

404(b)(1) EVALUATION
St. Francis Basin Construction
Below Piggott and Big Island Seepage Remediation
Clay and Greene Counties, Arkansas

I. Project Description

a. Location

The proposed project involves implementing two seepage control measures along the St. Francis Levee in Clay and Greene counties, Arkansas. Project features include the construction of landside berms and modification of existing ditches to accommodate drainage (Figures 1 - 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 both proposed projects.

b. General Description

- 1) The proposed project involves implementing seepage control measures along the St. Francis Levee in Clay and Greene Counties, Arkansas.

- a) Below Piggott

The proposed project reach/area is approximately 9.5 miles long, extending from just north of U.S. Highway 90 south along the existing St. Francis River levee. Proposed berms would be between approximately 150 – 300 feet wide, depending on location. However, berms would not be required along the entirety of the 9.5-mile project reach, as seepage concerns in some areas would be addressed through ditch modification or creation. Throughout the 9.5 mile project reach, existing ditches would be filled and new ditches constructed approximately 170 feet from the existing levee toe (Figure 1).

Approximately 1,032,000 cubic yards of spoil material from previous maintenance activities on the St. Francis River would be utilized for borrow material (Below Highway 90 Channel Maintenance Cleanout). However, approximately 0.2 acres of trees would be required to be cleared to establish access to the borrow source. This clearing is added to the overall project mitigation requirements. The borrow area identified is riverside of the proposed project area.

- b) Big Island

The proposed project reach/area is approximately 2.5 miles long, extending from U.S. Highway 412 south along the existing Big Slough levee. Two berms, approximately 2,500 and 1,000 feet long and

