

**Draft Environmental Assessment/404 Clean Water Act
Review for
Missouri River Bank Stabilization and Navigation
Project - 2019 Flood Repairs**

May 2021



**US Army Corps
of Engineers[®]**
Kansas City District

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Finding of No Significant Impact

Missouri River Bank Stabilization and Navigation Project

2019 Flood Repairs

Environmental Assessment

Summary

The U.S. Army Corps of Engineers (USACE), Kansas City District (NWK), has conducted an environmental assessment (EA) in accordance with the National Environmental Policy Act of 1969 (NEPA), as amended. USACE assessed the effects to the human environment of the proposed non-routine maintenance and repairs to the Missouri River Bank Stabilization and Navigation Project (BSNP). The EA is incorporated herein by reference.

The purpose of the Proposed Action is to provide for Congressionally authorized Missouri River BSNP channel dimensions that provide for safe and efficient use of the navigation channel. The Proposed Action is needed because the damage to the river control structures has created a situation where sufficient flow is not being concentrated into the navigation channel for self-scouring to provide the authorized 9-foot channel depth. Damaged river structures are overtopped by river flows more frequently than designed and become more susceptible to accelerated rates of degradation, which reduces the overall reliability of the navigation channel. At times in 2020, tows and barges have not been able to transit certain areas when the authorized dimensions of the Missouri River navigation channel were not being met and shoaling caused a restriction to navigation. Such situations can result in economic losses and unsafe navigation.

No Action Alternative

Under the No Action alternative, the proposed BSNP repairs would not occur to maintain the authorized BSNP channel dimensions. USACE would not be able to select this alternative because the agency is Congressionally mandated to maintain the BSNP; however, it is included in the range of alternatives as a benchmark for comparison of impacts, consistent with the Council on Environmental Quality NEPA regulations.

Proposed Action

The USACE Proposed Action is to implement non-routine repairs to the BSNP primarily in response to damages sustained from the 2019 flood events. The repairs would be focused within 17 areas of concern (AOCs) located along the length of the Missouri River within the USACE NWK area of responsibility from RM 498.4 at Rulo, Nebraska to RM 0.0 at the mouth near St. Louis, Missouri. The proposed repairs at the AOCs include the following general management actions:

- Construction of new structures in the main channel.
- Modification of the height of structures in the main channel or in naturally occurring side channel chutes.
- Extension of the lengths of structures in the main channel or associated with naturally occurring side channel chutes.
- Addition of new flow control structures to manage flow or increase robustness of flow control in naturally occurring side channel chutes.

- Addition of bank protection.

Construction is typically completed by a water-based floating plant. The equipment that comprises a floating plant typically includes tow boats, a work barge, a spud barge, and excavator/track hoe. In this case, rock is delivered by truck to a barge and then transported by barge to the construction site. The excavator/track hoe is used to place rock to achieve the design specifications for each structure. It is anticipated that land access would be required to accomplish some of the proposed repairs. In this case, trucks would transport the rock directly to the construction site. Or rock may be transported by barge to an off-loading location where it would then be trucked the remaining distance to the construction site. Land access requires provision of access roads, which may require vegetation clearance and construction of temporary and/or permanent access roads. If access is required through private lands, USACE would obtain all necessary real estate easements or rights-of-way. If access is through existing public lands, USACE would work with the agency that owns the property to obtain all necessary permissions for land-based access. Access routes would be identified in a manner to minimize vegetation disturbance/clearance and to avoid sensitive areas such as wetlands.

Summary of Environmental Impacts

The No Action alternative and Proposed Action were evaluated in the EA. No or negligible impacts are anticipated to air quality, environmental justice, invasive species, land use, noise, prime and unique farmland, and visual and aesthetic resources. Beneficial impacts to commercial sand and gravel dredging, navigation, and socioeconomics are anticipated. Construction activities would result in minor short-term adverse impacts to water quality from increased suspended sediment and turbidity while construction is ongoing. Sediment disturbance may result in temporary elevation in contaminants, which would quickly return to background levels due to dilution. Minor short-term adverse impacts to fish and wildlife may result during project construction. Fish access to naturally occurring chutes (i.e. Lisbon and Car of Commerce) would be flow-dependent and vary between and within years. USACE would take into consideration Missouri Department of Conservation (MDC) comments and concerns regarding design details for the Car of Commerce chute flow control structure to mitigate impacts to boater access and fish passage to the maximum extent possible. Recreation may experience minor temporary adverse impacts from physical and noise disturbances during construction. Flood risk is not anticipated to change noticeably.

All practicable means to avoid and minimize adverse environmental effects have been incorporated into the Proposed Action. The Proposed Action was determined to “may affect, but not likely adversely affect” the federally endangered pallid sturgeon and federally listed bat species. USACE would avoid construction activities from May 1 to June 15 for outside revetted bends at the Jameson and Lisbon AOCs to avoid potential disruption to pallid sturgeon spawning activity. USACE would comply with seasonable tree clearing restrictions established for federally listed bats. The Proposed Action would not affect designated critical habitat. Minimal wetland impacts may occur due to access roads for certain construction activities. In this case, access roads would comply with the conditions of Nationwide Permit 33. USACE will obtain special use permits from the U.S. Fish and Wildlife Service and/or MDC should land access be required for construction at the Lisbon or Car of Commerce chutes, respectively. No impact to sites listed on or eligible for inclusion on the National Register of Historic Places are anticipated.

Public Availability

A description of the Proposed Action was circulated to the public and resource agencies through a Public Notice, No. 2021-002-CW, dated May X, 2021, with a 30-day comment period ending on June X, 2021.

This notice contained a project description, along with information on the USACE preliminary determination to prepare a FONSI and a draft Section 404(b)(1) Evaluation. The Draft EA, Draft FONSI, and Public Notice were provided for public/agency review through the Office of Public Affairs.

Conclusion

All applicable laws, executive orders, regulations, and local government plans were considered in the evaluation of the Proposed Action. It is my determination that the Proposed Action does not constitute a major federal action that would significantly affect the human environment; therefore, preparation of an Environmental Impact Statement is not required.

Date: _____

William C. Hannan, Jr.
Colonel, Corps of Engineers
District Commander

1.0 Introduction

The 2019 floods resulted in sustained high flows on the Missouri River that caused wide-scale damage to Missouri River Bank Stabilization and Navigation Project (BSNP) structures. The scope of this Environmental Assessment (EA), prepared in compliance with the National Environmental Policy Act (NEPA), includes repairs within the area of responsibility of the U.S. Army Corps of Engineers (USACE), Kansas City District (NWK), Missouri River Miles (RM) 0.0 to 498.4. This EA provides information necessary to comply with NEPA and Section 404 of the Clean Water Act public interest review. This chapter provides background on the BSNP and describes the purpose and need for the Proposed Action. Chapter 2 describes the Proposed Action and alternatives. Chapter 3 presents the resources affected by the Proposed Action and the environmental impacts.

1.1. Missouri River Bank Stabilization and Navigation Project

Shortly after Lewis and Clark explored the Missouri River, the Federal Government started efforts to modify the Missouri River to support navigation. Starting as early as 1819, funds were appropriated by Congress to survey the river; remove river habitat features viewed as obstructive, such as snags, and to confine the river by locking its banks at specified locations. Beginning in 1912, Congress passed the first of several laws (Rivers and Harbors Acts of 1912, 1925, 1927, 1935, and 1945) to fund work by USACE to further improve the river for navigation. This work would later become known as the BSNP. The BSNP features authorized by these laws would further confine the natural river by providing for a comparably static, uniform depth, width, and length. From 1932 to 1973, USACE regularly dredged areas of the navigation channel that were prone to deposition.

The BSNP consists mainly of wood pile and rock structures and revetments along the outsides of bends and transverse dikes along the insides of bends to force the river into a channel alignment that is self-maintaining or self-scouring. This is different from most inland navigation systems, which are managed using locks with some associated dredging. Training structures permit an open condition for the entire length of the project with no dredging required under normal flow conditions. As authorized, the BSNP provides a 9-foot-deep channel with a minimum width of 300 feet during the navigation season from April 1 to November 30 between Sioux City, Iowa, and the mouth near St. Louis, Missouri, a length of 735 river miles (RM). Releases from the Missouri River Mainstem Reservoir System are necessary to provide the authorized navigation channel dimensions. The need for maintenance dredging dropped sharply in the early 1970s as a result of the structures' confining features. Construction of the BSNP was completed in 1980. USACE NWK is responsible for maintenance of BSNP structures and MRRP projects from Rulo, Nebraska downstream to the mouth. Figures 1-1 and 1-2 illustrate the typical structures associated with the BSNP.

USACE performs routine maintenance of the BSNP on an annual basis. Routine maintenance of existing structures can be both preventative and reactionary. Reactionary actions are structures constructed in response to an event that has happened. Routine maintenance of the BSNP can be divided into two categories; maintenance of the existing rock filled structures to ensure structures meet design grades and adjustment of the footprint of the structures in response to changes in the bed and banks of the river at the bend or individual structure scale. Structures are maintained by replacing stone fill lost to erosion by the current, rock deterioration, slumping, and other processes. The limestone rock in the structures is subject to freeze/thaw action which breaks down the rock over time making it more susceptible to erosion by the current. Hardpoints, which may be constructed to prevent a dike from being flanked by flowing water and losing its functionality and extending a flanked dike landward after it has flanked is an example of the

second category. NEPA compliance for routine maintenance is typically covered under a categorical exclusion.

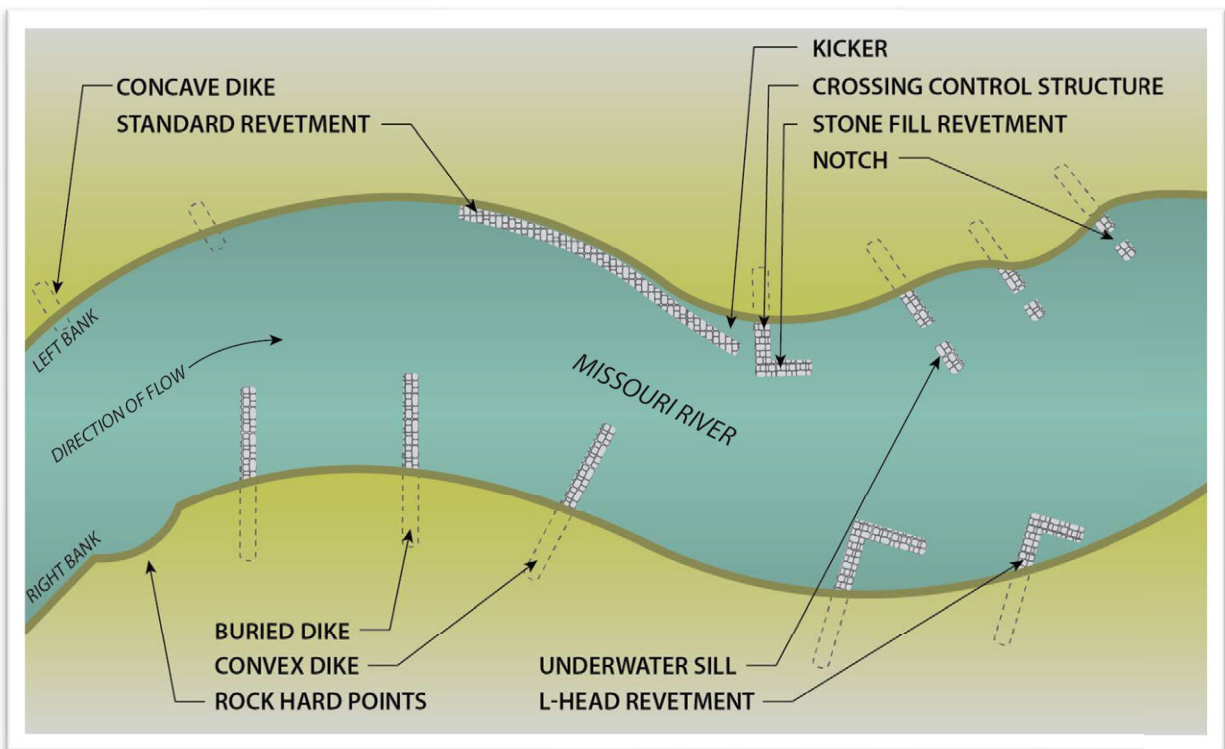


Figure 1-1. Typical Arrangement of BSNP Structures on the Missouri River

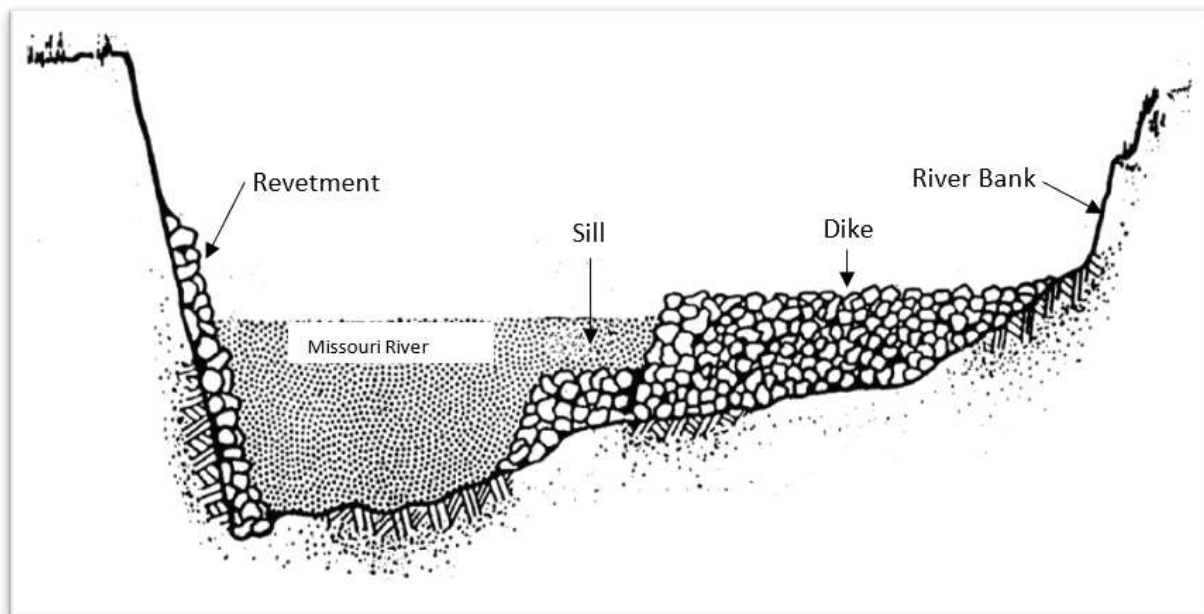


Figure 1-2. Typical Cross Section of the Missouri River Showing the BSNP Features that Create a Nine-foot deep by 300-foot-wide Navigation Channel

The structure repair heights are referenced from the Construction Reference Plane (CRP) which is the water surface elevation of a discharge exceeded 75% of the time during the navigation season. Each type of structure is designed to be overtopped a set percentage of the time regardless of structure location. Therefore, as average flows increase in the downstream direction the height of structures relative to the CRP increases. The current repair heights and exceedances were formally adopted in 1994 when the Design Criteria was published.

Large flood events, such as 2019, can cause significant damage to structures over large geographic areas. Recovery from these large flood events can require special appropriations to repair the damaged structures. Stone fill placement amounts during flood recovery can exceed 500,000 tons more than baseline budget maintenance. Although a portion of the 2019 flood repairs are considered routine maintenance because the structures would be returned to the design lines and grades that existed prior to flood damage, there is a substantial portion of repair work that would not be considered routine.

1.2. Purpose of the Proposed Action

The purpose of the Proposed Action is to provide for Congressionally authorized Missouri River BSNP channel dimensions that provide for safe and efficient use of the navigation channel.

