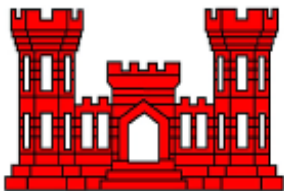


# **DRAFT ENVIRONMENTAL ASSESSMENT**

## **Below Kennett/Drainage District (DD) 48 Seepage Remediation St. Francis River Basin Dunklin County, Missouri**

**November 2020**



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

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# **DRAFT ENVIRONMENTAL ASSESSMENT**

## **Below Kennett/Drainage District 48 (DD) Seepage Remediation St. Francis River Basin Dunklin County, Missouri**

### **1.0 INTRODUCTION**

The U.S. Army Corps of Engineers (USACE), Mississippi River Valley Division, Regional Planning and Environmental Division South, has prepared this draft environmental assessment (EA) for the Memphis District (MVM) to evaluate the potential impacts associated with seepage control measures along the left (east) bank of the St. Francis River Levee, near the town of Kennett, Dunklin County, Missouri (Figure 1).

This EA has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969 and the Council on Environmental Quality's (CEQ) Regulations (40 CFR 1500-1508), as reflected in the USACE Engineering Regulation (ER) 200-2-2. This EA provides sufficient information on the potential adverse and beneficial environmental effects to allow the MVM District Commander to make an informed decision on the appropriateness of an environmental impact statement (EIS) or a finding of no significant impact (FONSI).

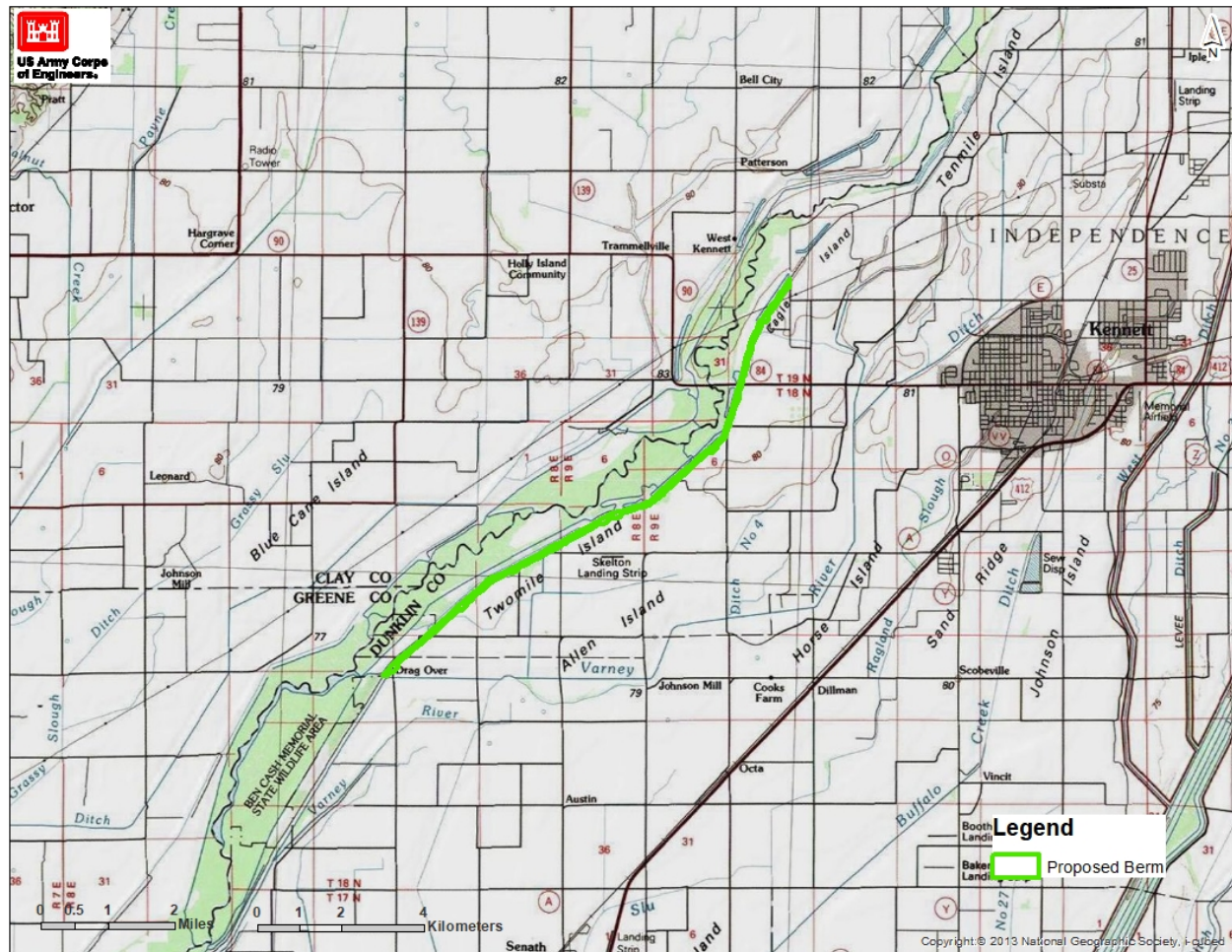
A 1973 EIS, *St. Francis Basin Project, Arkansas and Missouri*, addressed flood control measures to be implemented along the St. Francis River. The 1973 EIS may be viewed at the following location: <https://www.mvm.usace.army.mil/About/Offices/Regulatory/Public-Notices/>. Since publication of the 1973 EIS, it has been determined that other flood control measures were needed along the St. Francis River within the MVM to prevent continued seepage and potential degradation of the levee. During high water events in the St. Francis River in 2008, 2011, 2016, and 2017, seepage issues were observed at various sites along the proposed project location ranging from light to heavy seepage.

### **1.1 PROPOSED ACTION**

The proposed project resulted from analysis of seepage potential along the landside toe and within the adjacent ditch work running parallel to the levee and involves implementing seepage control measures along the St. Francis River Levee in Dunklin County, Missouri. Project features for the proposed seepage control action include construction of continuous, semi-pervious landside berms; modifying existing ditches to re-orient interior drainage away from the levee through a combination of existing and new ditch work, and re-grading fields adjacent to the levee (Figure 2). Access to the project area would be from county roads or from roads on top of the levee. Heavy construction equipment would be used to modify and fill the existing ditches and construct berms. Post-construction hydrology would be similar to pre-existing conditions for the proposed project.