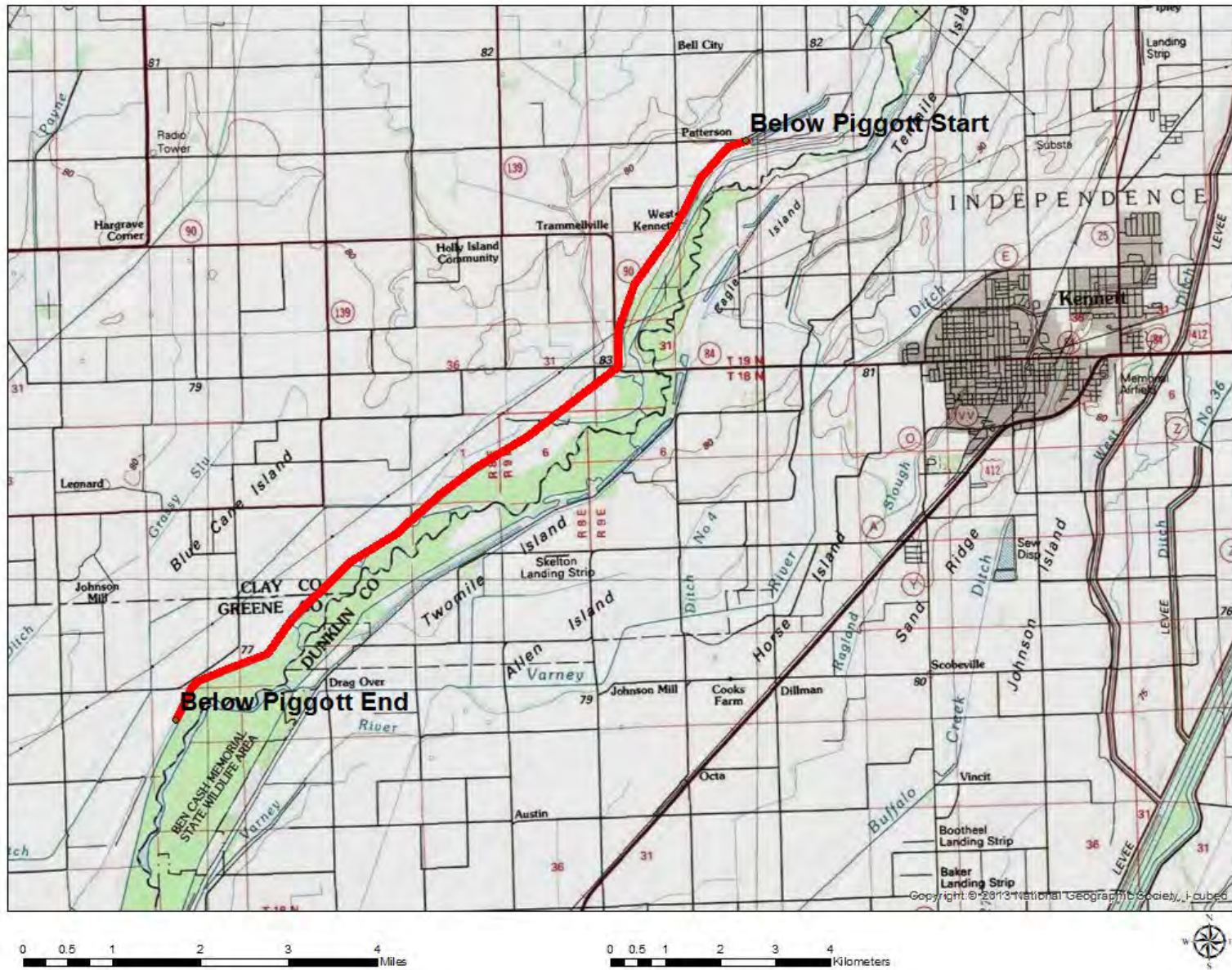


Figure 1. Location of Proposed Below Piggott Seepage Remediation Project, Clay and Greene County, Arkansas.

approximately 150 feet wide, are proposed. As the case with the Below Piggott reach, existing ditches would be filled and new ditches constructed (Figure 2). Borrow is proposed to be obtained from a 40-acre cleared agricultural field riverside of the existing levee approximately 1.5 miles south of project reach/area. However, unlike the Below Piggott portion, proposed work at Big Island would be split into two phases. Phase I would consist of the major portion of the 2,500-foot berm (the approximate lower half of the project reach) and would be truncated at the property line of the downstream landowner. Additionally, to preserve current hydrology, Phase I would be designed to receive existing runoff, as well as anticipated runoff from Phase II work to the north, which would consist of the remaining 1.25 miles of the project reach. Upon completion of construction activities, the levee would be re-graveled from the borrow location north to Highway 412. Please note that finalized design plans for Phase II are not yet complete, but contain enough details to calculate potential environmental impacts. Anticipated impacts based on Phase II preliminary designs have been estimated and accounted for in this EA's impact assessment and mitigation recommendations. If the Phase II design changes significantly from current design or requires additional mitigation, this EA will be updated to reflect the new design and mitigation requirements and re-submitted for public review.

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). Berms would be approximately 150 feet wide. Berms would be reduced in width and/or thickness at County or State road crossings to avoid costly modifications to the existing roadways. Existing landside drainage ditches running parallel to the landside toe would be filled. Interior drainage would be re-created by constructing new ditches approximately 170 feet away from the levee toe. The proposed ditches would be maintained as shallow as possible and still provide adequate drainage as required.

Borrow for the Below Piggott project would be obtained from previous maintenance activities on the St. Francis River (Below Highway 90 Channel Cleanout) riverside of the proposed project location. Borrow for the Big Island project would be obtained from a 40-acre cleared agricultural field riverside of the existing levee approximately 1.5 miles south of the project area/reach.