1.3. Need for the Proposed Action

The BSNP is comprised of over 7,000 river control structures located throughout the lower Missouri River. During the high-water events of 2017 and 2018 and the severe flooding in 2019, nearly 5,000 structures were damaged or impacted by the high water. As a result, many structures are not functioning as designed, and the river is not meeting its authorized depth in many locations. The flows on the Missouri River returned to near CRP levels in late August 2020 after three years of high water (near or at flood stage). In addition to causing structure damage, the prolonged high water left unusually large amounts of sediment buildup in the navigation channel, particularly in channel crossing areas. As the water level and flow dropped to CRP levels, structure damage was revealed. The damage to the river control structures created a situation where sufficient flow is not being concentrated into the navigation channel for self-scouring to provide the authorized 9-foot channel depth. Damaged river structures are overtopped by river flows more frequently than designed and become more susceptible to accelerated rates of degradation, which reduces the overall reliability of the navigation channel.

At times in 2020, tows and barges were not able to transit certain areas when the authorized dimensions of the Missouri River navigation channel were not being met and shoaling caused a restriction to navigation. Navigation restrictions are defined as areas where the channel is not meeting its authorized depth or width, which restricts the ability of barge traffic to navigate the river. Such situations result in safety issues for barges attempting to operate on the navigation channel and economic losses. Tow pilots risk grounding barges in shallow water or shoaled areas, which can cause tows to break apart and drift uncontrolled downstream potentially severely damaging bridge piers, government property, or other vessels. Damage to government property including the river training structures on the Missouri River can cause as much as \$100,000 in additional damage to each structure. Vessels also risk inducing severe damage that could sink the vessel, injure or kill personnel on board, or collide with another vessel in the river. In addition, if the contents of the tow are hazardous, damage to the barge and container integrity could cause uncontrolled release of substances into the environment. A recent grounding caused a petroleum barge to break loose and float uncontrolled down river for several miles before it was caught just upstream of a major highway bridge.

2.0 Proposed Action and Alternatives

NEPA requires federal agencies to evaluate and consider a range of alternatives that address the purpose of and need for action. Alternatives under consideration must include a “No Action” alternative in accordance with Council on Environmental Quality (CEQ) regulations (40 CFR 1502.14). This environmental assessment evaluates the Proposed Action and the No Action. Due to the emergency nature of the Proposed Action, alternatives are limited.

2.1. Proposed Action

The USACE Proposed Action is to implement non-routine repairs to the BSNP primarily in response to damages sustained from the 2019 flood events. The repairs would be focused within 17 areas of concern (AOCs) located along the length of the Missouri River within the USACE NWK area of responsibility (AOR) from river mile (RM) 498.4 at Rulo, Nebraska to RM 0.0 at the mouth near St. Louis, Missouri (Figure 2-1). The AOCs were identified by USACE river engineering staff as well as the navigation industry (Table 2-1). Appendix A contains maps of each AOC identifying proposed repairs. The repairs identified at each AOC shown in Appendix A include a mix of repair types, which vary in their NEPA compliance requirements. Repairs identified as “repair deficiencies” indicate that the structure is being rebuilt to the original design criteria. This type of repair falls within the scope of the USACE categorical exclusion for routine maintenance and is not within the scope of this EA’s proposed action. USACE completed a NEPA process in August 2020 for repairs and modifications at Missouri River Recovery Program (MRRP) chutes. Repairs that were included in the scope of that EA are also not included within this EA’s proposed action. The repairs included within the scope of this EA are highlighted in yellow on the text boxes that describe the repair work at each AOC in Appendix A. Repairs are categorized as Phase 1, Phase 2, or Phase 3. The phase relates to a relative prioritization of the repair work, as it is not anticipated that funding for all the work would be available from initiation.

Table 2-1. Missouri River Bank Stabilization and Navigation Project Areas of Concern.

Area of Concern	River Mile (RM)	Estimated Quantity (tons)
Pelican/Little’s	10	78,000
Bryan Island/St. Charles Bend	25	65,000
Daniel Boone Bridge	44	54,077
Augusta Bend	56	31,200
Lunch Island	92	83,500
Gasconade	104	12,500
Auxvasse Bend	122	6,800
Smoky Waters/Rising Creek Bend	133	138,500
Providence	166	17,550
Tadpole Chute/Searcys Bend	179	5,000
Overton North	187	5,900
Franklin Island	194	14,400
Jameson Island	213	67,000
Lisbon	217	101,500
Upper Miami	262	23,800
Prunty	269	8,600
Baker’s Bend	286	22,600
Total:		735,927

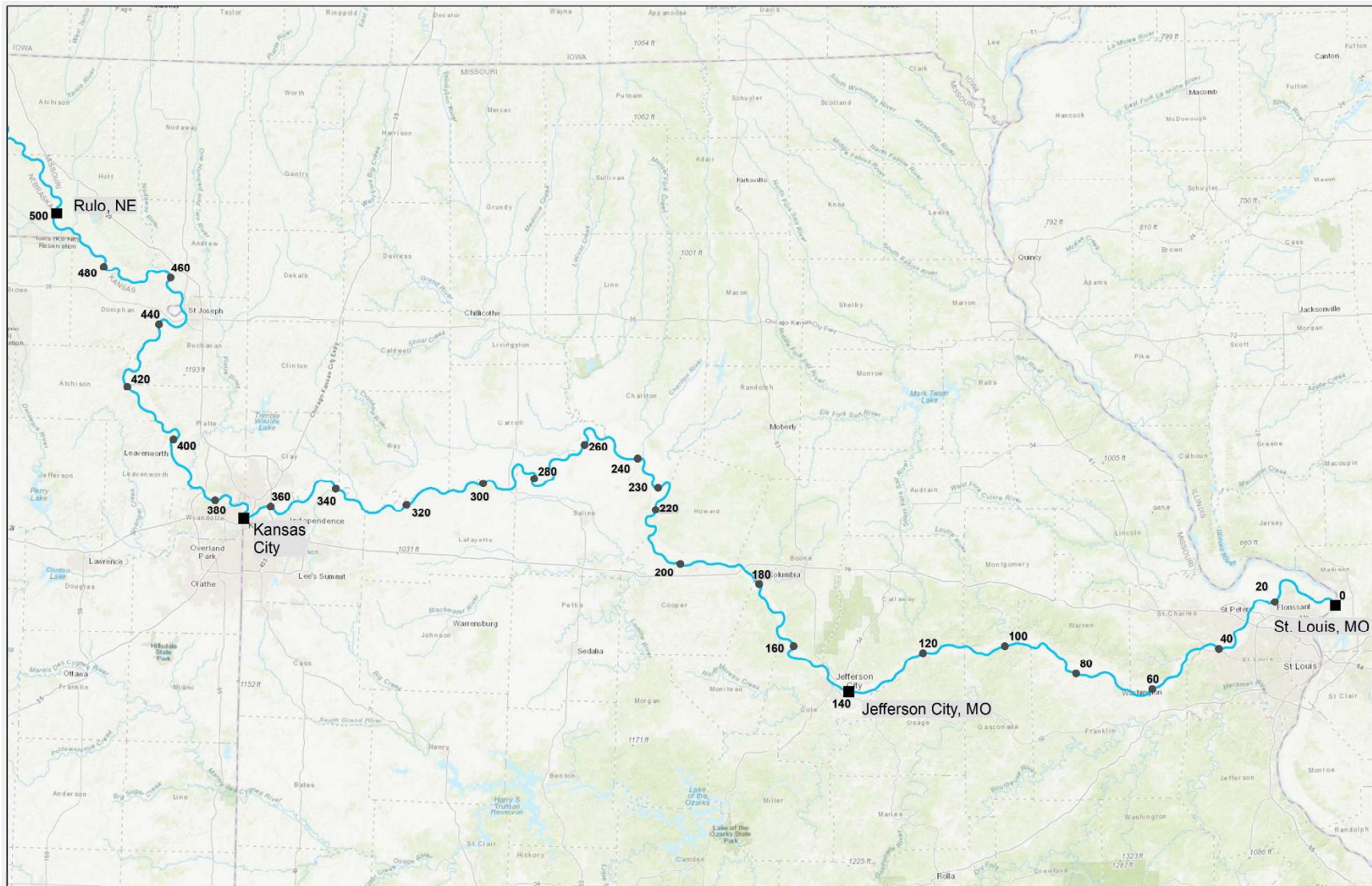


Figure 2-1. Geographic Scope of U.S. Army Corps of Engineers Kansas City District Missouri River Area of Responsibility.

The proposed repairs at the AOCs include the following general actions:

- Construction of new structures in the main channel.
- Modification of the height of structures in the main channel or in naturally occurring side channel chutes.
- Extension of the lengths of structures in the main channel or associated with naturally occurring side channel chutes.
- Addition of new flow control structures to manage flow or increase robustness of flow control in naturally occurring side channel chutes.
- Addition of bank protection.

In many cases, construction of a new structure is the only action that will permanently correct a navigation channel problem. The two most common structure types are dikes and revetments. Dikes are structures that typically extend from the bank into the river, perpendicular or nearly perpendicular to the flow. They constrict the river channel to the desired width and protect the bankline from erosion. Revetments are constructed parallel to the flow, either to establish and protect a desired bankline or to guide the flow along a desired alignment. There are different types of dikes or portions of dikes included in this proposed action as follows:

- Baffle dike – this is a dike behind a revetment that connects the revetment to the bank.
- L-head dike – a dike with a short segment of revetment attached to the riverward end of the dike, extending downstream parallel with the flow.
- Rootless dike – a dike constructed without a connection to the bank. Rootless dikes function to block a portion of the flow through the dike field and increase depth diversity while requiring less rock to construct than a rooted dike and often having less impact on the adjacent bankline. Rootless dikes may be selected instead of a rooted dike where flow does not need to be fully blocked at low stages or where in-channel depth diversity is desired.
- Sill – Sills are low elevation extensions into the river channel off the ends of dikes. Sills are constructed approximately perpendicular to the flow at elevations that are submerged during the navigation season. Sills are designed to control the shape of the river cross section in order to maintain navigation depths in the desired position within the section.
- Bendway weirs – Bendway weirs are discontinuous, redirecting structures designed to capture and then safely direct the flow through a meander bend. Typically, structures are placed in series along straight or convex bank lines. A series of bendway weirs are known as “weir fields.” Bendway weirs form a control system that captures and directs flow through the weir field, usually all the way through the bend. Bendway weirs are generally between a third and half the stream width in length, flat crested, and designed to be continuously submerged or at least overtopped by the design flows.

The bed of the river is constantly changing and adjusting itself due to changes in sediment loads and changes in discharge. These changes occur more rapidly during and following flood events. The erosion of inside bend sandbars can allow flow to spread laterally resulting in reduced depths in the navigation channel. This is most pronounced downstream of Kansas City where large sandbars existed on inside bends. Dikes were generally not built in these locations because the sandbar served the same purpose as a dike in defining and maintaining the navigable channel. At some locations, the sandbars have diminished

in size or have been completely scoured away requiring construction of a new dike to direct water back into the navigation channel. Navigation problems can also arise when flow patterns, varying hydrographs, and bank and bed changes cause the channel to shift locations in an unpredictable manner.

The design of the BSNP correlates the elevation of structures to the long-term discharge of the river and to the long-term water surface elevation of the river's discharge. This is done by calculating the CRP, discussed previously, and the maintenance criteria, i.e. the height at which a flow will be exceeded a specified percentage of time for that structure. It is occasionally desirable to deviate from the heights shown in the Structure Height Criteria to account for localized conditions. Reasons to deviate higher include navigation problems or excessive bank erosion that threatens the tie-in point of structures. These situations are present at certain AOCs and therefore raising of structures above criteria is proposed in localized situations.

The proposed action also includes the addition of new flow control structures to manage flow or increase robustness of flow control in naturally occurring side channel chutes. As shown in Appendix A, this is proposed at Car of Commerce chute (RM 10), Lunch Island chute (RM 92), and Lisbon chute (RM 216). Raising of existing flow control structures within two naturally occurring side channel chutes associated with Little's Island (RM 10 and 11) is also proposed. USACE would take into consideration Missouri Department of Conservation (MDC) comments and concerns regarding design details for the Car of Commerce chute flow control structure to mitigate impacts to boater access and fish passage to the maximum extent possible.

In some cases, the riverward end of a dike must be extended to resolve a navigation problem. Navigation problems can develop in areas with a history of infrequent navigation problems in the past or in areas with no history of navigation problems. In some cases, the length of the existing dikes in the problem area do not extend to the design channel width and the extensions serve to bring the channel width closer to design.

Bank protection, including revetment, bank paving, bankheads, and hardpoints, are used to prevent compromising or flanking of dikes and flow control structures, excessive widening, or channel avulsion. Hardpoints are also placed around dikes that have flanked and have been repaired to prevent the dike from flanking again. Hardpoints can also be used in areas where there is potential loss of bank stability that could impact flows in the navigation channel such as a natural chute that is meandering excessively.

Construction is typically completed by a water-based floating plant. The equipment that comprises a floating plant typically includes tow boats, a work barge, a spud barge, and excavator/track hoe. In this case, rock is delivered by truck to a barge (Figure 2-2) and then transported by barge to the construction site. The excavator/track hoe is used to place rock to achieve the design specifications for each structure (Figure 2-3). It is anticipated that land access would be required to accomplish some of the proposed repairs. In this case, trucks would transport the rock directly to the construction site. Or rock may be transported by barge to an off-loading location where it would then be trucked the remaining distance to the construction site. Land access requires provision of access roads, which may require vegetation clearance and construction of temporary and/or permanent access roads. If access is required through private lands, USACE would obtain all necessary real estate easements or rights-of-way. If access is through existing public lands, USACE would work with the agency that owns the property to obtain all necessary permissions for land-based access. Access routes would be identified in a manner to minimize vegetation disturbance/clearance and to avoid sensitive areas such as wetlands.

2.2. No Action Alternative

Under the No Action alternative, the proposed BSNP repairs would not occur to maintain the authorized BSNP channel dimensions. USACE would not be able to select this alternative because the agency is Congressionally mandated to maintain the BSNP; however, it is included in the range of alternatives as a benchmark for comparison of impacts, consistent with the CEQ NEPA regulations.



Figure 2-2. Rock being loaded onto a barge.



Figure 2-3. Rock being placed to repair/construct a BSNP structure.

3.0 Affected Environment and Environmental Consequences

This chapter discusses aspects of the environment that may potentially be impacted by the No Action alternative and Proposed Action. It presents both the affected environment and environmental consequences, as required by NEPA. This chapter is organized by resource topic with the status of the affected environment and the impacts of each alternative described within each resource section. The affected environment sections provide a description of different aspects of the human environment that may be affected by the Proposed Action. The environmental consequences sections provide a description of the anticipated impacts. Consistent with CEQ Regulation 1502.2 and CEQ 40 Questions 36A, this chapter focuses on the resource topics most relevant to the Proposed Action under evaluation. Resources that were considered but for which effects are either entirely beneficial or the adverse impacts are not as relevant to decision-making are described in Section 3.2.

3.1. Impact Characterization

CEQ Regulations 1508.1 define effects or impacts as changes to the human environment from the Proposed Action or alternatives that are reasonably foreseeable and have a reasonably close causal relationship to the Proposed Action or alternatives, including those effects that occur at the same time and place as the Proposed Action or alternatives and may include effects that are later in time or farther removed in distance from the Proposed Action and alternatives. The potential impacts of the alternatives are described in this EA using the following terms:

- Beneficial: A positive change in the condition or appearance of the resource or a change that moves the resource toward a desired condition.
- Adverse: A change that moves the resource away from a desired condition or detracts from its appearance or condition.
- Short-term: impacts generally occur during construction or for a limited time thereafter, generally less than two years, by the end of which the resources recover their pre-construction conditions.
- Long-term: impacts last beyond the construction period, and the resources may not regain their preconstruction conditions for a longer period of time.

3.2. Resources Considered but Dismissed

Air Quality – Air quality at a given location is described by the concentrations of various pollutants in the atmosphere. The quality of the air is measured against National Ambient Air Quality Standards (NAAQS) set by the EPA. Temporary increases in emissions that may occur during construction activities would not have potential to exceed NAAQS based on agency experience. This resource topic was dismissed from further evaluation.