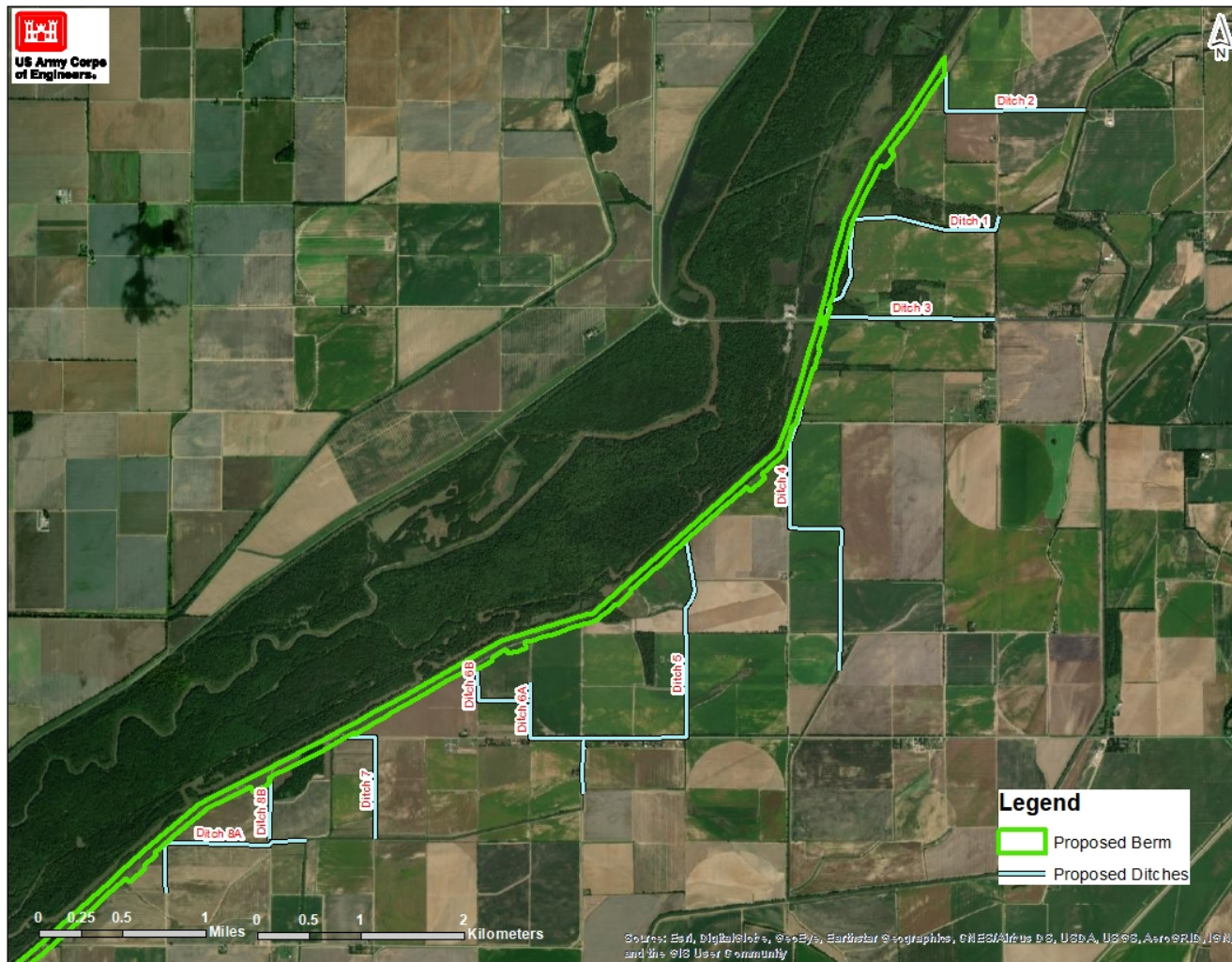
The proposed project is approximately 8 miles long, essentially from Missouri County Road 438 south along the existing East Bank St. Francis River Levee System to just south of Missouri

County Road 513 (levee baseline stations 19/18+00 and 28/00+00). The study area is directly west of Kennett, Missouri and runs south towards the Varney River confluence with the St. Francis River. However, due to various logistical and financial concerns the proposed project would be split into two Phases. Phase I would be constructed first and begin just south of



**Figure 1. Location of Proposed Below Kennett/DD48 Seepage Remediation Project Dunklin County, Missouri.**





**Figure 2. Proposed ditch modifications and alignments for the proposed Below Kennett/DD 48 Seepage Remediation Project, Dunklin County, Missouri.**

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State Highway 84, in the vicinity of Missouri County Road 500 and continue south approximately 5.5 miles. Phase I was also designed to receive runoff from north of Highway 84, in order to preserve current hydrology. Phase II covers the remaining approximately 2.5 miles and would be constructed at a later date. Design plans for Phase II are currently not as advanced as Phase I plans but are developed enough to forecast potential project impacts. For the purposes of this EA, anticipated impacts for both phases are calculated with both phases considered as one overall project.

A 150-foot wide continuous, semi-pervious landside berm is proposed, except in locations where wider berms (up to 300 feet wide) are required to reduce seepage issues (Table 1). In the lower approximately one mile of the proposed project area, no berms are proposed, as this area is back flooded by the Varney River during flood events; therefore landside berms are not required. All berms would be approximately 5 feet in thickness at the levee toe sloping to approximately 2.5 feet at the berm toe (Figure 3). A toe ditch would be constructed approximately 150 feet from the berm toe. Interior drainage would be re-orientated away from the levee through a combination of existing/new ditch work and re-grading approximately 285 acres of fields adjacent to the levee. Approximately 11 miles of lateral ditches would be re-directed towards the Varney River by re-sloping the ditch bottoms. Ditch 1 would be the only completely new ditch constructed (other than the re-established toe ditch) across an existing agricultural field. All ditches would have R-200 riprap 10 feet upstream and 15 feet downstream of any culverts with a thickness of 2-feet. These proposed improvements for the ditches are listed below:

#### **Ditch 1**

The proposed newly constructed Ditch 1 would cross under County Road 401 approximately 0.5 miles north of Highway 84. An existing 24-inch culvert under the road would be replaced by two 36-inch corrugated metal pipe (CMP) culverts under County Road 401.

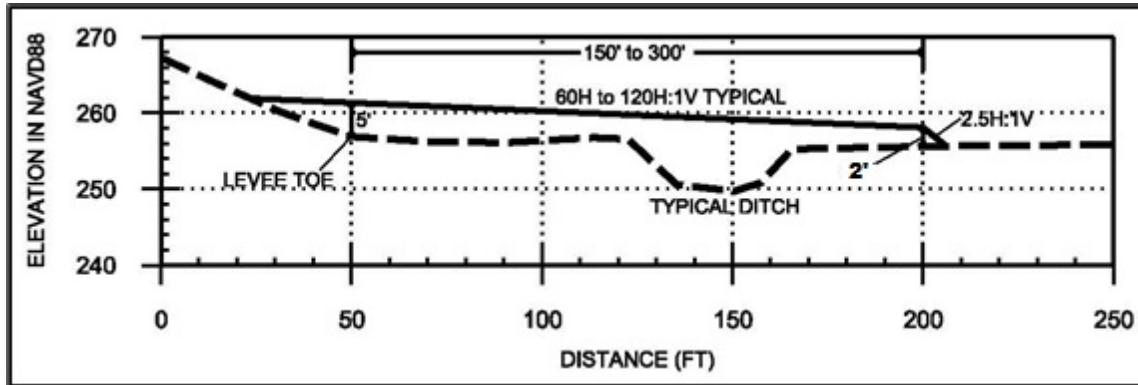
#### **Ditch 2**

Ditch 2 is approximately 4,500 feet in length. This ditch proceeds east along existing ditch alignment (Dunklin County Cutoff) and eventually crosses under County Road 401 before