Access to the project areas would be via State/County and levee roads

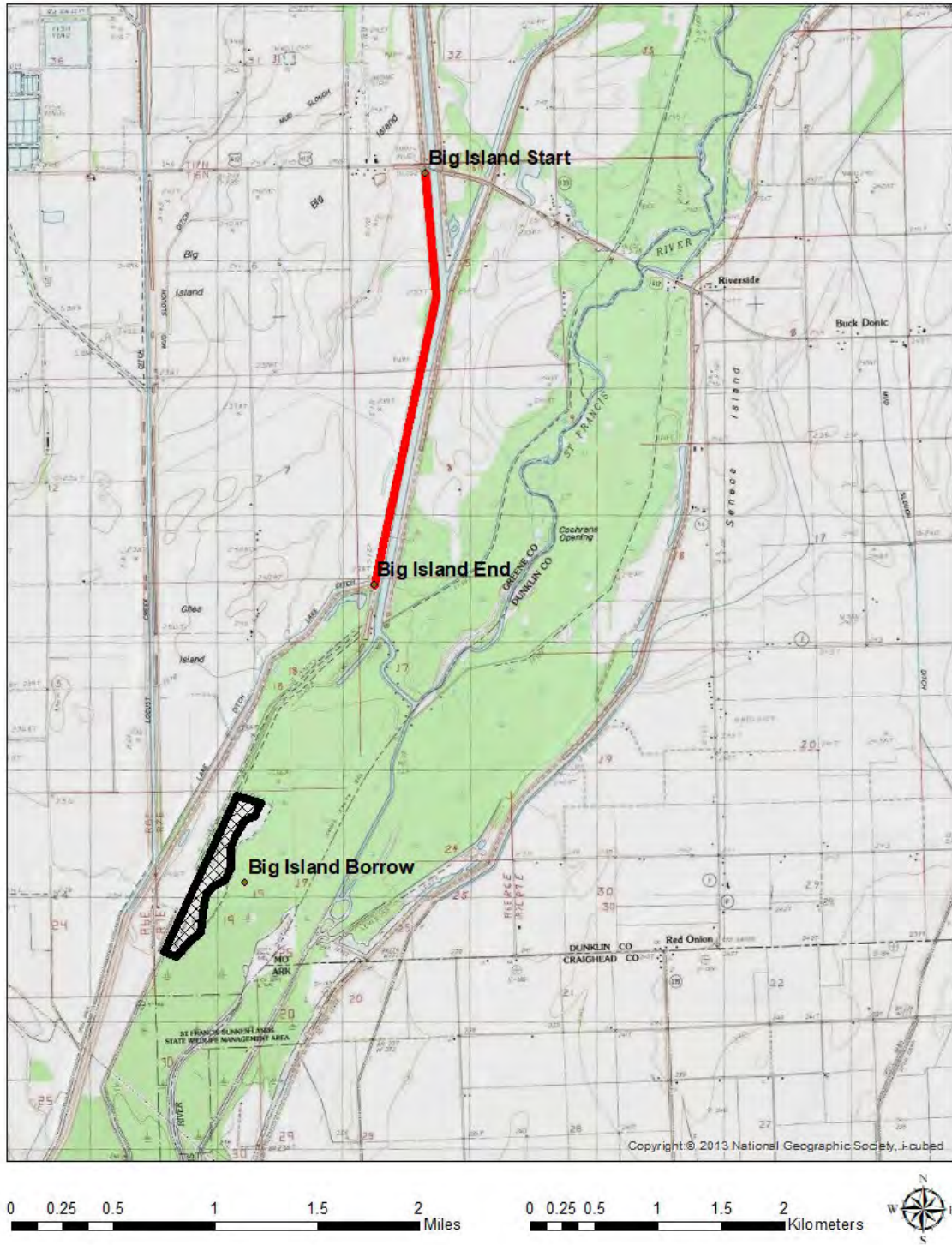


Figure 2. Location of Proposed Big Island Seepage Remediation, Greene County, Arkansas.

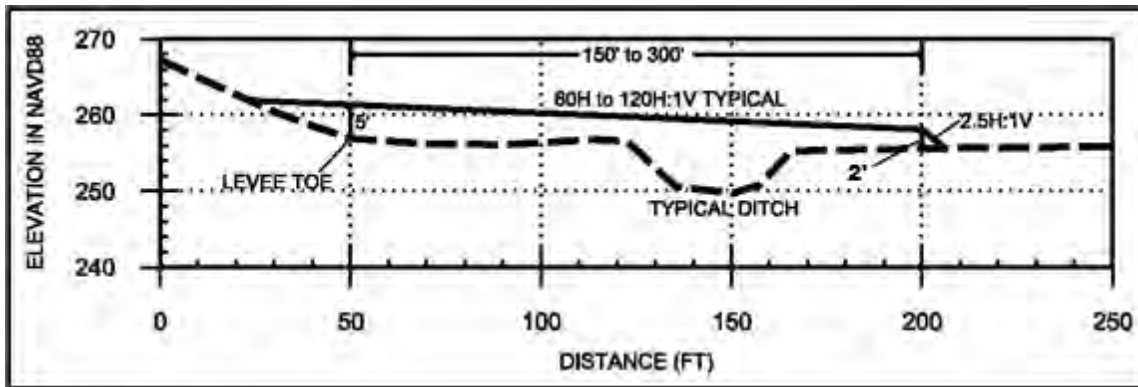


Figure 3. Typical proposed landside berm for the Proposed Below Kennett/DD 48 Seepage Remediation Project, Dunklin County, MO.

c. Authority and Purpose

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, 17 May 1950, 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.

d. General Description of Dredged or Fill Material

1) General Characteristics of Material

Riprap – All ditches would have R-200 riprap placed 5 feet upstream and 10 feet downstream of any culverts. All riprap would be placed in 2-foot thickness and extend continuously from one side slope to the other side slope.