Commercial Sand and Gravel Dredging on the Lower Missouri River – Commercial dredging on the lower Missouri River is regulated by USACE under the authorities of Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C §403) and Section 404 of the Clean Water Act (33 U.S.C §1344). As of March 2021, six commercial dredging permits were issued by USACE for operations on the lower Missouri River. As a condition of these permits, commercial dredging is not allowed within 200 feet of any dike, revetment, or other structure built or authorized by the U.S. Government without special authorization. The proposed action would add new structures to the BSNP and extend the footprint of others, which would require commercial dredgers to adapt their operations at these locations to comply with this condition of their permits. The impact on operations of commercial dredgers would be considered negligible because these companies have been operating under this condition for many years.

The proposed action would be beneficial to commercial sand and gravel dredging because this activity relies on a navigation channel that meets authorized dimensions to operate. As a result, this resource topic has been dismissed from further evaluation.

Environmental Justice – Environmental Justice promotes consideration of whether a Proposed Action would disproportionately affect low income and minority communities. Past NEPA reviews on operation and maintenance of the BSNP have not identified Environmental Justice issues. In addition, there are no options to complete the Proposed Action in a location other than where the proposed repairs are required. As a result, there is no potential for a disproportionate adverse effect on minorities, low-income residents, or other environmental justice populations. This resource topic was dismissed from further evaluation.

Invasive Species – Invasive species have the potential to displace native plants and animals. In accordance with Executive Order 13122, federal agencies may not authorize, fund, or carry out actions that are likely to cause or promote the introduction or spread of invasive species. Invasive aquatic species that have the potential to be introduced into new water bodies as a result of contaminated construction equipment include zebra mussels, quagga mussels, New Zealand mudsnails, purple loosestrife, and Eurasian watermilfoil. Common invasive fish species on the lower Missouri River include the common carp, goldfish, grass carp, silver carp, bighead carp, and western mosquitofish. Transport of invasive species by the river is common. Natural erosion and deposition of material along the river can result in conditions that are susceptible to becoming established with invasive plants. Construction contractors are required to implement best management practices (BMPs) to limit the potential to spread invasive species. This would not vary by alternative; therefore, this topic is not evaluated further.

Land Use – The Proposed Action would not result in any land use changes; therefore, this topic was dismissed from further evaluation.

Navigation – The purpose of the Proposed Action is to maintain a safe navigation channel that meets authorized channel dimensions. Therefore, all impacts to navigation from the Proposed Action would be considered beneficial. As a result, this resource topic was dismissed from further evaluation.

Noise – Construction activities under the Proposed Action would result in short-term increases of noise levels in the vicinity of the AOCs. However, maintenance of the BSNP is an ongoing activity on the Missouri River and therefore is not out of character for the baseline acoustic environment. This topic was dismissed from further evaluation.

Prime and Unique Farmland – There is no potential to affect prime and unique farmland because the Proposed Action would primarily affect open water areas. No agricultural lands would be converted to other uses. This resource was dismissed from further evaluation.

Socioeconomics – Socioeconomic impacts of the Proposed Action would be entirely beneficial because efficient navigation would be facilitated leading to avoidance of economic losses. This topic was dismissed from further evaluation.

Visual and Aesthetic Resources – The Proposed Action would result in the short-term presence of dredges and associated equipment in the action area. Dredging is a common activity on the Missouri River and therefore this would not be out of character with the existing visual and aesthetics of the area. This topic was dismissed from further evaluation.

3.3. Water Quality

3.3.1. Affected Environment

Past USACE water quality monitoring for the Missouri River has included long-term fixed station ambient monitoring at locations on the mainstem of the river, investigative monitoring, and special studies. Water quality parameters measured included total phosphorus, nitrate plus nitrite, ammonia, ortho-phosphorus, dissolved phosphorus, total Kjeldahl nitrogen, total suspended solids, suspended sediment concentration, total dissolved solids, total organic carbon, dissolved organic carbon, turbidity, chlorophyll A, total silica, and dissolved silica. Median concentrations of common water quality constituents are provided in Table 3-1. The Missouri River is listed on the Missouri 303(d) list of impaired waters for *Escherichia coli*.

3.3.2. Environmental Consequences

No impacts to water quality would result from the No Action alternative because no construction activities would be authorized. Localized increases in suspended sediment loading would continue due to ongoing bank erosion.

The Proposed Action may result in short-term adverse impacts to water quality during project construction. Construction activities would result in short-term disturbance to soils and riverbeds and banks. During construction, there would be small short-term adverse impacts to water quality from increased sediment loading to the river. Sediment disturbance could mobilize nutrients, organic material, anoxic sediments, and other pollutants including metals/metalloids associated with the sediment and would potentially increase loading of these pollutants into the river over the short-term. Any temporary elevation in contaminants would return quickly to background levels due to dilution. Turbidity increases generated from construction activities are likely to be well within the naturally high turbidity levels of the Missouri River.

A literature review on types of effects from riprap stated that the impacts on water quality are typically minor (Fischenich 2003). The use of construction equipment could result in negligible short-term adverse impacts to water quality from accidental leaks and spills of pollutants (e.g., oil, gas, lubricants). Water-based equipment would have a greater potential of causing impacts compared to land-based equipment because it is in direct contact with the river water. These impacts would be minimized or eliminated by compliance with provisions of the Clean Water Act (CWA) and by using construction BMPs. A CWA Section 404(b)(1) evaluation was completed for the Proposed Action (Appendix B). The project is not anticipated to result in any exceedance of state water quality standards or additional impairment to the Missouri River. USACE will seek a 401 Water Quality Certification from the Missouri Department of Natural Resources (MoDNR) following the public comment period on the draft report.

Table 3-2. Median concentrations of common water quality collected from the Missouri River between the years 2010 and 2014.

Sampling Location	Atchison, River Mile 423		Fort Osage, River Mile 340		Waverly, River Mile 294		Glasgow, River Mile 227		Marion, River Mile 160		Hermann, River Mile 98		Weldon Springs,* River Mile 50	
	Median	Range	Median	Range	Median	Range	Median	Range	Median	Range	Median	Range	Median	Range
Median and Range Categories														
Total Phosphorus (mg/L)	0.33	0.05-2.4	0.37	0.12-3	0.35	0.09-2.1	0.38	0.091-2	0.385	0.111-8	0.34	0.111-4	0.3	0.121-9
Total Orthophosphate (mg/L)	0.087	0.024-0.24	0.12	0.053-0.21	0.115	0.052-0.21	0.1	0.059-0.24	0.099	0.056-0.49	0.087	0.050-2	0.09	0.0260-16
Ammonia (mg/L)	0.056	0.01-0.32	0.09	0.03-0.29	0.068	0.01-.24	0.05	0.02-0.92	0.04	0.03-0.28	0.35	0.02-0.65	0.033	0.020-52
Nitrate/Nitrite (mg/L)	1.4	0.15-0	1.4	0.21-4.4	1.45	.224-7	1.2	0.23-8	1.3	0.17-4	0.98	0.12-3	0.9	0.12-9
Total Kjeldahl Nitrogen (mg/L)	0.9	0.28-4	1.1	0.26-7	1	0.25-6.7	1	0.22-6.4	1	0.334-6	0.89	0.383-6	0.78	0.354-2
Total Suspended Solids (mg/L)	128	25-4710	123	22.4-4140	160	28-3070	176	44-2660	203	321700	144	31.3-1410	132	231520

*Note: Water quality data was not collected at Weldon Springs in 2010.

3.4. Wetlands

3.4.1. Affected Environment

Wetlands are areas that transition between terrestrial and aquatic systems (Cowardin et al. 1979). Wetlands are characterized by three attributes: hydric soils, vegetation adapted to such soils, and soils that are saturated with water or covered by shallow water at some point during the growing season (Cowardin et al. 1979). Wetlands serve a variety of important functions, including wildlife habitat, fish breeding and foraging habitat, nutrient/sediment trapping, storage of flood waters, and recreation. Wetland losses between the 1780's to the 1980's included an 87 percent decrease in Missouri (Dahl 1990). Beginning in 1912, the Missouri River has been channelized through the construction of the BSNP, which was completed in the early 1980s. The BSNP stabilized the river and allowed accreted land to form in the old active channel and created a narrow channel with few islands, backwaters, or side channels. As a result, the number of wetlands has been significantly reduced along the Missouri River. Hesse et al. (1988) estimated that there was a 39 percent decline in the number of wetlands within the Missouri River floodplain between 1892 and 1982. In 1995, it was estimated using Landsat satellite images that nearly 75,000 acres of wetlands were present in Missouri River floodplain within the NWK AOR (USACE 2003). Most of the wetlands were classified as either forested or emergent.

3.4.2. Environmental Consequences

No impacts to wetlands would occur from construction activities under the No Action alternative because no work would be completed. Not repairing the BSNP would allow for bank erosion to continue and at certain locations along the river that could result in impacts to wetlands.

Most of the repair work under the Proposed Action would be accomplished from floating plant, which would not result in wetland impacts. Some structure repairs may not be accessible from the river and could require land access for construction activities. Two locations where land access is likely required is the flow control structures proposed at the lower end of the Lisbon chute and Car of Commerce chute. Land access requires an access road to allow for dump trucks and other heavy equipment to reach the construction site. Access routes would be planned to avoid wetlands to the maximum extent practicable. Any wetland impacts associated with access routes would fall under Nationwide Permit 33 (Temporary Construction, Access, and Dewatering). Following construction, temporary fill used for access roads would be removed and the area restored to pre-construction elevations. The affected areas would be revegetated with native species, as appropriate.

3.5. Terrestrial Habitat

3.5.1. Affected Environment

The predominant land cover in the vicinity of riverbanks where BSNP repairs would occur is deciduous trees. These areas are typically dominated by cottonwoods and willows.

3.5.2. Environmental Consequences

No impacts to terrestrial resources would occur due to construction activities under the No Action alternative because no construction activities would occur under this scenario. Deciduous forest would likely continue to be impacted from bank erosion under the No Action alternative.

There is low potential to affect terrestrial resources such as vegetation or terrestrial wildlife habitat because most of the construction would occur from water-based equipment (i.e. floating plants). As stated previously, some of the repairs may require land access for construction. In these cases, vegetation would

need to be cleared to provide an access road. For most of the work under the Proposed Action, the construction activities would be contained within the Missouri River channel or within the chute. Where land-based work is required, access routes would be planned to minimize the amount of vegetation clearing required. Affected vegetation types are early successional stage habitat types (e.g. cottonwood-willow riparian forest) that would be expected to reestablish quickly following construction. These short-term adverse impacts to terrestrial resources are considered negligible.

3.6. Fish and Wildlife Resources

3.6.1. Affected Environment

Typical fishes of the Missouri River system include:

- Big river main channel fishes (Pflieger 1971, Pflieger 1989, Galat et al. 2005): sturgeons, *Macrhybopsis* and *Platygobio* chubs, buffaloes, carpsuckers, blue sucker, catfishes, burbot and freshwater drum. Native big river fish species include those adapted to the swift, highly turbid currents, and unstable sand and silt bottom of the main channel (Pflieger 1971). Many of these big river fish species are benthic (bottom-dwelling). They have adapted to the swift current and highly turbid waters of the Missouri River by developing enlarged (often sickle-shaped) fins, streamlined bodies, flattened heads, mouths on the underside of the head, and well-developed chemosensory organs (Galat et al. 2005).
- Main channel border fishes (Galat et al. 2005): bullhead catfishes, and sunfishes. These species are adapted to slow to no current and clearer water found in main channel border areas.

Rich communities of benthic macroinvertebrates occur in the Missouri River, but their abundance is greater in the upper reaches (Galat et al. 2005, Poulton et al. 2003). Poulton (2004) identified benthic macroinvertebrate communities in the channelized reach of the lower Missouri River. Nearly one third of these taxa collected belonged to the sensitive insect orders (Ephemeroptera, Plecoptera, Odonata, and Trichoptera). In addition, Poulton et al. (2003) and Poulton (2004) found that artificial rock (material placed for bank and channel stability or for dike structures) contained a diverse macroinvertebrate community.

Amphibian species such as eastern tiger salamander, smallmouth salamander, great plains toad, Woodhouse's toad, and plains spadefoot toad require ephemeral wetland habitats to successfully reproduce. Wetlands within the floodplain also support numerous reptilian species such as diamondback water snake, northern water snake, and the western hog-nosed snake and eastern hog-nosed snake in certain geographic reaches. The floodplain also provides important habitat for turtles, such as false map turtles, smooth soft-shell turtles, and spiny soft-shell turtles.

The Missouri River Valley is an important nesting and feeding area within the Mississippi Flyway for many migratory birds and waterfowl species. Approximately one in every seven bird species in North America can be found along the lower Missouri River (Thogmartin 2009).

The increases in agriculture, along with the effects of bank stabilization and channelization, have also reduced the wildlife habitat in the floodplain. However, remnant riparian areas and agricultural fields provide habitat for mammals such as gray squirrel, fox squirrel, cottontail rabbit, red fox, gray fox, and coyote. Common furbearers along river banks include mink, muskrat, beaver, otter, and raccoon. White-tailed deer is a common species found in the floodplain.

3.6.2. Environmental Consequences

No impacts to fish and wildlife resources would occur under the No Action alternative because no construction activities would be authorized. Some habitat conversions would continue to occur as bank erosion would continue in locations.

Minor short-term adverse impacts to fish and wildlife may result during project construction. There is potential that construction activities could affect fish and wildlife species in the project area through physical disturbance. Fish and wildlife may also experience adverse impacts from noise associated with construction activities. Routine maintenance on rock structures in the Missouri River, which cause temporary disturbance, is conducted annually and has not shown any long-term impacts to fish and wildlife. Fish and wildlife are expected to move from areas of disturbance during project construction.

At the Lisbon and Car of Commerce chutes where new flow control structures are proposed on the lower end of the chutes, fish passage may be restricted at a range of lower flows because of the height of structures at the entrance and exit. Fish access to chutes would be flow-dependent and vary between and within years. As stated previously and based on input from MDC, the Car of Commerce structure design would minimize fish passage impacts and the risk of fish entrapment to the maximum extent practicable.

3.7. Threatened and Endangered Species

3.7.1. Affected Environment

Based on previous consultations with the U.S. Fish and Wildlife Service (USFWS) on similar proposed action within the action area and input from the USFWS Missouri Ecological Services Field Office, it was determined that effects of the Proposed Action should be evaluated for pallid sturgeon (*Scaphirhynchus albus*), gray bat (*Myotis grisescens*), northern long-eared bat (*Myotis septentrionalis*), and Indiana bat (*Myotis sodalis*).

3.7.1.1. Pallid Sturgeon

Pallid sturgeon are large, long-lived benthic (i.e. bottom dwelling) fish that inhabit rivers of the Missouri and Mississippi River basins. They have physical features adapted to life in turbid fast-flowing rivers such as a flattened shovel-shaped snout; a long, slender, and completely armored body; fleshy barbels; and a protrusible mouth (i.e. capable of being extended and withdrawn from its natural position) that supplement their small eyes in detecting and capturing food. The pallid sturgeon was listed as endangered under the ESA on September 6, 1990 (55 Federal Regulation 36641–36647). Winders and Steffensen (2014) developed population estimates for a reach of the Missouri River downstream of Kansas City, Missouri. The annual population estimates of pallid sturgeon varied from 6.1 to 11.1 fish/river kilometer (rkm), of which known hatchery-origin pallid sturgeon (5.5 to 10.2 fish/rkm) were much more abundant than those of wild origin (0.6 to 0.9 fish/rkm) (Winders and Steffensen 2014).