**Table 1. Approximate Berm Widths for the proposed Below Kennett/DD48 Seepage Project.**

Levee Station			Reach Length (ft)	Berm Width (ft)	Levee Station			Reach Length (ft)	Berm Width (ft)
Reach	From	To			Reach	From	To		
1	19/18+00	20/1+50	350	150	45	23/50+50	24/2+50	480	150
2	20/1+50	20/6+50	500	150	46	24/2+50	24/7+50	500	150
3	20/6+50	20/11+50	500	150	47	24/7+50	24/12+50	500	165
4	20/11+50	20/16+50	500	150	48	24/12+50	24/17+50	500	195
5	20/16+50	20/21+50	500	150	49	24/17+50	24/22+50	500	150
6	20/21+50	20/26+50	500	150	50	24/22+50	24/27+50	500	150
7	20/26+50	20/31+50	500	300	51	24/27+50	24/32+50	500	150
8	20/31+50	20/36+50	500	150	52	24/32+50	24/37+50	500	150
9	20/36+50	20/41+50	500	150	53	24/37+50	24/42+50	500	150
10	20/41+50	20/46+50	500	150	54	24/42+50	24/47+50	500	300
11	20/46+50	20/51+50	500	150	55	24/47+50	24/52+50	500	150
12	20/51+50	21/3+50	594	150	56	24/52+50	25/4+50	534	150
13	21/3+50	21/8+50	500	150	57	25/4+50	25/9+50	500	150
14	21/8+50	21/13+50	500	150	58	25/9+50	25/14+50	500	150
15	21/13+50	21/18+50	500	150	59	25/14+50	25/19+50	500	150
16	21/18+50	21/23+50	500	150	60	25/19+50	25/24+50	500	150
17	21/23+50	21/28+50	500	150	61	25/24+50	25/29+50	500	245
18	21/28+50	21/33+50	500	195	62	25/29+50	25/34+50	500	300
19	21/33+50	21/38+50	500	150	63	25/34+50	25/39+50	500	150
20	21/38+50	21/43+50	500	150	64	25/39+50	25/44+50	500	150
21	21/43+50	21/48+50	500	150	65	25/44+50	25/49+50	500	150
22	21/48+50	22/0+50	480	150	66	25/49+50	26/1+50	493	150
23	22/0+50	22/5+50	500	150	67	26/1+50	26/6+50	500	150
24	22/5+50	22/10+50	500	150	68	26/6+50	26/11+50	500	150
25	22/10+50	22/15+50	500	300	69	26/11+50	26/16+50	500	150
26	22/15+50	22/20+50	500	150	70	26/16+50	26/21+50	500	150
27	22/20+50	22/25+50	500	150	71	26/21+50	26/26+50	500	150
28	22/25+50	22/30+50	500	150	72	26/26+50	26/31+50	500	150
29	22/30+50	22/35+50	500	150	73	26/31+50	26/36+50	500	150
30	22/35+50	22/40+50	500	150	74	26/36+50	26/41+50	500	300
31	22/40+50	22/45+50	500	150	75	26/41+50	26/46+50	500	150
32	22/45+50	22/50+50	500	150	76	26/46+50	26/51+50	500	150
33	22/50+50	22/55+50	500	150	77	26/51+50	27/3+50	500	0
34	22/55+50	23/0+50	493	200	78	27/3+50	27/8+50	500	0
35	23/0+50	23/5+50	500	150	79	27/8+50	27/13+50	500	0
36	23/5+50	23/10+50	500	150	80	27/13+50	27/18+50	500	0
37	23/10+50	23/15+50	500	150	81	27/18+50	27/23+50	500	0
38	23/15+50	23/20+50	500	150	82	27/23+50	27/28+50	500	0
39	23/20+50	23/25+50	500	150	83	27/28+50	27/33+50	500	0
40	23/25+50	23/30+50	500	300	84	27/33+50	27/38+50	500	0
41	23/30+50	23/35+50	500	180	85	27/38+50	27/43+50	500	0
42	23/35+50	23/40+50	500	260	86	27/43+50	27/48+50	500	0
43	23/40+50	23/45+50	500	150	87	27/48+50	28/0+0	450	0
44	23/45+50	23/50+50	500	150					





**Figure 3. Typical Landside Berm from the St. Francis Basin Construction 48-Below Kennett Seepage Berm Design Documentation Report.**

emptying into the Varney River. As this portion of ditch is in Phase II, no final designs or appropriate mitigation has been definitively calculated at this time so preliminary design work and conservative impact estimates are used for this EA. Should designs or project impacts be determined to be in excessively different from those detailed in this document, an additional NEPA document would detail those details.

### **Ditch 3**

Ditch 3 is approximately 4,300 feet in length. The ditch starts south of and runs under Highway 84 through two 30-inch diameter culverts. This ditch then proceeds northwest along the existing ditch alignment and eventually empties into Ditch 1. As this portion of ditch is in Phase II, no final designs or appropriate mitigation is known at this time so preliminary design work and conservative impact estimates are used for this EA.

### **Highway 84 Culverts**

A double barrel 30-inch reinforced concrete pipe (RCP) is proposed to carry drainage north from the field immediately adjacent to Highway 84. This would replace the existing 5 by 4 foot concrete box culvert. As this portion of ditch is in Phase II, no final designs, Missouri Department of Transportation concurrence, or appropriate mitigation has been determined at this time so preliminary design work and conservative impact estimates are used for this EA. Should designs or project impacts be determined to be in excessively different from those detailed in this document, an additional NEPA document would detail those details.

### **Ditch 4**

Ditch 4 is approximately 17,350 feet in length. This ditch begins south of the field adjacent to Highway 84 and proceeds along the existing ditch alignment. Modifications to this ditch would widen the bottom width to approximately 10 feet with a final slope of 2.5H:1V. Current CMP

culverts would be removed and replaced with two reinforced concrete box culverts (RCBC) under each of the following: County Road 506, field access road, and County Road 535.

#### **Ditch 5**

Ditch 5 is approximately 9,500 feet in length. This ditch begins at the proposed berm toe following existing drainage and would be constructed in a similar fashion as Ditch 4, except the bottom width would vary between 4 and 5 feet. Current CMP culverts would be removed and replaced with one RCBC each under State Route A, County Road 510, and five field access roads.

#### **Ditch 6A**

Ditch 6A is approximately 4,000 feet in length. This ditch begins west of Ditch 5 and follows existing drainage until it terminates into Ditch 5. It would be constructed similarly to Ditch 5 except it would have a 4-foot channel bottom width. One RCP is proposed for this ditch at County Road 510.

#### **Ditch 6B**

Ditch 6B is approximately 2,000 feet in length. This ditch begins west of Ditch 5 and follows existing drainage until it terminates into Ditch 6A. The main section of this ditch would consist of a “V” channel transitioning to a 4-foot wide channel bottom. This ditch would also be sloped 2.5H:1V. No culverts are proposed for this ditch.

#### **Ditch 7**

Ditch 7 is approximately 3,300 feet in length and would be constructed to have a 4-foot bottom width and side slopes of 2.5H:1V. This ditch is west of Ditch 6 and would follow existing drainage at the edge of an agricultural field towards an existing ditch. Culverts proposed for this ditch include three CMPs at the confluence of the ditch, a field access road, and County Road 510.

#### **Ditch 8A**

Ditch 8A is approximately 5,000 feet in length and would be constructed to have a 4-foot bottom width. This ditch is west of Ditch 7 and would also follow existing drainage before terminating into the same collector ditch as Ditch 7, but further down of that confluence. One CMP culvert is proposed for this ditch at County road 510.

#### **Ditch 8B**

Ditch 8B is approximately 1,600 feet in length and is located north of County Road 516 and runs to the southwest parallel to the berm toe. Two CMP culverts are proposed for this ditch at separate field access locations.

#### **Field Grading**

As much of the runoff from landside agricultural fields adjacent to the levee is currently directed towards multiple collector ditches running parallel to the levee toe, approximately 285 acres of landside agricultural fields would be graded to re-direct surface water away from the proposed berm toe and towards the numerous ditches previously mentioned. This field grading work is proposed for seven agricultural fields. As previously mentioned, all ditch work has been sized to accommodate this drainage.

