DRAFT

Kaskaskia River Regional Port
CAP Section 107 Study
with Integrated Environmental Assessment

Kaskaskia Regional Port District (KRPD) Terminal 2

Photo: KRPD

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

28 August 2024

Table of Contents

* Environmental Assessment sections

ACRONYMS AND ABBREVIATIONS

CAP	Continuing Authorities Program
CO2	Carbon Dioxide
CWA	Clean Water Act
EO	Executive Order
EPA	U.S. Environmental Protection Agency
ER	Engineer Regulation
ESA	Endangered Species Act
FID	Federal Interest Determination
FY	Fiscal Year
GHG	Greenhouse Gas
GNF	General Navigation Feature
HEC	Hydrologic Engineering Center
HTRW	Hazardous, Toxic and Radioactive Waste
KRNP	Kaskaskia River Navigation Project
KRPD	Kaskaskia Regional Port District
KRPD#2	Kaskaskia Regional Port District Terminal 2
LERRD	Lands, Easements, Right-of-Ways, Relocations, and Disposals
LSF	Local Service Facility
NEPA	National Environmental Policy Act
NED	National Economic Development
NHPA	National Historic Preservation Act
NWI	National Wetlands Inventory
OHWM	Ordinary High Water Mark

OMRR&R	Operations, Maintenance, Repair, Replacement and Rehabilitation
TSP	Tentatively Selected Plan
USACE	U.S. Army Corps of Engineers
WRDA	Water Resources Development Act

EXECUTIVE SUMMARY

This Kaskaskia River Regional Port Feasibility Report with Integrated Environmental Assessment, conducted under the Continuing Authorities Program (CAP) Section 107 for Small Navigation Projects, evaluates the feasibility and environmental effects of implementing navigation improvement measures at the Kaskaskia Regional Port District (KRPD) Terminal 2 (KRPD#2). The study is being developed by the U.S. Army Corps of Engineers (USACE) St. Louis District in conjunction with the Non-Federal Sponsor (NFS), Kaskaskia Regional Port District KRPD.

Project Location and Background Information

KRPD#2 is located west of Baldwin, Illinois, in Randolph County, near river mile (RM) 18 on the Kaskaskia River, approximately 45 miles southeast of St. Louis, Missouri. The port terminal is located on an oxbow on the west side (right descending bank) of the Kaskaskia River. The terminal currently hosts four tenants (Gateway FS, The Material Works (TMW), Kaskaskia Shipyard, and Southern Illinois Transfer Company) and facilitates the movement of products such as dry bulk commodities like fertilizer and gypsum, and heavy manufactured goods like steel and aluminum. Freight is moved between the waterway, highway, and railroads at the facility.

KRPD has experienced and supported an increase in tonnage shipped on the Kaskaskia River and expects an increase in tonnage at KRPD#2 (per interviews with KRPD). KRPD requested this study to evaluate needed navigation improvements to support growing demands and increased capacity of the multi-modal facility.

The study area includes two oxbows of the Kaskaskia River. These oxbows are U-shaped meanders of the river that were cut off from the main river channel at one end when the river was straightened for the Kaskaskia River Navigation Project. The south ends of both oxbows remain open to the river.

The oxbow on which the KRPD#2 port terminal is located is called the south oxbow in this report. In the south oxbow, shallow depths (sedimentation) in the oxbow channel impact efficient use of the channel, causing delays from the difficulty of transiting the oxbow, resulting in decreased efficiency and economic loss.

The oxbow directly north of the south oxbow, approximately 1,200 feet (ft) from the existing port terminal on the north side of IL-154, is called the north oxbow in this report. The north oxbow is not currently used for shipping. KRPD plans to expand its operations to waterway traffic in the north oxbow and construct buildings, road, and rail development on the adjacent land.

The authority for this study is Section 107 of the River and Harbor Act of 1960, as amended, which permits USACE to undertake the investigation, design, and construction of small navigation projects.

Purpose and Need

Shallow depths are impacting the efficient use of the river oxbow and channel on which KRPD#2 is situated (the south oxbow). The major problem at the site is delays caused by difficulty transiting the oxbow due to shallow depth and maneuvering in this narrow channel, resulting in decreased efficiency and economic loss. In order to mitigate this problem, river industry reduces the number of barges transported to the dock and minimizes the volume of cargo placed onto the barges to lighten the load and reduce the vessel draft. In the future, existing channel depths and transloading delays would continue to impact Port operations. Future increases in demand are expected (per KRPD projections outlined in the 2020 KRPD#2 Master Plan) (KRPD [Consulting Engineer Thouvenot, Wade & Moerchen Inc.], 2020). KRPD requested this study to evaluate needed navigation improvements to support growing demands and increased capacity of the multi-modal facility.

Plan Formulation

During the feasibility study, several measures related to navigation improvements were considered for the north oxbow and south oxbow, such as deeper and wider channel dredging, turning areas, fleeting areas, and widening the mouth of the north oxbow. An initial array of alternatives was created from logical combinations of these measures in both oxbows; the alternatives were then evaluated and compared. Evaluation of the north oxbow alternatives resulted in these alternatives being screened out based on an assessment of economic benefits. A final array of four alternative plans for the south oxbow, which included three action alternatives and the No Action Alternative, was evaluated. The final array of alternatives was compared based on the National Economic Development (NED), Regional Economic Development (RED), Environmental Quality (EQ), and Other Social Effects (OSE) factors.

Tentatively Selected Plan

The Tentatively Selected Plan (TSP) was identified as Alternative 3a, which consists of channel dredging in the south oxbow to a greater depth and width to allow two-way traffic, and placement of dredged material at dredge placement areas DD-1 and DD-2 (**Figure 1**). The TSP was the NED plan, which is the alternative that maximizes net economic benefits under the NED account. The project first cost for this alternative was estimated at $4,887,000. Average annual costs were estimated at $245,000 and average annual benefits were estimated at $1,249,000, resulting in a benefit-to-cost ratio (BCR) of 5.1.

Under Section 107, the NFS is responsible for 100 percent of the construction and maintenance of Local Service Facilities (LSF) and 10 percent of the total costs of construction of General Navigation Features (GNF) for depths less than or equal to 20 feet. The TSP is comprised only of

GNF, so the non-federal cost share is 10 percent of the construction costs. The estimated non-federal share of the total project first cost is $515,000 and the federal share is $3.9 million. The NFS would pay an additional 10 percent toward GNF over a period not to exceed 30 years. This may be accomplished through crediting for Lands, Easements, Rights of Way, and Relocations (LERR) provided or through direct payments.

Significant Resources/Environmental Considerations

Lands in and around the study area adjacent to the Kaskaskia River are comprised of extensive mixed bottomland forests, many cultivated and fallow fields, mature bottomland hardwoods, oxbow lakes, and emergent and forested wetlands. This area is also intermingled with sloughs and portions of remnant river channels that have been exaggerated by the raising of the navigation pool and have resulted in increased wet and semi-emergent habitat including wetlands. IDNR actively manages a wetland complex adjacent to the north oxbow to support wetland vegetation for wildlife habitat and recreation. USACE determinations for federally listed Threatened and Endangered species are “May affect, but not likely to adversely affect” the Indiana bat, the northern long-eared bat, and the tricolored bat, and “Not likely to jeopardize the continued existence of” the Monarch Butterfly and the Whooping Crane, per Endangered Species Act Section 7 consultation. There are no recorded historic properties within the study area; therefore, no adverse effects to cultural resources are anticipated; there are no National Historic Preservation Act (NHPA) Section 106 agreements.

The TSP would require the use of placement area DD-2, which is currently forested. Approximately 13 acres of tree removal would be needed, requiring environmental mitigation at an estimated cost of approximately $515,000.

Plan Implementation

Pending approval, this Draft Report is scheduled to conclude in 2025. Construction is proposed to begin in Winter (early) 2026 and conclude in Fall 2026. There is no special construction sequencing. There are no major risks that could impede or derail approval or construction. The Non-Federal Sponsor, KRPD, supports the project.

Views of the Public, Agencies, Stakeholders, and Tribes

The Public Scoping Meeting held June 2023 did not generate any negative response for a project at the south oxbow; there were multiple negative responses and three positive responses for a project at the north oxbow. Cities, counties, and state government personnel have expressed support for expansion of shipping and business at KRPD#2. Tribal coordination regarding the TSP elicited one response stating no concerns with the TSP. Public response from the upcoming Public Meeting in September 2024 is TBD.

Reviews

The following USACE reviews were conducted. Targeted Agency Technical Review (ATR) for a subset of preliminary study documents (Draft Report chapters 1-5, cost estimates, real estate costs, and mitigation costs) was conducted in February 2024. District Quality Control (DQC) review of this Draft Report was conducted in July 2024 prior to its release for public review, ATR, and review by Mississippi Valley Division (MVD).

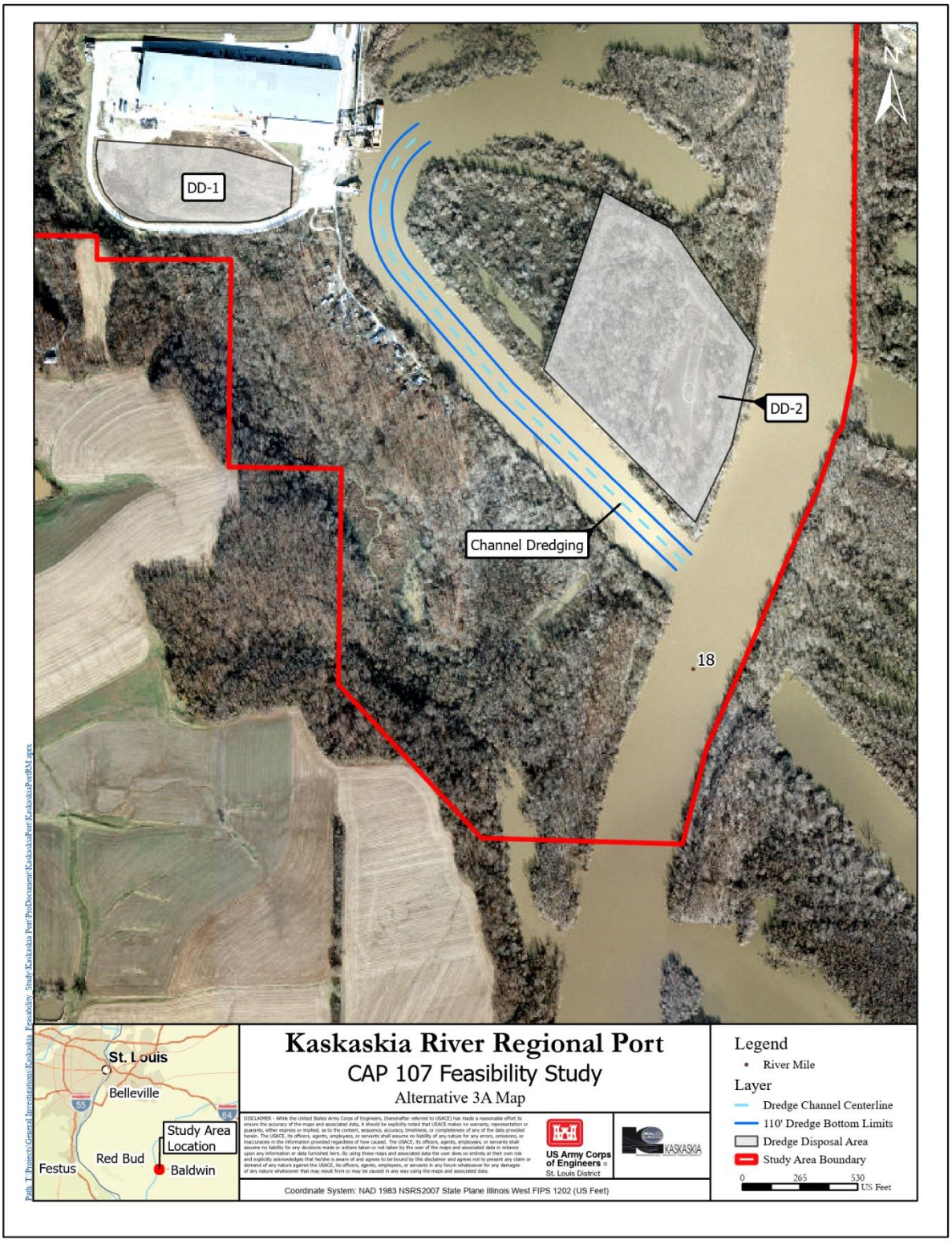

Figure 1. Tentatively Selected Plan: Alternative 3a – Minimum (Two-Way Traffic)

1. INTRODUCTION*

1.1. STUDY PURPOSE, NEED, AND SCOPE*

This study evaluates the feasibility and environmental effects of implementing navigation improvement measures at the Kaskaskia Regional Port District Terminal 2 (KRPD#2) west of Baldwin, Illinois. United States Army Corps of Engineers (USACE) Engineer Regulation (ER) 1105-2-100, "Planning Guidance Notebook" defines the contents of feasibility reports for navigation improvement measures. ER 200-2-2, "Procedures for Implementing NEPA", directs the contents of environmental assessments. This document presents the information required by both regulations as an Integrated Feasibility Report and Environmental Document. It also complies with the Council on Environmental Quality (CEQ) regulations for implementing the National Environmental Policy Act of 1969, as amended (NEPA, 42 U.S.C. 4321 et seq.).

Shallow depths are impacting the efficient use of the river oxbow and channel on which KRPD#2 is situated (the south oxbow). The major problem at the site is delays caused by difficulty of transiting the oxbow due to shallow depth and maneuvering in this narrow channel condition, resulting in decreased efficiency and economic loss. To mitigate this problem, river industry reduces the number of barges transported to the dock and minimizes the volume of cargo placed onto the barges to lighten the load and reduce the vessel draft. Without navigation improvements, existing transloading delays would continue to impact Port operations in the future.

KRPD#2 has experienced a significant increase in tonnage over its history. Future increases in demand are expected (per KRPD projections and the 2020 KRPD#2 Master Plan) (KRPD [Consulting Engineer Thouvenot, Wade & Moerchen Inc.], 2020). The goal of this study is to evaluate needed navigation improvements to support growing demands and increased capacity of the multi-modal facility.

1.2. STUDY AUTHORITY

This study is being carried out under USACE's Continuing Authorities Program (CAP) pursuant to Section 107 of the River and Harbor Act of 1960 (P.L. 86-645), as amended (excerpt below). Section 107 authorizes the Secretary of the Army, through the Chief of Engineers, to plan and construct small navigation improvement projects that have not already been specifically authorized by Congress (33 USC 577).

> SEC. 107. Ø 33 USC 577
> (a) That the Secretary of the Army is authorized to allot from any appropriations hereafter made for rivers and harbors not to exceed $62,500,000 for any one fiscal year for the construction of small river and harbor improvement projects not specifically authorized by Congress which will result in substantial benefits to navigation and which can be operated consistently with

appropriate and economic use of the waters of the Nation for other purposes, when in the opinion of the Chief of Engineers such work is advisable, if benefits are in excess of the cost.

1.3. NEPA COMPLIANCE

A NEPA Environmental Assessment (EA) is integrated within this report. The purpose of the EA is to evaluate potential environmental impacts of the proposed project, determine if the environmental impacts rise to the level of significant, and to serve as a record of public and interagency coordination. This report has been prepared under the National Environmental Policy Act of 1969, as amended (NEPA; 40 CFR 1500-1508) to evaluate the proposed alternatives.

1.4. NON-FEDERAL SPONSOR

The Non-Federal Sponsor is the Kaskaskia Regional Port District (KRPD). KRPD was chartered in 1965 by an act of the Illinois Legislature and currently operates five river terminals, four on the Kaskaskia River and one on the Mississippi River, in a three-county area in southern Illinois.

1.5. LOCATION AND STUDY AREA

KRPD#2 is located west of Baldwin, Illinois, in Randolph County near river mile (RM) 18 on the Kaskaskia River, approximately 45 miles southeast of St. Louis, Missouri. The port terminal is located on an oxbow side channel on the west side (right descending bank) of the Kaskaskia River (

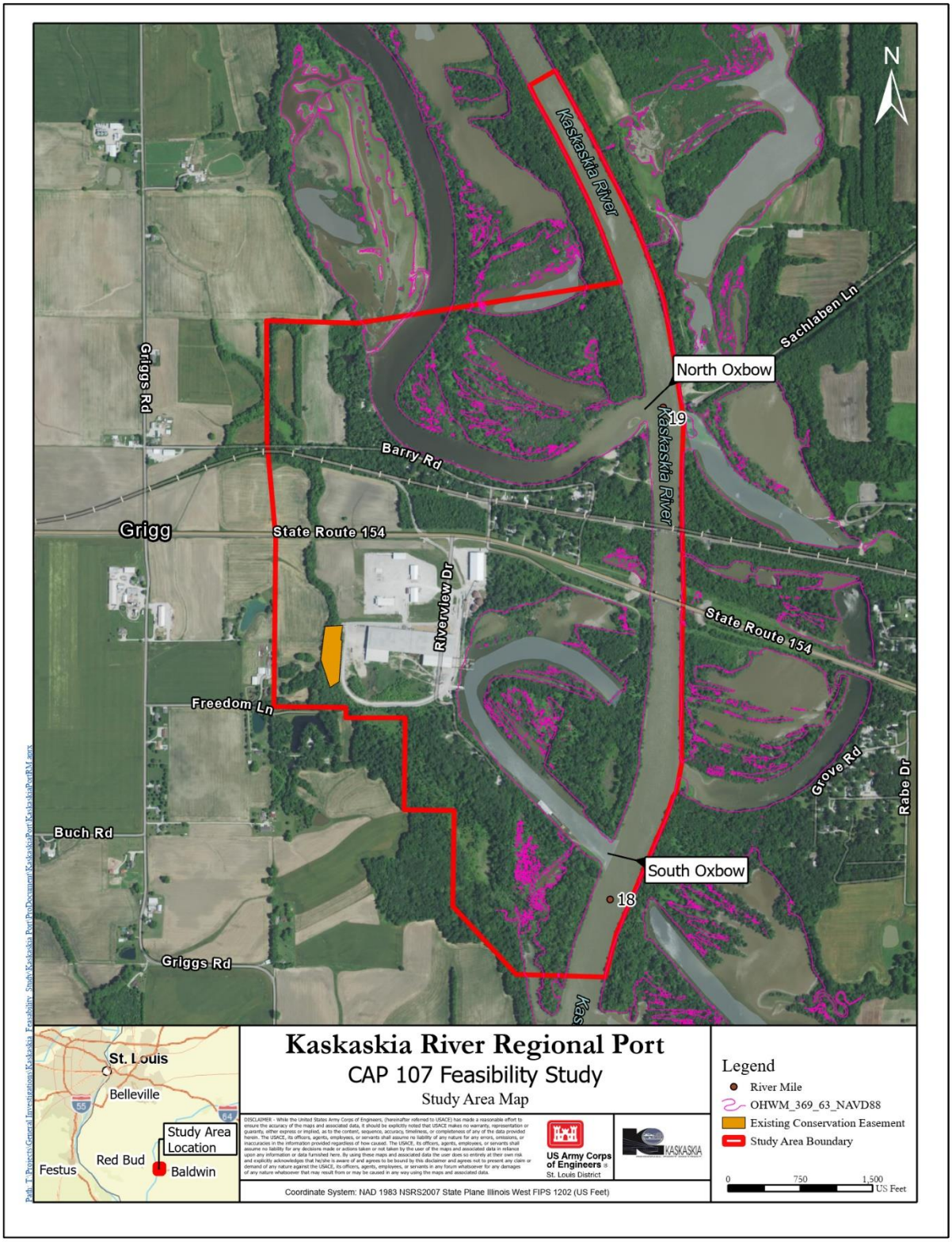

Figure 2). The Kaskaskia River adjacent to KRPD#2 is included in the Kaskaskia River Navigation

Project (KRNP). The KRNP, authorized for construction by the River and Harbor Act of 1962, consists of the Jerry F. Costello Lock and Dam (L&D) (formerly known as Kaskaskia Lock and Dam) at RM 0.8, and a navigation channel 9 ft deep, 225 ft wide, and 36 miles in length from Fayetteville, Illinois to the confluence of the Mississippi River. The Kaskaskia River is a Marine Highway Route with the designation M-3.

The study area includes two oxbow side channels of the Kaskaskia River. These oxbows are U-shaped meanders of the pre-channelized river that are no longer part of the main river channel. The south ends of both oxbows remain open to the river.

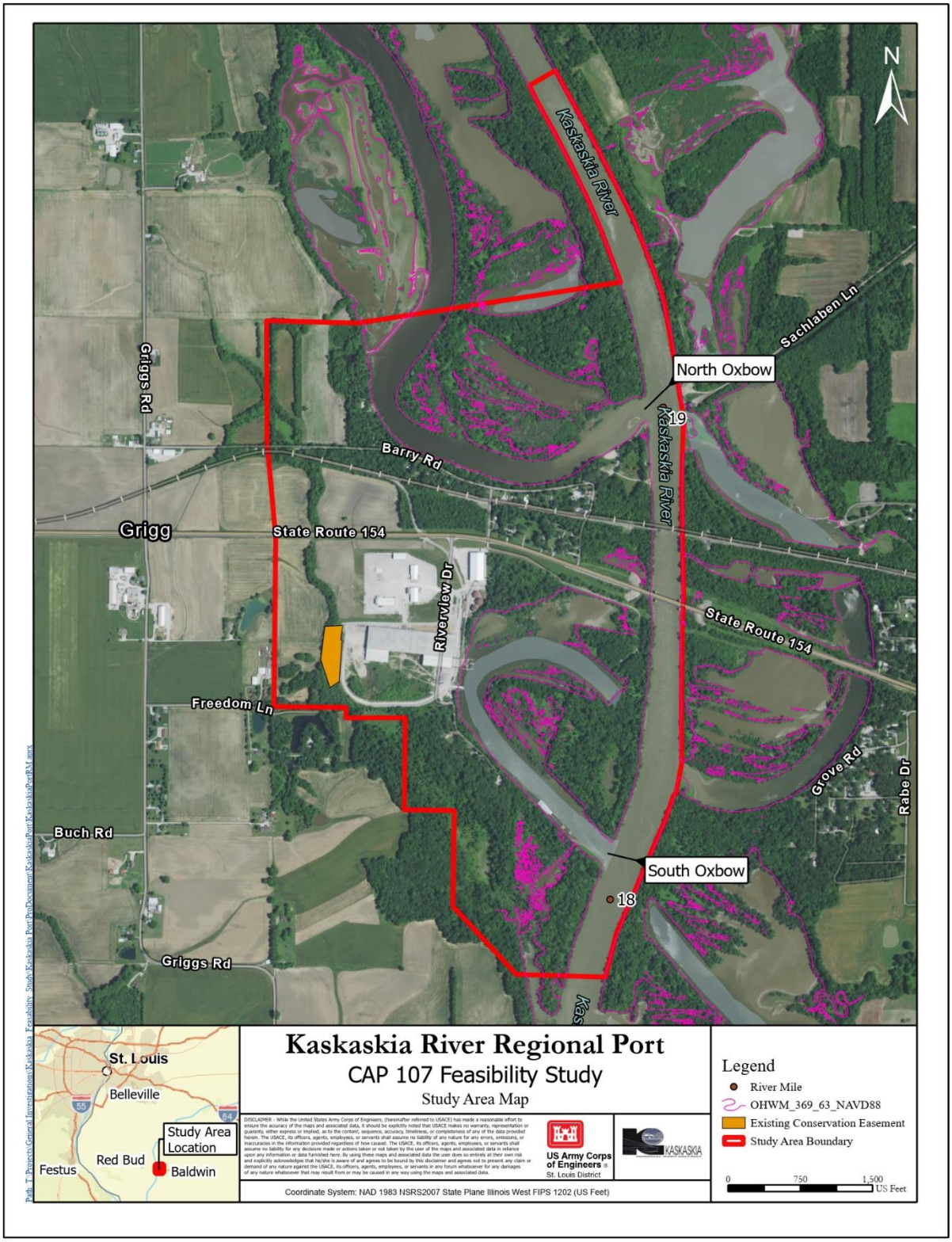

Figure 2 shows the study area including both oxbows.

The oxbow on which the KRPD#2 port terminal is located is called the south oxbow in this report. KRPD#2 is an intermodal facility, which means movement of freight by two or more different modes of transportation. At KRPD#2, there is a dock, a 50-ton overhead crane to move cargo between water and land, conveyer systems, a shipyard, and road and rail connections including a connection to the Canadian National Railroad spur. There are currently four tenants: The Material Works (TMW), Kaskaskia Shipyard, Gateway FS, and Southern Illinois Transfer Company.

The oxbow directly north of the south oxbow, approximately 1,200 ft from the existing port terminal on the north side of IL-154, is called the north oxbow in this report.

Figure 3 is a photograph of KRPD#2 on the south oxbow, with the north oxbow in the distance in the top right of the image. The north oxbow is not currently used for shipping. KRPD plans to expand its operations to include road and rail development on land adjacent to the north oxbow (Thouvenot, Wade & Moerchen, Inc., 2020).

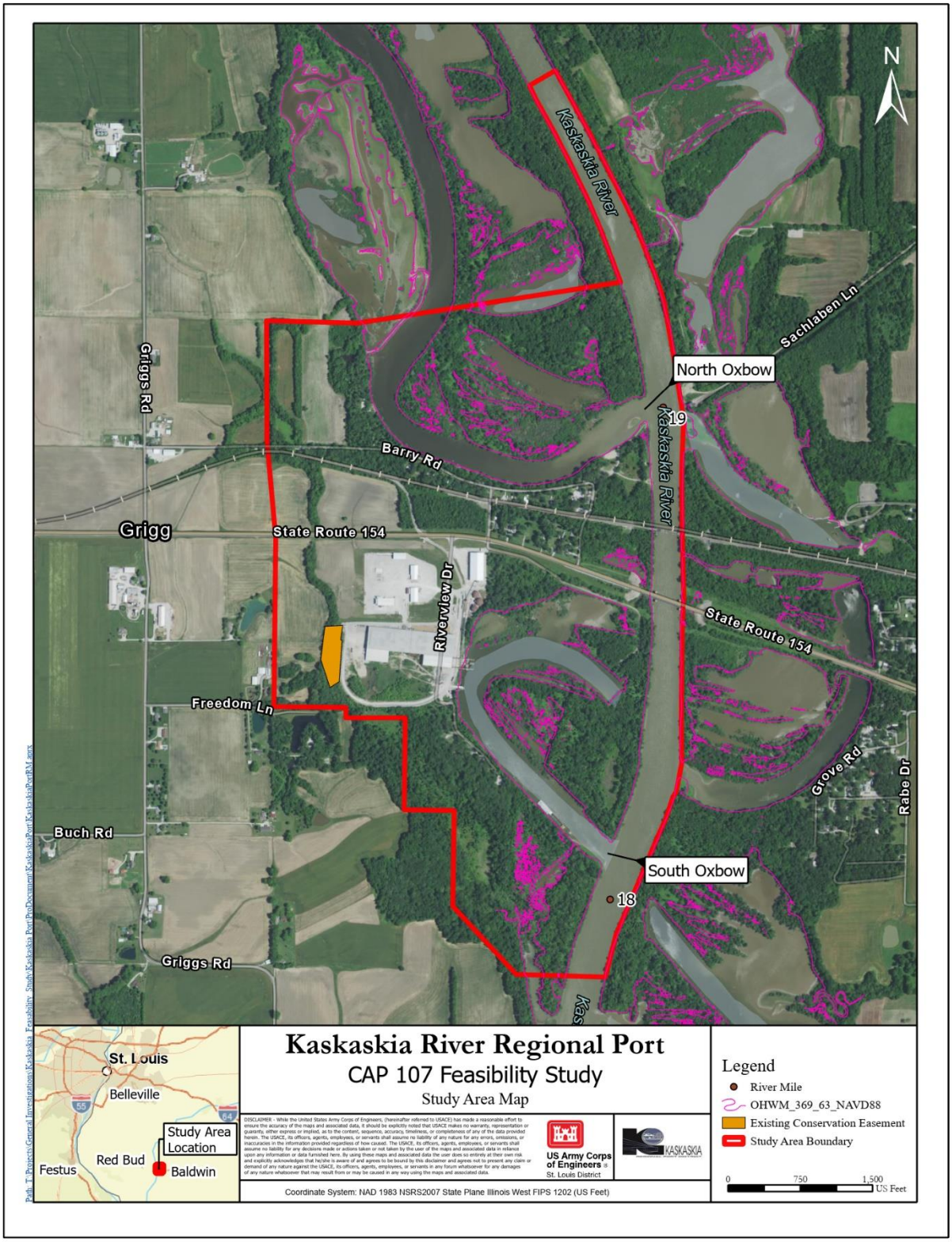

Figure 2. Study Area

Figure 3. Aerial View of KRPD#2 Terminal (Photo: KRPD)

The level of the Kaskaskia River at KRPD#2 is affected by Lake Shelbyville (Kaskaskia River RM 197.9), Carlyle Lake (Kaskaskia River Mile 94.2), and Jerry F. Costello Lock and Dam, Kaskaskia River Mile 0.8. These are multi-purpose federal flood control reservoirs on the Kaskaskia River located upstream of the study area. They are regulated in conjunction with one another to provide joint-use storage water for low flow augmentation for navigation through the KRNP, as needed, in addition to their other authorized purposes.

As part of the KRNP, USACE purchased 433 acres in fee title, 2,465 acres for operational easements, and 3,496 acres in flowage easements. This land was acquired by the IDOT and transferred to USACE. Two permanent flowage easements for the KRNP cover a portion of the study area (see Appendix F – Real Estate Plan).

1.6. LEAD AND COOPERATING AGENCIES

USACE is the lead agency under NEPA. There were no cooperating agencies on the project. Other agencies such as the Illinois Department of Resources (IDNR), Kaskaskia Regional Port District (KRPD), the U.S. Coast Guard (USCG), and the Illinois Department of Transportation (IDOT). coordinated on the project as their input was needed throughout the NEPA process.

1.8 PRIOR STUDIES AND REPORTS

Relevant prior studies and reports include:

- KRPD#2 Port Master Plan (KRPD [Consulting Engineer Thouvenot, Wade & Moerchen Inc.], 2020). The Master Plan provides a review of the history of port development at KRPD#2 and the existing Strategic Plan, a description of existing conditions and primary issues at KRPD#2, and an opinion on future demand and future trends relevant to planning. It presents a recommended plan for KRPD's strategic capital development that includes a new barge dock south of the existing crane, and rail and road improvements.
- The Master Plan, Kaskaskia River Project Jerry F. Costello Lock and Dam, Kaskaskia River, Illinois (USACE, 2017). This plan is the strategic land use management document for the Kaskaskia River Project that guides the comprehensive management, development, and use for recreation, natural resources, and cultural resources that is efficient and cost-effective throughout the life of the Kaskaskia River Project. It guides and articulates USACE responsibilities pursuant to federal laws to preserve, conserve, restore, maintain, manage, and develop the land, water, and associated resources.
- Southwest Illinois Connector Highway Task Force Report (Southwest Illinois Connector, 2019). The proposed Southwest Illinois Connector project would construct a regional rural expressway connecting Southwest Illinois to the St. Louis Metropolitan area along the existing two-lane roadways of IL 3, IL 154, and IL 13/127. This report identifies the section of IL 154 adjacent to KRPD#2 (between the north and south oxbows) for expansion to a four-lane expressway.
- Kaskaskia Regional Port District Strategic Plan: A Vision for the Next Twenty-Five Years (KRPD, 2014). The Strategic Objectives identified in this plan include promoting multimodal shipping and transloading opportunities, promoting environmental stewardship, and continuing collaborative relationships with entities including USACE.
- Kaskaskia River Basin Ecosystem Restoration Feasibility Study. This study was initiated in 2015 and was intended to develop "a comprehensive plan for the purpose of restoring, preserving, and protecting the Kaskaskia River Basin." (WRDA 2007, P.L. 110-114, Section 5073). A successful Alternatives Milestone Meeting was conducted in September 2016. The study was suspended and placed into inactive status in February 2017 due to the sponsor's inability to provide the required cost-sharing funds.

1.9 PROBLEMS & OPPORTUNITIES

1.9.1 Problems

Shallow depths are impacting the efficient use of the river oxbow and channel on which KRPD#2 is situated (the south oxbow). The major problem at the site is delays caused by difficulty of transiting the oxbow due to shallow depth and maneuvering in this narrow channel condition, resulting in decreased efficiency and economic loss. The oxbow channel is very narrow compared to the width of barge tows, with only five feet on either side of the barge for maneuvering in the curved channel. Siltation in the oxbow has prevented continued use of the fleeting area in the upper end of the oxbow. As cited in the KRPD#2 Master Plan and verified by waterway operators, the average speed and transit time for a tow (towboat and barge) is influenced by many factors, including (1) river width; (2) number of bends; (3) water depth fluctuations depending on normal, flood or drought conditions. The typical speed of a barge tow varies between 3.5 mph and 10 mph, with a realistic average speed in the mid-point of this range on the Kaskaskia River navigation channel. Due to the shallow depth and narrow width of the oxbow channel, tows must enter and transit the oxbow at 1 mph to avoid displacing water depth and grounding the tow. In order to mitigate this problem, river industry reduces the number of barges transported to the dock and minimizes the volume of cargo placed onto the barge to lighten the load and reduce the vessel draft. This creates transloading delays. The smallest possible towboats are already used to minimize vessel draft.

The sedimentation causing the shallow depths and narrow channel widths results from the deposition of silt and sediment particles from river water in the oxbow. The flow velocity in the oxbow is extremely slow and sometimes zero. Some bank erosion and upland runoff may also carry sediment into the oxbow where it sinks to the bottom. KRPD has conducted dredging in the south oxbow approximately every 10 years in recent decades, with the last two maintenance dredging operations taking place in 2008 and 2018.

KRPD#2 has experienced a significant increase in tonnage over its history. KRPD also informed USACE that there has recently been increasing congestion at KRPD#2 as a result of use by existing tenants, and these tenants also have plans for expansion. Future increases in demand are expected (per KRPD projections and the 2020 KRPD#2 Master Plan). Two upcoming projects may increase the use and capacity of KRPD#2. First, the 2019 Southwest Illinois Connector Highway Task Force Report recommended enlarging a series of state highways across southern Illinois, including widening the section of Illinois Route 154 adjacent to KRPD#2 from two to four lanes. Phase I of the highway project (including the section of Route 154 adjacent to KRPD#2) was allocated $15M in funding in 2020 (Public Act 101-0638). Second, the Act authorizes $25M in funding for KRPD, which will be applied to projects at KRPD#2 including a third dock (south dock, see Section 4.1.2); if a third dock is built, it will likely increase traffic at KRPD#2.

The following problems were identified for this study at KRPD#2:

1. Shallow depths and a narrow channel (due to sedimentation) impacting efficient use of the Port terminal and channel, including delays caused by difficulty of transiting the south oxbow; and
2. Large amount of traffic/goods in relation to existing dock/crane facilities for transloading, resulting in inefficiency of shipping.

1.9.2 Opportunities

The following opportunities were identified for this study:

- Support dock expansion and development to meet growing demands and increased capacity.
- Increase efficiency by switching some cargo from rail to water if water becomes more efficient.
- Minimize transloading delays during periods of high water (flooding).
- Increase flood resiliency.
- Use dredged material as fill for new development on land above the Ordinary High Water Mark (OHWM), i.e., new structures at KRPD#2.
- Relieve roadway congestion internal to KRPD#2.
- Reduce safety issues related to navigation.
- Improve aquatic habitat.
- Increase recreation (including river and nature-focused recreation).

1.10 OBJECTIVES AND CONSTRAINTS

1.10.1 Objectives

The following objectives have been developed for this study:

- Increase economic efficiency in navigation at KRPD Terminal 2 over the 50-year period of analysis.

1.10.2 Constraints

The following constraints were identified for this study:

- **Avoid impacts to existing federal projects and authorities**. These include operation of the KRNP, including the minimum 9-foot river navigation channel and the Jerry F. Costello Lock and Dam.

- **USACE General Navigation Feature (GNF) measures must be implemented below the OHWM** of 369.63 ft NAVD 88 (see Section 2.1) (with the exception of dredge placement areas which are treated as GNF under CAP 107).

1.10.3 Considerations

The following considerations were also identified in plan formulation:

- Avoid or minimize negative impacts to the environment.
- Avoid or minimize impacts to cultural resources.
- Avoid or minimize impacts from Hazardous, Toxic, and Radioactive Waste (HTRW).
- Minimize negative impacts to private and public landowners.
- Minimize maintenance as much as possible. Any future USACE dredging in the oxbow will be limited by funding. If this project recommends dredging of the oxbow channel(s), the CAP authority would cover the cost of USACE's initial dredging. After that, the authority would extend into the future for USACE to dredge in the oxbow again, but funding may or may not be available depending on future national priorities. If additional federal dredging funds are not available, the dredging maintenance would fall to KRPD.