Backfill –Excavated material from borrow location(s) would be placed in a 150-foot wide continuous, semi-pervious landside berm. All berms would be approximately 5 feet in thickness at the levee toe, sloping to approximately 2.5 feet at the berm toe. Approximately 1,137,855 cubic yards of material would be required.

2) Quantity of Material

Riprap – Approximately 500 tons of R-90, R-200, and R-400 riprap (each) would be needed for the estimated 26 culverts draining associated fields (7 for Big Island), weirs, or reinforced pipe locations.

Backfill – Approximately 1,137,855 cubic yards would be required for project construction with approximately 105,855 cubic yards for the proposed Big Island project with the remainder from the proposed Below Piggott project.

- 3) Source of Material – The riprap and associated silt fencing and other site protection measures would be provided from commercial sources. The backfill would be obtained from an appropriate borrow area. Borrow for the Below Piggott project would be obtained from previous maintenance activities on the St. Francis River (Below Highway 90 Channel Cleanout) riverside of the proposed project location. Borrow for the Big Island project would be obtained from a 40-acre cleared agricultural field riverside of the existing levee approximately 1.5 miles south of the project area/reach

e. Description of the Proposed Discharge Site(s)

- 1) Location – The project area is in Clay and Greene Counties, Arkansas and would drain via re-created ditches towards the St. Francis River; the same drainage layout would be kept with ditches at the toe of the constructed seepage berm. All construction would be conducted landside of the St. Francis River, a permanent waterbody.
- 2) Size – The St. Francis River levee provides flood protection from near Nimmons, Arkansas to the Bear Island area near Marmaduke, Arkansas (Below Piggott) and from Big Slough Ditch to the Big Island area near Paragould, Arkansas (Big Island). Approximately 850 acres are drained by the two proposed projects with flow eventually returning to the St. Francis River.
- 3) Type(s) of Habitat – Available in-stream habitat is sparse throughout the project area as there are few trees along the existing ditches to provide any allochthonous input. The ditch sediment load consists of agricultural and rain run-off and very little stable habitat. The immediate riparian zone is dominated by grasses, weed species, and agricultural lands with no trees or shrubs. There are some woody vegetated areas along the existing levee toe that would be removed during berm construction. Outside the immediate vicinity of the ditches, the surrounding area is dominated by land in row crop production.
- 4) Timing and Duration of Discharge – Construction is scheduled to commence fully for Below Piggott and on Phase I for Big Island in the immediate future. Construction would take place as soon as possible, but every effort would be made to construct during periods of low water and dry conditions. Best management practices would be applied. Big Island Phase II would be constructed at a later date, but Phase II is included in this document and associated environmental documents.

f. Description of Disposal Method

Approximately 64,000 cubic yards (Below Piggott) and 11,000 cubic yards (Big Island) would be excavated during ditch work and approximately 6.7 acres of bottomland hardwood (BLH) would be cleared along the levee toe to allow for berm construction and equipment access for all phases of construction for both projects. Minimal amounts of excavation of the ditch channel bottom would be

necessary to create the suitable slope and drainage flows required during construction. Construction would take place during periods of low water.