Pallid sturgeon are long-lived, with females reaching sexual maturity later than males (Keenlyne and Jenkins 1993). However, the age at first reproduction can vary between hatchery-reared and wild fish, depending on local conditions (USFWS 2014). The estimated age at first reproduction of wild fish is about 15 to 20 years for females and approximately 5 to 7 years for males (Keenlyne and Jenkins 1993). Minimum age-at-sexual maturity for known-aged hatchery-reared fish was age-9 for females and age-7 for males (Steffensen et al. 2012). Pallid sturgeon generally spawn from late April through May in the lower Missouri River (DeLonay et al. 2016). Reproductively ready pallid sturgeon indicate consistent patterns of upstream migration before spawning. Migration patterns can differ between males and females; where male patterns are less regular. Migrating pallid sturgeon in Missouri selected shallow

places in the channel, and velocities on the low end of the distribution, which indicates selection of migration pathways that optimize energy expenditure (DeLonay et al. 2016).

Fertilization to hatching, the embryo life stage, lasts 5-8 days depending on water temperature (DeLonay et al. 2016). Most of what is known about habitat requirements for embryos is extrapolated from laboratory studies. Naturally spawned pallid sturgeon eggs become adhesive 1 to 3 minutes after fertilization (Dettlaff et al. 1993) and presumably fall through the water column to affix to solid substrate such as rock (DeLonay et al. 2016). The relative importance of turbidity for the deposition, fertilization, and hatch of pallid sturgeon embryos is unknown (DeLonay et al. 2016). It is also unknown if predation is a threat to pallid sturgeon embryos (DeLonay et al. 2016).

A free embryo is a developing fish that no longer resides within the egg membrane. This life stage lasts 8 to 12 days post-hatch and covers the period from hatch until the larval fish begins feeding (DeLonay et al. 2016). Studies to date indicate: (1) pallid sturgeon free embryos drift and disperse downstream at a rate slightly less than mean water column velocity; (2) downstream drift and dispersal occur during day and night; (3) duration of the free embryo drift period depends on water temperature and rate of development; and (4) free embryos will drift and disperse several hundred kilometers during development into exogenously (i.e. external) feeding larvae, with total drift distance a function of water temperature, development rate, and velocity conditions in the river channel. Drifting free embryos use up their yolk sac and develop swimming ability, after which they “settle” into environments conducive to feeding, growth, and survival. The larval life stage is a developing fish without a yolk, feeding exogenously (i.e., it has consumed its yolk sac and must now feed externally). The period of transition from endogenous (growing or produced by growth from deep tissue) to exogenous feeding is considered critical because the larvae must find sufficient food or it will starve. Larval pallid sturgeon have been reported to consume the larvae and pupae of Dipterans (mainly from the family Chironomidae (i.e., midges) and Ephemeroptera nymphs (i.e., mayflies); DeLonay et al. 2016).

The juvenile life stage consists of sexually immature fish and lasts until the fish enter their first reproductive cycle. Diet composition plays a large role in the growth of juvenile pallid sturgeon to adult (Grohs et al. 2009), with chironomids (Order: Diptera) and mayflies (Order: Ephemeroptera) serving as important components of the early juvenile diet (Sechler 2010; Sechler et al. 2013). Pallid sturgeon diets shift from macroinvertebrates to fish as they grow. Of the food eaten by juvenile pallid sturgeon between 350 and 500 mm fork length, 57 percent was fish, whereas fish made up 90 percent of the diets of juvenile pallid sturgeons longer than 500 mm fork length (Gerrity et al. 2006; Grohs et al. 2009). Isotope analyses of pectoral spines support gut analyses and indicate that the diet shift of juvenile pallid sturgeon from invertebrates to fish likely occurs at or before 500 mm fork length—well before pallid sturgeon reach reproductive maturity (French 2010). Limited prey sources increase mortality and may suppress growth in surviving juveniles (Deng et al. 2003; DeLonay et al. 2009). No clear relationship has been documented between abiotic factors (e.g., water temperature) and pallid sturgeon recruitment, but early diet and growth are hypothesized to affect recruitment into adult spawning populations (DeLonay et al. 2009; Sechler 2010).

3.7.1.2. Gray Bat

The gray bat was federally listed as endangered in 1979 due to declining populations. The range of the gray bat is geographically limited to the limestone karst areas of the southeastern United States. This species primarily occurs in Alabama, northern Arkansas, Kentucky, Missouri, and Tennessee although few gray bats also occur in northwestern Florida, western Georgia, southeastern Kansas, southern Indiana, southwestern Illinois, northeastern Oklahoma, northeastern Mississippi, western Virginia, and western North Carolina. The gray bat is identifiable by its uniform grayish-brown fur which is dark gray following

their molt and then lightens to a rusty brown in the summer. This species is most easily identified and distinguished from other closely related bat species by its wings that attach to the ankle and not the base of the toes. The gray bat also has a distinct notch on the inside curve of each claw (MDC 2019).

Gray bats occupy caves in limestone karst regions within its range during both the summer and the winter. In the winter, these bats hibernate in deep, vertical cold caves or mines that trap large volumes of cold air (USFWS 2019a). Hibernacula for this species often have multiple entrances and maintain temperatures between 5 and 9°C (41 and 48.2°F) with a range of 1 to 4°C (33.8 to 39.2°F) being preferable. During the summer, females roost in warmer caves ranging in temperature from 14 to 25°C (57.2 to 77°F) with proximity to water where they can forage (USFWS 2006). Gray bats mate in the fall when males and females arrive at the hibernacula. Female gray bats begin hibernating in early fall following copulation, store the sperm through the winter and become pregnant in spring after emerging from hibernation. Male gray bats remain active after the females enter hibernation until early November, when they also begin to hibernate. Females give birth to one pup in late May or early June after a 64-day gestation period and form large maternity colonies in caves with domed ceilings. Gray bats are dependent on aquatic insects, specifically, mayflies, caddisflies, and stoneflies; and use water features and forested riparian corridors for foraging and travel. Due to this foraging need, maternity colonies are usually within proximity to prime feeding areas near large reservoirs or rivers (USFWS 2006).

Human disturbance, habitat loss and degradation, cave commercialization, and improper gating continue to threaten the gray bat. The continued spread of white-nose syndrome also poses a threat to this species, as is the case with many bats. The gray bat is vulnerable to disturbance due to their narrow habitat requirements and high density of cave occupancy. Disturbance during hibernation reduces energy stores and disturbance during the roosting period startles mothers which could cause potential harm to the pups. Caves within the gray bat range have been flooded from reservoir creation which forces the bats out in search of another suitable cave which may be difficult. Commercialization of caves also forces bats out and alters the conditions that make it suitable habitat for gray bats (USFWS 2019a).

3.7.1.3. Northern Long-eared Bat

The northern long-eared bat was listed as a threatened species under ESA in 2015 (80 FR 17974). This small bat species occurs across much of the eastern and north central United States, encompassing 37 states and all Canadian provinces from the Atlantic coast west to the southern Northwest Territories and eastern British Columbia. During the summer months, the northern long-eared bat roosts underneath bark or in cavities of a variety of tree species, both live and dead, and may roost individually or in colonies. Summer roosting sites may also include caves, mines, or human-made structures, such as barns, other buildings, utility poles, window shutters, and bat houses (80 FR 17974). During the winter, the northern long-eared bat inhabits large caves or mines known as hibernacula (Caceres and Pybus 1997). Foraging habitat consists of forested areas or forested edges along rivers and lakes. Northern long-eared bats feed at dusk preying on moths, leafhoppers, caddisflies, and beetles while in flight or by gleaning insects from vegetation (USFWS 2019b).

The northern long-eared bat was placed on the Endangered Species List due to severe impacts of white-nose syndrome, a fungal disease that has caused massive population declines in some portions of the species range (81 FR 1901). Other threats include habitat fragmentation, destruction, and modification from logging, oil/gas/mineral development, and wind energy development. Disturbances of hibernacula caused by recreational caving activities have also been documented as a potential threat to the northern long-eared bat (78 FR 61046). In January 2016 the USFWS published a Final 4(d) Rule which provides an exemption from incidental take restrictions for northern long-eared bats occurring in areas not yet affected by white-nose syndrome (81 FR 1901). The of the state of Missouri is within the white-nose

syndrome zone per the Final 4(d) Rule. Thus, individuals in the area are subject to full protection under ESA.

3.7.1.4. Indiana Bat

The Indiana bat is listed as an endangered species under the ESA. This species was listed as in danger of extinction in 1967 and was grandfathered in under the ESA in 1973 (USFWS 2007). The range of the Indiana bat spans most of the eastern half of the United States, but the population is largely concentrated in southern Indiana. The Indiana bat is similar in size to the northern-long eared bat and has many of the same habitat requirements. However, the Indiana bat requires hibernacula with cooler temperatures than those used by the northern long-eared bat. The Indiana bat is more selective with roosting sites, showing preference for trees that are dying or dead, and has been found to select trees by size, species, and surrounding canopy cover (USFWS 2007). Like the northern long-eared bat, foraging habitat for the Indiana bat consists of forested areas or forested edges along rivers and lakes. Indiana bats feed while in flight on a variety of flying insects along rivers, lakes, and uplands. This species consumes up to half of its body weight in insects daily (USFWS 2019c). Threats to this species include loss or alteration of cave and forest habitats and human disturbance of hibernating individuals (USFWS 2007).

3.7.1.5. Bald Eagle

Although no longer listed under the Endangered Species Act, the bald eagle is protected by the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. The bald eagle is commonly found as both a resident population and in higher concentrations as winter migrants along the lower Missouri River. Bald eagles commonly nest along the Missouri River. Bald eagles use large trees along the Missouri River for nesting, roosting, and foraging perches. Bald eagles primarily feed on fish and migratory waterfowl.

3.7.2. Environmental Consequences

Under the No Action alternative, there would be no potential for impacts to pallid sturgeon, federally listed bat species, or bald eagles from construction activities. Some trees suitable for roosting by federally listed bats or perch sites for bald eagles would be lost due to continued bank erosion.

USACE has determined that the proposed action may affect but would not likely adversely affect pallid sturgeon. Pallid sturgeon (adults and juveniles) occur throughout the Missouri River and could be present in proximity to revetments, dikes, sills, and kickers, however the benthic nature of pallid sturgeon suggests the probability of pallid sturgeon occupying the actual physical structures is low and any effect from construction of repairs would be negligible. Construction activities would result in short-term disturbance, localized increases in turbidity, and may generate unnatural noise levels. It is anticipated that pallid sturgeon would immediately move away from the construction location once equipment was mobilized to the site and activities such as placement of rocks began to occur. Short-term and localized turbidity increases generated from maintenance activities are likely to be well within historic high turbidity levels of the Missouri River. Noise attenuates through water and dissipates when it encounters land. Thus, in a meandering river, the distance that noise would travel is limited to the first bend upstream and downstream of the construction area.

Two of the AOCs (Lisbon and Jameson) include construction of a bendway weirs along outside revetted bends. Lower Missouri River pallid sturgeon have been documented to spawn in deep, turbulent, fast water on the outside of river bends, over revetted banks or bedrock (DeLonay et al. 2014; Jacobson et al. 2016). Information from drift studies (Kynard et al., 2002, 2007; Braaten et al., 2008, 2010, 2012), indicates that most pallid sturgeon free embryos drift in the lower 0.5 m (1.6 ft) of the water column, but a

few will be caught in the upper portions of the water column, depending on turbulence and secondary currents (Braaten, personal communication 2015). The vast majority of pallid sturgeon free embryos drift in or adjacent to the thalweg where velocities are high. Although a few free embryos will drift into regions of lower velocity flow (for example, along inside bends), most will be concentrated in the higher velocity regions and adjacent to outside bends. Prior to entering the drift there also could be a very brief time in which free embryos/larvae could occupy revetted banks. Although the probability is low, placement of rock along outside, revetted bends could adversely affect adult pallid sturgeon, eggs, and/or free embryo/larvae if the activity occurred while pallid sturgeon were present and actively spawning or exhibiting reproductive behaviors (spawning site selection, spawning aggregation, etc.).

Probable spawning was documented at the Lisbon bend in 2011 (Delonay et al. 2016). Although monitoring to date has not identified important spawning site(s) based on evidence of spawning site fidelity linked with successful spawning, USACE would stipulate that construction of the bendway weirs at these locations not occur between May 1 and June 15 to avoid potential for impacts.

USACE has determined that the proposed action may affect but would not likely adversely affect federally listed bats. Construction activities that require tree clearing would have potential to affect suitable bat habitat. This impact would be minimal because most of the work would be accomplished by floating plant on the river. However, some construction would require land access and associated tree clearance, such as the flow control structure at Lisbon chute, which was discussed previously. USACE would comply with established seasonal tree clearing restrictions for federally listed bats. Any tree clearing would occur between November 1 and March 31 to avoid impacts to spring/summer roosting and maternity colonies of federally listed bats.

The potential to affect bald eagles would occur primarily if nesting activity was occurring in the immediate vicinity of construction activities. Disturbance to bald eagles along the Missouri River is not anticipated because of the Proposed Action. If bald eagle nesting activity is observed in the area of construction activities, USACE would contact the USFWS to determine if any measures are necessary at a location to avoid disturbance. Restricting tree clearance for Federally- listed bats would also minimize impacts to migratory birds because the nesting season in Missouri is generally March 1 to August 31. Should vegetation clearing be required during the nesting season, nest surveys would be conducted to avoid potential injury to eggs or nestlings.

3.8. Cultural Resources

3.8.1. Affected Environment

An archeological background review was conducted of the area of potential effect (APE), the Missouri River navigational channel and associated natural chutes, using information from the MoDNR Archaeological Viewer (on-line); National Register of Historic Places on-line (NRHP); Natural Resources Conservation Service Web Soil Survey (online); USACE maps of historic Missouri River channels; the USACE Abandoned Shipwrecks on Missouri River Channel Maps of 1879 and 1954; and other pertinent cultural resource documents on file at the USACE NWK office. A number of Missouri River boat wrecks are mapped within historic channels. However, it is unlikely that any wrecks are within the current navigation channel. First, the mapped locations are informed estimates of where ships sank by two researchers, which is why there are often two different locations for every wreck; neither is considered highly accurate. Second, many wrecks were salvaged or removed from the navigation channel for safety and economic reasons. Third, any remains within the current channel would have been destroyed by past dredging or the self-scouring nature of the river. No other cultural resource types are mapped or believed present within the navigation channel.

The Car of Commerce chute has been in the same location since at least 1928 and was crossed by other channels in the 100 years before 1928; thus, the edges of the chute consist of recent alluvium with little chance for prehistoric or early historic sites. Pelican Island Natural Area, on either side of the chute, has been surveyed and no cultural resource sites were identified. The only sites identified within a one-mile radius are in the uplands and would not be affected by the repair project. The mapped locations of steamboat wrecks are all in the main channel over a half-mile to the north except for the eponymous “Car of Commerce” steamboat wreck mapped 2.5 miles upstream in the chute.

The Lunch Island chute area has been crossed by the Missouri River channel in the past 200 years and so contains recent alluvium with little chance for prehistoric or early historic sites. The chute has been in this general location since around 1894 and channel scars indicate an active floodplain in this location. The only sites identified within a one-mile radius are in the uplands and would not be affected by the repair project. Mapped locations of steamboat wrecks are in the older channels at least a half mile upstream and downstream.

Unlike the other natural chutes, the Lisbon chute is relatively recent, having formed during or after the 1993 flood. The location of the proposed flow control structure has been crossed by former channels. Topographic maps from 1947 and 1971 and aerial images, especially those on Google Earth taken after the 1993 flood, show an area that is covered with small channels and channel scars that indicate an active floodplain and not a stable landform. No houses are shown on this floodplain on the 1947 or 1971 topographic maps, but houses are shown on the 1896 Saline County plat map in the southwest portion of Section 18. Those houses were crossed by the changing river and were no longer in place by 1924 when USACE maps were drawn from aerial photography. The proposed flow control structure is in one of the swales created, presumably, when the Missouri River moved to its 1924 position. Few surveys have occurred in the area and only a few cultural resources have been identified in the uplands. Mapped steamboat wrecks are indicated in the main channel 2.5 miles to the north and 2 miles to the south at Arrow Rock.

3.8.2. Environmental Consequences

The No Action alternative would have no effect on any cultural resource in or adjacent to the project area.

