Appendix A

Alternative / Option 1 Screening Technical Memorandum

Memorandum

DATE:	October 25, 2022
FROM:	WSP
SUBJECT:	Screening Analysis for Preferred Alternative and Option 1 Westphalia Segments
TO:	Missouri Department of Transportation, Central District

Prepared by:	Connie Heitz 10-25-2022
Checked by:	NRR, 10-25-2022
Revision No.:	0

1 BACKGROUND

In 2009, the Missouri Department of Transportation (MoDOT), in coordination with the Federal Highway Administration (FHWA), prepared and approved an Environmental Impact Statement (EIS) as required under the National Environmental Policy Act (NEPA) for the improvement of Route 63 in Osage, Maries, and Phelps Counties, Missouri (2009 EIS). The purpose of the proposed improvements considered in the EIS is to correct deficiencies on existing Route 63; to ease congestion throughout the entire route, especially in the communities of Westphalia, Freeburg, Vienna, and Vichy; and to provide four-lane design continuity along the Route 63 corridor. The 2009 EIS evaluated many alternative segments of roadway to achieve the purpose and need which resulted in the selection of a Preferred Alternative that would include a new roadway, partially on new alignment and partially on the existing Route 63 alignment. The Preferred Alternative is a study area corridor approximately 47 miles long, ranging in width up to 750 feet, extending from south of the Route 50/Route 63 interchange in Osage County to near Rolla in Phelps County.

Currently, MoDOT is conducting a re-evaluation of the 2009 EIS to determine if changes in the project area have occurred. MoDOT will use this information to better understand the impact of potential improvements.

2 ALTERNATIVE DEVELOPMENT DURING THE 2009 EIS

Alternative corridor segments were developed during the 2009 EIS by the MoDOT Study Team. The development and evaluation of the alternatives assumed a four-lane divided highway configuration on new alignment in the Westphalia section. The Study Team used topographic maps and aerial photography to locate alignment away from visible structures such as homes or farm buildings and environmentally sensitive constraints. Tax assessment maps were also used to locate approximate property lines so corridors could be set to minimize dividing large farms

and properties. Field checks were also conducted to ensure the corridors would intersect existing state routes and public roads.

The Study Team also conducted a number of public meetings to solicit input from area residents and users of the roadway. Public comments received from the public meetings helped MoDOT to develop a set of study corridors called the Reasonable Range of Alternatives. When data collection for the Reasonable Range of Alternatives Matrix was completed, the Study Team met to evaluate the new information and determine which links should move forward for further consideration. Collaboration from the Study Team led to the development of the Preferred Alternative.

As a result of public comments, and as part of the effort to continue to improve the alternatives to minimize impacts, adjustments and new alignments emerged at four locations. These emerging options, Options 1 through 4, avoided potential historic properties and other impacts. Option 1 is located in the Westphalia section and provides an alternative to the corresponding Preferred Alternative segment on the west side of existing Route 63, as shown on Figure 1. Option 1 was added to the analysis because it resulted in slightly less construction costs and an improved alignment.

A “drop-in” open house was held on April 10, 2008 to discuss these emerging options with the public. As a result of this meeting, property owners affected by the alternatives met with MoDOT to discuss further options including use of the existing route through Westphalia for northbound traffic. The MoDOT study team evaluated this suggestion and the Option 1 segment and concluded that the recommended Alternate A segment move forward as the Preferred Alternative based on public input and because there were no significant differences in impacts between the two segments.

3 Route 63 EIS Re-evaluation Corridor Screening

The previous EIS study was completed in 2009 and requires a re-evaluation of the study corridor to gather public input and determine if changes in the project area have occurred. MoDOT will use this information to better understand the impact of potential improvements. As part of this effort MoDOT engaged with the public via a project webpage, news release, and letters to property owners that would be affected by the Preferred Alternative requesting right of entry to conduct environmental surveys. A request was made by a property owner through this outreach to reconsider Option 1 as a potential alternative to the selected Preferred Alternative. Although the evaluation of four emerging optional segments was documented in the 2009 EIS, MoDOT elected to conduct an updated screening analysis to determine if conditions have changed that would make Option 1 a reasonable alternative to the Preferred Alternative.

A desktop analysis was conducted by MoDOT staff with MoDOT’s environmental consultant, WSP, using publicly available environmental data and aerial photography. The analysis identified environmental features and structures located within the footprint of each corridor which are shown on Figures 1 and 2. Potential environmental features, structures, and

infrastructure that would be impacted were documented in the screening matrix in Table 1 to allow for a side-by-side comparison of impacts.

Table 1
Preferred Alternative/Emerging Option 1 Screening Matrix

		Potential Impacts within Corridor	
Description	**Measurement**	**Preferred Alternative**	**Emerging Option 1**
Engineering Considerations			
New Corridor Length	mile	2.2	2.1
Bridges	#	1	1
Creek/Stream Crossings	#	6	7
Stream Length Impact	feet	2,016	2,259
River Crossings	#	0	0
Right-of-Way Impacts			
Parcels Impacted	#	31	28
Farm Impacts/Severances	#	3	6
Residential Displacements	#	2	5
Commercial Agricultural Structures	#	1	1
Agricultural Building Displacements	#	3	4
Transmission Line Corridor length	feet	1,253	4,908
Environmental Impacts			
Impact to Communities	rating	0	0
Potential Section 4(f) Parklands	#	0	0
Recreational Use Facilities owned Privately	#	0	0
Wetlands			
PEM (Palustrine Emergent Wetland)	acres	0.0	0.1
PFO (Palustrine Forested Wetland)	acres	-	
PSS (Palustrine Scrub Shrub Wetland)	acres		
PUB- Ponds (Palustrine Unconsolidated Bottom)	acres	1.2	2.3
Land Cover			

		Potential Impacts within Corridor	
Description	**Measurement**	**Preferred Alternative**	**Emerging Option 1**
Forest	acres	136.5	116
Open Space	acres	68	68
Floodplain	acres	11.1	8.1
Threatened & Endangered Species	yes/no	No	No
Cultural Resources Impacts			
Cemeteries	#	0	0
National Register of Historic Places (NRHP)	#	0	0
Potential Historic/4(f) Properties ***	#	0	0
MoDOT Historic Properties (potentially eligible from 2009 EIS)	#	1	0

Sources: National Land Cover Database, 2019; National Heritage Data, 2022, National Wetlands Inventory, 2022; Maxar, 2019; 2009 Route 63 EIS (Osage, Maries, Phelps Counties)

4 Screening Summary and Conclusion

As the corridors were designed to minimize environmental and structure impacts to the maximum extent possible, impacts associated with each are similar for most resources. However, key differences between the two corridors include the following:

- Stream Impacts: The length of stream impacts for the Preferred Alternative is 2,016 feet compared to 2,259 feet for Option 1, a difference of 10%.
- Farm Severances: The Study Team considered farm severances impacts to occur where the corridor severs the parcel such that the entire parcel is divided resulting in two separate pieces of farm property separated by the roadway corridor. The number of farm severances for the Preferred Alternative is 3 compared to 6 farm severances for Option 1.
- Residential Displacements: The Preferred Alternative would result in the displacement of 2 single-family residences compared to Option 1 which would displace 5.
- Transmission Lines: The Preferred Alternative would require the relocation of 1,253 feet of transmission line compared to 4,908 feet that would be required for relocation for Option 1; a difference of 3,665 feet.

Other considerations discussed among the Study Team included potential differences in constructability between the two corridors. No notable differences were determined given the similar terrain and the width of the corridor. Given these comparisons and the additional impacts associated with Option 1, the Study Team concluded that there was no compelling reason to move away from the Preferred Alternative as Option 1 does not present a less impactful

alternative. Therefore, the Preferred Alternative will continue to be studied and evaluated in the 2009 EIS Re-evaluation.

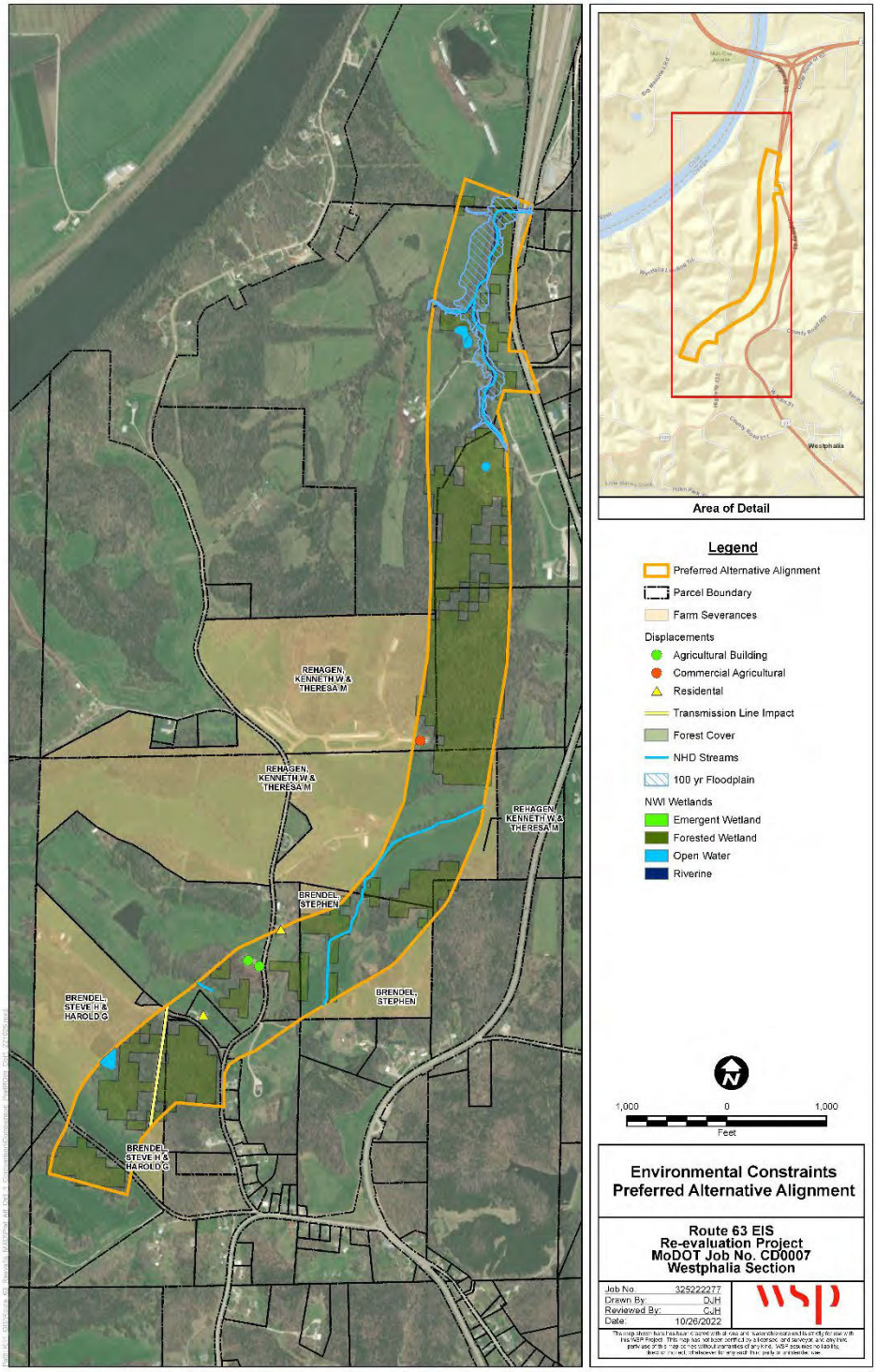

Figure 1 Preferred Alternative

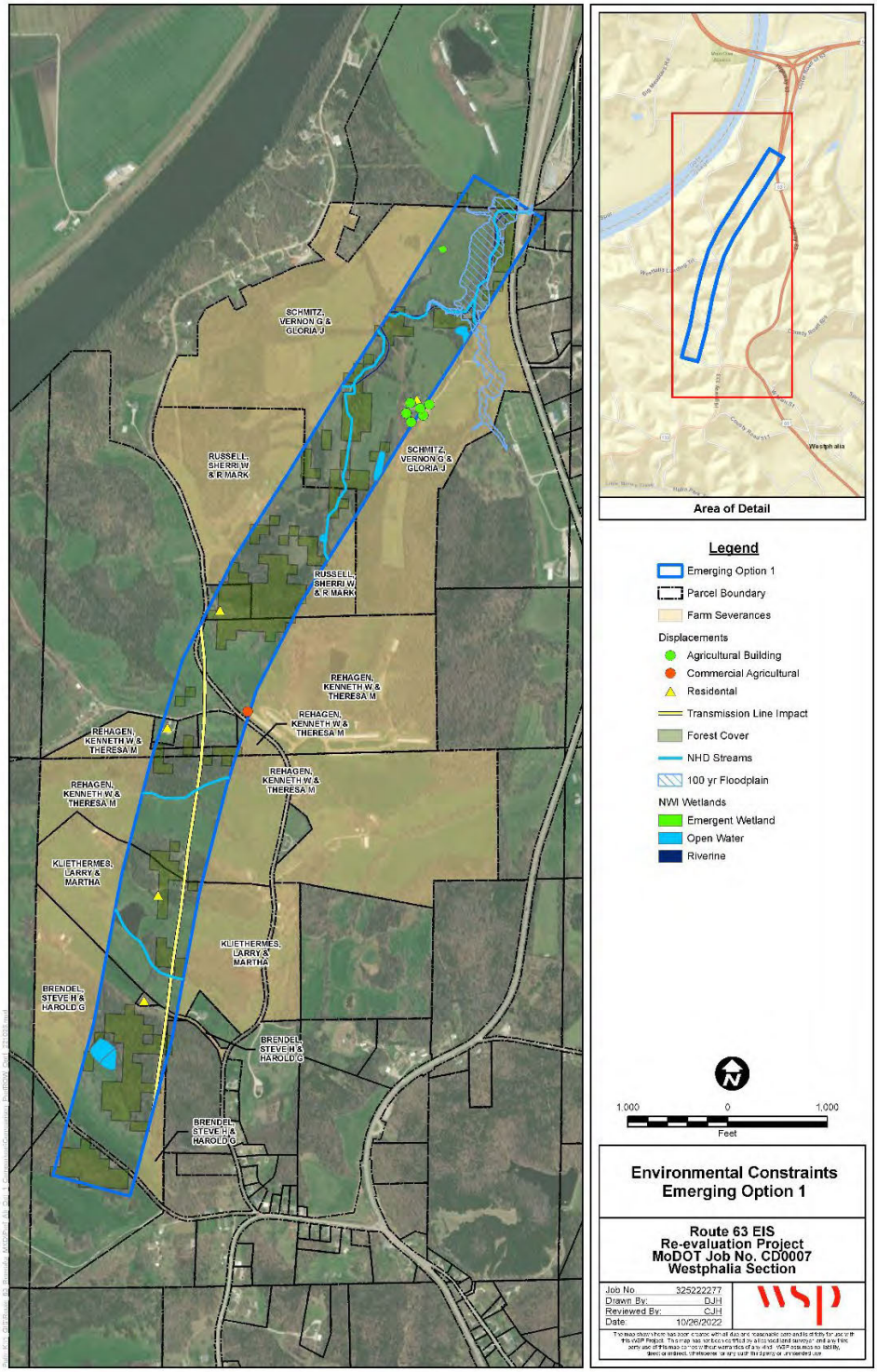

Figure 2 Emerging Option 1

Sources:

Maxar, Satellite Imagery, April 15, 2019

Missouri Department of Transportation, Route 63 Environmental Impact Statement (Osage, Maries, Phelps Counties), 2009

U.S. Fish and Wildlife Service, National Wetlands Inventory, May 27, 2022

U.S. Geological Survey, National Land Cover Database (2019 version), June 4, 2021

U.S. Geological Survey, National Heritage Database, June 11, 2022

Appendix B

Agency and Public Coordination

Public Notices

MoDOT

Missouri Department of Transportation

Central District
Machelle Watkins, District Engineer

1511 Missouri Blvd.
P.O. Box 718
Jefferson City, Missouri 65102
573.751.3322
Fax: 573.522.1059
1.888.ASK MODOT (275.6636)

For more information, contact MoDOT Central District Communications Manager Adam Pulley at (573) 522-3375.

FOR IMMEDIATE RELEASE – July 26. 2022

Public Input Needed for Route 63 in Osage, Maries, and Phelps Counties
Online comments accepted through August 23

JEFFERSON CITY – The Missouri Department of Transportation is seeking public comments as part of a U.S. Route 63 Environmental Study Re-evaluation over the corridor from just south of the Route 50 interchange in Osage County to just north of Rolla in Phelps County.

Completed in 2009, the previous study requires a re-evaluation to gather public input and determine if changes in the project area have occurred. MoDOT will use this information to better understand the impacts of potential improvements.

This re-evaluation is scheduled to be completed by the end of May 2023.

To learn more about the project and provide valuable feedback, MoDOT invites motorists and nearby residents to submit comments on the project website at https://www.modot.org/MeramecRt63. Comments will be accepted through August 23, 2022.

For more information and updates about this or other transportation-related matters in Mid-Missouri, please call 1-888-ASK-MoDOT (275-6636) or visit www.modot.org/central. Follow the MoDOT Central Missouri District on social media for project updates.

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Agency and Tribal Consultation

MoDOT

105 West Capitol Avenue
P.O. Box 270
Jefferson City, Missouri 65102

Missouri Department of Transportation
Patrick K. McKenna, Director

1.888.ASK MODOT (275.6636)

Mr. Josh Tapp, NEPA Program Manager
U.S. Environmental Protection Agency
11201 Renner Boulevard
Lenexa, Kansas 66219
{transmitted via electronic mail to tapp.joshua@epa.gov}

Subject: Request for Comments on Re-evaluation of U.S. Route 63 Environmental Impact Statement

Dear Mr. Tapp,

MoDOT is in the process of completing a re-evaluation under the National Environmental Policy Act (NEPA) of the 2009 Final Environmental Impact Statement (EIS) and 2010 Record of Decision (ROD) for U.S. Route 63 in Osage, Maries, and Phelps Counties. It is anticipated that the NEPA re-evaluation will be completed by May 2023.

The re-evaluation will be conducted for a 47-mile section of Route 63 between a point approximately 0.75 miles south of the current Route 50/Route 63 interchange in Osage County to a point just north of Rolla in Phelps County. The preferred alternative from the 2009 EIS will be reexamined to determine if any adjustments to the roadway alignment are necessary along this segment, taking into consideration changes in land use, design criteria, environmental constraints, and public input. The study area has been expanded in some areas to accommodate additional connections back to existing Route 63. Data and findings from the 2009 EIS will also be compared to current datasets and updated where new information is available.

MoDOT is currently seeking comments on the proposed project relative to the interests of your agency. In addition, any interested agency may request a meeting with respect to possible social, economic, and environmental effects of the project relative to the interests of the agency. Please submit any comments and/or requests for a meeting in writing by August 31, 2022 to:

Attn: Mia Peters, PE
Transportation Project Manager
Missouri Department of Transportation
1511 Missouri Boulevard
Jefferson City, MO 65102
or via email to: maria.peters@modot.mo.gov

The previously completed EIS may be reviewed at the following web address:
https://www.modot.org/MeramecRt63

Sincerely,

Mia Peters, PE
Transportation Project Manager

Alsop, Erin

From: Mia Peters <Maria.Peters@modot.mo.gov>
Sent: Wednesday, August 31, 2022 6:42 AM
To: Heitz, Connie; Alsop, Erin
Cc: Melissa Scheperle; Kyle E. Grayson
Subject: FW: EPA Scoping Comments: US Route 63 Reevaluation

Connie and Erin,

Below are scoping comments from Amber Tilley from EPA.

Thank you!

Mia Peters, P.E.
Transportation Project Manager
MoDOT – Central District
(573) 751-7690
maria.peters@modot.mo.gov

From: Tilley, Amber <Tilley.Amber@epa.gov>
Sent: Tuesday, August 30, 2022 4:54 PM
To: Mia Peters <Maria.Peters@modot.mo.gov>
Cc: Kensinger, Justin <Kensinger.Justin.R@epa.gov>; Schafer, Jeannette <schafer.jeannette@epa.gov>
Subject: EPA Scoping Comments: US Route 63 Reevaluation

Dear Ms. Peters:

The U.S. Environmental Protection Agency has received the Missouri Department of Transportation's April 28, 2022, Request for Comments on Re-evaluation of U.S. Route 63 Environmental Impact Statement in Osage and Phelps Counties, Missouri. In accordance with our responsibilities under Section 102(2)(C) of the National Environmental Policy Act, and Council on Environmental Quality regulations (40 CFR 1500-1508, as amended) and Section 309 of the Clean Air Act, we are providing these comments.

The re-evaluation will be conducted for a 47-mile section of Route 63 between a point approximately 0.75 miles south of the current Route 50/Route 63 interchange in Osage County to a point just north of Rolla in Phelps County. The preferred alternative from the 2009 EIS will be reexamined to determine if any adjustments to the roadway alignment are necessary along this segment, taking into consideration changes in land use, design criteria, environmental constraints, and public input. The study area has been expanded in some areas to accommodate additional connections back to existing Route 63. Data and findings from the 2009 EIS will also be compared to current datasets and updated where new information is available.

While we don't have any specific comments pertaining to the reevaluation at this time, we commend your early engagement with local, state, tribal and federal partners and look forward to working with you as the NEPA process for this project commences. Thank you also for holding a meeting with EPA Region 7 on August 10th, 2022. This was helpful in our understanding of the project and the anticipated reevaluation process.

Early engagement in the NEPA process helps ensure the meaningful involvement of communities with environmental justice concerns, reduce adverse environmental impacts, consider alternatives, and improve environmental outcomes. Within the NEPA process we can assist MoDOT in your efforts to identify, assess, and mitigate the potential impacts and permitting concerns involving the environment and human health.

As a reminder, EPA retains its independent review and comment function under CAA Section 309. During the formal public comment process on MoDOT's EA or EIS, if a decision is made to prepare one, we will submit comments on this project as we do for all federal EISs and EAs. In addition, EPA retains its right to review and provide comments during the U.S. Army Corps of Engineers' Clean Water Act Section 404 permitting process.

Please provide EPA with at least two weeks advance notice of the time and dates for all meeting and conference calls and prior to receipt of documents for our review and comment. The NEPA project manager for this project is Amber Tilley. If you have any questions, please contact Amber at (913) 551-7565 or tilley.amber@epa.gov. For CWA Section 404 questions, please contact Justin Kensinger at kensinger.justin.r@epa.gov or

Thank you for your early coordination and for the opportunity to assist throughout the reevaluation process.

Amber Tilley | NEPA Project Manager
| Grants Project Officer

a: EPA Region 7 | 11201 Renner Blvd | Lenexa, KS 66219
e: tilley.amber@epa.gov | **w:** www.epa.gov/nepa
p: 913.551.7565

MoDOT

105 West Capitol Avenue
P.O. Box 270
Jefferson City, Missouri 65102

Missouri Department of Transportation
Patrick K. McKenna, Director

1.888.ASK MODOT (275.6636)

Mr. Ken Sessa
Federal Emergency Management Agency
11224 Holmes Road
Kansas City, MO. 64131
{transmitted via electronic mail to Kenneth.Sessa@fema.dhs.gov}

Subject: Request for Comments on Re-evaluation of U.S. Route 63 Environmental Impact Statement

Dear Mr. Sessa,

MoDOT is in the process of completing a re-evaluation under the National Environmental Policy Act (NEPA) of the 2009 Final Environmental Impact Statement (EIS) and 2010 Record of Decision (ROD) for U.S. Route 63 in Osage, Maries, and Phelps Counties. It is anticipated that the NEPA re-evaluation will be completed by May 2023.

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Attn: Mia Peters, PE
Transportation Project Manager
Missouri Department of Transportation
1511 Missouri Boulevard
Jefferson City, MO 65102
or via email to: maria.peters@modot.mo.gov

The previously completed EIS may be reviewed at the following web address:
https://www.modot.org/MeramecRt63

Sincerely,

Mia Peters, PE
Transportation Project Manager

MoDOT

105 West Capitol Avenue
P.O. Box 270
Jefferson City, Missouri 65102

Missouri Department of Transportation
Patrick K. McKenna, Director

1.888.ASK MODOT (275.6636)

Mr. David Thorne
Policy Coordination
Missouri Department of Conservation
P.O. Box 180
Jefferson City, MO 651012
{transmitted via electronic mail to david.thorne@mdc.mo.gov}

Subject: Request for Comments on Re-evaluation of U.S. Route 63 Environmental Impact Statement

Dear Mr. Thorne,

MoDOT is in the process of completing a re-evaluation under the National Environmental Policy Act (NEPA) of the 2009 Final Environmental Impact Statement (EIS) and 2010 Record of Decision (ROD) for U.S. Route 63 in Osage, Maries, and Phelps Counties. It is anticipated that the NEPA re-evaluation will be completed by May 2023.

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Attn: Mia Peters, PE
Transportation Project Manager
Missouri Department of Transportation
1511 Missouri Boulevard
Jefferson City, MO 65102
or via email to: maria.peters@modot.mo.gov

The previously completed EIS may be reviewed at the following web address:
https://www.modot.org/MeramecRt63

Sincerely,

Mia Peters, PE
Transportation Project Manager

MoDOT

105 West Capitol Avenue
P.O. Box 270
Jefferson City, Missouri 65102

Missouri Department of Transportation
Patrick K. McKenna, Director

1.888.ASK MODOT (275.6636)

Mr. Rob Hunt, Planning Coordinator
Director's Office
Missouri Department of Natural Resources
P.O. Box 176
Jefferson City, MO 65102
{transmitted via electronic mail to rob.hunt@dnr.mo.gov}

Subject: Request for Comments on Re-evaluation of U.S. Route 63 Environmental Impact Statement

Dear Mr. Hunt,

MoDOT is in the process of completing a re-evaluation under the National Environmental Policy Act (NEPA) of the 2009 Final Environmental Impact Statement (EIS) and 2010 Record of Decision (ROD) for U.S. Route 63 in Osage, Maries, and Phelps Counties. It is anticipated that the NEPA re-evaluation will be completed by May 2023.

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Attn: Mia Peters, PE
Transportation Project Manager
Missouri Department of Transportation
1511 Missouri Boulevard
Jefferson City, MO 65102
or via email to: maria.peters@modot.mo.gov

The previously completed EIS may be reviewed at the following web address:
https://www.modot.org/MeramecRt63

Sincerely,

Mia Peters, PE
Transportation Project Manager

MoDOT

105 West Capitol Avenue
P.O. Box 270
Jefferson City, Missouri 65102

Missouri Department of Transportation
Patrick K. McKenna, Director

1.888.ASK MODOT (275.6636)

Mr. Roger Knowlton, Program Leader
National Park Service
601 Riverfront Drive
Omaha, Nebraska 68102-4226
402-661-1558
{transmitted via electronic mail to roger_knowlton@nps.gov}

Subject: Request for Comments on Re-evaluation of U.S. Route 63 Environmental Impact Statement

Dear Mr. Knowlton,

MoDOT is in the process of completing a re-evaluation under the National Environmental Policy Act (NEPA) of the 2009 Final Environmental Impact Statement (EIS) and 2010 Record of Decision (ROD) for U.S. Route 63 in Osage, Maries, and Phelps Counties. It is anticipated that the NEPA re-evaluation will be completed by May 2023.

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Attn: Mia Peters, PE
Transportation Project Manager
Missouri Department of Transportation
1511 Missouri Boulevard
Jefferson City, MO 65102
or via email to: maria.peters@modot.mo.gov

The previously completed EIS may be reviewed at the following web address:
https://www.modot.org/MeramecRt63

Sincerely,

Mia Peters, PE
Transportation Project Manager

MoDOT

105 West Capitol Avenue
P.O. Box 270
Jefferson City, Missouri 65102

Missouri Department of Transportation
Patrick K. McKenna, Director

1.888.ASK MODOT (275.6636)

Sarah Vanderfeltz
Federal Assistance Clearinghouse
Office of Administration
State Capitol Building, Room 125
201 West Capitol Avenue, P.O. Box 809
Jefferson City, MO 65102
{transmitted via electronic mail to Sara.Vanderfeltz@oa.mo.gov}

Subject: Request for Comments on Re-evaluation of U.S. Route 63 Environmental Impact Statement

Dear Ms. Venderfeltz,

MoDOT is in the process of completing a re-evaluation under the National Environmental Policy Act (NEPA) of the 2009 Final Environmental Impact Statement (EIS) and 2010 Record of Decision (ROD) for U.S. Route 63 in Osage, Maries, and Phelps Counties. It is anticipated that the NEPA re-evaluation will be completed by May 2023.

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Attn: Mia Peters, PE
Transportation Project Manager
Missouri Department of Transportation
1511 Missouri Boulevard
Jefferson City, MO 65102
or via email to: maria.peters@modot.mo.gov

The previously completed EIS may be reviewed at the following web address:
https://www.modot.org/MeramecRt63

Sincerely,

Mia Peters, PE
Transportation Project Manager

Michael L. Parson
Governor

State of Missouri
OFFICE OF ADMINISTRATION
Post Office Box 809
Jefferson City, Missouri 65102
Phone: (573) 751-1851
Fax: (573) 751-1212

Kenneth J. Zellers
Commissioner

August 16, 2022

Mia Peters
Jefferson City, MO 65101

Subject: 2302003
Legal Name: MoDot
Project Description: Request for Comments on Re-Evaluation of US Route 63 Environmental Impact Statement

The Missouri Federal Assistance Clearinghouse, in cooperation with state and local agencies interested or possibly affected, has completed the review on the above project application.

None of the agencies involved in the review had comments or recommendations to offer at this time. This concludes the Clearinghouse's review.

A copy of this letter is to be attached to the application as evidence of compliance with the State Clearinghouse requirements.

Sincerely,

Sara VanderFeltz

Sara VanderFeltz
Administrative Assistant

cc:

MoDOT

105 West Capitol Avenue
P.O. Box 270
Jefferson City, Missouri 65102

Missouri Department of Transportation
Patrick K. McKenna, Director

1.888.ASK MODOT (275.6636)

Mr. James Remillard, Director
State Emergency Management Agency
2302 Militia Drive
P.O. Box 116
Jefferson City, MO 65102
{transmitted via electronic mail to james.remillard@sema.dps.mo.gov}

Subject: Request for Comments on Re-evaluation of U.S. Route 63 Environmental Impact Statement

Dear Mr. Remillard,

MoDOT is in the process of completing a re-evaluation under the National Environmental Policy Act (NEPA) of the 2009 Final Environmental Impact Statement (EIS) and 2010 Record of Decision (ROD) for U.S. Route 63 in Osage, Maries, and Phelps Counties. It is anticipated that the NEPA re-evaluation will be completed by May 2023.

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Jefferson City, MO 65102
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Sincerely,

Mia Peters, PE
Transportation Project Manager

MoDOT

105 West Capitol Avenue
P.O. Box 270
Jefferson City, Missouri 65102

Missouri Department of Transportation
Patrick K. McKenna, Director

1.888.ASK MODOT (275.6636)

Ms. Toni Prawl, State Historic Preservation Officer
Missouri Department of Natural Resources
P.O. Box 176
Jefferson City, MO 65102
{transmitted via electronic mail to toni.prawl@dnr.mo.gov}

Subject: Request for Comments on Re-evaluation of U.S. Route 63 Environmental Impact Statement

Dear Ms. Prawl,

MoDOT is in the process of completing a re-evaluation under the National Environmental Policy Act (NEPA) of the 2009 Final Environmental Impact Statement (EIS) and 2010 Record of Decision (ROD) for U.S. Route 63 in Osage, Maries, and Phelps Counties. It is anticipated that the NEPA re-evaluation will be completed by May 2023.

The re-evaluation will be conducted for a 47-mile section of Route 63 between a point approximately 0.75 miles south of the current Route 50/Route 63 interchange in Osage County to a point just north of Rolla in Phelps County. The preferred alternative from the 2009 EIS will be reexamined to determine if any adjustments to the roadway alignment are necessary along this segment, taking into consideration changes in land use, design criteria, environmental constraints, and public input. The study area has been expanded in some areas to accommodate additional connections back to existing Route 63. Data and findings from the 2009 EIS will also be compared to current datasets and updated where new information is available.

MoDOT is currently seeking comments on the proposed project relative to the interests of your agency. In addition, any interested agency may request a meeting with respect to possible social, economic, and environmental effects of the project relative to the interests of the agency. Please submit any comments and/or requests for a meeting in writing by August 31, 2022 to:

Attn: Mia Peters, PE
Transportation Project Manager
Missouri Department of Transportation
1511 Missouri Boulevard
Jefferson City, MO 65102
or via email to: maria.peters@modot.mo.gov

The previously completed EIS may be reviewed at the following web address:
https://www.modot.org/MeramecRt63

Sincerely,

Mia Peters, PE
Transportation Project Manager

MISSOURI
DEPARTMENT OF
NATURAL RESOURCES

Michael L. Parson
Governor

Dru Buntin
Director

August 29, 2022

Mia Peters
Transportation Project Manager
Missouri Department of Transportation
1511 Missouri Boulevard
Jefferson City, MO 65102

Re: **SHPO Project No. 036-MLT-22** – Re-evaluation of U.S. Route 63 Environmental Impact Statement, Osage, Maries, and Phelps Counties, Missouri (FHWA)

Dear Mia Peters:

Thank you for submitting information on the above referenced project for our review pursuant to Section 106 of the National Historic Preservation Act (P.L. 89-665, as amended) and the Advisory Council on Historic Preservation's regulation 36 CFR Part 800, which requires identification and evaluation of cultural resources.

Thank you for notifying our office of the re-evaluation of the 2009 Final Environmental Impact Statement and 2010 Record of Decision for U.S. Route 63. Our office looks forward to continuing consultation with your office once any adjustments to the roadway alignment are identified and the Section 106 documentation has been submitted to our office.

If you have any questions please contact Jeffrey Alvey at (573) 751-7862 or Jeffrey.alvey@dnr.mo.gov. Please be sure to include the **SHPO Project Number (036-MLT-22)** on all future correspondence or inquiries relating to this project.

Sincerely,

STATE HISTORIC PRESERVATION OFFICE

Toni M. Prawl

Toni M. Prawl, Ph.D.
Director and Deputy State
Historic Preservation Officer

c: Raegan Ball, FHWA
Michael Meinkoth, MoDOT
Michael Meyer, MoDOT
Taylor Peters, FHWA

MoDOT

105 West Capitol Avenue
P.O. Box 270
Jefferson City, Missouri 65102

Missouri Department of Transportation
Patrick K. McKenna, Director

1.888.ASK MODOT (275.6636)

Mr. David Hibbs, Chief
Regulatory Branch
U.S. Army Corps of Engineers, **Kansas City District**
600 Federal Building
601 E. 12th Street
Kansas City, MO 64106
{transmitted via electronic mail to david.r.hibbs@usace.army.mil}

Subject: Request for Comments on Re-evaluation of U.S. Route 63 Environmental Impact Statement

Dear Mr. Hibbs,

MoDOT is in the process of completing a re-evaluation under the National Environmental Policy Act (NEPA) of the 2009 Final Environmental Impact Statement (EIS) and 2010 Record of Decision (ROD) for U.S. Route 63 in Osage, Maries, and Phelps Counties. It is anticipated that the NEPA re-evaluation will be completed by May 2023.

The re-evaluation will be conducted for a 47-mile section of Route 63 between a point approximately 0.75 miles south of the current Route 50/Route 63 interchange in Osage County to a point just north of Rolla in Phelps County. The preferred alternative from the 2009 EIS will be reexamined to determine if any adjustments to the roadway alignment are necessary along this segment, taking into consideration changes in land use, design criteria, environmental constraints, and public input. The study area has been expanded in some areas to accommodate additional connections back to existing Route 63. Data and findings from the 2009 EIS will also be compared to current datasets and updated where new information is available.

MoDOT is currently seeking comments on the proposed project relative to the interests of your agency. In addition, any interested agency may request a meeting with respect to possible social, economic, and environmental effects of the project relative to the interests of the agency. Please submit any comments and/or requests for a meeting in writing by August 31, 2022 to:

Attn: Mia Peters, PE
Transportation Project Manager
Missouri Department of Transportation
1511 Missouri Boulevard
Jefferson City, MO 65102
or via email to: maria.peters@modot.mo.gov

The previously completed EIS may be reviewed at the following web address:
https://www.modot.org/MeramecRt63

Sincerely,

Mia Peters, PE
Transportation Project Manager

MoDOT

105 West Capitol Avenue
P.O. Box 270
Jefferson City, Missouri 65102

Missouri Department of Transportation
Patrick K. McKenna, Director

1.888.ASK MODOT (275.6636)

Colonel Douglas B. Guttormsen, District Commander
U.S. Army Corps of Engineers, **Kansas City District**
600 Federal Building
601 E. 12th Street
Kansas City, MO 64106
{transmitted via electronic mail to Lora.E.Vacca@usace.army.mil}

Subject: Request for Comments on Re-evaluation of U.S. Route 63 Environmental Impact Statement

Dear Mr. Guttormsen,

MoDOT is in the process of completing a re-evaluation under the National Environmental Policy Act (NEPA) of the 2009 Final Environmental Impact Statement (EIS) and 2010 Record of Decision (ROD) for U.S. Route 63 in Osage, Maries, and Phelps Counties. It is anticipated that the NEPA re-evaluation will be completed by May 2023.