II. Factual Determinations

a. Physical Substrate Determinations

- 1) Substrate Elevation and Slope – Slopes not steeper than 3H:1V would be created to re-route drainage away from the levee toe. R-200 riprap would be utilized at culvert locations for erosion protection.
- 2) Sediment Type – The majority of the proposed Below Piggott project is composed of either Sharkey-Dundee-Dubbs-Bosket or Falaya soil series. Kobel-Commerce soils comprise the lower portion of Below Piggott and the entirety of the proposed Big Island project. These soils are somewhat poorly drained and occur mostly as narrow strips that parallel levees where soil material has been excavated for use in constructing the levee.
- 3) Dredged/Fill Material Movement – Material would be excavated from the proposed borrow areas and deposited adjacent to the levee to create the appropriate berm section along the levee toe.
- 4) Physical Effects on Benthos – Excavation of sediment to replace culverts would have a minimal impact on benthos. Benthic communities would return to pre-existing conditions shortly after project completion. Benthic communities in the existing toe ditches would be negatively impacted by the filling in of the toe ditches but would be expected to re-colonize the created drainage ditches.
- 5) Other Effects – not applicable.
- 6) Actions Taken to Minimize Impacts - The following actions would be implemented during construction to minimize impacts:
 - The recommended plan is the least environmentally damaging plan that is economically feasible.
 - Effective erosion control would be in place prior to construction and maintained throughout the construction period.
 - Construction would take place during periods of low rainfall and low water stages.
 - Discharge material would be clean and free of pollutants, contaminants, toxic materials, hazardous substances, waste metal, construction debris and trash, and other wastes.
 - Vegetation to be cleared would be the minimum necessary to allow for construction access.

- All disturbed areas would be seeded within 30 days after construction is completed.
- Heavy equipment shall be kept out of free flowing water.
- Construction debris would be kept from entering the ditch channel and shall be disposed of properly.
- Appropriate steps shall be taken to ensure that petroleum products or other chemical pollutants are prevented from entering the water.

b. Water Circulation, Fluctuation, and Salinity Determinations

- 1) Water. No change in water quality is expected due to this project.
 - a) Salinity – not applicable.
 - b) Water Chemistry – There would be no significant effects on water chemistry. However, a slight increase in water quality may occur due to buffer strips that will be planted alongside ditch right-of-ways.
 - c) Clarity – There would be limited disturbances to water clarity during construction due to minor increases in suspended particulates and turbidity levels. Water clarity is expected to return to pre-construction levels shortly after construction is completed.
 - d) Color – Water color is not expected to change significantly.
 - e) Odor – Odor of the water is not expected to change significantly.
 - f) Taste – The taste of the water is not expected to change significantly.
 - g) Dissolved Gas Levels – Dissolved gas levels are not expected to change significantly.
 - h) Nutrients – Nutrients are not expected to change significantly.
 - i) Eutrophication – No significant changes to eutrophication rates are expected from the discharge. There may be a slight decrease in eutrophication due to buffer strips that will be planted alongside ditch right-of-ways.
 - j) Others - not applicable.
- 2) Current Patterns and Circulation
 - a) Current Patterns and Flow – Current patterns and flows are not expected to be altered. Post-construction drainage will be similar to pre-existing

conditions except for flow will be directed away from the levee instead of flowing along the levee toe before entering downstream drainage ditches.

- b) Velocity – Water velocity is not expected to be affected. Average and low-flow conditions would not be affected.
 - c) Stratification – No significant changes to stratification are expected from project construction.
 - d) Hydrologic Regime – No significant changes to the hydraulic regime are expected. Post-construction hydrology of the project area will be similar to pre-existing conditions.
- 3) Normal Water Level Fluctuations – The existing water levels in the ditches are determined by rainfall and channel capacity. Some enlargement of existing ditches and is mentioned previously in this document with the storage capacity within the ditches to remain the same. Water level fluctuations would remain the same.
- 4) Salinity Gradients – not applicable.

Actions Taken to Minimize Impacts – Actions that would be implemented during construction to minimize impacts have been previously described in the Factual Determinations section above.

c. Suspended Particulate/Turbidity Determinations

- 1) Expected Changes in Suspended Particulates and Turbidity Levels in Vicinity of Disposal Site – Minor increases in suspended particulates and turbidity levels are expected during construction. Best management practices would be used throughout the construction process to minimize the impact. Ambient conditions are expected to return shortly after completion of construction.
- 2) Effects on Chemical and Physical Properties of the Water Column
- a) Light Penetration – Minor impacts are expected to light penetration due to an expected increase in turbidity levels during construction. Ambient conditions are expected to return shortly after completion of construction.
 - b) Dissolved Oxygen – No change is expected due to the shallow water depth and minimal currents.
 - c) Toxic Metals and Organics – No effect on toxic metals and organics are expected.
 - d) Pathogens – not applicable.

Aesthetics – Aesthetics would be temporarily impacted during construction due to the presence of construction equipment.

e) Others as Appropriate – None noted.

