



U.S. DEPARTMENT OF AGRICULTURE

Natural Resources Conservation Service **EAXX-005-53-029-1231884765**

August 2026

Lick Creek and Dudley Main Ditch Watershed Plan Environmental Assessment



Photo: Erosion on Cypress Ditch, Conservation Works Joint Venture 12/7/2023.

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Table of Contents

Table of Contents	ii
Proposal Information	1
General Information	1
Purpose and Need: Why do we need to act?	1
Proposed Action: What are we proposing to do?	2
Alternatives to the Proposed Action: Are there other ways to meet the purpose and need?.....	3
Alternatives Considered but Not Analyzed in Detail	3
Interdisciplinary Proposal Screening	5
Scope of Analysis	5
Agencies and Persons Consulted.....	6
Substantive Issues Considered for Analysis.....	10
Issues Considered but Dismissed from Detailed Analysis	12
Environmental Review & Consultation	13
NEPA: Consideration of Reasonably Foreseeable Impacts	13
Potentially Affected Environment	13
Environmental Impacts of Proposed Action	21
Environmental Impacts of FWOFI	26
Commitment of Federal Resources.....	29
Consideration of Pertinent Laws, Regulations, Guidance and Executive Orders.....	30
Certifying Statement for EA Page Limit and Deadline	37
References Cited	38
Finding of No Significant Impact (FONSI)	43
Documentation Informing the FONSI.....	43
Activities Approved	43
Determination of No Significant Impacts	43
Anticipated Implementation of Authorized Activities	45
Signature and Authorization Date	45



List of Tables

Substantive Issues Considered for Analysis	10
Issues Considered but Dismissed from Detailed Analysis	12
Table 1: May Affect, Likely to Adversely Affect Determination for TEPC Species/Critical Habitat.....	30



PROPOSAL INFORMATION

General Information

Proposal Name: Watershed Plan and Environmental Document – Lick Creek and Dudley Main Ditch Watershed - Missouri

Unique Identification #: EAXX-005-53-029-1231884765

Proposal Initiation Date: 4/14/2023

Proponent Name: Stoddard County Circuit Court Drainage Ditch District 12

Signing Authority: Responsible Official

Responsible Official: Nate Goodrich

Unit: Missouri State Office

Anticipated Implementation of Proposal: If financial assistance is available, it is anticipated that design and permitting will occur in 2027-2028 and construction will take place 2028-2032.

General Location of Proposal: The Lick Creek and Dudley Main Ditch Watershed - Missouri Watershed extends across Stoddard County in Missouri. The project site is located approximately 0.5 miles east of Dudley, Missouri in the western portion of the county. The Project Area is the portion of the watersheds around nearly 16 miles of drainage ditches, including Cane Creek, Cypress Lateral No. 1, Dudley Main Ditch, Lick Creek and unnamed ditches, that may be impacted by the Proposed Action. Latitude and longitude for the site is as follows: 36°47'59" N, 90°04'48" W.

Purpose and Need: Why do we need to act?

The purpose of the Proposed Action is to implement measures along the Lick Creek and Dudley Main watershed ditches and tributaries to provide flood damage reduction for agricultural lands and infrastructure, including areas downstream of the watershed. The measures are intended to address all three general purposes outlined in Section 1 of PL 83-566 by: (1) reducing damage from erosion, floodwater, and sediment; (2) furthering the utilization and disposal of water; and (3) furthering the conservation and proper utilization of land. The Proposed Action will benefit local farmers as well as landowners and communities within the watershed.

The Proposed Action is needed to address flooding and flood damage to an aging infrastructure that is increasing. Water from adjacent farmland has been transporting sediment to the DD12 drainage ditches for around a century. The sediments have accumulated over time and have reduced the drainage system's capacity and ability to prevent flooding. Specifically, the banks of Dudley Main Ditch, Lick Creek Ditch, and Cypress Lateral No. 1 are experiencing erosion from high water flow.

Aging infrastructure poses a risk of failure that could lead to loss of life, property damage, and disruption of public services for communities in the watershed. As the drainage system has aged



and become less effective at preventing floods, the flooding events themselves continue to degrade the system, contributing to failures of ditch bank slopes. The drainage ditches overflow and flood adjacent cropland, resulting in harvest interruptions, prevented plant acres, and loss of farm income. Given the importance of agricultural crop production to the region's economy and the increasing intensity of storms due, measures are needed to improve ditch infrastructure and protection of farming operations.

This project meets the P.L. 83-566 authorized purpose of flood prevention (flood damage reduction). The Natural Resources Conservation Service (NRCS) National Watershed Program Manual defines flood prevention (or flood damage reduction) as measures installed to prevent or reduce damages caused by floodwater. Flood damage reduction is further defined as the control and disposal of surface water caused by abnormally high direct precipitation, stream overflow, or floods aggravated or caused by wind or tidal effects.

Proposed Action: What are we proposing to do?

The Proposed Action (Alternative 3) includes the following measures to address flood damage reduction:

This alternative would include the excavation of segments of both banks of the ditches to a minimum slope of 2 horizontal feet to 1 vertical foot to improve bank stability, followed by installation of two layers on the bank side slopes and toe: first, a 6-inch-thick rock bedding layer; and second, a 24-inch-thick rock riprap (Mix No. 4) layer on top. Full-bank riprap armoring would extend up both sides of Cypress Lateral 1 from the confluence with Lick Creek Main Ditch north to County Road 679 (approximately 6,490 feet). For the remainder of Cypress Lateral 1 (4,200 feet), riprap armoring would be limited to toe protection and 4 feet up the bank slope. Total length of additional ditch segments receiving two-sided toe-protection would include 12.57 miles (66,386 linear feet) for Areas 2, 3a, 4, 5, and 6. Furthermore, Areas 1, 2, 3a, 4, and 5 contain 50 pipe outlets from adjacent channels into the APE that will receive stabilization armoring at the outlets and replacement if necessary due to condition. Additionally, Area 1 would include engineered rock riffles to address headcutting in the channel, and added armoring would extend at pipe locations that outlet into the ditches in Area 1, 2, 3a, 4, and 5.

Prior to spreading the excess material from the excavation, the topsoil from the area to spread on would be stripped and piled temporarily. Excess bank material from the excavation and riprap installation would be spread out with the topsoil on the exposed surface to promote seed germination. The excess material spreading would occur adjacent to the channel with a 10-foot minimum clearance from the top of bank location, maximum width of 50 feet from top of bank, and maximum height of 3 feet. Native grasses would be seeded on the topsoil of all areas disturbed through construction that are not covered with riprap or other stabilizing materials. Turf Reinforced Matting would be included on side slopes to aid seed establishment and bank stability.

Stabilization of sections of Cypress Lateral 1, Lick Creek, and Dudley Main Ditch would improve damaged areas of the drainage ditch, protect against future degradation, and provide a uniform channel configuration that would be easier to maintain.



Components of this alternative would include:

- Mobilization of the work crew;
- Bank excavation to subgrade elevation;
- Installation of the rock bedding layer;
- Installation of the rock riprap;
- Installation of engineered rock riffles;
- Installation of pipe outlet riprap;
- Where necessary, removal and replacement of pipe outlets in accordance with Conservation Practice 410 (Grade Stabilization Structure) and Conservation Practice 587 (Structure for Water Control);
- Spread excess bank material along the top of bank;
- Installation of turf reinforced erosion matting (TRM); and
- Seed all disturbed areas with native seed mix.

Alternatives to the Proposed Action: Are there other ways to meet the purpose and need?

The alternatives described below were selected for inclusion into the Final Array of Alternatives.

Alternative 1: No Action (FWOFI)

The No Action alternative was carried forward as if no work was done. This action is required to be carried forward to serve as a baseline for comparison of the action alternatives.

Alternative 2: Creation of Permanent Wetland

Alternative 2 is a structural alternative that would involve the creation of a permanent wetland from acres previously in row crop production and includes pump station and piping installation for water withdrawal from the Lick Creek ditch, six water control structures to allow for passive inflows from the ditch during high flow events, and seeding the formerly cropped and any newly-disturbed acres with native hydrophilic mixes.

Alternative 4: Buyouts

This alternative would involve floodplain conservation easement buyouts of acreage that currently floods in the 100-Yr storm event. This compromises 600 acres watershed for agricultural use.

Alternatives Considered but Not Analyzed in Detail

Structural: Full Bank Armoring

Full-bank armoring of all drainage ditches within the watershed was eliminated from detailed analysis, because full bank erosion was not identified in drainage ditches outside of the Project Area.



Structural: Channel Bottom Armoring

Armoring of the channel bottom of all drainage ditches within the watershed was eliminated from detailed analysis, because channel bottom cutting was not identified during surveys and assessments except in areas included in Alternative 2.



INTERDISCIPLINARY PROPOSAL SCREENING

Given the nature of the proposal, the responsible official is requesting documentation to demonstrate compliance with the following legal and regulatory considerations in addition to NEPA:

☒ Endangered Species Act (ESA)

☒ National Historic Preservation Act (NHPA)

☒ Tribal Consultation (EO 13175)

☒ Clean Air Act (CAA)

☒ Clean Water Act (CWA)

☒ Pertinent Executive Orders

Special Management Areas:

☐ Coastal Zone Management Areas

☐ Conservation Easements

☐ Coral Reefs

☐ Inventoried Roadless

☐ Marine Sanctuaries

☐ National Recreation Areas

☐ National Scenic & Historic Trails

☐ Research or Experimental Areas

☐ Wild & Scenic River Corridors

☐ Wilderness

☐ Other: [specify area type](#)

Scope of Analysis

The following describes how the agency drew a reasonable and manageable line relating to its consideration of environmental effects from the proposed action (and action alternatives, if any) that extend outside the geographical territory of the proposal or might materialize later in time.

Scoping is used to identify the issues relevant to defining the problems and formulating and evaluating the alternative solutions in an environmental assessment. Significant issues will be analyzed in detail in subsequent sections of the Plan. Scoping issues that were considered, but then determined not to be significant, were eliminated from detailed study as explained below.

The Project planning team conducted scoping efforts to identify economic, environmental, cultural, and social issues of importance in the watershed and areas of potential effect associated with the Proposed Action. Input from the Stoddard County Circuit Court Drainage Ditch District 12, interested agencies, and local residents was collected and documented through correspondence



and public meetings. An interdisciplinary planning team with experts in engineering, hydraulics, biology, economics, resource conservation, water quality, soils, archaeology, and geology identified factors that have the potential to affect soil, water, air, plants and animals, and the human environment.