The re-evaluation will be conducted for a 47-mile section of Route 63 between a point approximately 0.75 miles south of the current Route 50/Route 63 interchange in Osage County to a point just north of Rolla in Phelps County. The preferred alternative from the 2009 EIS will be reexamined to determine if any adjustments to the roadway alignment are necessary along this segment, taking into consideration changes in land use, design criteria, environmental constraints, and public input. The study area has been expanded in some areas to accommodate additional connections back to existing Route 63. Data and findings from the 2009 EIS will also be compared to current datasets and updated where new information is available.

MoDOT is currently seeking comments on the proposed project relative to the interests of your agency. In addition, any interested agency may request a meeting with respect to possible social, economic, and environmental effects of the project relative to the interests of the agency. Please submit any comments and/or requests for a meeting in writing by August 31, 2022 to:

Attn: Mia Peters, PE
Transportation Project Manager
Missouri Department of Transportation
1511 Missouri Boulevard
Jefferson City, MO 65102
or via email to: maria.peters@modot.mo.gov

The previously completed EIS may be reviewed at the following web address:
https://www.modot.org/MeramecRt63

Sincerely,

Mia Peters, PE
Transportation Project Manager

MoDOT

105 West Capitol Avenue
P.O. Box 270
Jefferson City, Missouri 65102

Missouri Department of Transportation
Patrick K. McKenna, Director

1.888.ASK MODOT (275.6636)

Mr. Jorge Lugo-Camacho, State Soil Scientist
U.S. Department of Agriculture
Natural Resources Conservation Service
Parkade Center, Suite 250
601 Business Loop 70 West
Columbia, MO 65203
{transmitted via electronic mail to jorge.lugo-camacho@mo.usda.gov}

Subject: Request for Comments on Re-evaluation of U.S. Route 63 Environmental Impact Statement

Dear Mr. Lugo-Camacho,

MoDOT is in the process of completing a re-evaluation under the National Environmental Policy Act (NEPA) of the 2009 Final Environmental Impact Statement (EIS) and 2010 Record of Decision (ROD) for U.S. Route 63 in Osage, Maries, and Phelps Counties. It is anticipated that the NEPA re-evaluation will be completed by May 2023.

The re-evaluation will be conducted for a 47-mile section of Route 63 between a point approximately 0.75 miles south of the current Route 50/Route 63 interchange in Osage County to a point just north of Rolla in Phelps County. The preferred alternative from the 2009 EIS will be reexamined to determine if any adjustments to the roadway alignment are necessary along this segment, taking into consideration changes in land use, design criteria, environmental constraints, and public input. The study area has been expanded in some areas to accommodate additional connections back to existing Route 63. Data and findings from the 2009 EIS will also be compared to current datasets and updated where new information is available.

MoDOT is currently seeking comments on the proposed project relative to the interests of your agency. In addition, any interested agency may request a meeting with respect to possible social, economic, and environmental effects of the project relative to the interests of the agency. Please submit any comments and/or requests for a meeting in writing by August 31, 2022 to:

Attn: Mia Peters, PE
Transportation Project Manager
Missouri Department of Transportation
1511 Missouri Boulevard
Jefferson City, MO 65102
or via email to: maria.peters@modot.mo.gov

The previously completed EIS may be reviewed at the following web address:
https://www.modot.org/MeramecRt63

Sincerely,

Mia Peters, PE
Transportation Project Manager

MoDOT

105 West Capitol Avenue
P.O. Box 270
Jefferson City, Missouri 65102

Missouri Department of Transportation
Patrick K. McKenna, Director

1.888.ASK MODOT (275.6636)

Ms. Karen Herrington, Field Supervisor
U.S. Fish and Wildlife Services
Columbia Ecological Services Field Office
101 Park DeVille Drive, Suite A
Columbia, MO 65203-0057
{transmitted via electronic mail to karen_herrington@fws.gov}

Subject: Request for Comments on Re-evaluation of U.S. Route 63 Environmental Impact Statement

Dear Ms. Herrington,

MoDOT is in the process of completing a re-evaluation under the National Environmental Policy Act (NEPA) of the 2009 Final Environmental Impact Statement (EIS) and 2010 Record of Decision (ROD) for U.S. Route 63 in Osage, Maries, and Phelps Counties. It is anticipated that the NEPA re-evaluation will be completed by May 2023.

The re-evaluation will be conducted for a 47-mile section of Route 63 between a point approximately 0.75 miles south of the current Route 50/Route 63 interchange in Osage County to a point just north of Rolla in Phelps County. The preferred alternative from the 2009 EIS will be reexamined to determine if any adjustments to the roadway alignment are necessary along this segment, taking into consideration changes in land use, design criteria, environmental constraints, and public input. The study area has been expanded in some areas to accommodate additional connections back to existing Route 63. Data and findings from the 2009 EIS will also be compared to current datasets and updated where new information is available.

MoDOT is currently seeking comments on the proposed project relative to the interests of your agency. In addition, any interested agency may request a meeting with respect to possible social, economic, and environmental effects of the project relative to the interests of the agency. Please submit any comments and/or requests for a meeting in writing by August 31, 2022 to:

Attn: Mia Peters, PE
Transportation Project Manager
Missouri Department of Transportation
1511 Missouri Boulevard
Jefferson City, MO 65102
or via email to: maria.peters@modot.mo.gov

The previously completed EIS may be reviewed at the following web address:
https://www.modot.org/MeramecRt63

Sincerely,

Mia Peters, PE
Transportation Project Manager

From:	Mia Peters
To:	Caddo Nation of Oklahoma.; Cherokee Nation.; Eastern Shawnee Tribe of Oklahoma.; Iowa Tribe of Oklahoma.; Kaw Indian Nation of Oklahoma.; Miami Tribe of Oklahoma.; Osage Nation.; johnnie.jacobs@osagenation-nsn.gov; colleen.bell@osagenation-nsn.gov; Ponca Tribe of Nebraska.; Ponca Tribe of Oklahoma.; Sac and Fox Tribe of the Missouri in Kansas and Nebraska.; Sac and Fox Tribe of the Mississippi in Iowa.; Sac and Fox Nation of Oklahoma.; Shawnee Tribe.; United Keetoowah Band of Cherokee Indians in Oklahoma.; Wyandotte Nation.
Cc:	Alsop, Erin; Heitz, Connie; Michael Meinkoth; Adam J. Pulley
Subject:	Request for Comments on Re-evaluation of U.S. Route 63 Environmental Impact Statement
Date:	Tuesday, August 2, 2022 3:40:40 PM
Attachments:	image001.png image002.emz image003.emz image004.png image005.png

Letterhead Temp CO above Line .eps

To Whom It May Concern:

MoDOT is in the process of completing a re-evaluation under the National Environmental Policy Act (NEPA) of the 2009 Final Environmental Impact Statement (EIS) and 2010 Record of Decision (ROD) for U.S. Route 63 in Osage, Maries, and Phelps Counties. It is anticipated that the NEPA re-evaluation will be completed by May 2023.

The re-evaluation will be conducted for an approximately 47-mile section of Route 63 between a point approximately 0.75 miles south of the current Route 50/Route 63 interchange in Osage County to a point just north of Rolla in Phelps County. The preferred alternative from the 2009 EIS will be reexamined to determine if any adjustments to the roadway alignment are necessary along this segment, taking into consideration changes in land use, design criteria, environmental constraints, and public input. The study area has been expanded in some areas to accommodate additional connections back to existing Route 63. Data and findings from the 2009 EIS will also be compared to current datasets and updated where new information is available.

MoDOT is currently seeking comments on the proposed project relative to the interests of your agency. In addition, any interested agency may request a meeting with respect to possible social, economic, and environmental effects of the project relative to the interests of the agency. Please submit any comments and/or requests for a meeting in writing by August 31, 2022 to:

Attn: Mia Peters, PE
Transportation Project Manager
Missouri Department of Transportation
1511 Missouri Boulevard
Jefferson City, MO 65102
or via email to: maria.peters@modot.mo.gov

The previously completed EIS may be reviewed at the following web address: https://www.modot.org/MeramecRt63

Sincerely,

Mia Peters, P.E.
Transportation Project Manager
MoDOT – Central District
(573) 751-7690
maria.peters@modot.mo.gov

From:	Michael Meinkoth
To:	Johnnie L. Jacobs; Mia Peters; Caddo Nation of Oklahoma.; Cherokee Nation.; Eastern Shawnee Tribe of Oklahoma.; Iowa Tribe of Oklahoma.; Kaw Indian Nation of Oklahoma.; Miami Tribe of Oklahoma.; Andrea Hunter; Colleen A. Bell; Ponca Tribe of Nebraska.; Ponca Tribe of Oklahoma.; Sac and Fox Tribe of the Missouri in Kansas and Nebraska.; Sac and Fox Tribe of the Mississippi in Iowa.; Sac and Fox Nation of Oklahoma.; Shawnee Tribe.; United Keetoowah Band of Cherokee Indians in Oklahoma.; Wyandotte Nation.
Cc:	Alsop, Erin; Heitz, Connie; Adam J. Pulley
Subject:	RE: Request for Comments on Re-evaluation of U.S. Route 63 Environmental Impact Statement
Date:	Wednesday, August 3, 2022 3:09:07 PM
Attachments:	image003.png image004.png image005.emz image006.emz image007.png image008.png MoDOT_Rte63_Preferred_220720.kmz

Attached is the KMZ of the preferred alignment.

MoDOT is also drafting a summary of the archaeological investigations that were done on the original EIS study over 13 years ago and will submit that to all of you once completed. Additional investigations will be needed to cover property where access was denied and where not part of the original area of potential effect. Because there was no funding to build the project in the original study, no Phase II site eligibility testing was conducted.

MIKE MEINKOTH
Historic Preservation Manager
Missouri Department of Transportation
Central Office – Design – Environmental & Historic Preservation Section
601A West Main Street, Jefferson City, MO 65101
573-526-3593 or 573-508-2224 (mobile) | michael.meinkoth@modot.mo.gov
https://www.modot.org/historic-preservation

From: Johnnie L. Jacobs <johnnie.jacobs@osagenation-nsn.gov>
Sent: Tuesday, August 2, 2022 4:19 PM
To: Mia Peters <Maria.Peters@modot.mo.gov>; Caddo Nation of Oklahoma, <section106@caddonation.com>; Cherokee Nation, <elizabeth-toombs@cherokee.org>; Eastern Shawnee Tribe of Oklahoma, <thpo@estoo.net>; Iowa Tribe of Oklahoma, <CPershall@iowanation.org>; Kaw Indian Nation of Oklahoma, <srichardson@kawnation.com>; Miami Tribe of Oklahoma, <THPO@MiamiNation.com>; Andrea Hunter <ahunter@osagenation-nsn.gov>; Colleen A. Bell <colleen.bell@osagenation-nsn.gov>; Ponca Tribe of Nebraska, <ssettje@poncatribe-ne.org>; Ponca Tribe of Oklahoma, <liana.hesler@ponca-nsn.gov>; Sac and Fox Tribe of the Missouri in Kansas and Nebraska, <lisa.montgomery@sacfoxenviro.org>; Sac and Fox Tribe of the Mississippi in Iowa, <director.historic@meskwaki-nsn.gov>; Sac and Fox Nation of Oklahoma, <Carol.Butler@sacandfoxnation-nsn.gov>; Shawnee Tribe, <tonya@shawnee-tribe.com>; United Keetoowah Band of Cherokee Indians in Oklahoma, <ukbthpo@ukb-nsn.gov>; Wyandotte Nation, <sclemons@wyandottenation.org>
Cc: Alsop, Erin <erin.alsop@woodplc.com>; Heitz, Connie <connie.heitz@woodplc.com>; Michael Meinkoth <Michael.Meinkoth@modot.mo.gov>; Adam J. Pulley <Adam.Pulley@modot.mo.gov>
Subject: RE: Request for Comments on Re-evaluation of U.S. Route 63 Environmental Impact Statement

Mia, could you please send a KMZ of the project's APE? It will help us evaluate the project using our own database of known resources in the area.

Thank you,

Ms. Johnnie Jacobs
Archaeologist
Osage Nation Historic Preservation Office
627 Grandview Avenue
Pawhuska, OK 74056

photo

Miami Tribe of Oklahoma
3410 P St. NW, Miami, OK 74354 ● P.O. Box 1326, Miami, OK 74355
Ph: (918) 541-1300 ● Fax: (918) 542-7260
www.miamination.com

Via email: maria.peters@modot.mo.gov

August 16, 2022

Mia Peters, PE
Transportation Project Manager
Missouri Department of Transportation
1511 Missouri Boulevard
Jefferson City, MO 65102

Re: Re-evaluation of U.S. Route 63, Osage, Maries, and Phelps Counties, Missouri – Comments of the Miami Tribe of Oklahoma

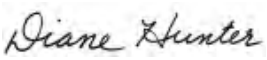
Dear Ms. Peters:

Aya, kikwehsitoole – I show you respect. The Miami Tribe of Oklahoma, a federally recognized Indian tribe with a constitution ratified in 1939 under the Oklahoma Indian Welfare Act of 1936, respectfully submits the following comments regarding the Re-evaluation of U.S. Route 63 Environmental Impact.

The Miami Tribe is not currently aware of existing documentation directly linking a specific Miami cultural or historic site to the project site; however, the project area in Osage county is within the Miami ancestral homelands. The Miami Tribe agrees with the archaeologist's recommendation that data recovery be conducted at site 23MS12 and avoidance at sites 23MS1124, 23MS1123, 23MS1121, 23MS1130, 23OS1230, 23OS1218, 23OS1221 or Phase II testing if avoidance is not possible. Given the Miami Tribe's deep and enduring relationship to its historic lands and cultural property within present-day Missouri, if any human remains or Native American cultural items falling under the Native American Graves Protection and Repatriation Act (NAGPRA) or archaeological evidence is discovered during any phase of this project, the Miami Tribe requests consultation within 48 hours with the entity of jurisdiction for the location of discovery. In such a case, please contact me at 918-541-8966 or by email at thpo@miamination.com to initiate consultation.

The Miami Tribe accepts the invitation to serve as a consulting party to the proposed project. In my capacity as Tribal Historic Preservation Officer I am the point of contact for all Section 106 consultation.

Respectfully,



Diane Hunter
Tribal Historic Preservation Officer

EASTERN SHAWNEE
CULTURAL PRESERVATION DEPARTMENT
70500 East 128 Road, Wyandotte, OK 74370

September 29, 2022

Missouri Department of Natural Resources
P.O. Box 176
Jefferson City, MO 65102-0176

RE: ***Job Number J5P0950, Osage, Maries, and Phelps County, Missouri***

Dear Mr. Meionkoth,

The Eastern Shawnee Tribe has received your letter regarding the above referenced project(s) within Osage, Maries, and Phelps County, Missouri. The Eastern Shawnee Tribe is committed to protecting sites important to Tribal Heritage, Culture and Religion. Furthermore, the Tribe is particularly concerned with historical sites that may contain but not limited to the burial(s) of human remains and associated funerary objects.

As described in your correspondence, and upon research of our database(s) and files, we find our people occupied these areas historically and/or prehistorically. However, the project proposes **NO Adverse Effect** or endangerment to known sites of interest to the Eastern Shawnee Tribe. Please continue project as planned. However, should this project inadvertently discover an archeological site or object(s) we request that you immediately contact the Eastern Shawnee Tribe, as well as the appropriate state agencies (within 24 hours). We also ask that all ground disturbing activity stop until the Tribe and State agencies are consulted. Please note that any future changes to this project will require additional consultation.

In accordance with the NHPA of 1966 (16 U.S.C. § 470-470w-6), federally funded, licensed, or permitted undertakings that are subject to the Section 106 review process must determine effects to significant historic properties. As clarified in Section 101(d)(6)(A-B), historic properties may have religious and/or cultural significance to Indian Tribes. Section 106 of NHPA requires Federal agencies to consider the effects of their actions on all significant historic properties (36 CFR Part 800) as does the National Environmental Policy Act of 1969 (43 U.S.C. § 4321-4347 and 40 CFR § 1501.7(a). This letter evidences NHPA and NEPA historic properties compliance pertaining to consultation with this Tribe regarding the referenced proposed projects.

Thank you, for contacting the Eastern Shawnee Tribe, we appreciate your cooperation. Should you have any further questions or comments please contact our Office.

Sincerely,

Paul Barton, Tribal Historic Preservation Officer (THPO)
Eastern Shawnee Tribe of Oklahoma
(918) 666-5151 Ext:1833

THPO@estoo.net

September 21, 2023

Mia Peters
Missouri Department of Transportation
1511 Missouri Boulevard #1729
Jefferson City, MO 65109

Re: **SHPO Project Number: 029-MLT-23** – Phase I Cultural Resource Survey for the US Highway 63 EIS Re-Evaluation Project (CD0007), Osage, Maries, and Phelps Counties, Missouri, MoDOT Job No. CD0007 (FHWA/MoDOT)

Dear Mia Peters:

Thank you for submitting information to the State Historic Preservation Office (SHPO) regarding the above-referenced project for review pursuant to Section 106 of the National Historic Preservation Act, P.L. 89-665, as amended (NHPA), and the Advisory Council on Historic Preservation's regulation 36 CFR Part 800, which require identification and evaluation of historic properties.

We have reviewed the information regarding the above-referenced project and have included our comments on the following page(s). Please retain this documentation as evidence of consultation with the Missouri SHPO under Section 106 of the NHPA. SHPO concurrence does not complete the Section 106 process as federal agencies will need to conduct consultation with all interested parties. **Please be advised that, if the current project area or scope of work changes, such as a borrow area being added, or cultural materials are encountered during construction, appropriate information must be provided to this office for further review and comment.**

If you have questions please contact the SHPO at (573)751-7858 or call/email Jeffrey Alvey, (573) 751-7862, jeffrey.alvey@dnr.mo.gov. If additional information is required please submit the information via email to MOSection106@dnr.mo.gov.

Sincerely,

STATE HISTORIC PRESERVATION OFFICE

Toni M. Prawl

Toni M. Prawl, PhD
Director and Deputy
State Historic Preservation Officer

c: Michael Meyer, MoDOT
Taylor Peters, FHWA
Connie Heitz, WSP
Kathy Warner, WSP

SHPO Project Number: 029-MLT-23 – Phase I Cultural Resource Survey for the US Highway 63 EIS Re-Evaluation Project (CD0007), Osage, Maries, and Phelps Counties, Missouri, MoDOT Job No. CD0007 (FHWA/MoDOT)

COMMENTS:

We have reviewed the cultural resources survey report entitled *Phase I Cultural Resource Survey for the US Highway 63 EIS Re-Evaluation Project (CD0007), Osage, Maries, and Phelps Counties, Missouri* by Tiffany R. Raymond et al. of WSP USA Environment & Infrastructure, Inc. Based on this review it is evident that an adequate survey has been conducted of the project area.
We concur that all 33 architectural resources identified and assessed during this survey, and archaeological sites 23OS1221, 23OS1321, and 23MS1152, should be considered **not eligible** for inclusion in the National Register of Historic Places (NRHP).

We concur that archaeological sites 23OS1218, 23OS1313, 23OS1314, 23OS1315, 23OS1316, 23OS1317, 23OS1318, 23OS1319, 23OS1320, 23OS1323, and 23OS1324 should be treated as unevaluated and therefore potentially **eligible** for inclusion in the NRHP.

We look forward to developing a programmatic agreement to address the additional testing that would be needed to determine the eligibility of these sites.

PROGRAMMATIC AGREEMENT
AMONG THE FEDERAL HIGHWAY ADMINISTRATION,
THE MISSOURI STATE HISTORIC PRESERVATION OFFICER, AND
THE MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
REGARDING MODOT JOB CD0007
OSAGE, MARIES, AND PHELPS COUNTIES, MISSOURI

UNDERTAKING: Re-evaluation of the "*Route 63 – Osage, Maries, Phelps Counties, Missouri Final Environmental Impact Statement*" (FEIS) which was completed in 2009 (J5P0950). The FEIS re-evaluation is being conducted for the improvement of 47 miles of Route 63 south of Jefferson City to a four-lane divided highway on both existing and new alignment. The study corridor from the FEIS ranges from approximately 300 feet to approximately 750 feet wide, extending from south of the Route50/Route 63 interchange in Osage County to near Rolla in Phelps County. Missouri Department of Transportation Job Number JCD0007 (Attachment A).
STATE: Missouri
AGENCY: Federal Highway Administration

WHEREAS, the Federal Highway Administration (FHWA) Missouri Division is the federal agency responsible for ensuring the undertaking complies with Section 106 of the National Historic Preservation Act (NHPA) (54 U.S.C. § 306108) codified in its implementing regulations 36 CFR Part 800, *Protection of Historic Properties*; and

WHEREAS, the duties of the Missouri State Historic Preservation Officer (SHPO) pursuant to Section 106 of the NHPA (54 USC 306108) and 36 CFR Part 800 include responsibilities to advise, assist, review, and consult with Federal agencies as they carry out their historic preservation responsibilities and to respond to Federal agencies' requests within a specified period of time; and

WHEREAS, the Missouri Highways and Transportation Commission (MHTC) is the board that governs the Missouri Department of Transportation (MoDOT), appoints the Director and authorizes the Statewide Transportation Improvement Program, and acting by and through MoDOT, has participated in the consultation and has been invited to be a signatory to this Agreement; and

WHEREAS, MoDOT plans to improve 47 miles of Route 63 south of Jefferson City to a four-lane divided highway on both existing and new alignment in Osage, Maries, and Phelps Counties, Missouri, using funding from the National Highway Performance Program funded by the FHWA pursuant to the Infrastructure Investment and Jobs Act (IIJA); and

WHEREAS, the MoDOT, acting on behalf of the FHWA, has determined that the undertaking's area of potential effects (APE), as defined at 36 CFR Part 800.16(d), has been identified as the project footprint, including existing right of way (ROW) and new ROW, including permanent and temporary easements, for the consideration of direct effects per 36 CFR Part 800.16(d), and considered the dimensional aspects of the APE including height and depth as well as length and

width. The APE is further described and mapped in Attachment B to this Programmatic Agreement (PA); and

WHEREAS, the FHWA has notified the Advisory Council on Historic Preservation (Council) of the development of this PA (January 18, 2024) and, to date, the Council has not responded; and

WHEREAS, the FHWA recognizes that the Caddo Nation of Oklahoma, Cherokee Nation, Eastern Shawnee Tribe of Oklahoma, Iowa Tribe of Oklahoma, Kaw Nation of Oklahoma, Miami Tribe of Oklahoma, The Osage Nation, Ponca Tribe of Nebraska, Ponca Tribe of Indians of Oklahoma, Sac and Fox Tribe of Missouri in Kansas and Nebraska, Sac and Fox Tribe of the Mississippi in Iowa, Sac and Fox Nation of Oklahoma, Shawnee Tribe, United Keetoowah Band of Cherokee Indians in Oklahoma, and Wyandotte Nation have an interest in the undertaking area, and initially consulted with them on a government-to-government basis for the EIS in 2007; and

WHEREAS, MoDOT notified the tribes of the reevaluation on August 3, 2022, with a summary of sites identified in the original Phase I survey and indicating that additional Phase I testing would be done where access had previously been denied or were not part of the original APE, and that sites within the APE would be re-evaluated. If avoidance of sites is not possible, Phase II testing would be done; and

WHEREAS, the Miami Tribe of Oklahoma (August 16, 2022) agrees with MoDOT's recommendation that data recovery be conducted at site 23MS12 and avoidance, or Phase II testing if avoidance is not possible, at sites 23MS11424, 23MS1123, 23MS1121 23MS1130, 23OS1230, 23OS1218, and 23OS1221. The Miami Tribe of Oklahoma also requests consultation within 48 hours if human remains or Native American cultural items falling under the Native American Graves Protection and Repatriation Act or archaeological evidence is discovered during any phase of the project; and

WHEREAS, the Eastern Shawnee Tribe (September 29, 2022) stated that the project will have no adverse effect or endangerment to known sites of interest to the Eastern Shawnee Tribe and requests the Tribe be immediately contacted should the project inadvertently discover an archeological site or object; and

WHEREAS, other consulting parties including Maries County, Osage County, Phelps County, City of Westphalia, City of Freeburg, Osage County Historical Society, Historical Society of Maries County, Phelps County Historical Society and interested residents Jane Beetem and Jan Haviland were notified of undertaking and invited to participate in consultation on October 3, 2023; and

WHEREAS, no responses were received from consulting parties; and

WHEREAS, public involvement for this undertaking will be handled in accordance with the MoDOT *Engineering Policy Guide*, Chapter 129: Public Involvement; and

WHEREAS, MoDOT received public comments regarding historic properties on Hatchery Lane in Westphalia during the open comment period, and followed up with concerned residents in a meeting on August 22, 2023; and

WHEREAS, in accordance with 36 CFR Part 800, the FHWA acknowledges and accepts the guidance outlined in the Council's *Recommended Approach for Consultation on the Recovery of Significant Information from Archaeological Sites*; and

WHEREAS, 36 CFR Part 800.11(c) provides for the confidentiality of archaeologically sensitive information where appropriate, and FHWA has accordingly modified the role of public involvement required by 36 CFR Part 800.2(d); and

WHEREAS, the consulting parties agree that it is in the public interest to expend funds to implement the recovery of significant information from archaeological sites to mitigate the adverse effects of the undertaking upon them; and

NOW, THEREFORE, the FHWA and the SHPO agree that the undertaking will be implemented in accordance with the following stipulations in order to take into account the effect of the undertaking on historic properties.

STIPULATIONS

FHWA, with the assistance of MoDOT, shall ensure that the following measures are carried out by, or under the direction of, a professional who meet the Professional Qualification Standards set forth in the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation (48 FR 44716):

I. CONSULTATION AND PUBLIC INVOLVEMENT

A. The FHWA, assisted by MoDOT, shall consult with federally recognized Tribal Nations with ancestral, historic, and ceded land connections to Missouri and that may attach religious and/or cultural significance to historic properties in the county or counties with the project and invite them to participate in Section 106 consultation per 36 CFR Part 800.2(c)(2).

B. The FHWA and MoDOT, in consultation with the SHPO, shall work to identify other consulting parties to notify of the project and invite to participate in consultation per 36 CFR Part 800.2(c)(3) and 800.2(c)(5). These parties shall include, at a minimum:
   1. The local elected official(s) with jurisdiction over the project area.

2. If communities in the project area have been designated Certified Local Governments (CLG) under the program jointly administered by the National Park Service and SHPO, the CLG point of contact.[1]
3. Local historical societies serving the project area.[2]
4. Local preservation organizations.
5. Bridge preservation groups
6. Communities participating in the Main Street Program in the project area.[3]

C. Consultation shall occur at major milestones in the Section 106 process and shall also be timed to allow the consulting parties the opportunity to have input into the project through timing of the National Environmental Policy Act (NEPA) documentation. Consultation shall occur at:
   1. Project Kickoff—project notification and invitation to consult
   2. Development of Purpose and Need and Initial Range of Alternatives/Development of Area of Potential Effects and discussion of field methods to be employed
   3. Narrowing of Range of Alternative—Results of Background (Archival) Survey; preliminary discussion of results of built environment results
   4. Selection of Preferred Alternative—
      a. effects of the preferred alternative on built environment resources
      b. preliminary archaeological results
      c. Resolution of adverse effects including appropriate mitigation measures for adversely affected properties

D. The public shall be kept informed of the status of the Section 106 process and informed of how to request consulting party status through the project website (if one is developed for the project), project publications, and through public meetings held for the project which will include displays on the Section 106 process and handouts explaining the Section 106 process and how to request consulting party status for the project.
   1. Any substantive comments about historic properties or Section 106 concerns received from the public will be shared with the consulting parties and will be addressed in the Section 106 consultation process and the resolution discussed in the project documentation for the National Environmental Policy Act (NEPA).
   2. Consulting parties will be informed of substantive comments received from the public concerning Section 106 and historic properties and how they will be addressed.

[1] Missouri Certified Local Government Program, List of Missouri CLG: https://mostateparks.com/sites/mostateparks/files/CLG_PrimaryContactList.pdf
[2] State Historical Society of Missouri, Society Directory: https://shsmo.org/local-societies/directory
[3] Missouri Main Street Connection, Participating Communities: https://www.momainstreet.org/participating-communities/

E. Any requests for consulting party status that are received shall be considered by FHWA, MoDOT, and the SHPO.

II. QUALIFICATION STANDARDS

A. Actions prescribed by this Agreement that involve the identification, evaluation, recording, treatment, monitoring, or disposition of historic properties, or that involve the reporting or documentation of such actions in the form of reports, forms, or other records, shall be carried out by or under the direct supervision of a person or persons who meets the Secretary of the Interior's Professional Qualifications Standards (SOI) (published in 48 FR 44716-44740) for the resource being considered.

III. AREA OF POTENTIAL EFFECTS

A. The APE was delineated based on the Preferred Alternative identified in the Route 63 FEIS completed in 2009 (J5P0950) in the Westphalia Section (Section 1) as shown on Attachment B. The APE in the Westphalia Section (Section 1) consists of 5.78 miles of the Route 63 Preferred Alternative which includes a western bypass of Westphalia from Route 50 to County Road 611.

B. South of the Westphalia Section (Section 1), the APE also includes additional new transition areas to accommodate the intersection of the relocated Route 63 with the existing Route 63 roadway in the Freeburg Section, Maries County Road 209 transition area, Vienna North Section, and Maries County Road 325 transition area (Attachment B).

C. As funding permits for the remaining portions of the Routh 63 Preferred Alternative corridor south of the Westphalia Section (Section 1), FHWA and MoDOT shall consult with SHPO, Tribal Nations and consulting parties to determine the APE for the South of Westphalia (Section 2), Freeburg (Section 3a), Vienna (Section 3b), Vichy (Section 4), and South of Vichy (Section 5) Sections (Attachment B), with the understanding that the APE will include the preferred alternative from the Route 63 FEIS (J5P0950) completed in 2009 and additional areas that would accommodate the intersection of the new highway with the existing Route 63 roadway. The APE in these remaining sections will be three dimensions (i.e., having height and depth as well as length and width), encompass the full range of alternatives and will be refined as alternatives are added and eliminated throughout the study. The APE shall consider:
   1. Direct effects from construction-related activities including ground disturbance, demolition of resources, visual, auditory, vibration and atmospheric effects;
   2. Proposed construction impacts, ground-disturbing and non–ground-disturbing, to justify the types and level of investigative effort to identify historic properties.

3. The APE may contract over time as alternatives are eliminated. Tribal Nations and other consulting parties will be consulted as this occurs.
4. Indirect effects, as clarified by the D. C. Circuit Court in *National Parks Conservation Assoc. v. Semonite* and the Council, as those effects "caused by the undertaking that are later in time or farther removed in distance but still reasonably foreseeable"[4]; and

D. The APE may expand if the Design-Build Process is utilized. If the Design-Build consultant proposes an alternative(s) that meets Purpose and Need that falls outside the original APE, FHWA and MoDOT shall consult per Stipulation III.A.

IV. IDENTIFICATION OF RESOURCES

A. The Built Environment investigations shall be conducted in a manner consistent with MoDOT's Built Environment Methods.

B. The archaeological investigations shall be conducted in a manner consistent with the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation and SHPO's Guidelines for Phase I Archaeological Surveys and Reports.

C. Reporting

1. The results of the Built Environment and Archaeological surveys shall be reported in a single, comprehensive report. The report shall include:
   a. Background Research Results including previous surveys, NRHP listed and determined eligible properties, previously reported sites, appropriate historic context, and historic mapping to understand the APE.
   b. Field Survey Results will be reported on the MoDOT Section 106 Survey Memo, which meets the standards set by the Missouri SHPO for surveys done in Missouri. Any properties where access was denied or where survey was not possible for any reason shall be clearly identified on mapping and in the report text; and
   c. Determinations made through consultation between MoDOT, FHWA, SHPO, the Tribal Nations and other consulting and interested parties shall be included in the Report.
   d. The report shall be shared with FHWA, SHPO and consulting parties. SHPO and the consulting parties shall have thirty (30) days to comment on the results and findings of the report. The results and findings shall be the topics of meetings between MoDOT, FHWA, SHPO and the consulting parties as needed.

[4] *NPCA v. Semonite*, No. 18-5179 (D. C. Cir 2019); ACHP, Court Ruling on Definitions Informs Agencies on Determining Effects, 2019: https://www.achp.gov/news/court-rules-definitions-informs-agencies-determining-effects.

D. Properties that could not be accessed for survey during the Phase I investigations shall be surveyed, in accordance with Stipulations IV.4-A-C for the properties identified in Attachment C, as design proceeds and property is acquired or access is obtained.

E. If the APE expands during the Design-Build process, the processes in Stipulation IV shall be followed for the identification of resources within that APE.

V. NATIONAL REGISTER OF HISTORIC PLACES ELIGIBILITY EVALUATION

A. MoDOT, in consultation with FHWA, SHPO, Tribal Nations, and other consulting and interested parties, shall apply the NRHP criteria (36 CFR Part 63), and applicable guidance issued by the Keeper of the National Register, to each property identified in the field survey or through consultation to determine if the property is eligible for listing in the NRHP (a historic property).

B. MoDOT will seek the concurrence of SHPO, Tribal Nations and other consulting parties, on eligibility for each resource identified as eligible for listing in the NRHP.

C. Properties that are eligible for listing in the NRHP shall have the following addressed in the report: the NRHP criteria the property is eligible for listing under; area(s) of significance, characteristics that qualify the property for inclusion in the NRHP, contributing and non-contributing elements, period(s) of significance and boundary of the historic property.

D. If the APE expands during the Design-Build process, the processes in Stipulation V shall be utilized to evaluate and consult about eligibility of resources.

VI. ASSESSMENT OF EFFECTS

A. MoDOT, on behalf of FHWA, shall apply the criteria of adverse effects (36 CFR Part 800.5) to each property listed in or eligible for listing in the NRHP, for each alternative under consideration. FHWA and MoDOT shall consult with the SHPO, Tribal Nations and other consulting parties about the effects of the various alternatives on historic properties.

B. If FHWA and MoDOT find that project activities have adverse effects on properties eligible for the NRHP, they shall consult with SHPO, Tribal Nations and other consulting parties to resolve the adverse effects, consistent with guidance provided in 36 CFR Part 800.6. This consultation shall include efforts to develop and evaluate alternatives or modifications to the undertaking that could avoid or minimize the adverse effects on said historic properties.

C. For projects utilizing the Design-Build process, the effects of the project on historic properties will be re-evaluated as the project design is developed through consistent communication between the Design-Build and MoDOT Historic Preservation staffs:

1. If there is an adverse effect finding, MoDOT shall provide FHWA with information to notify the Council of the adverse effect.

2. FHWA and MoDOT shall consult with Tribal Nations, SHPO and the other consulting parties to resolve the adverse effect, per Stipulation VII to inform them of the resource, the change in effect and what is causing the change:

    a. SHPO and the consulting parties will have thirty (30) days to review the information and provide comments.

    b. If there is disagreement about the finding, FHWA and MoDOT will consult with the parties to resolve the disagreement.

    c. If the disagreement cannot be resolved, procedures for resolution in 36 CFR 800.5(c)(2) shall be implemented.

3. FHWA and MoDOT shall consult with the SHPO, Tribal Nations and consulting parties to resolve any adverse effects using the processes in Stipulation VII: Resolution of Adverse Effects.

VII. RESOLUTION OF ADVERSE EFFECTS

A. If FHWA and MoDOT find project activities have adverse effects on historic properties, they will consult with SHPO, Tribal Nations and other interested parties to resolve the adverse effects, consistent with guidance provided in 36 CFR Part 800.6, through the implementation of a Mitigation Plan for Built Environment Resources or an Archaeological Data Recovery Plan(s) developed in accordance with the Council's *Recommended Approach for Consultation on the Recovery of Significant Information from Archaeological Sites* and the Secretary of the Interior's *Standards for Archaeological Documentation*.

B. Mitigation measures that benefit and engage the public shall be developed to an extent that is prudent and feasible practical. Public benefit mitigation measures may be used as a substitute for traditional mitigation measures in some cases.

C. All mitigation measures shall be memorialized in a Mitigation Plan, which shall be developed and will contain all agreed upon mitigation measures.

D. The Mitigation Plan or Archaeological Data Recovery Plan will be negotiated among the signatories and consulting parties and will become effective only upon written concurrence by representatives for all signatories and invited signatories. Concurrence of the Mitigation Plan or Archaeological Data Recovery Plan is needed to resolve adverse effects. Work on the project site will not commence until the field requirements of the Plan have been completed.