## **1.2 PURPOSE AND NEED FOR THE PROPOSED ACTION**

The purpose of the proposed action is to control seepage under the St. Francis River Levee, and reduce flood risk, flood damages, and flood protection costs resulting from flood events occurring in the St. Francis River floodplain. The proposed project would bring the existing infrastructure into compliance with current Engineering Manuals and ERs.

## **1.3 AUTHORITY FOR THE PROPOSED ACTION**

The proposed action is authorized as part of the Flood Control Act of 15 May 1928 as amended by the Acts of 15 June 1936, 18 August 1941, 24 July 1946, 27 October 1965, and 13 August 1968. These Acts provided for the construction, enlargement, and strengthening of the levees of the St. Francis Basin Project to safely pass the floodwaters of the St. Francis River and its tributaries. Local cooperation requirements for the Below Kennett/DD48 project were modified by the Flood Control Act of 24 July 1946, and limited local responsibility to ordinary maintenance as defined by Section 3 of the Flood Control Act of 1928. The Below Kennett/DD48 project site is covered by the 1964 USACE General Design Memorandum 104.

## **1.4 PUBLIC CONCERNS**

Public concerns exist regarding the ability of the St. Francis River Levee system to contain floodwaters during a flood event. Seepage could undermine the levee causing it to breach if unabated, thus posing a threat of flooding. A levee breach could flood the surrounding lands and residential areas, and threaten the lives and property of residents within the flooded areas. High water events in the St. Francis River in 2011, 2015, and 2017 have heightened public concerns.

## **2.0 ALTERNATIVES TO THE PROPOSED ACTION**

Six alternatives to the proposed action were considered. These alternatives were: (1) No-action; (2) the filling in of the existing ditch along the levee toe only; (3) construction of landside seepage berms only; (4) construction of landside seepage berms and filling in of the existing ditches; (5) installation of impervious cutoff walls; and (6) the installation of relief wells.

Alternative 5 (impervious cutoff walls) was not considered feasible due to the high cost of construction associated with the extreme depth of the aquifer in the project area. Alternative 6 (relief wells) was not considered practical due to the cost associated with placing relief wells every 50 feet within the project reach. A 2009 test section just northwest of the proposed DD 48 project area was used to evaluate the effectiveness of relief wells as part of the Piggott, Arkansas St. Francis River Seepage Study dated April 2004. This test project indicated relief wells were not effective in this area of the St. Francis River due to well spacing (as close as 50 feet), well

discharge elevations below the average landside elevations, high cost, and maintenance issues. The DD 48 study area is similar in subsurface conditions and topography as the Piggott study area with similar lack of effectiveness indicated. These two alternatives were eliminated during the screening process.

## **2.1 ALTERNATIVE 1 – FUTURE WITHOUT PROJECT CONDITION**

In the future without project condition (a.k.a. no-action), the proposed action would not be constructed. The no-action alternative would result in continued seepage during flood conditions. Sands and silts would be carried under the levee, potentially causing sand boils. This can eventually lead to levee failure during a major flood event. Failure of the levee would result in property damage and could cause human injuries and/or loss of life.

## **2.2 ALTERNATIVE 2 – FILLING IN OF THE EXISTING DITCH ONLY**

The proposed project action for this alternative would involve filling existing ditches adjacent to the St. Francis River Levee to prevent seepage and sand boils within the ditch. Fill material would be obtained from a previously identified borrow location.

## **2.3 ALTERNATIVE 3 – LANDSIDE SEEPAGE BERMS ONLY**

This alternative involves constructing only landside berms along the St. Francis River Levee using fill material from a previously identified borrow location (Figure 4). This borrow location is approximately 160 acres currently in agricultural production located in the approximate middle portion of the proposed project location. Impacts to local roadways and the public use of those roads would also be expected, as haul trucks would be needed to transport the tons of material to the project site. Additionally, seepage berms themselves do not address local interior drainage requiring additional drainage work to be completed; therefore, although seepage concerns would be alleviated, flooding induced by lack of interior drainage would still occur.

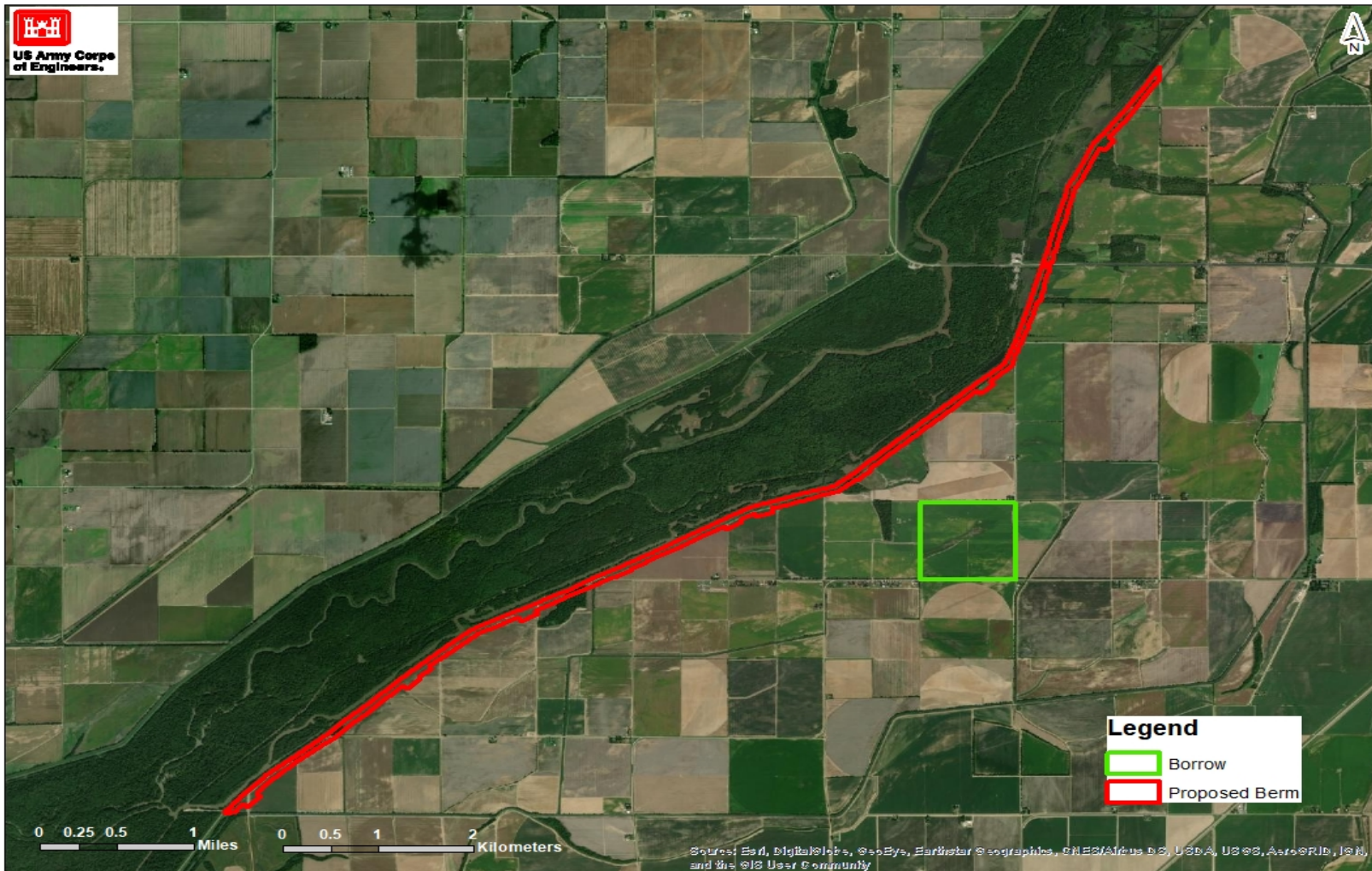
## **2.4 ALTERNATIVE 4 – LANDSIDE SEEPAGE BERMS AND FILLING IN OF THE EXISTING DITCHES**

Under this alternative, selected ditches would be filled to reduce landside seepage, via increasing back pressure. In areas where ditch fill alone would not generate a sufficient level of seepage reduction, berms varying in length and ranging between 150 and 300 feet would be constructed. The existing landside toe ditch would be re-created approximately 50 feet from the berm.