Agencies and Persons Consulted

Given the nature of the proposal, the responsible official consulted the following agencies, organizations, tribes, and persons during development and analysis of the proposal:

Native American Tribes

- Absentee-Shawnee Tribe of Indians of Oklahoma
- Eastern Shawnee Tribe of Oklahoma
- Osage Nation – requested to review the Cultural Resource report on 9/15/2022, but did not respond to NRCS letter about this report from 10/16/2024
- Quapaw Nation – NRCS notified the Quapaw Nation about the Preliminary Investigation Feasibility Reports (PIFR) for this project on 5/12/23 and 5/22/23. The Quapaw Nation stated there would be No Effect on 9/25/2024 and then concurred with No Effect to cultural resources determination on 6/19/2025.
- Shawnee Tribe

NRCS solicited input from the tribal governments listed above during the development of the Plan-EA. Federally recognized tribal lands, as defined in the NHPA, do not occur in Missouri. The invitation to participate as a consulting party was requested pursuant to requirements of Section 106 of the National Historic Preservation Act of 1966, as amended (54 U.S.C. §300101 et. seq.), and the Protection of Historic Properties (36 CFR Part 800) in letters dated September 25, 2023, and September 30, 2024 (see Stakeholder Letters in Appendix A). Five tribes were identified as having tribal interests in Stoddard County (MODOT 2026). The five tribes include Absentee-Shawnee Tribe of Indians of Oklahoma, Eastern Shawnee Tribe of Oklahoma, Osage Nation, Quapaw Nation, and Shawnee Tribe. The Osage Nation responded on October 19, 2022, with a request for a cultural resources survey report of the project. The Quapaw Nation responded on October 10, 2023, and Sept 25, 2024, stating the project would have “no effect” to known properties of cultural or sacred significance to the Quapaw Nation. There was no response from the remaining tribes.

The Section 106 was initiated on October 16, 2024, with a consultation package containing project information, APE, identification efforts, and finding of effect. All five tribes were sent Section 106 project review packages and consultation letters on October 16, 2024, which are also included in Appendix A. The Quapaw Nation was the only respondent (June 19, 2025), stating that the project would have “no effect” to known properties of cultural or sacred significance to the Quapaw Nation. No tribal comments indicated that the Proposed Action would have adverse effects on historic properties, which include Traditional Cultural Properties, Places of Religious and Cultural Significance, Indian Sacred Sites, or culturally sensitive resources based on the alternatives presented in this document and based on consultation with the relevant tribal entities about these alternatives. Above is the list of tribes who were identified by NRCS as having a potential interest



whose name is followed by reference and are filed in Appendix A. NRCS served as the tribal liaison for the project.

Agencies

Federal Agencies. The planning team coordinated technical submissions and drafts of the Plan and associated technical documents with NRCS. Technical review comments from NRCS were incorporated into the documents. NRCS served as the Tribal liaison for the project.

Additional input was solicited from the following Federal agencies.

- U.S. Army Corps of Engineers (Cooperating Federal Agency)
 - USACE was a cooperating agency throughout the project, including monthly meetings and 401/404 permitting consultation. These permits will not be applied for until the design stage of the project.
- U.S. Environmental Protection Agency
 - The USEPA's letter in Appendix A provided recommendations on:
 - Water Quality – no 303(d) CWA Impaired Water Bodies in project area
 - Wetlands and Aquatic Resources – wetlands in project area and streams (ditches) are exempt from section 404 permitting, first avoid, minimize then mitigate impacts
 - Air Quality Strategies – impacts during construction will be minimized
 - Resiliency – the drainage system's ability to withstand effects of increased storm frequency and intensity will be increased
 - Demolition Debris and Contamination – no contaminated materials will be involved in the construction process
 - Energy Efficiency – such vehicles will be used, if possible, during construction
 - Pollinators and Native Plant Species – ditch buffers will be replanted with native grass and forb species
 - Consultation Records – will be maintained as a part of the Plan-EA including correspondence from SHPO (historic and cultural resources), USACE (wetlands and streams), USFWS (federal threatened and endangered species), and MODNR (state threatened and endangered species)
- Federal Emergency Management Agency
- U.S. Fish and Wildlife Service
 - The updated Official Biological Assessment, Species List, Resource List, and Technical Assistance Letter obtained from the USFWS on November 19, 2025, are in Appendix A and were described in Appendix D, Tables D6-5 and D6-6. NRCS followed up the Technical Assistance letter with a consultation request on December 8, 2025. The USFWS responded on December 23, 2025, with concurrence of the NRCS finding of May Affect – Not Likely to Adversely Affect for T&E species in the Project Area.
- U.S. Geological Survey



- USDA Farm Service Agency
- USDA Forest Service
- USDA Rural Development

State Agencies. Input was solicited from State agencies listed below.

- Missouri Association of Soil and Water Conservation Districts
- Missouri Levee and Drainage District Association
- Missouri Department of Conservation
 - The findings of the consultation inquiry are in Appendix A and were described in “NEPA: Consideration of Reasonably Foreseeable Impacts”
- Missouri Department of Natural Resources
 - The MODNR’s letter in Appendix A provided recommendations on:
 - Karst Topography – use caution as this geology acts as direct conduit of pollution to groundwater (ground disturbance will be limited to currently disturbed land and minimized)
 - Wells – hazardous waste impacts to numerous shallow wells are possible (project will minimize use of fuels and associated vehicle fluids during construction)
 - Public Lands – four conservation areas and conservation opportunity areas were identified near the project area
 - Water Protection – Best Management Practices will be utilized during construction
 - Public Drinking Water – construction activities will take surface and groundwater resources into consideration
 - Water Bodies with Specific Designated Uses and General Uses – construction activities will take water body uses into consideration; wetlands have been identified near the project area
 - 303(d) Impaired and 305(b) Threatened Waters – none in the project area
 - Waters with TMDL’s – none in the project area
 - CWA Section 401 and 404 – permits may be necessary from the USACE
 - Mitigation – requirement to follow Missouri Wetland Mitigation Method for wetlands impacts (wetlands in the project area) and requirement to follow Missouri Stream Mitigation Method for stream impacts (likely to be exempt as work will involve maintaining previously constructed ditches)
 - Land Disturbance – construction will only involve previously disturbed land
 - Hazardous Waste – no demolition will occur with the construction, all removed sediment will be spread and planted on DD12 lands
 - Air Pollution – will be minimized during construction activities and no open burning will be necessary for the project
 - Historic Preservation – ditches will be maintained in this project are of historical significance



- Floodplain – coordinate with the state Emergency Management Agency, Floodplain Management and Mitigation Branch as necessary
- Endangered Species – coordinate with Missouri Department of Conservation
 - MODNR attended interagency meetings and had no additional input.
- Missouri State Emergency Management Agency (SEMA)
 - USDA NRCS is particularly appreciative of data provided by MOSEMA. This cooperation saved considerable cost and time in developing the Plan-EA.
- Missouri State Floodplain Administrators
- Missouri State Historic Preservation Office
 - USDA NRCS contacted SHPO on 8/20/2024 and 11/15/2024 regarding the Cultural Resources Report and Findings and received a response on 6/12/2025 concurring that there would be no adverse effect on historic properties. Copies of these letters can be found in Appendix A.
- Missouri Department of Agriculture
- Missouri Department of Transportation

Local Entities

Input was solicited from the following local agencies.

- Stoddard County Commission
- Stoddard County Soil and Water Conservation District
- City of Bloomfield
- City of Dexter
- City of Dudley

Input was solicited from the following governmental entities.

- Governor of Missouri
- US Congress – Senate
- US Congress – House, 8th Congressional District
- Missouri State Senate – Senate District 25
- Missouri State Representative – House District 151

Individuals

- Landowners who owned property within or adjacent to the project area were invited to attend the initial public meeting at the Stoddard County USDA Service Center in Dexter, Missouri on October 26, 2023. No public comments were received during or following this meeting.
- Landowners who owned property within or adjacent to the project area were also invited to attend the second public meeting at the Stoddard County USDA Service Center in Dexter, Missouri on September 30, 2024. No comments were received during or following this meeting.



- Landowners who owned property within or adjacent to the project area were also invited to attend the final public meeting at the Stoddard County USDA Service Center in Dexter, Missouri on June 2, 2026. No comments were received during or following this meeting.

Substantive Issues Considered for Analysis

Resource Concern	Rationale
Soils	
Erosion and Sedimentation	Sedimentation of drainage ditches has been documented, as ditch banks are sloughing and previously removed sediment is eroding into ditches leading to deposition of sediment in the ditches and areas downstream.
Prime and Unique Farmland and Farmland of Statewide Importance	The current floodwater management leads to ditch bank erosion which headcuts into and threatens prime and unique farmland and farmland of statewide importance.
Water	
Floodplain Management	The ditches in the Project Area are in Federal Emergency Management Agency flood hazard zone A, within the 100-year floodplain. The system's ability to lessen the effects of flooding on adjacent farmland and communities is negatively affected by sediment accumulating in ditches.
Waters of the U.S. (Streams, Lakes, and Wetlands)	Streams (ditches) are negatively impacted by sedimentation from uplands and ditch banks. Project Area contains streams (ditches) and wetlands.
Surface Water Quality (CWA)	Surface water quality is affected by sedimentation in ditches from uplands and ditch banks. Good or unknown condition; none are listed on Missouri's 2020 303(d) list of impaired waters.
Surface Water Quantity	The Project Area is subject to excess surface water and requires functioning drainage ditches to minimize flooding concerns.
Groundwater and Sole Source Aquifers	Although the water table and groundwater levels are regionally stable, groundwater quality is negatively affected by excess surface water from flooding, which leads to ponding in crop fields and increased transportation of nutrients/pathogens into shallow groundwater. Sole source aquifers were not identified in the watershed.
Regional Watershed Management Plans	The state Missouri Water Resources Plan includes information and strategies for the region in which the Project is located.
Air	
Air Quality (Clean Air Act)	No counties within the Project Area are listed as nonattainment areas for air quality (for 2015 standard) (USEPA 2024g). The ditch dredging can lead to short-term negative effects on air quality.