E. If adverse effects are avoided during the Design-Build process, the Mitigation Plan or Archaeological Data Recovery Plan can be amended by the signatories and consulting parties.

VIII. TREATMENT OF HUMAN REMAINS

A. The FHWA recognizes that any human remains (other than from a crime scene or covered under Missouri's Cemeteries Law, §§ 214. RSMo) that may be discovered during project activities and are located on non-federal land are subject to the immediate jurisdiction of the SHPO, albeit FHWA or its delegate is responsible to have a professional archaeologist analyze the remains and advise SHPO of the physical location and cultural and biological characteristics, and if SHPO determines, as per the consultation conducted under Section 106, excavation is warranted, such remains will be handled pursuant to the Missouri Unmarked Human Burial Sites Act, §§ 194.400 – 194.410, RSMo. All discoveries of human remains shall be treated as sensitive information and shall not be made available to the public.

B. Native American skeletal remains, associated or unassociated funerary objects, sacred objects, and objects of cultural patrimony that may be discovered during the archaeological survey, testing, or data recovery excavations on federal land are the responsibility of the federal agency that manages that property. The involved Federal land-managing agency will notify any Tribe that might attach cultural affiliation to the identified remains as soon as possible after their identification. The Federal Agency shall take into account Tribal recommendations regarding treatment of the remains and proposed actions, and then direct MoDOT to carry-out the appropriate actions.

C. The USDOT is a signatory to the Memorandum of Understanding Regarding Interagency Coordination and Collaboration for the Protection of Indigenous Sacred Sites to affirm their commitment to improve the protection of, and access to, Indigenous sacred sites through enhanced and improved interdepartmental coordination, collaboration, and action and to demonstrate their commitment through the early consideration of the protection and access to Indigenous sacred sites in agency decision-making and regulatory processes.

D. If human remains are encountered during archaeological investigations:

1. The archaeologists shall immediately stop all work within a fifty (50)-meter (approximately 165-foot) radius of the remains and shall not resume without specific authorization from either the SHPO or the local law enforcement officer, or if on federal land the land management agency, whichever party has jurisdiction over and responsibility for such remains.

2. MoDOT HP staff will notify the local law enforcement (to ensure that it is not a crime scene) and the SHPO as per the Missouri Unmarked Human Burial Sites Act and contact FHWA and Tribes that have expressed interest in Section 106 undertakings in the County the remains were found in, within twenty-four (24) hours of the discovery.

3. FHWA will notify any tribe that might attach cultural affiliation to the identified remains as soon as possible after their identification.

4. FHWA shall, to the maximum extent possible, seek consensus and incorporate identifications, recommendations, and Native American traditional knowledge to the maximum extent possible regarding treatment of the remains and proposed actions.

5. MoDOT shall monitor the archaeological data recovery and handling of any such human remains and associated or unassociated funerary objects, sacred objects or objects of cultural patrimony, to assure itself that these are handled, excavated or processed in accordance with the Missouri Unmarked Human Burials Sites Act.

6. Should, through consultation with Tribes, excavation be determined necessary, MoDOT will provide notification within twenty-four (24) hours to affiliated Tribes when physically transferring possession of ancestors or cultural items to SHPO for continued consultation on reinternment.

E. If human remains are encountered during construction:

1. The contractor shall immediately stop all work within a fifty (50)-meter (approximately 165-foot) radius of the remains and shall not resume without specific authorization from either the SHPO or the local law enforcement officer, or if on federal land the land management agency, whichever party has jurisdiction over and responsibility for such remains.

2. The contractor shall notify the MoDOT Construction Inspector and/or Resident Engineer who will contact the MoDOT HP section within twenty-four (24) hours of the discovery.

3. MoDOT HP staff will immediately notify the local law enforcement, or if on federal land the land management agency, (to ensure that it is not a

crime scene) and the SHPO as per the Missouri Unmarked Human Burial Sites Act or to notify SHPO what has occurred and that it is covered by Missouri's Cemeteries Law, §§ 214. RSMo.

4. MoDOT HP staff will notify FHWA that human remains have been encountered within twenty-four (24) hours of being notified of the find.

5. If, within twenty-four (24) hours, the contractor is unable to contact appropriate MoDOT staff, the contractor shall initiate the involvement by local law enforcement, or if on federal land the land management agency, and the SHPO. A description of the contractor's actions will be promptly made to MoDOT.

6. FHWA will notify any tribe that might attach cultural affiliation to the identified remains as soon as possible after their identification.

7. FHWA shall, to the maximum extent possible, seek consensus and incorporate identifications, recommendations, and Native American traditional knowledge regarding treatment of the remains and proposed actions.

8. MoDOT, under FHWA oversight, shall monitor the handling of any such human remains and associated funerary objects, sacred object or objects of cultural patrimony in accordance with the Missouri Unmarked Human Burial Sites Act.

9. Should, through consultation with Tribes, excavation be determined necessary, MoDOT will provide notification within twenty-four (24) hours to affiliated Tribes when physically transferring possession of ancestors or cultural items to SHPO for continued consultation on reinternment.

IX. POST-REVIEW DISCOVERIES

A. Planning for Subsequent Discoveries

MoDOT shall include in any environmental document, contract, and specifications a plan for post-review discovery of historic properties. Implementation of the plan as originally proposed or modified as necessary owing to the nature and extent of the properties discovered, will be in accordance with 36 CFR Part 800.4-6.

B. If cultural resources are encountered during construction:

1. The contractor shall immediately stop all work within a fifty (50)-meter (approximately 165 foot) radius around the limits of the resource and shall not resume work without specific authorization from a MoDOT Historic Preservation Specialist.

2. The contractor shall notify the MoDOT Resident Engineer or Construction Inspector, who shall contact the MoDOT Historic Preservation (HP) section within twenty-four (24) hours of the discovery.

3. MoDOT HP shall contact FHWA, Tribes and SHPO within forty-eight (48) hours of learning of the discovery to report the discovery after a preliminary evaluation of the resource and reasonable efforts to see if it can be avoided.

4. FHWA shall make an eligibility and effects determination based upon the preliminary evaluation and consult with MoDOT, Tribes and SHPO to minimize or mitigate any adverse effect.

5. FHWA shall take into account Tribal recommendations regarding the eligibility of the property and proposed actions, and direct MoDOT to carry out the appropriate actions. The Council does not need to be notified if the SHPO, Tribes, and other parties agree to treatment plan.

6. MoDOT shall provide FHWA and SHPO with a report of the actions when they are completed.

7. Upon receipt, FHWA shall provide this report to the Tribes.

8. MoDOT, in coordination with FHWA, will make this report available to the public and other consulting parties, if it is not limited by the requirements for confidentiality, as identified in Stipulation X.

C. If the discovery is not limited by the confidentiality requirements of Section 304 of the NHPA and Stipulation X of this Agreement, the public shall be notified of the late discovery, in the following manner:

1. Information on the discovery shall be posted to the MoDOT website associated with the project, if one exists. This information will include the nature of the discovery, how it is being treated, and the evaluation of it. The website will include information on how to contact the project manager or the MoDOT HP Section with comments or concerns about the discovery.

2. MoDOT will issue a press release about the discovery. The press release will include the nature of the discovery, how it is being treated and the

evaluation. The press release will include a way for the public to contact the project manager or the MoDOT HP Section if they have comments or concerns about the discovery.

X. CONFIDENTIALITY

All parties to this Agreement acknowledge that information about historic properties or potential historic properties are or may be subject to the provisions of Section 304 of NHPA. Section 304 allows FHWA to withhold from disclosure to the public, information about the location, character, or ownership of a historic resource if the signatories and invited signatories determine that disclosure may: 1) cause a significant invasion of privacy; 2) risk harm to the historic resource; or 3) impede the use of a traditional religious site by practitioners. Having so acknowledged, all parties to this Agreement will ensure that all actions and documentation prescribed by this Agreement are, where necessary, consistent with the requirements of Section 304 of the NHPA.

XI. DURATION

This Agreement shall remain in effect for a period of ten (10) years after the date it takes effect, unless it is terminated prior to that time. No later than six (6) months prior to the conclusion of the ten (10)-year period, MoDOT will notify all parties in writing if an extension is needed. The Agreement may be extended for an additional term, the length of which will be agreed to by the signatories and invited signatories. The extension will be codified through an amendment of the Agreement in accordance with Stipulation XIV. If any party objects to extending the Agreement, or proposes amendments, MoDOT will consult with the parties to consider amendments or other actions to avoid termination.

XII. REPORTING

At the end of each calendar year following the execution of this PA, the MoDOT, acting on behalf of FHWA, shall provide to all signatories a written report regarding the actions taken to fulfill the terms of the agreement, and shall file a copy with the Council per 36 CFR Part 800.6(b)(iv). The report shall include the following information:

A. Any stipulations completed during the calendar year;
B. Work done toward completion of any stipulations during the calendar year;
C. Any consultation done regarding any of the stipulations during the calendar year, the subject of the consultation and parties consulted with; and
D. The status of the project, including tasks that remain outstanding.

XIII. DISPUTE RESOLUTION

Any party to this Agreement may terminate it by providing thirty (30) calendar days-notice in writing to the other parties explaining the reason for termination, provided that the parties will consult during the period prior to termination to seek agreement on amendments and other actions that would avoid termination. In the event of termination,

FHWA shall ensure that undertakings shall be reviewed individually in accordance with 36 CFR Part 800.3-800.6 that were previously covered by this Agreement.

At any time during implementation of this Agreement, should any member of the public raise an objection in writing pertaining to such implementation to any signatory or invited signatory to this Agreement, that signatory or invited signatory shall immediately notify FHWA. FHWA shall immediately notify the other signatories and invited signatories in writing of the objection. Any signatory or invited signatory may choose to comment on the objection to FHWA. FHWA shall establish a reasonable time frame for this comment period. FHWA shall consider the objection, and in reaching its decision, FHWA will take all comments from the other parties into account. Within fifteen (15) days following closure of the comment period, FHWA will render a decision regarding the objection and respond to the objecting party. FHWA will promptly notify the other parties of its decision in writing, including a copy of the response to the objecting party. FHWA's decision regarding resolution of the objection will be final. Following the issuance of its final decision, FHWA may authorize the action subject to dispute hereunder to proceed in accordance with the terms of that decision.

XIV. AMENDMENTS

Any signatory or invited signatory to this Agreement may at any time propose amendments, whereupon all signatories and invited signatories shall consult to consider such amendment. This Agreement may be amended only upon written concurrence of all signatories and invited signatories. The amendment will be effective on the date a copy signed by all of the signatories is filed with the Council.

I. TERMINATION

Any party to this Agreement may terminate it by providing thirty (30) calendar days-notice in writing to the other parties explaining the reason for termination, provided that the parties will consult during the period prior to termination to seek agreement on amendments and other actions that would avoid termination. In the event of termination, FHWA shall ensure that undertakings shall be reviewed individually in accordance with 36 CFR Part 800.3-800.6 that were previously covered by this Agreement.

II. EXECUTION

Execution of this PA by the FHWA, the SHPO and the MHTC and the implementation of its terms evidence that FHWA has taken into account the effects of this undertaking on historic properties and afforded the Council an opportunity to comment. A copy of the executed PA shall be provided by FHWA to the Council for their records.

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PROGRAMMATIC AGREEMENT
AMONG THE FEDERAL HIGHWAY ADMINISTRATION,
THE MISSOURI STATE HISTORIC PRESERVATION OFFICER, AND
THE MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
REGARDING MODOT JOB CD0007
OSAGE, MARIES, AND PHELPS COUNTIES, MISSOURI

UNDERTAKING: Re-evaluation of the "*Route 63 – Osage, Maries, Phelps Counties, Missouri Final Environmental Impact Statement*" (FEIS) which was completed in 2009 (J5P0950). The FEIS re-evaluation is being conducted for the improvement of 47 miles of Route 63 south of Jefferson City to a four-lane divided highway on both existing and new alignment. The study corridor from the FEIS ranges from approximately 300 feet to approximately 750 feet wide, extending from south of the Route50/Route 63 interchange in Osage County to near Rolla in Phelps County. Missouri Department of Transportation Job Number JCD0007 (Attachment A).
STATE: Missouri
AGENCY: Federal Highway Administration

Signatory:

Federal Highway Administration

By: Rebecca Rost Date: 6/9/2025

**PROGRAMMATIC AGREEMENT
AMONG THE FEDERAL HIGHWAY ADMINISTRATION,
THE MISSOURI STATE HISTORIC PRESERVATION OFFICER, AND
THE MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
REGARDING MODOT JOB CD0007
OSAGE, MARIES, AND PHELPS COUNTIES, MISSOURI**

UNDERTAKING: Re-evaluation of the "*Route 63 – Osage, Maries, Phelps Counties, Missouri Final Environmental Impact Statement*" (FEIS) which was completed in 2009 (J5P0950). The FEIS re-evaluation is being conducted for the improvement of 47 miles of Route 63 south of Jefferson City to a four-lane divided highway on both existing and new alignment. The study corridor from the FEIS ranges from approximately 300 feet to approximately 750 feet wide, extending from south of the Route50/Route 63 interchange in Osage County to near Rolla in Phelps County. Missouri Department of Transportation Job Number JCD0007 (Attachment A).
STATE: Missouri
AGENCY: Federal Highway Administration

Signatory:

State Historic Preservation Officer

By: _____ Date: 6.2.25
Deputy State Historic Preservation Officer

**PROGRAMMATIC AGREEMENT
AMONG THE FEDERAL HIGHWAY ADMINISTRATION,
THE MISSOURI STATE HISTORIC PRESERVATION OFFICER, AND
THE MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
REGARDING MODOT JOB CD0007
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STATE: Missouri
AGENCY: Federal Highway Administration

Invited Signatory:

Missouri Highways and Transportation Commission:

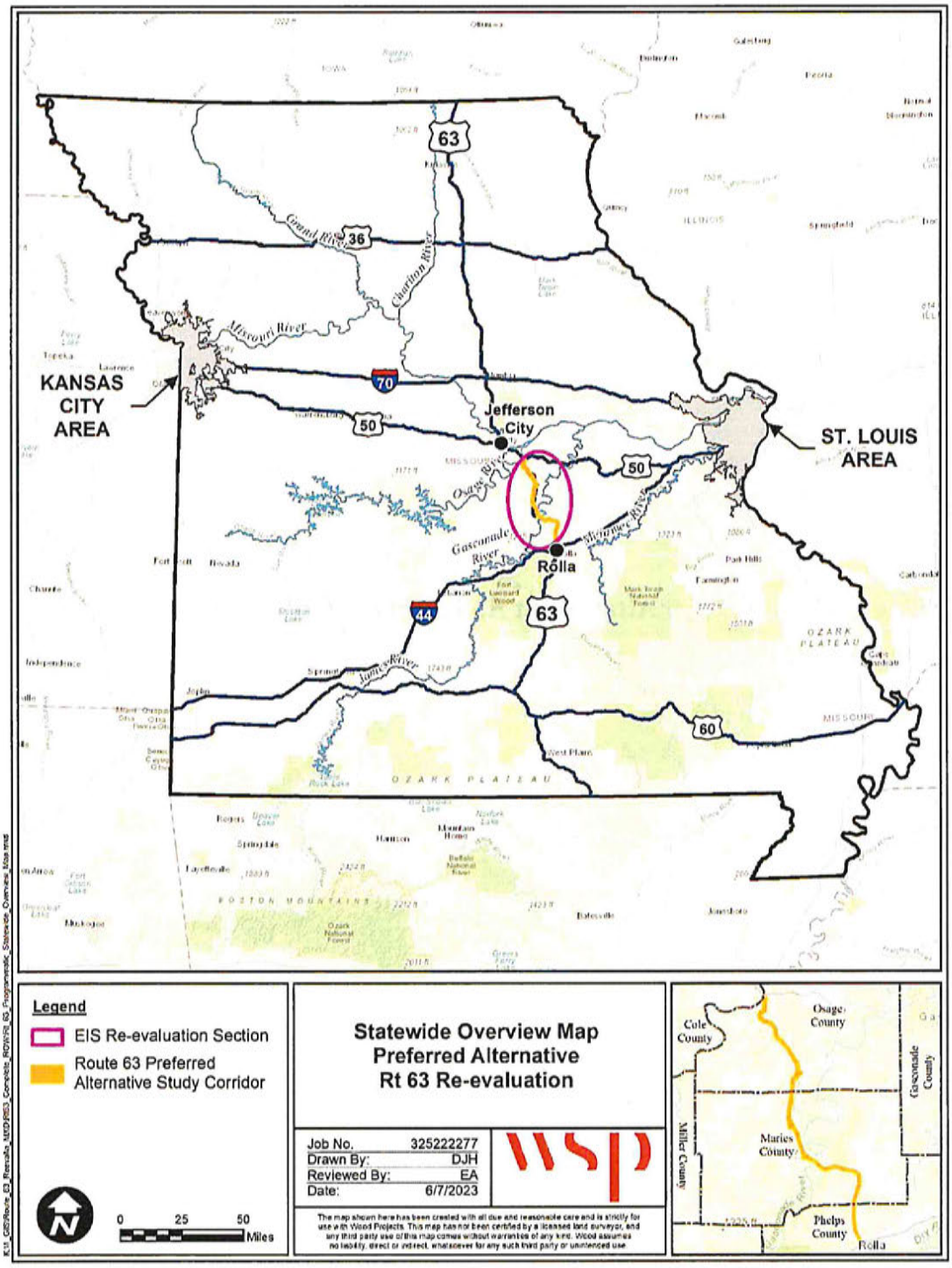
By: Mark Crowley Date: 5-27-2025
Assistant Chief Engineer

Title: _____

Attest: _____
Commission Secretary

Approved as to form: _____
Commission Counsel

Attachment A: Location Map



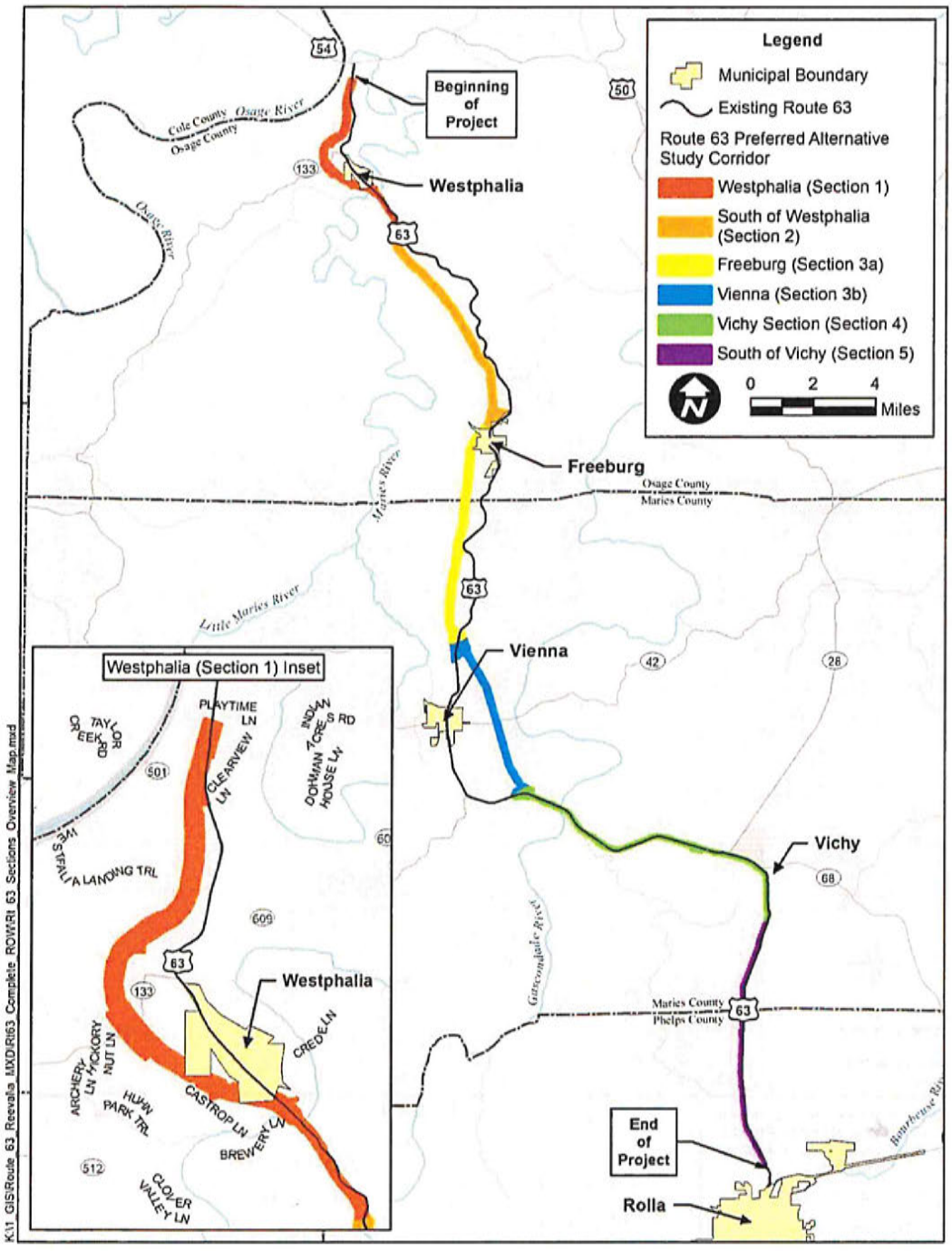
Statewide Location Map

Attachment B: APE Description

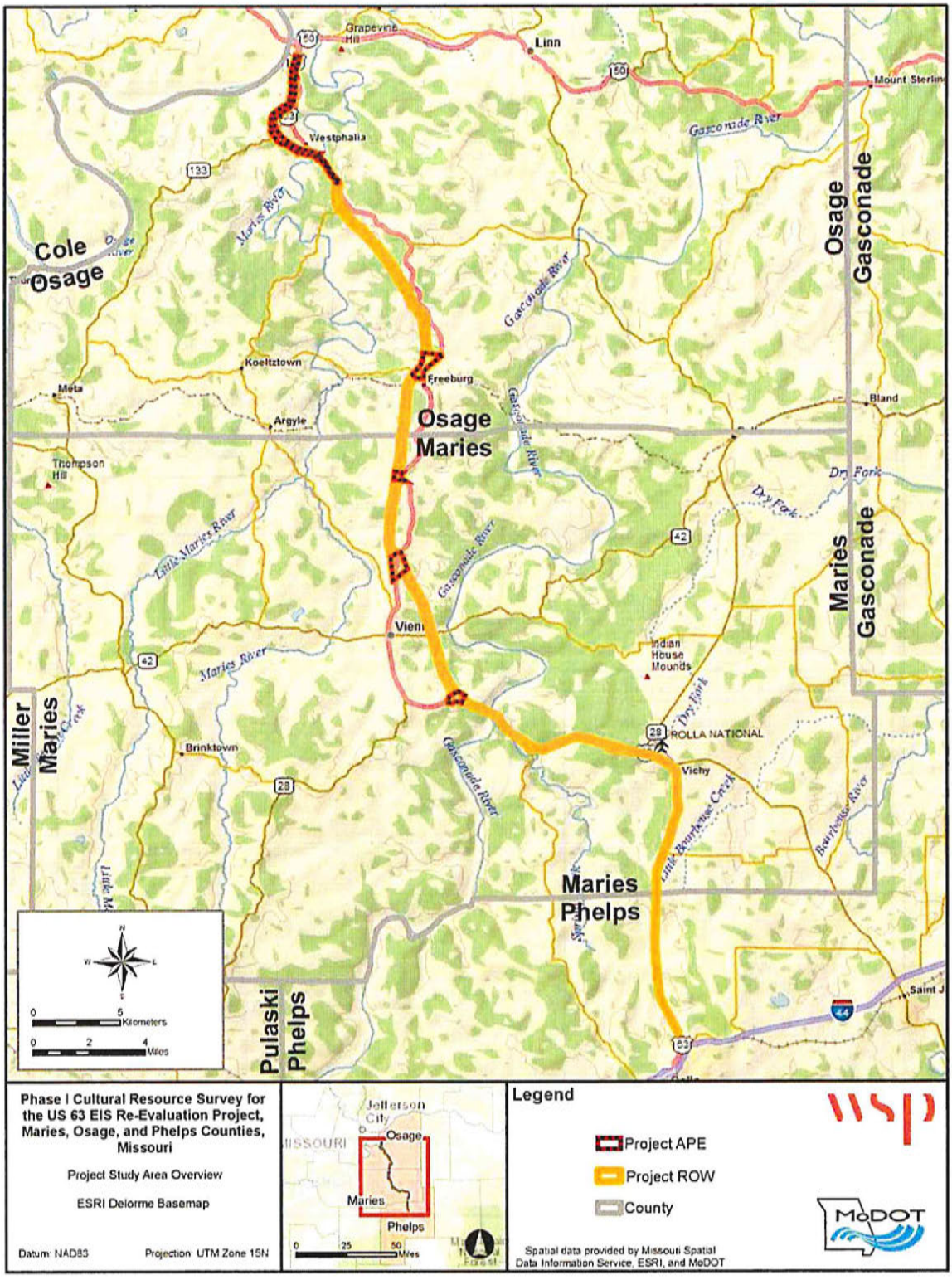
The APE was established following the criteria defined in the April 2009 *Cultural Resources Survey of the Preferred Alternative for the Environmental Impact Statement, Highway 63 Improvements, Osage, Maries, and Phelps Counties, Missouri* prepared by MoDOT. As a previous investigation was conducted, this current investigation was undertaken for the Missouri Department of Transportation (MoDOT) to assess National Register of Historic Places (NRHP) eligibility of previously identified sites within the previously defined US Hwy 63 Preferred Alternative corridor and to survey all areas not previously surveyed within the previously defined proposed Preferred Alternative and additional new transition areas. As such the APE for both archaeology and architecture consist of the Westphalia Section, Freeburg Section, Maries County Road 209 transition area, Vienna North Section, and Maries County Road 325 transition area.

The Westphalia Section totals 9714.3 meters in length with an average width of 245 meters. Of that, 1929.9 meters were surveyed currently, 550 meters were denied access, 4806.7 meters were previously surveyed, and 2427.8 meters of existing roadway ROW. The Freeburg Section is 232.4 acres in size, the Maries County Road 209 Interchange is 48.7 acres in size, the Vienna North Section 229.3 acres in size, and the Maries County Road 325 transition area is 110.4 acres in size.

The architectural survey revisited resources previously surveyed by MoDOT, as well as resources now over 40 years in age within the APE.



Route 63 Sections



Overview of Route 63 Survey Areas

Attachment C: Remaining Cultural Resource Investigations

From: Larsen, Scott - FPAC-NRCS, MO
To: Reiss, Natalie
Cc: Larsen, Scott - FPAC-NRCS, MO
Subject: RE: [External Email]RE: Route 63 Re-Evaluation - Form NRCS-CPA-106
Date: Monday, April 22, 2024 2:53:00 PM
Attachments: image001.png
image003.png
image004.png
image005.png
image006.png
image007.png
image008.png
image009.png

Natalie,

I agree that with only minor changes and the large size of the project that re-calculating the farmland conversion rating would result in very little change in the numbers. I believe that the rating from 2007 adequately represents the project area for the evaluation.
Thank you.

Scott Larsen
Area Resource Soil Scientist
USDA-NRCS, Area Office
6465 Highway 168, Suite C
Palmyra, MO 63461-3023
(573)769-2235 Ext.133
Cell: (573) 934-1084
scott.larsen2@usda.gov

From: Reiss, Natalie <natalie.reiss@wsp.com>
Sent: Monday, April 22, 2024 2:40 PM
To: Larsen, Scott - FPAC-NRCS, MO <scott.larsen2@usda.gov>
Subject: [External Email]RE: Route 63 Re-Evaluation - Form NRCS-CPA-106

Scott,

Thanks for your time today. Based on our discussion, it is not necessary to complete a new NRCS-CPA-106 as part of the re-evaluation of the 2009 EIS for US Route 63. Can you please review the statement below and confirm that you are in agreement?

As indicated on the original Farmland Conversion Impact Rating Form NRCS-CPA-106,

completed in 2007, “Corridor A” which represents the route that was chosen as the Preferred Alternative, resulted in a conversion impact rating total of 127.1 points. Since changes in soil composition occur gradually over long periods of time, and no major human developments have occurred in the region that would have notable impacts on soils, conditions along the project corridor are not expected to have experienced notable changes since that time. Due to the large scale of the project, the minor modifications to the originally assessed corridor are not expected to alter the impact rating such that it would be above the 160-point threshold that would require consideration of other alternatives. Therefore, it will not be necessary to complete a new Form NRCS-CPA-106 for this re-evaluation.

Let me know if you have any edits or additions. Thanks again,

Natalie Reiss
Sr. Consultant, Environmental Planner

T+ 1 636-238-0396

From: Reiss, Natalie
Sent: Wednesday, May 10, 2023 1:43 PM
To: scott.larsen2@usda.gov
Subject: FW: Route 63 Re-Evaluation - Form NRCS-CPA-106
Importance: High

Hi Scott,

WSP is completing a re-evaluation of the 2009 Environmental Impact Statement (EIS) for improvements to US Route 63 in Osage, Maries, and Phelps Counties, on behalf of FHWA and MoDOT. A Farmland Conversion Impact Rating form for the corridor was completed in 2007 and is attached for your reference. “Corridor A” on the form is nearly identical to the route that was chosen as the Preferred Alternative, and which is currently under re-evaluation. Minor modifications to the original corridor have been made since the previous consultation which involve the acquisition of areas of additional right-of-way to allow for tie-ins to the existing Route 63 alignment (project overview map attached).

Current funding for the Route 63 project has been allocated for design and construction within the northernmost portion of the corridor, in Osage County near Westphalia, only (from north terminus to just south of Maries River crossing). As funding for other sections is not yet programmed, detailed analysis of environmental impacts in this re-evaluation are focusing on that area – that’s why Lindsey sent me to you!

I’m trying to determine if the original form for the corridor is still sufficient as far as consultation goes, as minor modifications to the originally assessed corridor are not expected to alter the impact rating (127.1 points) such that it would be above the 160-point threshold that would require

consideration of other alternatives. Unfortunately though, MoDOT does not have shapefiles for the original corridor so it is difficult to quantify exactly how much the corridor has been tweaked since it was assessed in 2007, from an acreage standpoint.

If we need to complete a new form, I believe we'll just want to do it for the Westphalia section that is currently programmed. Let me know what all you would need if that is the case.
Please give me a call if you'd prefer to discuss.

Thank you!

Natalie Reiss
Consultant, Environmental Planner

T+ 1 636-896-5186

From: Anderson, Lindsey - FPAC-NRCS, MO <lindsey.anderson@usda.gov>
Sent: Wednesday, May 10, 2023 1:23 PM
To: Reiss, Natalie <natalie.reiss@wsp.com>
Subject: RE: [External Email]Route 63 Re-Evaluation - Form NRCS-CPA-106

Hi Natalie,

Here is Scott's information:

Scott Larsen
Area Resource Soil Scientist
USDA-NRCS, Area Office
6465 Highway 168, Suite C
Palmyra, MO 63461-3023
(573)769-2235 Ext.133
Cell: (573) 934-1084
scott.larsen2@usda.gov

Just FYI, this week he is currently busy doing a Quality Assurance Review.

Thanks and please let me know if you end up needing anything from me,

Lindsey Anderson
Area Resource Soil Scientist
USDA-NRCS
Springfield, Missouri
Office: (417) 831-5246 ext. 7391
Cell: (573) 507-0927

Public Comments

Route 63 EIS Re-evaluation Public Comments Received

Comment Number	Commenter Name	Comments	MoDOT Responder	Response Type	Response Date	MoDOT Response
1	Maria Bancroft	Missouri's Route 63 has been outdated to meet the needs of the state and the communities that encompass it. Transportation of goods is critical more so as a result of COVID and will continue. We need to adapt to how technology and economic growth are occurring in the affected counties and cities. By making Route 63 more appealing for transportation of goods, travelers, etc., it will allow rural Missouri to benefit from better road conditions for better transportation of goods and help support families to work in various parts of the region. Improvements made to the highway will also encourage new businesses to establish their operations in the region. Missouri is already known for strong workforce. The area would attract businesses if better roadways are invested in the State which would spur economic growth. There is a need for more retail, tourism, and locations on this route for people to stop, eat, acquire fuel, and visit.				
2	Laura Jones	Need passing lanes on 63 north from Rolla to hwy 50 like you have on 63 south of Rolla. Drive 63 north a lot and hate not being able to get around alow moving vehicles.				
3	Steve vogt	Southbound turn lane needed at hwy.63 and hwy28 intersection at airport.Intersection improvement needed at 63 and 28 junction south of vienna.				
4	Bonnie Baker	63 needs to be improved badly. At the very least make it three lanes with alternating passing lanes. We travel it quite often and it is often scary with so much traffic. Dual lanes would be best. Thank you.				
5	Bryce Cordry	Hi. I appreciate the opportunity to provide my views on this corridor. While I do support the 2009 preferred alternative, I believe that MoDOT should at least evaluate feasibility building a new four-lane corridor on a completely new alignment, passing south of Linn and west of Belle. This is for several reasons: 1. Linn and Belle are the largest cities in their respective counties, and therefore this new corridor would provide access to more people and industry than the present corridor. The new corridor would also provide closer access to Owensville, which could be further improved by an interchange/connector around Belle. By contrast, the present corridor does not serve any large towns, with Freeburg and Vienna combined totalling about the population of Belle (with Linn being about double that). 2. Going off of (1), the existing Route 63 corridor is built to a higher standard than most other two-lane state highways in the area, especially the section from Vienna southerly towards Rolla. Freeburg and Vienna are very well-served by the existing US 63 corridor, which could be maintained as-is. 3. The new Linn-Belle corridor would not require any modifications to the existing Route 50/63 interchange and makes use of the existing Route 50 divided highway east of the interchange towards Linn. Upgrading the existing Route 63 corridor would require costly modifications to both the (relatively new) interchange and Osage River bridges. This also reduces the total mileage of new construction necessary by five or so miles. 4. Depending on the specific route selected, there will be less environmental impact with the Linn-Belle corridor, especially for the section south of Belle, as that land is flatter and less earthwork would be needed. Moreover, the use of existing Route 50 west of Linn as described in (3) also lessens the impact. The only place I see greater impact is in the vicinity of the Gasconade River where the terrain is more rugged, but not any more rugged than that between Westphalia and Freeburg.				