## **2.5 ALTERNATIVE 5 - IMPERVIOUS CUTOFF WALLS**

This alternative would involve constructing an impervious cutoff wall (slurry trench) riverside of the St. Francis River Levee to control seepage under the levee. Impervious cutoff walls would have to penetrate the entire aquifer to be effective and could potentially adversely impact groundwater recharge. An impervious cutoff wall was not considered feasible or economical due to the extreme depth to the base of the aquifer.





**Figure 4. Proposed borrow location for the proposed Below Kennett/DD 48 Seepage Remediation Project, Dunklin County, Missouri.**

## **2.6 ALTERNATIVE 6 – RELIEF WELLS**

Under this alternative, relief wells would be installed along the landside toe of the St. Francis River Levee. Additionally, existing ditches or excavation of new outlet ditches would likely be required to provide adequate drainage for seep water.

## **2.7 PREFERRED ALTERNATIVE FOR THE PROPOSED PROJECT**

After careful consideration of all alternatives, it was determined that Alternative 1 (no action) was unacceptable because of risks to human life and property. Alternative 2 (filling in existing ditches only) would create the least environmental impacts but would not generate the level of protection needed. Alternative 3 (landside seepage berms only) was not considered practical because building only the berms would not provide for interior drainage and would not alleviate the flooding problem from landside toe ditches. Alternative 4 (landside seepage berms and filling in of existing ditches) would lower the environmental impacts by reducing the widths of the required berms while providing the necessary level of protection. Therefore, Alternative 4 was selected as the preferred plan.

## **3.0 AFFECTED ENVIRONMENT**

### **3.0.1 ENVIRONMENTAL SETTING**

Within the project area, properties on the landside of the levee surrounding the proposed work sites are dominated by row crop agricultural production. However, in the batture (riverside of the levee), land is primarily occupied by bottomland hardwood forest and borrow pits previously used in levee construction. Tree species in the batture adjacent to the project areas generally consist of cottonwood, American elm, sugarberry, silver maple, hickory, sycamore, cypress, black willow and various types of oaks.

### **3.0.2 CLIMATE**

Dunklin County has a humid subtropical climate with cool winters and hot summers. Summertime high temperatures average in the 90s (degrees Fahrenheit), whereas the average wintertime lows are in the 30s (degrees Fahrenheit). The average annual precipitation is approximately 50 inches, generally spread out over the year.

### **3.0.3 GEOLOGY**

The study area is located on braided relict alluvial fan deposits. The material within these types of deposits generally consist of approximately 5 to 15 feet of clay with occasional layers of fine sand and silt.

The major soil association of the project area is of the Lilbourn fine sandy loam series with Sharkey silty clay. Lilbourn soils are somewhat poorly drained, nearly level soils on natural levees. The Sharkey series are deep, nearly level, poorly drained soils on slack-water flats. The

soils in the vicinity of the borrow pit are Lilbourn fine sandy loam and Dubbs-Silverdale, rarely flooded. Dubbs-Silverdale soils are deep, well-drained, nearly level soils on natural levees.

### **3.1 RELEVANT RESOURCES**

This section contains a description of relevant resources that could be impacted by the project. The important resources (Table 2) described in this section are those recognized 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. The following resources have been considered and found to not be affected under the alternative being considered: freshwater marshes, freshwater lakes, state-designated scenic streams, fisheries, municipal facilities, municipal utilities, roadways, recreation, aesthetics, socio-economic, and environmental justice.

#### **3.1.1 AGRICULTURAL LANDS**

##### Existing Conditions

The existing ditches proposed for modification, transect, and are adjacent to, agricultural fields currently in production. The U.S. Department of Agriculture Web Soil Survey (<https://websoilsurvey.nrcs.usda.gov/app/>) was utilized to determine if any prime farmland was noted within the proposed projects construction limits. The inquiry revealed that although some land in the vicinity of the proposed project is considered prime farmland, none has been noted within the proposed construction limits.

#### **3.1.2 WETLANDS**

##### Existing Conditions

Within the proposed project, ditches proposed to receive fill can be described as Waters of the United States, which due to groundwater influence, typically remain wet throughout the year.

#### **3.1.3 BOTTOMLAND HARDWOOD FORESTS**

##### Existing Conditions

Bottomland Hardwood Forest (BLH) is located predominantly in the batture (riverside of the levee). There are limited trees landside of the levee, primarily located alongside the ditch at the toe of the levee. Tree species in the batture and adjacent to the project areas generally consist of cottonwood, American elm, sugarberry, silver maple, hickory, sycamore, cypress, black willow and various types of oaks.

### 3.1.4 WILDLIFE

#### Existing Conditions

Wildlife species that could be expected to be found within or in the vicinity of the project area include coyotes, deer, raccoons, opossums, rabbits, gray and fox squirrels, muskrats, mice, rats, shrews, songbirds, turtles, snakes, amphibians, and other small animals typically found within the St. Francis River Basin.

### 3.1.5 THREATENED AND ENDANGERED SPECIES

#### Existing Conditions

According to results obtained from the U.S. Fish and Wildlife Service (USFWS), there are a total of three threatened, endangered, or candidate species that could potentially be found within the proposed project area. These species are the Indiana bat (*Myotis sodalis*), grey bat (*M. grisescens*), and northern long-eared bat (*M. septentrionalis*). Of these species, only the endangered Indiana bat and threatened northern long-eared bat would potentially utilize the forested habitat within the project areas. Grey bats are cave-dependent species, and caves are not found within the project area.

In the summer of 2018, USACE biologists conducted a site assessment of the proposed project areas. Scattered vegetation within the ditches proposed for modification was examined for the presence of suitable/potential habitat for the Indiana and northern long-eared bat. Dominant tree species include sugarberry, silver maple, hickory, and cottonwood; of which, some tree species were documented being larger than 3 inches diameter at breast height, although no evidence of suitable roost trees (snags or live trees with exfoliating bark, cracks, crevices, or hollows) were observed. Therefore, USACE contracted with outside biologists to conduct a mist-net bat survey following the USFWS 2018 Range-Wide Indiana Bat Summer Survey Guidelines. The results of the survey failed to identify the presence of the Indiana and northern long-eared bat. Furthermore, habitat within the proposed project area is not considered critical habitat by USFWS for any potential species.