2. EXISTING CONDITIONS – DREDGING AND OPERATIONS

This section assesses the existing conditions of dredging and operations in the study area.

2.1. NAVIGATIONAL SERVITUDE AND ORDINARY HIGH WATER MARK

Existing Conditions

Navigational servitude emanates from the Commerce Clause of the Constitution of the United States, Article I, Section 8, Clause 3. The servitude recognizes the Federal Government's right to use or deepen the navigable waters of the United States for navigation projects without compensation. The federal navigational servitude extends below the Ordinary High Water Mark (OHWM) of navigable waters.

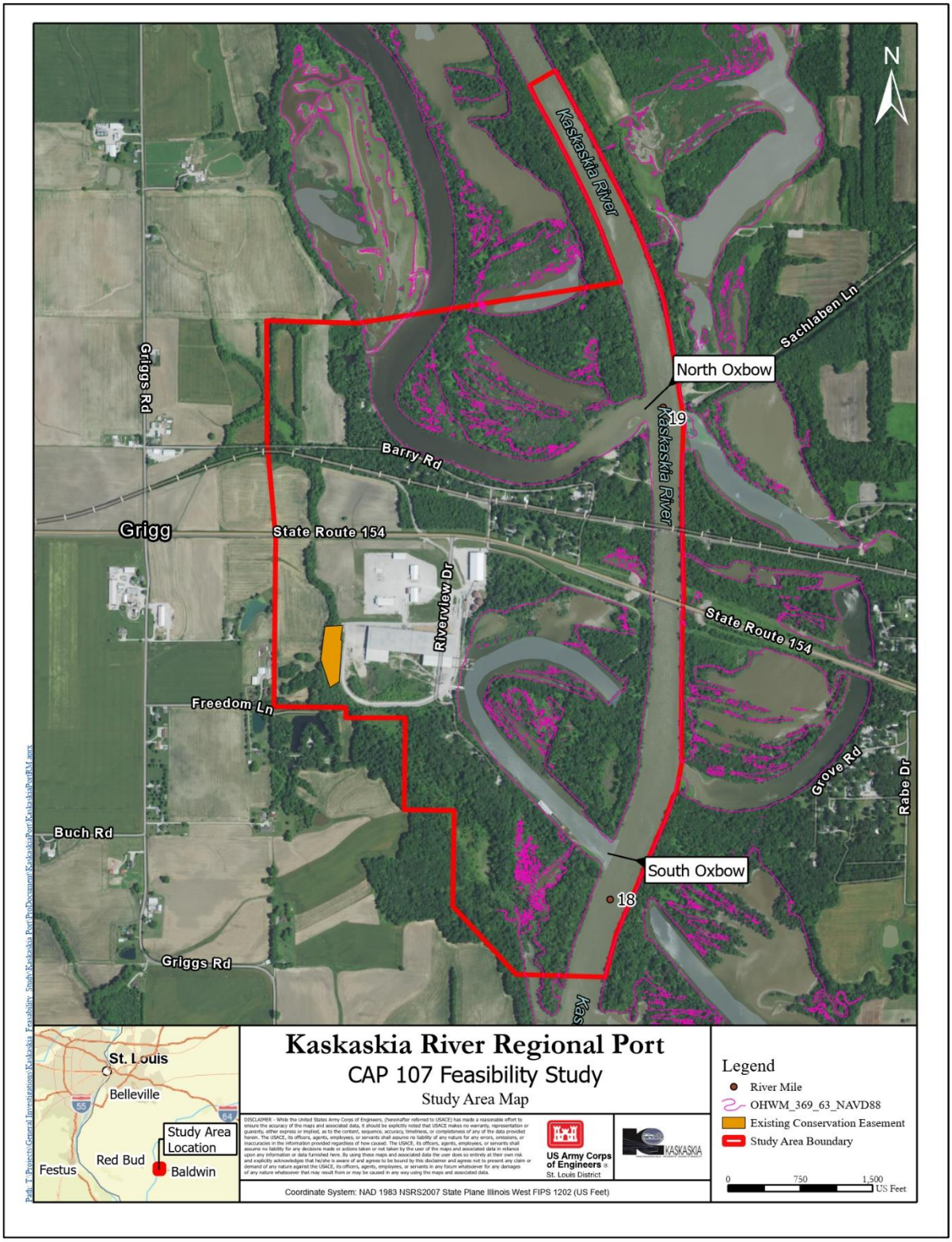

Figure 2 shows the navigation servitude boundary at the OHWM on the Kaskaskia River at

KRPD#2, which is 369.63 ft NAVD 88 (370 ft NGVD). This level was determined by the upper limits of pool operation at the Red Bud gage on the Kaskaskia River which is the hinge point for the Jerry F. Costello Lock and Dam. The Red Bud gage is located at Kaskaskia River Mile 19.3 upstream of KRPD#2.

2.2. DREDGING OPERATIONS

2.2.1. Dredging Frequency and Type

Vessel traffic in and out of the oxbow has helped to keep the south oxbow open for shipping, but KRPD notes that periodic dredging is required to maintain access at KRPD#2. Over the past few decades, KRPD and the Southern Illinois Transfer Company have dredged the south oxbow channel approximately once every 10 years. This dredging did not occur on a regular schedule. The most recent channel dredging occurred in 2018, and before that, in 2008. In both of these dredging events, mechanical dredging was used; dredged material was placed on containment barges which were unloaded with overhead crane to dump trucks, and the material was trucked less than half a mile to the placement site south of the TMW building known as DD-1 in this study.

Additional dredging has been done at the mouth of the south oxbow. This includes USACE dredging at the mouth of several oxbows under an environmental restoration program in 2002, 2021, and 2022. Both mechanical and hydraulic dredging have been used at the mouth of the oxbow. The north oxbow mouth was dredged just once in 2002; the north oxbow channel has never been dredged. See Appendix B – Hydrology and Hydraulics for more information on past dredging events.

Section 3.1 describes the most recent bathymetric data for both oxbows indicating the approximate depth of both oxbows.

2.2.2. Dredge Placement Areas

There are two dredge placement areas currently located at KRPD#2, identified as DD-1 and DD-2 in this study (**Figure 4**).

USACE standard management of dredge placement areas require periodic vegetation removal prior to usage for proper sediment control. However, for these placement areas, the USACE Regulatory Branch has not required environmental reviews or mitigation since the features were constructed for repeated dredge placement purposes. USACE regulations require impacts to environmental resources and any associated mitigation to be included in the costs for any proposed alternatives.

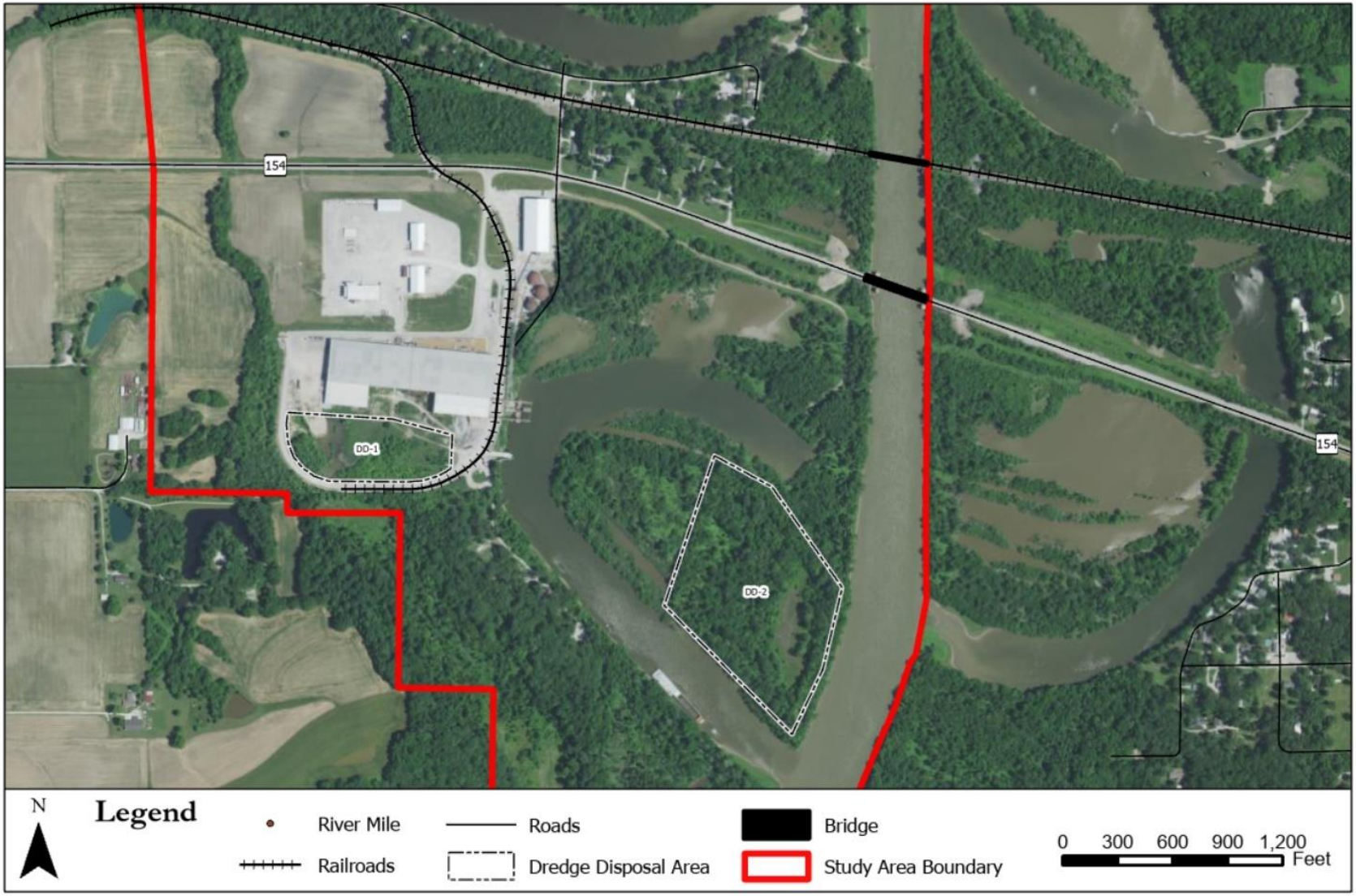

Figure 4. Dredge Placement Areas 1 and 2 (DD-1 and DD-2)

DD-1

The DD-1 site is located to the south of the TMW building on KRPD-owned land. The site has been gradually filled by KRPD over time. The most recent elevation data covering the site is from 2013 LIDAR; KRPD informed the study team in 2023 that fill material has since been added to the site. Existing capacity at DD-1 is estimated at 9,000 CY. The habitat is highly degraded industrial area with a mix of upland and wetland plant species, dominated by early successional cottonwoods.

DD-2

Background information

The DD-2 site is located to the east of the port terminal across the oxbow channel on a peninsula. The land is owned by KRPD but there are two USACE permanent easements along the length of the KRNP that cover the DD-2 location (see Appendix F - Real Estate Plan). During construction and later maintenance of the KRNP navigation channel, USACE cleared or filled 2,000-3,000 acres of bottomland forest and wetlands for the placement of excavated and dredged materials. Further information on the KRNP is available in the 2017 USACE Kaskaskia River Project Master Plan (USACE, 2017).

The site identified as DD-2 in this study was identified in the KRNP plans and was prepared as a placement site for the KRNP. However, to the study team's knowledge and the Sponsor's knowledge, DD-2 has never been used for dredge placement from the main Kaskaskia River under the KRNP. The Sponsor confirmed that dredged materials have not been brought into the containment area for at least 20 years.

Existing Conditions

Figure 5 shows the existing berm at DD-2, which forms the boundary of the placement site. Existing capacity at DD-2 is estimated at approximately 105,000 CY (if filled to the top of the existing berm). Lack of use has allowed the area to revert to a more natural state, including floodplain forest. Local terrestrial species could reside in DD-2 as well as migratory birds utilizing the Mississippi flyway. USACE does not currently use DD-2 for dredge disposal from the KRNP.

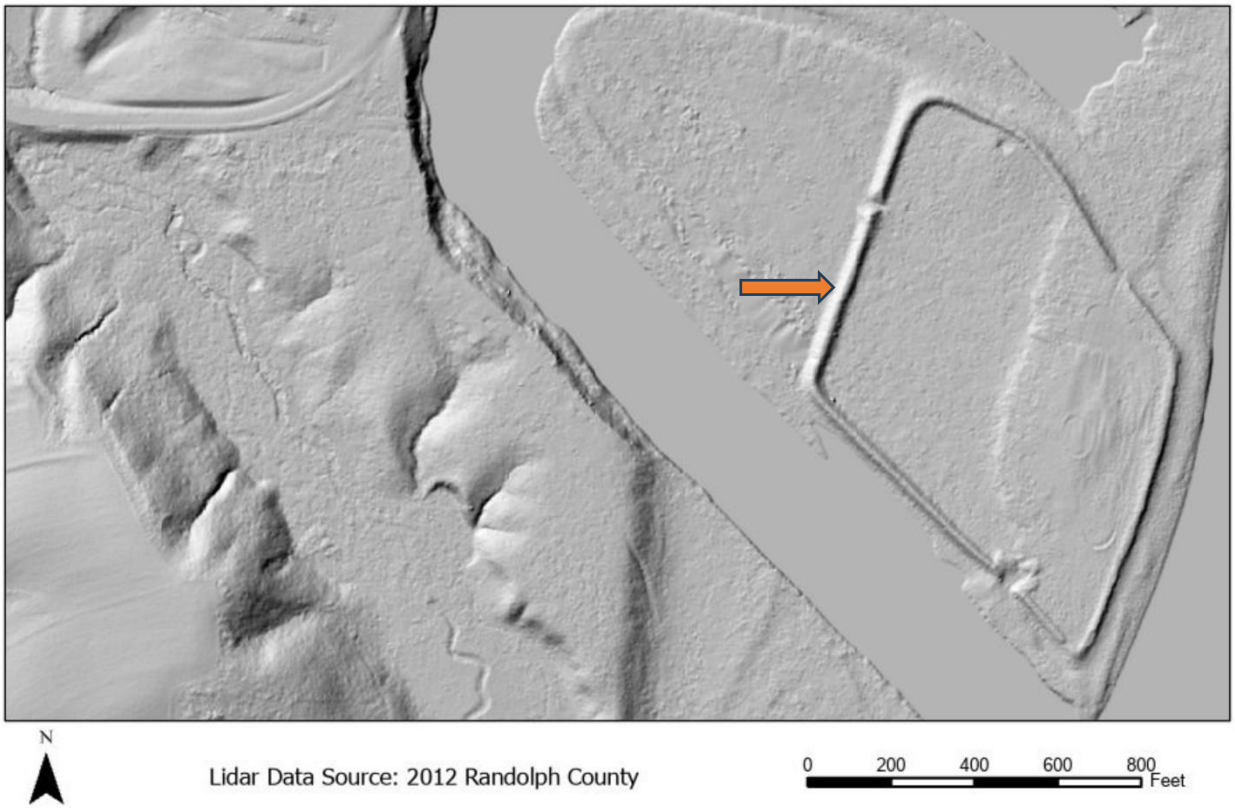

Figure 5. LIDAR Imagery Showing Elevation and the Existing Berm at DD-2 (shown at orange arrow)

2.3 ECONOMIC CONDITIONS

KRPD#2 is accessible to the Canadian National Railroad spur, includes a 50-ton overhead electric crane for harbor loading and off-loading, a shipyard, 30,000 square foot humidity/temperature-controlled warehouse, bulk cargo dump dock, steel processing center and recent expansions. Customers include the TMW steel processing complex and Gateway FS (grain shipments and fertilizer).

The dock at KRPD#2 handles commodities that include steel, gypsum, and fertilizer. Total tonnage over the past ten years has ranged from a high of 971,746 in 2023 to a low of 135,458 in 2019 with an average total tonnage of 311,274 (**Table 1**, as provided by KRPD). Tonnage amounts showed large leaps from 2016 – 2018 but then dramatically decreased the next two years. The year 2022, however, saw a substantial increase in tonnage of outbound gypsum such that it was greater than the tonnage of any other commodity. This continued the following year with outbound gypsum growing from 551,836 tons in 2022 to 862,887 tons in 2023.

Table 1. Tonnage by Year at KRPD#2

Year	Steel	Fertilizer	Frac Sand	Slag/ Fly Ash	Gypsum/ Stone	Misc. Coal/Grain	Total Tonnage
2014	15,393	32,262	-	88,499	-	4,817	140,971
2015	12,650	27,479	-	50,127	36,415	35,876	162,547
2016	11,232	38,409	-	118,879	-	30,856	199,375
2017	41,420	43,723	98,759	50,153	-	41,544	275,598
2018	32,273	35,577	11,299	107,653	4,845	56,397	248,043
2019	16,505	45,754	-	51,134	-	22,065	135,458
2020	33,948	50,866	-	-	27,684	26,460	138,958
2021	55,113	67,241	-	-	46,041	3,499	171,894
2022	56,671	59,645	-	-	551,836	-	668,152
2023	32,743	76,115	-	-	862,887	-	971,746
Total	**307,948**	**477,070**	**110,058**	**466,444**	**1,529,709**	**221,513**	**3,112,741**

Source: Data obtained from Kaskaskia Regional Port District.

Despite reporting no tonnage after 2019, slag/fly ash represented the largest percentage of commodities from 2014 – 2023 at 25 percent. Gypsum/stone was just behind at 24 percent followed by fertilizer at 22 percent (**Table 2** and **Figure 6**).

Table 2. Percent of Tonnage by Year at KRPD#2

Year	Steel	Fertilizer	Frac Sand	Slag/ Fly Ash	Gypsum/ Stone	Misc. Coal/Grain	Total Tonnage
2014	11%	23%	-	63%	-	3%	100%
2015	8%	17%	-	31%	22%	22%	100%
2016	6%	19%	-	60%	-	15%	100%
2017	15%	16%	36%	18%	-	15%	100%
2018	13%	14%	5%	43%	2%	23%	100%
2019	12%	34%	-	38%	-	16%	100%
2020	24%	37%	-	-	20%	19%	100%
2021	32%	39%	-	-	27%	2%	100%
2022	8%	9%	-	-	83%	-	100%
2023	3%	8%	-	-	89%	-	100%

Source: Data obtained from Kaskaskia Regional Port District.

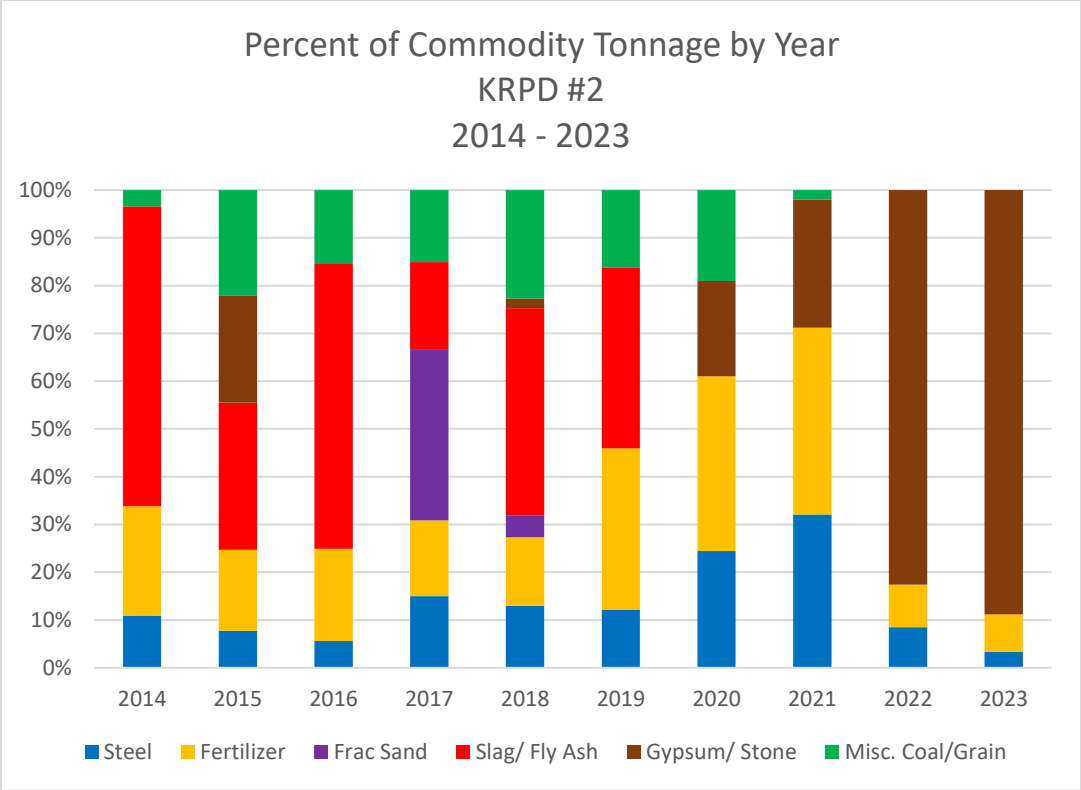

Figure 6. Percent of Tonnage by Year at KRPD#2, 2014-2023

In the existing condition, there is no barge traffic in the north oxbow.

3. AFFECTED ENVIRONMENT*

This section describes the relevant existing biological, physical, economic, and social conditions in the proposed action area, which are referred to under the NEPA process as the Affected Environment. The resources described in this section are those recognized as significant by laws, executive orders, regulations, and other standards of national, state, or regional agencies and organizations; technical or scientific agencies, groups, or individuals; and the general public.

3.1 HYDROLOGY AND HYDRAULICS

KRPD#2 is located in the south oxbow along the right descending bank of the Kaskaskia River near RM 18. The nearest upstream gage at Red Bud is at RM 19.3. Gage zero at this location is elevation 299.63 ft NAVD 88 and flood stage is 74.00 ft. The highest stage at this location was 94.83 ft on 2 January 2016.

The sedimentation causing the shallow depths and narrow channel widths results from the deposition of silt and sediment particles from river water in the oxbow. The flow velocity in the

oxbow is extremely slow and sometimes zero, creating the appropriate conditions for silt and sediment to drop out of suspension. After flooding in the oxbow, the receding floodwaters also leave behind sediment on the riverbanks and low-lying land which later ends up running off into the oxbow. Some bank erosion and upland runoff may also carry sediment into the oxbow where it sinks to the bottom. KRPD has conducted dredging approximately in the south oxbow approximately every 10 years in recent decades, with the last two maintenance dredging operations taking place in 2008 and 2018.

A bathymetric survey (topography of the underwater riverbed) of the south oxbow was conducted in 2016. At that time, elevations ranged from approximately 353 to 366 ft NAVD 88. A bathymetric survey was more recently conducted on 28 October 2021; these values range from 354 to 367 ft NAVD 88). **Error! Reference source not found.** shows a surface difference of the s urvey data. The green areas are deeper since 2016 and the blue areas that are shallower. The differences in depth in the five years between the 2016 and 2021 bathymetric surveys show that much of the outer curve (west bank) became shallower, including the area around the crane and docks, even after dredging occurred in 2018.

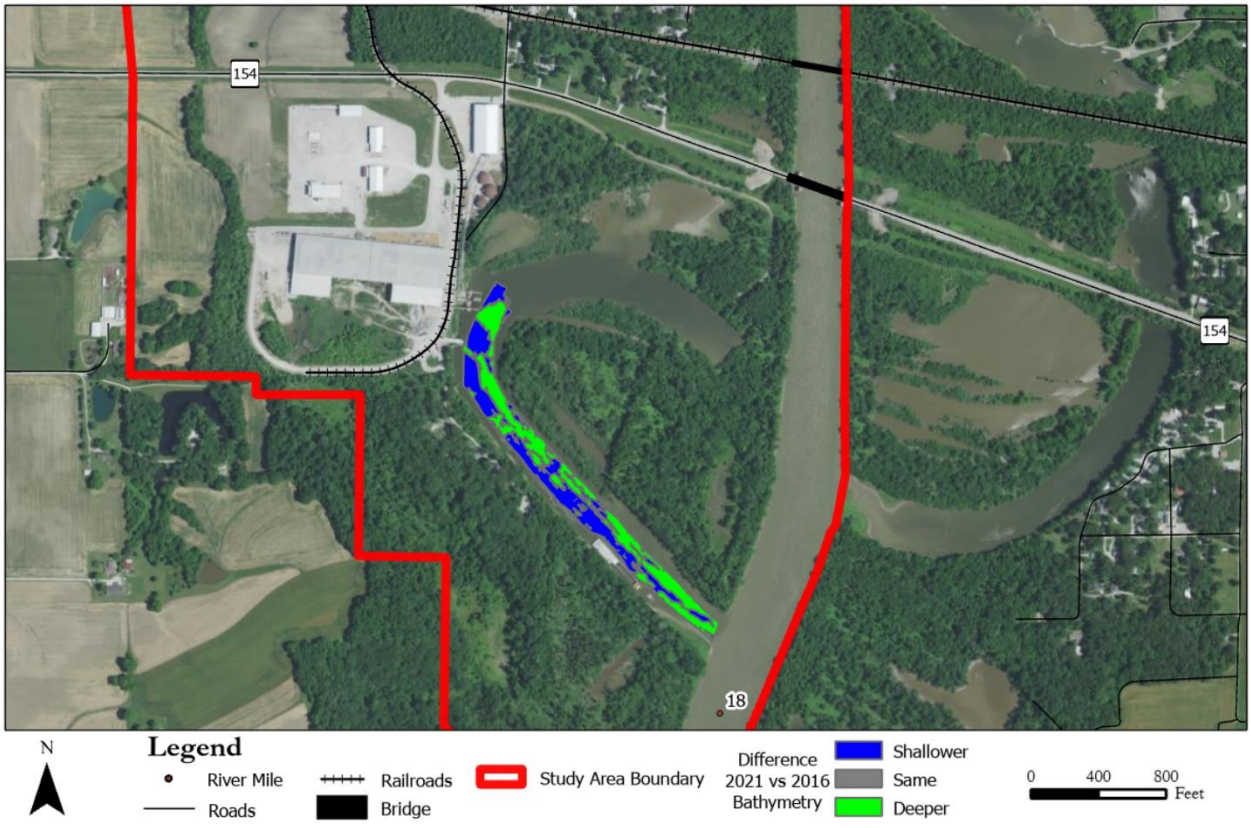

Figure 7. 2021 vs 2016 South Oxbow Bathymetric Survey – Surface Difference

The width of the south oxbow navigation channel is approximately 45 ft, which leaves only 5 ft on either side of a barge for maneuvering within the oxbow. In the past, KRPD has dredged the

channel at approximately ten-year intervals. USACE has also conducted environmental dredging activities to maintain oxbow conductivity; this environmental dredging has had the ancillary benefit of increasing oxbow navigability. A summary of dredging activities is available in Table B-1 of Appendix B – Hydrology and Hydraulics.

A bathymetric survey of the north oxbow was conducted in 2023. **Error! Reference source not found.** shows the north oxbow bathymetry with elevations ranging from 354 ft to 367 ft NAVD 88. The north oxbow is shallower near the mouth. The white sections in **Error! Reference source not found.** indicate the shallowest part of the oxbow channel, indicating a buildup of deposition. The oxbow had not been surveyed prior to 2023; so, there were no surveys that could be used for comparison.

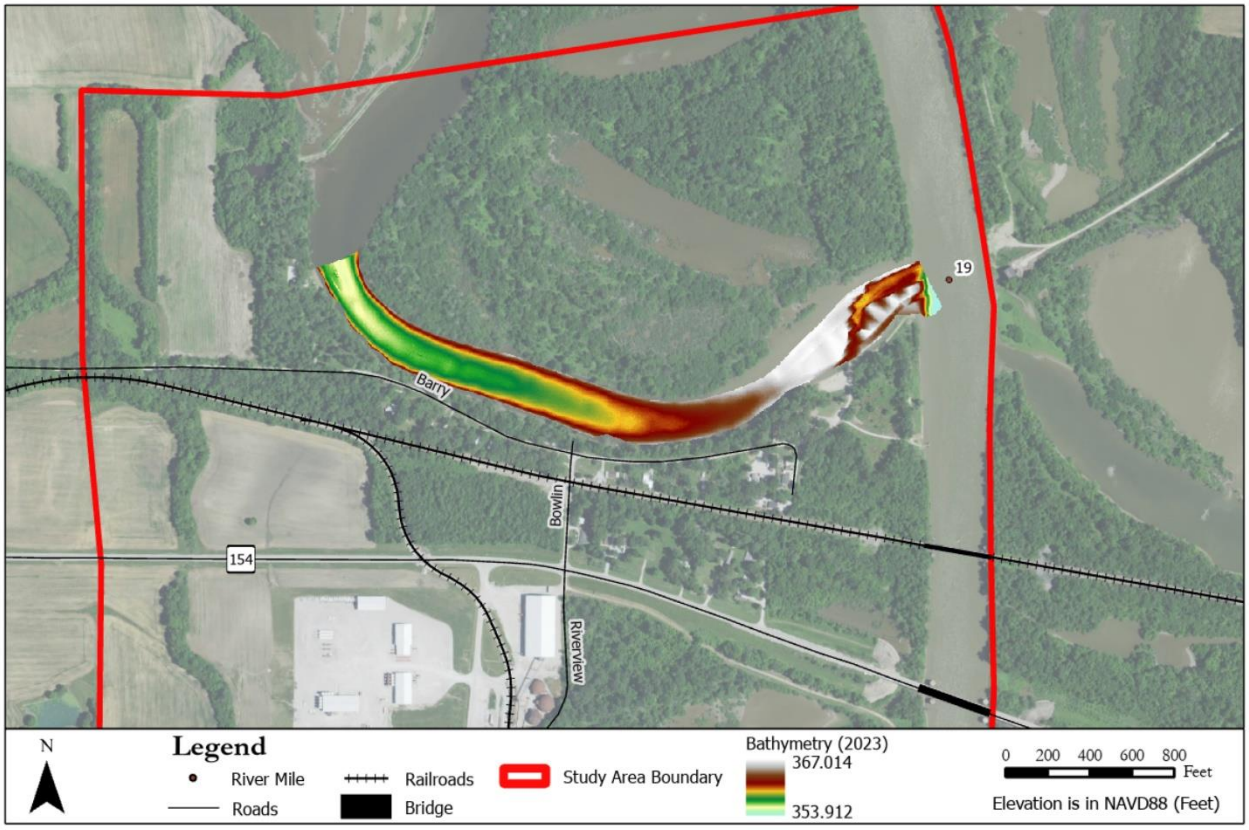

Figure 8. North Oxbow Bathymetry from June 2023 Single Beam Survey

For both the north and south oxbows, shipping stops when the Jerry F. Costello Lock and Dam is closed. According to the KRPD#2 Port operator, this means that flooding shuts down shipping at KRPD#2 when the Kaskaskia River flow is 7,000 cfs or higher. Based on the standard operating procedure at Jerry F. Costello Lock and Dam, the lock operation will continue until the pool water surface elevation is above 380.0 ft NAVD 88, possibly until 6-8 inches above 380.0 ft if the miter gate recesses are hosed out according to USACE Operations personnel. Analysis on the frequency of oxbow flooding can be found in Appendix B – Hydrology and Hydraulics.

There is a water intake structure for the coal-fired power plant in Baldwin, IL on the left descending bank of the Kaskaskia River opposite the mouth of the north oxbow. The power plant is partially in operation as of 2023 and is expected to close by 2025. In the existing condition, navigation on the river does not impact the water intake.

3.2 CLIMATE CHANGE

Climate change is a fundamental environmental issue and is a particularly complex challenge given its global nature and inherent interrelationships among its sources, causation, mechanisms of action, and impacts. Analyzing a proposed management measure's greenhouse gas emissions (GHG) and how climate change may change a management measure's environmental effects can provide useful information to decision makers and the public. Climate change science is evolving and is only briefly summarized here. In 1970 the Council of Environmental Quality estimated the level of atmospheric carbon dioxide to be 325 parts per million (ppm). Since 1970, the concentration of atmospheric carbon dioxide has increased at a rate of about 1.67 ppm per year (1970-2019) to approximately 407 ppm as of September 2019 (current globally averaged value). Based on the United States Global Change Research Program as well as other scientific records, it is now well established that rising global atmospheric greenhouse gas emission concentrations are significantly affecting the Earth's climate (IPCC, 2020). A large body of scientific evidence indicates that increases in GHG in the Earth's atmosphere are contributing to changes in national and global climatic conditions (Melillo, Richmond, & Yohe, 2014). These changes include such things as average temperature, changes in precipitation patterns, and increases in the frequency and intensity of severe weather events. These changes have the potential to impact a wide sector of the human environment including water resources, agriculture, transportation, human health, energy, and aquatic and terrestrial ecosystems. Therefore, it is important to understand the potential impacts of federal actions on GHG emissions and climate change as well as the potential changes that may occur to the human environment that could affect the assumptions made with respect to determining the impacts and efficacy of the federal action in question.

Upper Mississippi River Region Climate Trends

USACE is undertaking climate change preparedness and resilience planning and implementation in consultation with internal and external experts using the best available climate science and climate change information. USACE has prepared concise and broadly accessible summary reports of the current climate change science with specific attention to USACE missions and operations for the continental United States, Alaska, Hawaii, and Puerto Rico. Each regional report summarizes observed and projected climate and hydrological patterns cited in reputable peer-reviewed literature and authoritative national and regional reports. The following information on climate trends and future climate projections comes from the climate change and hydrology literature synthesis report for the Upper Mississippi River region (USACE, 2015).

Summary of Observed Climate Findings:

> *The general consensus in the recent literature points toward moderate increases in temperature and precipitation, and streamflow in the Upper Mississippi Region over the past century. In some studies, and some locations, statistically significant trends have been quantified. In other studies and locales within the Upper Mississippi Region, apparent trends are merely observed graphically but not statistically quantified. There has also been some evidence presented of increased frequency in the occurrence of extreme storm events (Villarini et al., 2013). Lastly, a transition point in climate data trends, where rates of increase changed significantly, at approximately 1970 was identified by multiple authors.*

Study Area Climate Trends & Greenhouse Gas Emissions

In terms of climate change, changes in the annual and long-term hydrologic cycles of the Kaskaskia River influence the study area. The two primary factors influencing hydrology in the vicinity of the study area include (1) snowmelt and precipitation events in the entire watershed of the river, and (2) local and regional precipitation. In general, there is a seasonal pattern to the river's hydrology with peak flows typically occurring in the spring and early summer associated with rain and snowmelt followed by declining flows from early summer through early fall.

The monthly mean average temperatures for the gage at the Jerry F. Costello L&D for the period from 2000 to 2024 are in **Error! Reference source not found.**. The average monthly p recipitation for 1991 to 2020 for the gage at Red Bud, IL is in **Error! Reference source not found.**. The average monthly snowfall for 1991 to 2020 for the gage at Red Bud, IL is in **Error! Reference source not found.**.

Table 3. Monthly Mean Average Temperatures for Jerry F. Costello L&D Gage (°F)

Variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Mean	33.2	35.8	46.9	56.9	66.7	76	79.2	77.3	70.6	58.3	46.9	36.8	56.4
Max	42.7	45.9	59.3	62.5	71.8	80.2	85.7	83.2	77.1	64.2	52.1	47.5	63.2
Max - Year	2006	2017	2012	2001	2012	2010	2012	2007	2019	2016	2009	2015	
Min	42.7	45.9	59.3	62.5	71.8	80.2	85.7	83.2	77.1	64.2	52.1	47.5	45.4
Min - Year	2014	2021	2013	2018	2008	2003	2014	2004	2006	2009	2014	2000	

Table 4. Monthly Average Cumulative Precipitation for Red Bud, IL Gage (in.)

Month:	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Red Bud, IL	2.60	2.42	3.62	4.85	5.09	4.24	3.86	2.95	3.17	2.95	3.86	2.90	42.51

Table 5. Monthly Average Cumulative Snowfall for Red Bud, IL Gage (in.)

Month:	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Red Bud, IL	2.8	3.7	0.6	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.5	2.4	10.2

3.3 LAND USE/LAND COVER

The land areas adjacent to the Kaskaskia River are comprised of extensive mixed bottomland forests, which consist of pecan (*Carya illinoinensis*), soft maple (*Acer spp.*), bur oak (*Quercus macrocarpa*), pin oak (*Quercus palustris*), shellbark hickory (*Carya laciniosa*), and willow (*Salix spp.*), many cultivated and fallow fields, mature bottomland hardwoods, oxbow lakes, and emergent and forested wetlands (USFWS, 2021). Lands adjacent to the river within the study area are within the floodplain and are subject to frequent inundation (USACE, Kaskaskia River Regional Port Terminal 2 Site Visit, 2021). This area is also intermingled with sloughs and portions of remnant river channels that have been exaggerated by the raising of the navigation pool and have resulted in increased wet and semi-emergent habitat.