Resource Concern	Rationale
Plants and Animals	
Fish and Wildlife Habitat and Conservation	The watershed does not contain Essential Fish Habitat. The potential for fish and wildlife habitat within the Project Area is very limited as the area is already highly disturbed by normal ditch maintenance.
Threatened and Endangered Species	Seven federal- and seven state-listed species have the potential to occur within the Project Area, according to the U.S. Fish and Wildlife Service (USFWS) and the Missouri Department of Natural Resources (MODNR).
Migratory Bird Treaty Act and Bald and Golden Eagle Protection Act	The Project is within the Mississippi Flyway, and migratory birds and bald eagles have been observed in the Project Area. Because the Project Area currently provides very limited wildlife habitat, potential disturbance of wildlife will be a minor issue.
Invasive Species	At least two invasive plant species were identified in field visits.
Natural Areas	MODNR has identified two Conservation Areas and two Conservation Opportunity Areas within the watershed.
Riparian Areas	Riparian areas along the ditches are minimal and highly disturbed by normal ditch management.
Human Environment	
Socioeconomic Issues	Flooding damages agricultural lands and impacts communities socially and economically by disrupting access to essential services and roadways during flood events.
Recreation	Seasonal hunting occurs within the watershed primarily in Conservation Areas. Flooding caused by the current level of sediment in the ditches negatively affects seasonal hunting activities and other recreation.
Public Health and Safety	The current infrastructure is vulnerable to failure, and poses a risk of property damage, disruption of public services, and potential loss of life. Ponding, flooding, and other drainage challenges also lead to mosquito production, increasing the vectors for mosquito-borne illnesses.
Historic and Cultural Resources	The architectural site, 23SO1657, consists of Cypress Lateral No. 1. NRCS Missouri determined that this site is eligible for listing on the NRHP under Criterion A for its importance to agriculture, community planning and development, and social history. The ditch was constructed around 1915 and is part of the extensive drainage system of southeast Missouri, which is considered an engineering feat. The period of significance for 23SO1657 is 1915-1974.



Resource Concern	Rationale
	Phase I Archaeological Survey of the ditches were negative for the presence of cultural materials or historical or archaeological sites. Therefore, the survey did not identify any historic properties aside from the ditch system (23SO1657) itself. Actions associated with this undertaking represent a continuation of historical activities related to the general upkeep of the drainage ditch system. Therefore, this undertaking will not pose an adverse effect on the significance or integrity of the system. Due to the purpose of the ditch and continuation of functional activities associated with the present undertaking, the NRCS recommends a finding of <i>No Adverse Effect</i> to Historic Properties for the proposed project, per 36 CFR 800.5. This finding has been presented to the Missouri SHPO, the Quapaw Nation, the Osage Nation, Absentee-Shawnee Tribe of Oklahoma and Eastern Shawnee Tribe of Oklahoma; with the Missouri SHPO and Quapaw Nation in concurrence with the finding.
Energy	Irrigation in the watershed is primarily gravity fed, but pumps are used to bring water to the surface and also to remove excess water from crop fields when necessary. Water resources in the watershed are not used to generate energy for human use. Energy efficiency is not part of the Project.

Issues Considered but Dismissed from Detailed Analysis

Resource Concern	Rationale
Soils	
Water	
Wild and Scenic Rivers	Wild and scenic rivers are not present in the watershed.
Coastal Zone Management Areas	The Project Area is not located in a coastal zone management area.
Air	
Plants and Animals	
Coral Reefs	Coral reefs do not exist in the watershed.
Human Environment	
Scenic and Visual Resources	Not applicable as the Project Area possesses little scenic or visual resources identified during scoping.



ENVIRONMENTAL REVIEW & CONSULTATION

The following documents compliance with the National Environmental Policy Act (NEPA) and other relevant environmental laws, executive orders, and regulations.

NEPA: Consideration of Reasonably Foreseeable Impacts

Potentially Affected Environment

General Description

Climate

The climate in southeastern Missouri is generally characterized by hot humid summers and cool wet winters. The variables of temperatures, precipitation, and snowfall can range greatly from one year to the next. In the summer, temperatures reach 90 or more degrees Fahrenheit; in the winter, temperatures typically fall as far as 20 degrees Fahrenheit. The coldest average temperatures are in January, and the warmest temperatures are in July. Southeastern Missouri's average annual total precipitation is 50 inches, which includes an average annual snowfall of 8 to 12 inches. The average growing season lasts 250 days. Major cyclonic storms occur from March to June, causing regional flooding. Short-duration intense storms occur during the growing season, causing severe local flooding (MOCC 2024).

Topography

The topography of the Project Area is a broad, flat floodplain with gentle undulations dissected by drainage ditches. Crowley's Ridge on the eastern portions of the watershed is a significant landscape feature that provides topographic relief. Surface elevations in the watershed are generally below 400 feet mean sea level (msl), though the elevation is as high as 550 msl in some areas on Crowley's Ridge (MODNR 2002, MODNR 2024b) (Appendix C, Figure 2).

Geology

Bedrock in the watershed generally ranges from 25-200 feet deep (MODNR 2023). Most of the surficial geologic composition of the watershed is either alluvium or loess. The alluvium is comprised of clay, silt, sand, and gravel of the Quaternary System of the Holocene Series while the loess is comprised of various sands, clays, or gravels of the Tertiary System of either the Pliocene, Eocene or Paleocene Series (Middendorf 2003). The classification system describes the Land Resource Region in which the watershed is located as the South Atlantic and Gulf Slope Cash Crops, Forest, and Livestock Land Resource Region and consists of the Southern Mississippi Valley Loess Major Land Resource Areas. Below the loess mantle, which can be up to 75 feet thick in places, are Tertiary and Quaternary fluvial deposits on top of marine sediments (NRCS 2022b).

Land Use and Land Cover

Land use and land cover within the watershed and Project Area were estimated using the U.S. Geological Survey (USGS) National Land Cover Database (NLCD) (USGS 2021), aerial photography, and field observations. Acres and percentages are in Appendix D, Table D2-1.



Within the ARA, cultivated crops are the primary NLCD cover type, comprising 60 percent of the watershed and are expected to continue in agricultural use. Hay/pastureland and deciduous forest are the second- and third-most prominent cover types in the watershed (14.7 and 10.5 percent respectively). Because cropland accounts for 60 percent of land use in the ARA, the Project meets the PL 83-566 requirement that agriculture and rural communities must account for at least 20 percent of total project benefits (NRCS 2018). The remaining cover types include developed land and woody wetlands (Appendix C, Figure 3a).

The proposed Project Area, at 86 percent cultivated cropland as the NLCD cover type, is comprised of ditch and levee banks with a small buffer of land from the top of the bank slope outward (Appendix C, Figure 3b). Scattered trees and small forest stands exist along the Project corridor; however, these areas are generally outside of the herbaceous riparian corridor.

Resource Concerns

Soils

The dominant soils in the region are Alfisols (suborder Udalfs), Vertisols (suborder Aquerts), and Entisols (suborder Aquents). These soil orders and suborders were generally derived under forest vegetation and are characterized by periods of prolonged saturation and poor drainage.

Most of the soils in the project area have a silty alluvium, alluvium, or clayey alluvium parent material. The soils are very deep, dominantly poorly drained, somewhat poorly drained, and dominantly loamy or clayey. Without managed drainage, both in individual fields and the regional system, excess water ponding and flooding results (NRCS 2022a). See Appendix D, Table D3-2 for soils information and Appendix C, Figure 4 for mapping.

Erosion and Sedimentation

Erosion and sedimentation of drainage ditches is occurring from within the channel and overland flow and has been a prominent issue in the ARA since the ditches were built. Water is the primary erosive force on the soils in the watershed. However, wind erosion is rated at moderate levels for most of the soils in the ARA (NRCS 2024a to 2024c). Wind Erodibility Index (WEI) values range from 48 to 56 for the soils in the watershed, except for a minor inclusion of Bosket, Lilbourn and Deanburg that have a WEI of 86 and Eustis-Memphis complex that has a WEI of 250.

Many soils in the Project Area including Amagon, Falaya, Zachary, and Levees-Borrow Pits Complex are rated as high to very high runoff class meaning they are prone to the sheet and rill erosion evidenced on the landscape (NRCS 2024a to 2024c). Additionally, as water flows to the ditches from crop fields and off the bank areas piled with previously removed ditch sediment, the banks become saturated and slough into the channel. Where concentrated runoff occurs from these flows, gully headcuts are forming as the crop fields meet the edge of the drainage ditch and increase erosion. The lack of conservation practices such as reduced tillage, cover cropping, riparian buffers, and introducing crops with higher conservation value contributes to erosion concerns as there is more exposed soil in the farming systems and less ability of the landscape to



filter the erosion that is occurring. This erosion causes sedimentation in the drainage system, which reduces its drainage capacity and transfers sediments downstream (NRCS 2022a).

Prime and Unique Farmland and Farmland Soils of Statewide Importance

NRCS classifies soil map units based on soil characteristics that are best suited to growing food, feed, fiber, forage, and oilseed crops. Of the 100,448 acres in the ARA, 51 percent are classified as prime farmland, prime farmland (if drained), and farmland of statewide importance (Appendix C, Figure 5a through h and Appendix D, Table D3-4).

Water

Floodplain Management

The Project Area is mapped as flood hazard zones A by FEMA. ‘A’ are high risk areas and at the greatest risk of flooding, mudflow or flood-related erosion with at least a 1 in 4 chance of flooding during a 30-year mortgage (FEMA 2024) (Appendix C, Figure 6a through k).

Waters of the U.S. (Streams, Lakes, and Wetlands)

The Project Area includes over 83,564 linear feet (LF) of streams (drainage ditches) and tributaries (Appendix C, Figure 7 and Appendix D, Table D6-1 and D6-2). No lakes are in the Project Area, but 73 acres of wetlands are in the Project Area (Appendix C, Figure 8).

The ditches flow generally from north to south, starting near the center of the north border of the ARA. Tributary ditches flow generally from west to east or east to west to join the main ditches. Downstream of the ARA, the ditches ultimately join with the St. Francis River and continue into Arkansas before eventually flowing into the Mississippi River (Appendix C, Figure 9).

Surface Water Quality (CWA)

Current water quality conditions of the ditches in the Project Area were reviewed through Missouri Department of Natural Resources (MODNR 2020b and MODNR 2022) and U.S. Environmental Protection Agency (USEPA 2024a) resources. The water quality of the ditches is currently either in good or unknown condition. None of the ditches are listed on Missouri’s 2020 303(d) list of impaired waters, though there are several 303d listed waters adjacent to the watershed (Appendix C, Figure 10). Given this information, individual review of the project by the Missouri Department of Natural Resources (MODNR) will not likely be necessary for acquisition of the project’s Section 401 Water Quality Certification.

Surface Water Quantity

The Project Area is subject to excess surface water and requires management to minimize flooding concerns. Ponding and flooding are common in the Project Area because poorly drained clay layers within the soil profile cause slow infiltration into subsoil aquifers without well-managed drainage systems (NRCS 2022a).

Overall precipitation is generally adequate but not necessarily in the amounts and at the times needed for agriculture. Managed drainage is required to move excess water, and irrigation is often required to supplement rainfall for crop production to ensure timely moisture availability.



According to 2023 data from the USDA Farm Service Agency, approximately 79 percent of all acres planted to annual crops in Stoddard County were irrigated (FSA 2023).