3) Effects on Biota

- a) Primary Production – Aquatic vegetation is limited within the existing ditches. The proposed work should have little effect on primary production after the banks revegetate.
- b) Suspension/Filter Feeders – Increased turbidity would be of short duration, and any organisms that are impacted should repopulate the area after project completion.
- c) Sight Feeders – Most of the ditches are ephemeral in nature and do not sustain native populations of fishes. However, resident fish present are adapted to turbidity increases that occur after every rainstorm. Project-related turbidity increases would be minor compared to these natural events. Since fish and other sight feeder are highly mobile, project impacts to sight-feeding organisms would be insignificant and short term.
- d) Actions taken to Minimize Impacts – Actions that would be implemented during construction to minimize impacts have been previously described in the Factual Determinations section above.

d. Contaminant Determinations – It is not expected that any contaminants would be introduced or translocated due to construction. A hazardous, toxic, and radioactive waste survey has been conducted on the area. No potential sources of contamination were found. The discharge material would be clean and free of pollution. No testing of the discharge material is warranted.

e. Aquatic Ecosystem and Organism Determinations

- 1) Effects on Plankton – Effect, if any, on plankton communities are expected to be insignificant and of short duration.
- 2) Effects on Benthos – There is an expected negative impact on benthic organisms from the filled in ditch, but these organisms are expected to re-populate the newly constructed stream with no overall impact expected to the benthic community.
- 3) Effects on Nekton – Nekton would be temporarily displaced during construction, but would return shortly after project completion. These organisms would expect similar impacts as those indicated for the benthic organisms.
- 4) Effects on Aquatic Food Web – Temporary reductions in benthic and suspension/filter communities should not significantly impact the aquatic food

web during construction. These organisms would quickly recolonize the area after construction.

5) Effects on Special Aquatic Sites

- a) Sanctuaries and Refuges – not applicable.
- b) Wetlands – Approximately 6.7 acres of BLH and 19.8 acres of farmed wetlands would be impacted by both project construction activities. At a minimum, a 3:1 ratio (20.1 acres) would be used to offset BLH impacts and a 1:1 ratio (19.8 acres) would be used to offset farmed wetland impacts for a total of 39.9 acres required to fully mitigate both projects. Several properties have been suggested for mitigation and would provide sufficient acreage to meet mitigation requirements. A mitigation team consisting of members from USFWS, U.S. Environmental Protection Agency, Arkansas Department of Environmental Quality, Arkansas Department of Game and Fish has reviewed the properties and have deemed the properties to be suitable for mitigation. However, final fee purchase of the proposed mitigation property has not been completed, so a mitigation plan has not been finalized. This mitigation plan would be finalized with input from all team members and implemented concurrently with these project's construction.
- c) Mud Flats – not applicable.
- d) Vegetated Shallows – not applicable.
- e) Coral Reefs – not applicable.
- f) Riffle and Pool Complexes – not applicable.

6) Threatened and Endangered Species – The endangered Indiana bat and threatened northern long-eared bat would potentially utilize the forested habitat adjacent to the project area. Site assessments of the proposed project area were performed during the summer/fall of 2018 and concluded that no evidence of suitable roost trees were present within the project location. Additionally, no evidence of bald eagles, or their nests, were observed at any project location. No federally threatened or endangered aquatic organisms, including freshwater mussels have been collected or observed in the vicinity of the project. Therefore, USACE has determined that the proposed project would have no effect on any threatened or endangered species nor their critical habitats. The U.S. Fish and Wildlife Service concurred with the no effect determination regarding federally listed threatened or endangered species on November 30, 2018.

7) Other Wildlife – Terrestrial wildlife would be minimally impacted during construction activities, but should return to pre-construction levels after construction is completed.

8) Actions Taken to Minimize Impacts – Actions that would be implemented during construction to minimize impacts have been previously described in the Factual Determinations section above, chiefly construction would occur in low-flow periods and impact areas would be limited to the extent necessary for construction.

f. Proposed Disposal Site Determinations

1) Mixing Zone Determinations – not applicable.

2) Determination of Compliance with Applicable Water Quality Standards – A state water quality certification is being requested from the State of Arkansas, Department of Environmental Quality as part of this application process.

