the landscape that are part of traditional lifeways and practices and are considered important to a community. The National Historic Preservation Act (NHPA) is the major piece of federal legislation that mandates that federal agencies consider how undertakings could affect significant cultural resources.

In addition to the consultation with IL State Historic Preservation Office (SHPO), consultation with Native American Tribal organizations is also required to ensure compliance with Section 106 of the National Historic Preservation Act of 1966, as amended. The USACE St. Louis District has previously established

consultation agreements with 26 Tribal organizations that have ties to, or an interest in, the District's region.

The bankline in this specific river reach has been vastly altered since the 19th century. For much of that century about half the project structures would have been located within the Mississippi river itself (Figure 5, Figure 6). By 1908, however, the area has accreted with built up sediments deposited by the river (Figure 7). After that point the bankline receded again due to river erosion before being stabilized by the placement of revetment in the mid-20th century (Figure 8).

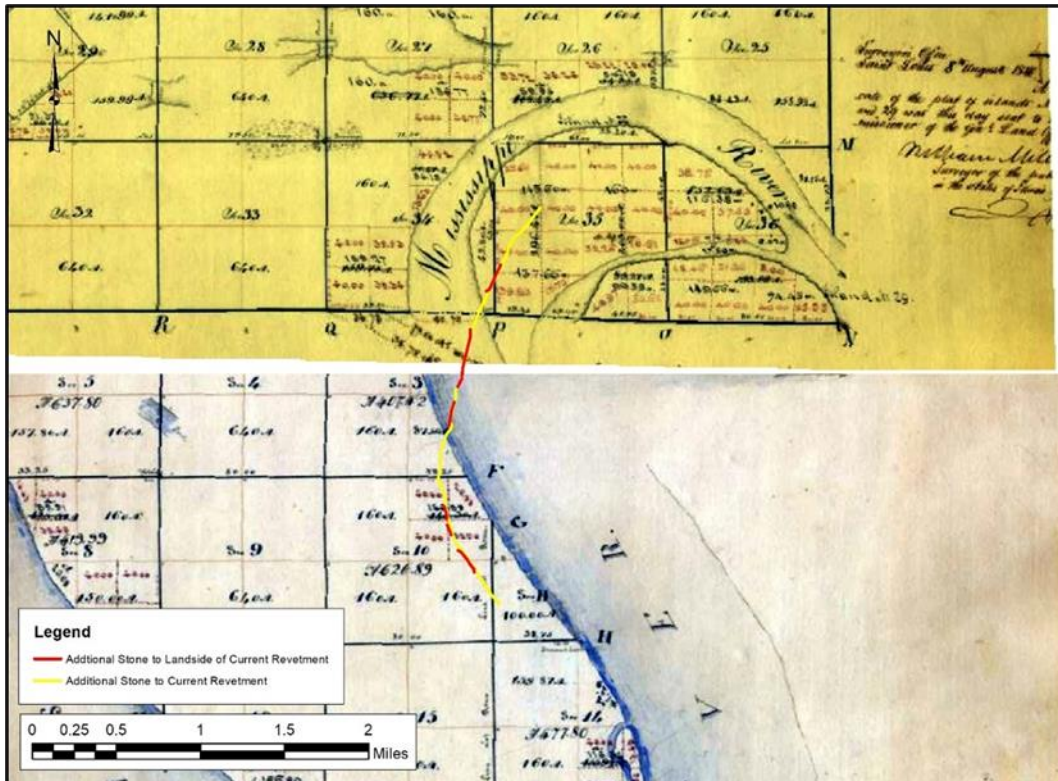


Figure 5. Plan of proposed revetment modifications (1815 plat maps).