Route 63 EIS Re-evaluation Public Comments Received

Comment Number	Commenter Name	Comments	MoDOT Responder	Response Type	Response Date	MoDOT Response
5	Bryce Cordry (Conintued)	5. The Westphalia section (assuming it's the first to be built) would still be necessary owing to its growing status as a Jefferson City bedroom community, thus reducing the waste of money that may have been already spent on design of that section. The design could even be scaled back a bit owing to its function as a local highway and not a cross-state corridor. 6. Federal approvals to reroute US 63 should not get in the way of building the Linn-Belle corridor if such efforts fail. US 63 can always stay as-is, with the new routing becoming a state highway. This approach was taken when InDOT rerouted the US 41 corridor north of Terre Haute, with US 41 remaining two-lane and Indiana Route 63 assuming the expressway during that section. Regardless of which routing MoDOT ends up selecting, it would definitely be useful to design this for 70mph traffic (similar to Route 63 north of Jefferson City), and the new expressway should bypass all towns including Vichy. This will prepare the corridor for a potential new interstate designation in the future. To this end, I would also invite MoDOT to explore plans for a direct controlled-access connection to I-44 at Rolla. If any other questions, including a concept map of this corridor, please email me back or call me at 573-823-7501. Thank you again for this comment opportunity.				
6	Danielle Tuepker	Build the new road! Make it 4 lanes all the way through. Preferred alternative looks like a great plan.				
7	Kelly D Sink	Will the Rock Island Trail State Park be considered where 63 would intersect?				
8	Laura Schiermeier	This is a long-needed highway improvement. Highway 63 becomes more dangerous every year. You can't pass any cars, yet people do so and it is unsafe. I have witnessed this many times. The time to improve this important and busy highway is now when MoDOT has federal infrastructure dollars. It may be the last chance we ever have to do it. Good luck with this project.				
9	Alan Voss	Hwy. 63 would not be a dangerous highway if people would slow down!! On almost a daily basis, I witness people passing other vehicles when there's no way they can see oncoming traffic. I have seen oncoming traffic having to take the ditch because of stupid drivers passing other vehicles and meeting them head on. Maybe if it was patrolled more often it would make people slow down?? Making Hwy. 63 a four-lane would definitely help the safety aspect of this dangerous highway but don't think it will slow down the drivers. At least they wouldn't pass other vehicles at no passing zones. Thank you for the opportunity to comment.				
10	John Meusch	I make the trip from Rolla to Jefferson City three to five days a week. It is well known and very likely documented, that it is a slow and dangerous stretch of highway. The amount of motor freight that travels that stretch is also more and more significant. Taking the curves out of the road and adding passing lanes would solve a lot of issues. Bypasses around Vienna, Westfalia and Freeburg would also move traffic more efficiently. I look forward improvements, whatever you decide. Thank you				
11	Leonard Haslag	I live in Loose Creek, Mo and I conduct business with companies on the current Hwy 63 corridor though my business, Haslag Machine in Loose Creek. I know the original plan for highway 63 back in 2007 was to be a 4 lane divided highway before funding got to be an issue. There was a proposal several years ago to make the 47 mile stretch a Shared 4 Lane highway. This was presented to the public as a proposal to persuade voters to pass an 10 cent a gallon tax increase I believe. I am hoping that the Shared 4 Lane highway has been shelved now that MoDOT has received federal funding and the 4 lane divided highway will be the highway of the future for the 47 mile stretch of highway 63. I feel as taxpayer that this is only fair to taxpayers and citizens of Osage, Maries, Phelps counties and the commercial traffic that depend on hwy 63 that if be rebuilt a full 4 lane highway. It will be very disappointing if this highway is not rebuilt as a fully divided 4 lane highway. I drove from Loose Creek to almost Vienna, MO last week and I felt like I was almost driving I70 or I44 with amount of commercial 18 wheeler trucks using highway 63. This highway is an important vital commercial & economical link for south, central, and north MO and it is just my opinion it would be terrible if this highway is being proposed as a Shared 4 lane highway. It is a vital link between Arkansas, Missouri, and Iowa.				
12	Joshua	It seems there are many roads in disrepair that need to be fixed before spending money on new roads. This				

Route 63 EIS Re-evaluation Public Comments Received

Comment Number	Commenter Name	Comments	MoDOT Responder	Response Type	Response Date	MoDOT Response
13	Joshua and Holly Blume	It seems there are many roads in disrepair that need to be fixed before spending money on new roads, though we understand this is a safety concern. The preferred alternative will cut directly through our property and our new home being built (we were hoping to move in next year). We realize a final decision has not been made but our future/retirement plans are now completely in flux. If the preferred route ends up being selected, when will we be notified? How will compensation for our land and new home be determined? When would we have to move out? We would really like to understand our options so that we can begin preparing. Thank you. Josh and Holly Blume	Mia Peters, Transportation Project Manager	email	8/3/2022	Good Morning Holly, I spoke with our Right of Way Manager, Karl Davenport, and he will be giving you a call at some point in the next few days. Also, we have been getting some requests from property owners for more zoomed in maps of the study corridor near their property. Our consultant now has the boundary of their study area completed and we are able to send these out. Would you be interested to have a copy of a map at the vicinity of your property? Thanks!
14	Craig Bock	I live in Westphalia and after looking at the 2009 Executive Summary Map, the new highway would be going through my land. How would I be compensated if this project were to affect my land?	Mia Peters, Transportation Project Manager	email	8/3/2022	Good Morning Craig, Thanks for your questions about the project concerning the location of the 63 EIS re-evaluation study area and also about the right of way acquisition process. Attached is a map showing the 2009 preferred alignment corridor near your property. This area will be studied with the 63 EIS Re-evaluation. The area will be re-evaluated for environmental/cultural impacts to be cleared for future construction projects. The area to be cleared is approximately 750' in width with a bump out for a possible CR512 connection. It won't be concluded that we will be using the preferred alignment corridor until after the EIS re-evaluation study is completed in May 2023. The Westphalia Section project was approved in the Statewide Transportation Improvement Program a few weeks ago by the MHTC Commission to be programmed in Fiscal Year 2027. After the consultant's environmental study and traffic study are completed in May 2023, then design of the Westphalia Section project will begin. If the preferred alignment corridor is approved in May 2023, it is possible that the entire study area shown on the map will not be needed for highway right of way. As design progresses, and the horizontal and vertical geometry has been laid out, we will be able to set the tentative right of way lines and let property owners know what right of way will be needed for the project. The right of way widths are dependent on factors such as design standards for curvature, grade, crossroad culverts, side road connections, etc. Along with the EIS re-evaluation, the consultant is also doing a traffic study to help MoDOT conclude if a four-lane highway or shared four-lane (alternating passing lanes) highway is warranted. This will also affect the amount of right of way that will be needed.
14	Craig Bock (Continued)		Mia Peters, Transportation Project Manager	email	8/3/2022	For the Westphalia Section project, I estimate that right of way acquisition will be done sometime in 2025-2026 after the right of way needs have been established. Our right of way division will contact the property owners, complete appraisals, make offers and negotiate with each property owner for the acquisition of property for the project. This process can take time with our goal to have property acquired by the time the project is put out for bid to a contractor in Fiscal Year 2027 (sometime between July 2026 – June 2027). There are a lot of unknowns for the Westphalia Section project since the EIS re-evaluation has not been completed, but I hope this has answered some of your questions. Please let me know if you have any other questions. Thank you!
15	vic stratman	Hwy 63 is vital to business in this area. the last few years the traffic on 63 has increased to the point that it is difficult get on it and especially to cross. With the curves North of Vienna any slow or farm vehicle on 63 is a danger as drivers want to pass but no safe place to do so.				
16	Tyler James	Will there be any assistance to the businesses and/or communities that are currently established along the highway and will be bypassed by the new route?				
17	Ginger Kloeppel	We received a letter in the mail about the Re-evaluation of the 2009 Route 63 Environmental Impact Statement. Do you have a copy of a map that shows what parts of 63 might be affected. The picture of the map in the letter we received is to fuzzy for us to be able to tell how it might affect us. Could you please send us a map so we could see what land of ours might be affected? Thank you, Michael and Ginger Kloeppel	Mia Peters, Transportation Project Manager	email	8/3/2022	Hello Ginger, Thanks for your questions about the Route 63 EIS re-evaluation study project. Attached is a map showing the preferred corridor study area near your property. This area will be re-evaluated for environmental/cultural impacts to be cleared for future construction projects. The preferred alignment corridor won't be approved until after the EIS re-evaluation study is completed in May 2023. Please note, the property lines that are shown on the map were received from the county's GIS company and appear to not be completely accurate in the area near your parcel. So don't be alarmed if they seem to be off a bit when overlaid on the google earth aerial. When MoDOT starts designing the roadway project, we will have our professional land surveyors re-establish the property lines from the deeds and existing roadway plans for accuracy. Please let me know if you have any questions. Thank you!

Comment Number	Commenter Name	Comments	MoDOT Responder	Response Type	Response Date	MoDOT Response
18	Ashley Scheulen	Good Morning, I would appreciate MoDOT's consideration to begin the study closer to the Highway 50/63 junction. The reason for this is that the largest day care facility in the Westphalia area is located on County Road 501. Traffic coming from Highway 50 must merge over two lanes of traffic with very little exit time to enter the County Road. Another dangerous entry point is the County Road 611 entrance from Highway 63 in Westphalia. Farm equipment along with a heavy amount of traffic enter and exit that road. There is a passing lane there on 63, so most traffic accelerates up the hill with little regard to the exit.				
19	Mark Emanuel	I can't wait for this to be built. Realignment and leveling of big stretches of highway 63 are badly needed. I will strongly suggest to make future interstate-grade changes now if and when highway 63 is rebuilt further south to Arkansas, to permit for quick and cheap interstate designation. The preferred alternative goes a long way toward interstate criteria but can be completed as such with some extra funds- please find the budget now to do so.				
20	Jim Roark	I would like to know where the corridors are going to be in Westphalia? Want to make sure we still have good access to highway and doesn't increase our response times. Thanks, Chief Roark 573-680-9154	Preston Kramer, Meramec Area Engineer	email	7/13/2022	Hello again Jim. Please see attached. The green line is the Preferred Alignment per the Environmental and Location Study, approved by FHWA. As I mentioned, there is a lot of work to be completed, and decisions to make, before we can build it. If you have any follow-up questions, please let us know. Thanks.
21	Mark Baker	Please consider following through with a significant upgrade to 63 while you have the funds. This section of highway has significant traffic volumes, more than I think the road was designed for. Additionally, I believe it will be a significant economic driver by improving travel times from Jefferson City/Columbia to Rolla and I-44. Both areas are growing and really as the crow flies, aren't that far apart, but the roads are just not good between the two. This can be improved and the time is now.				
22	Lisa Butler	A turn lane for Quaker would help with congestion. Many weekdays, especially in the morning, there is a line of cars behind someone waiting to turn in. The same is turn for the turnoff into Westphalia just after the bridge, going north. Please are going dast down the hill and there are lots of wrecks. Also it's hard to see northbound traffic at E south of Westphalia.				
23	Steve luebbering	I agree highway 63 needs improvement. But instead of taking all of the land for a new road (including any routes) Did Modot consider improving existing route . Adding bridges , partial 4 lanes,turn lanes. If new road goes in the county's that the existing roads is in ,is there responsibility . Most of the rural county's don't have enough money to maintain the roads they have. Please fix what you have, example drive 133 from Westphalia to Meta ,in my opinion it is an unsafe road for any vehicle to travel over 35 mph . (it's a dangerous road) also buildings are replaceable(a hardship for anyone or business that has to move) land is not replaceable! . Example highway 50 to Linn what did Modot improve (Bottlenecked traffic to Linn)				
24	Casey Helton	I have a few questions on the route of this road. Considering the preferred route goes directly through my house, what are you going to give me for the value of my house and value of the land around it? Are you going to tear my house down? Is the road just going to go through my property? This will dramatically affect the value of the house and the land it is on. I also have a tree in my front yard that is probably one of the oldest in Osage county. Are you just going to cut it down? I feel like that would be a severe tragedy and I feel the route should be moved in order to save this old oak. I would like to discuss this further. Please feel free to call me at 573-257-1373.				
25	Curtis Reinkemeyer	i own some land on County Road 502 in Westphalia, On the Corner of 502 and 501. i see the 2009 study shows the new proposed highway crossing 502 behind my land. county road 502 is a very low traffic county road and i would love there to not be an access from new highway to county road 502. i feel that would make a short cut cutting through there and causing a lot more traffic for me. im more than happy to drive around and not be there short cut road. i hope that makes sense. Also, on my land there is a large ditch, if there would be any extra fill needed to get ride of i would be very interested in supplying a spot. I also work for MODOT in General Services as a drafter. Thank YOU				
26	Ann Howard	Need to include passing lanes similar to those on 63 south of Rolla.				

Comment Number	Commenter Name	Comments	MoDOT Responder	Response Type	Response Date	MoDOT Response
27	Heather Luebbert	My comments are specific to the Westphalia area. I don't have an opinion on the alternatives proposed to essentially by-pass Westphalia, but I have a suggestion for the existing roadway. I think serious consideration needs to be had about, minimally, adding a center turning lane to the existing highway. Whether traveling northbound or southbound, motorists experience too many driveways along the stretch just south of the Hwy 50/63 interchange. There are numerous residences on both sides of the Highway, as well as the soccer fields, KC Hall, Barb's Boutique, Bruns Access/County Road, commuter lot, and Eicholz Building. Once you get into the city limits, it gets way worse, but understandably the width of roadway to work with through that section is not as flexible to expand. Too many crashes have occurred along that initial route because there are too many things happening. Too many vehicles turning, stopping, and starting. And while a center turning lane is not intended to create a buffer between the northbound and soundbound lane, it can provide that benefit as well. The Safe System approach speaks to designing roadways knowing that drivers will make mistakes. Adding this infrastructure buffer is one of those solutions. So again, I'd offer that a center turning lane should be considered from Heritage Tractor to Hwy 133.				
28	Chester A Kojro	I agree with improving US 63 between US Route 50 and Rolla, but I am very concerned with the constriction of US 63 WITHIN Rolla! First, Rolla's Transportation Development District is bypassing US 63 traffic in Rolla altogether by routing it onto the new MO Route 72 extension onto I-44 at exit 184 to exit 186. Second, Rolla has NARROWED US 63 / Bishop Avenue from 4 to 2 lanes and is installing a roundabout as an entryway to University of MST. So much for improving US 63!				
29	Colby	The existing corridor only needs alternating passing lanes, to straighten out a few of the curves and to rework a few intersections. The highway 50 project to Linn was a waste of tax payers money and a waste of their land. It would be unfortunate for the state to repeat this again with the Highway 63 project. We need to take care of the infrastructure we have, instead of adding to Missouri's highway infrastructure portfolio. This proposed project would have a negative impact on the local economies; the town businesses would suffer if you removed the corridor. In your study you need to address how many travelers stop at the Freeburg church to take pictures or to walk their dog in the park. I have faith in the design team at MoDOT to work out solutions to improve the highway within its existing parameters. Thanks for working on the bridges and keeping them safe . Best Regards, Colby				
30	Ron Rothove	One question is 133 at 63 going to have a overpass with on and off ramps, any J turns if so do you have enough room to make the turn pulling a loaded trailer without having to get out in live traffic. We were told that if it was a straight shot to Rolla it would take 11 miles off. I think that would be a very environmental impact if you choose not to use the straight shot because of how much traffic that is on hwy 63 and the emissions the cars will put off. Do you plan to also bypassing Rolla as when you straighten the road out and have dual lanes this will increase the traffic since the road will be safer.				

Comment Number	Commenter Name	Comments	MoDOT Responder	Response Type	Response Date	MoDOT Response
31	Kay Stuecken	Thank you for the opportunity to provide feedback on the 2009 shelved project of Rt. 63. I live in Freeburg and have been commuting on Rt. 63 to Jefferson City for the past 40+ years, Mon-Fri. It's unfortunate that there is no way to get around semi-trucks or to note that some curvy sections are extremely dangerous and have driven past accidents, so I value and respect that MoDot is revisiting this project. I don't agree, however, with the 2009 plan making it into a 4-lane highway, it just isn't necessary. When the time comes, please take into consider what is truly being lost: landscape, farmland, houses, commercial buildings, businesses and the economic impact a 4-lane highway will have in Osage/Maries County. If the 4-lane would go through, travelers would not have easy access to what the small communities have to offer. The off-road ramps to get to the towns would seem to make travelers pass us by not knowing a small shop/pub/convenient store/gas station/historical churches/parks/etc. would be at their disposal, they would just keep travelling. Instead of a 4-lane, perhaps a few options might be: from the hwy 50/63 interchange, make a center lane or turning lanes around the area of the Knights of Columbus soccer fields; when travelling through the beautiful town of Westphalia consider a center turn lane; the list keeps going on, but I hope you understand my point. If there would be a 4-lane, what happens to the maintenance of the existing road, just more roadway for MoDot to maintain. Another thought, I don't know MoDot's budgeting policy/procedure, whether federal grant and/or state money has to be dedicated to specific projects etc., but it would be nice if some of the money could be dedicated to some of the rural state roads. For example, 133 to Meta or Rte. E to Rich Fountain/Belle - those roads are extremely narrow, it'd be nice to widen them and others. If you ever meet a vehicle on Osage county off-roads, you would understand. Although a bit challenging, I have faith MoDot's professional team will thoroughly revisit the 2009 plan and come up with a new roadway design to improve and enhance the existing highway. Thank you for your time.				
32	Morgan Householder	This project unnecessarily will uproot close to 30 homeowners if not more. All for the sake of truck drivers not wanting to slow down by Westphalia. This is a waste of tax payer dollars.				
33	Mark Russell	I have been notified by several neighbors regarding the potential for the Hwy 63 Project from the Maries River north to the Highway 50 interchange. I was shown a map this evening with two potential routes but the map was so small, it was hard to determine property lines and impact areas. Would it be possible to send me a map that can be enlarged, and/or detailed enough to see the preferred route at the present time? Thank you so much. I was not sent anything by MODOT.... or at least never received it if it was sent. Thanks, Mark and Sherri Russell	Mia Peters, Transportation Project Manager	email	8/22/2022	Hello Mark and Sherri, Thank you for your interest in the MoDOT Route 63 EIS re-evaluation project. The property owners whose parcels overlapped with the preferred corridor from the 2009 Environmental Study were the ones who received right of entry letters. If we missed your property, I apologize. Where is your property located, so we can double check if it overlaps with the corridor? Attached is a map showing the outline of the corridor through the Westphalia section. If you want to circle where your property is located and email back a picture of the map, I can send you a closer view of that specific area. The Westphalia Section project has been funded and added to the approved Statewide Transportation Improvements Program for 2027. The preliminary design will not begin until after the Route 63 EIS re-evaluation for environmental and cultural factors has been completed around May 2023. Please let me know if I can answer any other questions. Also, we received some comments from Robert Russell under the same email address. I would like to reply to those comments also, should I reply to this email address or is there another address or phone number where I could reach Robert Russell? Thank you.
34	Robert Russell	I am a citizen of Osage County and own property between Highway 50 and Westphalia close to the proposed corridor project. I was shown a map this evening that was not legible to determine the proposed route. It looked different from the 2009 maps. Could you please put me on the mailing list..... Also, I would expect a public meeting to allow for questions and answers similar to 12-15 years ago. My biggest question is to see a legible map with the proposed route. I believe this is important to many landowners that may be impacted by this project. Thank you				

Comment Number	Commenter Name	Comments	MoDOT Responder	Response Type	Response Date	MoDOT Response
35	Gloria Schmitz	First, I am asking for a colored copy of the suggested route. As for comments, I think building constructing new highway shouldn't be the priority. Fixing existing highways should be first and foremost. The real problem is in Linn, MO, in the center of town. Delivery trucks stop right in the middle of town to unload, backing up traffic, etc. Also, when driving to Jefferson City, westbound on Highway 50, speed limit is 65, until you hit 5 stop lights?? Also, I think the route that you're supposedly considering will be more curvy that what's there now. Appears that you'll be splitting our farm (a Century farm at that). We'd prefer that you stay as close to the soccer field and the Knights of Columbus building as possible, rather than running all the way up our "north" hillside. Better yet, rebuild the K of C building to a different location. That seems to be more economical. Seems the farmers get no consideration in any of this. Will there be meetings to discuss other alternate routes that would make more sense, or is this a done deal? There are several of us who would like to meet with Modot staff/engineers. Will that be possible? Thank you. Gloria and Vernon Schmitz, 573-690-6785	Mia Peters, Transportation Project Manager	email	9/13/2022	Gloria, Attached is a map showing the Route 63 EIS re-evaluation study area near your property. Please let me know if you have any questions. Thank you!
36	Samuel James Davis	There is not enough traffic from Rolla to Highway 28 near Vienna to result in any more expanding of Highway 63. The funds would be better used to expand Highway 50. From Highway 28 near Vienna to Highway 50 could be expanded since of the high traffic flow from Quaker Window Factory.				
37	Ron Wilkerson	Hello, I would like to voice some concerns over the location of the alternative pathway 1 in the Vichy area. I would like to disclose a potential conflict of interest in these comments as this pathway would essentially cut my farm in half with this proposed pathway. This being said, I can offer insight to the property in regards to topographical and natural concerns. First, from a concern of natural features, is the location of the Mill creek spring on the property. From the best I can discern from the map, this pathway would cut directly over the point location of the spring that feeds Mill creek. There are several farmers in the area that use this creek as a water source for their cattle. While I'm unaware of the aquatic impact of disruption of this spring, I would fathom to believe it would be one of significance to mention. Missouri prides itself on the natural beauty of the Ozarks and this would be an easily avoidable disruption of such natural habitat and water settings. This location also potentially looks to have an effect on a significant sized pond/lake on my property that is used as a water source for cattle. This is a continuous source of water year round as the lake stays full during drought events. If this route separates this water source, this would impact the ability for livestock on my property to have an adequate year round water source.				
37	Ron Wilkerson (Continued)	Secondly, I have concerns with the topographical features of the area in the capacity to accommodate a 5 lane roadway. As soon as you head west of the current 63 corridor you encounter very less than ideal topography for such a roadway. To the north of my property there is an abandoned quarry just south of the Vichy park. It seems that this, along with the topography of the proposed alternative, extensive excavation and grading would need to take place. This also concerns me as a taxpayer with an additional cost of almost 6 million total dollars vs Alt 2 or the recommended preferred pathways according to the "Recommended Preferred Alternative, Alternative 1 and Alternative 2 Matrix - Route 63 EIS" in Appendix C of the material provided for review. Also in this pathway, per the appendix, there would be more environmental impacts including pond involvement, Forested acres, and possible threatened and endangered species disruption. Looking at the map of the proposed route, this also does not appear to increase the diameter of the curve at this point in 63 for increased safety. I just wanted to share my thoughts with you as a landowner affected by this alternative pathway corridor. 63 through the town of Vichy appears to have a current good path through the terrain of the area with the current roadbed already established. I would like to see the remaining wooded acreage of the Ozarks and its natural features kept intact as much as possible going into the future. If you have any questions or would like to discuss anything with me, please feel free to reach out to me at the above email address. Thank you for your consideration of this message. Ron Wilkerson				
38	Corey	I guess it is likely that US 63 could be upgraded to a 4-lane expressway with interchanges at major junctions from US 50 to Rolla. It seems to be a good option.				

Route 63 EIS Re-evaluation Public Comments Received

Comment Number	Commenter Name	Comments	MoDOT Responder	Response Type	Response Date	MoDOT Response
39	Sheldon L Bauer	Where can I find a map of the new highway 63 project from Westphalia to Freeburg mo A map for the new 4 lane highway from Westphalia to Freeburg Missouri				
40	Sheldon L Bauer	Where can I find a map of the new highway 63 project from Westphalia to Freeburg mo				
41	Justin and Morgan Householder, Vernon and Gloria Schmitz, Mark and Sherri Russell, Kenny and Theresa Rehagen, Dean and Amy Luecke, Jan Haviland, Wade and Delores Tucker, Cole Bocklage, Craig Bock, Patrick Stule	Change route to avoid Hatchery, moving south with new bridge over Maries River				

Alsop, Erin

From: Mia Peters <Maria.Peters@modot.mo.gov>
Sent: Tuesday, August 30, 2022 12:38 PM
To: Heitz, Connie
Cc: Melissa Scheperle; Kyle E. Grayson; Preston Kramer; Adam J. Pulley; Alsop, Erin
Subject: FW: 63 EIS

Connie,

Attached is a comment that someone tried to leave on the webpage but got an error. Please add this to the group of comments that has been received.

Thank you!

Mia Peters, P.E.
Transportation Project Manager
MoDOT – Central District
(573) 751-7690
maria.peters@modot.mo.gov

From: Ron Wilkerson <rwilker82@gmail.com>
Sent: Monday, August 29, 2022 9:09 PM
To: Mia Peters <Maria.Peters@modot.mo.gov>
Subject: Re: 63 EIS

Thank you. Below is a cut and paste from the website. Just let me know if you need anything else. Thank you again for the help.

Ron

Hello,
I would like to voice some concerns over the location of the alternative pathway 1 in the Vichy area. I would like to disclose a potential conflict of interest in these comments as this pathway would essentially cut my farm in half with this proposed pathway. This being said, I can offer insight to the property in regards to topographical and natural concerns. First, from a concern of natural features, is the location of the Mill creek spring on the property. From the best I can discern from the map, this pathway would cut directly over the point location of the spring that feeds Mill creek. There are several farmers in the area that use this creek as a water source for their cattle. While I'm unaware of the aquatic impact of disruption of this spring, I would fathom to believe it would be one of significance to mention. Missouri prides itself on the natural beauty of the Ozarks and this would be an easily avoidable disruption of such natural habitat and water settings. This location also potentially looks to have an effect on a significant sized pond/lake on my property that is used as a water source for cattle. This is a continuous source of water year round as the lake stays full during drought events. If this route separates this water source, this would impact the ability for livestock on my property to have an adequate year round water source.

Secondly, I have concerns with the topographical features of the area in the capacity to accommodate a 5 lane roadway. As soon as you head west of the current 63 corridor you encounter very less than ideal topography for such a roadway. To the north of my property there is an abandoned quarry just south of the Vichy park. It seems that this,

along with the topography of the proposed alternative, extensive excavation and grading would need to take place. This also concerns me as a taxpayer with an additional cost of almost 6 million total dollars vs Alt 2 or the recommended preferred pathways according to the "Recommended Preferred Alternative, Alternative 1 and Alternative 2 Matrix - Route 63 EIS" in Appendix C of the material provided for review. Also in this pathway, per the appendix, there would be more environmental impacts including pond involvement, Forested acres, and possible threatened and endangered species disruption. Looking at the map of the proposed route, this also does not appear to increase the diameter of the curve at this point in 63 for increased safety.

I just wanted to share my thoughts with you as a landowner affected by this alternative pathway corridor. 63 through the town of Vichy appears to have a current good path through the terrain of the area with the current roadbed already established. I would like to see the remaining wooded acreage of the Ozarks and its natural features kept intact as much as possible going into the future. If you have any questions or would like to discuss anything with me, please feel free to reach out to me at the above email address. Thank you for your consideration of this message.

Ron Wilkerson

On Mon, Aug 29, 2022 at 4:52 PM Mia Peters <Maria.Peters@modot.mo.gov> wrote:

> Ron,
>
> Sorry you were having difficulties with our website. I will ask our communications staff to take a look at that to make sure it is working correctly. You can email your comments to me and I will get them added to the comments we have received thus far.
>
> Thank you!
>
> Mia Peters, P.E.
>
> Transportation Project Manager
>
> MoDOT – Central District
>
> (573) 751-7690
>
> maria.peters@modot.mo.gov
>
> ---
>
> **From:** Ron Wilkerson <rwilker82@gmail.com>
> **Sent:** Monday, August 29, 2022 4:31 PM
> **To:** Mia Peters <Maria.Peters@modot.mo.gov>
> **Subject:** Re: 63 EIS

Alsop, Erin

From: Missouri Department of Transportation <noreply@modot.info>
Sent: Wednesday, September 28, 2022 8:20 PM
To: Mia Peters
Cc: Adam J. Pulley; Preston Kramer
Subject: PROJECT COMMENT: Route 63 Environmental Study Re-Evaluation (Osage, Maries, Phelps Counties)

Follow Up Flag: Follow up
Flag Status: Flagged

Submitted on Wed, 09/28/2022 - 20:19

Submitted by: Visitor

Submitted values are:

Your Name
Corey

Your Email
[redacted]

Please share your thoughts!
I guess it is likely that US 63 could be upgraded to a 4-lane expressway with interchanges at major junctions from US 50 to Rolla. It seems to be a good option.

From:	Missouri Department of Transportation
To:	Mia Peters
Cc:	Adam J. Pulley; Preston Kramer
Subject:	PROJECT COMMENT: Route 63 Environmental Study Re-Evaluation (Osage, Maries, Phelps Counties)
Date:	Saturday, October 8, 2022 4:52:50 PM

Submitted on Sat, 10/08/2022 - 16:52

Submitted by: Visitor

Submitted values are:

Your Name
Sheldon L Bauer

Your Email
[redacted]

Please share your thoughts!
Where can I find a map of the new highway 63 project from Westphalia to Freeburg mo
A map for the new 4 lane highway from Westphlia to Freeburg Missouri

From: Missouri Department of Transportation
To: Mia Peters
Cc: Adam J. Pulley; Preston Kramer
Subject: PROJECT COMMENT: Route 63 Environmental Study Re-Evaluation (Osage, Maries, Phelps Counties)
Date: Saturday, October 8, 2022 4:46:25 PM

Submitted on Sat, 10/08/2022 - 16:46

Submitted by: Visitor

Submitted values are:

Your Name
Sheldon L Bauer

Your Email
[redacted]

Please share your thoughts!
Where can I find a map of the new highway 63 project from Westphalia to Freeburg mo

Justin and Morgan Householder

[redacted]

Did not receive letter

VERNON + GLORIA SCHMITZ

[redacted]

Mark & Sherri Russell

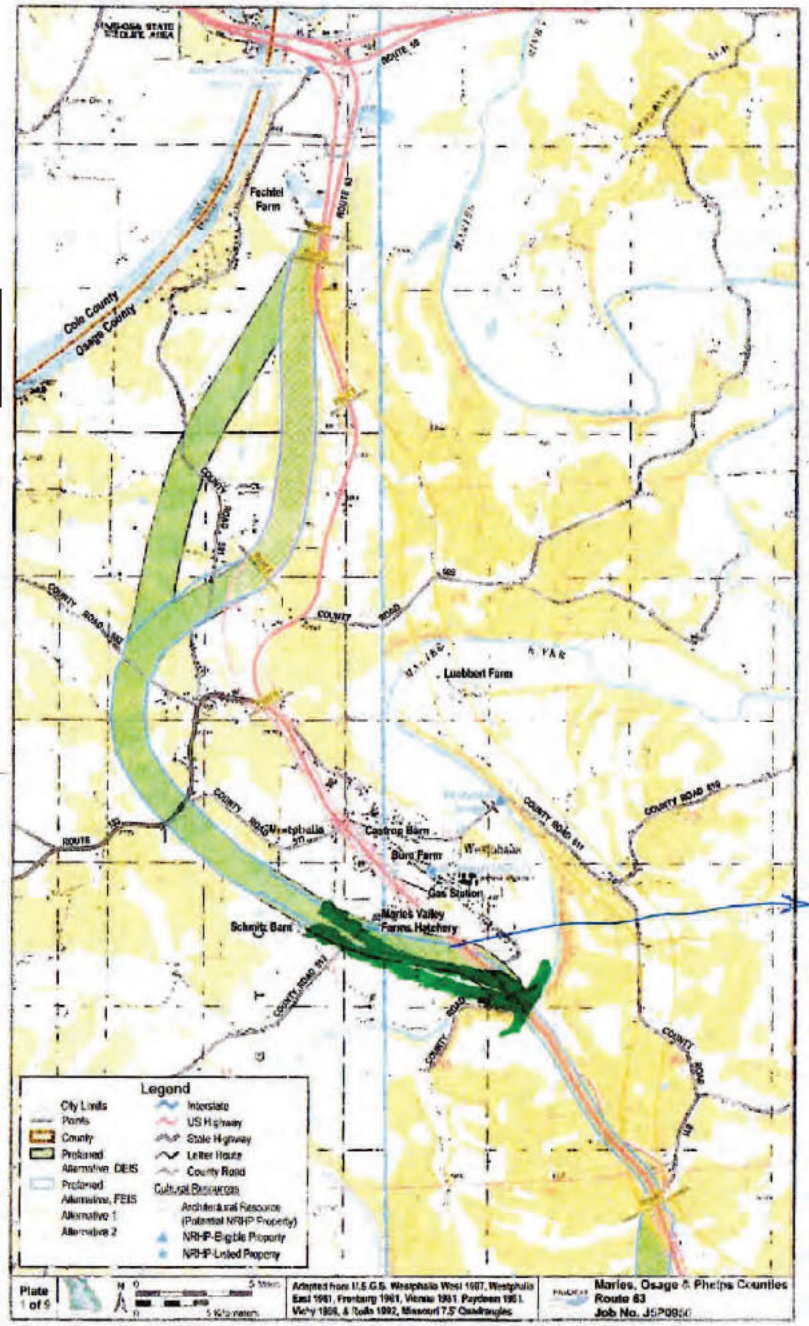
[redacted]

Kenny & Theresa Rehagen

[redacted]

Dean & Amy Luecke

[redacted]



Jan Haviland

[redacted]

Wade & Delores Tucker

Cole Bocklage

Alvin & Betty Bocklage

CRAIG Bock

[redacted]

Patrick Stuck

[redacted]

Change route to avoid Hatchery, moving south with new bridge over Maries River

Meeting Documentation

MoDOT Route 63
Environmental Impact Statement Re-Evaluation
Agency Scoping Meeting - EPA
Meeting Notes
August 10, 2022

Attendees

MoDOT: Mia Peters – Transportation Project Manager, Melissa Scheperle – Environmental and Historic Preservation Manager, Kyle Grayson – Environmental Compliance Manager

Wood: Connie Heitz – Project Manager, Erin Alsop – Staff Scientist

EPA: Amber Tilly – NEPA Project Manager, Joshua Tapp – Director Office of Governmental Affairs

Purpose of Meeting

The Meeting was requested by EPA in response to a letter sent by MoDOT to inform agencies and tribes about the Route 63 EIS Re-evaluation project.

Meeting Summary

1. Introductions
    a. Attendee introductions
    b. EPA thanked MoDOT for the opportunity to comment and learn of the project in the early stages.
2. Project Overview
    a. Discussion of current and proposed alignment. 2009 EIS preferred alternative is approximately 47 miles part of which will use current alignment of Route 63 and part goes off to a new alignment. Corridor of the preferred alternative study area ranges from 300 to 800 feet.
        i. Based on funding the project has been broken into sections, as the Westphalia section has been funded detailed biological and cultural studies will take place in the approximately 6-mile corridor.
            1. Westphalia Section is to be constructed in 2027
    b. Draft EIS reevaluation is to be completed March 2023 with the final to be completed May 2023.
        i. Project analysis will not be issued in a tiered approach or with supplemental EISs. Construction phase is to be tiered.
3. EPA Questions
    a. Waters of the US Reporting – Individual vs Nationwide permit?
        i. Field studies are scheduled in the next few weeks, so impacts are not yet known, nor is the anticipated permit application.
    b. EPA issued comments on 2009 EIS. The Re-evaluation will bring the EIS to current document standards. Areas of concern are anticipated to have changed from 2009 to the future 2023 document.

MoDOT Route 63
Environmental Impact Statement Re-Evaluation
Agency Scoping Meeting - USACE
Meeting Notes
September 1, 2022

Attendees

MoDOT: Mia Peters – Transportation Project Manager, Kyle Grayson – Environmental Compliance Manager, Stephanie McLerran - Senior Environmental Specialist

Wood: Joel Budnik – Associate Biologist, Robin Ledford – Natural Resources Lead, Erin Alsop – Staff Scientist

USACE: Sean Beyke – Regulatory Project Manager, Matthew Sailor – Missouri State Program Manager

Purpose of Meeting

The Meeting was requested by USACE in response to a letter sent by MoDOT to inform agencies and tribes about the Route 63 EIS Re-evaluation project.

Meeting Summary

1. Project Overview
    a. Discussion of current and proposed alignment. 2009 EIS preferred alternative is approximately 47 miles part of which will use the existing Route 63 alignment 63 and part goes off the existing corridor to a new alignment. The preferred alternative corridor area ranges from ~300 to ~750 feet.
        i. Based on funding the project has been broken into sections. As the Westphalia section has been funded detailed studies will take place in the approximately 6-mile corridor.
            1. Westphalia Section is schedule for construction in 2027. No other sections have funding at this time.
                a. A few other sections are on the unfunded needs list.
    b. The Final EIS Re-evaluation is scheduled to be completed May 2023.
    c. MoDOT in house team will be designing alignment.
2. MoDOT/Wood Items
    a. Will water resource impacts be looked at individually or cumulatively?
        i. Last few projects through USACE – Kansas City office were permitted through a Nationwide Permit (NWP) where each of the individual Waters of the U.S. (WOTUS) crossings (i.e., streams and wetlands) were considered single and complete projects.
            1. However, there is a threshold trigger if the WOTUS loss is over mitigation threshold, then the cumulative impacts of the whole project will be evaluated and permitted through an Individual Permit (IP).
        ii. Mitigation will not change regardless of permit type (IP vs. NWP) determined necessary for the project.

b. Understanding that for single stream crossing impacts less than 0.03 ac. would be evaluated as single and complete projects through a NWP. Whereas loss of over 0.03 ac. would trigger an IP.
    i. Generally yes, however if the individual crossings are clustered together or tightly packed than that could trigger IP regardless of individual acreage impacted.
c. Pre-Construction Notification (PCN) requirements
    i. Understanding that is project does not require a PCN if less than 0.01 acre of wetlands is impacted.
        1. Carry on with normal procedure, however you would submit a PCN with documentation for all resources, even if some of the individual resources being crossed do not need PCN.

3. USACE Items
    a. Would like to have pre application meeting to discuss delineation findings and answer questions regarding jurisdictional status and other determination findings.
        i. Tentative plan for late November, before holiday season.
    b. Mitigation
        i. 2021 Nationwide Permit mitigation threshold of 0.03 acre includes portions of streams encapsulated in culverts, as they are considered permanent stream channel loss.
    c. Credit Bank
        i. MoDOT usual credit bank is located near the intersection of Highways 50 and 63.
            1. Inquire if that particular bank has stream credits, or wetland credits only.
    d. Water of U.S. Report
        i. Ensure work is thorough and complete; should not contain any questions or unknowns.
            1. Would like to work out those discrepancies (if any) before submission.
    e. Timing
        i. 2021 Nationwide Permit expires on 3/14/2026. Past work could be out of compliance with new Nationwide Permits at that time if construction is expected in 2027.
            1. Current fieldwork is being completed to support EIS Re-Evaluation document and get a sense of future impacts once alignment is designed. Current study corridor is much wider than final alignment will be.

ii. Ensure that fieldwork is not too far from growing season, some areas may benefit from an evaluation in the spring.
    1. Appears to be minimal wetlands in the project corridor, however fieldwork will start in potential wetland areas that need identification of vegetation first.