Groundwater Quality and Sole Source Aquifers

The Project is in the Southeastern Lowlands Groundwater Province. The three main aquifers in this region are the Alluvial Aquifer (0-250 feet), Wilcox Aquifer (0-1,400 feet), and McNairy Aquifer (0-600 feet). The Alluvial Aquifer is the primary source for water used in the region. It has generally good water quality but can have higher concentrations of iron than underlying aquifers. Irrigation pumping from high-capacity wells can have a local drawdown effect but generally does not lower the water table. This aquifer is easily recharged from the Mississippi River and from precipitation. The Wilcox Aquifer contains more iron and manganese than the McNairy Aquifer but less than the Alluvial Aquifer. The McNairy Aquifer has high-quality water, and wells drilled into this layer are often artesian (MODNR 2021).

Few environmental concerns related to groundwater have been reported in the Southeastern Lowlands Groundwater Province, but contamination from agricultural inputs is a potential threat to consider (MODNR 2021). Uncontrolled flooding leads to ponding in crop fields and increased transportation of nutrients and pathogens into ground water. No Sole Source Aquifers are located within the project watershed (USEPA 2024c).

Regional Watershed Management Plans

There are no regional watershed management plans developed for the Project Area. The MODNR does maintain the Missouri Water Resources Plan. This state plan provides an assessment of water resources for each major region of the state, including physical setting, water use forecast, water supply, drinking water and wastewater funding options, and developing options for future water needs. The Project Area falls within the Southeastern Missouri Region and the Lower Mississippi-St. Francis Subregion (MODNR 2020a).

The Missouri Resources Water Plan notes that water resources in the Southeastern Missouri Region are generally not limiting. Nearly 50 percent of all water consumption in the state occurs in this region. Currently, sources of recharge are greater than consumption. However, groundwater declines have been observed in the Mississippi Delta region in Arkansas. Demands for groundwater are expected to increase 17 percent by 2060 in the Southeastern Missouri Region. The Plan recommends long-term monitoring in Missouri to support ongoing water planning. Additionally, infrastructure is aging, and investment in new infrastructure will be critical to support future growth in the area (MODNR 2020a).

Air

Air Quality

The Clean Air Act (42 USC §§ 7401–7671, as amended) provides authority to the USEPA for the establishment of nationwide air quality standards to protect public health and welfare. National Ambient Air Quality Standards for six pollutants that cause harm to public health and the environment have been established (USEPA 2024b and 2024f). These monitored pollutants are carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), particulate matter (PM), sulfur dioxide (SO₂), and lead (Pb).



The MODNR operates ambient air monitors and reports the data to the USEPA Air Quality System database. The Project site is situated in a largely rural community of cropland and scattered farmsteads. Stoddard County is currently attaining all criteria (i.e., meeting the standards) for air quality regarding particulate matter, greenhouse gases, ozone, and reactive nitrogen (MODNR 2024a). No non-attainment areas have been designated for any of the six pollutants within the Project Area (USEPA 2024e).

Plants and Animals

Fish and Wildlife Habitat and Conservation

Due to extensive historical alteration of land in the watershed, there is far less habitat for wildlife than before the drainage system converted the original extensive swamp system into farmable land. The area does, however, continue to support wildlife including white-tailed deer, coyote, rabbit, gray squirrel, water turtles, water snakes, frogs, otters, beavers, wild turkey, mourning doves, ducks, and geese. The area is also used by migrating birds, especially waterfowl, as an important migratory flyway (the Mississippi Flyway). Fishing is still available but restricted to oxbow lakes, rivers, and bayous. Fish caught in the area include largemouth bass, smallmouth bass, catfish, drum, bluegill, gar, and yellow perch (NRCS 2022a).

Scattered trees in the Project Area exhibit characteristics of potentially suitable summer roosting habitat for the three T&E listed bat species. Should trees exhibiting potential bat habitat need to be cleared as part of the final alternatives, conservation measures should be incorporated by removing these trees in the winter months of November 1 through March 31 (USFWS 2024d).

The St. Francis River, into which the ARA drains, is considered a critical habitat near the Project watershed according to the Missouri Natural Heritage Review Report. The St. Francis River and tributaries is important to several aquatic species of concern, many of which are indicators of overall ditch health and water quality. These species of concern are presumed to occur in suitable habitats in the St. Francis River and tributaries.

Threatened and Endangered Species

An official species list was obtained from the U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) tool on November 19, 2025, to identify federally threatened, endangered, proposed, and candidate species that may occur in the area. The watershed and Project Area were queried separately. The IPaC results were the same for both queries including three bats (gray, Indiana and tricolored), alligator snapping turtle, two mussels (snuffbox, and western fanshell), and monarch butterfly. All of the species are Endangered, except for one of the bats (tri-colored, Proposed Endangered), the turtle (Proposed Threatened), and the monarch (a Candidate species and not legally protected). More details on the official species list are in Appendix D, Tables D6-5 and D6-6. There were no areas of officially designated Critical Habitat for any species in the IPaC results (see Appendix A).

The Missouri Department of Conservation (MODC) provided a Natural Heritage Review Report (NHRR) for the watershed on October 5, 2023. The NHRR indicates that the alligator snapping turtle is located less than one mile from the watershed. In addition, the report specifies that although Indiana and Northern Long-eared bats are not known to occur in the project area, these



species should be assumed present wherever suitable habitat occurs (USFWS 2024d). The NHRR also noted that two species of state-listed endangered freshwater mussels have been identified near the project site: the pink mucket within three miles and the rabbitsfoot within two miles. The report also shows that the state-listed endangered American Bittern has been identified within one mile of the project site. The full list of species identified in the NHRR report are detailed in Appendix D, Tables D6-5 and D6-6. The NHRR reports are also included in Appendix A.

A brief field assessment of potentially suitable habitat for listed species within the Project Area was conducted by a qualified biologist in November of 2023 and described in Appendix D, Section D5. Trees exhibiting characteristics of potentially suitable habitat for Indiana, northern long-eared, and tricolored bat species were observed within the project area.

Migratory Bird Treaty Act and Bald and Golden Eagle Protection Act

Where applicable, the USFWS IPaC report identifies Birds of Conservation Concern and indicates whether bald or golden eagles may occur in a project area, due to protection of these species under the Bald and Golden Eagle Protection Act. According to the USFWS IPaC report, bald and golden eagles are both known to exist in the watershed. Several bald eagles were noted during field surveys (location undisclosed to protect the species). Other migratory birds protected under the Migratory Bird Treaty Act were identified as potentially occurring in the watershed. See Appendix D, Table D6-7 for the IPaC list of migratory birds potentially occurring in the watershed.

Invasive Species

A comprehensive list of all invasive species that have the potential to occur in the watershed is difficult to compile, because there are hundreds of species, they involve multiple taxa (e.g., plants vs. aquatic animals), and the designation of “invasive” varies by source. Invasive species have been observed within the Project site during the November 2023 field assessment conducted by a qualified biologist, including at least two of the twelve species designated by the Missouri Department of Agriculture as “noxious weeds” (MODA 2024). For a list of the vegetation observed during the field assessment, including invasive species, see Appendix D, Table D6-4.

Natural Areas

MODC and conservation partners have identified priority landscapes and areas that are important for wildlife populations and ecological systems associated with those populations. These areas have been termed Conservation Areas and Conservation Opportunity Areas (COAs) by MODC (2024a). There were four such areas noted in or near the Project Area in an MODNR consultation letter dated October 30, 2023 (Appendix A):

- Oak Ridge Conservation Area
- Fisk COA
- Otter Slough Conservation Area
- Otter Slough COA

Natural areas in the watershed are mapped in Appendix C, Figure 11.



Riparian Areas

The area of transition between terrestrial and aquatic ecosystems is also known as the riparian area. This Project will focus on riparian floodplains and streambanks (ditches). Historically, the landscape has been heavily altered from a swampy, bottomland hardwood forest to a landscape lacking native riparian vegetation (NRCS 2022a).

Human Environment

Socioeconomic Issues

According to the U.S. Census Bureau (USCB) American Community Survey (ACS), completed in 2019, Stoddard County has a relatively small population totaling to 28,812. Agriculture, at over 80 percent land use in the county, contributes greatly to the Stoddard County economy (USGS 2021). In 2021, agriculture contributed to household income in Stoddard County by 74 percent (MODA 2021, USCB 2022a).

Within Stoddard County, which encompasses the ARA, the average median household income is \$46,052, with 17.2% of households below the poverty level and 18.9% of populations having less than a high school diploma. In comparison, the median household income for Missouri is \$61,847, with 12.7% of households below the poverty level and 8.4% of the population having less than a high school diploma (USCB 2019a-f).

Tables in Appendix D (Tables D9-1 to D9-6) provide regional socioeconomic data.

Recreation

The Conservation Areas within or adjacent to the Project watershed include Oak Ridge and Otter Slough. MODC leases or owns these areas for public access. Management objectives include fishing and hunting as well as plant communities and wildlife conservation. Recreation areas in the watershed are mapped in Appendix C, Figure 11.

Public Health and Safety

Several towns are in proximity to the Project Area. These towns include Dudley, Dexter, and Bloomfield. Between these towns there is a network of roads crossing the Project Area. Some of these roads, such as U.S. Highway 60, serve the region as major thoroughfares. Residents in the region depend on these thoroughfares to get to and from schools, jobs, medical appointments, grocery stores, and other locations providing essential services. During flood events, driving on flooded roads presents a safety hazard to drivers and a health risk to people in need of emergency medical care due to the potential for delayed response times for emergency medical personnel (NRCS 2022a).

Potable Water Supply

The Project Area includes two drinking water wells, three tanks, and no intakes. Public Drinking Water Districts in the watershed include (MODNR 2024b):

- Stoddard Co. Public Water Supply Districts #1, #4, and #6.

The water table and groundwater levels are regionally stable, even through high water usage times, due to recharge from precipitation and the nearby Mississippi River. Wells located near high-capacity irrigation wells may be locally affected during high usage seasons. The groundwater in the Alluvial Aquifer generally meets the criteria for potable water but sometimes needs treatment as it contains calcium, iron, sulfate, sodium, and manganese (MODNR 2024c). The Project Area does not include any Sole Source Aquifers (USEPA 2024c).

Historic and Cultural Resources

In December 2023, archival and historical research was conducted for the Project Area. An archaeological review of literature was conducted to determine if National Register of Historic Properties (NRHP), NRHP districts, or archaeological sites had already been documented in the APE or if any recent disturbances had occurred that may have affected cultural resources. Two archaeological sites have been documented within the APE and an additional eleven sites within the 250-ft radius of the APE. The two sites within the APE included a historic surface scatter and a prehistoric isolated find, but no eligibility determination was on file for either site. A reconnaissance-level historic resources survey was also conducted for historic-age buildings, structures, and site features within the APE. No previously recorded historic structures were identified within or near the Area of Potential Effect (APE). However, one architectural resource, Cypress Lateral No. 1 ditch (23SO1657), was identified and documented during cultural resources investigations for the proposed undertaking.