3) Potential Effects on Human Use Characteristic

a) Municipal and Private Water Supply – not applicable.

b) Recreational and Commercial Fisheries – not applicable.

c) Water Related Recreation – not applicable.

d) Aesthetics – Any construction activities would have minimal impacts to the aesthetics of the area.

e) Parks, National and Historical Monuments, National Seashores, Wilderness Areas, Research Sites, and Similar Preserves – Ben Cash Memorial Conservation Area is located just to the south of the proposed Below Piggott project. No work is proposed for this area and no project related impacts to this conservation area is expected.

g. Determination of Cumulative Effects on the Aquatic Ecosystem – With the stabilization of the stream banks, construction of a landside berm, and re-routing of drainage seepage and piping would be reduced and could potentially reduce the amount of sediment entering the system. By creation of the landside berm, the integrity of the adjacent levee would be ensured.

h. Determination of Secondary Effects on the Aquatic Ecosystem – not applicable.

III. Findings of Compliance for Seepage Control Measures

a. Evaluation of Availability of Practical Alternatives to the Proposed Discharge Site Which Would Have Less Adverse Impact on the Aquatic Ecosystem

The original EIS and amendments direct that the completed projects are to be maintained to ensure the designed degree of protection. The recommended plan was determined to be the most cost effective and least environmentally damaging of the other alternatives studied in detail. The no action alternative was

determined not to be practical. The proposed action would protect existing public infrastructure, and private homes and businesses. Without installation of seepage control measures, the integrity of the levee would be compromised. Seepage could undermine the levee and cause it to breach during a flood event.

b. Compliance with Applicable State Water Quality Standards

Application for State of Arkansas water quality certification is being requested as part of the 404 analysis. A determination concerning water quality certification has not been made to date. Those making comments to this 404(b)(1) evaluation are asked to furnish a copy of their comments to the Arkansas Department of Environmental Quality.

c. Compliance with Applicable Toxic Effluent Standard or Prohibition Under Section 307 Of the Clean Air Act

Clay and Greene Counties are in attainment for all air quality standards. No significant impacts to air quality are expected. The equipment to be used is a mobile source. Therefore, the project is exempt from air quality permitting requirements.

d. Compliance with Endangered Species Act of 1973

No impacts are expected to federally listed or proposed threatened or endangered species. This project has been coordinated with the Department of Interior, U.S. Fish and Wildlife Service.

e. Compliance with Specified Protection Measures for Marine Sanctuaries Designated by the Marine Protection, Research, and Sanctuaries Act of 1972

Not applicable.

f. Evaluation of Extent of Degradation of the Waters of the United States

1) Significant Adverse Effects on Human Health and Welfare

- a) Municipal and Private Water Supplies – not applicable.
- b) Recreation and Commercial Fisheries – No significant impacts are expected.
- c) Plankton – No significant impacts are expected.
- d) Fish – No significant impacts are expected.
- e) Shellfish – not applicable.
- f) Wildlife – No significant impacts are expected.

g) Special Aquatic Sites – not applicable.

- 2) Significant Adverse Effects on Life Stages of Aquatic Life and Other Wildlife Dependent on Aquatic Ecosystems

No significant impacts are expected.

- 3) Significant Adverse Effects on Aquatic Ecosystem Diversity, Productivity, and Stability

No significant impacts are expected.

- 4) Significant Adverse Effects on Recreational, Aesthetic, and Economic Values

No significant impacts are expected. Construction activities would have minimal impacts to the aesthetics of the area. Vegetation would regenerate following construction.

- g. Appropriate and Practical Steps Taken to Minimize Potential Adverse Impacts of the Discharge on the Aquatic Ecosystem

Actions that would be implemented during construction to minimize impacts have been previously described in the Factual Determinations section above, chiefly best management practices would be implemented, construction would occur during low-flow periods, and impact areas would be limited to the extent necessary for construction.


- h. On the Basis of the Guidelines, the Proposed Disposal Site(s) for the Discharge of Dredged or Fill Material is:

- 1) Specified as complying with the requirements of these guidelines; or,
2) Specified as complying with the requirements of these guidelines, with the inclusion of appropriate and practical conditions to minimize pollution or adverse effects on the aquatic ecosystem; or,

All conditions from the Arkansas Department of Environmental Quality would be adhered to.

- 3) Specified as failing to comply with the requirements of these guidelines.

17 December 2019
Date


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