The Missouri State Historic Preservation Office (SHPO) has concurred with the USACE determination that no historic properties will be affected by the proposed action because construction activities would be limited to areas of recent accretion within the navigation channel or natural chutes (Appendix C). Given that the navigation channel is maintained to be hazard free, has been subject to repeated past dredging activity, and was designed to be self-scouring, it is unlikely that any remains of shipwrecks are present within the APE. It is very unlikely that the chutes repairs would affect historic properties. No other cultural resource is mapped within the APE. If in the unlikely event that archeological materials are discovered during project construction, work in the area of discovery will cease and the discovery investigated by a qualified archeologist. The findings on the discovery would be coordinated with the SHPO and federally recognized Native American Tribes. Appendix C includes SHPO coordination letters.

3.9. Recreation

3.9.1. Affected Environment

The Missouri River is used recreationally for fishing, boating, canoe/kayaking, and camping.

3.9.2. Environmental Consequences

The No Action alternative would have no impacts on recreation because no construction activities would be conducted.

The Proposed Action would have minor temporary adverse impacts on recreation from physical and noise disturbances during construction activities. There would be no long-term adverse impacts to the recreational experience due to changes in aesthetics. Depending on the final design height of the flow control structures at the lower ends of the Lisbon and Car of Commerce chutes, recreational boating access could be restricted at most flows. As stated previously and based on input from MDC, the Car of Commerce structure design would minimize boater access impacts to the maximum extent practicable.

3.10. Flood Risk

3.10.1. Affected Environment

There is an extensive flood risk management system (i.e., levees and dams) along the Missouri River. According to Executive Order 11988, each agency shall provide leadership and shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health, and welfare, and to restore and preserve the natural and beneficial values served by floodplains. USACE has a responsibility to evaluate the potential effects of any actions it may take in a floodplain, and to consider flood hazards in project planning.

3.10.2. Environmental Consequences

The No Action alternative would have no change to existing flood risk because no repairs would be constructed. In some locations, this could lead to a long-term adverse impact if ongoing bank erosion were to impact an existing levee or other flood risk management infrastructure.

Under the Proposed Action, all the repairs would involve structures that are below flood stage and would still allow flood flows to pass through the naturally occurring chutes. Within the main channel, there might be slight increase of stage heights when stages are above CRP but below the tops of the structures as more flow is excluded from the chutes and directed to the main channel at those stages. However, once the structures are overtopped (before reaching flood stage) the chutes would begin passing flow again, and it is unlikely that there would be adverse changes in water surface at, or above, flood stage. As a result, no adverse impacts to flood risk are anticipated.

3.11. Compliance with Environmental Laws

Table 3-1 summarizes the status of environmental compliance for the Proposed Action to date. Several activities are ongoing, and some may continue beyond the signing of a NEPA decision document. If it is determined that land access is necessary to construct flow control structures at the Lisbon and Car-of-Commerce chutes, Special Use Permits would be requested from the USFWS and MDC, respectively (Appendix D).

Table 3-3. Compliance with Environmental Quality Statutes.

Federal Policy	Compliance
Archeological Resources Protection Act, 16 U.S.C. 470, et seq.	Full Compliance
Bald and Golden Eagle Protection Act of 1940, <u>16 U.S.C. 668-668d</u> , et seq.	Full Compliance
Clean Air Act, as amended, 42 U.S. C. 7401-7671g, et seq.	Full Compliance
CWA (Federal Water Pollution Control Act), 33 U.S.C. 1251, et seq.	On-going
Coastal Zone Management Act, 16 U.S.C. 1451, et seq.	Not Applicable
Endangered Species Act, 16 U.S.C. 1531, et seq.	On-going
Environmental Justice (Executive Order 12898)	Full Compliance
Estuary Protection Act, 16 U.S.C. 1221, et seq.	Not Applicable
Farmland Protection Policy Act, 7 U.S.C. 4201, et seq.	Full Compliance
Federal Water Project Recreation Act, 16 U.S.C. 4601-12, et seq.	Full Compliance
Fish and Wildlife Coordination Act, 16 U.S.C. 661, et seq.	On-going
Floodplain Management (Executive Order 11988)	Full Compliance
Invasive Species (Executive Order 13122)	Full Compliance
Land and Water Conservation Fund Act, 16 U.S.C. 4601-4, et seq.	Not Applicable
Marine Protection Research and Sanctuary Act, 33 U.S.C. 1401, et seq.	Not Applicable
Migratory Bird Treaty Act, as amended, 16 U.S.C. 703-712	Full Compliance
National Environmental Policy Act, 42 U.S.C. 4321, et seq.	On-going
National Historic Preservation Act of 1966, as amended, 16 U.S.C. 470a, et seq.	On-going
Protection & Enhancement of the Cultural Environment (Executive Order 11593)	Full Compliance
Protection of Wetlands (Executive Order 11990)	Full Compliance
Rivers and Harbors Act, 33 U.S.C. 403, et seq.	Full Compliance
Watershed Protection and Flood Prevention Act, 16 U.S.C. 1001, et seq.	Full Compliance
Wild and Scenic Rivers Act, 16 U.S.C. 1271, et seq.	Not Applicable

Notes: Not applicable – No requirements for the statute are required

Ongoing – Activities to comply with the regulation are in process

Full Compliance – The project has met all anticipated requirements of the statute

Noncompliance – Violation of a requirement of the statute

4.0 Agencies and Persons Consulted

CEQ Regulations §1501.5 states that an EA should include a listing of agencies and persons consulted. In preparation of this EA and through the NEPA process, USACE consulted with the following agencies and persons:

- Absentee-Shawnee Tribe of Indians of Oklahoma
- Delaware Nation
- Delaware Tribe of Oklahoma
- Eastern Shawnee Tribe of Oklahoma
- Iowa Tribe of Kansas and Nebraska
- Iowa Tribe of Oklahoma
- Kansas Department of Health and Environment
- Kansas Department of Wildlife, Parks, and Tourism
- Kansas State Historic Preservation Office
- Kaw Nation
- Miami Tribe of Oklahoma
- Missouri Department of Conservation
- Missouri Department of Natural Resources
- Missouri Federal Assistance Clearinghouse
- Missouri State Historic Preservation Office
- Omaha Tribe
- Osage Nation
- Otoe-Missouria Tribe
- Pawnee Nation of Oklahoma
- Ponca Tribe of Nebraska
- Ponca Tribe of Oklahoma
- Sac and Fox Tribe of the Missouri in Kansas and Nebraska
- Sac and Fox Tribe of the Mississippi in Iowa
- Sac and Fox Nation of Oklahoma
- Shawnee Tribe
- U.S. Environmental Protection Agency, Region 7
- U.S. Fish and Wildlife Service, Missouri Ecological Services Field Office
- Wyandotte Nation

USACE has prepared this draft EA in accordance with NEPA. A public notice will be issued by USACE announcing the availability of this draft EA and draft Section 404(b)(1) Evaluation for a 30-day public comment period and public interest review. The public notice will be distributed as appropriate to notify the affected public of the availability of the draft EA. During the public comment period, the Public Notice and draft documents are available on the NWK Public Notice website at:

<http://www.nwk.usace.army.mil/Media/PublicNotices/PlanningPublicNotices.aspx>. All public and agency comments received during the public comment period and USACE responses will be included in the final EA. The NEPA process will conclude with either signing of a FONSI, the draft of which is found at the beginning of this document, or with a determination that an environmental impact statement is required.

5.0 List of Preparers

Name	Education	Years of Experience/ Area of Expertise	Responsibilities
Michael Snyder	B.A. Biology M.S. Biological Sciences	20 years/NEPA compliance and natural resources planning	Primary author of EA, compilation of main report, and 404(b)(1) evaluation.
Gina Powell	Ph.D., Archeology	28 years/North American Archaeology	Cultural Resources lead responsible for Section 106 compliance.

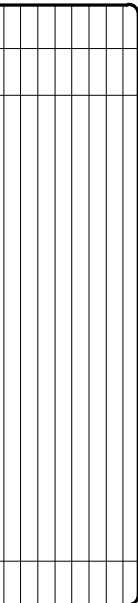
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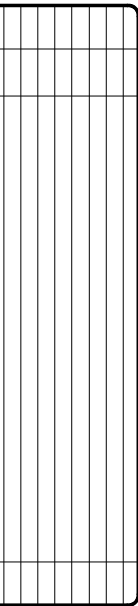
Appendix A
Navigation Areas of Concern
Conceptual Design Maps



U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS KANSAS CITY, MISSOURI	Drawn by: T. BROWN	G. FIGUEROA TORO	G. FIGUEROA TORO	JANUARY 2021
		G. FIGUEROA TORO		
		Submitted by: M. CHAPMAN		

MISSOURI RIVER BASIN
ST. CHARLES COUNTY, MISSOURI
POST FLOOD DAMAGE REPAIR
PELICAN-LITTLES PROJECT

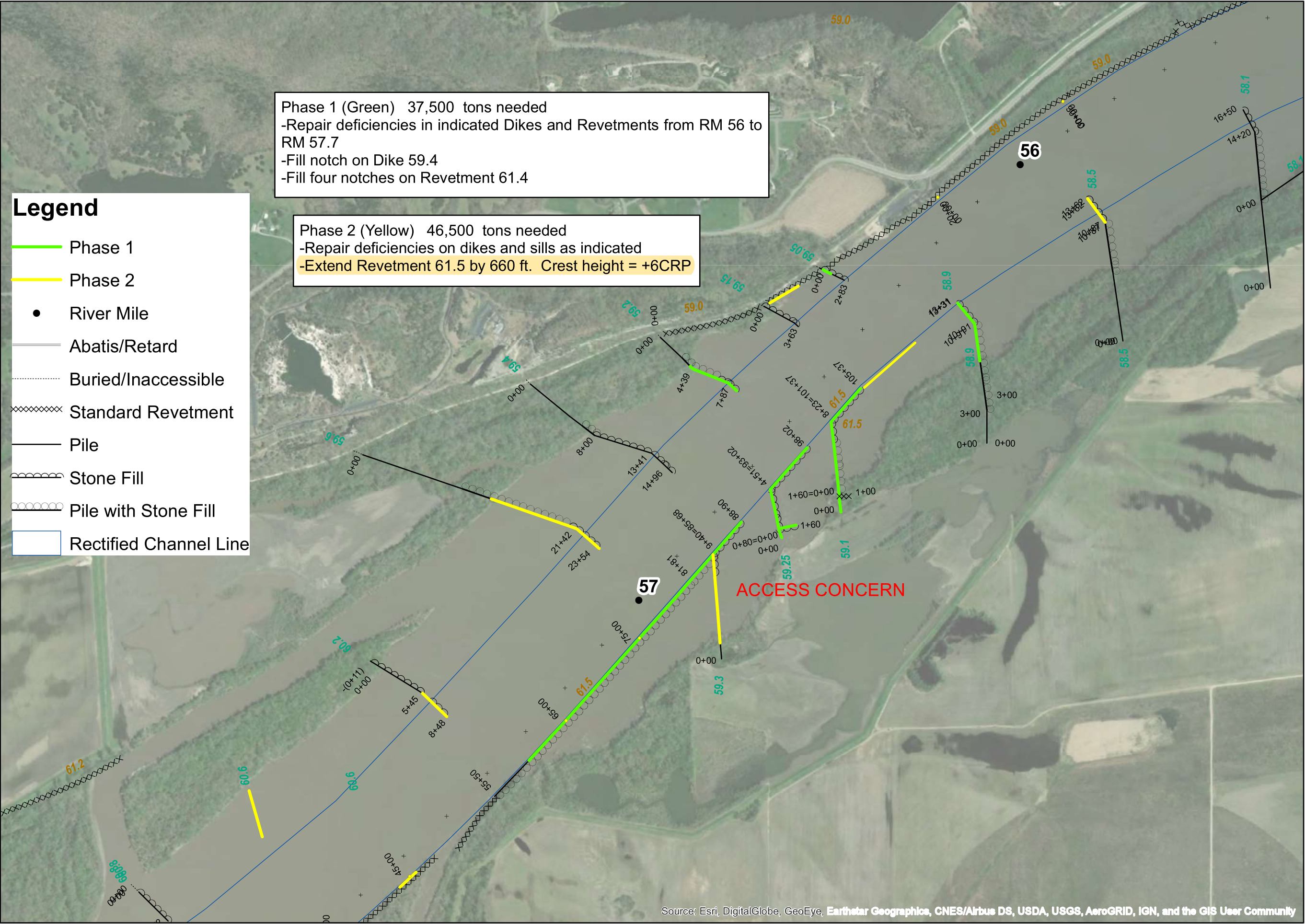
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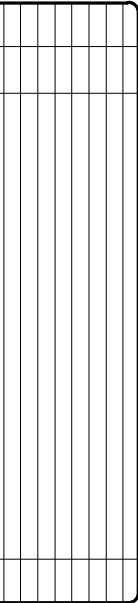
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RM 25-BRYAN ISLAND/
ST. CHARLES BEND

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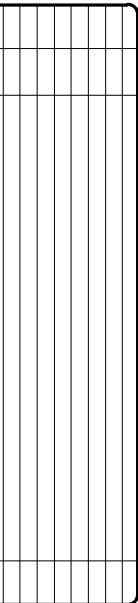




U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS KANSAS CITY, MISSOURI	Drawn by: T. BROWN	D. MORRIS	Submitted by: M. CHAPMAN	AUGUST 2020
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MISSOURI RIVER BASIN
FLOOD DAMAGE REPAIR
AREAS OF CONCERN (AOC)

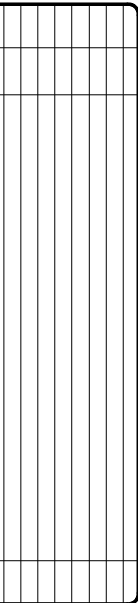
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U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS KANSAS CITY, MISSOURI	Drawn by: T. BROWN	AUGUST 2020
	D. MORRIS	
	Submitted by: M. CHAPMAN	

MISSOURI RIVER BASIN
CALLAWAY COUNTY, MISSOURI
FLOOD DAMAGE REPAIR
AXVASSE AOC PROJECT

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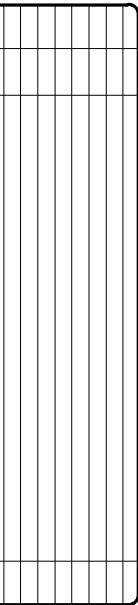


U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS KANSAS CITY, MISSOURI	Drawn by: T. BROWN	18 FEBRUARY 2021
	Submitted by: M. CHAPMAN	

**RM 179- TADPOLE CHUTE
AND SEARCYS IRC**

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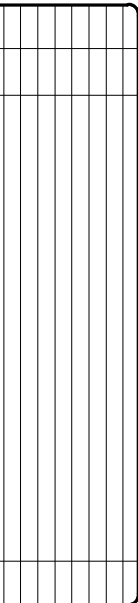


U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS KANSAS CITY, MISSOURI	Drawn by: T. BROWN	D. SCHAEFER	AUGUST 2020
		D. MORRIS	
		Submitted by: M. CHAPMAN	

FRANKLIN ISLAND-RM 194
SITE PLAN

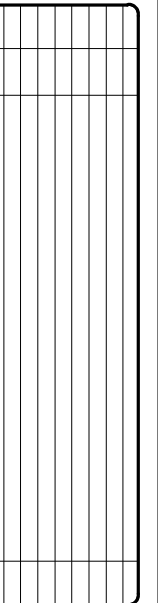
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U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS KANSAS CITY, MISSOURI	Drawn by: D. SCHRAUER	FEBRUARY 2021
	D. MORRIS	
	Submitted by: M. CHAPMAN	

POST FLOOD AOC REPAIR
RM213 - JAMESON ISLAND



U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS KANSAS CITY, MISSOURI	Drawn by: D. MORRIS	Submitted by: M. CHAPMAN	FEBRUARY 2021
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POST FLOOD A/C REPAIR
RM217 - LISBON

Appendix B

Section 404(b)(1) Evaluation

**Missouri River Bank Stabilization and Navigation Project
2019 Flood Repairs
Lower Missouri River (River Miles 0.0 to 498.4)**

Section 404(b)(1) Evaluation

1. Introduction

This Section 404(b)(1) Evaluation is for non-routine repairs to the Missouri River Bank Stabilization and Navigation Project (BSNP) resulting from 2019 flood damage. The USACE Proposed Action is to implement non-routine repairs to the BSNP primarily in response to damages sustained from the 2019 flood events. The repairs would be focused within 17 areas of concern (AOCs) located along the length of the Missouri River within the USACE NWK area of responsibility from RM 498.4 at Rulo, Nebraska to RM 0.0 at the mouth near St. Louis, Missouri. The purpose of the Proposed Action is to provide for Congressionally authorized Missouri River BSNP channel dimensions that provide for safe and efficient use of the navigation channel. The Proposed Action is needed because the damage to the river control structures has created a situation where sufficient flow is not being concentrated into the navigation channel for self-scouring to provide the authorized 9-foot channel depth. Damaged river structures are overtopped by river flows more frequently than designed and become more susceptible to accelerated rates of degradation, which reduces the overall reliability of the navigation channel. Such situations can result in economic losses and unsafe navigation. Additional background information regarding the proposed action can be found in Chapter 1 of the Environmental Assessment. This evaluation meets the requirements found in 40 CFR 230, Section 404(b)(1): Guidelines for Specification of Disposal Sites for Dredged and Fill Material.