Cypress Lateral No. 1 (23SO1657) is recommended to be eligible for listing in the National Register of Historic Places (NRHP) under Criterion A due to its significance in agriculture, community planning and development and social history. The ditch was originally constructed around 1915, and its period of significance spans from the year of its construction until 1974. It represents part of the larger southeast Missouri drainage system, which is considered an engineering achievement. As such, it may also be eligible under Criteria C and D. Since the APE does not encompass the full extent of Cypress Lateral No. 1, Lick Creek, or Dudley Main Ditches, comprehensive surveys required to evaluate these resources under Criteria C and D were beyond the scope of the present investigations.

Undertaking actions of the preferred alternative consist of dredging, armoring existing drop pipe outlets, spreading dredged soils, and broadcast seeding upper levels of ditch and levee with native herbaceous vegetation. These actions are generally considered normal ditch maintenance and would be considered exempt from CWA Section 404 permitting (USACE 2020). However, USACE would need to review final maintenance plans and concur with this exemption. Any potential ground disturbance impacts will be contained within the existing ditch footprint and will not alter the characteristics that make the ditch a significant cultural feature and eligible to the National Register of Historic Places. Since this undertaking represents a continuation of the regular maintenance that has been required to support the function of Cypress Lateral No. 1 over time, and because this maintenance will not significantly change any ditch characteristics, a finding of No Adverse Effect to Historic Properties is recommended relative to this resource.



Additionally, Phase I Archaeological Surveys were conducted at the locations of two archaeological sites previously recorded immediately adjacent to the APE. These surveys did not identify cultural materials or features associated with either site within the APE. Based on a visual inspection of the sites' conditions, NRCS recommended that both sites be determined Not Eligible for the NRHP. While the Missouri SHPO agreed that neither site would be affected by the undertaking's actions, they disagreed with the recommendation to find both sites Not Eligible in their concurrence of 6/12/2025.

NRCS completed consultation with Missouri SHPO, the Quapaw Nation, the Osage Nation, Absentee-Shawnee Tribe of Oklahoma, Eastern Shawnee Tribe of Oklahoma, and Shawnee Tribe. Missouri SHPO concurred with the recommended No Adverse Effect finding on 6/12/2025, and the Quapaw Nation provided their concurrence on 6/19/2025. There was no response from the Osage Nation, Absentee-Shawnee Tribe of Oklahoma, Eastern Shawnee Tribe of Oklahoma, or Shawnee Tribe.

A summary of the information in the Cultural Resources Report is available in Appendix D, while the full report is provided in Appendix E.

Energy

Management of water is critical to crop production in the Project Area. Gravity fed irrigation and drainage systems are used when possible to manage water, but it is not feasible to rely solely on gravity. When gravity fed systems are not sufficient, energy sources are used to pump irrigation water and move excess water from fields (NRCS 2022a).

Environmental Impacts of Proposed Action

What are the reasonably foreseeable short- and long-term and adverse or beneficial effects of the proposed action and alternatives (if any) on the environment, to public health and safety, on economics, and to the quality of life of the American people?

Soils

Erosion and Sedimentation

In the Proposed Action, full bank armoring would be installed on both sides of the south end of Cypress Lateral 1 (approximately 1.2 miles) with rock bedding and riprap. The remaining 13.4 miles of ditches would receive toe and 4 feet of bank armoring with rock bedding and riprap on both sides. To further stabilize the headcut developing along the full length of Cypress Lateral 1 (2.0 miles), engineered rock riffles will be installed. Additional riprap at pipe outlets will address localized erosion. A native grass/forb mix would be seeded above partial-bank armoring and along the top of bank for a maximum width of 50 feet to stabilize the channel and placed sediment. Riprap could also have negative effects, however, as introduction of riprap into the system may induce sediment deposition upstream and scour downstream of the riprapped section. These negative effects would be minimized by the existing ditch geometry and the planned armor and slope stabilization riprap techniques for the majority of the improvements and energy dissipation technique with engineered rock riffles in the Cypress Lateral 1.



Prime and Unique Farmland and Farmland of Statewide Importance

In the Proposed Action, approximately 14.6 miles of drainage ditches would be armored and seeded with native grasses, reducing erosion during rain events. This would protect prime farmland, maintain nutrient cycling and improve water quality in the riprapped sections. Riprap could also have negative effects, however, as introduction of riprap into the system can induce sediment deposition upstream and scour downstream of the riprapped section. Sedimentation upstream could reduce drainage from adjacent farmlands, increasing the duration of ponding that follows from storm events. Scouring downstream of the riprapped section could increase erosion headcuts into adjacent farmland as banks fail and begin to slough into the system. These negative effects would be minimized by the existing ditch geometry and the planned armor and slope stabilization riprap techniques for the majority of the improvements and energy dissipation technique with engineered rock riffles in the Cypress Lateral 1.

Water

Floodplain Management

Following the Proposed Action, floodwaters would move more quickly through the drainage system, providing benefits to agricultural land, property, and roads by decreasing bank erosion, sedimentation in streams (ditches), and the duration of ponding in fields in the sections where riprap would be installed. Riprap could also have negative effects outside of the riprapped sections, however, as introduction of riprap into the system can induce sediment deposition upstream and scour downstream of riprapped sections. Upstream sediment deposition and downstream scour could, in turn, reduce flow through the drainage system. Bottlenecks of surface water in the drainage system can then limit the flow of groundwater from under adjacent lands, thereby limiting infiltration on those lands and increasing the duration of ponding. These negative effects would be minimized by the existing ditch geometry and the planned armor and slope stabilization riprap techniques for the majority of the improvements and energy dissipation technique with engineered rock riffles in the Cypress Lateral 1.

Waters of the U.S. (Streams, Lakes, and Wetlands)

The Proposed Action would significantly improve the condition of streams (ditches), improving water quality and movement of water through the drainage system in the section where riprap would be installed. Riprap could also have negative effects, however, as introduction of riprap into the system would induce sediment deposition upstream and scour downstream of the riprapped section, leading to reduced water quality as solids and nutrients are suspended in the water column. These negative effects would be minimized by the existing ditch geometry and the planned armor and slope stabilization riprap techniques for the majority of the improvements and energy dissipation technique with engineered rock riffles in the Cypress Lateral 1.

Surface Water Quality (Clean Water Act)

The Proposed Action would reduce the amount of sediment and pesticides entering the ditch. Riprap could also have negative effects, however, as introduction of riprap into a system can induce sediment deposition upstream and scour downstream of the riprapped section, leading to reduced water quality as solids and nutrients are suspended in the water column. These negative effects would be minimized by the existing ditch geometry and the planned armor and slope



stabilization riprap techniques for the majority of the improvements and energy dissipation technique with engineered rock riffles in the Cypress Lateral 1.

Surface Water Quantity

The Proposed Action would increase flow through the drainage system, decreasing ponding on agricultural fields and roads where riprap is installed. Riprap could also have negative effects, however, as introduction of riprap into a system can induce sediment deposition upstream and scour downstream of riprapped sections. Upstream sediment deposition and downstream scour could, in turn, reduce flow through the drainage system. Bottlenecks of surface water in the drainage system can then limit the flow of groundwater from under adjacent lands, thereby limiting infiltration on those lands and increasing the quantity of water ponding on these lands. These negative effects would be minimized by the existing ditch geometry and the planned armor and slope stabilization riprap techniques for the majority of the improvements and energy dissipation technique with engineered rock riffles in the Cypress Lateral 1.

Groundwater Quality and Sole Source Aquifers

The Proposed Action would increase flow through the drainage system, decreasing ponding on agricultural fields and roads which would decrease transport of nutrients and chemicals into groundwater in the riprapped sections. Riprap could also have negative effects, however, as introduction of riprap into a system can induce sediment deposition upstream and scour downstream of the riprapped section, leading to decreased flow in this section of the ditch, which could lead to increased nutrients in groundwater in adjacent lands as ponding increases in duration following floods. These negative effects would be minimized by the existing ditch geometry and the planned armor and slope stabilization riprap techniques for the majority of the improvements and energy dissipation technique with engineered rock riffles in the Cypress Lateral 1.

Regional Water Resource Management Plans

The Proposed Action would result in no change to existing conditions.

Air

Air Quality (Clean Air Act)

The Proposed Action would create a temporary increase of pollutants from heavy equipment during installation. Afterwards, there would be an increase in air quality as native vegetation and bank stabilization reduced wind erosion of bank soils. Riprap could also have positive long-term effects on air quality, as it would lead to decreased use of heavy equipment in regular maintenance of eroding ditch banks. Prescribed burning to maintain the native vegetation would have a temporary negative effect on air quality.

Plants and Animals

Fish and Wildlife Habitat Conservation

Following the Proposed Action, riprap could negatively affect fish and wildlife habitat by disrupting the bank vegetation-water interface, which is an important element of aquatic habitat. Additionally, the absence of vegetation could result in less shading, higher water temperature,



and lower dissolved oxygen for aquatic organisms. Riprap could also have positive effects, however, by reducing erosion and thus increasing water quality. Whether effects are positive or negative would depend on the habitat requirements of a given species. These negative effects would be minimized by the existing ditch geometry and the planned armor and slope stabilization riprap techniques for the majority of the improvements and energy dissipation technique with engineered rock riffles in the Cypress Lateral 1.

Threatened and Endangered Species

Following the Proposed Action, riprap could negatively affect threatened and endangered species habitat by encroaching on vegetated portions of ditch banks and surface water. Riprap could have positive effects, however, by reducing erosion and sedimentation and thus preventing vegetated portions of ditch banks from eroding further and uprooting potential bat roost trees into ditches. Whether effects are positive or negative would depend on the habitat requirements of a given species. These negative effects would be minimized by the existing ditch geometry and the planned armor and slope stabilization riprap techniques for the majority of the improvements and energy dissipation technique with engineered rock riffles in the Cypress Lateral 1.

Migratory Bird Treaty Act/Bald and Golden Eagle Protection Act

Following the Proposed Action, riprap could negatively affect migratory bird habitat by encroaching on vegetated portions of ditch banks and surface water. Riprap could have positive effects, however, by reducing erosion and sedimentation and thus preventing vegetated portions of ditch banks from eroding into the ditches and negatively affecting surface water. Whether effects are positive or negative would depend on the habitat requirements of a given species. These negative effects would be minimized by the existing ditch geometry and the planned armor and slope stabilization riprap techniques for the majority of the improvements and energy dissipation technique with engineered rock riffles in the Cypress Lateral 1.