The increasingly isolated backwaters, in association with inundation on a routine basis, have allowed for the establishment and expansion of an extensive wetland within the study area. Wetland species observed within the south oxbow included willow species (*Salix spp*.), buttonbush (*Cephalanthus occidentalis*), silver maple (*Acer saccharinum*), cottonwood (*Populus deltoides*), smartweed (*Polygonum spp*.), and rosemallow (*Hibiscus moscheutos*) (USACE, Kaskaskia River Regional Port Terminal 2 Site Visit, 2021). **Error! Reference source not found.** s hows National Wetland Inventory classifications for wetlands in the study area. IDNR actively manages a wetland complex adjacent to the north oxbow to include food crops, bank revetment, and routine inundation to support wetland vegetation for wildlife habitat and recreation.

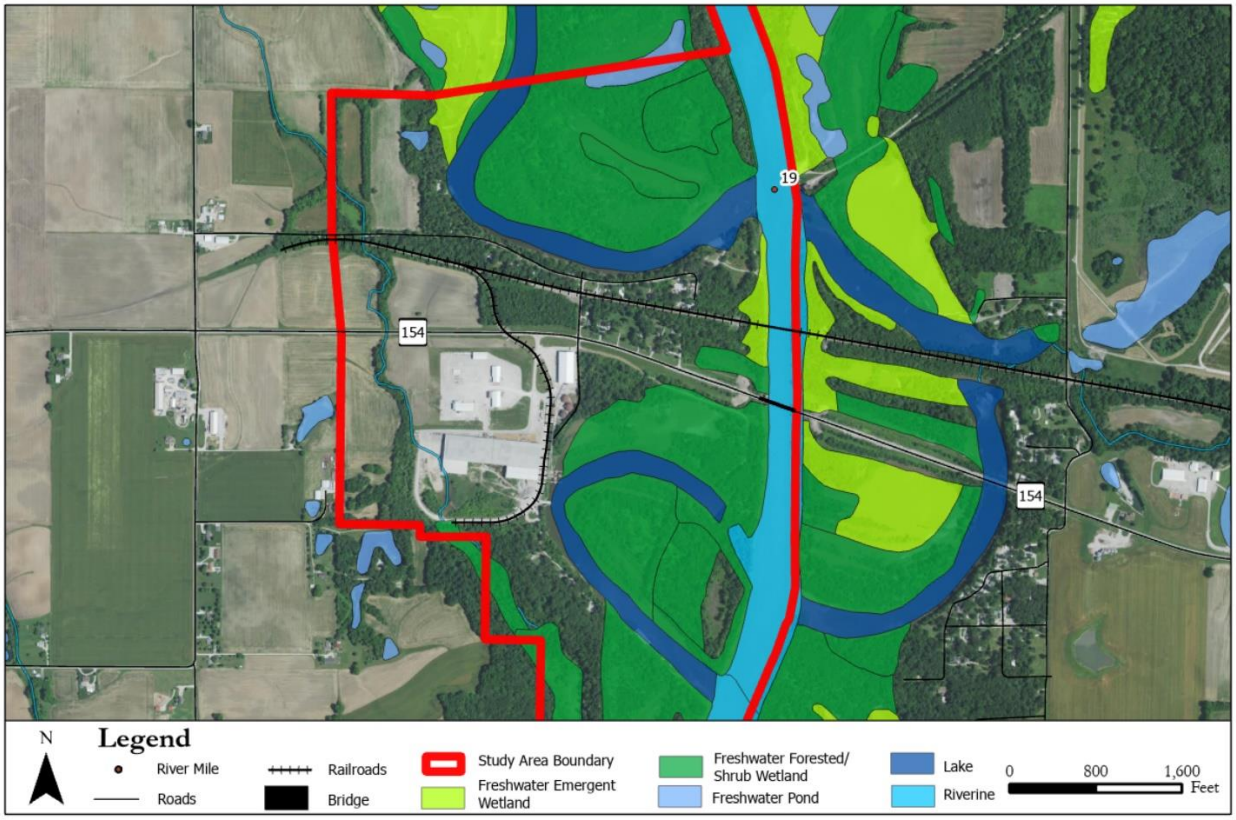

Figure 9. National Wetlands Inventory Map of the Study Area

Figure 10. Photo – Expansive Wetland Forming Upstream of the South Oxbow Dock; Evidence of Shallow Depths with Dense Woody Vegetation Growing

The DD-2 site is located to the east of the port terminal across the oxbow channel on a peninsula. It consists of bottomland hardwood forest that is surrounded by an old berm that was created for past dredge material use. Dredge materials have not been brought into the containment area for at least 20 years.

At the KRPD#2 terminal on the south oxbow, land use is industrial, including rail, road, and dock infrastructure, as well as industrial buildings and storage facilities.

At the north oxbow, in addition to bottomland hardwood forest, there are agricultural fields and several privately owned homes, cabins, and trailers positioned along the left descending bank of the oxbow.

3.3.1 Prime Farmland

Prime and unique farmland is important in meeting the Nation's short- and long-range needs for food and fiber. Prime farmland soils, as defined by the U.S. Department of Agriculture (USDA), are soils that are best suited for food, feed, forage, fiber, and oilseed crops. Prime farmland soils may presently be used as cropland, pasture, forestland, or for other purposes. Soils that have a high-water table, are subject to flooding, or are prone to droughts may qualify as prime farmland where these limitations are overcome by drainage measures, flood control, or irrigation. The USDA uses the following characteristics to classify prime farmland soils:

- Adequate and dependable supply of moisture from precipitation or irrigation.
- Temperature and growing season are favorable.
- Level of acidity or alkalinity and the content of salts and sodium are acceptable.
- Few, if any, rocks and permeable to water and air.
- Not excessively erodible or saturated with water for long periods, and they are not frequently flooded during the growing season or are protected from flooding.
- Slopes range mainly from 0 to 6 percent.

According to the Natural Resource Conservation Service (NRCS), USDA, Web Soil Survey, prime farmland, or farmland of statewide importance accounts for approximately 156.6 acres (27.3%) of the soils within the study area. Approximately 417.1 acres (72.7%) of the study area is defined as "not prime farmland", with a large percentage classified as water (126.6 acres, 22.1%).

3.4 AIR QUALITY & NOISE

The Clean Air Act of 1963 requires the U.S. Environmental Protection Agency (EPA) to designate National Ambient Air Quality Standards (NAAQS). The EPA has identified standards for six pollutants: lead, sulfur dioxide, carbon monoxide, nitrogen dioxide, ozone, particulate matter (less than 10 microns and less than 2.5 microns in diameter), along with some heavy metals, nitrates, sulfates, volatile organic and toxic compounds (**Error! Reference source not found.**, (U.S. EPA, 2018). This region of Randolph County, IL, is currently in attainment for all EPA air quality standards (U.S. EPA, 2021).

Table 6. Six Pollutants and their Standard Criteria Designated by the U.S. EPA (U.S. EPA, 2018)

Pollutant	Averaging time	Criteria	Form
Carbon monoxide	8 hours	9 ppm	Not to be exceeded more than once per year
Carbon monoxide	1 hour	35 ppm	Not to be exceeded more than once per year
Lead	Rolling 3 month	0.15 µg/m^3	Not to be exceeded
Nitrogen dioxide	1 hour	100 ppb	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years
Nitrogen dioxide	1 year	53 ppb	Annual Mean
Ozone	8 hours	0.070 ppm	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
Particle Pollution ($PM_{2.5}$)	1 year	12.0 µg/m^3	Annual mean, averaged over 3 years
Particle Pollution ($PM_{2.5}$)	24 hours	35 µg/m^3	98th percentile, averaged over 3 years
Sulfur dioxide	1 hour	75 ppb	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years

Port-related noises can consist of maintenance and operations equipment (e.g., lawn mowers, cranes, etc.), vehicle traffic, towboat motors, and recreational boat motors. In addition, air horn signals are used during Port operations. Due to a variety of activities at KRPD#2, noise levels can range widely. For example, a typical car can produce 60 – 90 decibels (dB) at a distance of 50 ft, while a pleasure boat may produce noise levels ranging from 65 – 115 dB (U.S. EPA, 1974). Noise from lawnmowers and chainsaws range from 90 – 100 dB (**Error! Reference source not f ound.**).

Currently, noise sources surrounding the study area are varied depending on the time of day and season. The current human activities causing elevated noise levels in the vicinity of the study area include cars, trucks, boats, port operations, and barge traffic. The sound of firearms during hunting season is also prevalent. Illinois State Route 54 is immediately north of the study area.

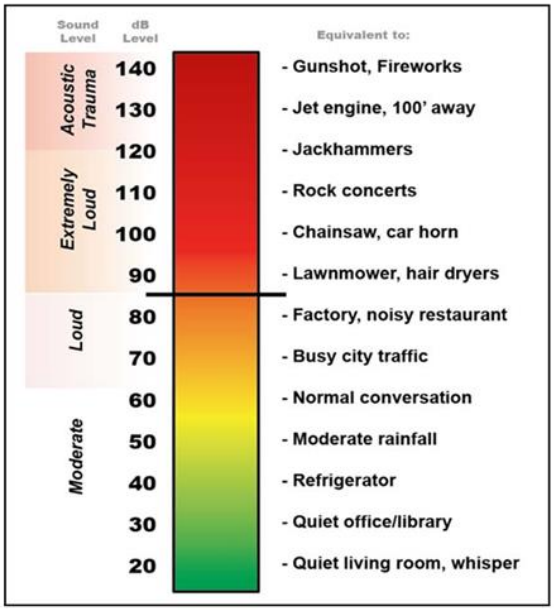

Figure 11. Sound and decibel (dB) Levels of a Variety of Sources that May Occur at the Jerry F. Costello Lock and Dam

3.5 GREENHOUSE GASES

There are currently no Federal Greenhouse Gases (GHG) emission thresholds. Therefore, a GHG significance threshold to assess impacts is not proposed. Rather, in compliance with NEPA implementing regulations, the anticipated emissions as well as their associated social costs are disclosed for each alternative without expressing a judgment as to their significance.

Council on Environmental Quality Guidance on Consideration of Greenhouse Gas Emissions and Climate Change.

On January 9, 2023, the CEQ released National Environmental Policy Act Guidance on Consideration of Greenhouse Gas Emissions and Climate Change. This guidance provides details for how federal agencies can incorporate GHG and climate change considerations into the NEPA process, including assessing and reducing impacts from GHG emissions or incorporating climate resiliency considerations into alternatives. While the Climate Change Guidance is considered "interim," it is effective immediately, while CEQ seeks public comment on the guidance.

As discussed in this guidance, when conducting climate change analyses in NEPA reviews, agencies are recommended to consider the potential effects of a proposed action on climate change, including by assessing both direct and indirect GHG emissions and reductions from the proposed action, quantifying the baseline (no-action) emissions, and the effects of climate change on a proposed action and its environmental impacts. The guidance further recommends that greenhouse gas emissions should be quantified for the gross and net emissions for each chemical species (i.e., methane, nitrous oxide, etc.) and summarized as carbon dioxide

equivalent (CO_2e) and social cost of greenhouse gases. The guidance also emphasizes the "rule of reason" which states that the depth of the GHG analysis should be commensurate to the amount of greenhouse gases emitted.

Social Cost of Greenhouse Gases

The 2023 CEQ guidance recommends including calculation of social cost of greenhouse gas (SC-GHG) in NEPA documents to disclose the potential future costs to society stemming from the carbon emitted by a project. Per this guidance, SC-GHG is not required for use in a cost-benefit analysis and was not used in the economics analysis for computing a cost-benefit ratio (CEQ 2023).

Existing greenhouse gas emissions from the study area are related to commercial use of the Kaskaskia River, road and rail traffic to and from the study area, and KRPD#2 operations. Commercial emissions within the study area come from barge traffic utilizing the Kaskaskia River, KRPD#2 operations, and dredging .

3.6 WATER QUALITY

Section 303(d) of the Clean Water Act (CWA) requires states to generate lists of impaired water bodies every two years. Impaired water bodies are those that do not meet state water quality standards for the water bodies' designated uses. Specific water quality criteria may vary between various states and for individual pollutants depending on the designated use for a specific segment of the Kaskaskia River.

The study area is within the Lower Kaskaskia HUC12 watershed. The Illinois Environmental Protection Agency (IEPA) samples surface waters within HUC12 watersheds on a 4-year rotation to meet Section 305(b) of the Clean Water Act (1976). IEPA reports the resource quality of its waters in terms of the degree to which the beneficial uses of those waters are supported and the reasons (i.e., causes and sources) beneficial uses may not be supported.

According to the IEPA, impaired uses and causes for impairment (within parentheses) for the Kaskaskia River include: fish consumption (Aldrin, Dieldrin, Endrin, Heltachlor, Mercury, Mirex, and Toxaphene); aquatic life (dissolved oxygen, flow alteration, habitat alterations, and sedimentation/siltation), and public and food processing water supplies (atrazine) (USEPA, 2022).

Water quality parameters were documented in March 2020 at two locations on the Kaskaskia River, one upstream and one downstream of the study area. The average temperature was 47.3°F and the pH was 7.77; readings for total suspended solids, total organic carbon, nitrate, nitrogen dioxide, and phosphate were all within acceptable levels (USACE MVS Historical Water Quality Monitoring Database, 2021).

3.7 HAZARDOUS, TOXIC, AND RADIOACTIVE WASTE (HTRW)

USACE regulations (ER-1165-2-132, ER 200-2-3) and District policy require procedures be established to facilitate early identification and appropriate consideration of potential HTRW in feasibility, preconstruction engineering and design (PED), land acquisition, construction, operations and maintenance, repairs, replacement, and rehabilitation phases of water resources studies or projects by conducting a Phase I Environmental Site Assessment. USACE specifies that these assessments follow the process/standard practices for conducting Phase I Environmental Site Assessments published by the American Society for Testing and Materials (ASTM). A Phase I Environmental Site Assessment will be prepared prior to the final report.

The purpose of a Phase I Environmental Site Assessment is to identify, to the extent feasible in the absence of sampling and analysis, the range of contaminants (i.e. Recognized Environmental Conditions, RECs) within the scope of the U.S. Environmental Protection Agency's (EPA) Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and petroleum products. Current policy is to avoid known HTRW to the extent practicable or until hazard risks and potential liability are mitigated.

For the purpose of assessing environmental risk in the early stages of this project, a preliminary HTRW assessment has been completed for the study area. The assessment included review of readily available public records from the following databases:

1. U.S. Environmental Protection Agency Enforcement and Compliance History Online (ECHO)
2. U.S. Environmental Protection Agency Enviromapper
3. U.S. Environmental Protection Agency Institutional and Engineering Controls Data
4. IL Environmental Protection Agency (IEPA) Site Remediation Program (SRP) database
5. IL Environmental Protection Agency (IEPA) Leaking Underground Storage Tank Incident Tracking (LIT) database
6. Pipeline and Hazardous Materials Safety Administration’s National Pipeline Mapping System (NPMS)

There were no indications of Hazardous, Toxic, and Radioactive Waste discovered that would prevent the project from moving forward based on this preliminary assessment. A full Phase I Environmental Site Assessment would be completed during implementation phase prior to engaging in any real estate transactions or construction activities.

KRPD is ultimately responsible for the safe handling, storage and transportation of all materials within its authority and will abide by all relevant state and federal regulations as well as all appropriate safety protocols for these materials. Safety Data Sheets should be used to obtain detailed information such as particular properties of each material, the physical, health, and

environmental health hazards as well as protective measures and safety precautions for the safe handling, storing, and transporting of the material. The following is a brief general hazards overview of the materials shipped to/from/through KRPD#2:

1. Sheet Steel (Nucor Steel):

   Health Hazards:
   Steel products as sold by Nucor are not hazardous per OSHA GHS 29 CFR 1910, 1915, 1926; however, individual customer processes, (such as welding, sawing, brazing, grinding, abrasive blasting, and machining) may result in the formation of fumes, dust (combustible or otherwise), and/or particulates that may present the following hazards:
   - Carcinogen
   - Skin Sensitizer
   - Target Organ Effect – Lungs

   Precautions if Material is Spilled or Released:
   Emergency response is unlikely unless in the form of combustible dust. Avoid inhalation, eye, or skin contact of dusts by using appropriate precautions outlined in the SDS.

   Environmental Precautions:
   Some grades of steel may contain reportable quantities of alloying elements.

3.8 FISH & WILDLIFE

Aquatic Organisms

Game fish in the Kaskaskia River include white bass, bluegill, crappie, channel catfish, largemouth bass, freshwater drum, common carp, flathead catfish, and sauger (IDNR, 2021). USACE, in cooperation with the IDNR, developed stocking and habitat improvement programs to increase fish populations and species diversity within the Kaskaskia River. For example, IDNR stocked over 800 alligator gar in the Kaskaskia River from 2016-2017. Sturgeon species, including the federally endangered pallid sturgeon, have been observed immediately below the Jerry F. Costello Lock and Dam and at the confluence of the Kaskaskia and Mississippi Rivers (USACE, 2017).

The Kaskaskia River is bordered by many oxbows and sub-impoundments. Oxbow lakes, like those within the study area, provide fish in the main river with important spawning and nursery habitat or overwinter habitat (Shoup & Wahl, 2009). However, the importance of those oxbow habitats is highly dependent on connectivity to the main channel and water depths (Shoup & Wahl, 2009). In a site visit August 19, 2021, most of the backwater habitat in the south oxbow was accessible via boat, where approximately 72% of backwater habitat was greater than 4 ft deep.

Terrestrial Organisms

Land adjacent to the Kaskaskia River includes highly valuable wildlife and waterfowl habitat. The Kaskaskia River State Fish and Wildlife Area (SFWA) is approximately 2 miles from the study area. The close proximity of the study area to the Mississippi River corridor makes the study area and surrounding landscapes an important mid-migration resting area for waterfowl and other migratory birds. Baldwin Lake and the adjoining lands are designated as a waterfowl and wildlife refuge. During the winter, peak populations of 1,000 geese and 20,000 ducks may be seen on the area. Broods of goslings may be seen on the area beginning in late April. Various other species of wildlife may also be observed including white-tailed deer, racoons, rabbits, squirrels, shorebirds, wild turkeys, hawks, and various songbirds (IDNR, 2024).

Invasive Species

Primary invasive species of concern throughout the Kaskaskia River are Asian Carp. Both Bighead and Silver Carp have negatively impacted recreational boating and sport fishing and reduced native fish populations on the river (USACE, 2017). Two 2021 Kaskaskia River fishing tournaments documented a total of 144 bighead carp, 4 common carp, and 21 non-carp fish caught (IDNR, 2021). A multitude of agencies including but not limited to the Mississippi Interstate Cooperative Resource Association, Illinois Natural History Survey, IDNR, USFWS, and USACE are actively implementing management and control actions to reduce the spread and abundance of Bighead, Black, Grass, and Silver Carps that are established and expanding their range within the Mississippi River Basin.

Invasive plants found around the Kaskaskia River include autumn olive, bush honeysuckle, common reed, crown vetch, multi-flora rose, Japanese hops, Johnson grass, Callery pear, garlic mustard, and thistle. These plants are a threat to native species and reduce species diversity and ecosystem health. Vegetative management practices to control invasive/non-native plants are included in the Kaskaskia River Master Plan (USACE, 2017).

Bald and Golden Eagle

Bald Eagles (*Haliaeetus leucocephalus*) winter along the major rivers of Illinois and Missouri, and at scattered locations some remain throughout the year to breed. Perching and feeding occurs along the edge of open water, from which eagles obtain fish. The bald eagle was removed from the List of Endangered and Threatened Species in August 2007, but it continues to be protected under the Bald and Golden Eagle Protection Act and by the Migratory Bird Treaty Act. Recommendations to minimize potential project impacts to the bird and nests are provided by the U.S. Fish and Wildlife Service in the agency's National Bald Eagle Management Guidelines publication (U.S. Fish & Wildlife Service, 2018). No bald eagle nests were identified on a site visit February 2021, and review of the USACE Eagle Nest Site Database shows the closest known eagle nest to be 13.4 miles away from the study area (USACE, 2020).

Threatened and Endangered Species

State Listed Species

The Illinois Department of Natural Resource (IDNR) was contacted via the Ecological Compliance Assessment Tool (EcoCAT) website on 08 July 2024, for a list of Illinois State threatened and endangered species that could potentially be located in the study area (IDNR project number: 2500361; see Appendix E – Environmental Compliance). The Illinois Natural Heritage Database shows that two species, the Indiana Bat (*Myotis sodalis*), and the Least Tern (*Sterna antillarum*) may be in the vicinity of the proposed project location.

Federally Listed Species

In accordance with Section 7(a)(2) of the Endangered Species Act (ESA) of 1973 (as amended), federally funded, constructed, permitted, or licensed projects must take into consideration impacts to federally listed and proposed threatened or endangered species. USFWS was contacted via USFWS Information for Planning and Consultation (IPaC) website on 08 July 2024 for a list of Federal threatened, endangered and candidate species that could potentially be located in the study area (Project Code: 2023-0133946) (**Error! Reference source not found.**).

Table 7. Federally Listed Threatened and Endangered Species Potentially Occurring in the Study Area

Common Name	Scientific Name	Status	Habitat	Suitable Habitat
Indiana Bat	*Myotis sodalis*	Endangered	Caves and mines (hibernacula); small stream corridors with well-developed riparian woods, upland forests (foraging)	Present
Northern Long-eared Bat	*Myotic septentrionalis*	Endangered	Caves and mines (hibernacula); small stream corridors with well-developed riparian woods, upland forests (foraging)	Present
Tricolored Bat	*Perimyotis subflavus*	Proposed Endangered	Caves and mines (hibernacula); small stream corridors with well-developed riparian woods, upland forests (foraging)	Present
Monarch Butterfly	*Danaus plexippus*	Candidate^	North America	Present
Whooping Crane	*Grus americana*	Experimental Population, Non-Essential	Coastal marshes and estuaries, inland marshes, lakes, ponds, wet meadows and rivers, and agricultural fields	Present

^ Candidate species are plants and animals for which the U.S. Fish and Wildlife Service (FWS) has sufficient information on their biological status and threats to propose them as endangered or threatened under the Endangered Species Act (ESA), but for which development of a proposed listing regulation is precluded by other higher priority listing activities.

Indiana Bat (*Myotis sodalis*)
The Indiana Bat has been listed as endangered by the USFWS since March 11, 1967, and is still in danger of extinction throughout all or a significant portion of its range. This species has been noted as occurring in several Missouri and Illinois counties and are considered to potentially occur in any area with forested habitat. Indiana Bats migrate seasonally between winter hibernacula and summer roosting habitats. Winter hibernacula include caves and abandoned mines. Summer roosts include loose bark and cavitied of dead or alive trees. During the summer, most reproductive females occupy roost sites in forested areas under the exfoliating bark of dead or dying trees that retain large, thick slabs of peeling bark. Indiana bats typically forage in semi-open to closed forested habitats with open understory, forest edges, and riparian areas. Suitable summer roost and foraging habitat may be located in the forested areas vicinity of the study area.

Northern Long-eared Bat (*Myotis septentrionalis*)
The Northern Long-eared Bats has been listed as endangered by the USFWS since November 30, 2022, and is still in danger of extinction throughout all or a significant portion of its range. Over the winter, they typically hibernate in small crevices or cracks within caves and mines with no air currents, high humidity, and constant temperatures. During summers northern long-eared bats roost singly or in colonies underneath exfoliating bark, in crevices, or in cavities of both live and dead trees. Foraging occurs in interior upland forests. Forest fragmentation, logging and forest conversion are major threats to the species. One of the primary threats to the northern long-eared bat is the fungal disease, white-nose syndrome, which has killed an estimated 5.5 million cave hibernating bats in the Northeast, Southeast, Midwest and Canada. Suitable summer roost and foraging habitat may be located in the forested areas vicinity of the study area.

Tricolored Bat (*Perimyotis subflavus*)
On September 13, 2022, the USFWS announced a proposal to list the tricolored bat as endangered since it is in danger of extinction throughout all or a significant portion of its range. The tricolored bat is a small insectivorous bat that is distinguished by its unique tricolored fur and often appears yellowish to nearly orange. The once common species is wide ranging across the eastern and central United States and portions of southern Canada, Mexico, and Central America. During the winter, tricolored bats are often found in caves and abandoned mines, although in the southern United States, where caves are sparse, tricolored bats are often found roosting in road-associated culverts. During the spring, summer, and fall, tricolored bats are

found in forested habitats where they roost in trees, primarily among leaves of live or recently dead deciduous hardwood trees, but may also be found in Spanish moss, pine trees, and occasionally human structures. Tricolored bats face extinction due primarily to the range wide impacts of white-nose syndrome, which has caused estimated declines of more than 90 percent in affected tricolored bat colonies across the majority of the species range. Suitable summer roost and foraging habitat may be located in the forested areas in vicinity of the study area.

Monarch Butterfly (*Danaus plexippus*)
The Monarch Butterfly has been a candidate species since December 2020. Much of the monarch butterfly's life is spent migrating between Canada, Mexico, and the United States. Grasslands of central North America, particularly the area known as the Corn Belt, and areas vegetated by milkweed (*Asclepias syriaca L*.) comprise the majority of its summer breeding areas. During the breeding season, monarchs lay their eggs on their obligate milkweed host plant and larvae emerge after two to five days. Nectar sources are also required by the butterflies to fuel fall migration and spring flights northward. Monarch populations of eastern North America have declined 90%, due primarily to deforestation, illegal logging, increased development, agricultural expansion, livestock raising, forest fires, and other threats to their migratory paths and summer and overwintering habitats. Chemical-intensive agriculture, increasing acreage converted to row crops, and mowing/herbicide treatment of roadsides have contributed to a decline of milkweed, the only plant eaten by monarch caterpillars. Sparse areas of suitable habitat may be found in the vicinity of the study area.

Whooping Crane (*Grus americana*)
The whooping crane occurs only in North America and is North America's tallest bird. The whooping crane adult plumage is primarily snowy white except for some black or grayish feathers. The common name "whooping crane" probably originated from the loud, single-note vocalization given repeatedly by the birds when they are alarmed. Whooping cranes are a long-lived species; current estimates suggest a maximum longevity in the wild of at least 30 years. Whooping cranes currently exist in the wild at 3 locations and in captivity at 12 sites. The whooping crane breeds, migrates, winters, and forages in a variety of habitats, including coastal marshes and estuaries, inland marshes, lakes, ponds, wet meadows and rivers, and agricultural fields. Whooping cranes migrate over western Illinois and may use habitat in the vicinity of the study area during the migratory period.

3.9 RECREATION

Most of the land along the Kaskaskia River is leased to IDNR to manage for fish, wildlife, and recreational activities. A few areas are managed by KRPD for industrial use and are not available for public use. Baldwin Lake, a 2,018-acre reservoir built by Illinois Power Company, is contained within the Kaskaskia River State Fish and Wildlife Area (SFWA) (**Error! Reference s ource not found.**). Baldwin Lake is open to the public for fishing and is a major part of the

area's waterfowl refuge. The Kaskaskia River SFWA is one of the largest state-owned and managed sites in Illinois. The area comprises more than 20,000 acres and extends along the Kaskaskia River from Fayetteville to the Mississippi River in St. Clair, Monroe, and Randolph counties. There are more than 450 acres of public lands open to hunting and subject to state regulations. The combination of diverse and abundant fish populations and important migratory bird habitats make this area suitable for bird watchers and other outdoor enthusiasts.

Within the south oxbow, there is less recreation than the north oxbow. However, recreational boaters use the south oxbow on occasion, but due to port traffic and potential safety issues for boaters, the south oxbow is less frequented compared to the north oxbow. Hunting, bird watching, and other forms of recreation are still an available option for many people that would like to travel into the south oxbow.

The north oxbow is used more often for recreation. Adjacent to the north oxbow is a wetland complex managed by IDNR for waterfowl hunting. Areas such as these are commonly used by wildlife interest groups such as Delta Waterfowl Hunting and Ducks Unlimited, as well as individuals. IDNR owns and manages a Day Use Area to the south of the wetland complex, which includes a gazebo and parking areas. To the west of the Day Use Area is an agricultural area used for public hunting. Additional publicly available infrastructure that supports recreational use of the Kaskaskia River near the study area includes Wood Duck Marina and the Barry Road boat launch located at the east end of Barry Road.

The public scoping meeting held 22 June 2023 generated several written comments from the public regarding recreation in the north oxbow (Section 9.2.2), including comments stating the importance of the north oxbow for boating, fishing, and hunting. These comments were generally not in favor of development in the north oxbow due to its recreational importance.

Figure 12. Kaskaskia River State Fish and Wildlife Area, northeast of study area (IDNR Map with USACE annotation showing north oxbow)

3.10 CULTURAL RESOURCES

Approximately half of the land owned by KRPD at KRPD#2 has been archaeologically surveyed. The footprints of these surveys have all occurred above the OHWM. Three archaeological sites, 11R375, 11R378, and 11R482, were identified and recorded on the property. Two of these are not eligible for the National Register of Historic Places (NRHP), while the third remains unevaluated. The project would be considered not to affect the two evaluated sites, i.e., no historic properties are affected in accordance with the implementing regulations for the National Historic Preservation Act, 36 CFR Part 800. However, if there is the potential to impact the third unevaluated site, further archaeological testing would be required to determine its NRHP eligibility status.

The majority of KRPD#2-owned land that has not been subject to cultural resources surveys falls within the floodplain of the Kaskaskia River. The lower Kaskaskia River has undergone significant planform and course changes since the 19th century, and construction of the lock and dam between 1967 and 1973 involved extensive earthmoving and channelization of the river. This continual disturbance of the landform would greatly reduce the likelihood of any significant historic properties being identified within the portion of KRPD#2 that is located within the floodplain.

In 1995, IDNR performed a Phase I cultural resources investigation along the north oxbow on IDNR land for the construction of a waterfowl levee in the Kaskaskia River Fish and Wildlife Area. The archaeological reconnaissance survey located no archaeological material and project clearance was recommended.

3.11 TRIBAL RESOURCES

The study area is located within the territory ceded by the Kaskaskia Tribe of Indians in an 1803 treaty between the Unites States of America and the Kaskaskia tribe of Indians; the Piankeshaw tribe in an 1804 treaty between the United States of America and the Piankeshaw tribe of Indians; and the Peoria in an 1818 treaty between the United States of America and the principal chiefs and warriors of the Peoria, Kaskaskia, Mitchigamia, Cahokia, and Tamarois tribes of the Illinois nation of Indians. Today the Peoria Tribe of Indians of Oklahoma is a confederation of Kaskaskia, Peoria, Piankeshaw and Wea Indians united into a single tribe in 1854.

3.12 SOCIO-ECONOMICS & DEMOGRAPHICS

The socioeconomics of the communities in the study area are summarized in this section. The study area is within Randolph County in Illinois. Two additional adjacent counties, Monroe and St. Clair counties, are also described here for context. The parameters used to describe the demographic and socioeconomic environment include recent trends in population,

employment, and wage earnings by sectors. Other social characteristics such as race, age distribution, and poverty are also examined.

Population

Illinois ranks as the 6th largest state in the United States in terms of resident population as of the 2020 United States census.

Between the years of 1990 and 2022, Illinois's population increased by 12 percent from 11.4 million to 12.8 million persons, or a little more than one third of the national average of 33 percent. Although both Randolph and St. Clair counties saw decreases in population, Monroe County experienced a robust growth of 56 percent from 22,422 in 1990 to 34,905 in 2022 (**Error! Reference source not found.**).

Table 8. Population Trends for Selected Illinois Counties – 1990 to 2022

County	1990 Pop.	2000 Pop.	2010 Pop.	2022 Pop.	1990 to 2000 % Change	2000 to 2010 % Change	2010 to 2022 % Change	1990 to 2022 % Change
Randolph	34,583	33,893	33,476	30,413	-2%	-1%	-9%	-12%
Monroe	22,422	27,619	32,957	34,905	23%	19%	6%	56%
St. Clair	262,852	256,082	270,056	256,791	-3%	5%	-5%	-2%
Illinois	11,430,602	12,419,293	12,830,632	12,757,634	9%	3%	-0.6%	12%
United States	248,709,873	281,421,906	308,745,538	331,097,593	13%	10%	7%	33%

Source: American Community Survey, Demographic Characteristics, 2022 5-Year Estimates

Employment

Illinois employment in 2022 totaled about 6.3 million. Of the major industry sectors within the state, the educational services and health care and social assistance sector employs the most persons at 1,466,000. This industry is followed by professional, scientific, and management, and administrative and waste management services (787,000) and manufacturing (731,000).

The proportions of workers per sector in the counties in the study area fairly parallel what is observed at the state level (**Error! Reference source not found.**).

Table 9. Employment by Industry – 2022

Industry	United States	Illinois	Randolph County	Monroe County	St. Clair County
Agriculture, forestry, fishing and hunting, and mining	2%	1%	4%	4%	1%
Construction	7%	5%	7%	6%	5%
Manufacturing	10%	12%	16%	11%	9%
Wholesale trade	2%	3%	2%	2%	2%

Industry	United States	Illinois	Randolph County	Monroe County	St. Clair County
Retail trade	11%	10%	11%	11%	11%
Transportation and warehousing, and utilities	6%	7%	6%	5%	8%
Information	2%	2%	1%	2%	1%
Finance and insurance, and real estate and rental and leasing	7%	7%	4%	9%	7%
Professional, scientific, and management, and administrative and waste management services	12%	13%	5%	10%	12%
Educational services, and health care and social assistance	23%	23%	24%	24%	23%
Arts, entertainment, and recreation, and accommodation and food services	9%	8%	6%	8%	10%
Other services, except public administration	5%	5%	5%	4%	5%
Public administration	5%	4%	9%	4%	6%
TOTAL	100%	100%	100%	100%	100%

Source: American Community Survey, Economic Characteristics, 2022 5-Year Estimates

Randolph County, where KRDP#2 is located, is in the Delta Regional Authority (DRA) Area, a federally designated area that stretches from Randolph County to the Delta in Louisiana. The DRA was established in 2000 as a formal framework for joint Federal-State collaboration to promote and encourage the economic development of the lower Mississippi River and Alabama Black Belt regions. The DRA invests in projects supporting transportation infrastructure, basic public infrastructure, workforce training, and business development.

Median Household Income for Selected Counties

Median household incomes for the three counties in 2022 are shown in **Error! Reference s ource not found.**. The average median household income across the three Illinois counties is $77,820, which is just lower than the state median of $78,433 but higher than the national median of $75,149.

Table 10. Median Household Income – 2022

Geography	Median Household Income	% of State Median Household Income	% of National Median Household Income
Randolph County	$ 63,860	81%	85%
Monroe County	$ 100,685	128%	134%
St. Clair County	$ 68,915	88%	92%
Illinois	$ 78,433	-	104%
United States	$ 75,149	96%	-

Source: American Community Survey, Economic Characteristics, 2022 5-Year Estimates

As shown in **Error! Reference source not found.**, the unemployment rates range from 1.7 p ercent (Monroe County) to 5.7 percent (St. Clair County). The average rate of 4.2 percent across the three Illinois counties is lower than the rate of 6.0 percent for the state and lower than the national rate of 5.3 percent.

Table 11. Unemployment Rate – 2022

Geography	Unemployment Rate
Randolph County	5.2%
Monroe County	1.7%
St. Clair County	5.7%
Illinois	6.0%
United States	5.3%

Source: American Community Survey, Economic Characteristics, 2022 5-Year Estimates

Race

In 2022 the majority population of Illinois is characterized as "White" and matches the national average of 66 percent. The next largest racial population is the "Black or African American" population. Illinois's "Black or African American" population percentage at 14 percent is just a little over that of the national average (12%). Of the three Illinois counties, St. Clair County has the largest percentage of "Black or African American" population (28%), while Monroe County has the largest percentage of "White" population (97%).

Although not designated as a race category in the United States census, the "Hispanic or Latino" population percentage for Illinois (18%) was greater than that of the "Black or African American" population and just under that of the national average (19%). However, the "Hispanic or Latino" population percentages for the three Illinois counties are well below the state and national averages (**Error! Reference source not found.** and **Error! Reference source no t found.**).