2. Project Description

- a. Location:** The project (Proposed Action) is located at multiple locations along the lower Missouri River. Work is anticipated at 17 AOCs as identified in Table 1.

Table 1. Missouri River Bank Stabilization and Navigation Project Areas of Concern.

Area of Concern	River Mile (RM)	Estimated Quantity (tons)
Pelican/Little's	10	78,000
Bryan Island/St. Charles Bend	25	65,000
Daniel Boone Bridge	44	54,077
Augusta Bend	56	31,200
Lunch Island	92	83,500
Gasconade	104	12,500
Auxvasse Bend	122	6,800

Area of Concern	River Mile (RM)	Estimated Quantity (tons)
Smoky Waters/Rising Creek Bend	133	138,500
Providence	166	17,550
Tadpole Chute/Searcys Bend	179	5,000
Overton North	187	5,900
Franklin Island	194	14,400
Jameson Island	213	67,000
Lisbon	217	101,500
Upper Miami	262	23,800
Prunty	269	8,600
Baker's Bend	286	22,600
	Total:	735,927

b. General Description: A detailed description of the proposed action, including illustrations, is described in Chapter 2 and Appendix A of the Environmental Assessment. The proposed repairs at the AOCs include the following general management actions:

- Construction of new structures in the main channel.
- Modification of the height of structures in the main channel or in naturally occurring side channel chutes.
- Extension of the lengths of structures in the main channel or associated with naturally occurring side channel chutes.
- Addition of new flow control structures to manage flow or increase robustness of flow control in naturally occurring side channel chutes.
- Addition of bank protection.

In many cases, construction of a new structure is the only action that will permanently correct a navigation channel problem. The two most common structure types are dikes and revetments. Dikes are structures that typically extend from the bank into the river, perpendicular or nearly perpendicular to the flow. They constrict the river channel to the desired width and protect the bankline from erosion. Revetments are constructed parallel to the flow, either to establish and protect a desired bankline or to guide the flow along a desired alignment.

The proposed action also includes the addition of new flow control structures to manage flow or increase robustness of flow control in naturally occurring side channel chutes. As shown in Appendix A, this is proposed at Car of Commerce chute (RM 10), Lunch Island chute (RM 92), and Lisbon chute (RM 216). Raising of existing flow control structures within two naturally occurring side channel chutes associated with Little's Island (RM 10 and 11) is also proposed. USACE would coordinate with Missouri Department of Conservation (MDC) on design

details for the Car of Commerce chute control structure to mitigate concerns regarding boater access and fish passage to the maximum extent possible. In some cases, the riverward end of a dike must be extended to resolve a navigation problem. Navigation problems can develop in areas with a history of infrequent navigation problems in the past or in areas with no history of navigation problems. Usually, the length of the existing dikes in the problem area do not extend to the design channel width and the extensions serve to bring the channel width closer to design.

Bank protection, including revetment, bank paving, bankheads, and hardpoints, are used to prevent compromising or flanking of dikes and flow control structures, excessive widening, or channel avulsion. Hardpoints are also placed around dikes that have flanked and have been repaired to prevent the dike from flanking again. Hardpoints can also be used in areas where there is potential loss of bank stability that could impact flows in the navigation channel such as a natural chute that is meandering excessively.

Construction is typically completed by a water-based floating plant. The equipment that comprises a floating plant typically includes tow boats, a work barge, a spud barge, and excavator/track hoe. In this case, rock is delivered by truck to a barge and then transported by barge to the construction site. The excavator/track hoe is used to place rock to achieve the design specifications for each structure. It is anticipated that land access would be required to accomplish some of the proposed repairs. In this case, trucks would transport the rock directly to the construction site. Or rock may be transported by barge to an off-loading location where it would then be trucked the remaining distance to the construction site. Land access requires provision of access roads, which may require vegetation clearance and construction of temporary and/or permanent access roads. If access is required through private lands, USACE would obtain all necessary real estate easements or rights-of-way. If access is through existing public lands, USACE would work with the agency that owns the property to obtain all necessary permissions for land-based access. Access routes would be identified in a manner to minimize vegetation disturbance/clearance and to avoid sensitive areas such as wetlands.

- c. **Authority:** USACE was authorized to construct and maintain the BSNP under the authorities of the Rivers and Harbors Acts of 1912, 1925, 1927, 1935, and 1945.

3. Review of Compliance (§ 230.10 a-d)

- a. No practicable alternative to the Proposed Action would have a less adverse impact on the aquatic ecosystem while meeting the project objectives. Additional information on the impacts of various alternatives to waters of the U.S. can be found in Chapter 3 of the Environmental Assessment.
- b. The Proposed Action would not violate any applicable state water quality standards, or applicable toxic effluent standard or prohibition under Section 307 of the Clean Water Act. USACE has determined that the Proposed Action would result in determinations of “may affect, but not likely to adversely affect” for the pallid sturgeon, gray bat, Indiana bat, and northern long-eared bat. The proposed

action is not anticipated to jeopardize the continued existence of species listed as endangered or threatened under the Endangered Species Act of 1973, as amended, or result in the destruction or adverse modification of critical habitat. Furthermore, the Proposed Action would not violate the requirements of any federally designated marine sanctuary.

- c. The Proposed Action would not cause or contribute to significant degradation of waters of the United States. This includes any adverse effects on human health, life stages of organisms' dependent on the aquatic ecosystem, ecosystem diversity, productivity and stability, and recreational, aesthetic, and economic values.
- d. Appropriate and practical steps have been taken to minimize potential adverse impacts on the aquatic ecosystem.

4. Technical Evaluation Factors (Subparts C-F)

a. Potential Impacts on Physical and Chemical Characteristics of the Aquatic Ecosystem (Subpart C)

- 1) **Suspended particulates/turbidity:** Based on experience from other similar projects, the proposed plan would result in localized minor, short-term impacts to suspended particulates and an increase in turbidity during project construction. The proposed action would not violate any general criteria of the Missouri Water Quality Standards, 10 CSR 20-7.037(3) (A)-(H).
- 2) **Water:** The project would not result in any long-term adverse impacts to water quality.
 - a) **Salinity:** Not applicable
 - b) **Water Chemistry:** Minor, short-term, and localized effects to water chemistry (see below) would primarily include an increase in turbidity due to construction activities.
 - c) **Clarity:** A minor short-term increase in turbidity would potentially occur during construction of the projects that could impact clarity. Even at the increased level the clarity would be within baseline conditions of the Missouri River and therefore not expected to adversely impact native species.
 - d) **Color:** A minor short-term change in color is possible due to the potential increased turbidity. Like Clarity above, any color change would be greatest during construction and would quickly become unnoticeable within a short distance downstream. Any changes in color would be expected to be within the range that is typically found where natural erosion occurs along the river or out of tributaries during high flow events and is not expected to adversely impact native species or result in adverse aesthetic impacts.

- e) **Odor:** No impacts are anticipated
 - f) **Taste:** Not applicable
 - g) **Dissolved Gas Levels:** No changes to dissolved gas levels are anticipated.
 - h) **Nutrients:** Any alluvial sediments and associated nutrients that may be mobilized to construct the Proposed Action are materials deposited from river transport that are in temporary storage in the floodplain. Under natural conditions, the river would flood, rework, remove, and deposit these materials in a dynamic fashion. Any sediment and nutrients being remobilized are not a net addition to the system. This material, or its equivalent, would have been transported through the system by natural geomorphic processes in an unaltered river. This activity will not adversely affect life forms in the immediate project areas or in areas downstream.
 - i) **Eutrophication:** The Proposed Action would not result in any eutrophication to the Missouri River or other water bodies downstream.
- 3) **Current patterns and water circulation:** The proposed repairs would primarily reestablish current patterns and water circulation that were present prior to the flood damages of 2019.
 - 4) **Normal water fluctuations:** There are no anticipated changes to normal water fluctuations that would result from the Proposed Action. There would not be any significant change to existing water elevation on the Missouri River within the vicinity of the repairs.
 - 5) **Salinity Gradients:** The Proposed Action would not impact any salinity gradients. The Missouri River is a freshwater system and this would not change as a result of the project.

b. Potential Impacts to the Biological Characteristics of the Aquatic Ecosystem (Subpart D)

- 1) **Threatened and endangered species:** This project “may affect but is not likely to adversely affect” pallid sturgeon, gray bat, Indiana bat, and northern long-eared bat. See the discussion in Chapter 3 of the Environmental Assessment.
- 2) **Fish, crustaceans, mollusks, and other aquatic organisms in the food web:** The project would not result in significant adverse impacts to aquatic organisms. Minor, short-term impacts to the aquatic community may result from the smothering of immobile organisms, direct displacement of organisms, and an increase in turbidity, during project construction. The impacts may affect individual organisms in localized

areas of the Missouri River, but would not have a significant impact on the overall population of any species within the river system. Fish access to chutes would be flow-dependent and vary between and within years

- 3) **Other wildlife:** Wildlife associated with aquatic ecosystems includes resident and transient mammals, birds, reptiles, and amphibians. There would be minor, short-term impacts to these types of wildlife from construction activities. No significant adverse long-term impacts are anticipated.

c. Potential Impacts on Special Aquatic Sites (Subpart E)

- 1) **Sanctuaries and Refuges:** The proposed action includes work adjacent to units of the Big Muddy National Fish and Wildlife Refuge managed by the U.S. Fish and Wildlife Service, as well as proposed work at Lisbon chute, which is located on a unit of the Big Muddy NWR.
- 2) **Wetlands:** The Proposed Action may result in minimal wetland impact associated with access roads where construction cannot be completed by floating plant. In these cases, it is anticipated that Nationwide Permit 33 conditions would apply.
- 3) **Mud flats:** No mud flats would be impacted by the Proposed Action.
- 4) **Vegetated shallows:** No vegetated shallows would be impacted by the Proposed Action. Because of the velocity in the Missouri River, little to no rooted aquatic vegetation is located within the project areas.
- 5) **Coral reefs:** No coral reefs are found in the Missouri River.
- 6) **Riffle and pool complexes:** Because of the low gradient and sandy/silty nature of the Missouri River in the vicinity of the project sites, stable riffle and pool complexes do not typically exist.

d. Potential Effects on Human Use Characteristics (Subpart F):

- 1) **Municipal and private water supplies:** The project would not impact any municipal or private water supplies. The project is designed to provide service equal to or better than the previous configuration for commercial navigation on the Missouri River.
- 2) **Recreational and commercial fisheries:** The project would not affect the suitability of any recreational or commercial fisheries.
- 3) **Water-related recreation:** The project would not impair or destroy any resources which support recreation activities. There may be minor, short-term impacts to recreation during project construction due to restricted access. Long-term minor adverse impacts to recreation are anticipated from restricting access to the chutes by boat, kayak, or canoe during most of the year.

4) **Aesthetics:** The project may result in minimal impacts to the aesthetics of the areas as a result of project construction. This impact is expected to be beneficial.

5) **Parks, national and historic monuments, national seashores, wilderness areas, research sites, and similar preserves:** As previously mentioned, the proposed action includes work in and adjacent to units of the Big Muddy National Wildlife Refuge.

5. EVALUATION OF DREDGED OR FILL MATERIAL (Subpart G)

a. **General evaluation of dredged or fill material:** No dredging is proposed for this project.

6. ACTIONS TO MINIMIZE ADVERSE EFFECTS (SUBPART H)

Steps to minimize impacts would include non-structural BMPs such as keeping heavy construction equipment out of the waterway whenever possible, protecting construction materials from precipitation/flooding, having spill containment plans for construction equipment, and using materials that are free from contaminants.

7. FACTUAL DETERMINATIONS (§230.11)

A review of the information in items 4 thru 7 of this report indicates that there is minimal potential for long-term adverse environmental effects of the proposed fill. Additionally, there is not expected to be any adverse cumulative or long-term, secondary impacts as a result of the project.

8. FINDINGS (§230.12)

The proposed BSNP repairs for 2019 flood damages has been evaluated and determined to be in compliance with Clean Water Act Section 404(b)(1) guidelines, with the inclusion of appropriate and practical conditions to minimize pollution and adverse effects on the aquatic ecosystem.

Prepared by:

Michael Snyder
Environmental Resources Specialist
Environmental Resources Section

Date

Reviewed by:

Mr. Todd Gemeinhardt
Chief, Environmental Resources Section
Planning Branch

Date

Approved by:

William C. Hannan, Jr.
Colonel, Corps of Engineers
District Commander

Date

Appendix C

Cultural Resources Agency and Tribal Coordination

CULTURAL RESOURCE COMMENTS
Section 106 Review

CONTACT PERSON/ADDRESS:

U.S. Army Corps of Engineers
Kansas City District,
Attn: Gina Powell
601 East 12th Street, RM 402
Kansas City, MO 64103

Copied:

PROJECT:

Chute Repairs to 3 naturally occurring chutes

FEDERAL AGENCY:

USACE Kansas City District

COUNTY:

St. Charles, Warren, and Saline

The Missouri State Historic Preservation Office (SHPO) has reviewed the information submitted on the above referenced project. Based on this review, we have made the following determination:

☒

Adequate documentation has been provided as outlined in 36 CFR Section 800.11. After review of the initial submission, the project area has no known historic properties present and a low potential for the occurrence of cultural resources. SHPO concurs with your determination of **No Historic Properties Affected**.

☐

An adequate cultural resource survey of the project area has been previously conducted; therefore, SHPO concurs with your determination of **No Historic Properties Affected**.

☐

An adequate cultural resource survey has been conducted for this project titled, by . Based on this survey and its negative findings, SHPO concurs with your determination of **No Historic Properties Affected**.

PLEASE BE ADVISED THAT, IF THE CURRENT PROJECT AREA OR SCOPE OF WORK CHANGES, SUCH AS A BORROW AREA BEING ADDED, OR CULTURAL MATERIALS ARE ENCOUNTERED DURING CONSTRUCTION, APPROPRIATE INFORMATION MUST BE PROVIDED TO THIS OFFICE FOR FURTHER REVIEW AND COMMENT. Please retain this documentation as evidence of consultation with SHPO under Section 106 of the National Historic Preservation Act, as amended. SHPO concurrence does not complete the Section 106 process as federal agencies will need to conduct consultation with all interested parties.

By: Toni M. Prawl
Toni M. Prawl, Ph.D., Deputy State Historic Preservation Officer

April 23, 2021
Date

MISSOURI DEPARTMENT OF NATURAL RESOURCES
STATE HISTORIC PRESERVATION OFFICE
P.O. Box 176, Jefferson City, Missouri 65102

For additional information, please contact Amy Rubingh, (573) 751-4589.