Invasive Species

With the Proposed Action, construction activities could result in invasive species being brought to the site on heavy equipment, though the risk can be reduced by cleaning and inspecting equipment before coming on-site. By purposefully planting a native grass/forb mix, invasive species would be less likely to reclaim disturbed construction areas. DD12 would use prescribed burning to maintain the landscape and reduce the risk of colonization by invasive species. The risk of invasive species spreading downstream via floodwater would be reduced.

Natural Areas

No change to existing conditions. Several natural areas are within the Project Area but would not be affected by ditch work.

Riparian Areas

With the Proposed Action, removing sediment, reshaping the ditches, and planting a native grass/forb mix would enhance the riparian environments along the affected ditch sections. Riprap could negatively affect riparian areas by encroaching on vegetated portions of ditch banks and surface water. Further, in causing sediment deposition upstream and scouring downstream of the riprapped section, riprap installation could degrade riparian habitat both upstream and

downstream of the riprapped section. These negative effects would be minimized by the existing ditch geometry and the planned armor and slope stabilization riprap techniques for the majority of the improvements and energy dissipation technique with engineered rock riffles in the Cypress Lateral 1. Riprap could, however, have positive effects on erosion and sedimentation in the section where riprap would be installed, which would prevent vegetated portions of ditch banks from further eroding into ditches and negatively affecting surface water.

Human Environment

Socioeconomic, Social, and Cultural Issues

Following the Proposed Action, residents would be less impacted socially and economically by loss of productive farmland after flood events and inability to travel due to flooded roads, as floodwaters would move more quickly through the system. Also, residents would have reduced need to purchase flood insurance or repair flood damage to homes, allowing for reallocation of finances. Emergency medical services would respond without additional delays. Riprap could also have negative effects, however, as introduction of riprap into a system can induce sediment deposition upstream and scour downstream of the riprapped section. Upstream sediment deposition and downstream scour could, in turn, reduce flow through the drainage system and off adjacent lands leading to increased duration of ponding on adjacent lands. These negative effects would be minimized by the existing ditch geometry and the planned armor and slope stabilization riprap techniques for the majority of the improvements and energy dissipation technique with engineered rock riffles in the Cypress Lateral 1.

Recreation

Following the Proposed Action, wildlife viewing and hunting opportunities would increase as riparian habitat is less affected by erosion. People would access more recreational opportunities, because floodwater would be adequately draining off roads and fields. Riprap could also have negative effects, however, as introduction of riprap into a system can induce sediment deposition upstream and scour downstream of the riprapped section. Upstream sediment deposition and downstream scour could, in turn, reduce flow through the drainage system and off adjacent lands leading to increased duration of ponding on adjacent lands. These negative effects would be minimized by the existing ditch geometry and the planned armor and slope stabilization riprap techniques for the majority of the improvements and energy dissipation technique with engineered rock riffles in the Cypress Lateral 1.

Public Health and Safety

Following the Proposed Action, standing water from flood events would reduce pooling duration and depth in fields, ditches, and on local highways, allowing for residents to safely travel to their destinations, as floodwaters would move more quickly through the system. The reduction in standing water would cause a reduction in mosquito habitat, decreasing the risk of mosquito-borne illnesses. Riprap could also have negative effects, however, as introduction of riprap into a system can induce sediment deposition upstream and scour downstream of the riprapped section. Upstream sediment deposition and downstream scour could, in turn, reduce flow through the drainage system and off adjacent lands leading to increased duration of ponding on adjacent lands. These negative effects would be minimized by the existing ditch geometry and the



planned armor and slope stabilization riprap techniques for the majority of the improvements and energy dissipation technique with engineered rock riffles in the Cypress Lateral 1.

Potable Water Supply

Following the Proposed Action, riprap installation would allow for floodwater to move through the project area more efficiently. Decreasing the ponding of floodwater would decrease the amount of nutrients and pollutants percolating into groundwater. Riprap could also have negative effects, however, as introduction of riprap into the system would induce sediment deposition upstream and scour downstream of the riprapped section. Upstream sediment deposition and downstream scour could, in turn, reduce flow through the drainage system and off adjacent lands leading to increased duration of ponding on adjacent lands. These negative effects would be minimized by the existing ditch geometry and the planned armor and slope stabilization riprap techniques for the majority of the improvements and energy dissipation technique with engineered rock riffles in the Cypress Lateral 1.

Historic and Cultural Resources

With the Proposed Action, the removal of some bank material during construction could have a short-term negative impact, but riprap installation would provide long-term protection from erosional effects at Cypress Lateral No. 1. Because the NHRP eligibility described in Section 4.3.5 does not restrict DD12's statutory maintenance responsibilities, the proposed work has been evaluated as having no adverse effect on historical and cultural resources. This alternative would be expected to provide an overall net benefit by ensuring the continuation of Cypress Lateral No. 1 ditch as a functional system well into the future. See section 4.3.5 for further details on No Adverse Effect determination.

Energy

Following the Proposed Action, energy spent on ditch maintenance to reduce erosion would decrease relative to existing levels after the energy expenditure of the initial riprap installation. If sediment deposition upstream and/or scour downstream of the riprapped section were to occur as a result of the riprap, however, DD12 would potentially need to resume regular ditch maintenance and thus revert to some level of energy expenditure for the use of heavy equipment. These negative effects would be minimized by the existing ditch geometry and the planned armor and slope stabilization riprap techniques for the majority of the improvements and energy dissipation technique with engineered rock riffles in the Cypress Lateral 1. As noted above, the native grass buffers would be maintained using prescribed burning rather than mowing, which would reduce the use of fossil fuels, and gravity fed pump systems would not be needed as often to remove floodwater from fields.

Environmental Impacts of FWOFI

What are the negative environmental impacts or consequences to public health and safety, economics, or the quality of life of the American people if the proposed action or alternatives (if any) are not implemented?



Soils

Erosion and Sedimentation

Without federal funding, ditch banks would continue to erode back into fields and become more undercut, and sediment would continue to fill up the ditches and be transported downstream.

Prime and Unique Farmland and Farmland of Statewide Importance

Inaction would negatively impact farmland. Maintenance activities within the DD12 system but outside the Project Area would continue, impacting some drainage of the Project Area. Over time, ditch banks would erode back into fields and become more undercut, leading to sedimentation and flooding of prime farmland adjacent to ditches and downstream. Natural and applied nutrients would erode with the soil, decreasing soil health, disrupting nutrient cycling, and decreasing water quality. After flooding events, standing water would continue to pool on prime farmland due to the degradation of drainage infrastructure.

Water

Floodplain Management

No change to existing conditions. The Sponsor would continue to monitor conditions and complete current maintenance activities to prolong the service life of the ditches. Flooding events would continue to cause damage to agricultural land, property and infrastructure.

Waters of the U.S. (Streams, Lakes, and Wetlands)

No change to existing conditions. After flood events, ditch banks would erode into streams (ditches), wetlands and ponds, impacting water quality, and increasing ponding on agricultural fields and roads.

Surface Water Quality (Clean Water Act)

No change to existing conditions; ditches are not listed on the Missouri 2020 303(d) list of impaired waters. Continued and exacerbated erosion would impact turbidity and nutrient cycling as more soil erodes into streams (ditches). Sedimentation in ditches would create small pools of standing water.

Surface Water Quantity

No change to existing conditions. Floodwater would continue to pond on agricultural fields and roads due to inadequate drainage. Sedimentation would restrict flow in the ditch, creating small pools of standing water.

Groundwater Quality and Sole Source Aquifers

Inaction would lead to negative impacts. Ponding floodwater would increase transport of nutrients and pollutants into groundwater, impacting water quality. No sole source aquifer exists.

Regional Water Resource Management Plans

No change to existing conditions.



Air

Air Quality (Clean Air Act)

No change to existing conditions; counties in Project Area are not within non-attainment zones for NAAQS (USEPA 2024h). Since no action will not protect the ditch banks with rock or vegetation, heavy equipment would be needed more often to address erosion from flood events. There would be temporary increases in pollutants released from heavy equipment to repair damages from future flooding events.

Plants and Animals

Fish and Wildlife Habitat Conservation

No change from existing condition. Habitat for fish and wildlife would continue to degrade as ditch banks slough into the drainage system, impacting water quality and turbidity. Little pollinator habitat would exist as banks are planted to nonnative grasses. Sedimentation would block flow in ditches, creating small pools of standing water and impacting water transport down the ditch. Available habitat types would shift as there is less flowing water.

Threatened and Endangered Species

No change to existing condition. Bat roost trees would be impacted as ditch banks slough into the ditch, taking any existing roost trees with them.

Migratory Bird Treaty Act/Bald and Golden Eagle Protection Act

No change to existing conditions. Bank trees would be impacted as the ditch banks slough into the ditch, reducing the amount of habitat available for migratory species.

Invasive Species

No change to existing conditions; invasive species would recolonize areas disturbed after flooding events or be transported downstream during flood events, expanding their range.

Natural Areas

No change to existing conditions.

Riparian Areas

No change to existing conditions. The riparian areas would continue to degrade as there is little mechanism in place to reduce ditch bank erosion. Sedimentation would impede the ditches, creating small pools of standing water and reducing flow in the ditches.

Human Environment

Socioeconomic, Social, and Cultural Issues

No change from current conditions. Farmland productivity would continue to degrade as soils become saturated and erode, moving nutrients and sediment downstream during flood events. Farmland inundated with standing floodwater would be less productive. Income generated from crop yield would be impacted. Residents would be forced to alter travel while attending medical appointments, religious activities, shopping, work, and school. Flooded roadways would increase response time for emergency medical services. School buses would be unable to travel through



flooded roads, forcing children to miss school and caretakers to potentially miss work to provide childcare.

Recreation

No change from existing conditions. Wildlife viewing and hunting opportunities would be negatively impacted by the degradation of riparian habitat. During flooding events, people would not be able to access recreational opportunities due to ponded floodwater on roads and fields.

Public Health and Safety

Inaction would result in negative impacts. Standing water from flood events would continue to impact local roads, forcing residents to drive flooded roadways or postpone traveling to medical appointments, grocery stores, work, and school. The response time for emergency medical services would be impacted. School buses would not be able to travel flooded roads, forcing children to miss school and caretakers to potentially miss work to provide childcare. Standing water would create a mosquito habitat, increasing the risk of mosquito-borne illnesses.

Potable Water Supply

No change to existing conditions. Ponding floodwater would lead to percolation of nutrients and pollutants into groundwater, impacting the quality for drinking water that is largely drawn from wells in the area.

Historic and Cultural Resources

No change to existing conditions at Cypress Lateral No. 1 would represent an adverse effect due to impacts related to erosion over time. Additionally, the ditch would eventually fail to serve as a functional system. If this alternative is chosen, there is a risk of adverse erosional effects upon two previously recorded archaeological sites located within the project area. Headcutting at Cypress Lateral No. 1 would continue, worsening the rate of bank erosion and threatening the archaeological integrity of adjacent sites.