Table 12. Racial Composition (Number) – 2022

Race	United States	Illinois	Randolph County	Monroe County	St. Clair County
White	218,123,424	8,388,659	26,603	33,706	158,891
Black or African American	41,288,572	1,774,605	2,428	217	72,692
American Indian & Alaska Native	2,786,431	55,819	24	43	917
Asian	19,112,979	738,071	213	214	4,022
Native Hawaiian & Other Pacific Islander	624,863	5,476	17	-	72
Some other race	20,018,544	842,553	458	291	4,098
Two or more races	29,142,780	952,451	670	434	16,099

Race	United States	Illinois	Randolph County	Monroe County	St. Clair County
Hispanic or Latino	61,755,866	2,275,704	965	581	11,524
TOTAL	**331,097,593**	**12,757,634**	**30,413**	**34,905**	**256,791**

Source: American Community Survey, Demographic Characteristics, 2022 5-Year Estimates

Table 13. Racial Composition (Percentage) – 2022

Race	United States	Illinois	Randolph County	Monroe County	St. Clair County
White	66%	66%	87%	97%	62%
Black or African American	12%	14%	8%	0.6%	28%
American Indian & Alaska Native	0.8%	0.4%	0.1%	0.1%	0.4%
Asian	6%	6%	0.7%	0.6%	2%
Native Hawaiian & Other Pacific Islander	0.2%	0.04%	0.06%	-	0.03%
Some other race	6%	7%	2%	0.8%	2%
Two or more races	9%	7%	2%	1%	6%
Hispanic or Latino	19%	18%	3%	2%	4%
TOTAL	**100%**	**100%**	**100%**	**100%**	**100%**

Source: American Community Survey, Demographic Characteristics, 2022 5-Year Estimates

Age Distribution

The age characteristics of the counties are shown in **Error! Reference source not found.** and REF _Ref172837984 \h **Error! Reference source not found.**. The average median age across all three Illinois counties is 41.6 years and is almost three years older than the state median of 38.7 years. The median age of the United States is 38.5 years.

Table 14. Age Characteristics (Number) – 2022

Age	United States	Illinois	Randolph County	Monroe County	St. Clair County
Under 18 years	73,213,705	2,820,477	6,122	7,713	59,716
18 - 65 years	203,146,240	7,866,250	18,079	20,769	155,057
65 years and older	54,737,648	2,070,907	6,212	6,423	42,018
Median age	38.5	38.7	43.0	42.5	39.4
Total population	331,097,593	12,757,634	30,413	34,905	256,791

Source: American Community Survey, Demographic Characteristics, 2022 5-Year Estimates

Table 15. Age Characteristics (Percent) – 2022

Age	United States	Illinois	Randolph County	Monroe County	St. Clair County
Under 18 years	22%	22%	20%	22%	23%
18 - 65 years	61%	62%	59%	60%	60%
65 years and older	17%	16%	20%	18%	16%

Age	United States	Illinois	Randolph County	Monroe County	St. Clair County
Total population	100%	100%	100%	100%	100%

Source: American Community Survey, Demographic Characteristics, 2022 5-Year Estimates

Income and Poverty

Income and poverty data for the counties are summarized in **Error! Reference source not found.** for 2021. Although Illinois has median household income and per capita income levels slightly greater than the national average, two of the three counties show levels less than the national average. Both Randolph and St. Clair counties' median household income levels are less than the national average of $75,149 and their per capita income is also less than the national average of $41,261. Correspondingly, the "Persons Below Poverty Level" percentages for these two counties are greater than or equal to the national average of 12.5 percent. Monroe County has the lowest "Persons Below Poverty Level" percentage at 4.3 percent.

Table 16. Income and Poverty Data – 2022

Income and Poverty	United States	Illinois	Randolph County	Monroe County	St. Clair County
Persons per Household	2.63	2.57	2.61	2.57	2.55
Median Household Income	$75,149	$78,433	$63,860	$100,685	$68,915
Per Capita Income	$41,261	$43,198	$29,832	$47,248	$36,010
Persons Below Poverty Level	12.5%	11.8%	12.5%	4.3%	13.8%

Source: American Community Survey, Economic Characteristics, 2022 5-Year Estimates

Education

The educational attainment levels for the counties in 2022 are presented in **Error! Reference source not found.** and **Error! Reference source not found.**. On average across the counties in the study area, 90.9 percent of persons aged 25 years and older had completed high school, while 26.6 percent had a bachelor's degree or higher. Illinois's percentages are 89.9 percent and 36.2 percent, respectively; the national percentages are 88.9 percent and 33.7 percent, respectively.

Table 17. Educational Attainment for Persons 25 Years or Older (Number) – 2022

Education	United States	Illinois	Randolph County	Monroe County	St. Clair County
High School Graduate or Higher	202,001,294	7,883,680	18,875	23,678	161,632
Bachelor's Degree or Higher	77,751,347	3,207,450	3,014	9,370	53,238

Source: American Community Survey, Social Characteristics, 2022 5-Year Estimates

Table 18. Educational Attainment for Persons 25 Years or Older (Percent) – 2022

Education	United States	Illinois	Randolph County	Monroe County	St. Clair County
High School Graduate or Higher	88.9%	89.9%	85.1%	95.3%	92.3%
Bachelor's Degree or Higher	33.7%	36.2%	13.2%	37.1%	29.6%

Source: American Community Survey, Social Characteristics, 2022 5-Year Estimates

3.13 ENVIRONMENTAL JUSTICE

Environmental justice refers to fair treatment of all races, cultures, and income levels with respect to development, implementation and enforcement of environmental laws, policies, and actions. Environmental Justice Analysis applies to both minority and low-income populations. For the analysis of Environmental Justice, minority populations are defined as any person who is Black, Hispanic, Asian American, American Indian, or Alaskan Native. Environmental justice analysis was developed following the requirements of: Executive Order 12898 ("Federal Actions to Address Environmental Justice in Minority Population and Low-Income Populations," 1994), and "Department of Defense's Strategy on Environmental Justice" (March 24, 1995). This mandates that federal agencies identify and address, as appropriate, disproportionately high, and adverse human health, or environmental effects of proposed projects on minority and low-income populations. Environmental Justice builds on Title VI of the Civil Rights Act of 1964. Environmental Justice has three guiding principles:

1. Avoid, minimize, or mitigate disproportionately high and adverse human health and environmental impacts, including social and economic effects on minority and low-income populations.
2. Ensure full and fair participation by all potentially affected communities in the decision-making process.
3. Prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations.

Existing Environmental Justice conditions were obtained using the Climate and Economic Justice Screening Tool (CEJST; https://screeningtool.geoplatform.gov/en/#3/33.47/-97.5) obtained on 03 October 2023 , and the U.S. Environmental Protection Agency (USEPA) Environmental Justice Screening and Mapping Tool (EJSCREEN; https://www.epa.gov/ejscreen) report obtained on 03 October 2023.

CEJST Tract Information

Per Executive Order 14008, the Justice40 Initiative recommends a goal of 40 percent of certain Federal investments should flow to disadvantaged communities to achieve the overall benefits of the initiative. According to CEJST, the census tract 17157950700 surrounding and making up a portion of the study area is considered a disadvantaged community because it meets at least one burden threshold AND the associated socioeconomic threshold (**Error! Reference source n**

ot found.). This tract (17157950700) meets or exceeds the burden threshold for energy, legacy pollution, and transportation. Under the energy threshold, Tract 17157950700 in Randolph County, IL is at the 96th percentile for energy cost. Regarding legacy pollution, there are one or more abandoned land mines within the tract. The average relative cost of transportation and time spent on transportation is at the 91st percentile. All three of these categories are coupled with Low Income which is at the 79th percentile for tract 17157950700.

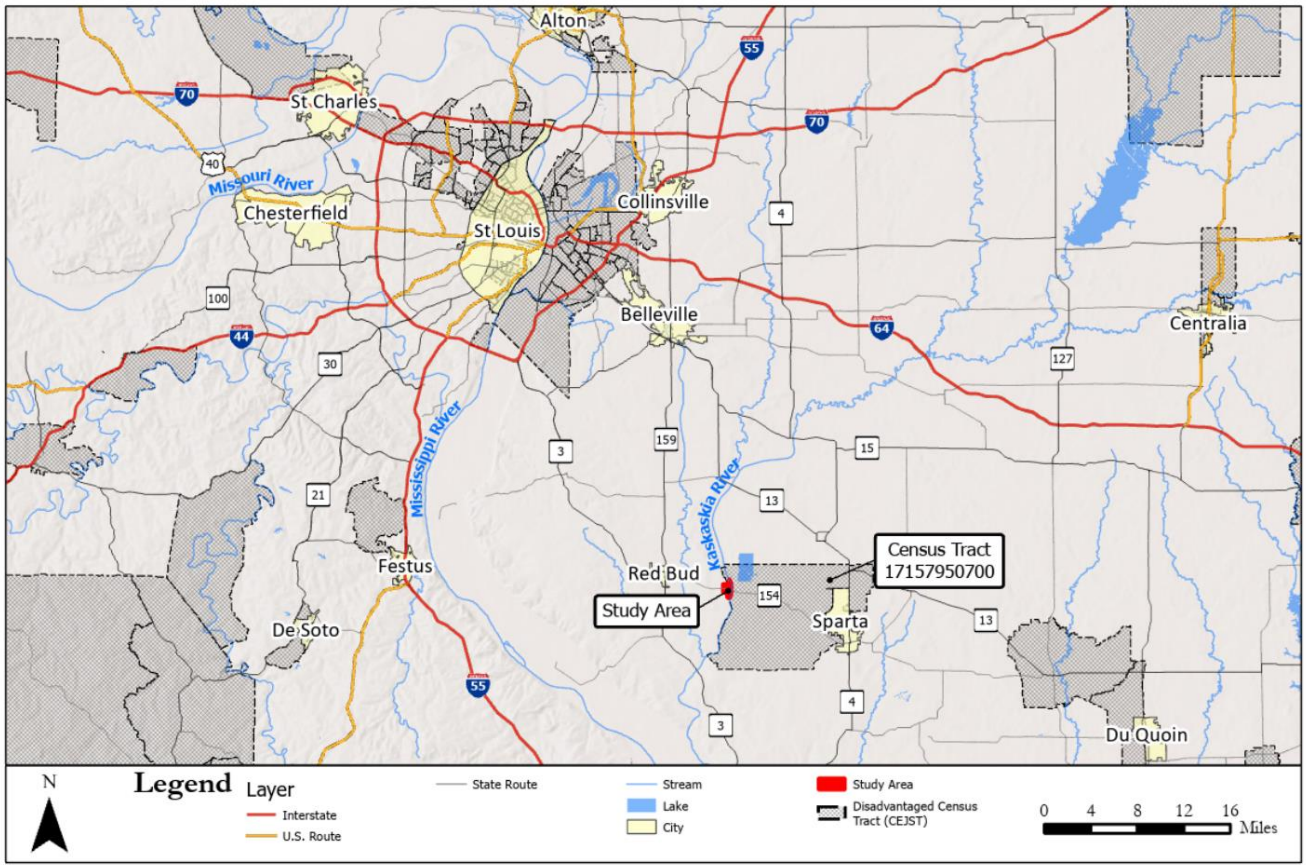

Figure 13. Census Tract 17157950700 Identified as a Disadvantaged Community in CEJST

EJScreen Community Report

The U.S. Environmental Protection Agency on-line EJScreen mapping tool (Version 2.2) was used to characterize existing conditions for underserved populations (**Error! Reference source n ot found.**). Randolph County, Illinois has a population of 2,346 individuals with approximately 939 households and an owner occupancy of 78%. The Low-Income Rate of 39% is higher than the state average of 29% as well as the Unemployment Rate of 9% compared to the state average of 7%. The percentage of Persons with Disabilities is at 23.7% and is higher than the state average of 12.1%. Randolph County is right at the state average for individuals with a Less than High School Education at 10% compared to the state average of 11%. The percentage of people of Color is 8% which is significantly lower than the state average of 39%.

Metric	Census Tract 17157950700	Randolph County, Illinois	Illinois State Average
Low Income	39%	31%	29%
Persons with Disabilities	23.7%	17%	12.1
Unemployment Rate	9%	5%	7%
Limited English Speaking	1%	0%	4%
Less than High School Education	10%	15%	11%
People of Color	8%	16%	39%
Under Age 5	7%	5%	6%
Over Age 64	21%	19%	17%

Table 19. Population and Environmental Justice Characteristics from EJScreen for Randolph County, IL

Additional EJ Metrics and Information

Additional factors that may provide metrics for EJ in the study area include:

- Air quality and noise (see Section 3.4). Existing air quality and noise impacts to disadvantaged community (identified as Census tract in CEJST) from Port traffic and equipment, road traffic, rail traffic are similar to the adjacent community.
- Recreation (see Section 3.9). Existing recreation impacts to disadvantaged community (i.e., boating, fishing, and hunting) are similar to the adjacent community.
- Health and safety
    - No data is available on past accidents at KRPD#2 and environs. KRPD reports low concern about current health and safety at KRPD#2.
    - Existing public health and safety is similar for the disadvantaged community and the adjacent community.
- Aesthetics (related to land use; see Section 3.3)
    - The south oxbow has an industrial aesthetic with Port facilities, in addition to adjacent forest. The north oxbow has residential structures, roads, a rail line, and adjacent forest including at the IDNR day use area. Existing aesthetics of the disadvantaged community portion of the study area are similar to the adjacent community.
- Socio-economic factors (see Section 3.12). Existing socio-economic factors in the disadvantaged community and adjacent community (population, age, income, race, education) are the same since they are located in the same counties.
- Economic vitality (see Section 2.3). Existing economic vitality in the disadvantaged community are similar to the adjacent community.
    - Additionally, the Baldwin coal-fired power plant on the left descending bank of the Kaskaskia River opposite the mouth of the north oxbow is expected to

close by 2025. The power plant has already reduced its power output resulting in the loss of jobs and loss of tax revenue to Randolph County, which creates negative impacts for lower income families benefiting from tax-funded programs.

- Transportation access
    - For residents and landowners in the study area, transportation by land to/from the study area requires personal vehicles; public transit is not available. Transportation by boat is possible from the IDNR boat ramp at the north oxbow.
- Social vulnerability and resilience
    - This section (Section 3.13) describes the EJScreen and CEJST tool results which indicate social vulnerability in the existing condition.
- Social connectedness
    - KRPD has been an employer in the region since it was established by the State of Illinois in 1965.
    - Some residents and landowners at the north oxbow have owned property there for 30 years or more and return there for family occasions, according to comments received following the Public Scoping Meeting in June 2023. Port activities and expansion may create noise or traffic impacts that decrease social use of the study area.

4. FUTURE WITHOUT PROJECT – DREDGING AND OPERATIONS

4.1 FUTURE CONDITIONS ASSUMPTIONS

Forecasting the future is an essential part of the USACE planning process. This report compares the future without project (FWOP) and the future with-project (FWP) conditions.

The FWOP condition is the basis from which alternative plans are formulated and impacts are assessed; future without-project conditions are reasonably foreseeable as existing in the absence of a federal action and are the baseline for the assessment of meaningful effects of a potential project (ER 1105-2-103). The FWOP, considered the No Action Alternative, would not include any USACE project measures, and no additional costs to USACE would be incurred.

A 50-year period of analysis was used to forecast the FWOP and FWP conditions. The base year (the year when a proposed project is expected to be operational or, in this case, when construction is complete, and benefits begin accruing) considered for this study is 2026.

KRPD is currently working on plans and funding for several development projects at KRPD#2. This study was not able to assume that all of these development projects would be actualized

because, at the time of writing, the development plans were either not certain enough or not close enough to construction to be considered as reasonably foreseeable.

4.1.1 FWOP Development Assumed for Plan Formulation

The following development at KRPD#2 was assumed to be realized in the FWOP condition:

1. Fertilizer dome replacement and new conveyor. KRPD has been approved for funding from the State of Illinois to remove the three Gateway FS fertilizer domes and replace the existing conveyor from the dock to Gateway FS. This $2.7 million project has begun, starting with demolition of the domes.
2. Second entrance road for the west side of the Port. This road would reduce congestion and service the south dock. This project is partially funded with a Delta Regional Authority grant. KRPD also submitted an application to the Economic Development Administration (EDA) for additional funding for completion of this road. Road construction began in the fall of 2023.
3. Double rail lines. KRPD has been approved to receive a grant administered by IDOT under the Illinois Competitive Freight Program. The grant funds will be used for installation of a second rail track parallel to the existing track (3,170 ft of new and replacement track) under the overhead crane at the existing terminal, along with a retaining wall and seven turnouts to accommodate cargo movement through the port and in anticipation of building the south dock. The $5.4 million project is expected to begin construction in 2025. Exhibit 3 in the 2020 KRPD Master Plan shows the planned freight grant improvements.
4. Laydown yard and TMW building expansion. A laydown yard adjacent to the south side of the TMW building is planned. KRPD made an application to the Economic Development Administration (EDA) for funding assistance in the construction of a laydown yard to support more business expansion. TMW plans to increase its barge tonnage by 250,000 tons per year (from about 36,000 tons per year to about 300,000 tons per year), due to an increase in the size of steel coils being moved, which would no longer fit on trucks (information received from TMW in 2023). The project began construction in the fall of 2023 and construction is expected to last approximately 2 years. TMW also has plans to expand their plant with a new addition to the south of their existing building in order to process new cargo that will be shipped inbound by water from the Big River Steel plant in Osceola, AR (information received from TMW in 2023).

4.1.2 FWOP Development Not Assumed for Plan Formulation

Development NOT assumed to be realized in the FWOP condition includes:

1. South dock at the south oxbow. KRPD is planning to install a new dock on the south oxbow to the south of the existing dock. The project includes the construction of a 200-foot open-cell sheet pile wall dock, 2 mooring dolphins, a moveable dump chute, 3,500 sq. yds of concrete dock surface, 4,000 sq. yds. of concrete pavement, 3,840 ft of rail extensions, 3 turnouts, 200 ft of timber crossings, a 600-ft retaining wall, 2,000 sq. yds of rip rap, clearing, earthwork and other incidental items. Also included in the project are federal and state agency permitting, environmental compliance, and design and construction engineering. The new dock is designed on a strip of land seven feet above the 100-year floodplain. The open cell piles would be installed in the floodplain/floodway, and the rest of the improvements (rail, road, concrete pad) would be out of the floodplain. Proposed improvements are shown in **Error! Reference source not found.**. KRPD has applied for grant funding to support this dock.

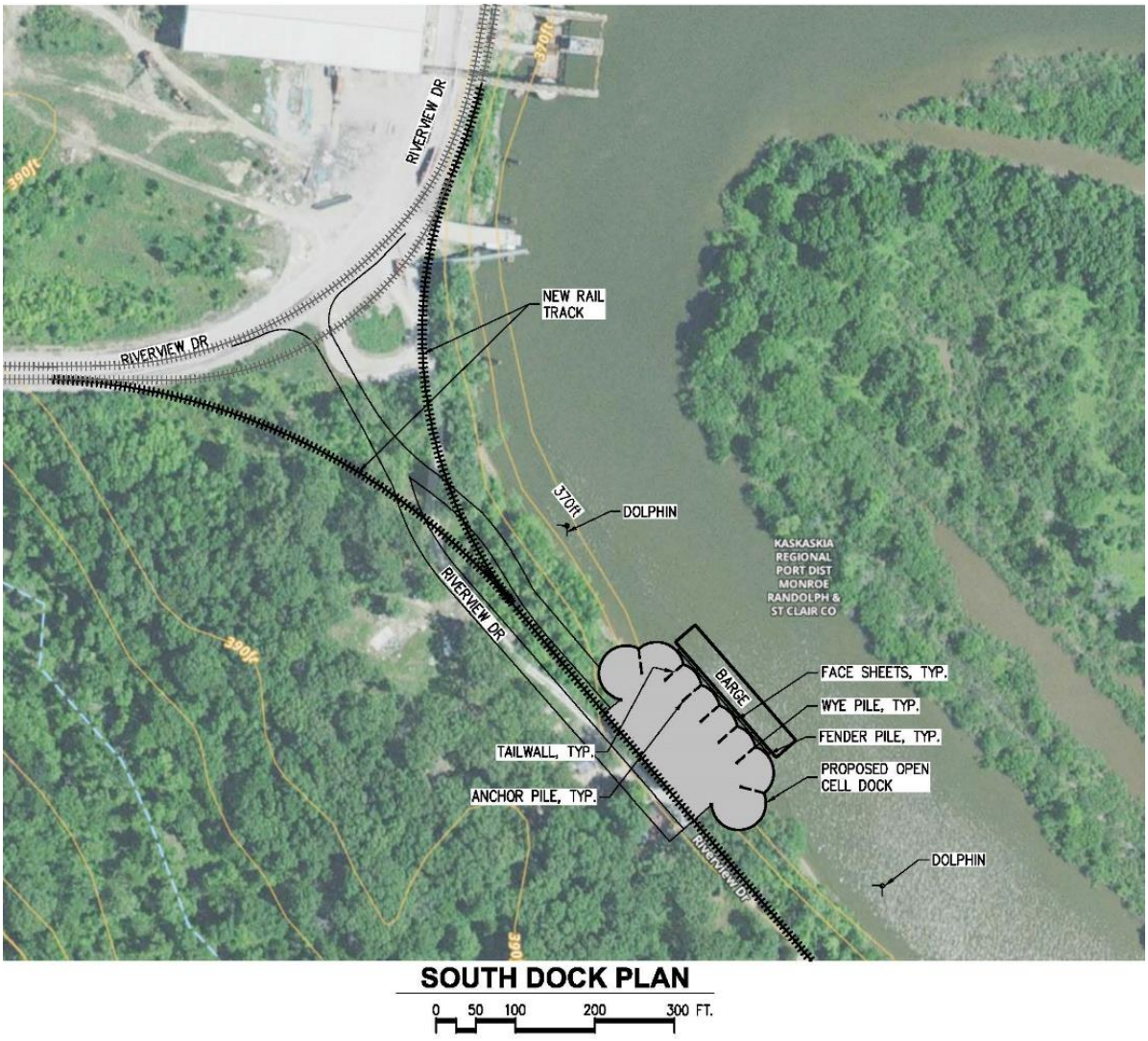

Figure 14. Plans for New South Dock with Rail Connections at KRPD#2 South Oxbow (KRPD image)

2. Other plans in KRPD's Master Plan. KRPD has begun acquisition of lands near Barry Road for the addition of road and rail capability by the north oxbow as outlined in the 2020 Master Plan. Plans such as an additional building to the north of the proposed dock in the north oxbow and an additional building to the west of the existing TMW building are not confirmed with enough certainty within this study timeframe to be assumed as future conditions.
3. STAG Steel: A prospective tenant, STAG Steel, LLC, is interested in building a facility at the north oxbow site in the near future to transport its steel products in the Midwest. The company worked with KRPD to develop preliminary plans that would rely on transloading goods to the north oxbow. The company is not currently in operation. Their plan is to build a facility northwest of New Orleans, LA, that will produce raw hot rolled coiled steel. This intermediate steel product would then be shipped by barge to a metal processing and treatment facility to be built upon property owned by KRPD that is adjacent and near the proposed new dock at the north oxbow at KRPD#2. The processed steel would then be shipped out by truck or rail.

   If STAG Steel locates their facility at KRPD#2 and can use the north oxbow for shipping, the company anticipates shipping an estimated inbound tonnage of 2.5-3 million tons of steel per year through KRPD#2. Because of this tonnage, STAG Steel would require the existence of a navigable north oxbow since the south oxbow is unable to handle such a large quantity of traffic.

   Currently, there is uncertainty about whether STAG Steel will come to the north oxbow in the absence of north oxbow dredging as part of this CAP 107 project (i.e., in the FWOP condition). Additionally, there are concerns about the ability to estimate transportation cost savings for a company that does not presently exist and therefore does not have historic transportation costs; following extensive coordination within USACE, no acceptable cost savings estimation method could be identified. Therefore, although the projected 2.5-3 million tons is about 5 times greater than the total tonnage projected for all the businesses operating at the south oxbow, the tonnage and potential economic benefits from STAG Steel are not included in this study. The company is currently weighing its options as to where to invest based on market considerations and viability of potential facility locations.

4.2 NAVIGATION SERVITUDE

It is assumed that the Kaskaskia River will continue to be used for navigation throughout the 50-year period of analysis, and that the existing pool operation will continue to be used. Therefore, the OHWM elevation is assumed to be unchanged in the FWOP condition. With regard to climate change, as outlined in Section 3.2 and Appendix C – Climate Assessment, projections of future stream flows are of a wetter, warmer condition. However, any adjustments to the L&D

to provide a more resilient channel or a full re-opening the Water Control Manual (which requires public review periods and significant reviews by multiple disciplines) are beyond the scope of this project.

4.3 DREDGING OPERATIONS

It may be assumed that dredging operations would continue at approximately 10-year intervals in the south oxbow using a cutterhead dredge or mechanical dredging, based on historic funding and dredging history.

DD-1

As noted in Section 4.1.1, TMW is planning to construct a laydown yard and to expand their building. These two features would overlay the footprint of DD-1. At the time of writing, the study team did not have enough certainty for the plan formulation and economic analysis in this study that this project would be realized; so, the development was not included in existing or FWOP conditions assumptions for plan formulation purposes. However, it was deemed prudent to assume that even without this development, KRPD would plan to fill DD-1 over time and develop the land on top, leaving less capacity for dredge material placement than in the existing condition. Once dredge placement site DD-1 is filled, DD-2 will be used for dredge material placement.

DD-2

DD-2 would continue in a natural state, including floodplain forest. Given that the site has not been in used for placement for at least 20 years, and USACE Operations personnel did not state a need for the potential capacity at DD-2 for the KRNP for the foreseeable future, it is assumed DD-2 would not be used for KRNP dredge placement in the FWOP condition.

4.4 ECONOMIC CONDITIONS

In the south oxbow, shallow depths will continue to impact the efficient use of the river oxbow and channel on which KRPD#2 is situated. Barges will not be loaded to their full capacity, resulting in light-loading and the use of more barges. Additionally, lack of fleeting areas in the oxbow will cause increased wait times for barges as well as for trucks waiting to handle the commodities. Channel narrowness will continue to cause periodic damages to barges, and lack of a turning basin will continue to add extra minutes to a barge's total trip time.

Future tonnage at KRPD#2 as well as the number of barges utilized at the dock is expected to increase in the near future. While gypsum is predicted to stay around 200,000 tons, both steel and fertilizer tonnage are expected to grow due to increases in building and plant capacities for the companies operating at KRPD#2. See Appendix H – Economics for more information.

5. PLAN FORMULATION*

5.1 PLANNING FRAMEWORK

The plan formulation and decision process includes:

- Scoping (identifying problems, opportunities, objectives, and constraints)
- Identifying existing conditions and future without project (FWOP) conditions
- Plan formulation (identifying measures, formulating alternative plans, evaluating and comparing plans)
- Plan selection

Evidence gathering, risk management, and stakeholder involvement occurs throughout the planning process. This Report summarizes the multidisciplinary efforts of the District, the Sponsor, and project partners.

The problems, opportunities, objectives, and constraints were identified through discussions with the Sponsor, including a Planning Workshop in March 2023.

5.2 MEASURES

A management measure is a feature or activity that can be implemented at a specific geographic site to address one or more planning objectives. The study team developed and screened the following measures utilizing information on existing infrastructure, existing reports, and subject matter expertise.

Measures are categorized as either a General Navigation Feature (GNF), or a Local Service Facility (LSF). GNFs may be cost shared by USACE; Local Service Facilities (LSF) may not. GNFs supported by USACE cost share include “vessel maneuvering, turning, passing, or anchoring or mooring incidental to transit”, but not “berthing, mooring, and anchorage areas where vessels can stay whatever time is required without obstructing the channels or other water areas provided for the movement of vessels"; these are LSFs. GNFs also include dredged material placement facilities required for construction or operation and maintenance of the other GNFs.

The following measures were identified, as summarized in **Table 20** and described in sections 5.2.1-5.2.15.

Table 20. Measures Identified

Measure	General Navigation Feature (GNF)/ Local Service Facility (LSF)
Dredging the oxbow channels	GNF
Dredged material placement areas	GNF
Turning area	GNF

Measure	General Navigation Feature (GNF)/ Local Service Facility (LSF)
Fleeting areas	LSF
New dock	LSF
Mouth widening	GNF
Bank stabilization	LSF
Bubblers	LSF
Agitators	LSF
Siltation area	LSF
Sediment trap	LSF
River training structures	LSF
Pipeline with pump	LSF
Opening the south oxbow north end to river	GNF
Mussels	LSF

5.2.1 Dredging the Oxbow Channel(s)

Dredging the oxbow channel deeper and/or wider would be a GNF. It was considered for both oxbows.

Deeper channel dredging

Currently, barges must "light-load" before entering the south oxbow channel. A deeper navigation channel in the oxbow would allow more heavily loaded barges from the Kaskaskia River to move cargo to and from the port in fewer trips, increasing efficiency. A deeper channel would also reduce the risk of grounding, improving safety for the boat operators. Providing 12 feet of depth in the channel at the minimum regulated pool water surface elevation would require dredging approximately 6 ft of material at the bed's shallowest point.

Preliminarily, the study team investigated dredging to a depth of 12 ft; this would allow heavier barge loading to a deeper draft and is a similar depth to the main river channel at RM 18-19 (see Appendix B – Hydrology & Hydraulics). A depth of 12 ft could accommodate vessels with an 11 ft draft, plus 1 ft of clearance/overdredging. An incremental/sensitivity analysis of depth will be conducted later in project design to determine whether a different depth would provide greater net economic benefits or other types of benefit.

Wider channel dredging

Dredging a wider channel in the south oxbow would improve efficiency of shipping and reduce risks to safety. Currently, the channel is approximately 45 ft wide. With barges that are 35 ft wide, the boat operator must maneuver the barge within a margin of just 5 ft on either side of the vessel. A wider channel would allow barges to move through the channel at greater speed and with lower risk of grounding.

Currently, the south oxbow channel accommodates one-way barge traffic. Preliminarily, the study team assessed dredging to a width of 75 ft to accommodate one-way barge traffic and 110 ft to accommodate two-way barge traffic. Widening the channel towards the oxbow interferes with existing infrastructure. The team thought a wider channel without increasing the side slopes by widening towards in the inside of the oxbow risks infringing on DD-2's ability to contain placed sediments. The team also thought that a wider channel achieved in part through steeper side slopes risked greater bank erosion.

A note about policy compliance

EP 1105-2-58, Restrictions on Program Eligibility, states: "CAP will not be used to adopt a non-Federal project for future maintenance at Federal expense". In the past, KRPD has dredged the south oxbow channel on an irregular basis at approximately ten-year intervals (see Section 2.2.1). This dredging was done intermittently and not to a specific depth, but was almost certainly shallower and narrower than the dredging proposed as a measure in this study. It can be argued that the Port's existing dredging is not a defined local project, and that this project would not simply assume dredging that the NFS has been doing. Also, for this project, the measures are deepening and widening the channel, not just taking over the existing dredging. Therefore, this CAP project would not "adopt" an existing non-Federal project and would be policy compliant.

Dredge vessel type & placement considerations

Mechanical, hydraulic, and cutterhead dredging were considered as potential dredging methods for both oxbows. In both oxbows, for the initial channel dredging, the dredge vessel would likely have to cut into compacted/hard pan material of the channel bottom. Therefore, hydraulic dredging with a cutterhead dredge or mechanical dredging with a clamshell dredge would be needed.

South oxbow dredging type & placement

For mechanically dredged material, disposal would involve placement on a hopper barge, and then transportation to the shore (e.g. via crane) and onto trucks to be deposited in a placement area. This method is time consuming and involves "multiple handling" of the material which drives up costs. For the south oxbow, cutterhead dredging was identified as the least expensive initial dredging option.

After the initial dredging, either suction head dredging or cutterhead dredging could be used for Operation and Maintenance (O&M) dredging, since it is assumed the material to be dredged would be loose enough to be removed by suction dredging. With hydraulic dredging, a hose can be set up between the location being dredged and the placement site, with a pump continuously operating. A slurry of approximately 15% solids to 85% liquid is generated. The

placement area(s) receiving the material must be able to hold and dewater the slurry as it fills, which can be time-consuming. Fortunately, the KRPD#2 crane and roadway would still be able to operate over and around the hose while the placement site is filling/dewatering.

Placement areas DD-1 and DD-2 could be used for dredge material placement of hydraulically dredged material from the south oxbow. An additional dredge material placement area may be needed to receive additional mechanically dredged material. See Section 5.2.2 for more information on potential placement areas.

North oxbow dredging type & placement

In the north oxbow, no dredging has previously been done. The study team did sampling to determine the material on the channel bottom and found that it had a high clay content (see Appendix A – Civil Engineering), making cutterhead dredging infeasible and leaving mechanical clamshell dredging as the only option for the initial dredging. After the initial dredging, it is assumed loose sediment would be deposited and hydraulic dredging (cutterhead or suction dredging) could be used for O&M dredging. New dredged material placement area(s) would be required for material placement from the north oxbow.

5.2.2 Dredged Material Placement Areas

Dredge placement areas would be GNFs. Dredge placement would be included in each dredging measure. Dredge placement area use, construction, and improvements were considered for both oxbows.

Dredge Placement Area 1 (DD-1) – Small placement area at KRPD#2

Section 2.2.2 has information on DD-1 dimensions and existing conditions. DD-1 could be used for placement of mechanically or hydraulically dredged material from the south oxbow.

Dredge Placement Area 2 (DD-2) – Placement area at south oxbow peninsula

Section 2.2.2 has information on DD-2 dimensions and existing conditions. As noted in Section 2.2.2, the land at DD-2 is owned by KRPD but there are two USACE permanent easements on it. Appendix F – Real Estate outlines how USACE can secure the real estate interests to utilize DD-2 for this project. DD-2 could be used for placement of mechanically or hydraulically dredged material from the south oxbow. The capacity of DD-2 could be enlarged by raising the existing berm. It should be noted that raising or widening the berm of DD-2 to greater than originally constructed likely requires review and approval from IDNR - Office of Water Resources for floodplain and floodway assessment (see Section 8.6 on no-rise analysis). A geotechnical assessment of soils has not yet been completed; geotechnical exploration will be done during the PED phase to confirm the feasibility level design. As a result, DD-2 berm height assumptions were conservative. Tree removal at DD-2 would be restricted to Inactive Bat Season to avoid adverse impacts to T&E species.

Dredge Placement Area 3 (DD-3) – New placement area west of north oxbow, north of Barry Rd

To place dredged material from the north oxbow, a new placement area would likely be needed; DD-1 and DD-2 are a great enough distance away that placement would be extremely expensive, and estimated capacity would not be enough for the north oxbow dredged material. A new placement area, DD-3, was identified on an agricultural field next to Barry Road, a short distance from the proposed new dock (Section 5.2.5). DD-3 could be used for placement of hydraulically dredged material from the south oxbow or mechanically dredged material from either oxbow (delivered to the site via truck). DD-3 could potentially be managed for wildlife habitat, and/or be open for public use in the future; these possibilities could be explored at a greater level of design. The outflow from DD-3 would flow through the existing IDNR Day Use Area located between DD-3 and the north oxbow.

Dredge Placement Area 4 (DD-4) – New placement area west of KRPD#2, south of IL-154

An additional placement area was identified on KRPD-owned land to provide additional potential capacity. DD-4 could only be used for placement of mechanically dredged material from either oxbow (delivered to the site via truck); it is at too great a distance and height differential for hydraulically dredged material to be pumped there from either oxbow (Figure 4).

Beneficial use of dredged material

The study team made a conservative assumption that no beneficial use of dredged material is possible. Potential solutions, such as river habitat, road construction, and agriculture were considered, but not fully investigated. These options should be revisited in the PED phase to determine their feasibility for this project.

Geotextile Containers

Geotextile containers, also known as geotubes (commercial name), have previously been used along the Kaskaskia River at locations where dredging is needed but no spoil site is available. According to USACE Operations personnel, they are not a simple or efficient method for dredged material placement. Often, two or three tubes must be set up at once and the contractor will switch back and forth between containers in order to let the water drain out of them before more material can be added. The study team will evaluate the potential use of geotextile containers in dredge placement at KRPD#2 during PED.

5.2.3 Turning Area

A turning area would be a GNF. It was initially considered for both oxbows, but the study team confirmed there was not enough space for a turning area in the north oxbow, so it was only moved forward for the south oxbow.

Currently, all barges that use KRPD#2 must back out of the oxbow in reverse. A turning area northeast of the crane would increase the number of options for waiting and loading configurations in the channel and fleeting area(s) and increase overall efficiency of transit in the oxbow. The turning area would be dredged to the same depth as the rest of the oxbow channel. Appendix A – Civil Engineering has more information on the dimensions of the turning area and associated bank stabilization.

Note: tiny, non-contiguous areas within the turning area footprint (680 square ft, or 0.016 acres) appear above the OHWM in the 2013 LIDAR; these appear vegetated in the aerial imagery. Data resolution accuracy and small size of the areas mean they are considered negligible.