**Table 2: Relevant Resources**

<b>Resource</b>	<b>Institutionally Important</b>	<b>Technically Important</b>	<b>Publicly Important</b>
<b>Agricultural Lands</b>	Food Security Act of 1985, as amended; the Farmland Protection Policy Act of 1981	The habitat provided for the provision or potential provision of human and livestock food products.	The present economic value or potential for future economic value.
<b>Wetlands</b>	Clean Water Act of 1977, as amended; Executive Order 11990 of 1977, Protection of Wetlands; Coastal Zone Management Act of 1972, as amended; Estuary Protection Act of 1968; Executive Order 11988; and Fish and Wildlife Coordination Act.	They provide necessary habitat for various species of plants, fish, and wildlife; they serve as ground water recharge areas; they provide storage areas for storm and flood waters; they serve as natural water filtration areas; they provide protection from wave action, erosion, and storm damage; and they provide various consumptive and non-consumptive recreational opportunities.	The high value the public places on the functions and values that wetlands provide. Environmental organizations and the public support the preservation of marshes.
<b>Bottomland Hardwood Forest</b>	Section 906 of the Water resources Development Act of 1986 and the Fish and Wildlife Coordination Act of 1958, as amended.	Provides necessary habitat for a variety of plant, fish, and wildlife species; it often provides a variety of wetland functions and values; it is an important source of lumber and other commercial forest products; and it provides various consumptive and non-consumptive recreational opportunities.	The high priority that the public places on its esthetic, recreational, and commercial value.
<b>Wildlife</b>	Fish and Wildlife Coordination Act of 1958, as amended and the Migratory Bird Treaty Act of 1918.	They are a critical element of many valuable aquatic and terrestrial habitats; they are an indicator of the health of various aquatic and terrestrial habitats; and many species are important commercial resources.	The high priority that the public places on their esthetic, recreational, and commercial value.
<b>Threatened and Endangered Species</b>	The Endangered Species Act of 1973, as amended; the Marine Mammal Protection Act of 1972; and the Bald Eagle Protection Act of 1940.	USACE, U.S. Fish and Wildlife Service, NRCS, U.S. Environmental Protection Agency, and Missouri Department of Natural Resources cooperate to protect these species. The status of such species provides an indication of the overall health of an ecosystem.	The public supports the preservation of rare or declining species and their habitats.
<b>Cultural Resources</b>	National Historic Preservation Act of 1966, as amended; the Native American Graves Protection and Repatriation Act of 1990; and the Archeological Resources Protection Act of 1979.	State and Federal agencies document and protect sites. Their association or linkage to past events, to historically important persons, and to design and construction values; and for their ability to yield important information about prehistory and history.	Preservation groups and private individuals support protection and enhancement of historical resources.

<b>Resource</b>	<b>Institutionally Important</b>	<b>Technically Important</b>	<b>Publicly Important</b>
<b>Air Quality</b>	Clean Air Act of 1963.	State and Federal agencies recognize the status of ambient air quality in relation to the National Ambient Air Quality Standards.	Virtually all citizens express a desire for clean air.
<b>Hydrology and Water Quality</b>	Clean Water Act of 1977, Fish and Wildlife Coordination Act.	State and federal agencies recognize value of fisheries and good water quality. The National and state standards are established to assess water quality.	Environmental organizations and the public support the preservation of water quality and fishery resources and the desire for clean drinking water.

### **3.1.6 CULTURAL RESOURCES**

The National Historic Preservation Act of 1966 (Public Law 89 80 655), as amended; NEPA of 1969 (Public Law 91-90), as amended; and other applicable laws and regulations require Federal agencies to take into account the effects of their undertaking on the environment and any significant cultural resources within the project area of the proposed undertaking, as well as its area of potential effect (APE). Typically, these studies require archival searches and field surveys to identify any cultural resources. When significant sites are recorded, efforts are made to minimize adverse effects and preserve the site(s) in place. If any significant sites cannot be avoided and would be adversely impacted, an appropriate mitigation plan would be implemented to recover data that would be otherwise lost due to the undertaking.

#### Existing Conditions

A literature review and cultural resources survey within the project's APE was completed by the MVM archaeologist in the summer of 2020. The investigation revealed no identified cultural resources within the proposed project footprint. Furthermore, the proposed borrow area was surveyed with no identified cultural resources within the proposed footprint.

### **3.1.7 AIR QUALITY**

#### Existing Conditions

The proposed project area is in attainment for all air quality standards. Since the equipment to be used is a mobile source, the project is exempt from air quality permitting requirements. Although air emissions would not require a permit, best management practices shall be used throughout the construction to minimize air pollution.

### **3.1.8 HYDROLOGY AND WATER QUALITY**

#### Existing Conditions

Within the project areas, the numerous ditches along the levee toe typically remain wet through the year with all ditches draining adjacent agricultural fields. Water flow within the existing ditches and waterways within the proposed project area is dependent on heavy rainfall, groundwater, and seepage under the levee from the adjacent St. Francis River

## **4.0 ENVIRONMENTAL CONSEQUENCES**

### **4.1 AGRICULTURAL LANDS**

#### Future Conditions with No Action

Without implementation of the proposed actions, agricultural lands (including prime and unique farmland) within the project vicinity are expected to remain as noted in Existing Conditions, provided that the adjacent levee remains stable. However, continued seepage can lead to a levee

failure during a major flood event. Floodwaters could negatively impact existing agricultural lands through erosion and excess deposition of sand and gravel.

#### Future Conditions with the Proposed Action

With implementation of the proposed actions, agricultural lands (including prime and unique farmland) within the project area would be expected to be provided the authorized level of protection as described in the 1973 EIS.

### **4.2 WETLANDS**

#### Future Conditions with No Action

Without implementation of the proposed actions, wetland habitats within the project area are expected to remain as noted in Existing Conditions, provided the adjacent levee remains stable. However, continued seepage can lead to a levee failure during a major flood event. Floodwaters could negatively impact wetlands within the project area through erosion and excess deposition of sand and gravel.

#### Future Conditions with the Proposed Action

With implementation of the proposed actions, approximately 6.75 acres of farmed wetlands are anticipated to be impacted by the placement of fill material. However, it is anticipated that post-construction, wetland characteristics within the newly constructed ditches would likely replicate that of the impacted ditches. In addition to the ditches, a grass “farm road” would be established on the right hand (landward) side of the ditches allowing farmers access to their land. Farmed wetland impacts would be mitigated during project construction on a 1:1 basis.

### **4.3 BOTTOMLAND HARDWOOD FORESTS**

#### Future Conditions with No Action

Without implementation of the proposed actions, BLH habitats within the project area are expected to remain as noted in Existing Conditions, provided the adjacent levee remains stable. However, continued seepage can lead to a levee failure during a major flood event removing many of the BLH located adjacent to the levee. Floodwaters could negatively impact BLH within the project area through erosion and excess deposition of sand and gravel.

#### Future Conditions with the Proposed Action

With implementation of the proposed action, approximately 20 acres of BLH would be cleared during filling of existing ditches and seepage berm construction. These unavoidable project related impacts would be mitigated during project construction on a 3:1 basis.



## **4.4 WILDLIFE**

### Future Conditions with No Action

Without implementation of the proposed actions, wildlife resources within the project area are expected to remain as noted in Existing Conditions.

### Future Conditions with the Proposed Action

With implementation of the proposed actions, wildlife resources within the project footprints are not anticipated to be impacted by the clearing of scattered vegetation within the project area ditches. However, disturbance and noise from the construction equipment would temporarily disperse wildlife species from the project area. Once the project is completed, wildlife species would be expected to return to the project area. The minor habitat loss and temporary disturbance would not adversely impact the general populations of wildlife species within the region, as extensive forested areas and suitable habitat is readily available within the vicinity of the project area, specifically riverside of the levee. The removal of 20 acres of trees would eliminate habitat for wildlife; however, the area on the riverside of the levee consists primarily of forested habitat. Therefore it is likely that displaced organisms would successfully relocate to those areas.

## **4.5 THREATENED AND ENDANGERED SPECIES**

### Future Conditions with No Action

Without implementation of the proposed action, threatened and endangered species within the project area are expected to remain as noted in Existing Conditions.