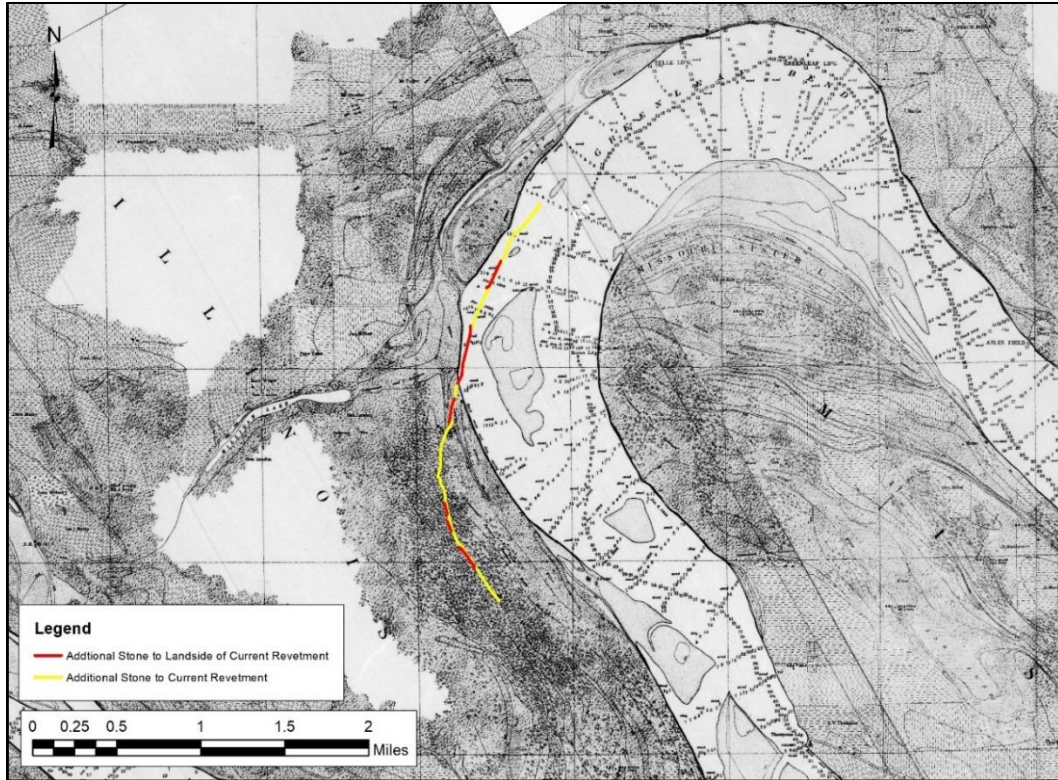


Figure 6. Plan of proposed revetment modifications (1890 map).

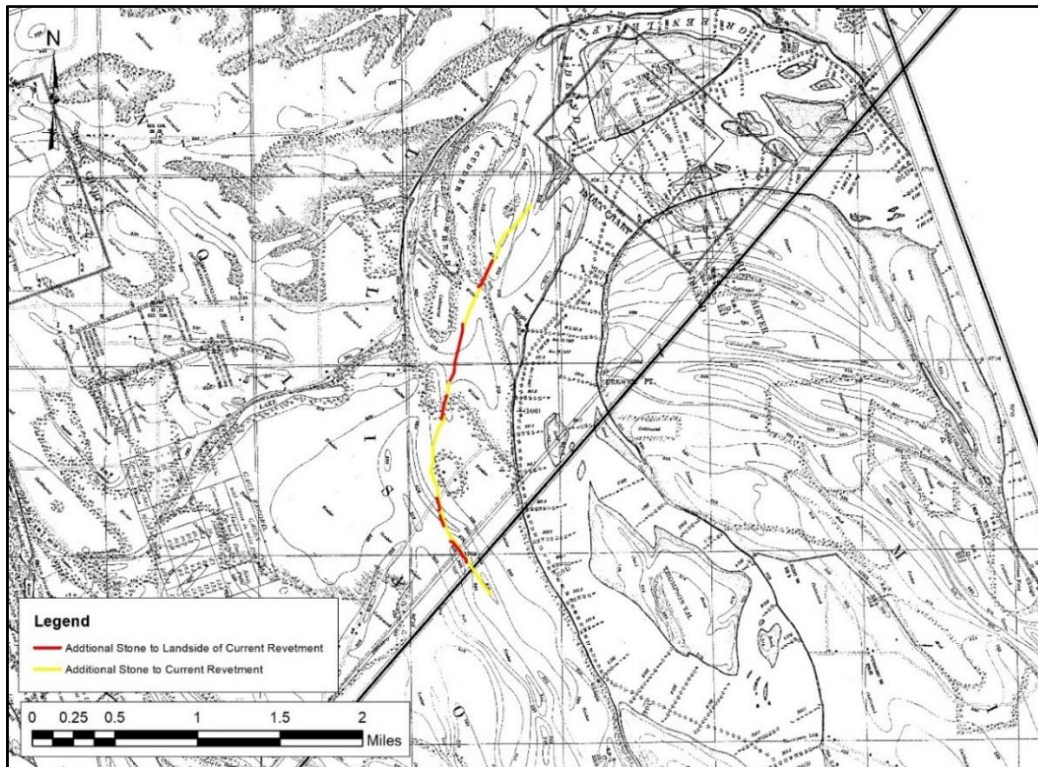


Figure 7. Plan of proposed revetment modifications (1908 map).