MoDOT Route 63
Environmental Impact Statement Re-Evaluation
Agency Scoping Meeting - USFWS
Meeting Notes
August 8, 2022

Attendees

MoDOT: Mia Peters – Transportation Project Manager, Melissa Scheperle – Environmental and Historic Preservation Manager, Kyle Grayson – Environmental Compliance Manager

Wood: Connie Heitz – Project Manager, Robin Ledford – Natural Resources Lead, Erin Alsop – Staff Scientist

USFWS: John Weber – Deputy Field Supervisor, Andy Roberts – Biologist

Purpose of Meeting

The Meeting was requested by USFWS in response to a letter sent by MoDOT to inform agencies and tribes about the Route 63 EIS Re-evaluation project.

Meeting Summary

1. Introductions
    a. Attendee introductions
    b. USFWS thanked MoDOT for the opportunity to comment and learn of the project in the early stages.
2. Project Overview
    a. Discussion of current and proposed alignment. 2009 EIS preferred alternative is approximately 47 miles part of which will use the existing Route 63 alignment 63 and part goes off the existing corridor to a new alignment. The preferred alternative corridor area ranges from 300 to 800 feet.
        i. Based on funding the project has been broken into sections. As the Westphalia section has been funded detailed biological and cultural studies will take place in the approximately 6-mile corridor.
            1. Westphalia Section is schedule for construction in 2027.
    b. Construction at the Maries Bridge, including possible new bridge, will be based upon results of ongoing traffic analysis.
    c. The preliminary Draft EIS Re-evaluation is scheduled to be completed March 2023 with the final to be completed May 2023.
3. USFWS Questions
    a. Threatened and Endangered Species and Critical Habitat
        i. Critical habitat for the Niangua darter may be present in the Maries River near the Maries River Bridge along the proposed project corridor.
        ii. USFWS recommends including the Little Brown Bat and Tri-Colored Bat in threatened and endangered species studies as they may be elevated from Candidate Species to Threatened or Endangered by the time construction is to occur in 2027.

iii. Robin will send species lists to USFWS for their confirmation.

JCD0007 Osage/Maries/Phelps Route 63 Environmental Impact Re-evaluation Study and JCD0108 Osage US63 Westphalia Re-alignment Project

Requested Property Owner Meeting – Tuesday, October 11th at 5:00 p.m. at Central District Office – Muri Room

- Introductions – MoDOT, Wood Environmental, property owners

- US63 runs north and south across the state of Missouri and carries thousands of vehicles per day. The corridor included in this study includes Osage, Maries, and Phelps counties, and serves as a primary roadway connecting Jefferson City and Rolla. With the availability of additional federal and state funding now is the time to make it fully functional for the demands of the 21st century.

- The original EIS Study was completed in 2009 and concluded: Project Needs are to improve safety, improve traffic flow, and improve corridor continuity. The proposed action will correct roadway deficiencies on Route 63 by relocating sections on new alignments and improving existing Route 63 in various locations. Reasonable alternatives included a "No-build" alternative, upgrading the existing facility, and various build alternatives. The reasonable alternatives were then compared on an entire corridor basis. The Preferred Alternative chosen best met the project's purpose and need, therefore it became the recommended alternative. The Preferred Alternative is shown in the 2009 EIS document linked on the MoDOT webpage and also in the property owner right of entry letter.

- The current EIS Re-evaluation Study will be completed by May 2023. Since the previous EIS study was completed in 2009, it requires a re-evaluation of the study corridor to gather public input and determine if changes in the project area have occurred. MoDOT will use this information to better understand the impact of potential improvements. (See Osage/Maries/Phelps corridor map display)

- Give status of EIS Re-evaluation (MoDOT and consultant partner Wood Environmental)
    - Press release sent out announcing start of study and requesting comments.
    - Right of Entry Letters were sent to each property owner along the EIS preferred alternative corridor to seek support and cooperation with field surveys required for the project.
    - Webpage was published to introduce the Route 63 EIS Re-evaluation project, give access to the previous EIS study and accept comments. https://www.modot.org/MeramecRt63
    - Field crews are visiting parcels for environmental/cultural analysis, identifying natural and archeological resources that may be impacted by potential highway improvements.
    - Option 1 from the 2009 EIS was requested to be screened again since the EIS document did not include evaluation data. The Consultant did a desktop comparison of Preferred Corridor vs Option 1. The Preferred Corridor was found to be the best alternative based on stream impacts, parcel bisections, home displacements and impacts to utilities.

- MoDOT is conducting a traffic and safety study with its consultant team to identify ways to improve the 47-mile stretch of Route 63, from south of the U.S. Route 50 interchange in Osage County to Rolla in Phelps County. The goal of this study is to explore specific improvements that will enhance safety and ease congestion along the corridor, while also providing improved access for businesses and communities.

- Discuss JCD0108 Westphalia Section project added to STIP. In July with the approval of the 2023-2027 STIP, the Missouri Highway Commission approved funding for corridor improvements to 5.78 miles of Route 63 to be designed and awarded for construction in FY2027. This is the northernmost section of the corridor (Westphalia section) from

US50 to south of Westphalia. The project has an estimated construction cost of $40,123,000. Design of this project will begin after the EIS Re-evaluation project is completed in May 2023. (See Westphalia corridor map display)

- Ask if there are any comments or questions.

- Ask if there is any other information that we can supply you that we haven't already shared?

JCD0007 Osage/Maries/Phelps Route 63 Environmental Impact Study Re-evaluation

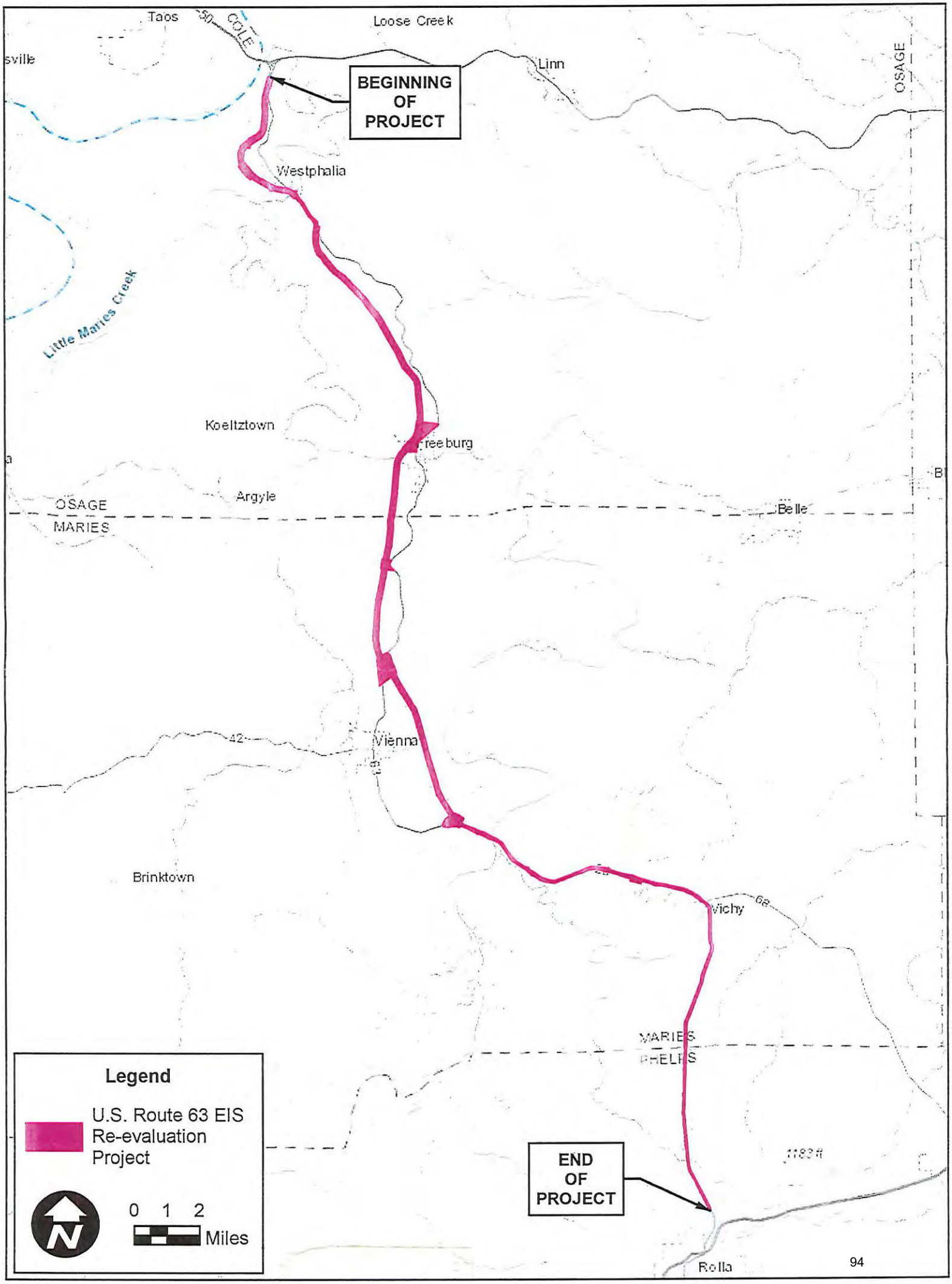
- Re-evaluation Purpose: The previous EIS study was completed in 2009 and requires a re-evaluation of the study corridor to gather public input and determine if changes in the project area have occurred. MoDOT will use this information to better understand the impact of potential improvements.

- Re-evaluation Timeline: The re-evaluation is scheduled to be completed by the end of May 2023.

- A Route 63 EIS re-evaluation letter and right of entry form were sent to each property owner within the 2009 EIS preferred alternative corridor to seek support and cooperation with field surveys required for the project (see attached letter and form).

- A MoDOT project webpage was published to introduce the Route 63 EIS Re-evaluation project, give access to the previous EIS study and accept comments https://www.modot.org/MeramecRt63. A press release was sent out announcing the start of the re-evaluation and to request public input for a 30-day period (see attached press release).

- In July with the approval of the 2023-2027 STIP, the Missouri Highway Commission approved funding for corridor improvements to 5.78 miles of Route 63 to be designed and awarded for construction in FY2027. This is the northernmost section of the corridor (Westphalia section) from US50 to south of Westphalia. The project number is JCD0108 with an estimated total project cost of $62,910,000.


Taos
COLE
Loose Creek
Linn
OSAGE
BEGINNING OF PROJECT
Westphalia
Little Maries Creek
Koeltztown
Argyle
OSAGE
MARIES
Belle
42
Vienna
Brinktown
Vichy
MARIES
PHELPS
END OF PROJECT
Rolla
Legend
U.S. Route 63 EIS Re-evaluation Project
0 1 2
Miles

Westphalia Section

MoDOT Route 63 EIS Re-evaluation Study Area

Legend

Preliminary

10/11/2022 7:51:22 AM

Osage River

Maries River

Westphalia

US Hwy 63

50

501

502

503

504

133

511

512

513

603

608

609

610

611

612

613

63

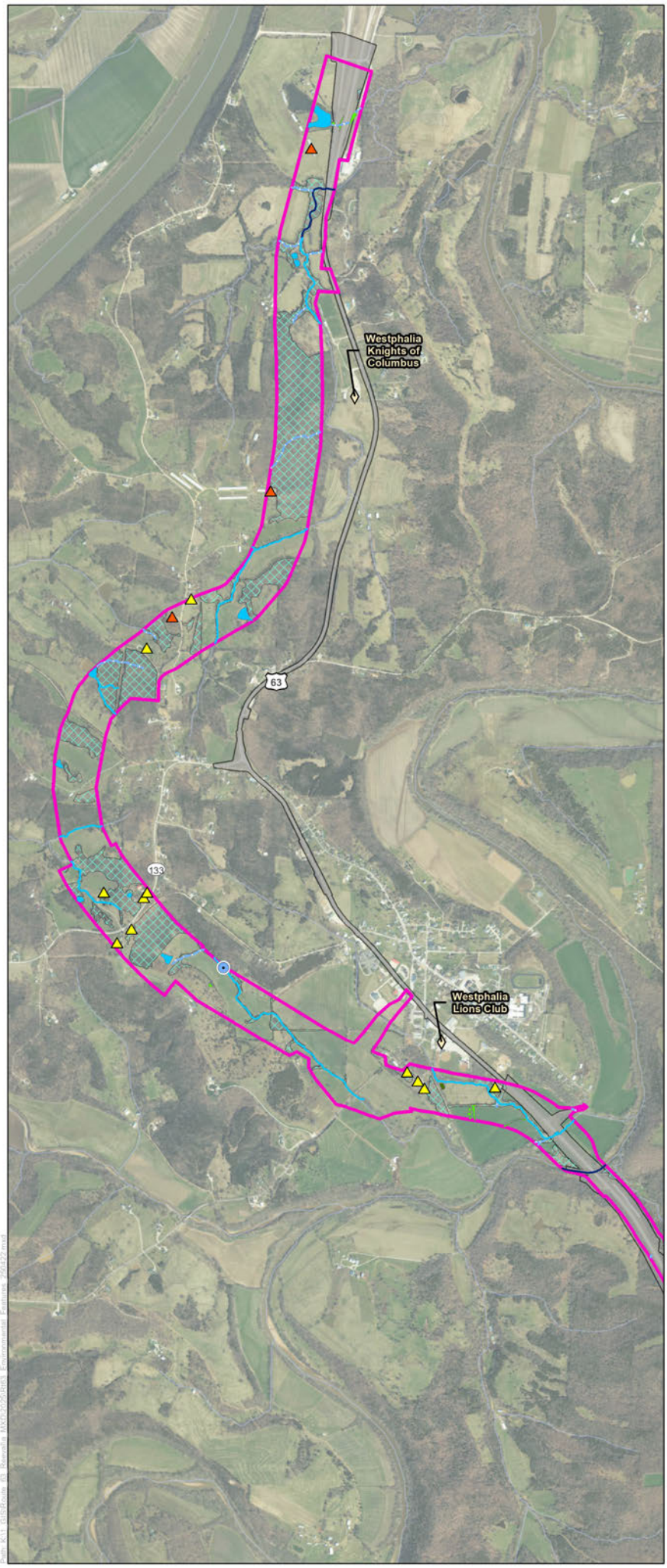
N

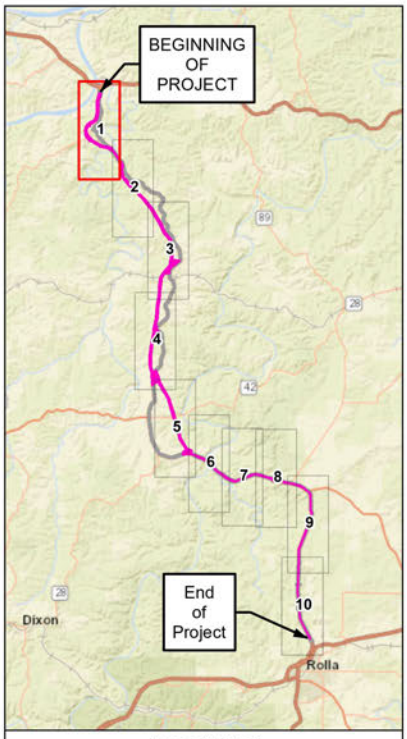
2 mi

Google Earth

Appendix C

Map Index





Area of Detail

Legend

- Preferred Alternative Study Corridor
- Approximate Existing ROW
- Water Well
- Park/Recreation Area

Potential Displacements

- Residential
- Commercial

Delineated Features

Stream (WSP delineated)

- Ephemeral
- Intermittent
- Perennial

Wetland/Water Resource (WSP delineated)

- Emergent
- Forested
- Open Water

Forest Stand (WSP delineated)

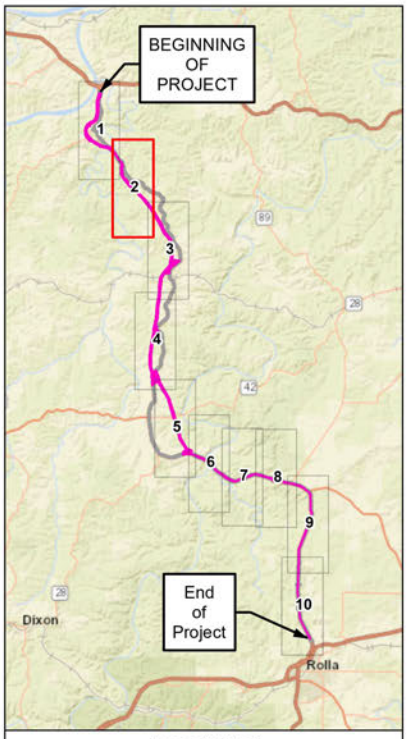
- Potential Bat Presence

2,000 0 2,000
Feet

Environmental Features Page 1 of 10

Route 63 EIS Re-evaluation Project MoDOT Job No. CD0007

Job No.	325222277
Drawn By:	DJH
Reviewed By:	CJH
Date:	4/24/2025



Area of Detail

Legend

- Preferred Alternative Study Corridor
- Approximate Existing ROW
- Water Well

Potential Displacements

- Residential
- Commercial

Delineated Features

Stream (WSP delineated)

- Ephemeral
- Intermittent

Wetland/Water Resource (WSP delineated)

- Open Water

Forest Stand (WSP delineated)

- Potential Bat Presence

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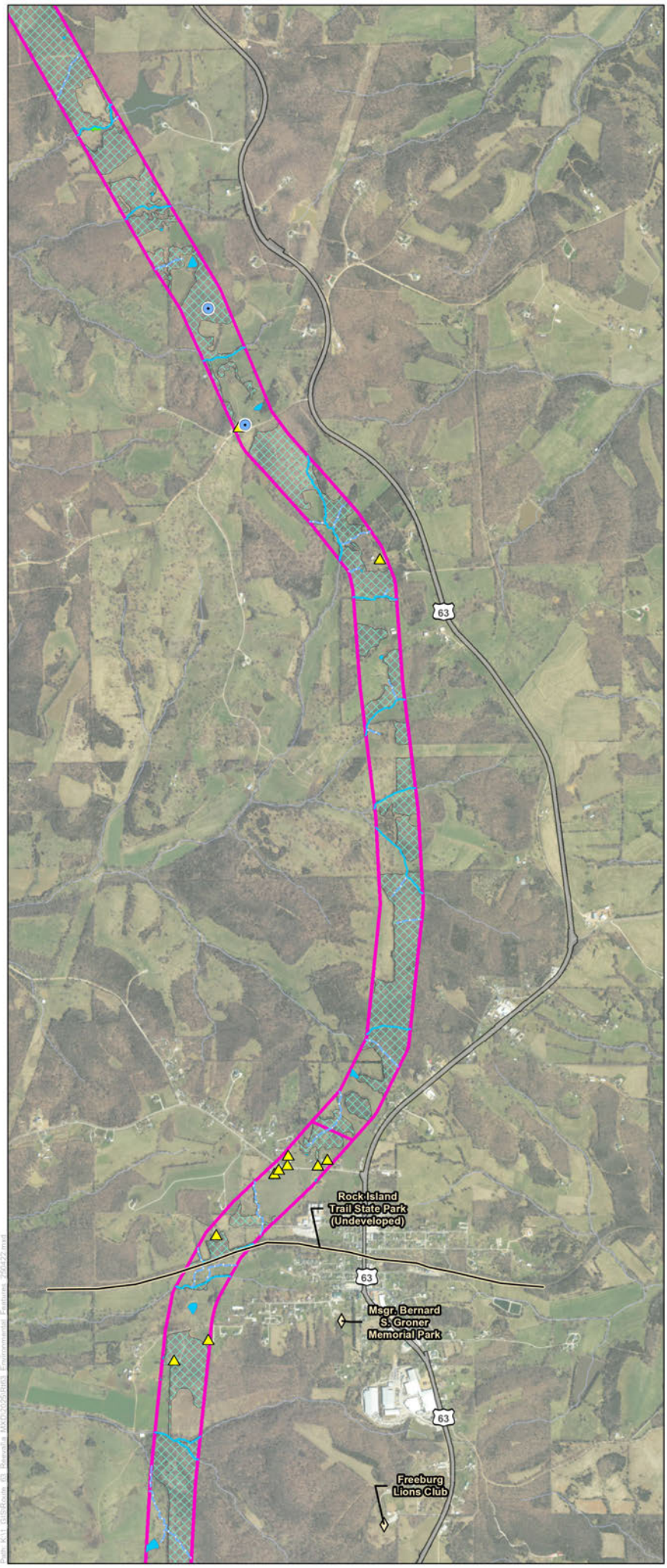
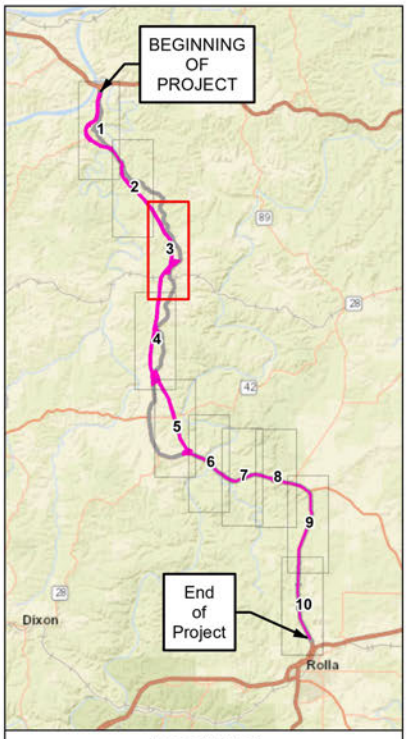
Feet

Environmental Features Page 2 of 10

Route 63 EIS Re-evaluation Project MoDOT Job No. CD0007

Job No.	325222277
Drawn By:	DJH
Reviewed By:	CJH
Date:	4/24/2025





Area of Detail

Legend

- Preferred Alternative Study Corridor
- Approximate Existing ROW
- Water Well
- Park/Recreation Area
- Rock Island Trail

Potential Displacements

- Residential
- Commercial

Delineated Features

Stream (WSP delineated)

- Ephemeral
- Intermittent

Wetland/Water Resource (WSP delineated)

- Emergent
- Open Water

Forest Stand (WSP delineated)

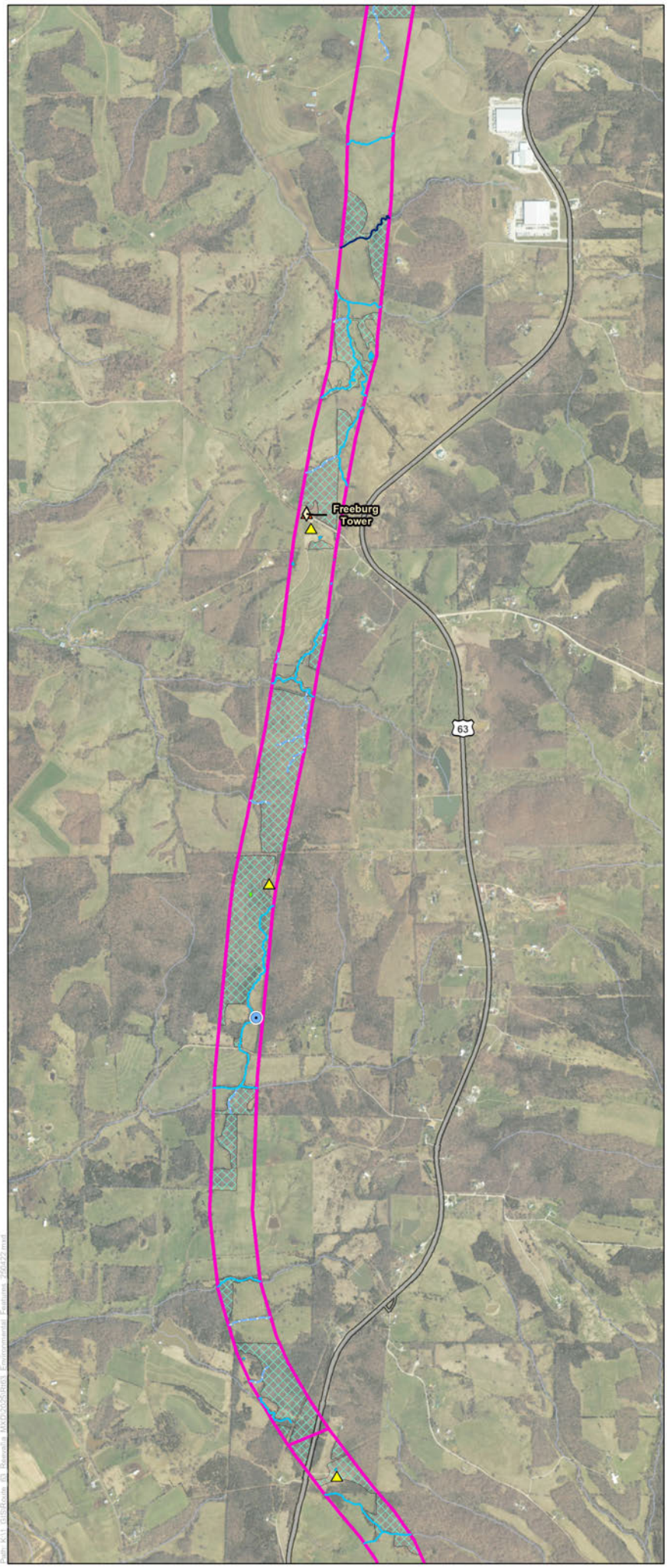
- Potential Bat Presence

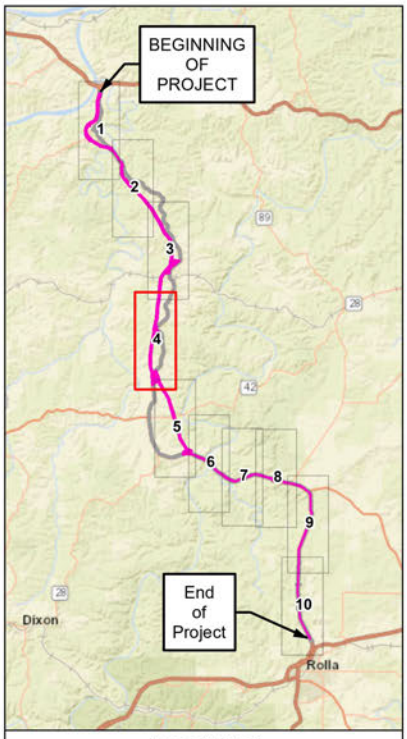
2,000 0 2,000
Feet

Environmental Features Page 3 of 10

Route 63 EIS Re-evaluation Project MoDOT Job No. CD0007

Job No.	325222277
Drawn By:	DJH
Reviewed By:	CJH
Date:	4/24/2025





Area of Detail

Legend

- Preferred Alternative Study Corridor
- Approximate Existing ROW
- Water Well
- Park/Recreation Area

Potential Displacements

- Residential
- Commercial

Delineated Features

Stream (WSP delineated)

- Ephemeral
- Intermittent
- Perennial

Wetland/Water Resource (WSP delineated)

- Emergent
- Open Water

Forest Stand (WSP delineated)

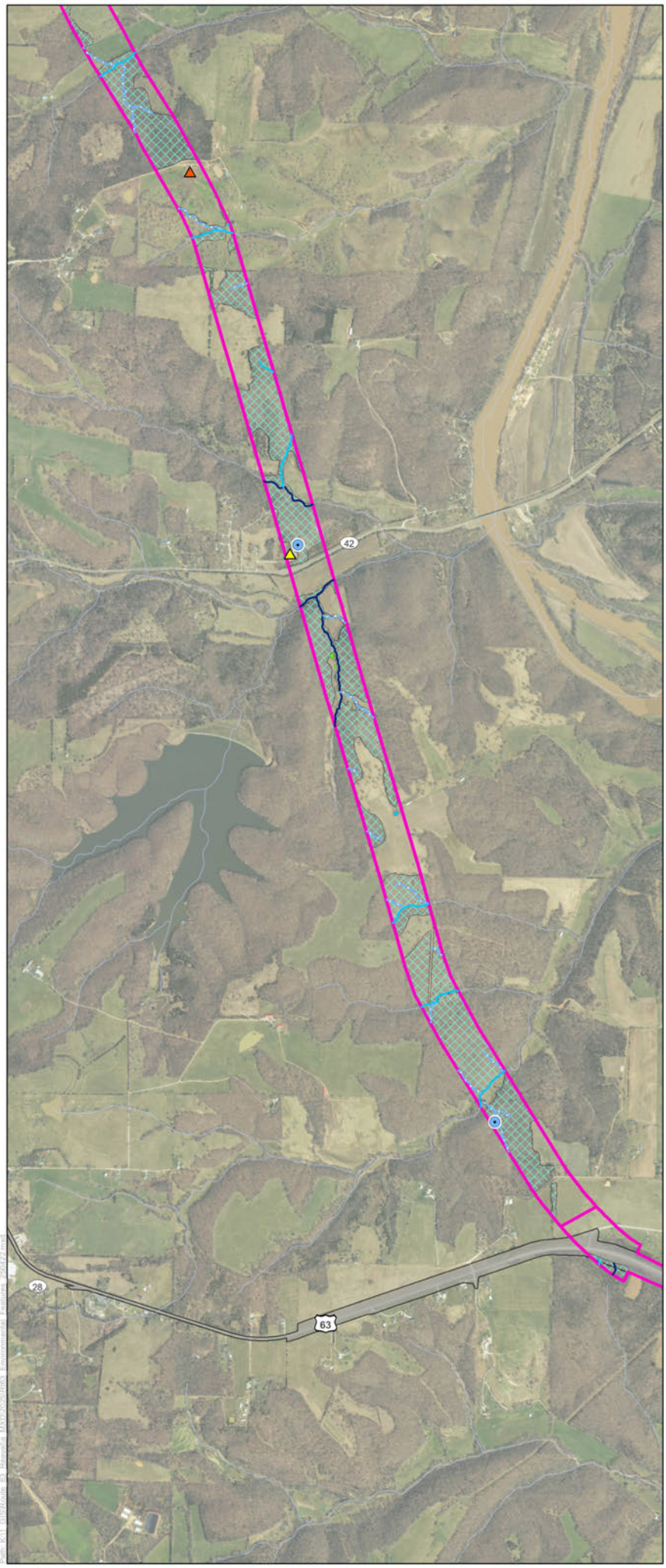
- Potential Bat Presence

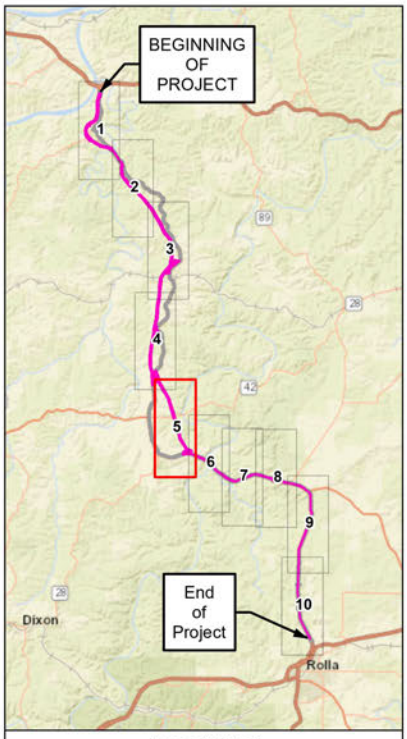
2,000 0 2,000
Feet

Environmental Features Page 4 of 10

Route 63 EIS Re-evaluation Project MoDOT Job No. CD0007

Job No.	325222277
Drawn By:	DJH
Reviewed By:	CJH
Date:	4/24/2025





Area of Detail

Legend

- Preferred Alternative Study Corridor
- Approximate Existing ROW
- Water Well

Potential Displacements

- Residential
- Commercial

Delineated Features

Stream (WSP delineated)

- Ephemeral
- Intermittent
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Wetland/Water Resource (WSP delineated)

- Emergent
- Open Water

Forest Stand (WSP delineated)

- Potential Bat Presence

2,000 0 2,000
Feet

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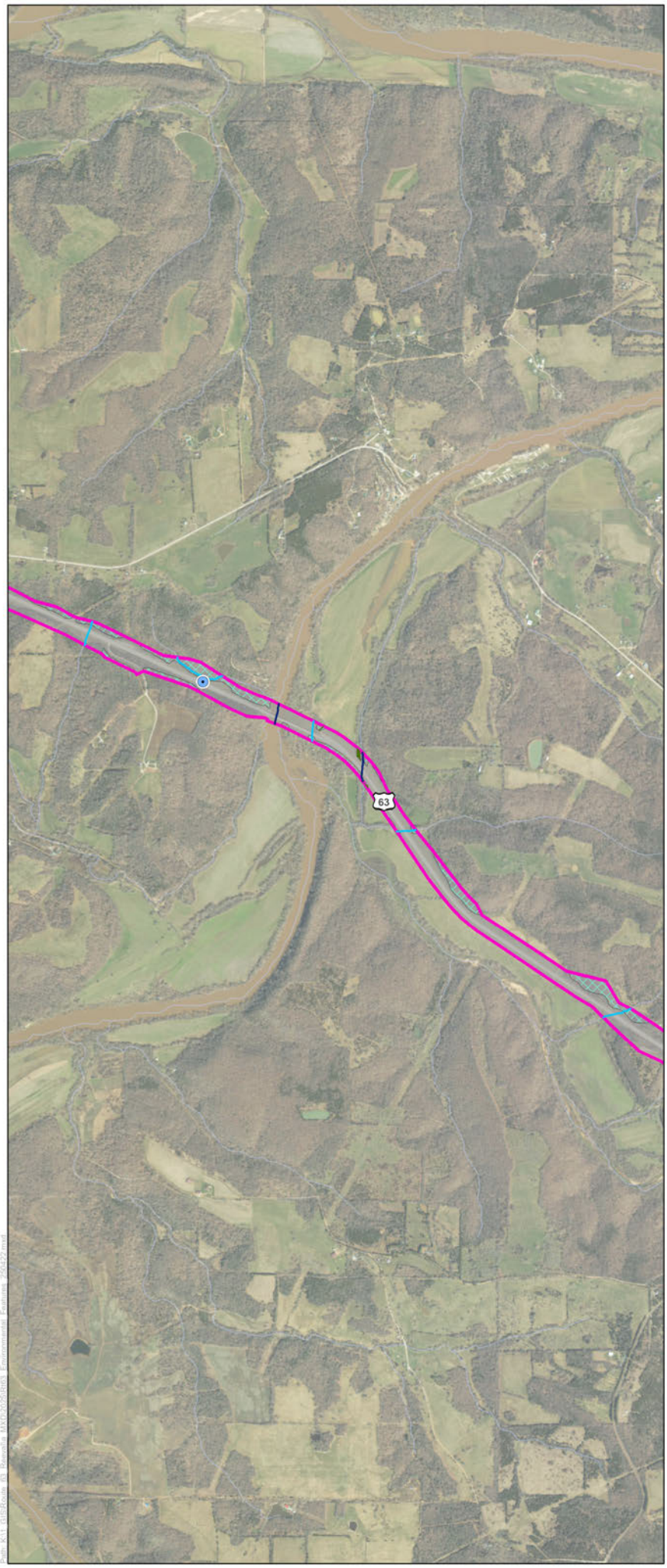

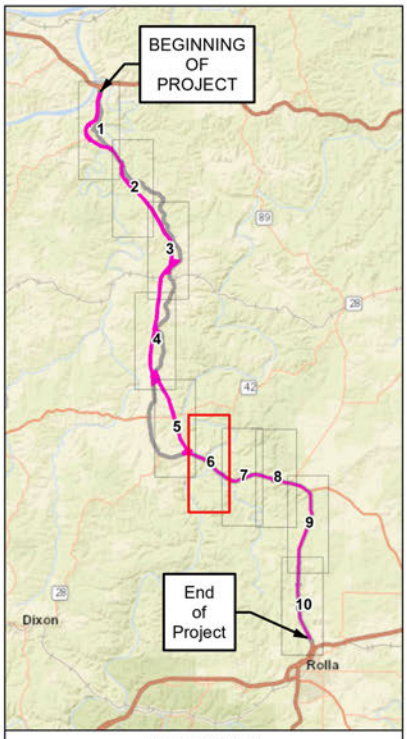

Area of Detail

Legend

- Preferred Alternative Study Corridor
- Approximate Existing ROW
- Water Well

Potential Displacements

- Residential
- Commercial

Delineated Features

Stream (WSP delineated)

- Intermittent
- Perennial

Wetland/Water Resource (WSP delineated)

- Forested

Forest Stand (WSP delineated)