### Future Conditions with the Proposed Action

Based on the project and surveys of the project areas, USACE has determined the proposed project would have no effect on threatened or endangered species (concurrence on 30 November 2018). Additionally, no evidence of bald eagles, or their nests, were observed at any project location. The bald eagle is no longer listed as a threatened species, but is still protected by the Bald and Golden Eagle Act and the Migratory Bird Treaty Act.

## **4.6 CULTURAL RESOURCES**

### Future Conditions with No Action

Without implementation of the proposed action, any potential cultural resources are expected to remain as noted in Existing Conditions. However, continued seepage can lead to a levee failure during a major flood event, potentially impacting cultural resources.

#### Future Conditions with the Proposed Action

With implementation of the proposed actions, no impacts to cultural resources are anticipated as there are no historic properties listed or determined eligible for inclusion in the National Register for Historic Places. However, should an inadvertent discovery be made during construction, the resource would be evaluated, assessed for effects, avoided if possible, or mitigated if unavoidable in accordance with Federal statutes and regulations (36 CFR, Part 800).

### **4.7 AIR QUALITY**

#### Future Conditions with No Action

Without implementation of the proposed action, no changes in air quality would occur.

#### Future Conditions with the Proposed Action

With implementation of the proposed action, project-related equipment would produce small amounts of engine exhaust during construction activities. The temporary, minor impacts to air quality would be localized to the project area and would not affect area residents. The project area would still be in attainment for all air quality standards. Since the equipment to be used is a mobile source, the project is exempt from air quality permitting requirements. Although air emissions would not require a permit, best management practices shall be used throughout the construction to minimize air pollution.

### **4.8 HYDROLOGY AND WATER QUALITY**

#### Future Conditions with No Action

Without implementation of the proposed action, hydrology and water quality within the project area would be noted as in Existing Conditions. However, in the event of a levee failure, due to seepage or overtopping, the impacts to water quality could be significant.

#### Future Conditions with the Proposed Action

With implementation of the proposed action, hydrology riverside of the levee is expected to remain as noted in Existing Conditions. Impacts to water quality within the St. Francis River would be minimal or have no effect, as the river normally carries a heavy sediment load and the project action would be conducted during dry or low water periods. Modifying the existing drainage ditches would increase their discharge capacity, allowing them to handle in excess of 100-year flood events. The project would have only minor impacts on water quality to adjacent areas. Turbidity and suspended solids would be increased to minor degrees as a result of runoff from cleared areas. However, best management practices (*e.g.*, silt fences, seeding) would be employed throughout construction to minimize impacts. Any temporary impacts to water quality would be anticipated to return to normal shortly after construction ceases. Thus, no significant impacts to water quality would occur as a result of the proposed project.

## **4.9 HAZARDOUS, TOXIC, AND RADIOACTIVE WASTE**

The USACE is obligated under ER 1165-2-132 to assume responsibility for the reasonable identification and evaluation of all Hazardous, Toxic, and Radioactive Waste (HTRW) contamination within the vicinity of proposed actions. ER 1165-2-132 identifies that HTRW policy is to avoid the use of project funds for HTRW removal and remediation activities. A record search has been conducted of the Environmental Protection Agency's (EPA) EnviroMapper for Envirofacts web site (<https://www.epa.gov/emefdata/em4ef.home>). The website was checked for any superfund sites, toxic releases, or hazardous waste sites within the proposed project area. Additionally, a site inspection of the proposed project area was conducted by USACE personnel during the summer of 2018. The environmental record search and site survey conducted did not identify the presence of any hazardous or suspected hazardous wastes in the project area. As a result of these assessment, it was concluded that the probability of encountering HTRW for the proposed action is minimal. If any hazardous waste/substance is encountered during construction activities, the proper handling and disposal of these materials would be coordinated with the Missouri Department of Environmental Quality, EPA, and other applicable agencies.

## **4.10 CUMULATIVE IMPACTS**

The CEQ regulations (40 CFR 1500-1508) implementing the procedural provisions of the NEPA of 1969, as amended (42 U.S.C. 4321 et seq.) define cumulative effects as “the impact on the environment which results from the incremental impact of the action when added to other past, present, or reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions (40 CFR 1508.7)”. Cumulative Effects can result from individually minor but collectively significant actions taking place over a period of time.”

A similar seepage remediation project (Below Senath) was the subject of a previous EA in January 2019. Below Senath is located in Dunklin County, Missouri in the vicinity of Senath, Missouri. For this particular project, one 300-foot section of a main ditch was filled and two adjacent wet weather conveyances were re-directed over a swale to drain into the main ditch.

Another similar seepage project (Below Piggott and Big Island Seepage Remediation Project, Clay and Green Counties, Arkansas) was the subject of a previous EA in 2020 with a FONSI signed on 26 March 2020 (<https://www.mvm.usace.army.mil/About/Offices/Regulatory/Public-Notices/>). The Below Piggott portion of that project is located along the right descending bank of the St. Francis River, across the river from this proposed project. For this project, a 150 – 300 foot wide landside berm would be constructed at the toe of the existing levee, existing drainage would be modified/re-routed, and creating a landside toe ditch approximately 170 feet from the newly constructed levee toe.

Below Senath, Below Piggott and Big Island, and Below Kennett/DD48 projects are located in rural, agricultural fields adjacent to the St. Francis River. Any water quality or hydrologic impacts would be temporary in nature and would occur during construction. All post-project hydrology would be similar to pre-project hydrology. The temporary, minor impacts to air

quality would be localized to the project area and would not affect area residents. The project area would still be in attainment for all air quality standards. Agricultural land within all of the proposed berm footprints would be impacted by permanent easements prohibiting farming activities on the berms. These berms would be required to be maintained in grasses and forbs. With the removal of lands from agricultural production a slight improvement in overall water quality in the region may be seen. Any unavoidable impacts to wetlands would be mitigated. The Below Senath project did not require mitigation and compensatory mitigation was acquired to offset unavoidable impacts to the Below Piggott and Big Island project. Wildlife impacts would be minimal throughout all proposed project areas as the interior wooded batture of the St. Francis would not be disturbed.

Therefore, the analysis set forth in this report indicates that no significant beneficial or adverse impacts to the various resources within the project area are anticipated under either the future with-project conditions scenarios, or the future without-project conditions scenario; therefore, the proposed action, coupled with other known proposed projects, are not expected to result in significant cumulative impacts. The three prior approved projects would, in addition to the current project, provide for the continued integrated protection of lands in this part of the St. Francis River Levee system.

## **5.0 COORDINATION**

Preparation of this draft EA, draft FONSI, and 404(b)(1) is being coordinated with appropriate Congressional, Federal, state, and local interests, as well as environmental groups and other interested parties. The following agencies have received copies of this EA and draft FONSI: USFWS, U.S. Environmental Protection Agency, Missouri Department of Environmental Quality, Missouri Department of Conservation, federally recognized tribes, and other interested parties.

## **6.0 MITIGATION**

With the implementation of the proposed project, approximately 20.0 acres of bottomland hardwood (BLH) and 6.75 acres of Waters of the U.S. (farmed wetlands) are anticipated to be impacted. The farmed wetland impacts would be mitigated at a 1:1 ratio with the 20 acres of BLH impacts mitigated at a 3:1 ratio for a total of 66.75 acres of BLH restoration required. Several properties have been suggested for mitigation totaling approximately 180 acres (Figure 5). These properties are in the final stages of purchase with mitigation plans to be developed in the near future with input from an interagency team composed of members from MVM, U.S. Fish and Wildlife Service, U.S. Environmental Agency, U.S. Department of Agriculture Natural Resource Conservation Service, Missouri Department of Natural Resources, Missouri Department of Conservation, and any other interested parties. Excess mitigation from properties identified for this project would be applied to the mitigation currently outstanding for the St. Francis River (MO) after project completion.