5.2.4 Fleeting Areas

Barge fleeting areas would be LSFs. Fleeting areas were considered for both oxbows and the main river channel adjacent to the oxbows. Fleeting areas are defined in ER 1105-2-100 as "mooring areas or temporary anchorages used for assembling tows, making barge transfers between tows, transferring supplies, awaiting arrival of additional barges or serving as a barge holding area." Fleeting areas would include mooring structures and riprap bank stabilization. Permitting would be required.

Fleeting Area 1 (FL-1) – Large fleeting area in the upper end of the south oxbow
FL-1 is located in the upper (northeastern) end of the south oxbow. It would increase the number of options for mooring, waiting, and loading configurations, and ultimately increase navigation efficiency at the port. The FL-1 location has been used at least once in the past for fleeting; a photo from approximately 1998-2000 shows approximately 24 barges in this location, although this may have been a temporary situation during a flood event and there is no Section 10 permit for fleeting at this location. To create and maintain FL-1, dredging and installation of mooring infrastructure and some bank stabilization would be needed.

Fleeting Area 2 (FL-2) – Small fleeting area on the north side of the lower south oxbow
FL-2 is located on the north bank of the lower south oxbow. A fleeting area in this location would increase the number of options for mooring, waiting, and loading configurations and increase overall efficiency. A Section 10 permit was issued for fleeting at this location in 2002 (Permit No. P-2304 – 200101850), but to the Sponsor's knowledge, the mooring infrastructure (deadmen anchors) was never constructed. The functionality of fleeting at this location may have been lost due to the deposition of sediment in the area. To create this fleeting area, dredging and installation of mooring infrastructure would be needed.

Fleeting Area 3 (FL-3) – Large fleeting area on the north side of the upper south oxbow

FL-3 was identified as a fleeting location in the shallow area directly adjacent to the north of FL-1. A fleeting area at this location would increase the options for mooring, waiting, and loading configurations, and ultimately increase efficiency at the port. FL-3 would displace approximately 4.3 acres of forested/shrub wetland adjacent to the channel. Compensatory mitigation would be required for associated impacts.

Fleeting Area 4 (FL-4) – Small fleeting area on the north side of the north oxbow
FL-4 is located to the northeast of the proposed north oxbow dock (Section 5.2.5). A fleeting area at this location would increase the options for mooring, waiting, and loading configurations to the north oxbow dock, and ultimately increase efficiency at the port.

Fleeting Area 4 (FL-5) – Fleeting area on the riverbank north of the north oxbow
FL-5 is located north of the proposed north oxbow on the right descending bank of the river. A fleeting area at this location would increase the options for mooring and waiting configurations as barges approach and exit from the oxbow. Appendix B – Hydrology and Hydraulics provides more information on how FL-5 was evaluated including analysis of the width available for FL-5 adjacent to the 225-foot wide river navigation channel.

5.2.5 New Dock

A new dock would be an LSF. It was considered for the north oxbow as an LSF that would enable the Sponsor to realize the benefits of the channel dredging. A new dock was not considered for the south oxbow since there is already a dock and crane, and the Sponsor already plans to build a new third dock (south dock, see Section 4.1.2). At the north oxbow, the Sponsor could build a new dock and conveyor belt close to Barry Road that would enable goods to be transferred directly from a barge into a facility on land. KRPD has developed preliminary plans for such a dock and facility.

5.2.6 Mouth Widening

Widening the mouth of the north oxbow would be a GNF. It was only considered for the north oxbow, where the turning angle for barges approaching from the south would be acute. Without the mouth widening, barges approaching from the south would make the turn into the oxbow more slowly. There are no direct/significant safety concerns for navigation or recreation associated with widening the mouth vs. not widening the mouth.

There is a potential USACE policy issue with mouth widening. Approximately 0.14 acres of land above the OHWM would need to be excavated to create the wider mouth opening. The use of land above the OHWM for a CAP 107 project is not warranted as it violates the fast land policy (see constraints in Section 1.10.2). A waiver from HQ USACE would be needed to approve a plan that includes acquisition of land above the OHWM; approval is not guaranteed.

5.2.7 Bank Stabilization

Bank stabilization would be an LSF. It was considered for both oxbows. Stabilization of the oxbow banks could support navigation by reducing sloughing of the bank into the channel, particularly if dredging and increased use of the oxbow(s) would make the bank more unstable.

In the south oxbow, bank stabilization at the steep bank south of the existing dock and crane may conflict with future development identified in the 2020 KRPD#2 Port Master Plan, such as a third dock (the "south dock"); coordination would be needed to avoid planning a project that might need to be redone if the dock is constructed.

5.2.8 Bubbler(s)

Bubblers would be an LSF. They were considered for the south oxbow; the north oxbow has not been dredged or used for barge shipping and the flow and sediment characteristics of the dredged FWP condition are not established enough to provide a basis for this measure. A bubbler is a high velocity system that changes the density of water locally such that sediment particles collide and are knocked out of suspension. A bubbler could be placed near the mouth of the oxbow to assist with channel clearance for vessels entering the oxbow; it may also be possible to have the bubbler assist in moving sediment back out into the river. Bubblers have previously been used in marinas, but the study team was not able to find an example of their use in a situation similar to this project.

5.2.9 Agitator(s)

Agitators would be an LSF. They were considered for the south oxbow; the north oxbow has not been dredged or used for barge shipping and the flow and sediment characteristics of the dredged FWP condition are not established enough to provide a basis for this measure. In theory, agitators could be installed in the south oxbow to help keep sediment/silt from being deposited in key areas. Three potential locations for agitation were identified: two sites on the outer bend of the oxbow, and an area where wind wash has been seen. Several small agitators could work more effectively than one large one; multiple agitators would need to work together properly to produce the intended results. Agitator systems may need to be removable, so that dredging can be done at their locations; they could be pulled out for maintenance (e.g., with a diver attaching a hook to the crane) at the same time dredging occurs. If removable, the agitator(s) could be moved so that the Port can adaptively manage them and decide based on experimentation at which sites they are the most effective.

5.2.10 Siltation Area

A siltation area would be an LSF. It was considered for the south oxbow; the north oxbow has not been dredged or used for barge shipping and the flow and sediment characteristics of the dredged FWP condition are not established enough to provide a basis for this measure. A berm could be constructed alongside the upper end of the south oxbow channel, creating a

slackwater area behind it where silt collects and settles out. The berm could be constructed at or below the normal or high water levels. This siltation area would function to collect silt in water that overtops the berm (e.g., in flood conditions), and also capture sediment from runoff from the upland area before it reaches the oxbow channel.

5.2.11 Sediment Trap

A sediment trap would be an LSF. It was considered for the south oxbow; the north oxbow has not been dredged or used for barge shipping and the flow and sediment characteristics of the dredged FWP condition are not established enough to provide a basis for this measure. There are a few types of sediment trap, which collect sediment in different ways. For example, a pit can be created on a river to trap sediment before it is carried further downstream. Additionally, an old meander can be opened up (or side channel added) to increase channel cross-section, reducing velocity and inducing sedimentation within the trap. Sediment traps such as these have been piloted for use within MVS as an effective way to remove sediments from rivers. Depending on flood conditions, and trap configuration and size, they may fill up within a couple of years of operation, requiring a clean-out operation to remove the material for additional trapping capacity.

5.2.12 River Training Structure(s)

River training structures would be LSF. They were considered for both oxbows. River training structures are manmade structures designed and constructed in a river reach to modify the hydraulic flow and sediment response of a river. For this study, they were considered as an intended method of reducing sediment deposition at the mouth of the oxbows.

5.2.13 Pipeline with Pump

A pipeline with pump would be an LSF. It was considered for the south oxbow, which at its upriver end is close to the river; the north oxbow has a much longer channel that would make a pipeline less feasible and/or cause impact outside the study area. The south oxbow is a backwater area with no positive flow. A pipeline and pump from the river to the north (closed) end of the south oxbow were considered as way to create positive flow which would reduce sediment deposition in the oxbow and reduce the need for dredging.

5.2.14 Opening the North End of the South Oxbow

This measure would likely be a GNF; it was considered only for the south oxbow. Opening the north end of the south oxbow to the river would create a flowing side channel allowing two entrances/exits to the Port facilities. This channel would allow barge traffic to travel to and from the port without the need to turn or reverse direction, which would improve safety for boat operators and increase efficiency. Excavation of the land between the upper end of the oxbow and the river would remove approximately 2.2 acres of forested/shrub wetland. Wetland mitigation would be required for associated impacts. However, to create this channel,

land that is above the navigation servitude ("fast land") would have to be excavated. This is not permissible under USACE policy (ER 1165-2-1).

5.2.15 Mussels

Mussels would be an LSF; they were considered for both oxbows. Mussels were considered as a natural measure that could increase the removal of silt and sediment from the oxbow channel. Mussels ingest organic and inorganic materials suspended in the water column and have been shown to improve water quality and clarity in some environments.

5.3 EVALUATION AND SCREENING OF MEASURES

Evaluation of measures is based on the four Principles and Guidelines (P&G) criteria: completeness, acceptability, efficiency, and effectiveness (ER 1105-2-103). While the definitions of these criteria refer to alternatives, the USACE planning process first uses them to help in screening measures.

Completeness

Completeness is the extent to which the alternative plans provide and account for all necessary investments or other actions to ensure the realization of the planning objectives, including actions by other federal and non-federal entities. Completeness must consider the sustainability and long-term aspects of the plans and whether all resource requirements are included. Completeness does not mean that all planning objectives are fully realized, only that the required resources and actions are included to achieve the estimated benefits.

Effectiveness

Effectiveness is the extent to which the alternative plans contribute to achieving the planning objectives. Benefit metrics reflect the effectiveness of each alternative. Effectiveness does not mean that all planning objectives need to be addressed or fully realized. The degree of effectiveness will be used to illustrate the trade-offs between plans when compared.

Efficiency

Efficiency is the extent to which an alternative plan is a cost-effective means of solving the problem and achieving the objectives. Efficiency is determined through a comparison of the costs and benefits of each alternative.

Acceptability

Acceptability is the workability and viability of the alternative plan with respect to acceptance by state and local entities and the public and compatibility with existing laws, regulations, and public policies. Acceptability has two dimensions – implementability and satisfaction. Implementability means the extent to which the alternative is feasible from a technical,

financial, and legal perspective. Satisfaction is the extent to which the plan is welcome from a political or preferential perspective.

Screening criteria qualitatively applied included whether the measure meets planning objectives and avoids constraints, as well as qualitative assessments of effectiveness, efficiency, and acceptability. **Table 21** shows a summary of the measures screened and the screening rationale.

Table 21. Measures Screened and Screening Rationale

Measure	Oxbow	Screening Rationale
Turning area (north oxbow)	North	Not Acceptable: There is not enough space between the banks for the size/area needed to turn barges without cutting into fast land, which would violate USACE policy. Approximately 200 ft width could be supported, which is less than the approximately 450 ft needed for a turning basin.
Fleeting area FL-3	South	Ineffective: Usefulness for mooring/fleeting limited, especially compared with FL-1; costs of wetland mitigation expected to be very high and outweigh benefits
Bank stabilization	Both	Ineffective: Stabilization along oxbow banks is not necessary to support stability for channel dredging. Amount of sediment currently eroding from bank is likely negligible.
Bubblers	Both	Ineffective: Not enough information on the function of a bubbler in this environment/for this purpose (further study needed), so benefit too low and cost too high; and dredging has the same function for a lesser cost
Agitators	Both	Ineffective: Would not capture much sediment during flood events. Also wetland impacts and mitigation, potential fish entrapment, potential navigation/safety concerns.
Siltation area	South	Ineffective: Would not capture much sediment during conditions including flood events. Also, wetland impacts, fish entrapment issues, high costs, and potential navigation impacts.
Sediment trap	South	Ineffective: Insufficient space available; Construction cost-ineffective; high O&M requirements
River training structures	Both	Ineffective: Would deflect sand but not silt from the mouth of the oxbow; it would travel overland or back in with only light agitation/low velocity. Also, concerns about expensive cost and interference with river navigation project
Pipeline with pump	South	Ineffective: Could make siltation worse by drawing in more water from the river. Also not cost effective; would need an exorbitantly high amount of power
Opening the oxbow	South	Not Acceptable: Not USACE policy-compliant due to fast land policy

Measure	Oxbow	Screening Rationale
Mussels	Both	Ineffective: Acquiring enough mussels to establish a self-sustaining population under poor environmental conditions to induce noticeable change in water quality would be a risk to mussel life and cost-prohibitive

5.4 SUMMARY OF RETAINED MEASURES

The following measures were retained, as shown in **Figure 15**.

South oxbow:

- Channel dredging, to one-or two-way traffic width (GNF)
- Turning area (GNF)
- Fleeting area 1 (FL-1) (LSF)
- Fleeting area 2 (FL-2) (LSF)

Dredge placement would be included with each dredging measure, including DD-1 (GNF) and DD-2 (GNF).

North oxbow:

- New dock (LSF)
- Channel dredging, to one-or two-way traffic width (GNF)
- Fleeting area 4 (FL-4) (LSF)
- Fleeting area 5 (FL-5) (LSF)
- Mouth widening (GNF)

Dredge placement would be included with each dredging measure, including DD-3 (GNF).

Either or both oxbows: DD-4 (GNF) could be included with dredging measures.

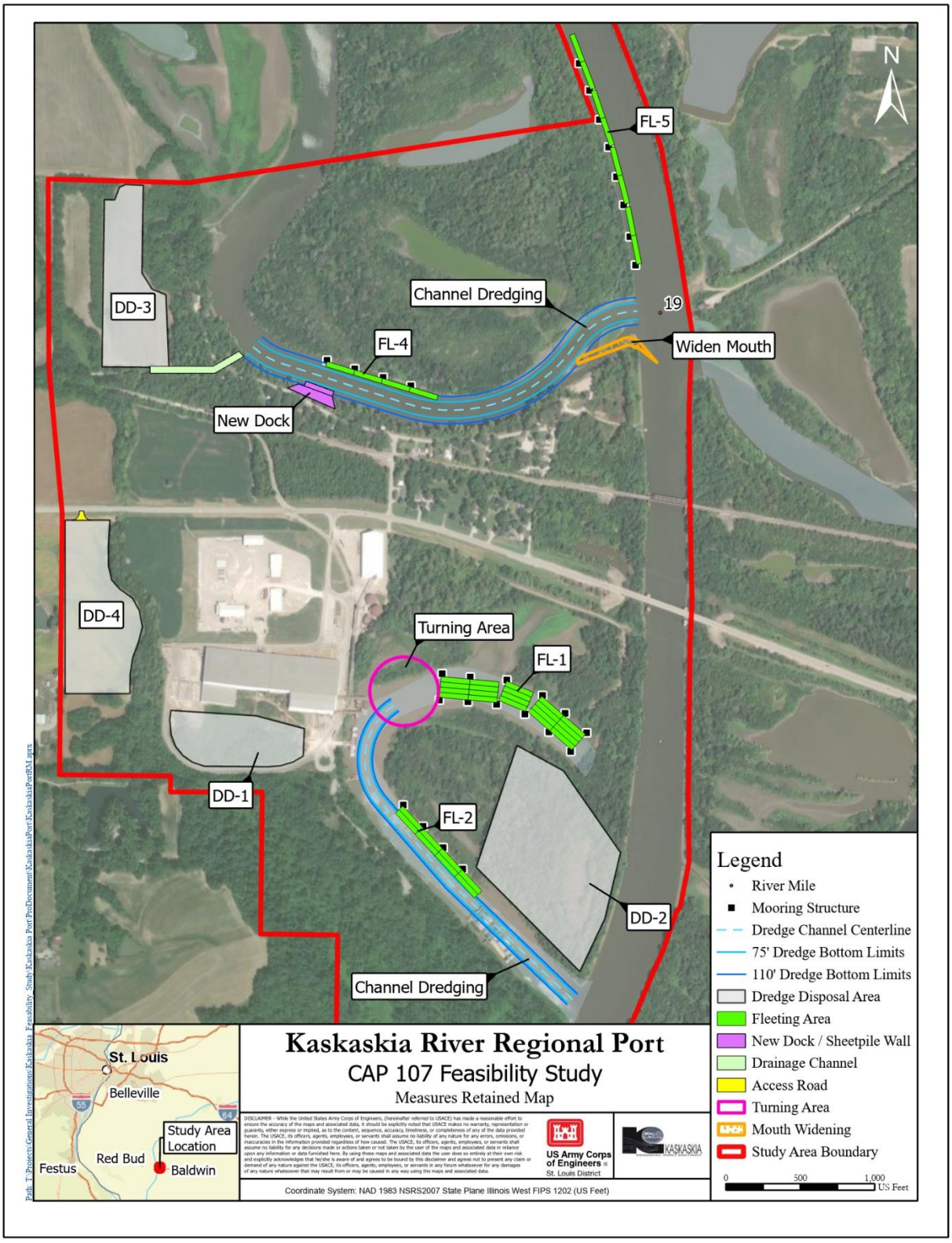

Figure 15. Measures Retained in the Initial Array of Alternatives

5.5 INITIAL ARRAY OF ALTERNATIVES

Measures deemed feasible were carried forward for consideration in the development of alternatives. Alternatives are combinations of measures that will contribute to attaining the planning objectives. This section describes considerations that led to the development of an initial array of alternatives and the evaluation of alternative plans' ability to meet Project objectives.

Formulation strategies, defined by Planning Manual Part II: Risk -Informed Planning 2017, are a set of conditional decisions that shape and guide the development of alternatives. Formulation strategies combine measure(s) together into alternatives based on the study goal, objectives, planning criteria, and opportunities, while avoiding constraints. Measures were combined based on appropriate dependencies and exclusivities. For this study, formulation strategies were based on the following:

- **No Action:** This alternative is defined as the alternative in which no federal action takes place. The FWOP condition would be anticipated as a result of no federal action.
- **Minimum:** This alternative strategy identifies the smallest (least cost) plan resulting in minimal improvements towards the Project objective while making a measurable and cost-effective improvement to existing conditions. The minimum alternative focuses on channel dredging to a greater depth and width than the existing condition. For the north oxbow, a new dock was also included, since the benefit of dredging for transloading could not be realized without it.
- **Turning Area and Channel Dredging:** This alternative strategy focuses on the addition of a turning area, with channel dredging to a greater depth and width than the existing condition. This would offer greater flexibility in navigation and result in intermediate improvement towards the Project objective, with an intermediate cost. This strategy was not applicable to the north oxbow; there was not enough width for a turning area.
- **Fleeting and Channel Dredging:** This alternative strategy focuses on measures that maximize fleeting alongside channel dredging to a greater depth and width. This would offer greater flexibility in navigation and result in intermediate improvement towards the Project objective, with an intermediate cost.
- **Mouth Widening and Channel Dredging:** This alternative strategy was developed for the north oxbow, which has a sharp angle of entry; mouth widening would enable more efficient navigation into the dredged channel with an intermediate cost.
- **Maximum Alternative:** This alternative strategy maximizes navigation efficiency and is also the largest (greatest cost) plan. Measures included in this strategy address Project problems statements to the greatest extent.

Additional combinations of measures were considered, but for the initial array, the study team determined the strategies above were sufficient; additional reformulation could be developed later based on alternatives that evaluated well.

The initial array of alternatives for the south oxbow is shown in **Table 22** and for the north oxbow in **Table 23,** showing measures included and dredge material quantities generated. GNF denotes General Navigation Features and LSF denotes Local Service Facilities. All dredging measures assume dredging to 12 ft depth. The alternatives include management of dredged material associated with the construction and maintenance "for the established project economic life" including all material that would need to be dredged to realize project benefits (including the LSFs, which are not Federal responsibilities), per ER 1105-2-100, Paragraph E-15.i. O&M dredging was assumed at 5-year intervals, and the O&M dredging quantity over the 50-year timeframe was estimated at 100% of the initial dredge material quantity. See Appendix A – Civil Engineering for more detail.

Table 22. Initial Array of Alternatives for the South Oxbow

Measure	Type	Alt 1a – Maximum (two-way traffic)	Alt 1b – Maximum (one-way traffic)	Alt 2a – Turning area + two-way traffic	Alt 2b – Turning area + one-way traffic	Alt 3a – Minimum (two-way traffic)	Alt 3b – Minimum (one-way traffic)
Channel dredged for one-way traffic (75 ft width)	GNF		x		x		x
Channel dredged for two-way traffic (110 ft width)	GNF	x		x		x	
Fleeting area FL-1	LSF	x	x				
Fleeting area FL-2	LSF		x				
Turning area	GNF	x	x	x	x		
Dredge placement area DD-1		x	x	x	x	x	x
Dredge placement area DD-2	GNF	x	x	x	x	x	x
Dredge placement area DD-4	GNF	x	x	x	x		
Total initial dredge material quantity (CY) (not including water content)		**143,000**	**134,000**	**107,000**	**91,000**	**45,000**	**29,000**
Total dredge material quantity including O&M dredging (CY) (not including water content)		**286,000**	**268,000**	**214,000**	**182,000**	**90,000**	**58,000**

Table 23. Initial Array of Alternatives for the North Oxbow

Measure	Type	Alt 4a – Maximum (two-way traffic)	Alt 4b – Maximum (one-way traffic)	Alt 5a – Fleeting + two-way traffic	Alt 5b – Fleeting + one-way traffic	Alt 6a – Mouth widening + two-way traffic	Alt 6b – Mouth widening + one-way traffic	Alt 7a – Minimum (two-way traffic)	Alt 7b – Minimum (one-way traffic)
New dock	LSF	x	x	x	x	x	x	x	x
Channel dredged for one-way traffic (75 ft width)	GNF		x		x		x		x
Channel dredged for two-way traffic (110 ft width)	GNF	x		x		x		x	
Fleeting area FL-4	LSF		x		x				
Fleeting area FL-5 (river)	LSF	x	x	x	x				
Widening mouth of oxbow	GNF	x	x			x	x		
Dredge placement area DD-3	GNF	x	x	x	x	x	x	x	x
Dredge placement area DD-4	GNF	x	x	x	x	x	x	x	
Total initial dredge material quantity (CY)		**141,000**	**113,000**	**128,000**	**97,000**	**130,000**	**104,000**	**117,000**	**87,000**
Total dredge material quantity including O&M dredging (CY)		**282,000**	**226,000**	**256,000**	**194,000**	**161,000**	**208,000**	**234,000**	**175,000**

5.5.1 Economic Analysis of Initial Array of Alternatives

Costs and benefits were developed for all alternatives in the initial array. **Table 24** and **Table 25** contain the National Economic Development (NED) annual costs and benefits as well as the resulting average annual net benefits and benefit-cost ratios for the south and north oxbow alternatives at FY2024 price levels and amortized at the 2024 Federal discount rate of 2.75 percent. More information is provided in Section 7.1.1.

To develop economic benefits for the north oxbow, current Port tenants were contacted to determine if the existence of a navigable north oxbow would allow them to expand their output and thus increase barge traffic. Care was taken not to double count benefits for existing

tenants as transportation cost savings would simply be shifting from the south oxbow to the north oxbow. **Table 25** shows the north oxbow benefits derived from existing tenants' expected transportation savings from using both the south and north oxbows.

Table 24. Preliminary Average Annual Costs and Benefits for the South Oxbow Alternatives

Channel Alternative	Alternative 1a	Alternative 1b	Alternative 2a	Alternative 2b	Alternative 3a	Alternative 3b
First Cost of Construction	$ 13,788,000	$13,605,000	$ 11,770,000	$ 10,986,000	$ 4,887,000	$ 4,105,000
Interest During Construction	$ 188,000	$ 186,000	$ 161,000	$ 150,000	$ 67,000	$ 56,000
Total Investment	$ 13,976,000	$13,791,000	$ 11,931,000	$ 11,136,000	$ 4,954,000	$ 4,161,000
Average Annual First Cost	$ 518,000	$ 511,000	$ 442,000	$ 412,000	$ 183,000	$ 154,000
Average Annual Increm. O&M	$ 151,000	$ 146,000	$ 94,000	$ 86,000	$ 61,000	$ 52,000
Total Average Annual Cost	$ 668,000	$ 657,000	$ 536,000	$ 498,000	$ 245,000	$ 207,000
Total Average Annual Benefits	$ 1,509,000	$ 1,379,000	$ 1,379,000	$ 1,119,000	$ 1,249,000	$ 989,000
Net Benefits	**$ 841,000**	**$ 722,000**	**$ 843,000**	**$ 621,000**	**$ 1,004,000**	**$ 782,000**
B/C Ratio	**2.3**	**2.1**	**2.6**	**2.2**	**5.1**	**4.8**

(FY24 price level, 2.75% discount rate) (rounded to nearest $1,000)

Table 25. Preliminary Average Annual Costs and Benefits for the North Oxbow Alternatives

Channel Alternative	Alternative 4a	Alternative 4b	Alternative 5a	Alternative 5b	Alternative 6a	Alternative 6b	Alternative 7a	Alternative 7b
First Cost of Construction	$ 38,719,000	$36,478,000	$ 37,368,000	$ 34,850,000	$ 37,132,000	$ 34,747,000	$ 35,785,000	$ 30,687,000
Interest During Construction	$ 529,000	$ 498,000	$ 510,000	$ 476,000	$ 507,000	$ 475,000	$ 489,000	$ 419,000
Total Investment	$ 39,248,000	$36,976,000	$ 37,878,000	$ 35,326,000	$ 37,639,000	$ 35,222,000	$ 36,274,000	$ 31,106,000
Average Annual First Cost	$ 1,454,000	$ 1,370,000	$ 1,403,000	$ 1,309,000	$ 1,394,000	$ 1,305,000	$ 1,344,000	$ 1,152,000
Average Annual Increm. O&M	$ 162,000	$ 135,000	$ 149,000	$ 119,000	$ 152,000	$ 126,000	$ 139,000	$ 110,000
Total Average Annual Cost	$ 1,616,000	$ 1,505,000	$ 1,552,000	$ 1,428,000	$ 1,546,000	$ 1,431,000	$ 1,482,000	$ 1,263,000
Total Average Annual Benefits	$ 732,000	$ 667,000	$ 689,000	$ 624,000	$ 667,000	$ 537,000	$ 624,000	$ 494,000
Net Benefits	**$ (884,000)**	**$ (838,000)**	**$ (863,000)**	**$ (804,000)**	**$ (879,000)**	**$ (894,000)**	**$ (858,000)**	**$ (769,000)**
B/C Ratio	**0.5**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**

(FY24 price level, 2.75% discount rate) (rounded to nearest $1,000)

5.5.2 Compensatory Mitigation Evaluation of Initial Array of Alternatives

An analysis of compensatory mitigation required by the initial array of alternatives was conducted using habitat modeling. Habitat Evaluation Procedures (HEP; USFWS 1980a) is a habitat-based evaluation methodology used in USACE planning. The procedure evaluates the quality and quantity of available habitat for selected wildlife species. HEP procedures were used to evaluate the effects of the measures and summarized by alternative grouping. Two approved and certified [per EC 1105-2-412] HSI models were utilized for the HEP analysis; the Black-Capped Chickadee and Bluegill models.

Table 26 shows the environmental mitigation costs developed based on habitat modeling for the south oxbow, and **Table 27** shows the environmental mitigation costs developed based on habitat modeling for the north oxbow. Grey cells indicate that no mitigation was needed for the measure. These costs were incorporated into the economic analysis in the previous section (Section 5.5.1). Appendix E – Environmental Compliance has more information.

Table 26. Environmental Mitigation Costs for South Oxbow Initial Array of Alternatives

Measure	Alt 1a	Alt 1b	Alt 2a	Alt 2b	Alt 3a	Alt 3b
Channel dredging						
Fleeting area FL-1	$ 50,000	$ 50,000				
Fleeting area FL-2		$ 50,000				
Turning area						
DD-1						
DD-2	$ 1,000,000	$ 1,000,000	$ 1,000,000	$ 1,000,000	$1,000,000	$ 1,000,000
DD-4						
Total Mitigation Cost	**$ 1,050,000**	**$ 1,100,000**	**$ 1,000,000**	**$ 1,000,000**	**$ 1,000,000**	**$ 1,000,000**

Table 27. Environmental Mitigation Costs for North Oxbow Initial Array of Alternatives

Measure	Alt. 4a	Alt. 4b	Alt. 5a	Alt. 5b	Alt. 6a	Alt. 6b	Alt. 7a	Alt. 7b
New dock	$100,000	$100,000	$100,000	$100,000	$100,000	$100,000	$100,000	$100,000
Channel dredging								
Fleeting area FL-4		$ 50,000		$ 50,000				
Fleeting area FL-5	$100,000	$100,000	$100,000	$100,000				

Measure	Alt. 4a	Alt. 4b	Alt. 5a	Alt. 5b	Alt. 6a	Alt. 6b	Alt. 7a	Alt. 7b
Widening mouth of oxbow								
DD-3	$1,200,000	$1,200,000	$1,200,000	$1,200,000	$1,200,000	$1,200,000	$1,200,000	$1,200,000
DD-4								
Total Mitigation Cost	**$1,400,000**	**$1,450,000**	**$1,400,000**	**$1,450,000**	**$1,300,000**	**$1,300,000**	**$1,300,000**	**$1,300,000**

The initial array of alternatives was also evaluated for other environmental benefits and impacts as discussed below.

South oxbow alternatives

In addition to the habitat modeling, initial evaluation of the south oxbow alternatives identified the following environmental and acceptability concerns which are similar between all alternatives:

a. Tree removal at DD-2: Placement capacity at DD-2 is required for all south oxbow alternatives. Approximately 13 acres of trees would need to be removed, requiring environmental mitigation.
b. Noise, air quality, and GHGs: The south oxbow alternatives would allow more barge traffic, which may increase noise, air pollution, and GHG emissions at KRPD#2 in small/negligible amounts compared to the FWOP condition. However, the increased depth would allow fully loaded barges from the Kaskaskia River to move cargo to and from the port in fewer trips, increasing efficiency and perhaps reducing air pollution and GHG emissions per unit of freight along the shipping route. A deeper channel would also reduce the number of grounding incidents, improving safety for the boat operators.
c. Recreation use conflicts: Increased barge traffic would lead to decrease in recreation at the south oxbow for all alternatives.

North oxbow alternatives

In addition to the habitat modeling, initial evaluation of the north oxbow alternatives identified the following environmental and acceptability concerns which are similar between all alternatives:

a. Impacts to residents/landowners: Commercial barge traffic and associated development in the north oxbow would create potential noise, air quality, dust, traffic, aesthetic, land use/land cover, and wildlife concerns. Based on feedback from the June 2023 Public Scoping Meeting, some landowners at the north oxbow would push back on any alternative at the north oxbow.

b. IDNR coordination: The north oxbow alternatives would require the transfer of real estate interests held by the State of Illinois; the north dock and DD-3 would both be needed in all north oxbow alternatives, and both are located on land currently owned by IDNR. Further coordination with IDNR would be needed to confirm a viable path forward on these real estate interests. Appendix D – Coordination has more information on coordination with IDNR as part of this study.
c. Recreation use conflicts: Use of the north oxbow for recreation, fishing, and hunting may be impacted by an increase in commercial shipping. The north oxbow, IDNR Day Use Area and wetland north of the Day Use Area, Wood Duck Boat Launch, and Barry Road IDNR boat launch may all experience a decline in recreational activity. Residents and visitors using the water may have increased safety concerns visiting the oxbow due to increased road and barge traffic.
d. IDNR Day Use Area: DD-3 would be needed for dredge material placement from all north oxbow alternatives. The outflow from DD-3 would be located across the IDNR Day Use Area west of the north oxbow. Additionally, increased shipping in the oxbow and industrial use of neighboring land may decrease recreational use of the area.
e. Agricultural land at DD-3: The land in the DD-3 footprint is currently agricultural land used for hunting; this would be converted to a dredge placement area.
f. Bank erosion: Increased wave wash from barge traffic may cause scouring and erosion; however, bank stabilization features could be constructed to minimize erosion.
g. Power plant intake: Dredging the north oxbow channel and allowing barge traffic to use the channel may impact the Baldwin, IL power plant water intake. The water intake is directly opposite the oxbow entrance on the east bank (left descending bank) of the river. If the north oxbow is used by barges, the water intake could take in increased sediment as towboats generate propulsion when pushing barges around the turn. However, the power plant is expected to close by 2025, with solar operations commencing in fall 2024 (Republic-Times, 2020). IDNR may take over operation of the water intake structure once the power plant is closed, using the water to supply Baldwin Plant Cooling Lake to support fish and wildlife. It is likely IDNR would pump less often than the power plant had pumped, meaning that sediment may build up at the water intake structure.
h. Baldwin Lake State Fish and Wildlife Area lake levels: The power plant intake described in the previous section is critical to maintaining lake levels at the Baldwin Lake State Fish and Wildlife Area. If barge traffic commences at the north oxbow, sediment deposition at the water intake pump area may increase the chance of pump damage and the frequency of maintenance dredging.

5.5.3 Alternative Plans Screened

The following alternatives were screened from further consideration based on an economic evaluation of cost efficiency:

- All of the south oxbow one-way traffic alternatives: Alternatives 1b, 2b, and 3b
- All of the north oxbow alternatives: Alternatives 4a, 4b, 5a, 5b, 6a, 6b, 7a, 7b

The south oxbow alternatives 1b, 2b, and 3b were screened because they had lower net benefits compared to their 1a, 2a, and 3a counterparts (see **Table 24**). In other words, alternatives 1a and 1b were very similar except that Alternative 1a had wider channel dredging of 110 ft for two-way traffic, whereas Alternative 1b had narrower channel dredging of 75 ft for one-way traffic. The benefits of dredging the extra width exceeded the additional cost, resulting in greater net benefits for each alternative with two-way/one-way traffic options.

The north oxbow alternatives were screened due to negative net economic benefits as shown in **Table 25**. As described in Section 5.3, efficiency is one of the P&G criteria and is defined (in ER 1105-2-103) as the extent to which an alternative plan is a cost-effective means of solving the problem and achieving the objectives. Negative net benefits and a BCR of less than 1.0 are indicators of lack of efficiency (cost-effectiveness) of these alternatives towards the federal interest.

Screening the north oxbow alternatives from this study does not preclude KRPD from pursuing development at the north oxbow, including dredging the channel and building a dock, outside of this study. Permitting for this development would be coordinated with USACE Regulatory Branch.

5.5.4 Final Array of Alternative Plans

The following alternatives were retained and developed into the final array.

Alternative 0 – No Action Plan

Alternative 0, the No Action alternative, is a scenario with no federal CAP 107 project. The future condition with the No Action plan is the same as the Future Without Project condition. It does not address either of the planning objectives. Navigation efficiency is unlikely to change significantly in the future. The south oxbow would continue to be prone to natural sedimentation, dredging would continue at approximately ten-year intervals, and future hydraulic conditions are assumed to be the same as the existing condition. Barges would continue to light-load and move slowly through the south oxbow.