- Potential Bat Presence

2,000 0 2,000
Feet

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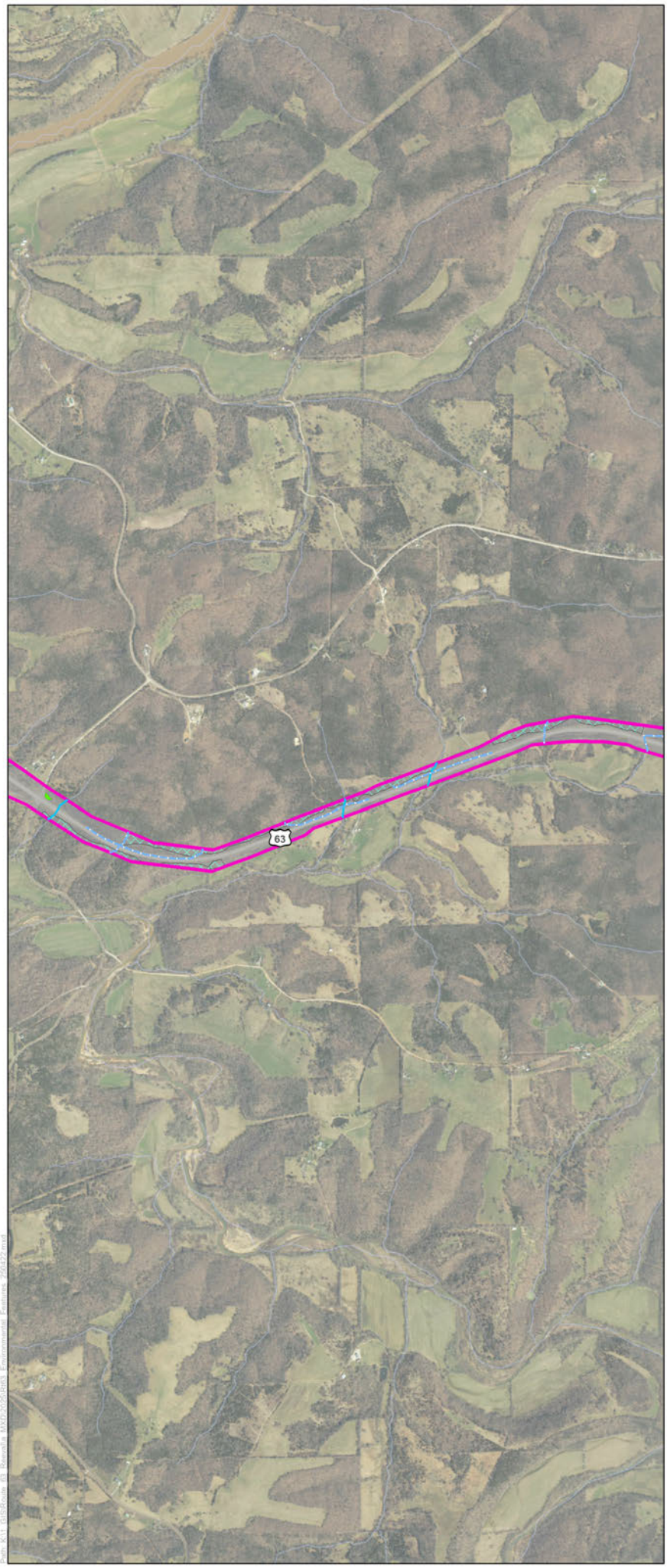

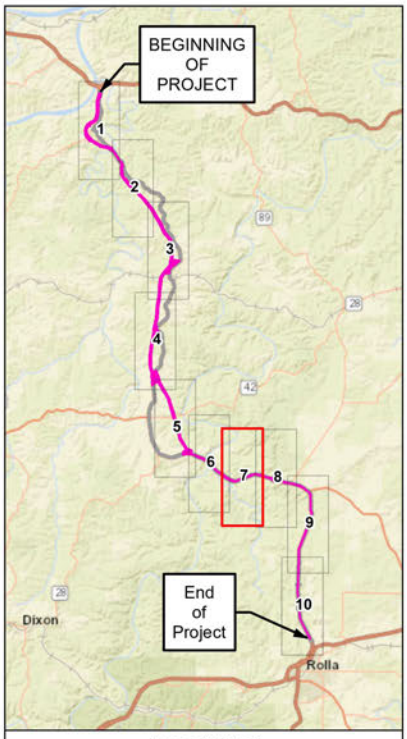

Area of Detail

Legend

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- Water Well

Potential Displacements

- Residential
- Commercial

Delineated Features

Stream (WSP delineated)

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- Intermittent

Wetland/Water Resource (WSP delineated)

- Emergent

Forest Stand (WSP delineated)

- Potential Bat Presence

2,000 0 2,000

Feet

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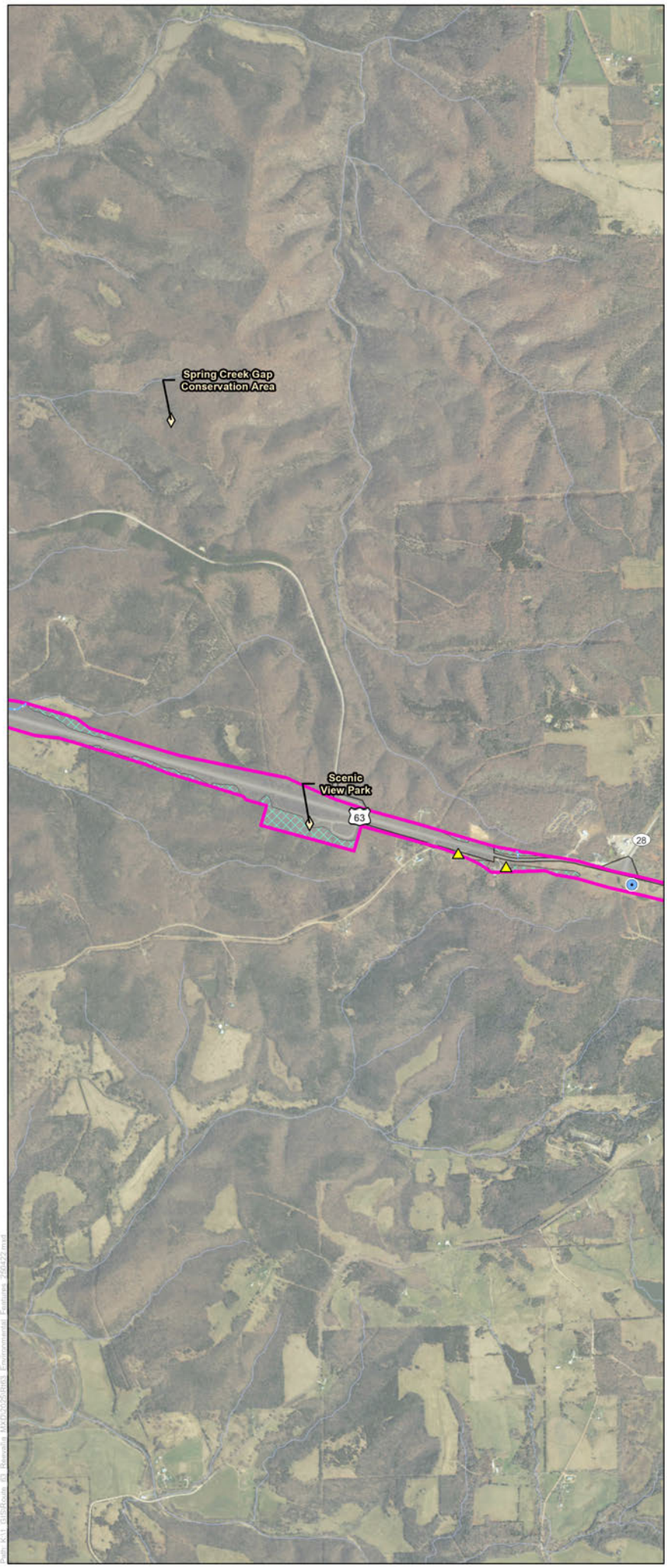

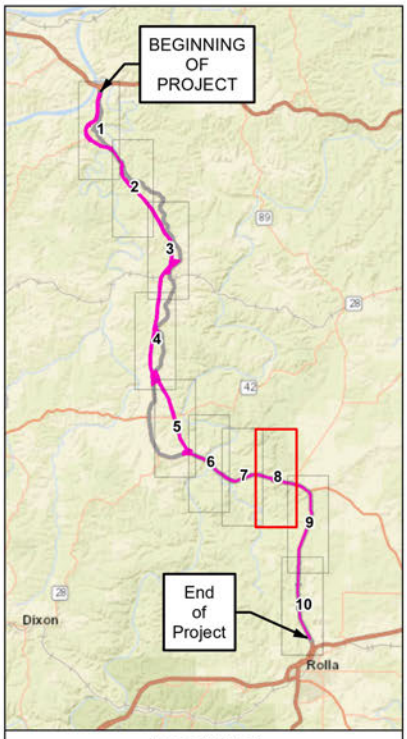

Area of Detail

Legend

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- Water Well
- Park/Recreation Area

Potential Displacements

- Residential
- Commercial

Delineated Features

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- Ephemeral

Wetland/Water Resource (WSP delineated)

- Open Water

Forest Stand (WSP delineated)

- Potential Bat Presence

2,000 0 2,000
Feet

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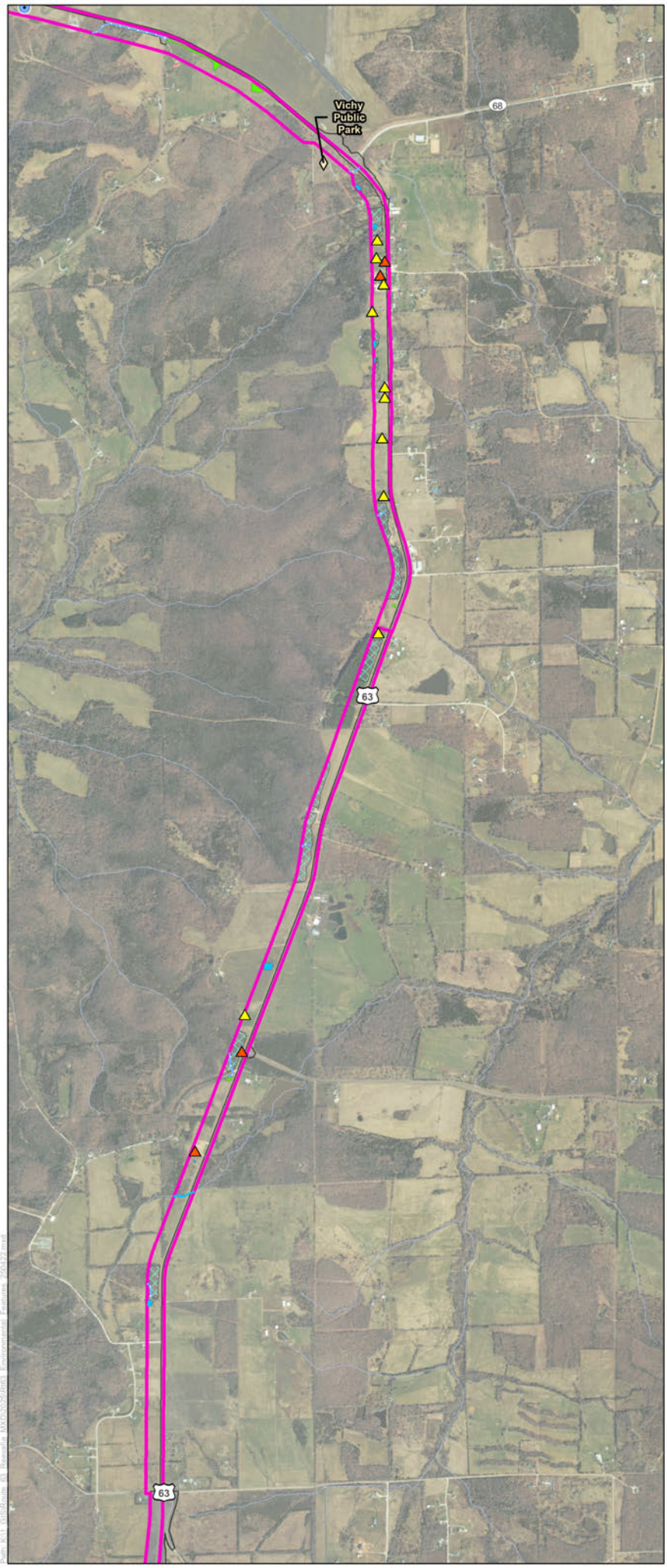

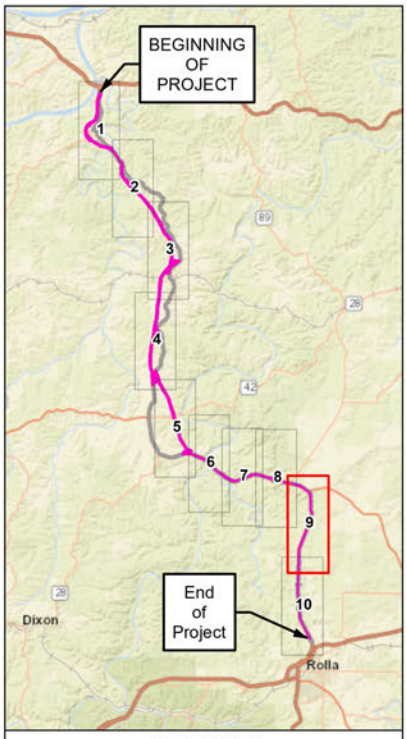

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- Water Well
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Potential Displacements

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- Open Water

Forest Stand (WSP delineated)

- Potential Bat Presence

2,000 0 2,000
Feet

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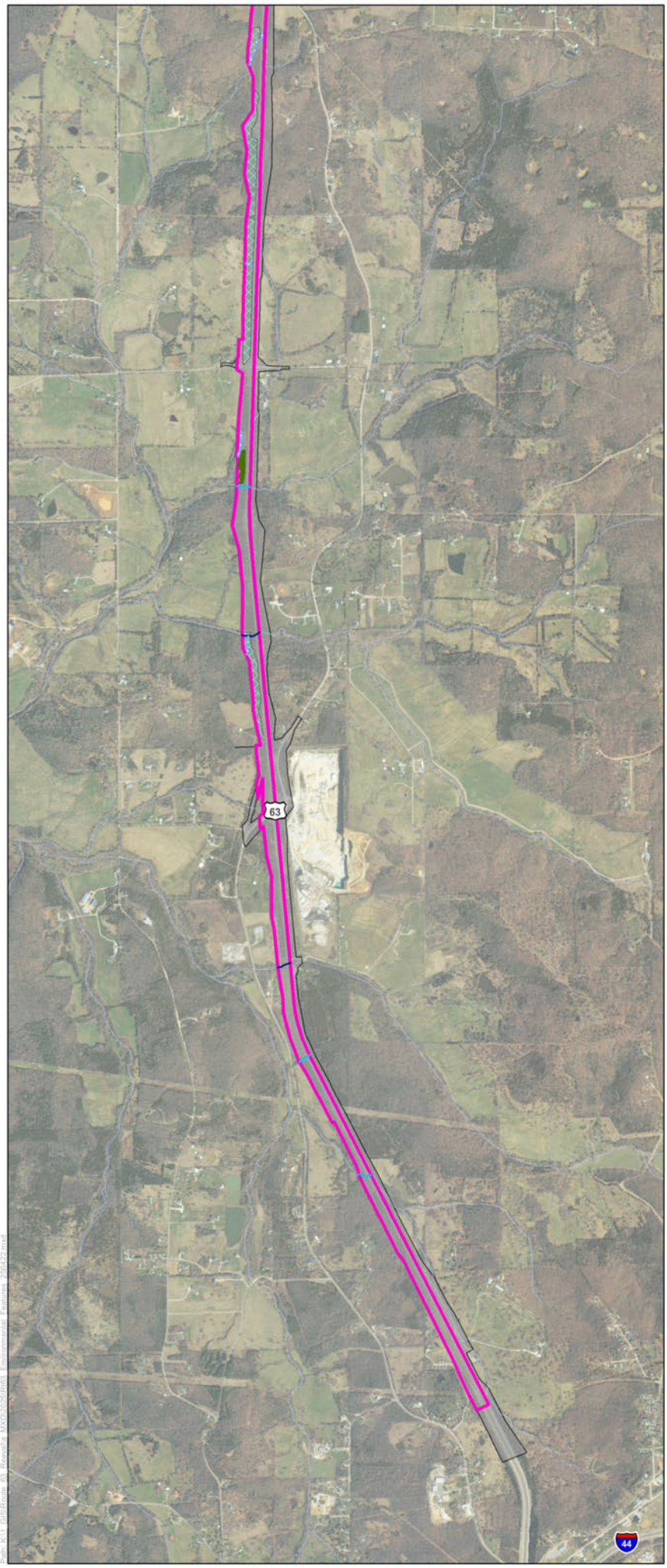

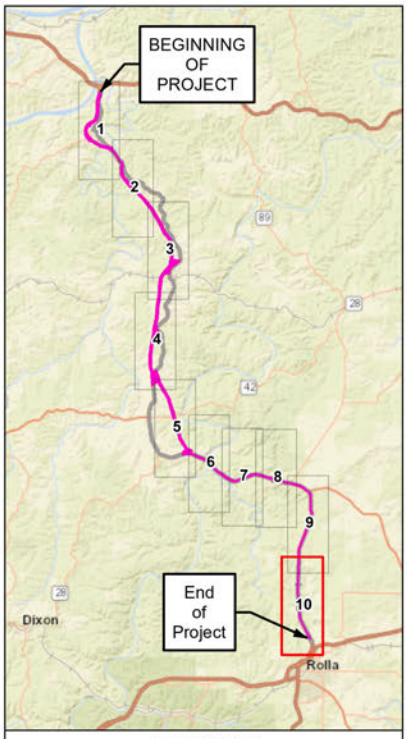

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2,000 0 2,000
Feet

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Route 63 EIS Re-evaluation Project MoDOT Job No. CD0007

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Appendix D

Waters of the U.S. Report

Missouri Department of Transportation (MoDOT)

Route 63 Environmental Impact Statement Re-evaluation Project

MoDOT Job Number CD0007

Waters of the U.S. Delineation
Westphalia Section
Osage County, Missouri

This report was prepared by WSP USA Environment & Infrastructure Inc. (WSP USA) (formerly known as Wood Environment & Infrastructure Solutions, Inc.), employer identification number (EIN) -91-1641772.

Report for

Missouri Department of Transportation
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Jefferson City, Missouri 65102
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Contents

List of Abbreviations and Acronyms

CWA	Clean Water Act
CFR	Code of Federal Regulations
CoCoRaHS	Community Collaborative Rain, Hail & Snow Network
EIS	Environmental Impact Statement
FEMA	Federal Emergency Management Agency
GIS	geographical information system
GPS	global positioning system
HUD	heads up digitized
MDNR	Missouri Department of Natural Resources
MoDOT	Missouri Department of Transportation
NHD	National Hydrography Dataset
NOAA	National Oceanic and Atmospheric Administration
NWI	National Wetland Inventory
NRCS	Natural Resources Conservation Service
OHWM	ordinary high water mark
PEM	palustrine emergent wetland
PFO	palustrine forested wetland
PSS	palustrine scrub-shrub wetland
PUB	palustrine unconsolidated bottom (pond)
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
USP	upland sampling point
WQC	Water Quality Certification
WOTUS	Waters of the United States
WSP	wetland sampling point
WSP USA	WSP USA Environment & Infrastructure Inc.

1. INTRODUCTION AND PROJECT DESCRIPTION

This report provides the results of the Waters of the U.S. (WOTUS) delineation conducted by WSP USA Environment & Infrastructure Inc. (WSP USA) in support of the Missouri Department of Transportation (MoDOT) Route 63 Environmental Impact Statement (EIS) Re-evaluation Project (Project). In 2009, MoDOT, in coordination with the Federal Highway Administration, prepared and approved an EIS as required under the National Environmental Policy Act for the improvement of 47 miles of Route 63 in Osage, Maries, and Phelps Counties, Missouri. The purpose of the proposed improvement considered in the 2009 EIS was to correct deficiencies on existing Route 63, to ease congestion throughout the entire route, especially in the communities of Westphalia, Freeburg, Vienna, and Vichy, and to provide four-lane design continuity along the Route 63 corridor. Currently, MoDOT is preparing an EIS Re-evaluation of the 47-mile corridor of Route 63 proposed for improvement. Although funding for construction is not currently available for the entire corridor, MoDOT has secured funding for the Westphalia Section of the study corridor. Therefore, this WOTUS report examines only the 6-mile Westphalia Section (**Figure 1-1**), which is also the northern reach of the overall study corridor.

WOTUS are those water features subject to U.S. Army Corps of Engineers (USACE) jurisdiction and that require authorization under Section 404 of the Clean Water Act (CWA) for dredge or fill activities. In conjunction with Section 404, a state-issued CWA Section 401 Water Quality Certification (WQC) may be required for impacts to WOTUS. In Missouri, the Missouri Department of Natural Resources (MDNR) authorizes Section 401 WQCs.

Although design plans for the Westphalia Section are unknown at this time, MoDOT anticipates that CWA Section 404/401 permitting will be needed for construction of this segment of Route 63 once design plans are determined. Therefore, this report describes WOTUS delineations that occurred between September 14 and September 29, 2022, and has been prepared to assist MoDOT with future CWA Section 404/401 permitting requirements.

1.1 LOCATION

The Westphalia Section of the Project (project area or proposed project corridor) includes an approximate 6-mile section of the EIS' preferred alternative corridor that bypasses Westphalia and comprises approximately 542 acres. As illustrated on **Figure 1-1**, the northern terminus of the project corridor is near the intersection of Route 63 and Highway 50 (approximate coordinates: 38.485356, -92.003433) and the southern terminus is near the intersection of Route 63 and Highway 611 (approximate coordinates: 38.419771, -91.978477). The project corridor is in Osage County, Missouri (Sections 10, 11, 15, 22, 26, 27, 35, and 36; Township 43 North, Range 10 West and Section 01, Township 42 North, Range 10 West).

2. METHODOLOGY

2.1 DESKTOP REVIEW

A variety of existing data sources were reviewed as planning tools prior to field reconnaissance to support and enhance the identification of potential WOTUS in the field. Data sources reviewed include:

- Natural Resources Conservation Service (NRCS) soil survey maps,
- National Wetland Inventory (NWI) maps,
- National Hydrography Dataset (NHD),
- U.S. Geological Survey (USGS) topographic maps,
- Federal Emergency Management Agency (FEMA) maps,
- aerial imagery, and
- five-foot contours based on Missouri LiDAR data obtained from Missouri Spatial Data Information Service.

For the desktop review, a project-specific ArcView geographical information system (GIS) Webmap was created with the above datasets. Identified water features and suspect water features were given a unique identification number and heads up digitized (HUD) into the GIS database. To enhance feature identification during the desktop HUD process, additional data resources were reviewed for a better understanding of historical hydrology and site conditions. These include:

- National Oceanic and Atmospheric Administration (NOAA) National Weather Service Weather Forecast Office historical climate data for Jefferson City, Missouri, which is the closest to the project area,
- NOAA National Integrated Drought Information System recent and historical drought data,
- Community Collaborative Rain, Hail & Snow Network (CoCoRaHS) recent and historical precipitation data, and
- Google Earth recent and historical aerial imagery.

2.2 WETLANDS

Wetlands are defined as those areas that are “inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas” [33 CFR 328.3(b)]. Potential wetlands within the project area were evaluated in accordance with the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region* (Version 2.0) (USACE 2012). Areas of inquiry are identified as wetlands if they meet all three wetland criteria below. Specific criteria for vegetation, soil, and hydrology are described in detail in the *Regional Supplement*.

- **Vegetation** – The prevalent vegetation consists of species that are typically adapted to inundated or saturated soil conditions. This criterion does not need to be met if the area

has been disturbed (farmed, etc.) and the natural vegetation has been removed or altered.

- **Soil** – Soils are present that have been classified as hydric because they possess characteristics that are associated with reducing soil conditions due to periodic inundation and/or saturation.
- **Hydrology** – The area is inundated either permanently or periodically or the soil is saturated to the surface at some time during the growing season.

Following desktop review, a field survey of the project corridor was conducted between September 14 and September 29, 2022, to verify wetland resources mapped during the desktop review and to identify and document additional wetland resources. Survey teams consisted of two to four biologists with training and expertise in wetland delineations and specific knowledge and expertise in local flora and fauna.

Field data collected at each wetland sampling point (WSP), or upland sampling point (USP) was given a unique identification number, photographed, and located using global positioning system (GPS) equipment with submeter accuracy. If the wetland was previously identified during the desktop review, the wetland boundary was adjusted, as appropriate, or if the desktop-identified wetland was found to not meet wetland criteria, the HUD wetland boundary was deleted from the database. GPS data collected was uploaded into the project-specific GIS database for resource quantification, mapping, and preparation of report figures. Field data was recorded using appropriate regional data sheets required by the *Regional Supplement*.

Wetlands were classified according to the hierarchical system developed by the U.S. Fish and Wildlife Service (USFWS) (Cowardin et al. 1979). According to the Cowardin et al. (1979) classification system, palustrine wetlands cover less than 20 acres, lack active wave-formed or bedrock shoreline features, and have water depths at low water of less than two meters (6.6 feet). Palustrine wetlands are subsequently classified according to dominant vegetation:

- **Palustrine Unconsolidated Bottom (PUB)** wetlands are characterized by fine-grained substrate and a vegetative cover less than 30 percent. This classification is typically applied to small open water impoundments (ponds) with an appropriate hydrophytic component.
- **Palustrine Emergent (PEM)** wetlands are characterized by a dominance of herbaceous (non-woody) plants. Emergent wetlands are also known as marshes and sedge meadows.
- **Palustrine Scrub-Shrub (PSS)** wetlands are characterized by a predominance of woody vegetation in the shrub layer.
- **Palustrine Forested (PFO)** wetlands are characterized by a predominance of woody vegetation that is six meters (19.6 feet) tall or taller.

2.3 OPEN WATER FEATURES

According to Cowardin et al. (1979), the boundary between wetland and deep-water habitat in the riverine and lacustrine systems lies at a depth of two meters (6.6 feet) below low water; however, if emergent vegetation, shrubs, or trees grow beyond this depth at any time, their deep-water edge is the boundary. The two-meter lower limit for inland wetlands was established because it represents the maximum depth to which emergent plants normally grow.

Following desktop review, ponds and other open water habitats were evaluated in the field to determine if hydrophytic communities were present that would be characteristic of wetland

areas. If so, potential wetland communities were evaluated as described in Section 2.2**.** The field survey of the project corridor was conducted in September 2022, to verify open water resources mapped during the desktop review and to identify and document additional open water resources. Survey teams consisted of two to four biologists with training and expertise in wetland delineations and specific knowledge and expertise in local flora and fauna. Open water features were delineated using GPS devices, which were subsequently downloaded into the GIS database. The GIS information was used to generate the report figures herein. Due to the number of ponds identified during the desktop review, only representative photographs of field-verified or identified ponds were collected.

2.4 STREAMS

The identification of stream resources in the field is typically based upon the presence of an ordinary high-water mark (OHWM), observable "bed and bank," and the presence of documented surface water connections to navigable WOTUS. According to 33 CFR 328.3(c)(7), "The term *ordinary high water mark* means that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas". In general, the OHWM of a stream is usually determined through an examination of the recent physical evidence of surface flow in the stream channel. The OHWM is the defining element for identifying the lateral limits of jurisdiction within a stream channel. However, determining whether a particular stream is a jurisdictional WOTUS involves further assessment in accordance with the current regulations, case law, and clarifying guidance.

During the desktop review, streams in the project corridor were identified and classified as ephemeral, intermittent, or perennial based on resource maps. During the field survey, assigned classifications and flow paths of desktop-identified streams were verified and data regarding stream dimensions and characteristics were collected at those streams exhibiting an OHWM. Additional streams, not identified during the desktop review but exhibiting an OHWM, were GPS-located, photographed, and pertinent data collected. The stream delineation of the project corridor was conducted in September 2022 by a team of two to four biologists with training and expertise in stream delineations and specific knowledge and expertise in local hydrology. Collected GPS data was downloaded into the GIS database for resource quantification, mapping, and preparation of report figures.

3. ENVIRONMENTAL SETTING

3.1 ECOREGIONS

Ecoregions are those areas that possess similar ecosystems and similarity in the type, quality, and quantity of environmental resources (Bryce et al., 1999). The project area is located in the Ozark Highlands (39) Level III Ecoregion within the Osage/Gasconade Hills (39e) Level IV Ecoregion. Chapman et al. (2002) describe this ecoregion as comprised of moderately dissected hills with steep slopes and narrow valleys, karst features, and dendritic spring-fed perennial streams. Local elevation ranges from 600 to 1,100 feet with local relief ranging from 150 to 300 feet. Steep slopes and narrow ridges of carbonate and sandstone underlie soils which are rocky and thin. Outcrops of Gasconade dolomite with some sandstone are found throughout the region along with areas of Roubidoux sandstone, Jefferson City-Cotter dolomites, and scattered Mississippian limestone outliers in the western portion. Numerous caves, springs, calcareous wet meadows, losing streams, and streams with entrenched valley meanders are common. Streams flow generally northward and drain into the Missouri River. The potential natural vegetation is predominantly mixed oak forest, with oak-pine forest, and some pine forests in the southeast areas of the region. Some small limestone and sandstone glades are present. Land use and cover include forestry, recreation, and pasture (Chapman et al. 2002).

3.2 USGS TOPOGRAPHY

USGS topographic maps indicate that the project corridor traverses primarily steeply sloped terrain, crossing two floodplains. USGS-mapped streams in the project corridor include the Maries River, five of its intermittent tributaries, and three intermittent tributaries to the Osage River which is located west of the project area. One mapped pond is depicted near the northern terminus of the project area (USGS 2021, 2021a). USGS topographic mapping is shown on **Figures 1-1.**

3.3 WATERSHED AND WATER QUALITY

The majority of the project corridor is located in the Outlet Maries River Watershed (HUC 102901110307). Maries River is the only stream assessed within this watershed within the project area and was found to exhibit good water quality in 2020. A small portion of the project corridor near Highway 133 and County Road 511 is in the adjacent watershed to the west, Castle Rock-Osage River Watershed (HUC 102901110406). Impaired waters were not depicted within this watershed within the project area (USEPA 2022).

3.4 NWI MAPPING

NWI mapping indicates several mapped surface waters and wetlands within the project corridor. Near the northern terminus of the project corridor, a PFO has been mapped east and outside of the project area. NWI indicates that an intermittent tributary to Maries River meanders through the project corridor and flows through the forested wetland prior to discharging to Maries River. Two additional intermittent tributaries flow to the unnamed tributary and one has been impounded for a pond. Two other isolated ponds are mapped by NWI in the upper reaches of the project corridor. An intermittent tributary to the aforementioned tributary of Maries River meanders through the Westphalia proposed bypass reach of the project corridor. Within the bypass reach, NWI also depicts two intermittent tributaries to the Osage River. Two intermittent tributaries to Maries River are depicted in the southern reaches of the Westphalia bypass as it re-aligns with Route 63 near Maries Rivers, which is bridged by the project. Five linear emergent

wetlands (PEMs) are mapped in meander scars in the floodplain north of Maries River and a triangular PEM is mapped in a field near the river. Forested wetlands are mapped in the riparian corridor along Maries River but outside of the project corridor; however, a linear forested wetland is mapped south of the river and east of Route 63. A short, linear PEM is also mapped in this area along the Route 63 ditch. Two ponds are mapped in the southern reach of the project corridor (USFWS 2022). NWI-mapped wetlands and surface water features within the vicinity are illustrated on **Figure 3-1**.

3.5 FLOODPLAIN MAPPING

According to FEMA maps of the project corridor (Community Panel Numbers 29151C0225E, 29151C02288E, and 29151C0236E), a “Zone A” special flood hazard area (i.e., floodplain) is mapped in the floodplain of the unnamed tributary to Maries River, identified in Section 3.4, that flows through forested wetlands near the northern corridor terminus. An extensive “Zone A” flood hazard area is mapped over Maries River and its floodplain which primarily extends north of the river; however, a small tributary floodplain is mapped south of the river and east of Route 63. A special flood hazard area is subject to inundation by the one percent annual chance flood (100-year flood), also known as the base flood. Special flood hazard areas are categorized into zones. Base flood elevations have not been determined for “Zone A” areas (FEMA 2022, 2012, 2012a, 2012b). FEMA-mapped 100-year floodplains are illustrated on **Figure 3-1**.

3.6 SOILS

According to the NRCS Web Soil Survey, 22 different soil types are mapped in the project corridor. Of the 22, 11 are rated as hydric, and of the 11 mapped hydric soils, three exhibit a significant hydric rating of 90 percent or higher: Racoon silt loam, 0 to 3 percent slopes, rarely flooded; Deible silt loam, 0 to 2 percent slopes, rarely flooded; and McGirk silt loam, 1 to 3 percent slopes. These three soils are found in the Maries River floodplain, however generally, the sloped terrain is comprised of well-drained soils (USDA-NRCS 2022). Mapped soils and pertinent characteristics are listed in **Table 3.1**. Soils mapped with hydric inclusions within the project corridor are illustrated on **Figure 3-1**.

TABLE 3.1 SOILS MAPPED IN THE PROJECT AREA

Map Unit Symbol	Map Unit Name	Hydric Rating	Natural Drainage Class	Depth to Water Table	Acreage in Project Area
60006	Marion silt loam, 2 to 5 percent slopes	5	Somewhat poorly drained	~12 to 24 inches	5.25
64000	**Racoon silt loam, 0 to 3 percent slopes, rarely flooded**	**100**	**Poorly drained**	**~0 inches**	**15.55**
64001	Freeburg silt loam, 0 to 3 percent slopes, rarely flooded	8	Somewhat poorly drained	~12 to 30 inches	13.83
66005	**Deible silt loam, 0 to 2 percent slopes, rarely flooded**	**100**	**Poorly drained**	**~0 to 12 inches**	**16.01**
66037	Wrengart silt loam, 8 to 15 percent slopes, eroded	0	Moderately well drained	~12 to 40 inches	6.59
64003	Freeburg silt loam, 3 to 8 percent slopes	0	Somewhat poorly drained	~12 to 30 inches	14.99
70029	Moko-Rock outcrop complex, 15 to 50 percent slopes, very stony	0	Well drained	>80 inches	2.59
73089	Rueter very gravelly silt loam, 15 to 35 percent slopes, very stony	0	Somewhat excessively drained	>80 inches	10.40
73094	Gatewood very gravelly silt loam, 15 to 35 percent slopes, stony	0	Moderately well drained	~18 to 36 inches	135.05
73095	Gravois silt loam, 15 to 20 percent slopes	0	Moderately well drained	~14 to 37 inches	19.40
73102	Wrengart silt loam, foot slopes, 5 to 9 percent slopes	0	Moderately well drained	~24 to 42 inches	19.89
73104	Wrengart silt loam, 14 to 20 percent slopes, eroded	0	Moderately well drained	~24 to 40 inches	57.90
73105	Wrengart-Gatewood complex, 14 to 35 percent slopes	0	Moderately well drained	~14 to 40 inches	23.26
73108	Gravois-Gatewood complex, 3 to 8 percent slopes	0	Moderately well drained	~14 to 37 inches	46.72

Map Unit Symbol	Map Unit Name	Hydric Rating	Natural Drainage Class	Depth to Water Table	Acreage in Project Area
73110	Gravois-Gatewood complex, 15 to 35 percent slopes	0	Moderately well drained	~14 to 37 inches	33.64
73976	**McGirk silt loam, 1 to 3 percent slopes**	**95**	**Poorly drained**	**~6 to 24 inches**	**5.08**
74634	Hartville silt loam, 3 to 8 percent slopes	10	Somewhat poorly drained	~12 to 24 inches	41.00
75395	Jamesfin silt loam, 0 to 3 percent slopes, occasionally flooded	5	Well drained	~48 to 72 inches	25.63
75399	Jamesfin silt loam, 0 to 3 percent slopes, frequently flooded	5	Well drained	~48 to 72 inches	10.27
66003	Jemerson silt loam, 0 to 2 percent slopes, rarely flooded	0	Well drained	~42 to 60 inches	0.16
75400	Gladden silt loam, 0 to 2 percent slopes, frequently flooded	10	Well drained	>80 inches	26.11
76400	Gladden silt loam, 1 to 3 percent slopes, frequently flooded	10	Well drained	>80 inches	11.20
	Total				**542.44**

Source: USDA-NRCS Web Soil Survey. 2022.
Significantly hydric soils shown in **bold** text.

4. RESULTS

Results of the WOTUS delineation of the project area are summarized herein and in **Table 4.1.** Wetlands, open water features, streams, and other surface water resources identified within the project area are presented on **Figure 4-1**. Supporting documentation enclosed includes wetland determination data forms (**Appendix A**), stream characterization forms (**Appendix B**), and a photographic log (**Appendix C**).

TABLE 4.1 SUMMARY OF DELINEATION FINDINGS

Feature	Type	Number	Size
Wetlands	Emergent (PEM)	6	1.02 acres
	Forested (PFO)	2	0.21 acres
Total		**8**	**1.23 acres**
Open Water Features	PUB	**10**	**5.03 acres**
Streams	Ephemeral	16	6,484 LF
	Intermittent	9	15,609 LF
	Perennial	2	2,146 LF
Total		**27**	**24,239 LF**

Table includes all surface water features observed and may include features that are not necessarily jurisdictional WOTUS.