## **7.0 COMPLIANCE WITH ENVIRONMENTAL LAWS AND REGULATIONS**

Environmental compliance for the proposed action would be achieved upon coordination of this draft EA, draft FONSI, and 404(b)(1) evaluation with appropriate agencies, organizations, and individuals for their review and comments on the impact analysis documented in this draft EA. The draft FONSI will not be signed until the proposed action achieves environmental compliance with applicable laws and regulations.

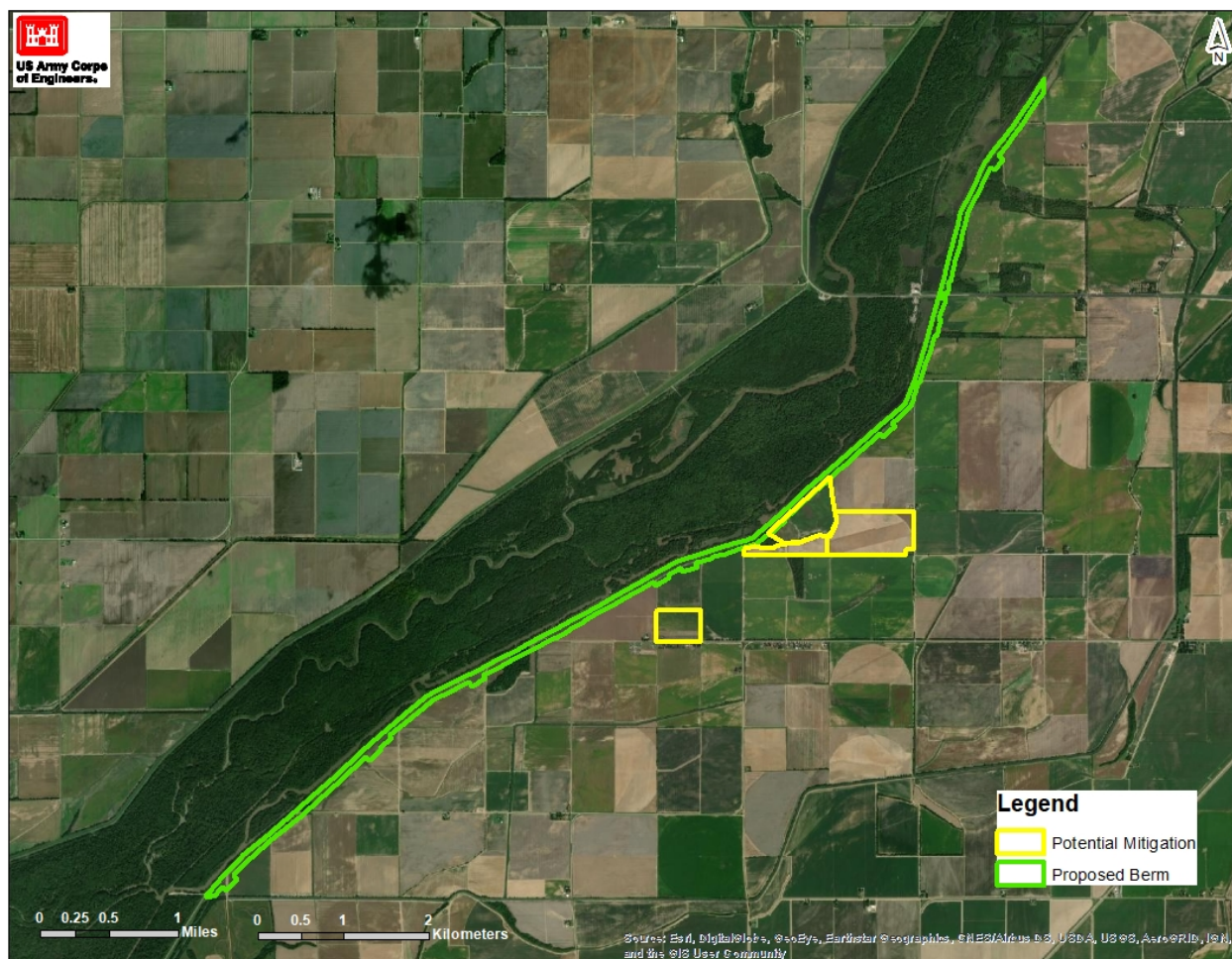
### **7.1 THREATENED AND ENDANGERED SPECIES**

In the summer of 2018, the proposed project area was surveyed using mist netting in accordance with the USFWS 2018 Range-Wide Indiana Bat Summer Survey Guidelines. No listed species were captured during the survey period. USACE has determined that project activities will not effect listed bat species due to the probable absence of listed bat species, with tree clearing proceeding with no restriction dates. The USFWS concurred with this determination 30 November 2018. Any potential roost trees would be avoided to the extent practicable, especially in areas where complete clearing is not necessary. Removal of vegetation outside peak breeding seasons to help protect bird species would also enforced, to the extent practicable.

### **7.2 CULTURAL RESOURCES**

A literature review and cultural resources survey within the Project's Area-of-Potential-Effect (APE), including the proposed borrow locations, were completed by the MVM archaeologist in the summer of 2018. The proposed project APE was previously cleared during construction of the St. Francis River Levee. Field surveys of potential borrow locations not previously surveyed were conducted in the summer of 2019 with results coordinated with the Arkansas and Missouri State Historic Property Office.

No significant cultural resources were identified within the proposed projects APE. No additional cultural resources investigations are recommended prior to project implementation. However, should inadvertent discovery be made during construction, the resource would be evaluated, assessed for effects, avoided if possible, and mitigated in accordance with Federal statutes and regulations (36 CFR, Part 800).



**Figure 5. Potential Mitigation for the Below Kennett/DD 48 project, Dunklin County, Missouri.**

## **8.0 CONCLUSION**

The proposed work involves implementing seepage control measures along the St. Francis River Levee. Project features consist of modifying/re-routing existing drainage, placement of borrow material into existing toe drainage ditches, and placement of culverts in existing ditches. A total of 6.75 acres of farmed wetlands and 20.0 acres of BLH are anticipated to be impacted by the proposed projects. The mitigation for the unavoidable impacts is 66.75 acres of BLH restoration and be mitigated concurrent with construction.

This office has assessed the environmental impacts of the proposed action and has determined that the proposed action is expected to have only minor impacts on agricultural lands, wildlife, air quality, and hydrology and water quality. Impacts to wildlife, air quality, and hydrology and water quality would be temporary, and would be expected to return to existing conditions after completion of the project action. The proposed project would have no significant impacts on the following resources: wetlands, terrestrial resources, bottomland hardwood forests, wildlife, threatened and endangered species, cultural resources, aesthetics, socio-economic resources, environmental justice, air quality, or hydrology and water quality. It was also determined that

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the risk of encountering hazardous, toxic, and radioactive waste is low. Therefore, a supplemental EIS is not required.

## **9.0 PREPARED BY**

This draft EA and associated draft FONSI and 404(b)(1) evaluation was prepared by Kevin Pigott, USACE biologist, with cultural resources information provided by Pamela Lieb, USACE District Archaeologist. The address of the preparers is: U.S. Army Corps of Engineers, Memphis District, Regional Planning Division South, Environmental Compliance Branch, 167 North Main St., B-202, Memphis, TN 38103-1894.

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