Alternative 1a – Maximum (Two-Way Traffic)

Alternative 1a consists of channel dredging to a width of 110 ft and a depth of 12 ft, fleeting area FL-1 northeast of the existing dock, a turning area north of the existing dock, and dredge material placement

at DD-1, DD-2, and DD-4 (

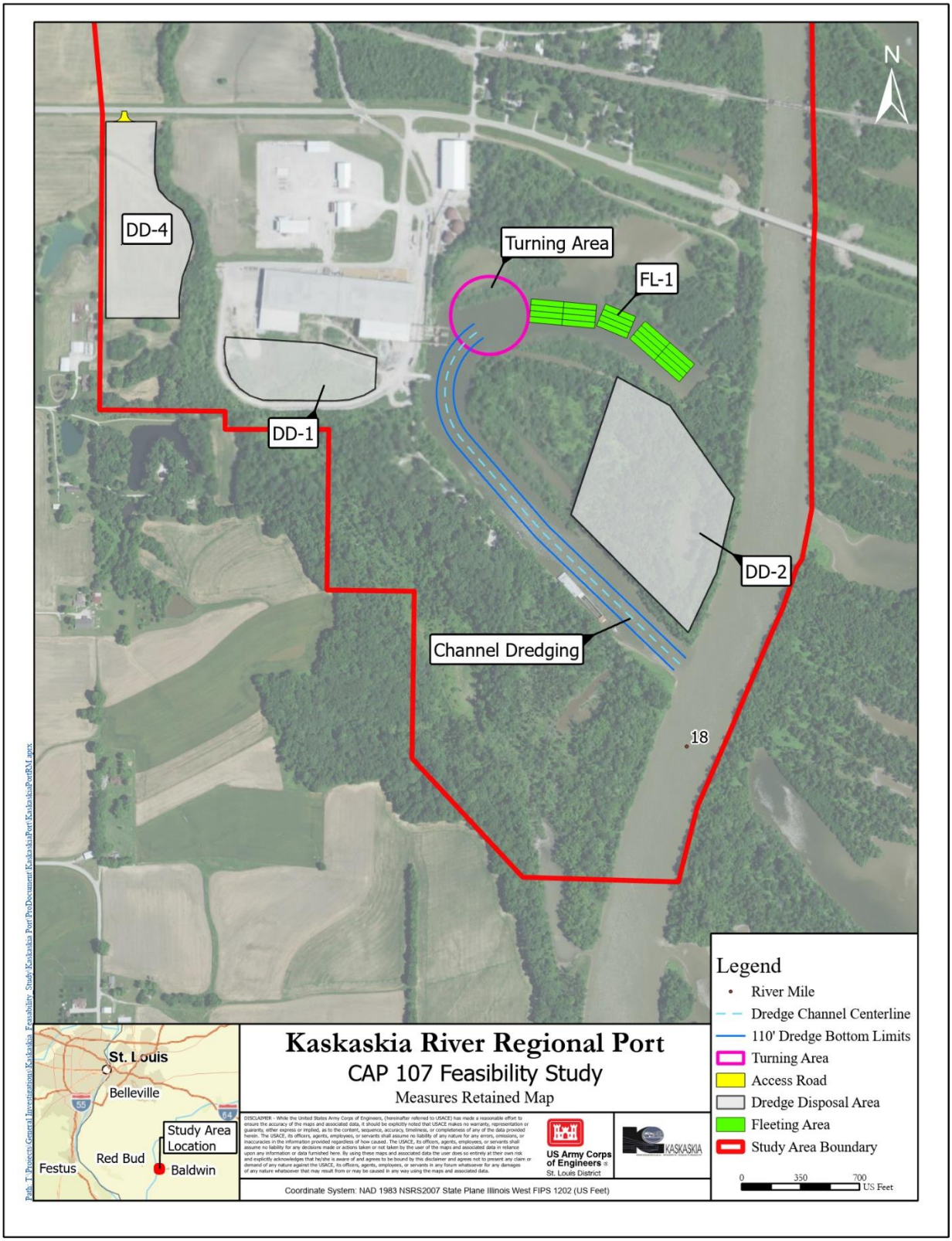

Figure 16). This alternative would allow barges to load to a greater depth, move through the oxbow at greater speed, turn in the turning area, and wait in the fleeting area for the dock/crane facilities to become available. These changes would allow greater economic efficiency. Dredge material would be placed at DD-1 and DD-2 by either mechanical or hydraulic dredging; hydraulic dredging was used as the assumption for cost estimates. Mechanical dredging would need to be used for dredge material at DD-4 given its distance and elevation from the oxbow.

Alternative 2a – Turning Area + Two-Way Traffic

Alternative 2a consists of channel dredging to a width of 110 ft and a depth of 12 ft, a turning area north of the existing dock, and dredge material placement at DD-1, DD-2, and DD-4 (

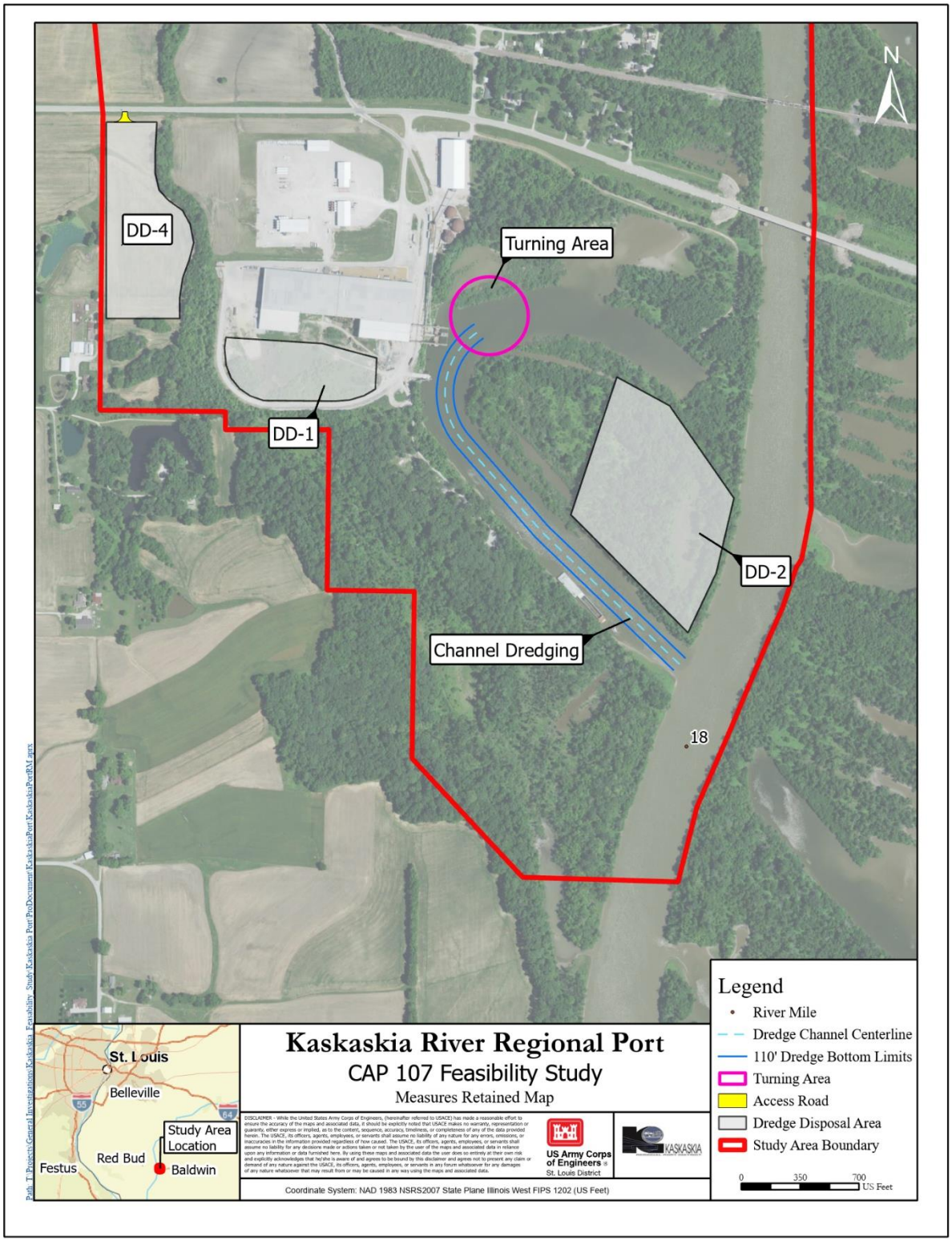

Figure 17). This alternative would allow barges to load to a greater depth, move through the oxbow at greater speed, and turn in the turning area. These changes would allow greater economic efficiency. Dredge material would be placed at DD-1 and DD-2 by either mechanical or hydraulic dredging; hydraulic dredging was used as the assumption for cost estimates. Mechanical dredging would need to be used for dredge material at DD-4 given its distance and elevation from the oxbow.

Alternative 3a – Minimum (Two-Way Traffic)

Alternative 3a consists of channel dredging to a width of 110 ft and a depth of 12 ft, and dredge material placement at DD-1 and DD-2 (

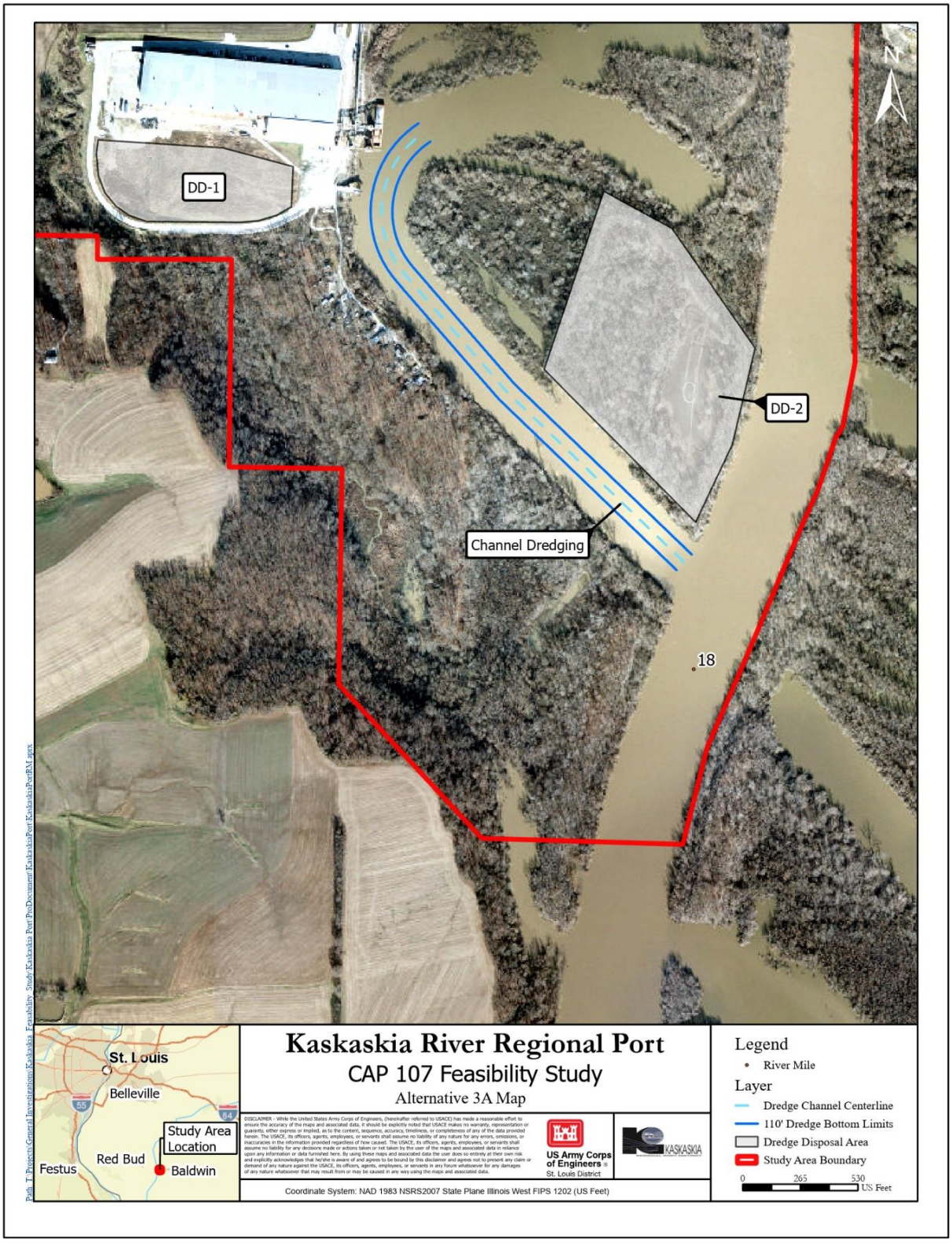

Figure 18). This alternative would allow barges to load to a greater depth and move through the oxbow at greater speed. Dredge material would be placed at DD-1 and DD-2 by either

mechanical or hydraulic dredging; hydraulic dredging was used as the assumption for cost estimates.

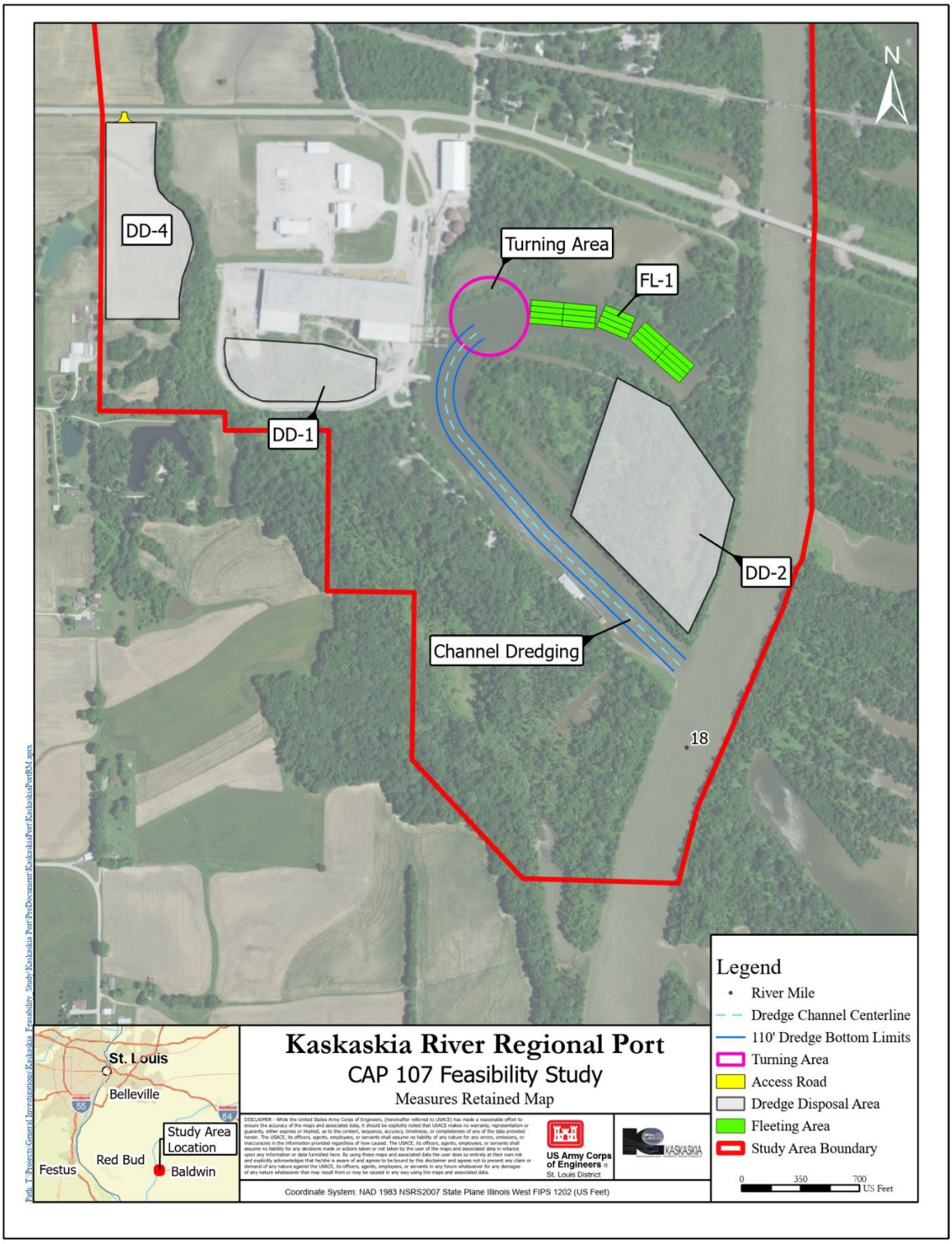

Figure 16. Alternative 1a – Maximum (Two-Way Traffic)

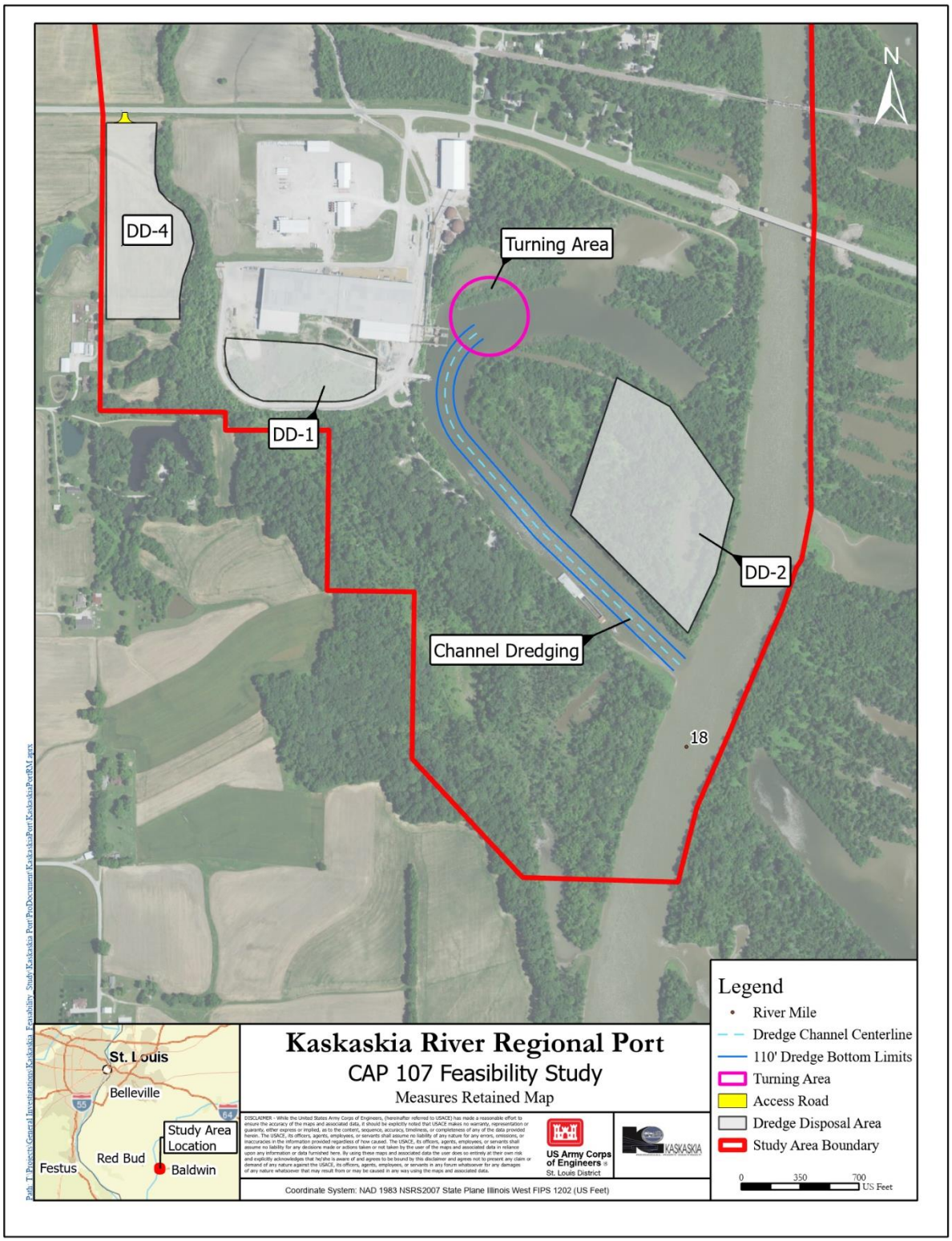

Figure 17. Alternative 2a – Turning Area + Two-Way Traffic

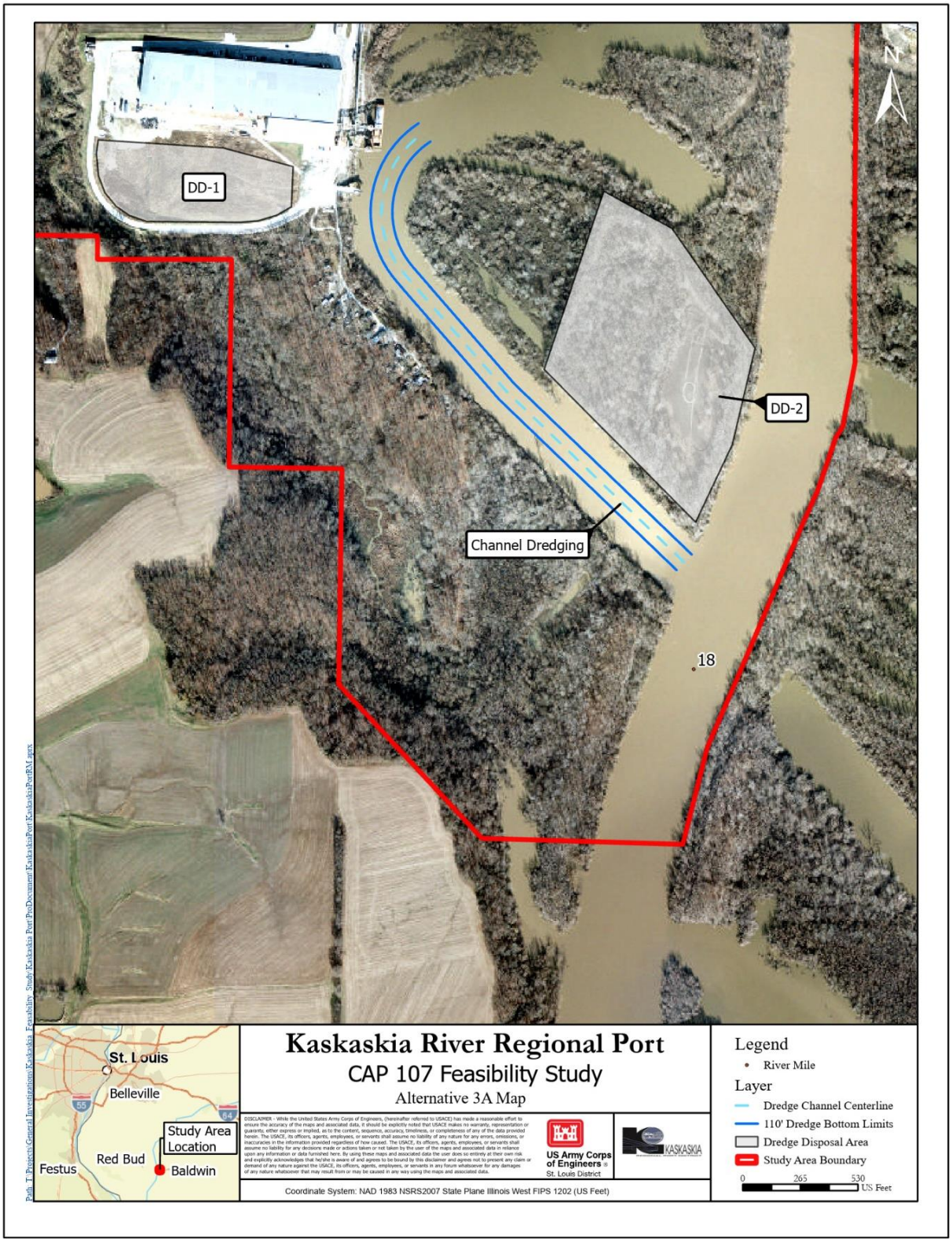

Figure 18. Alternative 3a – Minimum (Two-Way Traffic)

6 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES*

This section evaluates and discusses the potential impacts (environmental consequences) for each resource topic discussed in Section 3 that could be impacted, directly or indirectly, by the no-action alternative and the final array of alternatives. Direct effects (impacts) are those which are caused by the action and occur at the same time and place (40 CFR §1501.1(i)(1)) as the action under consideration. Indirect effects (impacts) are those that are caused by the action and are later in time or farther removed in distance but are still reasonably foreseeable (40 CFR §1508.1(i)(2)). The depth of analysis corresponds to the scope and magnitude of the potential environmental impact.

Qualitative definitions/descriptions of impacts as used in this section of the report include:

- Intensity
    - Negligible – No noticeable effects to the resource in the project area
    - Minor – Noticeable impacts to the resource in the project area, but the resource is still mostly functional
    - Moderate – The resource is impaired, so that it cannot function normally
    - Major – The resource is severely impaired so that it is no longer functional in the project area
- Duration
    - Short term – Temporary effects caused by the construction and/or implementation of a selected alternative
    - Long term – Lasting effects caused by an alternative after the action has been completed and/or after the action is in full and complete operation.

6.1 HYDROLOGY AND HYDRAULICS

No Action Alternative

The river and the oxbows will continue to be prone to sedimentation. The sedimentation causing the shallow depths and narrow channel widths results from the deposition of silt and sediment particles from river water in the oxbows. The flow velocity in the oxbows would remain extremely slow and sometimes zero, creating the appropriate conditions for silt and sediment to drop out of suspension. After flooding in the oxbows, the receding floodwaters would leave behind sediment on the riverbanks and low-lying land which later ends up running off into the oxbows. Some bank erosion and upland runoff may also carry sediment into the oxbows where it sinks to the bottom.

It is assumed that KRPD will continue to dredge the south oxbow channel periodically. In the past, KRPD has dredged at approximately ten-year intervals (see Section 2.2), and this is expected to continue in the FWOP condition. When possible, USACE has undertaken other dredging efforts. There is insufficient data to quantitatively estimate the future flooding frequency and the rates of additional erosion and sedimentation. Therefore, the FWOP condition is assumed to be the same as the existing condition.

Based on the standard operating procedure at Jerry F. Costello Lock and Dam, the lock operation will continue until the pool water surface elevation is above 380.0 ft NAVD 88, possibly until 6-8 inches above 380.0 ft if the miter gate recesses are hosed out according to USACE Operations personnel. Analysis of the pool gage records revealed high water closures of the L&D occur roughly every two years. Those high water closure periods account for roughly 3% of the days from 2004 to 2024. Because of the relative frequency of closure periods, USACE Operations personnel and KRPD are aware of the possibility of location.

Alternatives 1a, 2a, 3a

O&M dredging was assumed at 5-year intervals, with key "problem locations" being dredged at 5 years, 15 years, etc., and a more thorough dredging operation at 10 years, 20 years, etc. With O&M dredging in the south oxbow channel at 5-year intervals, the channel depth would vary between 12 ft after dredging and shallower depths as sediment deposition occurs. Sedimentation rates would be expected to continue similarly to the existing condition.

Assessment of Impacts to the Main River Navigation Chan**nel No Action Alternative**

No impacts to the main river navigation channel would be anticipated.

Alternatives 1a, 2a, 3a

Sediment impacts to the main river navigation channel would be negligible. No dredged sediments are anticipated to impact the navigation channel. The increased utilization of the facility, made possible by the access dredging, would increase sediment exchange between the oxbow and the main river navigation channel. The net balance of this exchange is unknown but is likely to be relatively even. Should additional sediments be deposited in the navigation channel through increased traffic, it is anticipated that they would quickly be remobilized either by traffic along the navigation channel or due to the hydrograph, passing downstream to the Mississippi River, at which point they would not be a measurable concern.

6.2 CLIMATE CHANGE

No Action Alternative and Alternatives 1a, 2a, 3a

Potential climate change issues such as change in runoff and temperature are scientific uncertainties for this and all studies. Recent climate science literature points towards a warmer and wetter climate in the future for the Kaskaskia basin. The most likely consequence from climate change is a loss of access to the south oxbow due to closure of Jerry F. Costello Lock and Dam, which would happen with or without a project. Closure of the lock and dam already occurs roughly every two years. This watershed is not relatively vulnerable in the navigation business line compared to other watersheds in the continental U.S. For more information related to future climate conditions in the study region, see Appendix C – Climate Assessment.

The No Action Alternative as well as the construction of any of the Final Array of Alternatives would have negligible if any effect on the climate of the region.

6.3 LAND USE/LAND COVER

No Action Alternative

The bottomland hardwood forest, oxbow lakes, and emergent and forested wetlands in the study area are generally expected to continue in a condition similar to existing conditions.

In the south oxbow, without federal action, it is anticipated that KRPD#2 would continue its current operations and implement development associated with the KRPD#2 Master Plan. KRPD#2 Master Plan prioritizes improving port operations areas, truck and train access, and a third docking facility. Some development is assumed as described in Section 4.1.1, including new buildings, a new access road, extended rail lines, and an additional dock and associated structures. Additionally, the 2019 Southwest Illinois Connector Highway Task Force Report recommended enlarging a series of state highways across southern Illinois, including widening the section of Illinois Route 154 adjacent to KRPD#2 from two to four lanes.

Alternatives 1a

Alternative 1a would involve placement of 286,000 cy of dredge sediment onto DD-1, DD-2, and DD-4. Rip rap would be placed at the turning area for bank stabilization. Due to the inclusion of FL-1, there would be a small loss of riparian vegetation (0.9 acres) due to revetment of the shoreline adjacent to the fleeting area, but the impact would be minimal. Tree removal would occur at DD-2, which amounts to approximately 13 acres of bottomland hardwood forest. Dredge material would be placed inside the berm at DD-2 where the tree removal has taken place. Any terrestrial species in the DD-2 area could be impacted by tree removal prior to the dredge placement. Every 5 years, USACE could utilize DD-2 for scheduled dredge maintenance preventing regrowth of bottomland hardwood forest for the foreseeable future.

Alternatives 2a

Alternative 2a would involve placement of 214,000 cy of dredge sediment onto DD-1, DD-2, and DD-4. Rip rap would be placed at the turning area for bank stabilization. Tree removal would occur at DD-2, which amounts to approximately 13 acres of bottomland hardwood forest. Dredge material would be placed inside the berm at DD-2 where the tree removal has taken place. Any terrestrial species in the DD-2 area could be impacted by tree removal prior to the dredge placement. Every 5 years, USACE could utilize DD-2 for scheduled dredge maintenance preventing regrowth of bottomland hardwood forest for the foreseeable future.

Alternatives 3a

Alternative 3a would involve tree removal at DD-2 which amounts to approximately 13 acres of bottomland hardwood forest. Dredge material would be placed inside the berm at DD-2 where

the tree removal has taken place. Any terrestrial species in the DD-2 area could be impacted by tree removal prior to the dredge placement. Every 5 years, USACE could utilize DD-2 for scheduled dredge maintenance preventing regrowth of bottomland hardwood forest for the foreseeable future.

Mitigation information pertaining to Land Use/Land Cover is located in Appendix E-3

6.3.1 Prime Farmland

No Action Alternative

The development identified in KRPD's 2020 Master Plan could be implemented; this development would include conversion of some agricultural land which may include prime farmland.

Alternatives 1a, 2a, 3a

None of the alternatives would alter any areas that are considered to be prime farmland. According to the United States Department of Agriculture (USDA) Web Soil Survey (see Appendix E – Environmental Compliance), neither DD-1, DD-2, DD-4, Turning Area, or FL-1 contain any land that is considered prime farmland. The development identified in KRPD's 2020 Master Plan could be implemented; this development would include conversion of some agricultural land which may include prime farmland.

6.4 AIR QUALITY & NOISE

No Action Alternative

Without federal action, noise sources from current human activities such as cars, trucks, boats, Port operations, barge traffic, and firearms during hunting season, would continue in the FWOP condition. However, the proposed development identified in KRPD's 2020 Master Plan would still be implemented; such development may result in additional noise and air pollution due to increased road, rail, and river traffic, as well as expanded industrial facility use.

Alternatives 1a, 2a, 3a

For any of the action alternatives, there would be increased levels of noise due to the initial dredging operations in and around the south oxbow and increased shipping in the south oxbow, as well as O&M dredging. For alternatives 1a and 2a, construction would likely take longer than alternative 3a, thus a prolonged increase in noise levels and emissions could occur. Overall, impacts to air quality and noise would be minor and short term.

6.5 GREENHOUSE GASES

No Action Alternative

The development identified in the KRPD#2 2020 Master Plan would be implemented, however, the federal project would not occur. GHG emissions from commercial and recreational use of the Kaskaskia River, road and rail traffic through the study area, and KRPD#2 operations would be expected to increase in the No Action Alternative.

Alternatives 1a, 2a, 3a

The Environmental Protection Agency (EPA) is currently considering a change to a lower discount rate from 3% to 1.5%, 2%, or 2.5% which is a method for deciding how much of a finite resource can be used each year to ensure it will not all get used at one time and would remain available for future generations. As discount rates get applied to the social cost of greenhouse gas emissions, a lower discount rate would increase the social cost of near-term emissions and leverage less emissions reductions on future generations; with higher discount rates corresponding to lower costs for near-term emissions and leveraging greater emissions reductions to be carried out by future generations. The EPA has not made a determination on the discount rate that federal agencies should use, therefore per the recommendation to the Whitehouse by the Interagency Working Group, a 3% discount rate will be used corresponding to a social cost of $57 per metric ton of CO_2e.

Estimating Greenhouse Gases

Gases that contribute to climate change are CO_2, CO, N_2O, and CH_4. Emissions of these gases were estimated using the CEQA Air Quality Handbook Off-road Mobile Source Emission Factors (Scenario Years 2007 – 2025) for construction equipment anticipated to be used during project construction. CO_2 is the reference gas for climate change, as it is the GHG emitted in the highest volume. The effect of each GHG on global warming is the product of the mass of their emissions and their global warming potential (GWP). The GWP of a gas indicates how much the gas is predicted to contribute to global warming relative to the amount of warming that would be predicted to be caused by the same mass of CO_2. For example, methane and nitrous oxide are substantially more potent GHGs than CO_2, with GWPs of 25 and 298 times that of CO_2 respectively, which has a GWP of 1.

Social Cost of Greenhouse Gas Emissions

In order to further contextualize the anticipated emissions from each project alternative and provide an additional metric for alternatives comparison, the social cost of greenhouse gas emissions (SC-GHG) will be calculated for the alternatives by multiplying the metric tonnage of CO_2e with $57 per metric ton. Estimated social costs of greenhouse gasses will be shown in the final report for this study, after sensitivity analyses are completed.

6.6 WATER QUALITY

No Action Alternative

For the No Action Alternative, it is anticipated that KRPD#2 would continue its current operations and implement development associated with the KRPD#2 Master Plan. Such development is likely to result in no degradation or negligible degradation in water quality.

Alternatives 1a, 2a, 3a

For Alternatives 1a, 2a, and 3a, there would likely be a short-term impact on water quality during dredging operations when sediment/total suspended solids would increase in the water column. However, in the long term, the dredging may result in neutral or beneficial impacts as the dredged channel would generally have increased flow.

6.7 HAZARDOUS, TOXIC, AND RADIOACTIVE WASTE (HTRW)

No Action Alternative

Without federal action, it is anticipated that KRPD#2 would continue its current operations and implement development associated with the KRPD#2 Master Plan. Such development should follow current HTRW policies and laws; therefore, it is not anticipated that there would be any change to the current HTRW conditions within the study area. Additionally, it is anticipated that KRPD would continue to handle the materials shipped to/from/through KRPD#2 appropriately and in accordance with state and federal regulations.

Alternatives 1a, 2a, 3a

Based on the preliminary HTRW assessment, there were no indications of Hazardous, Toxic, and Radioactive Waste discovered that would prevent any of the alternatives from moving forward. A full Phase I Environmental Site Assessment would be completed during implementation phase prior to engaging in any real estate transactions or construction activities.

6.8 FISH & WILDLIFE

Aquatic Organisms

No Action Alternative

Under the No Action Alternative, no federal action would take place, it is anticipated that KRPD#2 would continue its current operations and implement development associated with the KRPD#2 Master Plan, however the federal project would not occur. Sediment would continue to build up in the south oxbow, with KRPD dredging approximately every ten years. Vegetation would remain relatively similar throughout the No Action Alternative. Periodically, benthic organisms would be removed along with the sediment by KRPD, and more area will be available for large aquatic organisms. Impacts to Aquatic organisms are anticipated to be minor and short term.

Alternatives 1a

For Alternative 1a, approximately 286,000 cy of sediment would be dredged from the south oxbow into DD-1, DD-2, and DD-4. Rip rap placed in the turning area would have a negligible effect on aquatic organisms. FL-1 would remove approximately 0.9 acres of riparian vegetation along the shoreline along the right ascending bank. Dredging would likely decimate the benthic macroinvertebrate community in the impacted area. The benthic community is anticipated to repopulate the dredged area from adjacent undredged sites over a period of several months to several years (Wilber, 2007). While there are various environmental conditions that are commonly identified as influencing benthic recovery rates, such as sediment type, depth of overburden, frequency and timing of dredging, the relative importance of these factors in influencing benthic recovery is not known. Mobile aquatic organisms are likely to avoid the proposed project area during construction activities but would have more area to inhabit once the dredging is complete. Impacts to aquatic resources are anticipated to be moderate and short term.

Alternatives 2a

For Alternative 2a, approximately 214,000 cy of sediment would be dredged from the south oxbow into DD-1, DD-2, and DD-4. Rip rap placed in the turning area would have a negligible effect on aquatic organisms. Dredging would likely decimate the benthic macroinvertebrate community in the impacted area. The benthic community is anticipated to repopulate the dredged area from adjacent undredged sites over a period of several months to several years (Wilber, 2007). While there are various environmental conditions that are commonly identified as influencing benthic recovery rates, such as sediment type, depth of overburden, frequency and timing of dredging, the relative importance of these factors in influencing benthic recovery is not known. Mobile aquatic organisms are likely to avoid the proposed project area during construction activities but would have more area to inhabit once the dredging is complete. Impacts to aquatic resources are anticipated to be moderate and short term.