Energy

Energy requirements do not change. The sponsor continues to use mowing and heavy equipment to combat erosion and maintain the ditch's shape. Farmers would continue to use pumps to remove water from flooded fields.

Commitment of Federal Resources

Will the proposed action or action alternatives (if any) make an irreversible or irretrievable commitment of Federal resources?

Irreversible effects or irretrievable commitment of resources are considered permanent. The Proposed Action would have no irreversible effects on prime farmland.

Construction equipment and materials, labor, and fuel consumption during construction activities are irretrievable. The cost of this alternative is irretrievable in the short-term but the investment will be realized in the long term due to risk reduction downstream.

How will the irreversible or irretrievable commitment of Federal resources, if any, contribute to a loss of long-term productivity for the human environment?

Long-term productivity for the human environment is likely to be minor if not negligible as the impacted resources of prime farmland are small and costs of materials, labor, and fuel will be considered an investment in reduction of downstream flood risk for the foreseeable future.

Consideration of Pertinent Laws, Regulations, Guidance and Executive Orders

Endangered Species Act

The pertinent subject matter expert(s) reviewed the proposed action (and action alternatives, if any) and documented determinations for threatened, endangered, proposed and/or candidate species (TEPC) and/or critical habitat in a biological assessment. A “may affect, likely to adversely affect” determination was reached for the following species:

Table 1: May Affect, Likely to Adversely Affect Determination for TEPC Species/Critical Habitat

Species/Habitat	Status	Proposed or Designated Critical Habitat Present?	Brief Rationale (or refer to other proposal documentation)
Gray Bat (<i>Myotis grisescens</i>)	Endangered	No	Gray bats rely on caves and other underground habitat (such as bridges, tunnels, and mines) year-round. They move annually between hibernacula and summer caves. Caves are not in the vicinity of the PA; therefore, this species was removed from consideration. The Project is anticipated to have a determination of <u>no effect</u> to the gray bat.
Indiana Bat (<i>Myotis sodalis</i>)	Endangered	No	Live and dead trees that offer potential bat habitat are sparse but present in and near the PA. To avoid adverse impacts, no snag or tree removal will occur during the maternity roosting season, from April 1 to November 15. If tree clearing must occur during this time, a bat survey will be conducted. The Project is anticipated to have a determination of <u>may affect, not likely to adversely affect</u> the Indiana bat.
Tri-Colored Bat (<i>Perimyotis subflavus</i>)	Proposed Endangered	No	Live and dead trees that offer potential bat habitat are sparse but present in and near the PA. To avoid potential adverse impacts, snag or tree removal should be avoided during the maternity roosting season, from April 1 to November 15. These dates may change prior to implementation depending on listing status. The tri-colored bat is currently a proposed federally listed species, and a federal listing opinion is anticipated. If it becomes listed prior to construction, consultation with USFWS would occur and avoidance measures would be followed. The Project is anticipated to have a determination of <u>may affect, not likely to adversely affect</u> the tri-colored bat.

Species/Habitat	Status	Proposed or Designated Critical Habitat Present?	Brief Rationale (or refer to other proposal documentation)
Alligator Snapping Turtle (<i>Macrochelys temminckii</i>)	Proposed Threatened	No	Alligator snapping turtles are generally found in deeper water of large rivers but are also found in a wide variety of other habitats, including small streams, bayous, canals, swamps, lakes, reservoirs, ponds, and oxbows. They prefer structure (e.g., tree root masses, stumps, submerged trees, etc.) over open water and may select sites with a high percentage of canopy cover. Suitable habitat for this species was not observed in the PA, therefore, this species was removed from consideration. The Project is anticipated to have a determination of <u>no effect</u> to the alligator snapping turtle.
Monarch Butterfly (<i>Danaus plexippus</i>)	Proposed Threatened	No	The monarch butterfly range is within PA limits. A significant population of monarchs and common milkweed (<i>Asclepias syriaca</i>) was observed along the eastern bank of Ditch Number 1 adjacent to Old Caney Basin Conservation Area. The monarch butterfly is currently a proposed threatened species. If the monarch butterfly becomes listed prior to construction, consultation with USFWS would occur and avoidance measures would be followed. Conservation measures will include adding milkweed species into the seeding plan to increase forage available for the species. The Project is anticipated to have a determination of <u>may affect, not likely to adversely affect</u> the monarch butterfly.
Snuffbox Mussel (<i>Epioblasma triquetra</i>)	Endangered	No	Snuffbox mussels are generally found in deeper water of large rivers. Habitat is minimal in the Project Area as the drainage ditches are silted in and shallow much of the year; therefore, this species was removed from consideration. The Project is anticipated to have a determination of <u>no effect</u> to the snuffbox mussel.
Western Fanshell (<i>Cyprogenia aberti</i>)	Threatened	No	Western fanshell mussels are generally found in deeper water of large rivers. Habitat is minimal in the Project Area as the drainage ditches are silted in and shallow much of the year; therefore, this species was removed from consideration. The Project is anticipated to have a determination of <u>no effect</u> to the western fanshell.

National Historic Preservation Act – Section 106 Review

The pertinent subject matter expert has reviewed the proposed action (and action alternatives, if any) and made the following determination:

No adverse effects. Section 106 Review has been completed for the project area and one National Register eligible cultural site was found.

In December 2023, archival and historical research was conducted for the Project Area. An archaeological review of literature was conducted to determine if National Register of Historic



Properties (NRHP), NRHP districts, or archaeological sites had already been documented in the APE or if any recent disturbances had occurred that may have affected cultural resources. Two archaeological sites have been documented within the APE and an additional eleven sites within the 250-ft radius of the APE. The two sites within the APE included a historic surface scatter and a prehistoric isolated find, but no eligibility determination was on file for either site. A reconnaissance-level historic resources survey was also conducted for historic-age buildings, structures, and site features within the APE. No previously recorded historic structures were identified within or near the Area of Potential Effect (APE). However, one architectural resource, Cypress Lateral No. 1 ditch (23SO1657), was identified and documented during cultural resources investigations for the proposed undertaking.

Cypress Lateral No. 1 (23SO1657) is recommended to be eligible for listing in the National Register of Historic Places (NRHP) under Criterion A due to its significance in agriculture, community planning and development and social history. The ditch was originally constructed around 1915, and its period of significance spans from the year of its construction until 1974. It represents part of the larger southeast Missouri drainage system, which is considered an engineering achievement. As such, it may also be eligible under Criteria C and D. Since the APE does not encompass the full extent of Cypress Lateral No. 1, Lick Creek, or Dudley Main Ditches, comprehensive surveys required to evaluate these resources under Criteria C and D were beyond the scope of the present investigations.

Undertaking actions of the preferred alternative consist of dredging, armoring existing drop pipe outlets, spreading dredged soils, and broadcast seeding upper levels of ditch and levee with native herbaceous vegetation. These actions are generally considered normal ditch maintenance and would be considered exempt from CWA Section 404 permitting (USACE 2020). However, USACE would need to review final maintenance plans and concur with this exemption. Any potential ground disturbance impacts will be contained within the existing ditch footprint and will not alter the characteristics that make the ditch a significant cultural feature and eligible to the National Register of Historic Places. Since this undertaking represents a continuation of the regular maintenance that has been required to support the function of Cypress Lateral No. 1 over time, and because this maintenance will not significantly change any ditch characteristics, a finding of No Adverse Effect to Historic Properties is recommended relative to this resource.

Additionally, Phase I Archaeological Surveys were conducted at the locations of two archaeological sites previously recorded immediately adjacent to the APE. These surveys did not identify cultural materials or features associated with either site within the APE. Based on a visual inspection of the sites' conditions, NRCS recommended that both sites be determined Not Eligible for the NRHP. While the Missouri SHPO agreed that neither site would be affected by the undertaking's actions, they disagreed with the recommendation to find both sites Not Eligible in their concurrence of 6/12/2025.



NRCS completed consultation with Missouri SHPO, the Quapaw Nation, the Osage Nation, Absentee-Shawnee Tribe of Oklahoma, Eastern Shawnee Tribe of Oklahoma, and Shawnee Tribe. Missouri SHPO concurred with the recommended No Adverse Effect finding on 6/12/2025, and the Quapaw Nation provided their concurrence on 6/19/2025. There was no response from the Osage Nation, Absentee-Shawnee Tribe of Oklahoma, Eastern Shawnee Tribe of Oklahoma, or Shawnee Tribe.

A summary of the information in the Cultural Resources Report is available in Appendix D, while the full report is provided in Appendix E.

Consultation with Federally Recognized Tribes

Consultation with federally recognized tribes was conducted as follows:

NRCS solicited input from the tribal governments listed below during the development of the Plan-EA. Federally recognized tribal lands, as defined in the NHPA, do not occur in Missouri. The invitation to participate as a consulting party was requested pursuant to requirements of Section 106 of the National Historic Preservation Act of 1966, as amended (54 U.S.C. §300101 et. seq.), and the Protection of Historic Properties (36 CFR Part 800) in letters dated September 25, 2023, and September 30, 2024 (see Stakeholder Letters in Appendix A). Five tribes were identified as having tribal interests in Stoddard County (MODOT 2026). The five tribes include Absentee-Shawnee Tribe of Indians of Oklahoma, Eastern Shawnee Tribe of Oklahoma, Osage Nation, Quapaw Nation, and Shawnee Tribe. The Osage Nation responded on October 19, 2022, with a request for a cultural resources survey report of the project. The Quapaw Nation responded on October 10, 2023, and Sept 25, 2024, stating the project would have “no effect” to known properties of cultural or sacred significance to the Quapaw Nation. There was no response from the remaining tribes.

The Section 106 was initiated on October 16, 2024, with a consultation package containing project information, APE, identification efforts, and finding of effect. All five tribes were sent Section 106 project review packages and consultation letters on October 16, 2024, which are also included in Appendix A. The Quapaw Nation was the only respondent (June 19, 2025), stating that the project would have “no effect” to known properties of cultural or sacred significance to the Quapaw Nation. No tribal comments indicated that the Proposed Action would have adverse effects on historic properties, which include Traditional Cultural Properties, Places of Religious and Cultural Significance, Indian Sacred Sites, or culturally sensitive resources based on the alternatives presented in this document and based on consultation with the relevant tribal entities about these alternatives. Below is the list of tribes who were identified by NRCS as having a potential interest whose name is followed by reference and are filed in Appendix A. NRCS served as the tribal liaison for the project.