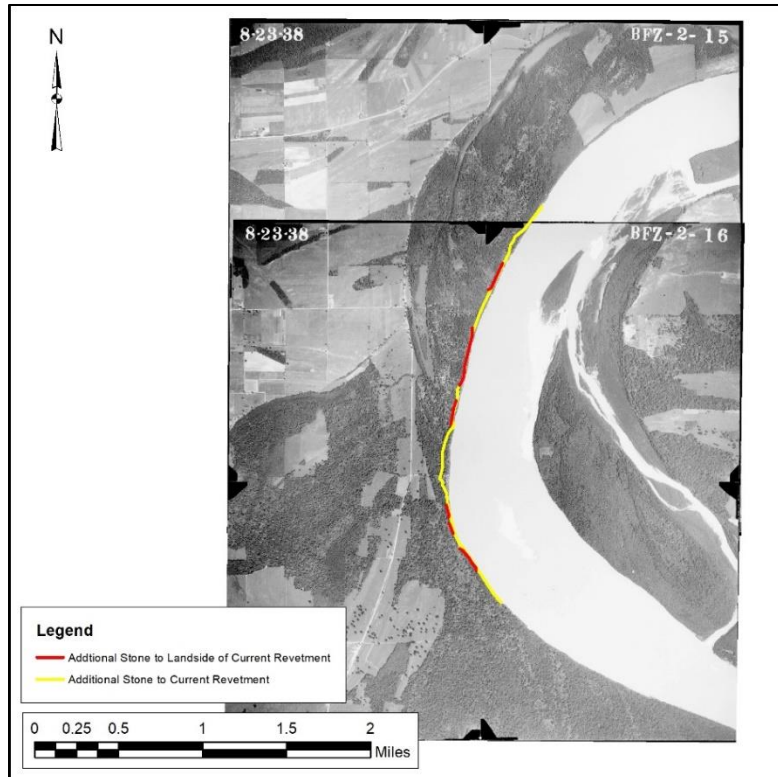


Figure 8. Plan of proposed revetment modifications (1938 aerial photo).

3.10.2 Alternative 1: No Action

With no action during high water events the Mississippi River’s scouring activity is likely to continue across the neck of Dogtooth Bend peninsula. This scouring will adversely affect all historic properties present in the area. Dogtooth Bend peninsula is the location of a multitude of previously identified historic properties.

3.10.3 Alternative 2: Bankline Revetment

Given the features’ construction method (with no land impact), the nature of the work (being modification of existing revetment), the extensive disturbance of the area by the flood plain scouring, the channel migration recorded for the location in the nineteenth century, it is the District’s opinion that the proposed undertaking would have no adverse effect on cultural resources.

On 16 December 2022 a consultation letter was submitted to the IL SHPO explaining that the District’s option was that the undertaking would have no adverse effects to historic properties as defined under Section 106. Communication with 26 federally recognized tribes affiliated with the St. Louis District was initiated by the District’s tribal liaison with a letter dated 20 January 2023.

In the unlikely event any cultural properties are located during construction they would be evaluated for National Register eligibility, in consultation with the Illinois Historic Preservation Officer, and appropriate mitigation would be completed. Should an inadvertent discovery of human remains occur, all work would cease until the St. Louis District complies with the appropriate state acts.

3.11 ENVIRONMENTAL JUSTICE

Executive Order 12898 directs federal agencies to take the appropriate steps to identify and address any disproportionately high and adverse human health or environmental effects of federal programs, policies, and activities on minority and low-income populations. Minority populations are those persons who identify themselves as Black, Hispanic, Asian American, American Indian/Alaskan Native, and Pacific Islander. A minority population exists where the percentage of minorities in an affected area either exceeds 50 percent or is meaningfully greater than in the general population.