This approximate 6-mile section of the proposed Route 63 corridor consists of a mix between agricultural farms within undulating landscapes of rolling forested hills (oak-hickory, and cedar forest stands) between the Maries River and the Osage River, which exists outside of the project area. Aspects of the proposed corridor reside along the outskirts of Westphalia, Missouri, a small town along existing Route 63. Agricultural practices include livestock, chicken, and turkey farming, as well as corn, soybean, and sorghum farming. Observed streams mostly flow intermittently, although some are spring fed and exhibit perennial flow. Bedrock outcroppings are common within the stream drainage features. Open water bodies speckle the landscape in the form of cattle ponds, or small private ponds. Some of the streams, wetlands, and open water bodies have been altered by farming practices, as well as by the development of existing Route 63, where roadside drainage features may tie into, or interrupt mapped NWI or NHD drainages. Typical dominant, herbaceous vegetation (aside from crop) includes fields of sorghum, foxtails (*Setaria* spp.), crabgrass (*Digitaria* spp.), panicum (*Panicum* spp.) and crown grasses (*Paspalum* spp.). Forested areas consist of sycamore (*Platanus occidentalis*), black walnut (*Juglans nigra*), hickory (*Carya* spp.), common persimmon (*Diopspyros virginiana*), silver maple (*Acer saccharinum*), white oak (*Quercus alba*), red oak (*Quercus rubra*), pin oak (*Quercus palustris*), elm (*Ulmus* spp.), ash (*Fraxinus* spp.), boxelder (*Acer negundo*), cottonwood (*Populus deltoides*), and sugarberry (*Celtis laevegata*). Herbaceous understory in forested areas includes Virginia wild-rye (*Elymus virginicus*) and Canadian wood-nettle (*Laportea canadensis*). Thickets of scrub vegetation are common along and within riparian stream corridors and may include honeysuckle (*Lonicera* spp.) and various brambles (*Rubus* spp.).

4.1 WETLANDS

Eight wetlands, totalling approximately 1.23 acres, were observed in the project corridor. Cowardian wetland types observed include six emergent (PEM) (1.02 acres) and two forested (PFO) (0.21 acres). Scrub-shrub (PSS) wetlands were not observed in the project corridor. This section describes the dominant attributes of each wetland type identified. **Table 4.2** summarizes delineated wetland attributes and provides WSP USA's opinion of jurisdictional status; however, the USACE has the final determination as to which wetlands are considered WOTUS and therefore under their jurisdiction.

4.1.1 EMERGENT WETLANDS

Three of the emergent wetlands (OC-WET-0001, OC-WET-0002, and OC-WET-0003) are associated with existing Route 63 drainage system near the northernmost end of the project area. Here, Route 63 is divided into separate north and southbound lanes. OC-WET-001 is located east of the northbound lanes, OC-WET-002 is located in the median, and OC-WET-003 is located west of the southbound lanes. The three emergent wetlands are connected via ephemeral stream, OC-STR-0010, which flows east beneath the elevated/bermed highway system through a series of culverts. Hydric vegetation within the easternmost wetland, OC-WET-0001, is dominated by reed canary grass (*Phalaris arundinacea*), while OC-WET-0002 is dominated by rice cut grass (*Leersia oryzoides*), and dark green bulrush (*Scirpus atrovirens*). On the west side of the highway system, OC-WET-0003 is dominated by reed canary grass and smartweed (*Persicaria punctata*). Soils differed between the three wetlands. OC-WET-0001 exhibited a Loamy Gleyed Matrix (F2) and a Depleted Matrix (F3). OC-WET-0002 exhibited a Sandy Redox (S5) matrix and the beginning of a Depleted Matrix (F3); although, a restrictive layer of riprap at approximately eight inches prevented further soil analysis. OC-WET-0003 exhibited a matrix with Redox Dark Surface (F6). Each of these wetlands have been either altered by development of the highway system, and the varying soil series between the three wetlands may be a relic from those activities. Hydrological indicators for all three wetlands include Geomorphic Position (D2) and FAC-Neutral Test (D5), while OC-WET-0003 also exhibited a Sparsely Vegetated Concave Surface (B8).

OC-WET-0010, located in an agricultural field, is likely an old, drained cattle pond. It exists within a valley of rolling, partly forested topography, and is bermed on two sides. Dominant hydric vegetation includes barnyard gras (*Echinochloa crus-galli*) and ragweed (*Ambrosia trifada*). Hydric soils exhibited a Depleted Matrix (F3) and hydrological indicators include Drift Deposits (B3), Inundation Visible on Aerial Imagery (B7), Sparsely Vegetated Concave Surface (B8), Geomorphic Position (D2), and FAC-Neutral Test (D5). WET-0010 appears to be an isolated wetland feature as a surface water connection to associated WOTUS was not observed at the time of survey.

The two remaining emergent wetlands (OC-WET-0035 and OC-WET-0050) exist as low areas within an agricultural sorghum field. Dominant vegetation within OC-WET-0035 includes barnyard grass, blunt spikerush (*Eleocharis obtusa*) and spotted lady's thumb (*Persicaria maculosa*), while dominant vegetation observed in OC-WET-0050 includes fall panicgrass (*Panicum dichotomiflorum*) and yellow foxtail (*Setaria pumila*). Both wetlands exhibited soils with a Depleted Matrix (F3) and both wetlands exhibited hydrological indicators of Oxidized Rhizospheres on Living Roots (C3), Saturation Visible on Aerial Imagery (C9), Geomorphic Position (D2), and FAC-Neutral Test (D5). Additionally, drainage patterns exist within OC-WET-0050 as it sits at the toe slope of a lower terraced field. Both wetlands drain to a riparian corridor to intermittent stream, OC-STR-0130.

4.1.2 FORESTED WETLANDS

Two forested wetlands (PFOs) were found within the project area and include OC-WET-0024 and OC-WET-0040. OC-WET-0024 is a forested depression bound by a small levee and an upland slope into a larger forested tract. This area is likely an old cattle pond that has since drained and vegetated. To the east of the forested tract is an agricultural sorghum field. WET-0024 is dominated by hydric vegetation consisting of silver maple, and black walnut, although silver maple is more prevalent. Hydric soils consist of a Depleted Matrix (F3), and hydrological indicators include Water Marks (B1), Inundation Visible on Aerial Imagery (B7), Presence of Reduced Iron (C4), Sparsely Vegetated Concave Surface (B8), Crayfish Burrows (C8), Geomorphic Position (D2), and FAC-Neutral Test (D5).

OC-WET-0040 is located within a riparian corridor that separates and drains two agricultural sorghum fields, one to its north, and one to its south, and which encapsulates part of ephemeral stream, OC-STR-0132, which drains west to east toward intermittent stream, OC-STR-0130. OC-WET-0040 is the forested extension of emergent wetland OC-WET-0035 which abuts its southern border into the open sorghum fields. Dominant wetland vegetation within OC-WET-0040 consists of silver maple, common persimmon, green ash (*Fraxinus pennsylvanica*), and reed canary grass. Hydric soils indicators observed include a Depleted Matrix (F3). Hydrological indicators observed include Water Marks (B1), Sparsely Vegetated Concave Surface (B8), Drainage Patterns (B10), Geomorphic Position (D2), and FAC-Neutral Test (D5).

TABLE 4.2 WETLANDS IN THE PROJECT AREA

Wetland ID	Type[1]	Size[2]	Associated Stream or Waterbody	Latitude	Longitude	WOTUS Opinion[3]
OC-WET-0001	PEM	0.32	OC-STR-0010 and -0011	38.482472	-92.003423	Yes
OC-WET-0002	PEM	0.12	0 OC-STR-0010	38.482568	-92.004058	Yes
OC-WET-0003	PEM	0.08	OC- STR-0010	38.482251	-92.004622	Yes
OC-WET-0010	PEM	0.07	None	38.440931	-92.012439	No
OC-WET-0024	PFO	0.16	OC-STR-0130	38.436013	-91.998234	Yes
OC-WET-0035	PEM	0.30	OC-STR-0134	38.434717	-91.996321	Yes
OC-WET-0040	PEM	0.05	OC-STR-0134	38.434989	-91.996246	Yes
OC-WET-0050	PEM	0.12	OC-STR-0130	38.434095	-91.994231	Yes
Total		**1.23**				

[1] PEM = emergent, PFO = forested (Cowardin et al. 1979).
[2] Size is acreage within the project area.
[3] WSP USA opinion of jurisdictional status; however, the USACE has the final determination as to which waterbodies are WOTUS and subject to CWA Section 404 permitting.

4.2 OPEN WATER FEATURES

Ten open water features (e.g., ponds or lakes), totalling approximately 5.03 acres, were observed in the project corridor. Generally, identified open water features are isolated stock ponds; however, four have been created by the impoundment of jurisdictional streams and would likely be considered jurisdictional according to the USACE. Open water features are listed in **Table 4.3** and depicted in **Figure 4-1.**

TABLE 4.3 OPEN WATER FEATURES IN THE PROJECT AREA

Open Water ID	Size[1]	Associated Stream or Isolated	Longitude	Latitude	WOTUS Opinion[2]
OC-OW-0010	2.06	OC-STR-0010	-92.005368	38.482542	Yes
OC-OW-0020	0.23	Isolated	-92.007024	38.47595	No
OC-OW-0025	0.24	Isolated	-92.006884	38.475605	No
OC-OW-0030	0.78	Isolated	-92.010248	38.458674	No
OC-OW-0040	0.42	OC-STR-0080	-92.019688	38.456135	Yes
OC-OW-0050	0.30	Isolated	-92.021601	38.451524	No
OC-OW-0055	0.12	OC-STR-0130	-91.991245	38.433641	Yes
OC-OW-0060	0.14	Isolated	-92.017337	38.445233	No
OC-OW-0070	0.24	Isolated	-92.020355	38.445051	No
OC-OW-0080	0.50	OC-STR-0110	-92.015062	38.442172	Yes
Total	5.03 acres				

[1] Size is acreage within the project area.
[2] WSP USA opinion of jurisdictional status; however, the USACE has the final determination as to which waterbodies are WOTUS and subject to CWA Section 404 permitting.

4.3 STREAMS

Stream delineations occurred during a period of relatively dry weather (end of September 2022, where, according to CoCoRaHS, only 0.29 inches of rain was recorded between September 14 and September 29 near Westphalia, Missouri, and less than 1 inch was recorded during the 15 days prior), thereby water within the streams was either low or non-existent in many instances. For this, stream features other than standing or flowing water, as well as discussions with landowners regarding stream flow consistency, helped classify delineated streams into three flow categories: ephemeral, flowing only during and immediately after rain events; intermittent, flowing through part of the year; and perennial, near constant flow.

Twenty-seven (27) streams, totalling approximately 24,239 linear feet (LF), were observed in the project corridor. Of the 27, 16 exhibited ephemeral flow characteristics (6,484 LF); 9 exhibited intermittent flow characteristics (15,609 LF); and 2 exhibited perennial flow characteristics (2,146 LF), one of which includes the Maries River (OC-STR-0140). Dominant stream attributes of each stream type identified in the project corridor are summarized in **Table 4.4**, and copies of the field stream datasheets are attached within **Appendix B**. Substrate found in streams within the project area contains gravel, cobble, muck, sand, silt, clay, and bedrock in many instances.

Almost all streams are lined with forested riparian corridor typified by the above-mentioned forest plant species. Streams are depicted in **Figure 4-1**. Depending on connectivity to traditional navigable waters and current rules and regulations, WSP USA has provided our opinion of whether identified streams will be considered WOTUS and under the jurisdiction of the USACE; however, the USACE has the final determination as to which streams are considered jurisdictional WOTUS.

4.3.1 EPHEMERAL STREAMS

Due to lack of flow, ephemeral streams were identified by a defined bed and bank, evidence of significant flows events, as well as topographical evidence of conveyance to or from other WOTUS. Some of the ephemeral streams have been altered by the construction of existing Route 63, where streams have been culverted below the highway system (OC-STR-0010, OC-STR-0125). Other ephemeral streams exist as agricultural drainage to larger, intermittent tributaries (OC-STR-0110, -0131, -0132, -0131, -0134). Highway roadside drainage features that did not exhibit jurisdictional characteristics (i.e. ditches). Roadside drainage runs the extent of the corridor on either side of the Highway.

4.3.2 INTERMITTENT STREAMS

Intermittent streams account for most of the linear stream feet within the project area, some meandering long distance through the project corridor. Three intermittent streams had not previously been mapped by the NHD (OC-STR-0028, OC-STR-0070, and OC-STR-0080), but have been described as having intermittent flow based on the existence of flowing water during a relative dry period and informal consultation with landowners who described typical flow cycles and the existence of seasonal spring flows.

4.3.3 PERENNIAL STREAMS

Two perennial streams were mapped within the project area (OC-STR-0020 and OC-STR-0140). OC-STR-0020 is an NHD-mapped stream that begins near the northernmost extent of the project area and meanders along the center of the proposed corridor. This stream begins perennial flow characteristics at the confluence of OC-STR-0030 and OC-STR-0025a. Toward the southernmost extent of the project area, the Maries River (OC-STR-0140) crosses the proposed project area and beneath a bridge along existing Route 63.

TABLE 4.4 STREAMS IN THE PROJECT AREA

Stream ID	Flow	Length in Project Area (ft)	Top of Bank Width (ft)	Top of Bank Height (ft)	OHWM Width (ft)	OHWM Height (ft)	Longitude	Latitude	WOTUS Opinion[1]
OC-STR-0010	Ephemeral	345	6	4	4	1	-92.004199	38.482256	Yes
OC-STR-0011	Ephemeral	144	4	2	1	0.5	-92.002368	38.483584	Yes
OC-STR-0015	Ephemeral	395	5	3	2	1	-92.006532	38.479138	Yes
OC-STR-0020	Perennial	1,348	35	6	20	3	-92.005977	38.478089	Yes
OC-STR-0025a	Intermittent	1,781	30	8	9	3	-92.005152	38.47234	Yes
OC-STR-0025b	Intermittent	2,951	25	7	10	2.5	-92.009929	38.461376	Yes
OC-STR-0026	Ephemeral	312	10	4	4	1	-92.005832	38.476074	Yes
OC-STR-0027	Ephemeral	426	10	5	4	1	-92.006801	38.473181	Yes
OC-STR-0028	Intermittent	99	30	7	5	1.5	-92.009608	38.461882	Yes
OC-STR-0030	Ephemeral	526	7	3	5	1	-92.009085	38.476364	Yes
OC-STR-0040	Ephemeral	1,214	5	2	3	0.5	-92.007163	38.467136	Yes
OC-STR-0050	Ephemeral	318	10	3.5	2	0.5	-92.017038	38.458117	Yes
OC-STR-0060	Ephemeral	884	15	3	2	0.5	-92.017835	38.456424	Yes
OC-STR-0070	Intermittent	358	30	5	3	1	-92.018536	38.455321	Yes
OC-STR-0080	Intermittent	784	25	2.5	8	1	-92.018664	38.454356	Yes

Stream ID	Flow	Length in Project Area (ft)	Top of Bank Width (ft)	Top of Bank Height (ft)	OHWM Width (ft)	OHWM Height (ft)	Longitude	Latitude	WOTUS Opinion[1]
OC-STR-0090	Intermittent	802	20	4	10	1	-92.01979	38.448569	Yes
OC-STR-0100	Intermittent	1,467	16	3	5	1	-92.020444	38.445925	Yes
OC-STR-0110	Ephemeral	646	6	3	2	0.5	-92.013369	38.442398	Yes
OC-STR-0120	Intermittent	4,053	20	5	10	1.5	-92.005328	38.43675	Yes
OC-STR-0125	Ephemeral	98	10	4	6	2	-91.990419	38.434895	Yes
OC-STR-0130	Intermittent	3,313	30	4	16	2	-91.994852	38.435163	Yes
OC-STR-0131	Ephemeral	121	4	2	1.5	0.5	-91.994906	38.435029	Yes
OC-STR-0132	Ephemeral	223	16	4	5	1	-91.992271	38.433267	Yes
OC-STR-0133	Ephemeral	113	10	2.5	4	1	-91.992603	38.433215	Yes
OC-STR-0134	Ephemeral	648	3	1	0.5	0.5	-91.995972	38.434993	Yes
OC-STR-0140 (Maries River)	Perennial	798	200	35	150	4.5	-91.989937	38.431791	Yes
OC-STR-0160	Ephemeral	71	3	2	2	1	-91.985666	38.42754	No
Total		**24,239 LF**							

[1] WSP USA opinion of jurisdictional status; however, the USACE has the final determination as to which waterbodies are WOTUS and subject to CWA Section 404 permitting.

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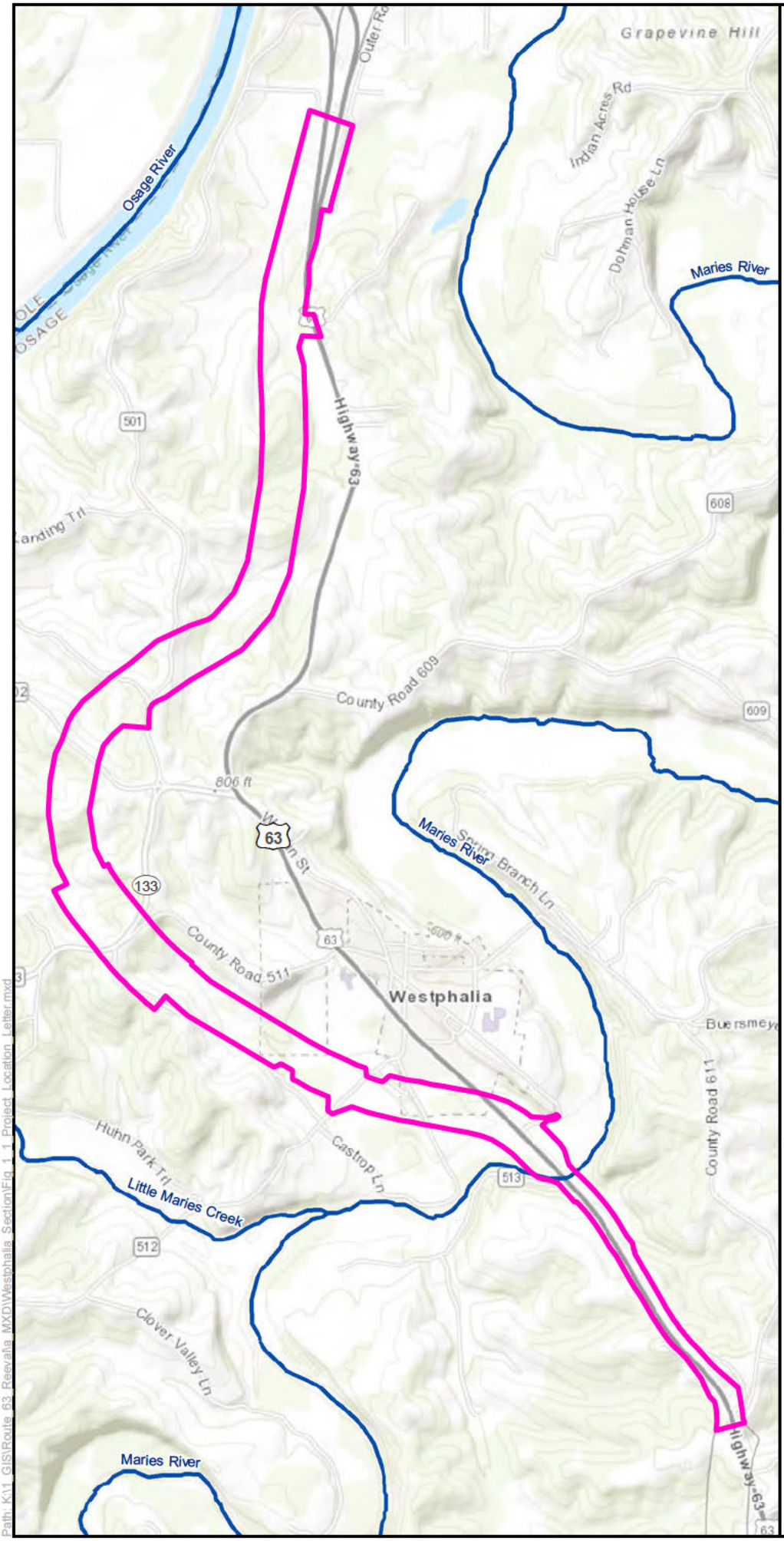
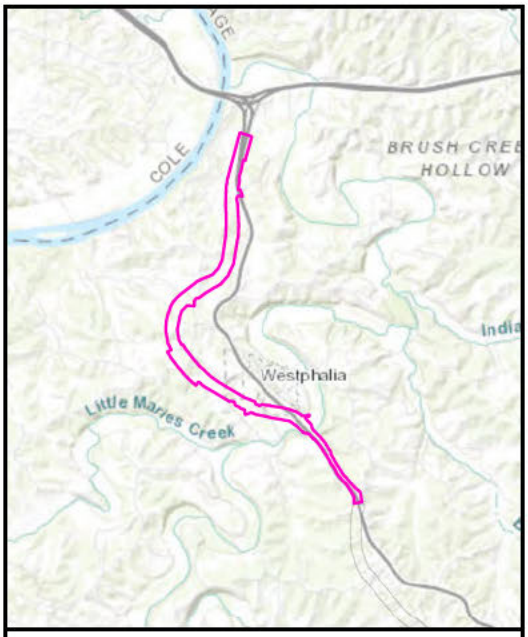
Figures





Area of Detail

Legend

- Westphalia Section
- Stream

0.5 0 0.5

Miles

Figure 1-1.
Project Location

Route 63 EIS
Re-evaluation Project
MoDOT Job No. CD0007
Westphalia Section

Job No.	325222277
Drawn By:	DJH
Reviewed By:	RLL
Date:	12/20/2022

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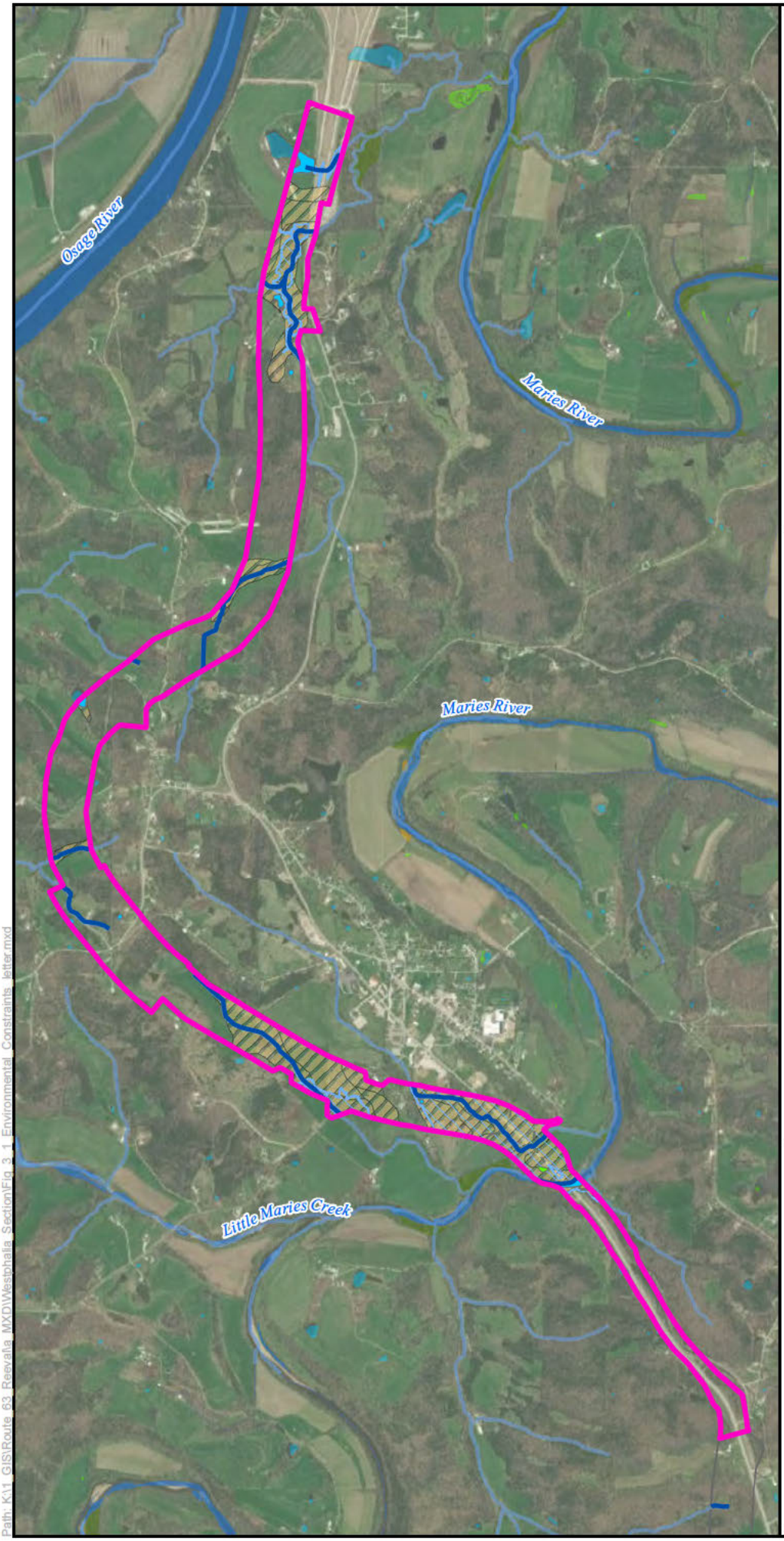

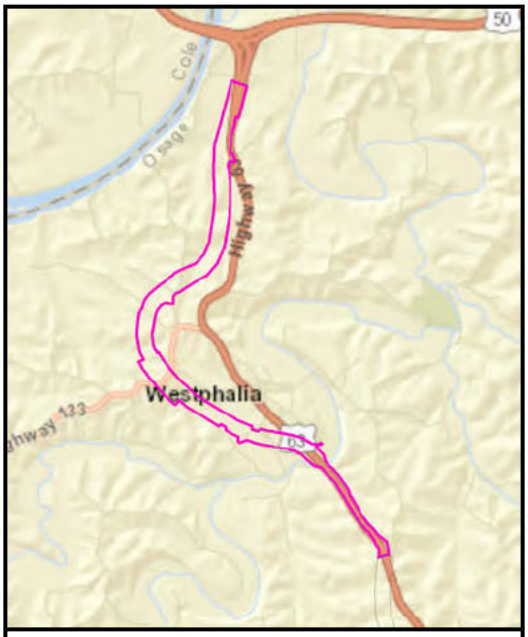

Area of Detail

Legend

- NHD Stream
- FEMA 100yr Flood Zone
- Soils with Hydric Inclusions

Preferred Alternative Project Area

- Westphalia Section

NWI Feature

- Emergent Wetland
- Forested Wetland
- Scrub-Shrub
- Open Water
- Riverine

N

0.5 0 0.5

Miles

Figure 3-1.
Mapped Environmental Constraints

Route 63 EIS
Re-evaluation Project
MoDOT Job No. CD0007
Westphalia Section

Job No.	325222277
Drawn By:	DJH
Reviewed By:	RLL
Date:	12/20/2022

WSP

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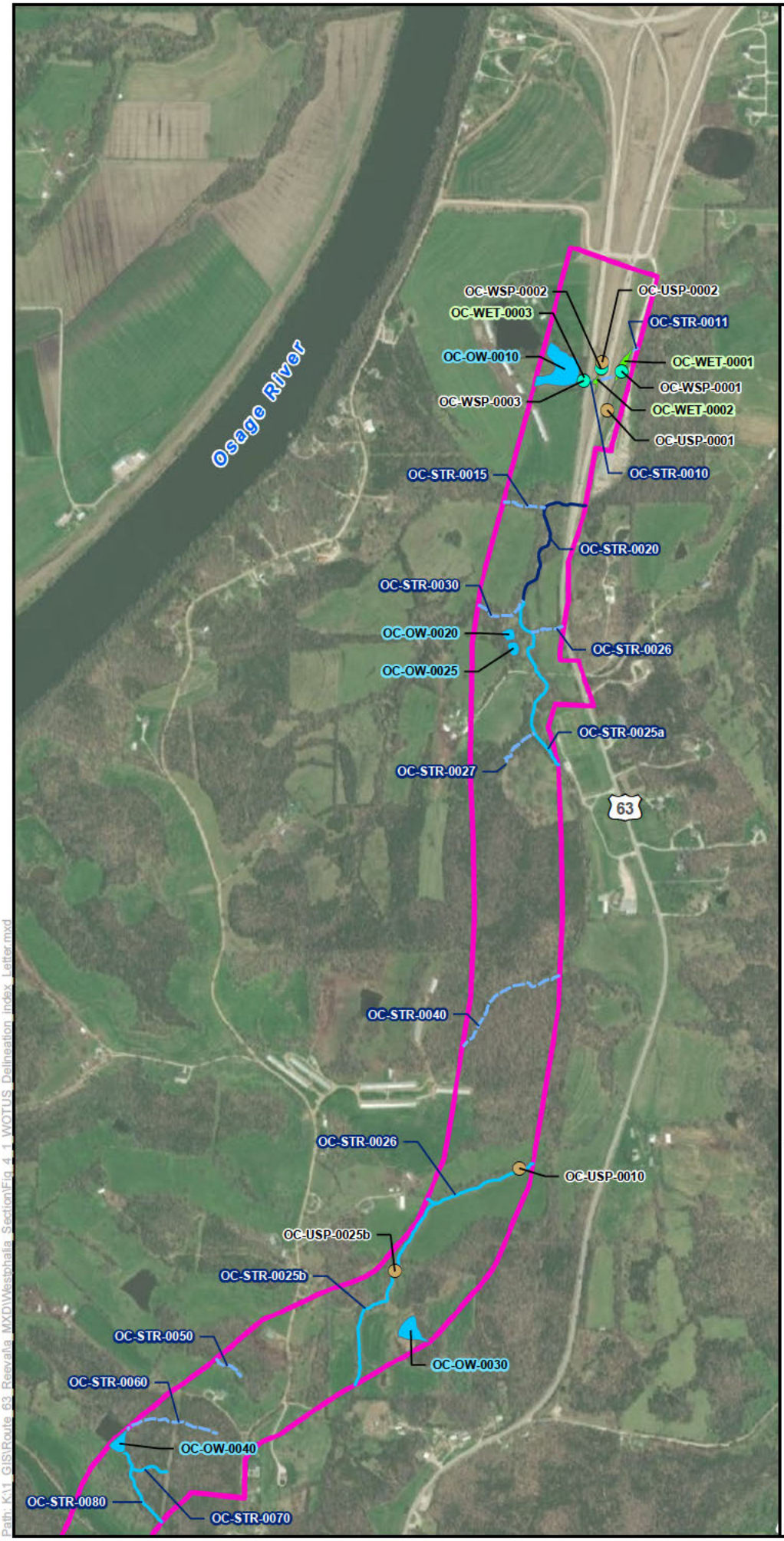

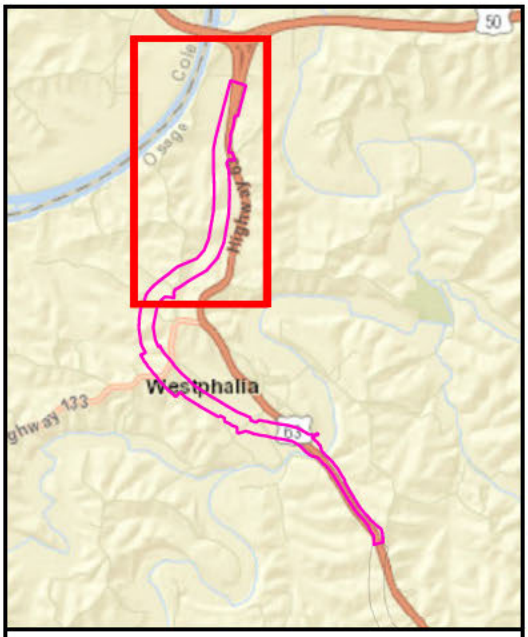

Area of Detail

Legend

Soil Sampling Location
- Upland Sample Point
- Wetland Sample Point

Stream (WSP delineated)
- Ephemeral
- Intermittent
- Perennial

Water Resource (WSP delineated)
- Emergent
- Open Water

Preferred Alternative Project Area
- Westphalia Section

1,000 0 1,000
Feet

N

Figure 4-1.
Waters of the U.S. Delineation
Page 1 of 3

Route 63 EIS Re-evaluation Project
MoDOT Job No. CD0007
Westphalia Section

Job No.	325222277
Drawn By:	DJH
Reviewed By:	RLL
Date:	2/13/2023

WSP

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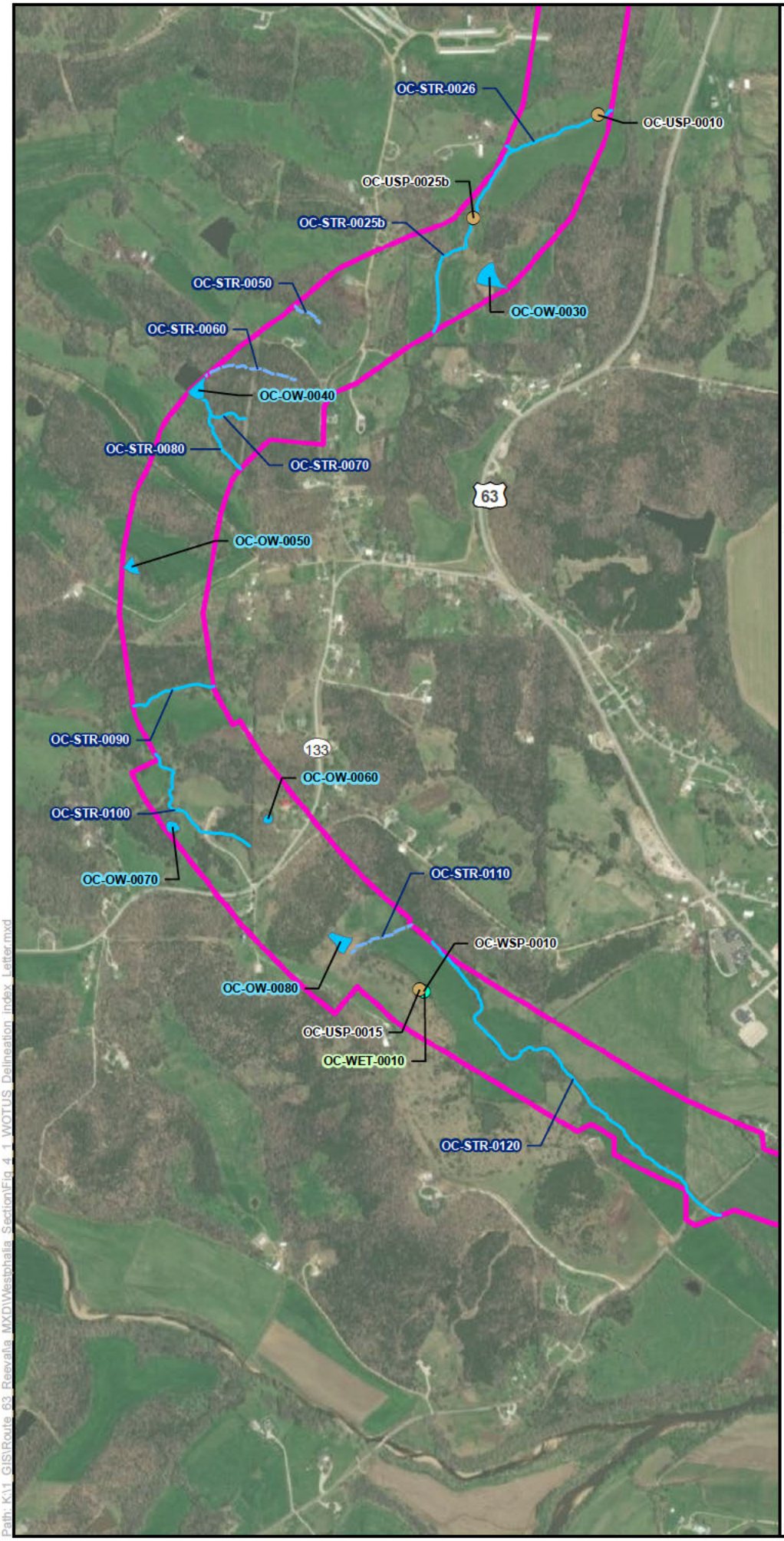
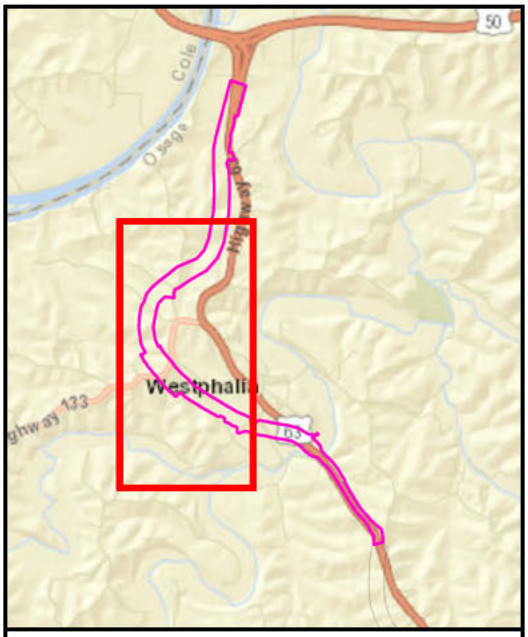