Please be sure to refer to the project number: 043-MLT-20



DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, KANSAS CITY DISTRICT
601 E. 12TH STREET, 635 FEDERAL BLDG
KANSAS CITY, MO 64106-2824

Date: April 1, 2021

Dr. Toni Prawl
Director and Deputy State Historic Preservation Officer
State Historic Preservation Office
Department of Natural Resources
P.O. Box 176
Jefferson City, MO 65102-0176

Dear Dr. Prawl:

The U.S. Army Corps of Engineers, Kansas City District (Corps) is planning non-routine flood repairs to the Missouri River Bank Stabilization and Navigation Project (BSNP) primarily in response to damages sustained from the 2019 flood events. The proposed repairs include improvements at three naturally occurring chutes in the lower Missouri River in St. Charles, Warren, and Saline counties. The nature of the repairs and improvements at the naturally occurring chutes are similar to those that are ongoing at Missouri River Recovery Program (MRRP) chutes, which were described in the July 2020 Environmental Assessment (EA) entitled "Final Environmental Assessment for Chute Repairs and Modifications from 2019 Flood Damages." In that document, repairs to these Corps-constructed chutes were described. Your office concurred (in emailed correspondence dated July 13, 2020) with our determination of no historic properties affected. In addition, repairs to structures in the main navigation channel, such as dikes and revetments, are also planned. Those repairs have no potential to affect historic properties since they are all in the maintained navigation channel and will be repaired from floating construction plants.

This letter initiates consultation with your office regarding the implementation of emergency repair to the three naturally occurring Missouri River chute projects under Section 106 of the National Historic Preservation Act. Since they are natural, no previous consultation has been performed.

Proposed repairs to the three chutes (Figure 1; Car of Commerce, Lunch Island, and Lisbon) include rebuilding or adding bank armoring and adding control structures that allow water flow and retain water flow at certain heights. Access to the construction sites will either be by floating material and machinery to the island or chute entrance and traveling overland (Car of Commerce and Lisbon) or via floating construction plant (Lunch Island).

The Kansas City District Archeologist has reviewed the proposed project area using records on the Missouri Archaeological Viewer (online); Natural Resources Conservation Service Web Soil Survey (online); online National Register of Historic

Places (NRHP); historic plat maps; steamboat wreck maps; and in-house Corps levee repair records. No recorded cultural resources sites are located within any the proposed project repair areas. In a few cases, described below, there are cultural resources sites located within a 1-mile radius of the project area but none would be affected by the repair projects. In general, areas that are shown to have been within former channels of the Missouri River are now filled with accreted deposits that have no potential to hold prehistoric resources or historic resources older than the channel. It is possible that these old channels hold the remains of wrecked steamboats or have historic sites on or near the surface.

Car of Commerce Chute, St. Charles County

The Car of Commerce chute project consists of adding a structure and bankheads (armoring) near the downstream end of the chute (Figure 2). The Car of Commerce chute has been in the same location since at least 1928 and was crossed by other channels in the 100 years previous to 1928; thus, the edges of the chute consist of recent alluvium with little chance for prehistoric or early historic sites (Figure 3). Pelican Island County Park, on either side of the chute, has been surveyed and no cultural resource sites were identified. The only sites identified within a one-mile radius are in the uplands and will not be affected by the repair project. The mapped locations of steamboat wrecks are all in the main channel over a half-mile to the north except for the eponymous “Car of Commerce” steamboat wreck mapped 2.5 miles upstream in the chute. It is very unlikely that the Car of Commerce chute repairs will affect historic properties.

Lunch Island, Warren County

The Lunch Island chute project consists of a structure and bankheads (armoring) near the downstream end and a closure structure at the upstream end (Figure 4). The chute area has been passed over by the Missouri River channel in the past 200 years and so contains recent alluvium with little chance for prehistoric or early historic sites (Figure 5). The chute has been in this general location since around 1894 and channel scars indicate an active floodplain in this location. The only sites identified within a one-mile radius are in the uplands and will not be affected by the repair project. Mapped locations of steamboat wrecks are in the older channels at least a half mile upstream and downstream. It is very unlikely that the chute repairs will affect historic properties.

Lisbon Island, Saline County

Unlike the other chute project areas, the Lisbon chute is relatively recent, having formed during or after the 1993 flood. The proposed project is a structure and bankheads (armoring) near the downstream end. The closure structure at the upstream end already exists (Figure 6). The project area has been crossed by former channels (Figure 7). Topographic maps from 1947 and 1971 and aerial images, especially those on Google Earth taken after the 1993 flood (Figure 8), show an area that is covered with small channels and channel scars that indicate an active floodplain and not a stable landform. No houses are shown on this floodplain on the 1947 or 1971 topographic maps, but houses are shown on the 1896 Saline County plat map in the southwest portion of Section 18 (Figure 9). Those houses were run over by the changing river and

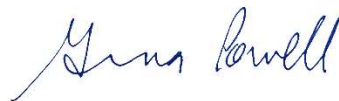
no longer in place by 1924 when Corps maps were drawn from aerial photography (Figure 10). The proposed chute structure is located in one of the swales created, presumably, when the Missouri river moved to its 1924 position.

Few surveys have occurred in the area and only a few cultural resources have been identified in the uplands. Mapped steamboats wrecks are indicated in the main channel 2.5 miles to the north and 2 miles to the south at Arrow Rock. In the specific case of the Lisbon chute, it is proposed that the construction site be accessed by barging equipment and material from the river instead of traveling overland, reducing the impact to natural resources. It is very unlikely that the chute repairs will affect historic properties in this highly flood-disturbed area.

For the above-mentioned reasons, the undertakings in all three project areas would result in no effect on historic properties listed or eligible for listing on the National Register of Historic Places. Therefore, we request your concurrence with this recommendation. If, in the unlikely event that archeological materials are discovered during project construction, work in the area of discovery will cease, and the discovery investigated by a qualified archeologist. The findings on the discovery would be coordinated with your office and appropriate federally recognized Native American Tribes.

Thank you for your consideration in this matter. We would appreciate your efforts to notify us within 30 days of receipt of this letter preferably by email. If you have any questions or have need of further information, please contact Dr. Gina Powell, by email at Gina.S.Powell@usace.army.mil or by phone at (816) 389-2320.

Sincerely,

A handwritten signature in blue ink that reads "Gina Powell". The signature is fluid and cursive, with the first name "Gina" and last name "Powell" clearly distinguishable.

Dr. Gina Powell
Archaeologist

Enclosure

List of Tribes that received the letter on the following page:

- Delaware Nation
- Delaware Tribe
- Iowa Tribe of Kansas and Nebraska
- Iowa Tribe of Oklahoma
- Kaw Nation
- Miami Tribe of Oklahoma
- Missouri-Otoe Tribe
- Osage Nation
- Ponca Tribe of Nebraska
- Ponca Tribe of Oklahoma
- Quapaw Tribe of Oklahoma?
- Sac and Fox Tribe of the Missouri in Kansas and Nebraska
- Sac and Fox Tribe of the Mississippi in Iowa
- Sac and Fox Nation of Oklahoma
- Shawnee Tribe
- Absentee-Shawnee Tribe of Indians of Oklahoma
- Eastern Shawnee Tribe of Oklahoma
- Wyandotte Nation



DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, KANSAS CITY DISTRICT
601 E. 12TH STREET, 635 FEDERAL BLDG
KANSAS CITY, MO 64106-2824

April 1, 2021

SUBJECT: Missouri River Recovery Program emergency chute repairs

Dr. Andrea Hunter
Tribal Historic Preservation Officer
The Osage Nation, P.O. Box 779
Pawhuska, OK 74056

Dear Dr. Hunter:

The U.S. Army Corps of Engineers, Kansas City District (Corps) is planning non-routine flood repairs to the Missouri River Bank Stabilization and Navigation Project (BSNP) primarily in response to damages sustained from the 2019 flood events. The proposed repairs include improvements at three naturally occurring chutes in the lower Missouri River in St. Charles, Warren, and Saline counties. The nature of the repairs and improvements at the naturally occurring chutes are similar to those that are ongoing at Missouri River Recovery Program (MRRP) chutes, which were described in the July 2020 Environmental Assessment (EA) entitled "Final Environmental Assessment for Chute Repairs and Modifications from 2019 Flood Damages." In that document, repairs to these Corps-constructed chutes were described. In addition, repairs to structures in the main navigation channel, such as dikes and revetments, are also planned. Those repairs have no potential to affect historic properties since they are all in the maintained navigation channel and will be repaired from floating construction plants.

This letter initiates consultation with your office regarding the implementation of emergency repair to the three naturally occurring Missouri River chute projects under Section 106 of the National Historic Preservation Act. Since they are natural, no previous consultation has been performed.

Proposed repairs to the three chutes (Figure 1; Car of Commerce, Lunch Island, and Lisbon) include rebuilding or adding bank armoring and adding control structures that allow water flow and retain water flow at certain heights. Access to the construction sites will either be by floating material and machinery to the island or chute entrance and traveling overland (Car of Commerce and Lisbon) on previously disturbed routes or via floating construction plant (Lunch Island).

The Kansas City District Archeologist has reviewed the proposed project area using records on the Missouri Archaeological Viewer (online); Natural Resources Conservation Service Web Soil Survey (online); online National Register of Historic Places (NRHP); historic plat maps; steamboat wreck maps; and in-house Corps levee

repair records. No recorded cultural resources sites are located within any the proposed project repair areas. In a few cases, described below, there are cultural resources sites located within a 1-mile radius of the project area but none would be affected by the repair projects. In general, areas that are shown to have been within former channels of the Missouri River are now filled with accreted deposits that have no potential to hold prehistoric resources or historic resources older than the channel. It is possible that these old channels hold the remains of wrecked steamboats or have historic sites on or near the surface.

Car of Commerce Chute, St. Charles County

The Car of Commerce chute project consists of adding a structure and bankheads (armoring) near the downstream end of the chute (Figure 2). The Car of Commerce chute has been in the same location since at least 1928 and was crossed by other channels in the 100 years previous to 1928; thus, the edges of the chute consist of recent alluvium with little chance for prehistoric or early historic sites (Figure 3). Pelican Island County Park, on either side of the chute, has been surveyed and no cultural resource sites were identified. The only sites identified within a one-mile radius are in the uplands and will not be affected by the repair project. The mapped locations of steamboat wrecks are all in the main channel over a half-mile to the north except for the eponymous “Car of Commerce” steamboat wreck mapped 2.5 miles upstream in the chute. It is very unlikely that the Car of Commerce chute repairs will affect historic properties.

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Lisbon Island, Saline County

Unlike the other chute project areas, the Lisbon chute is relatively recent, having formed during or after the 1993 flood. The proposed project is a structure and bankheads (armoring) near the downstream end. The closure structure at the upstream end already exists (Figure 6). The project area has been crossed by former channels (Figure 7). Topographic maps from 1947 and 1971 and aerial images, especially those on Google Earth taken after the 1993 flood (Figure 8), show an area that is covered with small channels and channel scars that indicate an active floodplain and not a stable landform. No houses are shown on this floodplain on the 1947 or 1971 topographic maps, but houses are shown on the 1896 Saline County plat map in the southwest portion of Section 18 (Figure 9). Those houses were destroyed by the changing river and no longer in place by 1924 when Corps maps were drawn from aerial photography

(Figure 10). The proposed chute structure is located in one of the swales created, presumably when the Missouri river moved to its 1924 position.

Few surveys have occurred in the area and only a few cultural resources have been identified in the uplands. Mapped steamboats wrecks are indicated in the main channel 2.5 miles to the north and 2 miles to the south at Arrow Rock. It is very unlikely that the chute repairs will affect historic properties in this highly flood-disturbed area.

As cultural resource sites are very unlikely to occur within the project areas, the Corps has made the preliminary determination that the proposed projects will have no effect on historic properties. However, should your Tribe have information on any cultural resource that may be affected by the proposed project of which we may be unaware, we would take such information into account for our final determination of effect. If, in the unlikely event that archeological materials are discovered during project construction, work in the area of discovery will cease, and the discovery investigated by a qualified archeologist. The findings on the discovery would be coordinated with your office and the Missouri State Historic Preservation Office.

Thank you for your consideration in this matter. We would appreciate your efforts to notify us within 40 days of receipt of this letter preferably by email. If you have any questions or have need of further information, please contact Dr. Gina Powell, by email at Gina.S.Powell@usace.army.mil or by phone at (816) 389-2320.

Sincerely,

A handwritten signature in blue ink that reads "Gina Powell". The signature is fluid and cursive, with the first name "Gina" being more prominent than the last name "Powell".

Dr. Gina Powell
Archeologist

Enclosures

Appendix D

Special Use Permit Applications



GENERAL ACTIVITIES SPECIAL USE PERMIT APPLICATION



National Wildlife Refuge System

Refuge:

Address:

Attn: (Refuge Official)

E-Mail:

Phone #:

For Official Use Only:

Permit #:

Station #:

Permit Term: from to

Note: We do not require all information for each use. See instructions at the end of the notice and contact the refuge identified above to determine applicability of a particular item. Attach additional sheets to the application if the text spaces provided are inadequate.

- 1a) Identify the type of Permit you are applying for: New ☐ Renewal ☐ Modification ☐ Other ☐
- 1b) Have you applied, or do you intend to apply, to any other refuges for this same activity? ☐ Yes ☐ No
- 1c) If yes, which refuges?

Applicant Information

- 2) Full Name: 3) Organization:
- 4) Physical Address:
- City/State/Zip:
- 5) Mailing Address:
- City/State/Zip:
- 6) Phone #: 7) Fax #:
- 8) E-mail:

- 9) List **known** assistants/subcontractors/subpermittees: (Only required if the assistants/subcontractors/subpermittees will be operating on the refuge without the permittee being present.)

Name/Business	Address	Phone #

Activity Information

- 10a) Choose an Activity: Special Access ☐ Construction ☐ Event ☐ Cabins/Subsistence ☐ Group Visit ☐
- Educational Activity ☐ Ceremonial Activity ☐ Wood Cutting ☐ Trapping ☐ Mapping/Survey ☐ Other ☐

10b) Specify type of activity if 'Other' was chosen:

Note: Depending on the activity for which you are requesting a permit, we may ask you for the following activity information. Please contact the specific refuge where the activity is being conducted to determine what information is required.

11) Describe activity by specifically identify timing (occupancy timeline), frequency, and how the activity is expected to proceed:

12) Specifically identify location(s) and/or attach a map: (GPS location(s) preferred)

13) If drones will be used, describe why the drone is needed and provide specifics on how it will be used:

14) Inquire with refuge if Plan of Operation is required. Is a Plan of Operation attached? Yes ☐ No ☐ N/A ☐

For group, ceremonial, and educational activities provide:

15) Expected number of participants, if applicable: Children (1-18) Adults Total

16) Grade level of educational group, if applicable: Grade

17a) Will staff time/assistance be required for group activities? Yes ☐ No ☐ N/A ☐

17b) If yes, what's the anticipated time frame?

Insurance Coverage/License/Certifications/Permits

Note: Contact the specific refuge headquarters office where the activity is going to be conducted to determine if any type of insurance, certification(s), or permit(s) will be required. We may process this Special Use Permit while the applicant obtains them.

18) List and attach a copy of any **insurance coverage(s)** you have such as general liability, aviation, grounding liability, contaminants applicator, medical evacuation, or others, if required:

Insurance Type	Carrier Name	Policy Number

19) List and attach a copy of any relevant licenses, certifications, and permits, if required:

License/Certification/Permit Type	Number (if applicable)	Issued to:

Logistics and Transportation

Note: Not all information is required for each use. Please contact the specific refuge where the activity is being conducted to determine what information is required. Attach additional sheets to the application if the text spaces provided are inadequate.