Alternatives 3a

For Alternative 3a, approximately 90,000 cy of sediment would be dredged from the south oxbow into DD-2. Dredging would likely decimate the benthic macroinvertebrate community in the impacted area. The benthic community is anticipated to repopulate the dredged area from adjacent undredged sites over a period of several months to several years (Wilber, 2007). While there are various environmental conditions that are commonly identified as influencing benthic recovery rates, such as sediment type, depth of overburden, frequency and timing of dredging, the relative importance of these factors in influencing benthic recovery is not known. Mobile aquatic organisms are likely to avoid the proposed project area during construction activities but would have more area to inhabit once the dredging is complete. Impacts to aquatic resources are anticipated to be moderate and short term.

<u>Terrestrial Organisms</u>

No Action Alternative

Under the No Action Alternative, no federal action would take place, it is anticipated that KRPD#2 would continue its current operations and implement development associated with the KRPD#2 Master Plan, however the federal project would not occur. Impacts to Terrestrial organisms include displacement and are anticipated to be minor and long term.

Alternatives 1a

For Alternative 1a, approximately 286,000 cy of sediment would be dredged from the south oxbow into DD-1, DD-2, and DD-4. Rip rap placed in the turning area will have a negligible effect on terrestrial organisms. FL-1 would remove approximately 0.9 acres of riparian vegetation along the shoreline along the right ascending bank. Roughly 13 acres of bottomland hardwood forest would be removed from DD-2 for dredge placement, eliminating forest habitat for terrestrial species within the project area. Common species such as various species of ducks, Canadian geese, deer, turkey, rabbits, squirrels, and other common terrestrial organisms utilizing the proposed project area are likely to avoid the area during construction. Terrestrial species that utilize bottomland hardwood forested areas in DD-2 would be permanently displaced. Impacts to terrestrial resources are anticipated to be minor and long term. Removal of trees or tree limbs would only occur during the winter months to minimize impacts to birds and other wildlife that might be using the project area.

Alternatives 2a

For Alternative 2a, approximately 214,000 cy of sediment would be dredged from the south oxbow into DD-1, DD-2, and DD-4. Rip rap placed in the turning area will have a negligible effect on terrestrial organisms. Roughly 13 acres of bottomland hardwood forest would be removed from DD-2 for dredge placement, decreasing available habitat for terrestrial species within the project area. Common species such as various species of ducks, Canadian geese, deer, turkey, rabbits, squirrels, and other common terrestrial organisms utilizing the proposed project area are likely to avoid the area during construction. Terrestrial species that utilize bottom land hardwood forested areas in DD-2 would be permanently displaced. Impacts to terrestrial resources are anticipated to be minor and long term. Removal of trees or tree limbs would only occur during the winter months to minimize impacts to birds and other wildlife that might be using the project area.

Alternatives 3a

For Alternative 3a, approximately 90,000 cy of sediment would be dredged from the south oxbow into DD-2. Roughly 13 acres of bottomland hardwood forest would be removed from DD2 for dredge placement, decreasing available habitat for terrestrial species within the project area. Common species such as various species of ducks, Canadian geese, deer, turkey, rabbits, squirrels, and other common terrestrial organisms utilizing the proposed project area are likely to avoid the area during construction. Terrestrial species that utilize bottom land hardwood

forested areas in DD-2 would be permanently displaced. Impacts to terrestrial resources are anticipated to be minor and long term. Removal of trees or tree limbs would only occur during the winter months to minimize impacts to birds and other wildlife that might be using the project area.

Invasive Species

No Action Alternative

Under the No Action Alternative, sediment would continue to accumulate in the south oxbow, sustaining a shallow backwater habitat. Bighead and Silver carp would continue to thrive in the environment. Invasive plants such as the autumn olive, bush honeysuckle, common reed, crown vetch, multi-flora rose, Japanese honeysuckle, Johnson grass, Callery pear, garlic mustard, and thistle would continue to be present in the area.

Alternatives 1a, 2a, 3a

For any of the Final Array of Alternatives, anywhere from 90,000-286,000 CY of sediment would be dredged from the south oxbow and placed in dredge placement areas. Dredge sediment placed over existing plant species could provide an opportunity for invasive species to populate although it is unlikely initially due to the physical makeup of subaqueous soils. Bighead and Silver Carp would continue to be prevalent in the study area. Impacts from invasive species are anticipated to be minor and long term.

Bald and Golden Eagle

No Action Alternative

Without federal action, it is anticipated that KRPD#2 would continue its current operations and implement development associated with the KRPD#2 Master Plan, however the federal project would not occur. Overall, impacts to eagle habitat would be minor and long term.

Alternatives 1a, 2a, 3a

For any of the action alternatives, approximately 13 acres of tree removal would occur. Bald and Golden Eagles use mature bottomland hardwood trees for roosting. No eagle nests were identified on a site visit February 2021, and review of the USACE Eagle Nest Site Database shows the closest known eagle nest to be 13.4 miles away from the study area (USACE, 2020). The effects of tree clearing pertaining to the Bald and Golden Eagle would be negligible and long term.

State Listed Species

No Action Alternative

Without federal action, it is anticipated that KRPD#2 would continue its current operations and implement development associated with the KRPD#2 Master Plan, however the federal project would not occur. Sediment would continue to build up in the south oxbow, with KRPD dredging

approximately every ten years. Construction of new facilities by KRPD may result in tree loss, including potential bat habitat. Dredging may impact foraging by Least Terns. Overall, impacts to state listed species would be minor and long term.

Alternatives 1a, 2a, 3a
Anywhere from 90,000-286,000 CY of sediment would be dredged from the south oxbow which would provide more open water for aquatic organisms such as small fishes on which the Least Tern feeds. Overall, impacts to the Least Tern are anticipated to be negligible and short-term. Impacts to the Indiana Bat are discussed in the Federally Listed Species section.

Federally Listed Species
No Action Alternative
Without federal action, it is anticipated that KRPD#2 would continue its current operations and implement development associated with the KRPD#2 Master Plan, however the federal project would not occur. Sediment would continue to build up in the south oxbow, with KRPD dredging approximately every ten years. Construction of new facilities by KRPD may result in tree loss, including potential bat habitat. If tree removal occurred during the bat non-active period, the overall, impacts to federally listed species are anticipated to be minor and long term.

Alternatives 1a, 2a, 3a
Indiana Bat (*Myotis sodalis*), **Northern Long-eared Bat** (*Myotis septentrionalis*), **and Tricolored Bat** (*Perimyotis subflavus*)
Approximately 13 total acres of trees would be removed from DD-2 for site access and dredge material placement. Suitable summer roost and foraging habitat may be located in the forested areas in the vicinity of the south oxbow. In order to minimize impacts to bat species, tree clearing would be restricted to the bat non-active period between 1 October and 31 March. Therefore, the USACE St. Louis District has determined that each action alternative "***may affect, but is not likely to adversely affect***" the Indiana bat, the northern long-eared bat, and the tricolored bat.

Monarch Butterfly (*Danaus plexippus*)
The study area primarily consists of water, agricultural, ingress, and egress areas. Populations of milkweed are unlikely to be present due to the practices at and around the dredge placement areas and the dredge placement access route's dense overstory, however stray plants may occur. Therefore, the USACE St. Louis District has determined that each action alternative is "***not likely to jeopardize the continued existence of***" the Monarch Butterfly.

Whooping Crane (*Grus americana*)
Whooping Cranes do not breed at the study area, although they may migrate through Illinois, and could potentially use areas in the vicinity of the proposed project during migration.

Therefore, the USACE St. Louis District has determined that each action alternative is "***not likely to jeopardize the continued existence of***" the Whooping Crane.

USACE determinations for federally listed Threatened and Endangered species for the three action alternatives are shown in **Error! Reference source not found.**.

Table 31. USACE Determinations for Federally Listed Threatened and Endangered Species

Common Name	Scientific Name	Status	Determinations
Indiana Bat	*Myotis sodalis*	Endangered	May affect, but not likely to adversely affect
Northern Long-eared Bat	*Myotic septentrionalis*	Endangered	May affect, but not likely to adversely affect
Tricolored Bat	*Perimyotis subflavus*	Proposed Endangered	May affect, but not likely to adversely affect
Monarch Butterfly	*Danaus plexippus*	Candidate^	Not likely to jeopardize the continued existence
Whooping Crane	*Grus americana*	Experimental Population, Non-Essential	Not likely to jeopardize the continued existence

6.9 RECREATION

No Action Alternative

At the south oxbow, without federal action, it is anticipated that KRPD#2 would continue its current operations and implement development associated with the KRPD#2 Master Plan, which would lead to increased shipping in the south oxbow and road and rail traffic on land. Noise and traffic associated with this development may disturb recreationists, in addition to the fish and wildlife related to recreational pursuits. Impacts to recreation are anticipated to be negligible and long term.

Alternatives 1a, 2a, 3a

For any of the action alternatives, there would be an increase in barge traffic in the south oxbow that would make it less appealing for recreation activities. More barge traffic in the south oxbow and through the Kaskaskia River could have negative impacts on recreationists with more noise and traffic from incoming and outgoing barges.

6.10 CULTURAL RESOURCES

No Action Alternative

There are no recorded historic properties within the study area; therefore, no adverse effects to cultural resources are anticipated in the No Action Alternative. Unless further cultural surveying finds otherwise, no adverse effects to cultural resources are anticipated.

Alternatives 1a, 2a, 3a

Based on the measures identified for this study, a determination of no historic properties will be affected by this project has been reached. A letter requesting concurrence with these findings was sent to the Illinois State Historic Preservation Office on 2 July 2024. The IDNR SHPO sent a response dated 23 July 2024 stating no historic properties will be affected and they have no objection to the undertaking proceeding as planned.

No adverse effects to cultural resources are anticipated from the action alternatives. Unless further cultural surveying finds otherwise, no adverse effects to cultural resources are anticipated.

6.11 TRIBAL RESOURCES

No Action Alternative

No impacts to tribal resources are expected.

Alternatives 1a, 2a, 3a

As stated in Section 3.11, in addition to the Peoria Tribe of Indians there are twenty-five other federally recognized tribes (i.e., 26 tribes contacted, cumulatively) who officially wish to be consulted on matters that could potentially affect prehistoric and historic Indian sites within the USACE-Saint Louis District in Illinois. In an effort to avoid or minimize adverse effects to Tribal resources, final project site selection and design may be altered as a result of consultation with these Tribes or as a result of any newly discovered cultural resources located by cultural resource surveys which may take place in the future. Two tribes, the Iowa Tribe of Kansas and Nebraska, and the Caddo Nation, responded stating no concerns with the project at this time; these responses are included in Appendix E.

6.12 ECONOMIC CONDITIONS

No Action Alternative

For the No Action Alternative, tonnage passing through KRPD#2 is anticipated to continue to increase leading to increased inefficiencies and greater transportation costs due to the limitations of the south oxbow channel.

Alternatives 1a, 2a, 3a

For Alternatives 1a, 2a, and 3a, transportation cost savings would be generated by creating more efficiencies in the movement of barges at KRPD#2. A deeper channel would eliminate light loading, and a wider channel would allow for two-way traffic. The addition of a turning basin (Alternatives 1a and 2a) and fleeting area (Alternative 1a) would reduce the transit time of barges having to fleet in the Kaskaskia River. See Appendix H – Economics for more details.

6.13 SOCIO-ECONOMICS AND DEMOGRAPHICS

No Action Alternative

For the No Action Alternative, socio-economic conditions would likely be dependent on and follow the economic and educational trends occurring in the state of Illinois. Educational services and health care and social assistance sector will likely continue to employ the most persons. Randolph and St. Clair counties will also likely continue to fall below the national median household income levels, but that of Monroe is likely to remain above the national average. See Appendix H – Economics for more details.

Alternatives 1a, 2a, 3a

For Alternatives 1a, 2a, and 3a, demographics and socio-economic conditions are unlikely to be affected by FWP conditions.

6.14 ENVIRONMENTAL JUSTICE

No Action Alternative

Without federal action it is anticipated that KRPD#2 would continue its current operations and implement development associated with the KRPD#2 Master Plan. Under the energy threshold, Tract 17157950700 in Randolph County, IL is at the 96th percentile for energy cost, currently has one or more abandoned land mines within the tract, and is at the 91st percentile for relative cost of transportation and time spent on transportation. It is not anticipated that the No Action Alternative would impact energy costs, legacy pollutions, or transportation. Development associated with KRPD#2 may result in additional hiring for expanded port operations. Although additional development may temporarily or permanently attract more individuals to communities near the study area, it is not anticipated there would be any noticeable change to the current socioeconomic and demographics conditions or other EJ metrics within the study area. The No Action Alternative would not disproportionately adversely impact EJ communities.

Alternatives 1a, 2a, 3a

It is expected that the increased cargo at KRPD#2 could add job opportunities for the communities adjacent to the study area, including the Census tract identified in CEJST as a disadvantaged community. The noise, air quality, recreation, and aesthetics impacts of the action alternatives may cause a slight negative effect on communities in the study area. On balance, none of the action alternatives have a strong positive or negative EJ implication, and

there is not much difference between them in this regard. The Action Alternatives would not disproportionately adversely impact EJ communities.

6.15 IRREVERSIBLE OR IRRETRIEVABLE COMMITMENT OF RESOURCES

This section discusses likely irreversible and irretrievable commitments of resources for the project. The impact of the proposed actions on resources that would be forever lost or altered also is discussed. No mitigation specific to the irreversible and irretrievable commitment of resources discussed below has been identified to date for the proposed actions.

Irreversible commitments are those that cannot be reversed, except perhaps in the extreme long run (Shipley, 2010). Simply stated, once the resource is removed it can never be replaced. For the action alternatives considered, there have been no irreversible commitments to natural resources. This study is in the planning stage. Money has been expended to complete this planning document and pre-project data collection and modeling. No construction dollars, which are considered irreversible, have been expended for the study. Fossil fuels consumed during construction of proposed actions would be irreversibly expended since their use cannot be reversed or resources replenished. Lastly, human power and funding used to construct the proposed action would result in irreversible fiscal resource commitments. When time and money are dedicated to the project and used, these expenditures cannot be restored or dedicated to another project.

Irretrievable commitments are those that are lost for a period of time (Shipley, 2010). The proposed action alternatives require the commitment of construction materials, fuel, energy, land, funding, and labor. Construction materials used to build the proposed action, such as steel, concrete, riprap, geotextile fabric, and petroleum would be irretrievably committed to the project. These materials cannot be retrieved until they are removed, recycled, and used elsewhere. In addition, water used directly in concrete mixtures or through dust abatement would effectively be an irreversible expenditure. Although concrete can be retrieved through recycling and reuse, the water used to make it is irreversibly locked in solid form.

6.16 CUMULATIVE IMPACTS

Cumulative impacts are defined as those impacts that result from the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (Federal or non-Federal) or person undertakes the actions. Cumulative impacts are not caused by a single project but include the effects of a particular project in conjunction with other projects (past, present, and future) on the resource. Cumulative effects are studied to enable the public, decision-makers, and project proponents to consider the “big picture” effects of a given project on the community and the environment. In a broad sense, all impacts on affected resources are probably cumulative; however, the role of

the analyst is to narrow the focus of the cumulative impacts analysis to important issues of national, regional, and local significance (CEQ, 1997).

Identify Potentially Affected Resources

In this step, each resource affected by the action alternatives are identified. Resources were not assessed for cumulative impacts if the analysis in the Affected Environment and Environmental Impacts Chapter determined there would be no impact to that resource from the action alternatives. Resources that may be affected by the project actions at the proposed project area could include biological resources. Potentially affected biological resources could include the aquatic and terrestrial habitat, bald eagles, migratory birds, invasive species, and the federally listed and state-listed threatened & endangered species listed in this assessment. Potentially affected social/economic resources could include aesthetics, recreation.

Establish Boundaries (Geographic and Temporal)

In identifying past, present, and reasonably foreseeable actions to consider in the cumulative impact analysis, affected resource-specific spatial and temporal boundaries were identified. The spatial boundary is where impacts to the affected resource could occur from the action alternatives and therefore where past, present, and reasonably foreseeable future actions could contribute to cumulative impacts to the affected resource. This boundary is defined by the affected resource and may be a different size than the project area. The spatial boundary includes the area in a 1-mile radius from Latitude 38.190508° Long -89.898216° on Highway 154 just north of the port.

The temporal boundary describes how far into the past and forward into the future actions should be considered in the impact analysis. The temporal boundary is guided by CEQ guidance on considering past action and a rule of reason for identifying future actions. For all resource topics, the consideration of past actions is reflected in the existing condition. A default future temporal boundary of 50 years from the baseline condition was used as an initial timeframe; however, the impacts are based on their likelihood of occurring and whether they can be reasonably predicted.

Identify the Cumulative Action Scenario

In this step, past, present, and reasonably foreseeable future actions to be included in the impact analysis for each specific affected resource were identified. These actions fall within the spatial and temporal boundaries established in Step 2.

Major Past Actions

KRPD was chartered in 1965 by an act of the Illinois Legislature and currently operates five river terminals, four which are on the Kaskaskia River and one on the Mississippi River. Before KRPD was chartered, the surrounding area was undeveloped agricultural and forested habitat. The Kaskaskia

River meandered in a natural flowing direction utilizing the path of least resistance while flowing into the Mississippi. The Kaskaskia River Navigation Project began in June 1966, it included the Kaskaskia River from the Mississippi River upstream to Fayetteville, Illinois, (river mile,(RM) 35.9). The project, virtually completed in 1973, shortened the Kaskaskia River between its mouth and Fayetteville from 52 to 36 miles. KRPD#2 operations began in 1985, major improvements included a dock facility in 1997, rail access in 2003, and road repairs and improvements in 2016. Major transportation development included roads, rail and riverways.

Major Present Actions

Operations at KRPD#2 currently include Gateway FS, involving fertilizer distribution and related services. The Material Works (TMW), which processes steel coils and ships the processed steel to a variety of users in automotive, appliance and other industries; Southern Illinois Transfer Company (SITCO), which operates the river terminal; and Kaskaskia Shipyard, which builds towboats in the SITCO Facility. Existing operations and activities occupy most of the developed acreage. Agricultural practices occur in the vicinity of KRPD#2 as well as recreational activities on the Kaskaskia River. IDNR manages property inside the geographic boundary north of Highway 154 for recreational and conservation use.

Major Future Actions

According to the KRPD Master Plan, recommended items and improvements are listed by priority as it pertains to their respective needs. The Priority A (0-5 years) actions are listed as Navigation Improvements, a New Access Road, an Expanded Port Operations Area, Increased Sites for Barge and Rail Users, North Railyard Improvements, and a New Barge Dock. Priority B (10-15 years) actions are Rail Improvements, and Sites for Barge and Rail Users. Priority C (10-20 years) actions are Rail Improvements and Development of Sites for Barge and Rail Users North of the Rail Corridor.

According to the Southwest Illinois Connector Highway Task Force Report (Southwest Illinois Connector, 2019). The proposed Southwest Illinois Connector project would construct a regional rural expressway connecting Southwest Illinois to the St. Louis Metropolitan area along the existing two-lane roadways of IL 3, IL 154, and IL 13/127. This report identifies the section of IL 154 adjacent to KRPD#2 (between the north and south oxbows) for expansion to a four-lane expressway.

Analyze Cumulative Impacts

For each resource, the actions identified in Step 3 are analyzed in combination with the impacts of the action alternatives being evaluated. This analysis describes the overall cumulative impact related to each resource and the contribution to this cumulative impact of each alternative being evaluated. None of the alternatives were determined to significantly adversely impact the resources discussed. Cumulative impacts to the various resources are summarized in **Table 28**.

Table 28. Summary of Effects of the No Action Alternative and Tentatively Selected Plan on Physical, Biological, and Socioeconomic Resources

No Action Alternative Future Effects Compared to Existing Conditions (Effects of Nature)							Symbols: X = Long-Term Effect T = Temporary Effect C = Cumulative Impact	**Proposed Alternatives, Effects of Action Alternatives to No Action Effects (Effects of Project)**						
BENEFICIAL				ADVERSE				BENEFICIAL				ADVERSE		
SIGNIFICANT	SUBSTANTIAL	MINOR	NO EFFECT	MINOR	SUBSTANTIAL	SIGNIFICANT	Affected Resource	SIGNIFICANT	SUBSTANTIAL	MINOR	NO EFFECT	MINOR	SUBSTANTIAL	SIGNIFICANT
							A. Physical Effects							
			X				Topography, Geology, & Soils					X		
			X				Land Use/Land Cover					X		
			X				Prime Farmland				X			
			X				Noise					X		
				X			Water Quality					X		
				X			Hydraulics & Hydrology					X		
			X				Air Quality				X			
			X				Climate				X			
			X				Hazardous Waste				X			
							B. Biological Effects							
				X			Aquatic Habitat					X		
				X			Terrestrial Habitat					X		
				X			Bald Eagle					X		
				X			Migratory Birds					X		
			X				Invasive Species				X			
			X				State-listed Species				X			
				X			Federally-listed Species					X		
							B. Social Effects							
				X			Economics			X				
				X			Aesthetics					X		
				X			Recreation					X		
			X				Cultural Resources, Historic Prop.				X			
			X				Tribal Resources				X			
			X				Environmental Justice				X			

7 EVALUATION AND COMPARISON OF ALTERNATIVE PLANS

This section evaluates and compares the final array of alternatives.

7.1 EVALUATION OF COMPREHENSIVE BENEFITS

The final array of alternatives was assessed to identify benefits across four categories: NED, Regional Economic Development, Other Social Effects, and Environmental Quality.

a) The National Economic Development or **NED** account displays changes in the economic value of the national output of goods and services.
b) The Regional Economic Development or **RED** account registers changes in the distribution of regional economic activity that result from each alternative plan. Evaluations of regional effects are to be carried out using nationally consistent projections of income, employment, output, and population.
c) The Environmental Quality or **EQ** account displays non-monetary effects on significant natural and cultural resources.
d) The Other Social Effects or **OSE** account registers plan effects from perspectives that are relevant to the planning process but are not reflected in the other three accounts.

7.1.1 National Economic Development

The National Economic Development (NED) Plan is the plan that reasonably maximizes net economic development benefits, consistent with the Federal Objective. The benefits and costs of the alternatives were annualized over the 50-year period of analysis. The expected annual benefits attributable to the alternatives were developed based on transportation cost savings analysis. The net benefits for the alternatives were calculated by subtracting the annual costs from the equivalent annual benefits. **Table 29** identifies the first costs and benefits of the final array of alternatives and includes contingencies. Contingencies were determined by performing an abbreviated cost risk assessment for each action alternative, which considered uncertainties related to each input to the cost estimate. The costs used to compare alternatives are preliminary; once the Recommended Plan is identified, it will undergo additional detailed cost estimating. Refer to Appendix H - Economics for more details.

Table 29 shows the preliminary net benefits and Benefit-Cost Ratio (BCR) associated with the final array of alternatives for the south oxbow.

Table 29. Costs and Benefits of the Final Array of Action Alternatives

Cost Category	Alt 1a - Maximum (two-way traffic)	Alt 2a - Turning area + two-way traffic	Alt 3a - Minimum (two-way traffic)
Project First Cost With Associated Costs	$ 13,788,000	$ 11,770,000	$ 4,887,000

Cost Category	Alt 1a - Maximum (two-way traffic)	Alt 2a - Turning area + two-way traffic	Alt 3a - Minimum (two-way traffic)
Annualized Project Costs	$ 518,000	$ 442,000	$ 183,000
Annual OMRR&R	$ 151,000	$ 94,000	$ 61,000
Total Annual Costs	$ 668,000	$ 536,000	$ 245,000
Total Annual Benefits	$ 1,509,000	$ 1,379,000	$ 1,249,000
Net Annual Benefits	$ 841,000	$ 843,000	$ 1,004,000
Benefit to Cost Ratio	2.3	2.6	5.1

(FY24 price level, 2.75% discount rate) (rounded to nearest $1,000)

The National Economic Development Plan is the alternative that reasonably maximizes net benefits while remaining consistent with the Federal objective of protecting the environment. The NED Plan is Alternative 3a, which has the greatest average annual net benefits at $1,004,000.

7.1.2 Regional Economic Development

The RECONS model was used to estimate RED benefits for alternative plans. A summary of jobs supported and gross regional product for each alternative is shown in **Table 30**; full RECONS results are shown in Appendix H – Economics. Based on the RECONS results, Alternative 1a has the highest RED benefits for the final array of alternatives; the expenditures support a total of 126.7 full-time equivalent jobs, $9,534,529 in labor income, $11,597,934 in the gross regional product, and $18,861,889 in economic output in the local impact area (2024 price level). Based on the analysis, Alternative 1a maximizes benefits in the RED category.

Table 30. Selected RECONS Results for Final Array of Alternatives (2024 Price Level)

Total Impact (Local)	Local Capture	Output	Jobs*	Labor Income	Value Added
Alternative 1a	$9,060,000	$18,862,000	126.7	$9,535,000	$11,598,000
Alternative 2a	$7,231,000	$15,054,000	101.1	$7,609,000	$9,256,000
Alternative 3a	$3,004,000	$6,254,000	42.0	$3,161,000	$3,845,000

Rounded to the nearest $1,000.

* Jobs are presented in full-time equivalence (FTE).

7.1.3 Environmental Quality

Environmental mitigation and potential environmental benefits and impacts are very similar between action alternatives 1a, 2a, and 3a, as shown in **Table 31**. More information on the FWP conditions for each type of environmental resource is available in Section 6.

USACE must evaluate alternatives that are practicable and reasonable under section 404 of the Clean Water Act in accordance with 40 CFR 230.10(a). Alternative 3a is determined by USACE to be the least environmentally damaging practicable alternative (LEDPA), since it involves the least construction and disturbance to the study area, and creates a long-term neutral or beneficial effect on water quality (although all three action alternatives are fairly similar regarding water quality and the other environmental metrics).

Table 31. Comparison of Environmental Quality Metrics

Environmental Quality Metric	Alternative 1a – Maximum (Two-way traffic)	Alternative 2a – Turning area + two-way traffic	Alternative 3a – Minimum (two-way traffic)
Land Use/Land Cover	No change in land use/cover at DD-1. Removal of approximately 13 acres of trees at DD-2. Agricultural field cleared for DD-4. Small loss of riparian vegetation at FL-1.	No change in land use/cover at DD-1. Removal of approximately 13 acres of trees at DD-2. Agricultural field cleared for DD-4.	No change in land use/cover at DD-1. Removal of approximately 13 acres of trees at DD-2.
Noise, Air Quality, & Greenhouse Gases (GHGs)	Small or negligible increased noise, air pollution, and GHGs from dredging operations and increased shipping.	Same as Alternative 1a	Same as Alternative 1a
Water Quality	Short-term water quality impact; long-term neutral or beneficial effects.	Same as Alternative 1a	Same as Alternative 1a
Hazardous, Toxic, and Radioactive Waste (HTRW)	No impacts identified	Same as Alternative 1a	Same as Alternative 1a
Fish & Wildlife	Invasive species: low potential for invasive species to populate in dredge placement areas. Bald & Golden Eagles: no known impact. State Listed species: minor impacts. Federally Listed species: "May affect, but not likely to adversely affect", or "Not likely to jeopardize the continued existence of".	Same as Alternative 1a	Same as Alternative 1a
Recreation	Increased barge traffic would lead to decrease in recreation in the south oxbow.	Same as Alternative 1a	Same as Alternative 1a
Cultural Resources	No adverse effects anticipated	Same as Alternative 1a	Same as Alternative 1a
Environmental Justice	No strong positive or negative EJ implication. Job opportunities would increase. Some noise, air quality, recreation, and aesthetics impacts.	Same as Alternative 1a	Same as Alternative 1a

7.1.4 Other Social Effects

Social vulnerability and environmental justice were qualitatively evaluated. It is expected that the increased cargo at KRPD#2 would add job opportunities for the communities adjacent to the study area, including the Census tract identified in CEJST as a disadvantaged community. The noise, air quality, recreation, and aesthetics impacts of the action alternatives would cause a slight negative effect on EJ communities in the study area. On balance, none of the action alternatives have a strong positive or negative EJ implication, and there is not much difference between them in this regard.

Public health and safety may be marginally impacted by the action alternatives as increased barge traffic at the south oxbow may increase the risk of collision with other vessels. However, the safety of barge operation may improve given that the oxbow channel would be deeper and wider, allowing easier navigation of barges through the oxbow. Differences in safety between the action alternatives are negligible.

Recreational opportunities would be impacted in each of the alternatives in the final array. Any increase in barge traffic in the south oxbow would make it less appealing for recreation activities. More barge traffic in the south oxbow and through the Kaskaskia River could have negative impacts on recreational waterfowl hunting with more noise and traffic from incoming and outgoing barges.

Based on the analysis presented above, no one alternative clearly maximizes benefits in the OSE category.

7.1.5 Summary of Comprehensive Benefits

In accordance with a 2021 policy directive, the USACE decision framework must consider, in a comprehensive manner, the total benefits of project alternatives, including equal consideration of economic, environmental, and social categories.

Table 32 presents a summary of the comprehensive benefits evaluation for each alternative in the FWP condition across the four categories: NED, RED, EQ, and OSE. The NED evaluation is based on average annual net benefits. The RED evaluation is based on labor income calculated by the RECONS model. The EQ evaluation is based on the metrics presented in **Table 31**, including water quality and land use/land cover. The OSE evaluation reflects factors such as social vulnerability, environmental justice, public health and safety, and recreation.

Based on a comprehensive evaluation of benefits across NED, RED, EQ, and OSE, Alternative 3a reasonably maximizes total benefits across the benefits categories. The EQ and OSE benefits are similar between the action alternatives, and the RED benefits are proportionate to the

construction cost; the comparative increase in NED benefits for Alternative 3a is therefore the main justification for selection.

Table 32. Comprehensive Benefits for the Final Array of Alternatives in the NED, RED, EQ, and OSE Accounts

Alternative	Net Economic Development (NED)	Regional Economic Development (RED)	Environmental Quality (EQ)	Other Social Effects (OSE)
0 – No Action	$0 net annual benefits	$0 labor income	No change	No change
1a – Maximum (two-way traffic)	$841,000 net annual benefits	$9,535,000 labor income	Minimal or neutral water quality benefit. Moderate land use/cover impact: Approx. 13 acres tree removal; agricultural field cleared; small loss of riparian vegetation. Other metrics similar between Alts. 2a & 3a (see Table 28).	Minimal benefit for job opportunities. Minimal impact for EJ; noise, air quality, recreation, and aesthetics. Minimal benefit to navigation safety. Minimal impact to recreation.
2a – Turning area + two-way traffic	$843,000 net annual benefits	$7,609,000 labor income	Minimal or neutral water quality benefit. Minimal land use/cover impact: Approx. 13 acres tree removal; agricultural field cleared. Other metrics similar between Alts. 1a & 3a (see Table 28).	Similar to Alt. 1a (see Section 7.1.4)
3a – Minimum (two-way traffic)	$1,004,000 net annual benefits	$3,161,000 labor income	Minimal or neutral water quality benefit. Minimal land use/cover impact: Approx. 13 acres tree removal. Other metrics similar between Alts. 1a & 2a (see Table 28).	Similar to Alt. 1a (see Section 7.1.4)

FY24 price level.

7.2 PRINCIPLES AND GUIDELINES (P&G) CRITERIA

Each alternative plan carried into the final array meets the P&G criteria described in Section 5.3.

Completeness: All final array alternatives are complete; they account for all necessary investments and actions to realize the estimated benefits towards the planning objective.

Effectiveness: All the action alternatives (1a, 2a, and 3a) contribute to achieving the planning objective of navigation efficiency at KRPD#2. Effectiveness is captured in this study as transportation cost savings used in the economic analysis to total annual benefits as shown in **Table 27**, which are similar between the action alternatives.

Efficiency: Each of the action alternatives is a cost-effective means of solving the problems and achieving the objective, as determined by the net annual benefits and BCR of each alternative (see Section 7.1.1). Alternatives 1a and 2a have BCRs of 2.3 and 2.6, respectively, which are well above 1.0. The BCR for Alternative 3a is much higher at 5.1 making it the most efficient alternative.

Acceptability: All the action alternatives are viable and would be welcomed with respect to acceptance by state and local entities and the public. They are all compatible with existing laws, regulations, and public policies. KRPD has garnered support from business, industry, and government entities at federal, state, and local levels for expansion at KRPD#2. One item to note regarding USACE policy is that none of the alternatives would exceed the current per-project CAP 107 Federal limit of $10 million when cost sharing is applied, which would require approval of a waiver from HQUSACE. However, the preliminary cost estimate for Alternative 1a would be close to this limit at $9,831,000 in federal costs.

7.3 TSP SELECTION

The primary decision criteria for identifying the NED Plan includes reasonably maximizing net benefits while remaining consistent with the Federal objective of protecting the nation's environment. Contributions to NED are increases in the net value of the national output of goods and services, expressed in monetary units.

Based on the evaluation and comparison analysis summarized above, Alternative 3a is identified as the NED Plan and the TSP. The TSP has a total project first cost of approximately $4.9 million and a BCR of 5.1.

8 TENTATIVELY SELECTED PLAN

8.1 PLAN COMPONENTS

The Tentatively Selected Plan (TSP) is Alternative 3a – Minimum (Two-Way Traffic) (**Figure 19**). It includes dredging of the south oxbow channel to a depth of 12 ft and width of 110 ft to accommodate two-way traffic, and placement of dredge material at placement sites DD-1 and DD-2. All the project features are GNFs. Hydraulic dredging with a cutterhead dredge was assumed for the initial dredging, and hydraulic dredging (cutterhead or suction dredging) is also assumed for O&M dredging. O&M dredging was assumed at 5-year intervals, every 5 years for minor O&M dredging and every 10 years for major O&M dredging. The quantity of dredge material from the initial dredging is estimated at 45,000 CY, and the quantity of maintenance dredge material over the 50-year planning horizon is 90,000 CY. DD-1 currently has a capacity of 9,000 CY, and DD-2 would have a capacity of 212,000 CY if the berm is raised per the TSP (current DD-2 capacity is 105,000 CY if filled to the top of the existing berm). Compensatory mitigation would be required for the 13 acres of tree removal.

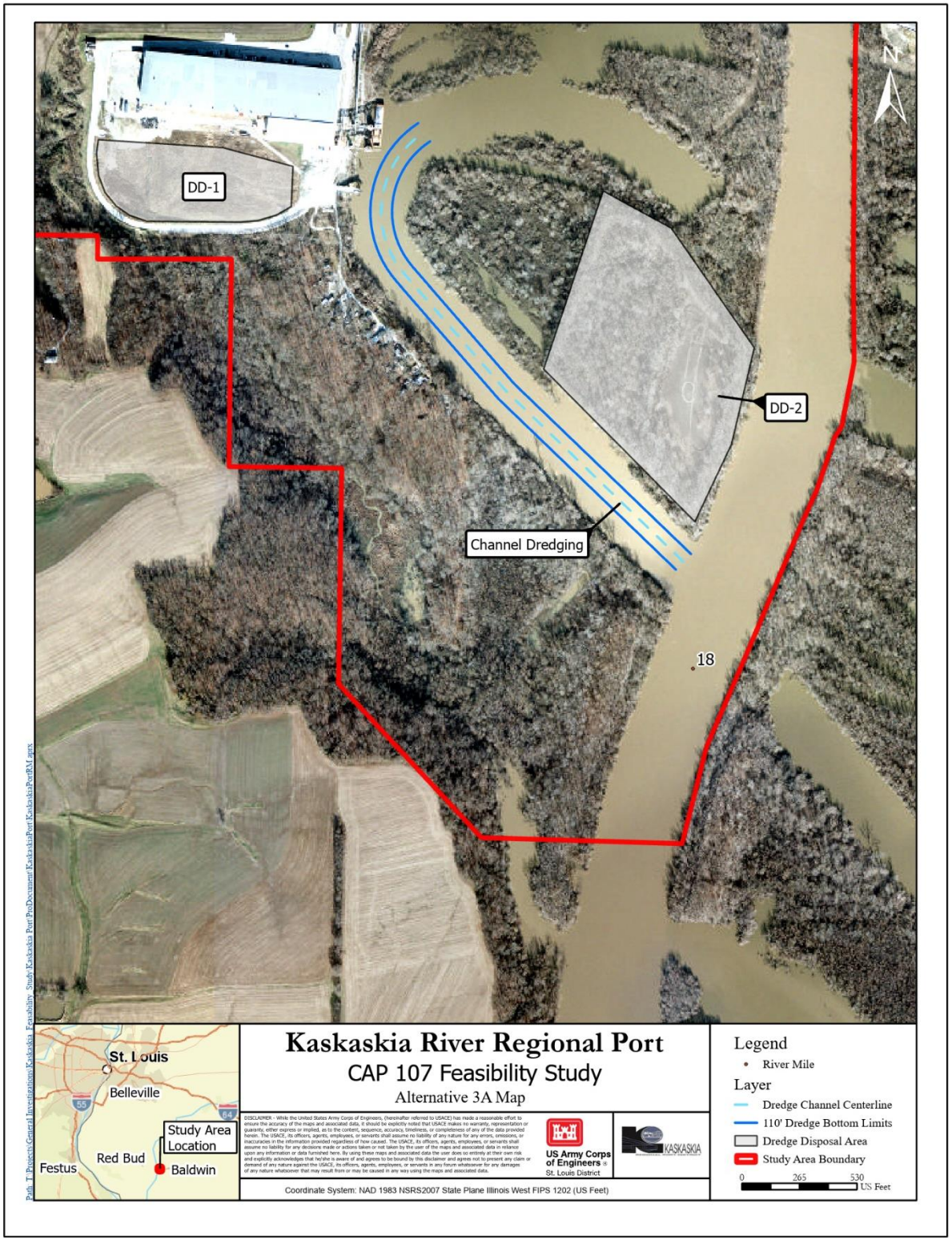

Figure 19. Map of Tentatively Selected Plan (Alternative 3a)

8.2 PLAN ACCOMPLISHMENTS

Table 32 shows the average annual costs, average annual benefits, net annual benefits, and Benefit-Cost Ratio (BCR) associated with the TSP. The annual benefits signify transportation cost savings, and the BCR of 5.1 signifies a high return on investment with regard to navigation efficiency.