The socioeconomic landscape within the project vicinity varies widely due to agricultural and industrial practices along the Mississippi River. The nearest population to the proposed actions on the LDB within the project vicinity with available demographic information is Olive Branch, Alexander County, IL. The population of Olive Branch is approximately 0.2% African-American, 0.5% American Indian or Alaskan Native, 0% Asian, 0% Native Hawaiian or Pacific Islander, and 8.0% more than one race (US Census 2020; Table 4). The population is 0.9% Hispanic or Latino (US Census 2020; Table 5). There are approximately 43.8% of households in the Olive Branch area whose income in the past 12 months falls below the national poverty level (US Census 2021).

Alexander County is considered a disadvantaged populations based on criteria such as projected flood risk, expected population loss rate, energy cost, low income, unemployment rate, and medically underserved (CEQ 2022, USEPA 2022b). However, the percentage of minorities or percentage of households below the national poverty level does not exceed 50 percent in either case, and is not meaningfully greater than in the general population. Additionally, the proposed construction measures would be limited to the waterway. Thus, no disproportionate adverse impacts to low-income or minority populations are anticipated.

Table 4. Olive Branch, IL, Alexander County, IL and Illinois population demographics. (US Census, 2020).

	Olive Branch, IL		Alexander County, IL		Illinois	
	Population	%	Population	%	Population	%
White	592	91.0	3,311	63.1	7,868,227	61.4
Black or African American	1	0.2	1,617	30.9	1,808,271	14.1
American Indian and Alaska Native	3	0.5	24	0.5	96,496	0.8
Asian	0	0.0	6	0.1	754,878	5.8
Native Hawaiian and Other Pacific Islander	0	0.0	0	0.0	4,501	0.1
Other	2	0.3	20	0.4	1,135,149	8.9
Two or more races	52	8.0	262	5.0	1,144,984	8.9
Total	650	100.0	5,240	100.0	12,812,508	100.0
Hispanic or Latino	6	0.9	82	1.6	2,337,410	18.2

3.12 SUMMARY COMPARISON OF PROJECT ALTERNATIVES

Table 5. Summary of the effects of project alternatives to physical, biological, and socioeconomic resources.

	No Action Alternative	Action Alternative
Physical Resources	Additional headcutting and channel formation will occur, altering river hydrology and hydraulics.	Revetment would reduce flow, and subsequently erosion, across the bankline.
	Increased potential for further erosion and sedimentation throughout the year.	Temporary minor impacts to water and air quality during construction.
	Does not meet Project objective and increases probability of a channel cut-off.	Meets Project objective and reduces probability of a channel cut-off.
Biological Resources	There is potential for beneficial impacts due to potential increase in aquatic and wetland habitats.	Construction would be performed from the river which may result in minor temporary impacts.
	Federal T&E species would not likely be adversely impacted.	Federally T&E species are not anticipated to be adversely affected.
	Increased erosion and sediment transport may impact aquatic species downstream.	Meets Project objective of minimal environmental impacts.
Socioeconomic Resources	Potential negative impacts to the local and regional economy due to direct and indirect agricultural damages.	No adverse effect to agricultural areas, local and regional economy, and cultural resources.
	A channel cutoff would lead to severe National economic losses due to disruption in navigation and cost of associated repairs.	Reduces the short-term likelihood of a channel cut-off until long-term plan to stabilize peninsula is established.
	Does not meet Project objective.	Meets Project objective.

4. ENVIRONMENTAL LAWS, REGULATIONS, AND COMPLIANCE

A USACE regulatory review was completed 10 January 2023. Based on the review of available resources and from information gathered during the field visit, the proposed action alternative would qualify under a General Permit 3 its associated 401 water quality certification, meeting requirements under Section 10 of the Rivers and Harbors Act and the Clean Water Act. Additionally, 404(b)(1) guidelines are covered during the review and issuance of the general permit itself; therefore, no additional analysis is required.

Notification of the Draft Environmental Assessment and unsigned Finding of No Significant Impact will be sent to Indian Tribes, officials, agencies, organizations, and individuals for public review and comment. Additionally, an electronic copy will be available during the public review period (31 January – 2 March 2023) on the USACE St. Louis District’s website at:

<https://www.mvs.usace.army.mil/Portals/54/docs/pm/Reports/EA/DTBPhase7EAFinalDraft.pdf>

Please note that the Finding of No Significant Impact is unsigned in the draft version of the EA and would only be signed into effect after careful consideration of the comments received as a result of the public review. In addition, to ensure compliance with NEPA, Endangered Species Act, and other applicable environmental laws and regulations, coordination with these entities and individuals would continue, as required, throughout the execution of the proposed project.