20) Does activity require personnel to stay overnight onsite? Yes ☐ No ☐

21) List names of personnel involved:

List Names	List Names	List Names

22) Specifically describe all major equipment/gear and materials used, if required:

23a) Provide detailed information on the logistics for onsite, intersite, and/or ship-to-shore transportation to or on the refuge, if required:

23b) Provide descriptions, license plate, or I.D. numbers of vehicles used for onsite, intersite, and/or ship-to-shore transportation, if required:

Type of transportation (onsite, intersite, or ship-to-shore)	Equipment Type	License/I.D./Registration Numbers

24) Specifically describe onsite work and/or living accommodations:

25) Specifically describe onsite hazardous material storage or other onsite material storage space:

Sign, date, and print this form and return it to the refuge for processing. By signing this application, I agree my operations will conform to the information I have provided in this application, and I understand that any deviations or changes to this information must receive prior written approval.

26) Signature of Applicant: _____ Date of Application: _____

NOTICES

No Members of Congress or Resident Commissioner shall participate in any part of this contract or to any benefit that may arise from it, but this provision shall not pertain to this contract if made with a corporation for its general benefit.

The Permittee agrees to be bound by the equal opportunity "nondiscrimination in employment" clause of Executive Order 11246.

PRIVACY ACT STATEMENT

Authority: The information requested is authorized by the National Wildlife Refuge System Administration Act (16 U.S.C. 668dd-ee) and the Refuge Recreation Act (16 U.S.C. 460k-460k-4).

Purpose: To collect the applicant's information to process permits allowing for general activities such as: woodcutting; miscellaneous events (fishing tournaments, one-time events, other special events); cabin rentals; and education activities.

Routine Uses: The information will be used by the refuge's administrative office for processing General Activity Special Use permits. More information about the routine uses may be found in the Systems of Records Notice, FWS-5 National Wildlife Refuge Special Use Permits.

Disclosure: Providing the information is voluntary. However, submission of information is required to process and approve general activity usage on the National Wildlife Refuge System.

PAPERWORK REDUCTION ACT STATEMENT

We are collecting this information subject to the Paperwork Reduction Act (44 U.S.C. 3501) to evaluate the qualifications, determine eligibility, and document permit applicants and to respond to requests made under the Freedom of Information Act and the Privacy Act of 1974. The information that you provide is required to obtain or retain a benefit; however, failure to provide all required information is sufficient cause for the U.S. Fish and Wildlife Service to deny a permit. False, fictitious, or fraudulent statements or representations made in the application may be grounds for revocation of the Special Use Permit and may be punishable by fine or imprisonment (18 U.S.C. 1001). According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number. OMB has approved this information collection and assigned control number 1018-0102.

ESTIMATED BURDEN STATEMENT

The public reporting burden for this information collection varies based on the requested specific refuge use. We estimate the relevant public reporting burden for the Commercial Activity Special Use Permit Application form (General) to average 30 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Service Information Clearance Officer, U.S. Fish and Wildlife Service, 5275 Leesburg Pike, MS: PRB (JAO/3W), Falls Church, VA 22041-3803, or via email to Info_Coll@fws.gov. Please do not send your completed form to this address.

GENERAL CONDITIONS AND REQUIREMENTS

- 1) Responsibility of Permittee: We shall consider the permittee, by operating on the premises, to have accepted these premises with all facilities, fixtures, or improvements in their existing condition as of the date of this permit. At the end of the period specified or upon earlier termination, the permittee shall give up the premises in as good order and condition as when received except for reasonable wear, tear, or damage occurring without fault or negligence. The permittee will fully repay the Service for any and all damage directly or indirectly resulting from negligence or failure on his/her part, and/or the part of anyone of his/her associates, to use reasonable care.
- 2) Operating Rules and Laws: The permittee shall keep the premises in a neat and orderly condition at all times, and shall comply with all municipal, county, and State laws applicable to the operations under the permit as well as all Federal laws, rules, and regulations governing national wildlife refuges and the area described in this permit. The permittee shall comply with all instructions applicable to this permit issued by the refuge official in charge. The permittee shall take all reasonable precautions to prevent the escape of fires and to suppress fires and shall render all reasonable assistance in the suppression of refuge fires.
- 3) Use Limitations: The permittee's use of the described premises is limited to the purposes herein specified and does not, unless provided for in this permit, allow him/her to restrict other authorized entry onto his/her area; and allows the U.S. Fish and Wildlife Service to carry on whatever activities are necessary for: (1) protection and maintenance of the premises and adjacent lands administered by the U.S. Fish and Wildlife Service; and (2) the management of wildlife and fish using the premises and other U.S. Fish and Wildlife Service lands.

4) Transfer of Privileges: This permit is not transferable, and no privileges herein mentioned may be sublet or made available to any person or interest not mentioned in this permit. No interest hereunder may accrue through lien or be transferred to a third party without the approval of the Regional Director of the U.S. Fish and Wildlife Service and the permit shall not be used for speculative purposes.

5) Compliance: The U.S. Fish and Wildlife Service's failure to require strict compliance with any of this permit's terms, conditions, and requirements shall not constitute a waiver or be considered as a giving up of the U.S. Fish and Wildlife Service's right to thereafter enforce any of the permit's terms or conditions.

6) Conditions of Permit not Fulfilled: If the permittee fails to fulfill any of the conditions and requirements set forth herein, the U.S. Fish and Wildlife Service shall retain all money paid under this permit to be used to satisfy as much of the permittee's obligation as possible.

7) Payments: All payment shall be made on or before the due date to the local representative of the U.S. Fish and Wildlife Service by a postal money order or check made payable to the U.S. Fish and Wildlife Service.

8) Termination Policy: At the termination of this permit the permittee shall immediately give up possession to the U.S. Fish and Wildlife Service representative, reserving, however, the rights specified in paragraph 11 below. If he/she fails to do so, he/she will pay the U.S. Fish and Wildlife Service, as liquidated damages, an amount double the rate specified in this permit for the entire time possession is withheld. Upon yielding possession, we will still allow the permittee to reenter as needed to remove his/her property as stated in paragraph 11 below. The acceptance of any fee for the liquidated damages or any other act of administration relating to the continued tenancy is not to be considered as an affirmation of the permittee's action nor shall it operate as a waiver of the U.S. Fish and Wildlife Service's right to terminate or cancel the permit for the breach of any specified condition or requirement.

9) Revocation Policy: The Regional Director of the U.S. Fish and Wildlife Service may revoke this permit without notice for noncompliance with the terms hereof, or for violation of general and/or specific laws or regulations governing national wildlife refuges, or for nonuse. It is at all times subject to discretionary revocation by the Director of the Service. Upon such revocation the U.S. Fish and Wildlife Service, by and through any authorized representative, may take possession of said premises for its own and sole use, and/or may enter and possess the premises as the agent of the permittee and for his/her account.

10) Damages: The U.S. Fish and Wildlife Service shall not be responsible for: any loss or damage to property including but not limited to crops, animals, and machinery; injury to the permittee or his/her relatives, or to the officers, agents, employees, or any other(s) who are instructed to be on the premises; the sufferance from wildlife or employees or representatives of the U.S. Fish and Wildlife Service carrying out their official responsibilities. The permittee agrees to hold the U.S. Fish and Wildlife Service harmless from any and all claims for damages or losses that may arise to be incident to the flooding of the premises resulting from any associated government river and harbor, flood control, reclamation, or Tennessee Valley Authority activity.

11) Removal of Permittee's Property: Upon the expiration or termination of this permit, if all rental charges and/or damage claims due to the U.S. Fish and Wildlife Service have been paid, the permittee may, within a reasonable period as stated in the permit or as determined by the U.S. Fish and Wildlife Service official in charge, but not to exceed 60 days, remove all structures, machinery, and/or equipment, etc., from the premises for which he/she is responsible. Within this period the permittee also must remove any other of his/her property including his/her acknowledged share of products or crops grown, cut, harvested, stored, or stacked on the premises. Upon failure to remove any of the above items within the aforesaid period, they shall become the property of the U.S. Fish and Wildlife Service.

INSTRUCTIONS FOR COMPLETING APPLICATION

You may complete the application portion verbally, in person, or electronically and submit to the refuge for review. Note: Please read instructions carefully as not all information is required for each activity. Contact the specific refuge headquarters office where the activity is going to be conducted to determine applicability of a particular item. We may add special conditions or permit stipulations to permit prior to approval.

1a-1c) Identify if permit application is for new, renewal, or modification of an existing permit, whether or not you have or will be applying to another refuge for the same activity, and for which refuge(s). Permit renewals may not need all information requested. Contact the specific refuge headquarters office where the activity is going to be conducted if you have questions regarding the applicability of a particular item.

2-8) Provide full name, organization (if applicable), physical and/or mailing address, phone, fax, and e-mail.

9) Provide known names and addresses of assistants, subcontractors or subpermittees. Names and address are only required if the assistants, subcontractors or subpermittees will be operating on the refuge without the permittee being present. Volunteers, assistants, subcontractors or subpermittees that are accompanied by the permittee need not be identified.

10a) Activity type: check one of the following categories:

- Special Access;
- Construction;

- Event;
- Cabin/Subsistence (subsistence cabins are only allowed on Alaska Refuges);
- Educational Activity;
- Ceremonial Activity;
- Wood Cutting, Firewood Collection;
- Trapping (non-commercial);
- Mapping/Survey (non-commercial and non-archeological)
- Other:

10b) If "other" was chosen for activity type, specify the activity in the space provided.

11) Provide detailed information on the activity, including times, occupancy timeline, frequency, and how the activity is expected to proceed, etc. Permit renewals may not need activity description if the activity is unchanged from previous permit. Most repetitive activities, such as group visits, do not require an activity description for each visit. Contact the specific refuge headquarters office where the activity is going to be conducted to determine if we require an activity description.

12) identify specific location (GPS coordinates preferred) if not at a named facility, and attach a map with location. Most repetitive activities, such as group visits, do not require a location. In addition, permit renewals may not require a location if the activity is essentially unchanged from the previous permit. Contact the specific refuge headquarters office where the activity is going to be conducted to determine if we require a location.

13) If a drone will be used for this activity, describe in detail why the drone is necessary to complete the activity and provide specifics on how the drone will be used.

14) Attach a Plan of Operation, if required. Most repetitive activities do not require a Plan of Operations for each visit. In addition, permit renewals may not require a Plan of Operations if the activity is essentially unchanged from the previous permit. Contact the specific refuge headquarters office listed where the activity is going to be conducted to determine if a Plan of Operations is required.

15-16) Provide an estimate of the number of adults, and children and grade level of group, if applicable.

17a-17b) Identify if group activities will require onsite refuge staff and the anticipated time frame, if applicable.

18) Provide name, type, carrier of insurance and attach copies, if required. Contact the specific refuge headquarters office where the activity is going to be conducted to determine if we require insurance and type of insurance.

19) Specifically identify type(s) and number(s) of other licenses, certifications or permits, and provide copies if required. Contact the specific refuge headquarters office where the activity is going to be conducted to determine the type(s) of licenses, certifications or permits required, and to coordinate the simultaneous application of several types of licenses, certifications or permits. We may or may not issue this Special Use Permit (SUP) while the permittee obtains other licenses, certifications, and/or permits.

20-21) Provide name(s) of any personnel required to stay overnight, if applicable.

22) Identify all equipment and materials that will be used, if required. Most repetitive events, such as group visits, do not require a list of equipment. In addition, permit renewals may not require a list of equipment if the event is essentially unchanged from the previous permit. Contact the specific refuge headquarters office where the activity is going to be conducted to determine if we require a list of equipment.

23a-23b) Provide vehicle descriptions and license plate or identification numbers of all vehicles, including boats and airplanes, if required. We only require motor vehicle descriptions for permittee vehicle, and/or if the vehicle will be operated on the refuge without the permittee being present. Motor vehicles accompanied by the permittee as part of a group (convoy) activity need not be identified if cleared in advance by the refuge supervisor. Specifically describe ship-to-shore, intersite (between islands, camps, or other sites) and onsite transportation mechanisms, and license plate or identification numbers, if required.

24) Specifically describe onsite work and/or living accommodations, if applicable.

25) Specifically describe onsite hazardous material storage, or other onsite material storage space (including on and offsite fuel caches).

26) Sign, date, and print the application. By signing this application, you agree your operations will conform to the information you have provided in this application, and understand that any deviations or changes to this information must receive prior written approval. Click on the Print button to print the application (if using the fillable version). The refuge official will review and, if approved, fill out the remaining information, sign, and return a copy to you for signature and acceptance.

THIS APPLICATION FORM IS NOT VALID AS A PERMIT

**BUT MAY BE USED AS A REFERENCE DOCUMENT ATTACHED TO THE OFFICIAL PERMIT.
ONLY OFFICIAL REFUGE PERSONNEL MAY ASSIGN A VALID PERMIT NUMBER AND PERMIT TERM
TO THIS APPLICATION FORM AFTER THE PERMIT HAS BEEN APPROVED.**



Official use only

MISSOURI DEPARTMENT OF CONSERVATION

SPECIAL USE PERMIT APPLICATION

**Application must be received 30 days prior to requested event.*

Section A – to be completed by the applicant (Please print):

Name of Permittee _____ Representing _____
(Individual) (Organization)

Mailing Address _____
(Street or Box) (City) (State) (Zip Code)

E-mail Address _____

Daytime Phone Number _____ Evening Phone Number _____

Alternative Contact name and Phone Number _____

Department Area Requested _____

Portion of Area and/or Facility Requested _____

Date(s) of Proposed Activity _____ Time of Proposed Activity _____

Number of People _____ Number of Vehicles, Boats, Trailers, Horses, Dogs, etc. (Specify for each)

Proposed Activity _____

A separate permit is used for field trials. See Field Trial Special Use Permit policy.

Return completed application to Area Manager or local conservation office.

*The thirty days advance application requirement may be waived by the Area Manager based on resource conditions and availability. Thirty-day notice is not required for mobility device applications.

Statewide Public Use Guidelines

The following guidelines are used by Area Managers to determine if a requested use is appropriate for a specific conservation area (for Other Power-Driven Mobility Devices SUPs, see Special Use Permit Policy, Activity Specific Guidance, Attachment 4):

1. Will the activity interfere with or in any way compromise management of the Conservation Areas' fish, forest, wildlife, and natural communities?
2. Will the activity conflict with local ordinances, state constitution, Department regulations, or Federal Aid assistance?
3. Will the activity cause an unacceptable level of damage to resources or facilities?
4. Is the long-term impact of the proposed activity—and the commitment in budget and staffing—fully evaluated and understood?
5. Will the activity conflict with scheduled or seasonal primary public uses?
6. Will the activity require undue accommodation from Department staff, including reservations, special setup, cleanup, or maintenance?
7. Will the activity impede foot, boat, or vehicular traffic flow or restrict access to area locales normally open to the general public?
8. Will the activity pose a threat to public health, safety, and welfare?

Section B – to be completed by the Area Manager

☐ Deposit is required for use of area and/or facilities. Total _____

Deposit Received by _____ Date _____

☐ Permittee required to supply and remove portable restrooms.

The Permittee is authorized to:

☐ Leave horse trailers and other equipment on the premises overnight from _____
until _____ at (location) _____

☐ Use the following Department facilities (include dates and times):

1. _____
2. _____
3. _____

☐ Permit Approved, with attached terms, maps and conditions. Approval is not complete until the applicant signs the permit and returns it, along with any fee or deposit if necessary, to the Area Manager.

☐ Permit Denied. Applicant may appeal the denial by following the attached Reconsideration Process. Reason(s) for Denial (which guidelines would be violated):

PERMIT PROCESS

1. The citizen requesting special use of a conservation area obtains a Special Use Permit Application from the Area Manager or local conservation office, completes Section A, and returns it to the Area Manager or local conservation office.
2. The Area Manager completes Section B of the Special Use Permit Application and returns the completed application, and appropriate attachment(s), to the citizen.
 - a. If the permit request is approved, the Area Manager also sends the applicant two copies of the Special Use Permit & Conditions Form and the Safety Rules for Other Power-Driven Mobility Device Use, if applicable. The applicant is instructed to sign both copies, keeping one for themselves and returning the other, plus any fee or deposit if required, to the Area Manager.
 - b. If the permit request is denied, the Area Manager also sends the applicant a Special Use Permit Reconsideration Form or, for Other Power-Drive Mobility Device denial, provides contact information for a Unit or Division Chief.