Table 33. Costs and Benefits of the TSP

Cost or Benefit	Alt 3a - Minimum (two-way traffic)
Project First Cost With Associated Costs	$4,887,000
Annualized Project Costs	$183,000
Annual OMRR&R	$61,000
Total Annual Costs	$245,000
Total Annual Benefits	$1,249,000
Net Annual Benefits	**$1,004,000**
Benefit to Cost Ratio	**5.1**

(FY24 price level, 2.75% discount rate) (rounded to nearest $1,000)

The TSP would allow KRPD#2 and its tenants and customers to increase shipping operations in the south oxbow in terms of number of barges per day and draft depth of each barge (i.e., each barge could be loaded with more freight). This would increase the tonnage moving through the port terminal. The deeper, wider channel in the TSP would allow barges to move through the channel at greater speed and with lower risk of grounding, improving safety for the boat operators.

The preparation of DD-2 for use as a placement area in the TSP would allow USACE to use the placement area for dredging from the KRNP outside of this CAP project.

8.3 COST ESTIMATE

Table 34 shows the total project cost summary of Alternative 3a in FY24 dollars. More information on project costs is provided in Appendix G – Cost.

Table 34. Total Project First Cost Summary by Feature (FY 2024 Price Level)

Feature Code	Feature Name	First Cost
12	Navigation Ports and Harbors	$2,961,000
30	Planning, Engineering and Design	$533,000
31	Construction Management	$297,000
06	Mitigation	$514,000
01	Lands and Damages	$85,000
	Total	**$4,390,000**

Note: This cost estimate has not undergone ATR. Not certified by the Civil Works Cost Engineering MCX per ER 1110-2-1302.

8.4 LERR CONSIDERATIONS

The dredging portion of the TSP will take place below the navigation servitude. DD-1 is located on land owned by KRPD; the Sponsor will receive LERR credit for this land. The land at DD-2 is owned by KRPD but is covered by USACE permanent easements related to the KRNP. Appendix F – Real Estate outlines how KRPD can secure the real estate interests to utilize DD-2 for this project.

8.5 OPERATION AND MAINTENANCE CONSIDERATIONS

O&M dredging was assumed at 5-year intervals, and the O&M dredging quantity over the 50-year timeframe was estimated at 100% of the initial dredge material quantity. See Appendix A – Civil Engineering for more detail. Operation and maintenance of the TSP would be entirely federal since the project consists only of GNFs. Hydraulic dredging for maintenance dredging was assumed.

8.6 RISK AND UNCERTAINTY

The study team used a risk-based strategy in its approach to formulating and evaluating alternatives. Key risks, uncertainties, or assumptions for the study are listed below along with risk management strategies. Each of these risks or uncertainties impacted the development of the alternatives and selection of the TSP. Section 4 of Appendix A – Civil Engineering describes additional risks (low risk).

8.6.1 Study Risks

Bathymetry data: The bathymetry data is a snapshot in time of the conditions in the oxbow and river channels. As a snapshot, the bed conditions during the survey may not be representative of the general trends. This could result incorrect assumptions about volumes of sediment to be removed and depositional rates of sediment infilling, affecting initial and O&M cost estimates, and in turn, estimated project benefits. The study team acknowledged that the bathymetry data used for the study was adequate for planning purposes but assumed a new survey would be done in PED to determine most current, accurate quantities.

Management: A new bathymetric survey will be done in PED.

Depth assumption: The 12-foot depth assumption for the dredging of the oxbows was developed in coordination with the Sponsor and could prove itself to be less effective or cost-efficient than other depths.

Management: The study team will conduct a depth sensitivity analysis after the report is released for public review and prior to development of the Final Report, to determine the dredging depth that will provide the greatest benefits for the project.

Geotechnical investigations: No geotechnical investigations were done during the study phase, and this leaves the possibility that the actual geotechnical conditions will not support the current design of the project.

Management: Geotechnical exploration will be done during the PED phase to confirm the feasibility level design.

8.6.2 Implementation Risks

Real estate interests and NEPA compliance: Any change in assumptions regarding the availability of real estate interests for the TSP or related NEPA effects could affect project construction.

Management: In order to reduce the risk, additional real estate coordination and NEPA compliance activities will be pursued during feasibility level design.

Availability of borrow material: To construct DD-2, commercial borrow would be needed or an on-site borrow location identified. If borrow is needed but there is no site available, or if dredged material is not suitable for borrow, costs would increase.

Management: In PED, the project team will investigate borrow source locations if needed and determine suitability of dredged material.

Dam Breach Analysis: A dam breach analysis will likely be needed for the Project (see Section 8.6). The risk posed by the dam breach analysis is minor; the modeling would not be considered complex, the head differential across the damming surface is small, and the consequences from a failure would be minor (no loss of life, no exposure of critical species). As such, there is not significant concern of cost or schedule impacts from a lengthy permitting dialogue.

Management: In PED, continue coordination with IDNR.

8.6.3 Outcome Risks

Sedimentation after initial dredging and maintenance dredging: Qualitatively, the team acknowledges that dredging the oxbow channel will enable a higher sedimentation rate in the channel, reducing the benefits of the project from those forecasted with the currently assumed deposition rate. However, it is the team's thinking that the quantitative difference in deposition rates with and without the project would be insignificant, making the impact on benefits negligible. There is no quantitative data to support the development of a sediment transport

model, and if there was, the team thinks the uncertainty in such a model would negate its effectiveness..

Management: None. The study team feels confident that sediment deposition would not change meaningfully with the proposed measures and thus did not pursue any new modeling.

Two-Way traffic is not feasible within the south oxbow: The south oxbow was not modeled with a software like ShipSim and as a result it is possible that the two-way traffic width is insufficient for the port's needs without a turnaround area. In lieu of shipping modeling data, the study team discussed all of the assumptions made during the feasibility phase with USACE Operations personnel, their shipping industry contacts, as well as the current and future operations in the south oxbow with the KRPD#2 officials themselves. Guidance from each of these groups was implemented by the study team and none had any major concerns with what was proposed.

Management: None. The study team is confident in the information gathered from local, regional, and national sources is sufficient and thus did not pursue any ShipSim type modeling.

Climate change: Climate change modeling suggests a warmer, wetter future for the Kaskaskia River. The most likely impact from these changes is a loss of oxbow access, as high water surface elevations lead to the closure of Jerry F. Costello L&D, and thus, an inability to navigate to the oxbow. This loss of access would reduce the benefit of the project. Closure of the L&D already occurs at a relatively high frequency (a closure every approx. 2 years, for ~3% of days from 2004-2024), and the facility has already developed an understanding of consequences.

Management: None. Changing the resilience of Jerry F. Costello L&D to a higher duration of WSEs that lead to closure would require significant investment and outside the scope of the project.

8.7 COST APPORTIONMENT

KRPD is the non-federal cost sharing Sponsor for all features of the project. Based on FY24 price levels, the estimated total project first cost is $4,391,000. The total project first cost includes the value of lands, easements, rights-of-way, and relocations (LERRs). Total LERR costs are estimated to be $85,000.

Under Section 107, the NFS is responsible for 100 percent of the construction and maintenance of LSF and 10 percent of the total costs of construction of GNF for depths less than or equal to 20 feet. The TSP is comprised only of GNF, so the non-federal cost share is 10 percent of the construction costs. The estimated non-federal share of the total project first cost is $515,000 and the federal share is $3.9 million.

The additional annualized cost of operation, maintenance, repair, replacement, and rehabilitation (OMRR&R) for the TSP is estimated to be $61,000. OMRR&R activities include dredging the south oxbow channel every five years. The federal government will be responsible for 100 percent of the cost of project OMRR&R since the project consists entirely of GNFs.

Note: The NFS would pay an additional 10 percent toward GNF over a period not to exceed 30 years. This may be accomplished through crediting for Lands, Easements, Rights of Way, and Relocations (LERR) provided or through direct payments.

Table 35 shows the federal and non-federal cost apportionment of the TSP, including the feasibility study costs which count towards the CAP 107 federal cost limit.

Table 36 displays the cost share another way and also includes the additional 10% payment the Sponsor would be required to pay.

Table 35. Federal and Non-Federal Cost Apportionment of the TSP and Feasibility Study

	Alternative	3a	
		Federal Cost	Non-Federal Cost
Total Project First Cost (GNF)	Construction w/ Contingency	$2,665,000	$296,000
	PED	$480,000	$53,000
	S&A	$267,000	$30,000
	Environmental Mitigation:	$900,000	$100,000
	Real Estate Costs:	$0	$96,000
	Total Project First Cost	$4,312,000	$575,000
		$4,887,000	
Associated Costs (LSF)	Construction w/ Contingency		
	PED		
	S&A		
	Environmental Mitigation:		
	Real Estate Costs:		
	Associated Cost Total		
	Project First Cost with Associated Costs	$4,887,000	
	Feasibility Study Costs:	$520,000	$420,000
	Total Fed/Non Fed Costs:	$4,832,000	$995,000

(FY2024 price levels)

Table 36. Cost Share of Estimated Total Project First Cost in 2024 Price Levels

Item	Federal Cost (90%)	Non-Federal Cost (10%)	Total
Construction*	$ 3,128,000	$ 347,000	$ 3,475,000
PED/Construction Management	$ 747,000	$ 83,000	$ 830,000
LERR	$ -	$ 85,000	$ 85,000
Total Project First Cost	$ 3,875,000	$ 515,000	$ 4,390,000
Associated Costs	$ -	$ -	$ -
Total with Associated Costs	$ 3,875,000	$ 515,000	$ 4,390,000
Additional 10 percent payment (may be paid over 30 years)	$ 3,875,000	$ 515,000	$ 4,390,000

(FY2024 price levels)

* Dredge placement area costs are included in GNF construction costs per CAP policy.

8.8 DESIGN AND CONSTRUCTION CONSIDERATIONS

At this point in the study, the designs for the TSP are at a low level of detail.

Implementation Schedule

This Draft Report is scheduled to conclude and be approved in 2025. A proposed Project implementation schedule is shown in **Table 37Table 37**.

Table 37. Project Implementation Schedule

Event	Scheduled Date*
Public Review of Draft Report	September 2024
Submit Final Feasibility Report to MVD	March 2025
Approved Final Feasibility Report from MVD	April 2025
Execute Project Partnership Agreement with Sponsor	Spring/Summer 2025
Initiate Design	Summer 2025
Construction Start Date	Winter2025-2026
Construction End Date (base year used in this study)	Fall 2027

*Further data collection needs, scope changes, design complications, etc., can affect the schedule.

There is no special construction sequencing. There are no major risks that could impede or derail approval or construction.

Environmental Considerations in Timing of Dredging and Construction

Dredging should not occur from April 15th to June 30th in order to avoid impacts during the primary timeframe for fish spawning. If dredging may be a necessity during this timeframe, USACE Environmental Compliance Section will initiate coordination with the U.S. Fish and Wildlife Service for a variation and approval. USACE is required to meet permit conditions for dredging and placement of fill.

Tree clearing at DD-2 would only occur 1 November to 31 March of any year to minimize impacts to federally threatened or endangered bat species.

Dam Breach Analysis

Initial discussions were held with IDNR in March 2024 about the need for permitting for dam breach analysis for the berm around DD-2. The initial responses from IDNR suggest that a dam breach analysis will likely be needed. IDNR stated that the berm around the dredge placement area is considered to a dam by IDNR/OWR even if it only impounds water temporarily. Further coordination with IDNR regarding the dam breach analysis is planned for the PED phase after this study is complete. The risk posed by the dam breach analysis are minor; the modeling would not be considered complex, the head differential across the damming surface is small, and the consequences from a failure would be minor (no loss of life, no exposure of critical

species). As such, there is not significant concern of cost or schedule impacts from a lengthy permitting dialogue.

No-Rise Analysis and Illinois Rivers and Streams Act (ILRSA)
Due to a 1979 Consent Decree in the Hoffman Case, the federal government must obtain a permit from the State of Illinois for certain work in or adjacent to the rivers covered by the Decree. Corps actions subject to this Consent Decree involve "dredging, channel work, levee construction, deposition of earth, fill, sand, rock, gravel, vegetation, or other materials into or adjacent to the rivers covered by the Order." For the St. Louis District, this includes work on the Mississippi River, Illinois River, Kaskaskia River, Big Muddy River, Beaucoup Creek and Macoupin Creek. Therefore, an ILRSA permit would be required for this TSP.

There is no indication that the project features will induce flooding by the construction or operation and maintenance of the project. See Section 3 of Appendix B – Hydrology and Hydraulics for more information. Further coordination with IDNR to determine the need for a no-rise analysis and permitting is planned for the PED phase after this study is complete.

Other Design and Construction Considerations
Existing LiDAR data used for the design of the TSP was flown in 2012. New survey data collection would be necessary for the PED phase.

8.9 ENVIRONMENTAL COMMITMENTS

The PDT worked to minimize impacts to the environment, however compensatory mitigation would be required for 13 acres of tree removal. At this time that is estimated to be 20 credits via the in-lieu fee mitigation bank. Best management practices would be used during all construction activities.

8.10 ENVIRONMENTAL OPERATING PRINCIPLES

Consistent with the National Environmental Policy Act (NEPA), USACE formalized its commitment to the environment by creating a set of "Environmental Operating Principles" applicable to all its decision making and programs (Box 1). These principles ensure environmental conservation and restoration are considered in all USACE activities.

Box 1. The USACE Environmental Operating Principles

1. Foster Sustainability as a way of life throughout the organization.
2. Proactively consider environmental consequences of all Corps activities and act accordingly.
3. Create mutually supporting economic and environmentally sustainable solutions.
4. Continue to meet our corporate responsibility and accountability under the law for activities undertaken by the Corps, which may impact human and natural environments.
5. Consider the environment in employing a risk management and systems approach throughout life cycles of projects and programs.
6. Leverage scientific, economic, and social knowledge to understand the environmental context and effects of Corps actions in a collaborative manner.
7. Employ an open, transparent process that respects views of individuals and groups interested in Corps activities.

8.11 USACE CAMPAIGN PLAN

The USACE Campaign Plan provides goals, objectives, and actions for improving the USACE contribution to the nation in the areas of warfighting, civil works processes and delivery systems, risk reduction from natural events, and preparation for the future. The four primary goals are to 1) Support National Security, 2) Deliver Integrated Water Resource Solutions, 3) Reduce Disaster Risks, and 4) Prepare for Tomorrow. The Kaskaskia River Regional Port CAP Section 107 Study supports the Campaign Plan with contributions to Goal 2, "Deliver Integrated Water Resource Solutions." The project does not make significant contributions to the other three goals.

Goal 2 (Deliver Integrated Water Resource Solutions) includes the following objectives: 2a - Deliver quality water resource solutions and services; 2b - Deliver the civil works program and innovative solutions; 2c - Develop the civil works program to meet the future needs of the Nation; and 2d - Manage the life cycle of water resources infrastructure systems to consistently deliver reliable and sustainable performance. This study supports Goal 2 by:

- Identifying a plan to improve navigation efficiency in at KRPD#2 on the Kaskaskia River.
- Coordinating with significant stakeholder groups throughout the study process; and
- Recommending a sustainable and resilient plan, with appropriate consideration of the long-term operation and maintenance of the plan features.

8.12 VIEWS OF THE NON-FEDERAL SPONSOR

KRPD is in support of the TSP. A Sponsor letter of support will be provided in the final report submittal package.

8.13 DIVISION OF PLAN RESPONSIBILITIES, COST SHARING, AND OTHER NON-FEDERAL RESPONSIBILITIES

The USACE St. Louis District is responsible for project management and coordination with KRPD and other affected entities. The USACE will submit the Final Report, program funds, finalize plans and specifications, complete all NEPA requirements, complete all NHPA requirements, advertise and award construction contracts, and perform construction contract supervision and administration.

Federal implementation of the Recommended Plan would be subject to the Non-Federal Sponsor agreeing to enter into a written Project Partnership Agreement (PPA), as required by Section 221 of Public Law 91-611, as amended, to provide local cooperation satisfactory to the Secretary of the Army. Entering the PPA will ensure compliance with federal laws and policies, including but not limited to:

[Placeholder: web link to PPA site on HQ website is broken (https://www.usace.army.mil/Missions/CivilWorks/ProjectPartnershipAgreements/ioc.aspx)]

9 ENVIRONMENTAL COMPLIANCE

Notification of the Draft Environmental Assessment and unsigned Finding of No Significant Impact will be sent to officials, agencies, organizations, and individuals for public review and comment. Additionally, an electronic copy is available during the public review period (August 28-September 27) on the USACE St. Louis District's website at: https://www.mvs.usace.army.mil/Missions/Programs-Project-Management/Kaskaskia-River-Regional-Port-Small-Navigation-Project/.

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

9.1 ENVIRONMENTAL COMPLIANCE TABLE

The TSP complies with all applicable federal environmental laws, statutes, and executive orders (EOs) (**Table 38Error! Reference source not found.**). Appendix E – Environmental Compliance

includes more information on environmental compliance activities, including relevant correspondence and supporting documentation.

Table 38. Compliance Status for Federal Statutes and Executive Orders Applicable to this Study

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

FC = Full Compliance, PC = Partial Compliance.

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

9.2 PUBLIC INVOLVEMENT

9.2.1 Scoping

A Public Scoping Meeting was held in June 2023. It was announced via several methods including mailings to owners/tenants at the north oxbow, emails to wildlife and recreation groups, social media posts, and a press release sent to local media. The meeting was well attended by the public, multiple interest groups including recreational groups, and IDNR; approximately 60 people were in attendance. KRPD spoke first on their current and future plans for the development of the KRPD#2 port facility and shared their plans for expansion and a potential new tenant. USACE then presented on the feasibility study and its focus on

efficiency of navigation, and measures identified for evaluation in the initial array of alternatives. Section 9.2.2 provides information on the comments received from the meeting.

9.2.2 Public Comments

At the June 2023 Public Scoping Meeting, USACE and KRPD representatives invited attendees to provide input on comment cards and made themselves available to talk with attendees one-on-one. In these discussions, USACE personnel heard opinions both for and against the planned development and increase in shipping at the port terminal. A handful of comment cards were filled out on that night, and several more comments were received later by mail and email for a total of 20 comments (see Appendix D – Coordination). The comments can be approximately categorized by tone: 14 negative/against development at the north oxbow, 3 positive/for development at the north oxbow, and 3 neutral (neither positive nor negative, usually consisting of questions). The negative comments highlighted the following major concerns: impacts to fish, wildlife, and hunting, increased boat traffic causing safety hazards to recreational boaters, increased noise, impacts to bank stability, and loss of use of lands that have been in some families for decades/generations. The positive comments highlighted the importance of improvements in navigation and benefits to jobs and the economy. The written comments largely pertained to the north oxbow; no verbal or written comments were received regarding a USACE project at the south oxbow or the existing KRPD#2 facility.

Future outreach to the public will occur at the next public meeting when the Draft Report is released for public comment.

9.2.3 Agency Coordination

USACE conducted scoping and coordination with state and federal agencies, federally-recognized Tribes, and other interested parties. Study collaborators discussed problems, opportunities, and potential measures through numerous coordination meetings. While not comprehensive, the following meetings are examples of ongoing coordination:

- Presentation to KRPD Board, December 2019
- Site visit at KRPD#2, February 2020
- Presentation to KRPD Board, August 2020
- Feasibility Cost Share Agreement (FCSA) Signing Ceremony site visit, May 2021
- Presentation to KRPD Board, June 2022
- North oxbow planning workshop, March 2023
- Public Scoping Meeting, June 2023

Further information on the dates and types of coordination with these agencies and parties may be found in Appendix D – Coordination.

9.2.4 Tribal Consultation

USACE sent out coordination letters to tribes on 2 July 2024. Two tribes, the Iowa Tribe of Kansas and Nebraska, and the Caddo Nation, responded stating no concerns with the project at this time; these responses are included in Appendix E.

9.2.5 List of Statement Recipients

Appendix D – Coordination includes a list of the agencies, organizations, and persons to whom USACE sent copies of the draft report for review.

10 DISTRICT ENGINEER RECOMMENDATION (DRAFT)

I have considered all significant aspects of this project, including environmental, social, and economic effects and engineering feasibility. I recommend that the Tentatively Selected Plan for the Kaskaskia River Regional Port Feasibility Study with Integrated EA as generally described in this report for implementation as a federal project, with such modifications thereof as in the discretion of the Commander, HQUSACE may be advisable. The estimated total project first cost of the Tentatively Selected Plan is approximately $4,887,000 at the FY24 price level. OMRR&R expenses are estimated to be approximately $61,000 per year. The federal portion of the estimated total project first cost is approximately $4,312,000. The Non-Federal Sponsor's portion of the estimated total project first cost is approximately $575,000.

The total project cost (TPC) is the total project first cost fully funded with escalation to the estimated midpoint of construction and is the cost used in Project Partnership Agreements. The TPC is provided for the sponsor's use in financial planning, as it provides information regarding the overall cost-sharing obligation. The TPC of the Tentatively Selected Plan is approximately $__, with the Sponsor's share being approximately $__. [The TPC of the TSP will be developed later in the project.]

The recommendations contained herein reflect the information available at this time and current departmental policies governing formulation of individual projects. They do not reflect program and budgeting priorities inherent in the formulation of a national Civil Works construction program nor the perspective of higher review levels within the Executive Branch. Consequently, the recommendations may be modified before they are transmitted to higher authority as proposals for authorization and implementation funding. However, prior to transmittal to higher authority, the sponsor, the states, interested federal agencies, and other parties will be advised of any modifications and will be afforded an opportunity to comment further.

_____ _____

Date

ANDY J. PANNIER
Colonel, U.S. Army
Corps of Engineers
District Commander, St. Louis

11 LIST OF PREPARERS

- Zachary Day, USACE Wildlife Biologist
- Janet Buchanan, USACE Plan Formulation
- Ben Greeling, USACE HTRW Specialist
- Lara Anderson, USACE Cultural Specialist
- Meredith Trautt, USACE Tribal Specialist
- Matt Napolitano, USACE Economist
- Edwin Ramos, USACE Real Estate Specialist
- Tim Lauth, USACE Hydraulic and Hydrologic Engineer
- Michelle Puzach, USACE Cost Engineer

REFERENCES

ACS. (2019). *American Community Survey*. Retrieved from US Census Bureau: https://www.census.gov/programs-surveys/acs

ASPE. (2022). *U.S. Federal Poverty Guidelines to Determine Financial Eligibility for Certain Programs, Health and Human Services Poverty Guidelines*. Retrieved from Office of the Assistant Secretary for Planning and Evaluation: https://aspe.hhs.gov/topics/poverty-economic

IDNR. (2021). *Kaskaskia River Profile.* . Retrieved from Illinois Department of Natural Resources: https://www.ifishillinois.org/profiles/Kaskaskia.php

IEPA. (2018). *303d List*. Retrieved from Illinois Environmental Protection Agency: https://www2.illinois.gov/epa/topics/water-quality/watershed-management/tmdls/Pages/303d-list.aspx

IPCC. (2020). *AR5 Synthesis Report: Climate Change 2014. Accessed on May 5 2020.*

KRPD [Consulting Engineer Thouvenot, Wade & Moerchen Inc.]. (2020). *KRPD#2 Port Master Plan.*

KRPD. (2014). *Kaskaskia Regional Port District Strategic Plan: A Vision for the Next Twenty-Five Years.* KRPD.

Melillo, J. M., Richmond, T. C., & Yohe, G. W. (2014). *Climate Change Impacts in the United States: the Third National Climate Assessment.* U.S. Global Change Research Program. doi:10.7930/J0Z31WJ2

Memorandum of Understanding Between the U.S. Army Engineer District, St. Louis and the State of Illinois, Department of Public Works and Buildings for the Kaskaskia River Navigation Improvement Project. (1964, May 7th).

Public Lock Commodity Report Calendar Years 1999 – 2019. (2020, April). Retrieved from LPMS: https://publibrary.planusace.us/#/series/Lock%20Performance%20Monitoring%20System%20(LPMS)

Public Lock Usage Report files, Calendar Years 1993 - 2019. (2020, April). Retrieved from LPMS: https://publibrary.planusace.us/#/series/Lock%20Performance%20Monitoring%20System%20(LPMS)

Republic-Times. (2020, September 29). *Baldwin power plant closing by 2025*. Retrieved from https://www.republictimes.net/baldwin-power-plant-closing-by-2025/

Shipley. (2010). *How to Write Quality EISs and EAs.* The Shipley Group.

Shoup, D. E., & Wahl, D. H. (2009). Fish diversity and abundance in relation to interannual and lake-specific variation in abiotic characteristics of floodplain lakes of the lower Kaskaskia River, Illinois. *Transactions of the American Fisheries Society*.

Southwest Illinois Connector. (2019). *Southwest Illinois Connector Highway Task Force Report.* Randolph County.

Thouvenot, Wade & Moerchen, Inc. (2020). *KRPD#2 Port Master Plan .* Swansea, IL.

U.S. Department of Homeland Security, U.S. Coast Guard. (2022). *Light List Volume V Mississippi River System.* COMDTPUB P16502.5 .

U.S. EPA. (1974). *Information on levels of environmental noise requisite to protect public health and welfare with an adequate margin of safety.* https://nepis.epa.gov/Exe/ZyPDF.cgi/2000L: Office of Noise Abatement and Control. Retrieved from Office of Noise Abatement and Control.

U.S. EPA. (2018). *National Ambient Air Quality Standards (NAAQS) Table*. Retrieved from U.S. Environmental Protection Agency: https://www.epa.gov/criteria-air-pollutants/naaqs-table

U.S. EPA. (2021, December 31). *Nonattainment Areas for Criteria Pollutants (Green Book)*. Retrieved from U.S. Environmental Protection Agency: https://www.epa.gov/green-book

U.S. Fish & Wildlife Service. (2018, September 26). *Bald & Golden Eagle Protection Act*. Retrieved from https://www.fws.gov/birds/policies-and-regulations/laws-legislations/bald-and-golden-eagle-protection-act.php

U.S. Government Printing Office. (1961). *Senate Document No. 44.* Washington, D.C.: U.S. Government Printing Office.

US Census Bureau. (2010). *2010 Census Data*. Retrieved from US Census Bureau: https://data.census.gov/cedsci/

USACE . (2021, March). Kaskaskia Main Channel Water Quality Data. *US Army Corps of Engineers*.

USACE. (1975). *Final Environmental Statement: Kaskaskia Navigation Project (Operation and Maintenance).* St. Louis.

USACE. (2002, September 18). Kaskaskia River Spoil Site Management Plan - New Athens to Fayetteville Reach (April 2022). *Memorandum: The Kaskaskia River Maintenance Dredge from New Athens Illinois (RM 29) to Fayetteville, Illinois (RM 35+)*. St. Louis, Missouri.

USACE. (2015). *Recent US Climate Change and Hydrology Literature Applicable to US Army Corps of Engineers Missions - Water Resources Region 07, Upper Mississippi.* Washington, D.C.: U.S. Army Corps of Engineers.

USACE. (2017). *The Master Plan, Kaskaskia River Project Jerry F. Costello Lock and Dam, Kaskaskia River, Illinois.* St. Louis, Missouri: St. Louis District.

USACE. (2018). *US Army Corps of Engineers St. Louis District Website*. Retrieved from 2017 Kaskaskia River Project Master Plan Update: https://www.mvs.usace.army.mil/Missions/Recreation/Kaskaskia-River-Project/Kaskaskia-Master-Plan-Update/

USACE. (2020). *MVS Borrow Tool Application, Eagle Nest Database*. Retrieved from US Army Corps of Engineers.

USACE. (2021, August 19). Kaskaskia River Regional Port Terminal 2 Site Visit. (A. Anderson, Interviewer)

USACE. (2021, November 15). Kaskaskia River Regional Port Terminal 2 Site Visit. (M. Hartman, R. Steiger, & C. Macek, Interviewers)

USACE MVS Historical Water Quality Monitoring Database. (2021). CEMVS Historical Water Quality Monitoring database.

USEPA. (2022). *How's My Waterway? Waterbody Report - Kaskaskia River Assessment Unit ID: IL_O-97*. Retrieved from United States Environmental Protection Agency: https://mywaterway.epa.gov/waterbody-report/IL_EPA/IL_O-97/2022

USFWS. (2021). *National Wetlands Inventory NCLD Landcover Database*. Retrieved from US Fish and Wildlife Service: https://www.fws.gov/wetlands/

Wilber, D. a. (2007). *Defining and Assessing Benthic Recovery Following Dredging and Dredged Material Disposal.* Lake Buena Vista, FL: Presentation from the 2007 WODCON XVIII Conference. Retrieved from https://westerndredging.org/index.php/woda-conference-presentations/category/60-session-3d-environmental-aspects-of-dredging?download=240:3-wilber-defining-and-assessing-benthic-recovery-following-dredging-and-dredged-material-disposalpdf defining and ass

Wilber, D.H., and Clarke, D.G. 2007. Defining and assessing benthic recovery following dredging and dredged material disposal. Proceedings XXVII World Dredging Congress 2007, Orlando, Florida. https://safe.menlosecurity.com/doc/docview/viewer/docN59111D538960935f67876f255e99c06190a35ca96f4fa4e162668a79d8e4c5c54eaf135996fe

FINDING OF NO SIGNIFICANT IMPACT

Kaskaskia River Regional Port CAP Section 107 Study

with Integrated Environmental Assessment

Kaskaskia River, River Mile 18, Randolph County, Illinois

The U.S. Army Corps of Engineers, St. Louis District (Corps) has conducted an environmental analysis in accordance with the National Environmental Policy Act of 1969, as amended. The final Integrated Feasibility Report and Environmental Assessment (IFR/EA) dated **DATE OF IFR/EA**, for the Kaskaskia River Regional Port CAP Section 107 Study addresses implementing navigation improvement opportunities and feasibility in the Kaskaskia River Regional Port #2, Randolph County, Illinois. The final recommendation is contained in the report of the Chief of Engineers, dated **DATE OF CHIEF'S REPORT**.

The Final IFR/EA, incorporated herein by reference, evaluated various alternatives that would implement navigation improvement measures at KRPD#2 in the study area. The recommended plan is the **National Economic Development (NED) Plan** and includes:

Alternative 3a – Minimum (Two-Way Traffic)

- Dredging of the south oxbow channel to a depth of 12 ft and width of 110 ft to accommodate two-way traffic
- Placement of dredge material at sites DD-1 and DD-2
- O&M dredging at 5-year intervals; every 5 years for minor O&M dredging and every 10 years for major O&M dredging
- Initial dredging quantity estimated at 45,000 CY; maintenance dredge material over the 50-year planning horizon is estimated at 90,000 CY
- DD-1 currently has a capacity of 9,000 CY, and DD-2 would have a capacity of 212,000 CY if the berm is raised per this alternative
- Compensatory mitigation would be required for the 13 acres of tree removal

In addition to a "no action" plan, three alternatives were evaluated. The alternatives included 1a-Maximum (two-way traffic) which included channel dredging, a fleeting area as well as a turning area, 2a-Turning Area + two-way traffic which included dredging and a turning area, and 3a-Minimum two-way traffic which solely focused on the channel dredging.

For all alternatives, the potential effects were evaluated, as appropriate. A summary assessment of the potential effects of the Recommended Plan are listed in Table 1:

Table 1: Summary of Potential Effects of the Recommended Plan

Potentially Affect Aspect	Insignificant effects	Insignificant effects as a result of mitigation*	Resource unaffected by action
Aesthetics	☒	☐	☐
Air quality	☒	☐	☐
Aquatic resources/wetlands	☒	☐	☐
Invasive species	☒	☐	☐
Fish and wildlife habitat	☐	☒	☐
Threatened/Endangered species/critical habitat	☐	☒	☐
Historic properties	☐	☐	☒
Other cultural resources	☐	☐	☒
Floodplains	☒	☐	☐
Hazardous, toxic & radioactive waste	☐	☐	☒
Hydrology	☒	☐	☐
Land use	☒	☐	☐
Navigation	☒	☐	☐
Noise levels	☒	☐	☐
Public infrastructure	☐	☐	☒
Socio-economics	☐	☐	☒
Environmental justice	☒	☐	☐
Soils	☒	☐	☐
Tribal trust resources	☐	☐	☒
Water quality	☒	☐	☐
Climate change	☒	☐	☐

All practicable and appropriate means to avoid or minimize adverse environmental effects were analyzed and incorporated into the recommended plan. Best management practices (BMPs) as detailed in the IFR/EA will be implemented, if appropriate, to minimize impacts.

- Dredging should not occur from April 15th to June 30th in order to avoid impacts during the primary timeframe for fish spawning (Report Section 8.8).
- Tree clearing at DD-2 would only occur 1 November to 31 March of any year to minimize impacts to federally threatened or endangered bat species (Report Section 8.8).

Implementation of environmental compensatory mitigation is required. The recommended plan will result in unavoidable adverse impacts to approximately 13 acres of bottomland forest habitat. To mitigate for these unavoidable adverse impacts, the U.S. Army Corps of Engineers will purchase an estimated 20 credits via an in-lieu fee mitigation bank. The bank operator is responsible for demonstrating and reporting that the bank's success criteria are being met. Therefore, no specific ecological success criteria are developed for this plan. Details are included in the Compensatory Mitigation Plan Kaskaskia River Regional Port CAP Section 107 Study July 2024, Appendix E-3.

Public review of the draft IFR/EA and FONSI was completed on **DATE DRAFT EA AND FONSI REVIEW PERIOD ENDED**. All comments submitted during the public review period were responded to in the Final IFR/EA and FONSI.

Pursuant to section 7 of the Endangered Species Act of 1973, as amended, the U.S. Army Corps of Engineers determined that the recommended plan may affect but is not likely to adversely affect the following federally listed species or their designated critical habitat: Indiana Bat (*Myotis sodalis*), Northern Long-eared Bat (*Myotis septentrionalis*), Tricolored Bat (*Perimyotis subflavus*), and is not likely to jeopardize the continued existence of the monarch butterfly (*Danaus plexippus*) or the whooping crane (*Grus americana*). The U.S. Fish and Wildlife Service (FWS) concurred with the Corps' determination on **DATE OF CONCURRENCE LETTER**

Pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended, the U.S. Army Corps of Engineers determined that the recommended plan has no effect on historic properties. The Illinois SHPO concurred with the determination on 23 July 2024.

Pursuant to the Clean Water Act of 1972, as amended, the discharge of dredged or fill material associated with the recommended plan has been found to be compliant with section 404(b)(1) Guidelines (40 CFR 230). The Clean Water Act Section 404(b)(1) Guidelines evaluation is found in Appendix E-4 of the IFR/EA.

A water quality certification pursuant to section 401 of the Clean Water Act will be obtained from the Illinois Environmental Protection Agency prior to construction. In a letter dated **DATE OF LETTER**, the **STATE, TERRITORY, OR TRIBE** stated that the recommended plan appears to meet the requirements of the water quality certification, pending confirmation based on information to be developed during the pre-construction engineering and design phase. All conditions of the water quality certification will be implemented in order to minimize adverse impacts to water quality.

All applicable environmental laws have been considered and coordination with appropriate agencies and officials has been completed.

Technical, environmental, economic, and cost effectiveness criteria used in the formulation of alternative plans were those specified in the Water Resources Council's 1983 Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies. All applicable laws, executive orders, regulations, and local government plans were considered in evaluation of alternatives. Based on this report, the reviews by other Federal, State and local agencies, Tribes, input of the public, and the review by my staff, it is my determination that the recommended plan would not cause significant adverse effects on the quality of the human environment; therefore, preparation of an Environmental Impact Statement is not required.

_____
Date

_____
Andy J. Pannier
COL, Corps of Engineers
District Commander