Table 9. Compliance status for federal statutes and executive orders applicable to this study.

Guidance	Compliance
Federal Statutes	
Archaeological and Historic Preservation Act, as Amended, 16 U.S.C. 469, et seq.	PC ¹
Bald and Golden Eagle Protection Act, 16 USC 668-668d	FC
Clean Air Act, as Amended, 42 U.S.C. 7401-7542	FC
Clean Water Act, as Amended 33 U.S.C. 1251-1375	PC ²
Comprehensive Environmental Response, Compensation, and Liability Act, 42 USC 9601-9675	FC
Endangered Species Act, as Amended, 16 U.S.C. 1531-1544	PC ²
Federal Water Project Recreation Act, as Amended. 16 U.S.C. 4601, et seq.	FC
Fish and Wildlife Coordination Act, as Amended, 16 U.S.C. 661-666c	PC ²
Land and Water Conservation Fund Act, as Amended, 16 U.S.C. 4601, et seq.	FC
National Environmental Policy Act, as Amended, 42 U.S.C. 4321- 4347	PC ³
National Historic Preservation Act, as Amended, 54 U.S.C 300101, et seq.	PC ¹
Noise Control Act, 42 USC 4901, et seq.	FC
Migratory Bird Treaty Act of 1918, 16 USC 703-712	FC
Resource Conservation and Recovery Act, 42 USC 6901-6987	FC
Executive Orders	
Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (EO 12898)	FC
Floodplain Management, E.O. 11988 as amended by E.O. 12148	FC
Protection of Wetlands, E.O 11990 as amended by E.O. 12608	FC
Protection and Enhancement of the Cultural Environment, E.O. 11593	PC ¹
Consultation and Coordination with Indian Tribal Governments E.O. 13175	PC ¹
Protection of Migratory Birds E.O. 13186	FC

FC = Full Compliance, PC = Partial Compliance.

1. FC attained after completion of all required archaeological investigations, reports, and coordination.
2. FC attained upon completion of any permitting requirements or coordination with other agencies.
3. FC attained upon signing of the NEPA decision document.

5. LIST OF PREPARERS

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6. RESOURCES CITED

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FINDING OF NO SIGNIFICANT IMPACT

Regulating Works Project - Dogtooth Bend Phase 7 Middle Mississippi River (RM 14.9-17.8) Alexander County, IL

- 1) I have reviewed the documents concerned with the Dogtooth Bend Phase 7 project. The purpose of this work is to stabilize the Mississippi River bankline and initiate pursuit of a long-term construction solution to reduce the risk of a channel cutoff forming in the Mississippi River along the left descending bank (LDB) of river miles (RM) 14.9-17.8
- 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 No Action, the District would neither stabilize the degraded bankline nor reduce the risk of a channel cutoff forming within the proposed work area.
 - b) Bankline Revetment Alternative: The Action Alternative would reshape and place stone revetment along the LDB in multiple locations from RM 14.9-17.8. This would include approximately 224,000 tons across 4600 yards riverside, and 128,000 tons across 1730 yards landside. The areas identified are in flow paths where previous head cuts have led to a loss of material behind the bankline protection. All construction work would be river based.
- 3) The possible consequences of the No Action Alternative and Action 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 determined to be ineffective primarily based upon the increased likelihood that a significant river channel cutoff would form.
 - b) The Action Alternative is anticipated to protect the navigation channel.
 - c) No appreciable effects to general environmental conditions (i.e., air quality, noise, and water quality) would result from the Action Alternative.
 - d) The Action Alternative is not expected to cause significant adverse impacts to general fish and wildlife resources.
 - e) The Action Alternative is not expected to cause unacceptable adverse impacts to riparian habitat or other wetlands.

- f) No Federally endangered or threatened species are anticipated to be adversely impacted by the Action Alternative.
 - g) No prime farmland would be adversely impacted as a result of the Action Alternative.
 - h) No significant impacts to cultural or tribal resources are anticipated as a result of the Action Alternative.
 - i) The Action Alternative would not disproportionately affect low income or minority populations.
 - j) Section 401 Water Quality Cert is covered under the exiting NW3 permit.
 - k) 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.
- 4) Based upon the Environmental Assessment of the Action Alternative, 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.

Date

Kevin R. Golinghorst
Colonel, U.S. Army
District Commander