- Absentee-Shawnee Tribe of Indians of Oklahoma
- Eastern Shawnee Tribe of Oklahoma

- Osage Nation – requested to review the Cultural Resource report on 9/15/2022, but did not respond to NRCS letter about this report from 10/16/2024
- Quapaw Nation – NRCS notified the Quapaw Nation about the Preliminary Investigation Feasibility Reports (PIFR) for this project on 5/12/23 and 5/22/23. The Quapaw Nation stated there would be No Effect on 9/25/2024 and then concurred with No Effect to cultural resources determination on 6/19/2025.
- Shawnee Tribe

Clean Water Act

The pertinent subject matter expert has reviewed the proposed action (and action alternatives, if any) and made the following determination:

Project may affect waters but will not affect wetlands. Modifications/design criteria have been included to ensure compliance with CWA is met. All permits received and modifications/design features are clearly presented and documented in the analysis.

Any permanent impact on waters of the United States (WOTUS) may require mitigation in the form of restoration (re-establishment or rehabilitation), enhancement, or establishment of aquatic resources. The need for compensatory mitigation would be addressed during the CWA Section 404 permitting process. The proposed action will not impact wetlands but will impact streams (ditches) used for drainage. The Sponsor will request an Approved Jurisdictional Determination (AJD) from the USACE – Memphis District to determine whether the ditches are subject to jurisdiction under Section 404 of the CWA and whether the proposed activities are exempt from regulation under Section 404(f)(1)(C). A 2020 memo between the USACE and the EPA outlines guidance for applying this exemption for maintenance of drainage ditches (USACE 2020).

Wetlands were not identified in the Project Area and will not be impacted by implementation of the preferred alternative.

Approximately 14.6 miles of streams (ditches) will be permanently impacted by implementation of preferred alternatives. The AJD will determine if the streams (ditches) are jurisdictional. It would then be necessary to determine the impact and assess whether compensatory mitigation would be required; this would likely include agency coordination to help inform this decision. If needed, the Missouri Stream Mitigation Method, or other assessment methodology would generally be applied to determine appropriate mitigation. There is an in-lieu fee mitigation provider with a service area that includes the bootheel. If mitigation is necessary, it would also be necessary to address the preference hierarchy and other requirements established in the CWA 2008 Mitigation Rule.

The project appears to meet the Section 404(f)(1)(C) exemption for maintenance of drainage ditches and therefore not be subject to permitting by the U.S. Army Corps of Engineers (USACE). However, the USACE has the final determination as to which waterbodies fall under their jurisdiction and which are subject to Section 404 permitting. Therefore, if the project does not meet Section 404(f)(1)(C) exemptions, an individual Section 404 permit may be required for

the placement of dredged or fill material within the Project Area. Should an individual Section 404 permit be required, an individual Section 401 Water Quality Certification from MDNR may also be required.

The National Pollution Discharge Elimination System (NPDES) regulates the discharge of any pollutant from a point source into a water of the United States. The maintenance of the ditches will discharge sediment and other materials into streams (ditches). During the design phase, the sponsor will need to obtain an NPDES Construction General Permit (USEPA 2024d). This will outline limits on what pollutants can be discharged, reporting requirements, and other provisions to ensure that the discharge does not adversely affect water quality. This permit will be obtained through the Missouri Department of Natural Resources.

Clean Air Act

The pertinent subject matter expert has reviewed the proposed action (and action alternatives, if any) and made the following determination:

The project will not result in permanent air emissions and no modifications or further coordination needs to occur to ensure compliance.

Special Management Area Considerations

The pertinent subject matter expert has reviewed the proposed action (and action alternatives, if any) and made the following determinations based on special management area presence, proximity, or lack of:

No activities are proposed within or in the vicinity of Special Management Areas.

Pertinent Executive Orders

The applicable subject matter experts have determined the proposed action (and action alternatives, if any) are in compliance with the following Executive Orders (EO), which were deemed pertinent based on the nature of the proposal:

EO 11990, Protection of Wetlands – avoid actions within wetlands unless there are no practical alternatives, and the action includes all practicable means to minimize harm to wetlands.

The project would not impact wetlands. Project activities would occur within existing drainage ditches and associated banks that have been constructed, operated, and maintained for agricultural drainage purposes.

EO 13007, Indian Sacred Sites – avoid adversely affecting the physical integrity of these sites.



Consultation with Federally Recognized Tribes was completed as described above. No Indian Sacred Sites were identified.

EO 13112, Invasive Species – prevent the introduction of invasive species and provide for their control and to minimize the economic, ecological, and human health impacts that invasive species cause.

Best management activities for reducing risk of invasive species transport and establishment include using fill material that is guaranteed to be free from invasive species, all imported material sources locally, not importing topsoil, and cleaning equipment prior to its use within the PA.

EO 13186, Migratory Birds – identify actions that may have a measurable negative effect on migratory bird populations.

There would be no tree clearing from May 1 to July 15, or a nesting survey will be required. Eagle surveys would be conducted within a half mile of each project site prior to construction.



CERTIFYING STATEMENT FOR EA PAGE LIMIT AND DEADLINE

This section is required. See 7 CFR 1b.5(c)(6). Must be able to check every box.

The Responsible Official certifies that this EA:

- ☒ Demonstrates the agency has thoroughly considered the factors mandated by NEPA;
- ☒ Represents the agency's good-faith effort to prioritize documentation of the substantive issues and most important considerations required by NEPA within the congressionally mandated page limits;
- ☒ Reflects the agency's expert judgment.
- ☒ Addressed briefly, or left unaddressed, any issues or considerations that were, in the agency's judgment, comparatively not of a substantive nature;
- ☒ Represents the agency's good-faith effort to fulfill NEPA's requirements within the Congressional timeline (or within the minimally extended timeline) and this effort is substantially complete; and
- ☒ Contains analysis that is adequate to inform and reasonably explain the responsible official's final decision regarding the proposed action or selected alternative.

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FINDING OF NO SIGNIFICANT IMPACT (FONSI)

Proposal Name: Watershed Plan and Environmental Document – Lick Creek and Dudley Main Ditch Watershed - Missouri **Unique Identification #:** EAXX-005-53-029-1231884765

Agency Name: Natural Resources Conservation Service **Unit Name:** Missouri State Office

Documentation Informing the FONSI

This Finding of No Significant Impact incorporates the Environmental Assessment and relies on documentation in the associated proposal record.

Activities Approved

I have decided to approve the “[Proposed Action](#)” as described in the “[Proposal Information](#)” section of the Environmental Assessment.

Determination of No Significant Impacts

I have determined no significant impacts are anticipated for the activities approved based on the discussion provided under the “[NEPA: Consideration of Reasonably Foreseeable Impacts](#)” section, and as informed by other analysis and determinations provided in the “[Environmental Review and Consultation](#)” section of the Environmental Assessment.

The EA evaluated both the beneficial and adverse impacts of the proposed action, which is the authorization of funds to administer a watershed protection program offering technical and financial assistance to address flooding and flood damage to an aging infrastructure that is increasing. Water from adjacent farmland has been transporting sediment to the DD12 drainage ditches for around a century. The sediments have accumulated over time and have reduced the drainage system’s capacity and ability to prevent flooding. Specifically, the banks of Dudley Main Ditch, Lick Creek Ditch, and Cypress Lateral No. 1 are experiencing erosion from high water flow.

Aging infrastructure poses a risk of failure that could lead to loss of life, property damage, and disruption of public services for communities in the watershed. As the drainage system has aged and become less effective at preventing floods, the flooding events themselves continue to degrade the system, contributing to failures of ditch bank slopes. The drainage ditches overflow and flood adjacent cropland, resulting in harvest interruptions, prevented plant acres, and loss of farm income. Given the importance of agricultural crop production to the region’s economy and the increasing intensity of storms due, measures are needed to improve ditch infrastructure and protection of farming operations.

As summarized in “NEPA: Consideration of Reasonably Foreseeable Impacts” section, the proposed action’s environmental benefits would outweigh the potential environmental costs of the program, which would be temporary and occur primarily during construction of individual treatment projects. Impacts to cultural and socio-economic resources would be primarily positive and minimized by project-specific systems to reduce impacts. Long-term impacts of the projects



over the project life would outweigh the short-term, adverse impacts of construction. Overall, the program is estimated to result in long-term beneficial impacts to water quality, and other ecosystem services; and reduce flooding and negative stormwater impacts.

A cultural resources inventory of the area of potential effects (APE) was undertaken. The NRCS has consulted with the Missouri State Historic Preservation Officer (MO-SHPO), the Quapaw Nation, the Osage Nation, Absentee-Shawnee Tribe of Oklahoma, Eastern Shawnee Tribe of Oklahoma, and Shawnee Tribe. Missouri SHPO concurred with the recommended No Adverse Effect finding on 6/12/2025, and the Quapaw Nation provided their concurrence on 6/19/2025. There was no response from the Osage Nation, Absentee-Shawnee Tribe of Oklahoma, Eastern Shawnee Tribe of Oklahoma, or Shawnee Tribe.

The recommended action is not anticipated to have adverse long-term effects on fish and wildlife habitat, floodplains, migratory birds, park lands, prime farmlands, rare, threatened, and endangered species of plants and animals, scenic beauty, wild and scenic rivers, or ecologically critical areas.

No threatened or endangered species in the watershed will be affected by the project.

The effects of the recommended action are not considered highly uncertain nor involve unique or unknown risks.

The project is not of National Significance and implementing the proposed alternative will not establish a precedent for future actions with significant effects, nor does it represent a decision in principle about future considerations.

The proposed action will not violate Federal, State, or local law requirements imposed for protection of the environment. Consultations required by the Magnuson-Stevens Fishery Conservation and Management Act, Endangered Species Act, National Historic Preservation Act, and Marine Mammal Protection Act have been completed. The recommended action is consistent with the requirements of these laws. The local sponsors will obtain any necessary permits before they begin implementation of the project.

The recommended action will not result in significant adverse cumulative impacts. The cumulative effects of this project are very positive for protection of downstream loss of life and property. The planned action is the most practical, complete, and acceptable means of protecting life and property of downstream residents. There are no significant negative short-term or long-term environmental or human impacts associated with the implementation of this action.

The action alternative would require construction equipment and materials and other energy in the form of labor and fossil fuels. Using these items would be generally irretrievable. The expenditure of financial resources is irretrievable in the short term, but the investment could be retrieved over the life of the projects by increasing the value of ecological resources and a reduction in flooding and stormwater damages.



Anticipated Implementation of Authorized Activities

I intend to implement the approved activities starting 1 year from authorization, depending on funding availability. Following authorization, design and construction phase funding will be requested. The implementation is expected to take 3-10 years.

Signature and Authorization Date

Nate Goodrich

Missouri State Conservationist

Date

A handwritten signature in blue ink, appearing to read "Nate R. Goodrich", written over the word "Date".

October 1, 2026