Legend

Soil Sampling Location
- Upland Sample Point
- Wetland Sample Point

Stream (WSP delineated)
- Ephemeral
- Intermittent

Water Resource (WSP delineated)
- Emergent
- Open Water

Preferred Alternative Project Area
- Westphalia Section

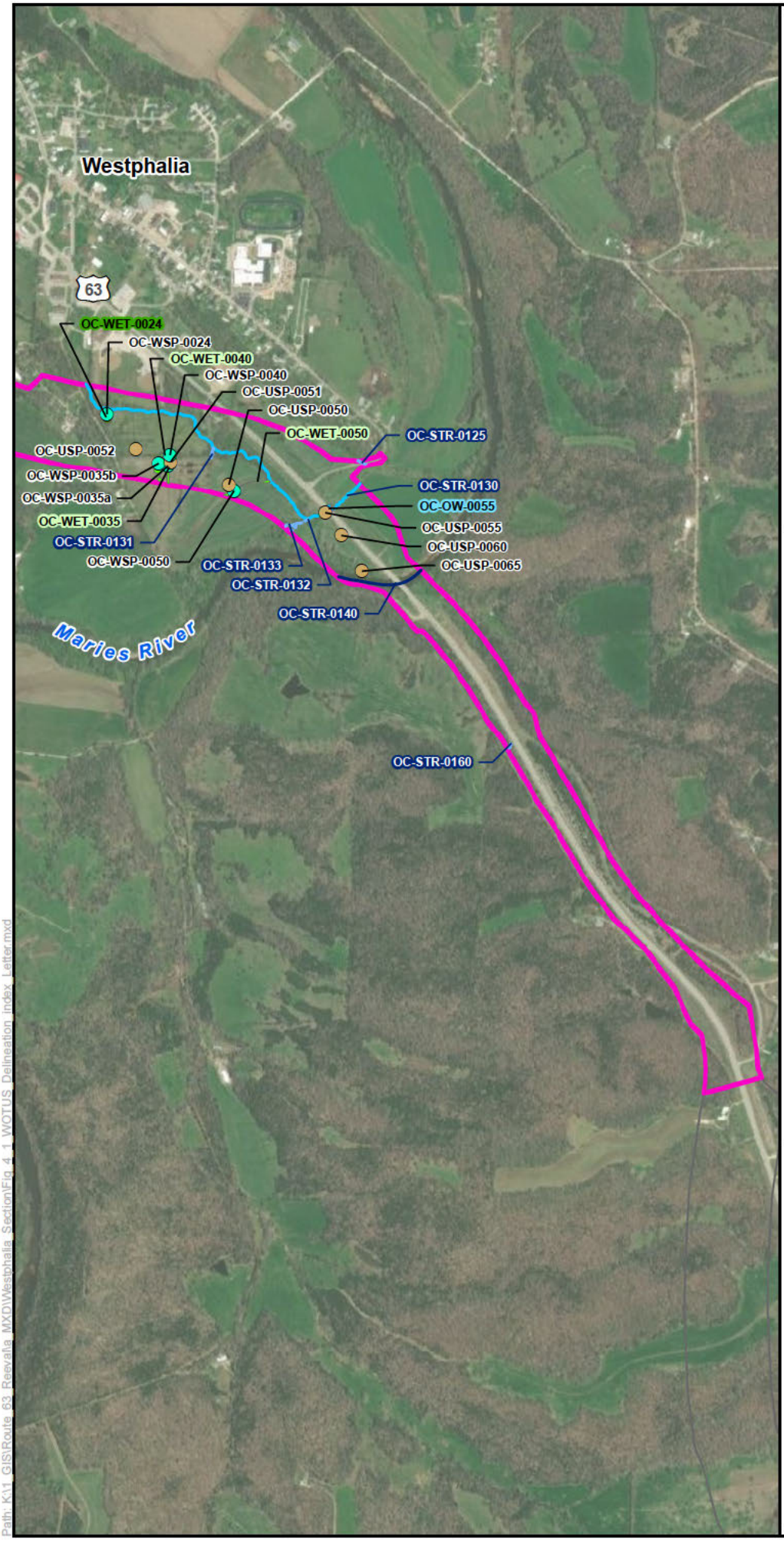
1,000 0 1,000
Feet

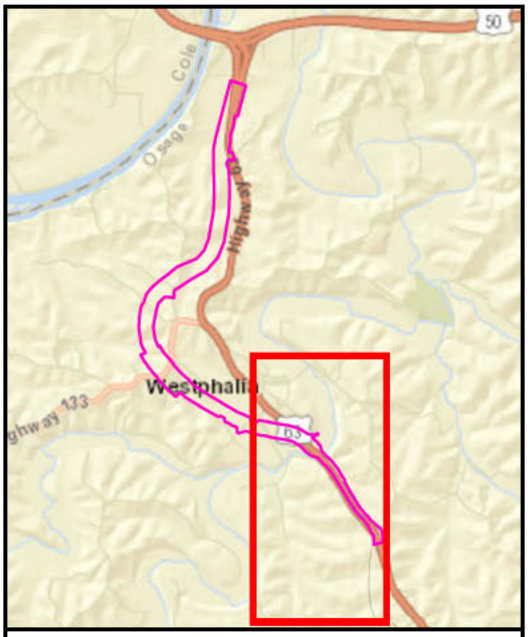
Figure 4-1.
Waters of the U.S. Delineation
Page 2 of 3

Route 63 EIS Re-evaluation Project
MoDOT Job No. CD0007
Westphalia Section

Job No.	325222277
Drawn By:	DJH
Reviewed By:	RLL
Date:	2/13/2023

Path: K:\1_GIS\Route_63_Reevalu_MXD\Westphalia_Section\Fig_4_1_WOTUS_Delineation_Index_Letter.mxd





Area of Detail

Legend

Soil Sampling Location
- Upland Sample Point
- Wetland Sample Point

Stream (WSP delineated)
- Ephemeral
- Intermittent
- Perennial

Water Resource (WSP delineated)
- Emergent
- Forested
- Open Water

Preferred Alternative Project Area
- Westphalia Section

1,000 0 1,000
Feet

N

Figure 4-1.
Waters of the U.S. Delineation
Page 3 of 3

Route 63 EIS
Re-evaluation Project
MoDOT Job No. CD0007
Westphalia Section

Job No.	325222277
Drawn By:	DJH
Reviewed By:	RLL
Date:	2/13/2023

WSP

Path: K:\1_GIS\Route_63_Reevalu_MXD\Westphalia_Section\Fig_4_1_WOTUS_Delineation_Index_Letter.mxd

Appendix A
Wetland Determination Data Forms

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region
See ERDC/EL TR-12-9; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp:11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Route US 63 City/County: Osage Sampling Date: 09/15/2022
Applicant/Owner: MoDOT State: MO Sampling Point: USP-0001
Investigator(s): Chris Mausert-Mooney, Rebecca Roth Section, Township, Range: T43NR10WS10
Landform (hillside, terrace, etc.): Hillslope Local relief (concave, convex, none): None Slope (%): 20-25
Subregion (LRR or MLRA): LRR N, MLRA 116B Lat: 38.481513 Long: -92.003886 Datum: NAD83
Soil Map Unit Name: Freeburg silt loam, 3 to 8 percent slopes NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** X
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:
Hillslope above highway ditch which is included in OC-WET-0001. Upland planted in prairie grass.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? **Yes** ____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: USP-0001

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
50% of total cover:	20% of total cover:		
Sapling/Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	=Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 5)			
1. *Andropogon gerardii*	35	Yes	FAC
2. *Sorghastrum nutans*	25	Yes	FACU
3. *Solidago altissima*	15	No	FACU
4. *Securigera varia*	7	No	UPL
5. *Dipsacus fullonum*	5	No	FACU
6.			
7.			
8.			
9.			
10.			
11.			
	87 =Total Cover		
50% of total cover: 44	20% of total cover: 18		
Woody Vine Stratum (Plot size: 5)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	35	x 3 =	105
FACU species	45	x 4 =	180
UPL species	7	x 5 =	35
Column Totals:	87 (A)		320 (B)

Prevalence Index = B/A = 3.68

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody Vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: USP-0001

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 5/2	100	7.5YR 4/6	10	C	M	Loamy/Clayey	Fill within
4-10	10YR 5/2	95	7.5YR 5/8	5	C	M	Loamy/Clayey	Mn+ Concretions
10-16	10YR 5/2	85	7.5YR 5/8	15	C	M	Loamy/Clayey	Mn+ Concretions

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Mucky Mineral (F1) **(MLRA 136)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 122, 136)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147, 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (F21) **(outside MLRA 127, 147, 148)**
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region
See ERDC/EL TR-12-9; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp:11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Route US 63 City/County: Osage Sampling Date: 09/15/2022

Applicant/Owner: MoDOT State: MO Sampling Point: WSP-0001

Investigator(s): Chris Mausert-Mooney, Rebecca Roth Section, Township, Range: T43NR10WS10

Landform (hillside, terrace, etc.): swale Local relief (concave, convex, none): concave Slope (%): 10-15

Subregion (LRR or MLRA): LRR N, MLRA 116B Lat: 38.482472 Long: -92.003423 Datum:

Soil Map Unit Name: Freeburg silt loam, 3 to 8 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
Reed canary grass swale hydrologically fed via culvert from pond on west side of HWY. Extends along vegetated ditch that runs along HWY.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Standing water, saturated soils elsewhere in interior of wetland

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: WSP-0001

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
50% of total cover:	20% of total cover:		
Sapling/Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	=Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 5)			
1. *Phalaris arundinacea*	100	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100 =Total Cover		
50% of total cover: 50	20% of total cover: 20		
Woody Vine Stratum (Plot size: 5)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	100	x 2 =	200
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		200 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody Vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WSP-0001

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 4/1	70	7.5YR 5/8	30	C	M	Loamy/Clayey	
6-9	10Y 4/1	80	5YR 3/4	20	C	M	Loamy/Clayey	
9-18	10Y 4/1	95	5YR 3/4	5	C	M	Loamy/Clayey	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Mucky Mineral (F1) **(MLRA 136)**
- X Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 122, 136)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147, 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (F21) **(outside MLRA 127, 147, 148)**
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region
See ERDC/EL TR-12-9; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp:11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Route US 63 City/County: Osage Sampling Date: 09/14/2022
Applicant/Owner: MoDOT State: MO Sampling Point: USP-0002
Investigator(s): Michael Lehmann, Chris Mausert-Mooney Section, Township, Range: T43NR10WS10
Landform (hillside, terrace, etc.): toeslope Local relief (concave, convex, none): None Slope (%): 30
Subregion (LRR or MLRA): LRR N, MLRA 116B Lat: 38.482711 Long: -92.004026 Datum: NAD83
Soil Map Unit Name: Freeburg silt loam, 3 to 8 percent slopes NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** X
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:
Steep toe of hillslope above OC-WET-0002. Planted in prairie grasses

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? **Yes** ____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: USP-0002

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
50% of total cover:	20% of total cover:		
Sapling/Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	=Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 5)			
1. *Andropogon gerardii*	65	Yes	FAC
2. *Sorghastrum nutans*	10	No	FACU
3. *Dipsacus fullonum*	10	No	FACU
4. *Solidago altissima*	7	No	FACU
5. *Medicago officianalis*	5	No	
6.			
7.			
8.			
9.			
10.			
11.			
	97 =Total Cover		
50% of total cover: 49	20% of total cover: 20		
Woody Vine Stratum (Plot size: 5)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	65	x 3 =	195
FACU species	27	x 4 =	108
UPL species	0	x 5 =	0
Column Totals:	92 (A)		303 (B)

Prevalence Index = B/A = 3.29

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody Vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: USP-0002

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 5/1	90	7.5YR 4/6	10	C	M	Loamy/Clayey	
3-12	10YR 6/1	80	7.5YR 4/6	20	C	M	Loamy/Clayey	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Mucky Mineral (F1) **(MLRA 136)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 122, 136)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147, 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (F21) **(outside MLRA 127, 147, 148)**
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region
See ERDC/EL TR-12-9; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp:11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Route US 63 City/County: Osage Sampling Date: 09/27/2022
Applicant/Owner: MoDOT State: MO Sampling Point: WSP-0002
Investigator(s): Michael Lehmann, Chris Mausert-Mooney Section, Township, Range: T43NR10WS10
Landform (hillside, terrace, etc.): basin Local relief (concave, convex, none): concave Slope (%): 5-7
Subregion (LRR or MLRA): LRR N, MLRA 116B Lat: 38.482568 Long: -92.004058 Datum: NAD83
Soil Map Unit Name: Freeburg silt loam, 3 to 8 percent slopes NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
Linear drainage swale in US63 HWY median emptying to catchment basin which drains east into OC-WET-0001 and connecting stream

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: WSP-0002

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
50% of total cover:	20% of total cover:		
Sapling/Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	=Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 5)			
1. *Leersia oryzoides*	65	Yes	OBL
2. *Scirpus atrovirens*	30	Yes	OBL
3. *Cyperus odoratus*	10	No	FACW
4. *Solidago altissima*	7	No	FACU
5. *Dipsacus fullonum*	7	No	FACU
6. *Panicum capillare*	7	No	FAC
7. *Platanus occidentalis*	5	No	FACW
8.			
9.			
10.			
11.			
	131 =Total Cover		
50% of total cover: 66	20% of total cover: 27		
Woody Vine Stratum (Plot size: 5)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	95	x 1 =	95
FACW species	15	x 2 =	30
FAC species	7	x 3 =	21
FACU species	14	x 4 =	56
UPL species	0	x 5 =	0
Column Totals:	131 (A)		202 (B)

Prevalence Index = B/A = 1.54

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- X 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody Vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WSP-0002

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 5/1	90	7.5YR 4/6	10	C	M	Sandy	Sandy clay
5-8	10YR 5/1	90	7.5YR 4/6	10	C	M	Loamy/Clayey	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- X Sandy Redox (S5)
- X Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Mucky Mineral (F1) **(MLRA 136)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 122, 136)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147, 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (F21) **(outside MLRA 127, 147, 148)**
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Rip rap rock

Depth (inches): 8

Hydric Soil Present? **Yes** X **No** ___

Remarks:

X

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region
See ERDC/EL TR-12-9; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp:11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Route US 63 City/County: Osage Sampling Date: 09/14/2022
Applicant/Owner: MoDOT State: MO Sampling Point: WSP-0003
Investigator(s): Michael Lehmann, Chris Mausert-Mooney Section, Township, Range: T43NR10WS10
Landform (hillside, terrace, etc.): swale Local relief (concave, convex, none): concave Slope (%): 3-5
Subregion (LRR or MLRA): LRR N, MLRA 116B Lat: 38.482251 Long: -92.004622 Datum: NAD83
Soil Map Unit Name: Freeburg silt loam, 3 to 8 percent slopes NWI classification: R4SBC
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
Seepage swale at back of pond OC-OW-0010 berm. Drains through culvert beneath US 63 connecting to OC-WET-0002 and OC-WET-0001

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: WSP-0003

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
50% of total cover:	20% of total cover:		
Sapling/Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	=Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 5)			
1. *Phalaris arundinacea*	40	Yes	FACW
2. *Persicaria punctata*	25	Yes	OBL
3. *Leersia oryzoides*	20	Yes	OBL
4. *Echinochloa crus-galli*	15	No	FAC
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100 =Total Cover		
50% of total cover: 50	20% of total cover: 20		
Woody Vine Stratum (Plot size: 5)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	45	x 1 =	45
FACW species	40	x 2 =	80
FAC species	15	x 3 =	45
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		170 (B)

Prevalence Index = B/A = 1.70

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody Vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WSP-0003

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 3/2	85	5YR 4/6	15	C	M	Loamy/Clayey	
8-21	10YR 3/1	80	5YR 4/6	20	C	M	Loamy/Clayey	High clay concentration

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Mucky Mineral (F1) **(MLRA 136)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 122, 136)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147, 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (F21) **(outside MLRA 127, 147, 148)**
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Gravel

Depth (inches): 21

Hydric Soil Present? **Yes** X **No** ___

Remarks:

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region
See ERDC/EL TR-12-9; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp:11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Route US 63 City/County: Osage Sampling Date: 09/14/2022

Applicant/Owner: MoDOT State: MO Sampling Point: USP-0010

Investigator(s): Ray Finnochiaro, Chris Mausert-Mooney, Rebecca Roth Section, Township, Range: T43NR10WS22

Landform (hillside, terrace, etc.): terrace Local relief (concave, convex, none): None Slope (%): 10-15

Subregion (LRR or MLRA): LRR N, MLRA 116B Lat: 38.462691 Long: -92.006785 Datum: NAD83

Soil Map Unit Name: Gladden silt loam , 0-2 percent slopes, frequently flooded NWI classification: PFO1A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:
Stream terrace of OC-STR-0025b

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1)
- ____ Sediment Deposits (B2)
- ____ Drift Deposits (B3)
- ____ Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Aquatic Fauna (B13)
- ____ True Aquatic Plants (B14)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres on Living Roots (C3)
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Tilled Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? **Yes** ____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: USP-0010

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Celtis occidentalis*	50	Yes	FACU
2. *Gleditsia triacanthos*	25	Yes	FAC
3. *Morus alba*	15	No	UPL
4. *Juglans nigra*	15	No	FACU
5.			
6.			
7.			
	105	=Total Cover	
50% of total cover: 53		20% of total cover: 21	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Lonicera maackii*	15	Yes	UPL
2. *Symphoricarpos orbiculatus*	10	Yes	FACU
3. *Rosa multiflora*	7	Yes	FACU
4. *Ribes missouriense*	3	No	UPL
5.			
6.			
7.			
8.			
9.			
	35	=Total Cover	
50% of total cover: 18		20% of total cover: 7	
Herb Stratum (Plot size: 5)			
1. *Elymus villosus*	30	Yes	FACU
2. *Lonicera maackii*	15	Yes	UPL
3. *Verbesina alternifolia*	7	No	FAC
4. *Campsis radicans*	7	No	FAC
5. *Persicaria virginiana*	3	No	FAC
6.			
7.			
8.			
9.			
10.			
11.			
	62	=Total Cover	
50% of total cover: 31		20% of total cover: 13	
Woody Vine Stratum (Plot size: 5)			
1.			
2.			
3.			
4.			
5.			
		=Total Cover	
50% of total cover:		20% of total cover:	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 14.3% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	42	x 3 =	126
FACU species	112	x 4 =	448
UPL species	48	x 5 =	240
Column Totals:	202 (A)		814 (B)

Prevalence Index = B/A = 4.03

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody Vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: USP-0010

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/3	100					Loamy/Clayey	
6-10	10YR 4/3	100					Loamy/Clayey	
10-16	10YR 4/4	100					Loamy/Clayey	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Mucky Mineral (F1) **(MLRA 136)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 122, 136)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147, 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (F21) **(outside MLRA 127, 147, 148)**
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

Stream terrace for STR-0025b

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region
See ERDC/EL TR-12-9; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp:11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Route US 63 City/County: Osage Sampling Date: 09/14/2022
Applicant/Owner: MoDOT State: MO Sampling Point: USP-0025b
Investigator(s): Robin Ledford, Michael Lehmann Section, Township, Range: T43NR10WS22
Landform (hillside, terrace, etc.): Stream terrace/bank Local relief (concave, convex, none): Concave Slope (%): 3
Subregion (LRR or MLRA): LRR N, MLRA 116B Lat: 38.460143 Long: -92.010741 Datum: NAD83
Soil Map Unit Name: Hartville silt loam, 3 to 8 percent slopes NWI classification: PFO1A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:
Mapped NWI linear PFO wetland. Field checked, and no linear PFO, rather intermittent stream. Upland point taken at top of bank.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: USP-0025b

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Ulmus americana*	20	Yes	FACW
2. *Platanus occidentalis*	20	Yes	FACW
3. *Diospyros virginiana*	15	Yes	FAC
4. *Gleditsia triacanthos*	15	Yes	FAC
5. *Quercus alba*	15	Yes	FACU
6. *Juniperus virginiana*	10	No	FACU
7.			
	95	=Total Cover	
50% of total cover: 48		20% of total cover: 19	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Symphoricarpos orbiculatus*	35	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	35	=Total Cover	
50% of total cover: 18		20% of total cover: 7	
Herb Stratum (Plot size: 5)			
1. *Ribes*	15	Yes	
2. *Ageratina altissima*	5	Yes	FACU
3. *Pilea pumila*	3	No	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	23	=Total Cover	
50% of total cover: 12		20% of total cover: 5	
Woody Vine Stratum (Plot size: 5)			
1. *Smilax hispida*	5	Yes	FAC
2.			
3.			
4.			
5.			
	5	=Total Cover	
50% of total cover: 3		20% of total cover: 1	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 9 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 55.6% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	43	x 2 =	86
FAC species	35	x 3 =	105
FACU species	65	x 4 =	260
UPL species	0	x 5 =	0
Column Totals:	143 (A)		451 (B)

Prevalence Index = B/A = 3.15

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody Vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: USP-0025b

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 4/3	98	10YR 5/6	2	C	M	Loamy/Clayey	Distinct redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Mucky Mineral (F1) **(MLRA 136)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 122, 136)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147, 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (F21) **(outside MLRA 127, 147, 148)**
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Gravel

Depth (inches): 6

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

Gravel bar/ edge of stream on bank

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region
See ERDC/EL TR-12-9; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp:11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Route US 63 City/County: Osage Sampling Date: 09/15/2022
Applicant/Owner: MoDOT State: MO Sampling Point: USP-0015
Investigator(s): Ray Finnochiaro, Michael Lehmann Section, Township, Range: T43NR10WS27
Landform (hillside, terrace, etc.): Hillslope Local relief (concave, convex, none): None Slope (%): 7-12
Subregion (LRR or MLRA): LRR N, MLRA 116B Lat: 38.440977 Long: -92.012574 Datum: NAD83
Soil Map Unit Name: Gatewood very gravelly silt loam, 15 to 35 percent slopes, stony NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** X
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:
Small hillslope above old cattle pond depression (WET-0010). Upland point. Soils gravelly and trampled from cattle grazing

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? **Yes** ____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: USP-0015

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Juniperus virginiana*	30	Yes	FACU
2. *Gleditsia triacanthos*	20	Yes	FAC
3.			
4.			
5.			
6.			
7.			
	50	=Total Cover	
50% of total cover: 25		20% of total cover: 10	

Sapling/Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
		=Total Cover	
50% of total cover:		20% of total cover:	

Herb Stratum (Plot size: 5)			
1. *Echinochloa crus-galli*	15	Yes	FAC
2. *Setaria faberi*	15	Yes	UPL
3. *Sorghum halepense*	10	Yes	FACU
4. *Ambrosia trifida*	5	No	FAC
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	45	=Total Cover	
50% of total cover: 23		20% of total cover: 9	

Woody Vine Stratum (Plot size: 5)			
1.			
2.			
3.			
4.			
5.			
		=Total Cover	
50% of total cover:		20% of total cover:	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 40.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	40	x 3 =	120
FACU species	40	x 4 =	160
UPL species	15	x 5 =	75
Column Totals:	95 (A)		355 (B)

Prevalence Index = B/A = 3.74

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody Vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: USP-0015

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 5/1	80	7.5YR 4/4	20	C	PL/M	Loamy/Clayey	stoney barrier

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Mucky Mineral (F1) **(MLRA 136)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 122, 136)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147, 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (F21) **(outside MLRA 127, 147, 148)**
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: stoney/gravel

Depth (inches): 8

Hydric Soil Present? **Yes** X **No** ___

Remarks:

Cattle present

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region
See ERDC/EL TR-12-9; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp:11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Route US 63 City/County: Osage Sampling Date: 09/14/2022
Applicant/Owner: MoDOT State: MO Sampling Point: WSP-0010
Investigator(s): Ray Finnochiaro, Michael Lehmann Section, Township, Range: T43NR10WS27
Landform (hillside, terrace, etc.): Toe slope Local relief (concave, convex, none): Concave Slope (%): 0-1
Subregion (LRR or MLRA): LRR N, MLRA 116B Lat: 38.440931 Long: -92.012439 Datum: NAD83
Soil Map Unit Name: Gatewood very gravelly silt loam, 15 to 35 percent slopes, stony NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
Small wetland in cattle pasture. Likely an old, drained cattle pond

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- X Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- X Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- X Surface Soil Cracks (B6)
- X Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: WSP-0010

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix nigra*	30	Yes	OBL
2. *Gleditsia triacanthos*	20	Yes	FAC
3. *Juniperus virginiana*	5	No	FACU
4.			
5.			
6.			
7.			
	55	=Total Cover	
50% of total cover: 28	20% of total cover: 11		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Celtis occidentalis*	20	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	20	=Total Cover	
50% of total cover: 10	20% of total cover: 4		
Herb Stratum (Plot size: 5)			
1. *Echinochloa crus-galli*	25	Yes	FAC
2. *Ambrosia trifida*	15	Yes	FAC
3. *Persicaria hydropiper*	10	No	OBL
4. *Bidens frondosa*	5	No	FACW
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	55	=Total Cover	
50% of total cover: 28	20% of total cover: 11		
Woody Vine Stratum (Plot size: 5)			
1.			
2.			
3.			
4.			
5.			
		=Total Cover	
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 80.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	40	x 1 =	40
FACW species	5	x 2 =	10
FAC species	60	x 3 =	180
FACU species	25	x 4 =	100
UPL species	0	x 5 =	0
Column Totals:	130 (A)		330 (B)

Prevalence Index = B/A = 2.54

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody Vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WSP-0010

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 5/1	80	7.5YR 4/4	20	C	PL/M	Loamy/Clayey	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Mucky Mineral (F1) **(MLRA 136)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 122, 136)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147, 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (F21) **(outside MLRA 127, 147, 148)**
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

Cattle present

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region
See ERDC/EL TR-12-9; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp:11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Route US 63 City/County: Osage Sampling Date: 0915/2022
Applicant/Owner: MoDOT State: MO Sampling Point: WSP-0024
Investigator(s): Robin Ledford, Michael Lehmann Section, Township, Range: T43NR10WS26
Landform (hillside, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2
Subregion (LRR or MLRA): LRR N, MLRA 116B Lat: 38.436013 Long: -91.998234 Datum: NAD83
Soil Map Unit Name: Racoon silt loam, 0 to 3 percent slopes, rarely flooded NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
Forested wetland depression. Was likely a small pond but is now drained and contains woody vegetation

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- X Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- X Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- X Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: WSP-0024

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer saccharinum*	70	Yes	FACW
2. *Juglans nigra*	30	Yes	FACU
3.			
4.			
5.			
6.			
7.			
	100	=Total Cover	
50% of total cover: 50		20% of total cover: 20	

Sapling/Shrub Stratum (Plot size: 15)			
1. *Acer saccharinum*	10	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	10	=Total Cover	
50% of total cover: 5		20% of total cover: 2	

Herb Stratum (Plot size: 5)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
		=Total Cover	
50% of total cover:		20% of total cover:	

Woody Vine Stratum (Plot size: 5)			
1.			
2.			
3.			
4.			
5.			
		=Total Cover	
50% of total cover:		20% of total cover:	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	80	x 2 =	160
FAC species	0	x 3 =	0
FACU species	30	x 4 =	120
UPL species	0	x 5 =	0
Column Totals:	110 (A)		280 (B)

Prevalence Index = B/A = 2.55

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- X 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody Vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WSP-0024

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 5/1	75	7.5YR 4/6	25	RM	M	Loamy/Clayey	
10-20	10YR 5/1	60	7.5YR 4/6	40	RM	M	Loamy/Clayey	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Mucky Mineral (F1) **(MLRA 136)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 122, 136)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147, 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (F21) **(outside MLRA 127, 147, 148)**
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region
See ERDC/EL TR-12-9; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp:11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Route US 63 City/County: Osage Sampling Date: 09/27/2022
Applicant/Owner: MoDOT State: MO Sampling Point: WSP-0035a
Investigator(s): Michael Lehmann, Chris Mausert Mooney Section, Township, Range: T43NR10WS35
Landform (hillside, terrace, etc.): Flat field Local relief (concave, convex, none): Slight concavity Slope (%): 1-3
Subregion (LRR or MLRA): LRR N, MLRA 116B Lat: 38.434717 Long: -91.996321 Datum: NAD83
Soil Map Unit Name: Racoon silt loam, 0-3 percent slopes, rarely flooded NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
Wet swath within agricultural field. Field may be managed for Sorghum hay. Sorghum not growing within wet areas.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: WSP-0035a

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
50% of total cover:	20% of total cover:		
Sapling/Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	=Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 5)			
1. *Echinochloa crus-galli*	35	Yes	FAC
2. *Eleocharis obtusa*	25	Yes	OBL
3. *Setaria pumila*	10	No	FAC
4. *Digitaria ciliaris*	10	No	FAC
5. *Panicum dichotomiflorum*	7	No	FACW
6. *Persicaria maculosa*	3	No	FACW
7. *Eleusine indica*	3	No	FACU
8.			
9.			
10.			
11.			
	93 =Total Cover		
50% of total cover: 47	20% of total cover: 19		
Woody Vine Stratum (Plot size: 5)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	25	x 1 =	25
FACW species	10	x 2 =	20
FAC species	55	x 3 =	165
FACU species	3	x 4 =	12
UPL species	0	x 5 =	0
Column Totals:	93 (A)		222 (B)

Prevalence Index = B/A = 2.39

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody Vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WSP-0035a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 5/1	90	7.5YR 4/6	10	RM	M	Loamy/Clayey	
4-16	10YR 5/1	75	7.5YR 4/6	25	RM	M	Loamy/Clayey	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Mucky Mineral (F1) **(MLRA 136)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 122, 136)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147, 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (F21) **(outside MLRA 127, 147, 148)**
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

Soil likely relic and has been turned over during agricultural practices

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region
See ERDC/EL TR-12-9; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp:11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Route US 63 City/County: Osage Sampling Date: 09/27/2022
Applicant/Owner: MoDOT State: MO Sampling Point: WSP-0035b
Investigator(s): Michael Lehmann, Chris Mausert Mooney Section, Township, Range: T43NR10WS35
Landform (hillside, terrace, etc.): Flat field Local relief (concave, convex, none): Slight concavity Slope (%): 1-3
Subregion (LRR or MLRA): LRR N, MLRA 116B Lat: 38.434786 Long: -91.996605 Datum: NAD83
Soil Map Unit Name: Racoon silt loam, 0 to 3 percent slopes, rarely flooded NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
Second soil pit for WET-0035. Wet swath within agricultural field. Field may be managed for Sorghum hay. Sorghum not growing within wet areas.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: WSP-0035b

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
50% of total cover:	20% of total cover:		
Sapling/Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	=Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 5)			
1. *Echinochloa crus-galli*	30	Yes	FAC
2. *Eleocharis obtusa*	25	Yes	OBL
3. *Persicaria maculosa*	20	Yes	FACW
4. *Panicum dichotomiflorum*	15	No	FACW
5. *Setaria pumila*	15	No	FAC
6. *Digitaria ciliaris*	10	No	FAC
7. *Eleusine indica*	5	No	FACU
8.			
9.			
10.			
11.			
	120 =Total Cover		
50% of total cover: 60	20% of total cover: 24		
Woody Vine Stratum (Plot size: 5)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	25	x 1 =	25
FACW species	35	x 2 =	70
FAC species	55	x 3 =	165
FACU species	5	x 4 =	20
UPL species	0	x 5 =	0
Column Totals:	120 (A)		280 (B)

Prevalence Index = B/A = 2.33

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody Vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WSP-0035b

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 5/1	90	7.5YR 4/6	10	C	M	Loamy/Clayey	
6-12	10YR 5/1	80	7.5YR 4/6	20	C	M	Loamy/Clayey	
12-18	10YR 5/1	75	7.5YR 4/6	25	C	M	Loamy/Clayey	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Mucky Mineral (F1) **(MLRA 136)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 122, 136)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147, 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (F21) **(outside MLRA 127, 147, 148)**
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

Soil likely relic and has been turned over during agricultural practices

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region
See ERDC/EL TR-12-9; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp:11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Route US 63 City/County: Osage Sampling Date: 09/27/2022
Applicant/Owner: MoDOT State: MO Sampling Point: WSP-0040
Investigator(s): Michael Lehmann, Chris Mausert Mooney Section, Township, Range: T43NR10WS35
Landform (hillside, terrace, etc.): Riparian swale Local relief (concave, convex, none): Slight concavity Slope (%): 1-3
Subregion (LRR or MLRA): LRR N, MLRA 116B Lat: 38.434989 Long: -91.996246 Datum: NAD83
Soil Map Unit Name: Racoon silt loam, 0-3 percent slopes, rarely flooded NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
Riparian swale/ drainage between two sorghum fields. Both field drain to swale. PFO

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Sparsely Vegetated Concave Surface (B8)
- X Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: WSP-0040

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer saccharinum*	35	Yes	FACW
2. *Diospyros virginiana*	35	Yes	FAC
3. *Ulmus americana*	20	No	FACW
4. *Quercus palustris*	15	No	FACW
5.			
6.			
7.			
	105	=Total Cover	
50% of total cover: 53		20% of total cover:	21
Sapling/Shrub Stratum (Plot size: 15)			
1. *Fraxinus pennsylvanica*	7	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	7	=Total Cover	
50% of total cover: 4		20% of total cover:	2
Herb Stratum (Plot size: 5)			
1. *Phalaris arundinacea*	80	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	80	=Total Cover	
50% of total cover: 40		20% of total cover:	16
Woody Vine Stratum (Plot size: 5)			
1.			
2.			
3.			
4.			
5.			
		=Total Cover	
50% of total cover:		20% of total cover:	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	157	x 2 =	314
FAC species	35	x 3 =	105
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	192 (A)		419 (B)

Prevalence Index = B/A = 2.18

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody Vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WSP-0040

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 5/1	90	7.5YR 4/6	10	RM	M	Loamy/Clayey	
6-12	10YR 5/1	80	7.5YR 4/6	20	RM	M	Loamy/Clayey	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Mucky Mineral (F1) **(MLRA 136)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 122, 136)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147, 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (F21) **(outside MLRA 127, 147, 148)**
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region
See ERDC/EL TR-12-9; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp:11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Route US 63 City/County: Osage Sampling Date: 0915/2022
Applicant/Owner: MoDOT State: MO Sampling Point: USP-0050
Investigator(s): Ray Finnochiaro, Michael Lehmann Section, Township, Range: T43NR10WS35
Landform (hillside, terrace, etc.): Backslope Local relief (concave, convex, none): Convex Slope (%): 1-5
Subregion (LRR or MLRA): LRR N, MLRA 116B Lat: 38.434254 Long: -91.994387 Datum: NAD83
Soil Map Unit Name: Freeburg silt loam, 0 to 3 percent slopes, rarely flooded NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:
Flat field of Johnson grass. Point taken upland of slope to second flat terrace

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? **Yes** ____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: USP-0050

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
50% of total cover:	20% of total cover:		
Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	=Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 5)			
1. *Digitaria sanguinalis*	35	Yes	FACU
2. *Sorghum halepense*	30	Yes	FACU
3. *Setaria parviflora*	20	Yes	FAC
4. *Paspalum*	1	No	
5. *Rumex crispus*	1	No	FAC
6. *Oxalis*	1	No	
7.			
8.			
9.			
10.			
11.			
	88 =Total Cover		
50% of total cover: 44	20% of total cover: 18		
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.3% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	21	x 3 =	63
FACU species	65	x 4 =	260
UPL species	0	x 5 =	0
Column Totals:	86 (A)		323 (B)

Prevalence Index = B/A = 3.76

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody Vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: USP-0050

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 4/3	99	10YR 5/6	1	C	M	Loamy/Clayey	Distinct redox concentrations
10-16	10YR 5/2	90	7.5YR 4/4	10	C	PL	Loamy/Clayey	Distinct redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Mucky Mineral (F1) **(MLRA 136)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 122, 136)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147, 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (F21) **(outside MLRA 127, 147, 148)**
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region
See ERDC/EL TR-12-9; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp:11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Route US 63 City/County: Osage Sampling Date: 09/27/2022
Applicant/Owner: MoDOT State: MO Sampling Point: USP-0051
Investigator(s): Ray Finnochiaro, Michael Lehmann Section, Township, Range: T43NR10WS35
Landform (hillside, terrace, etc.): Field Flat Local relief (concave, convex, none): None Slope (%): 0-1
Subregion (LRR or MLRA): LRR N, MLRA 116B Lat: 38.434819 Long: -91.996238 Datum: NAD83
Soil Map Unit Name: Racoon silt loam, 0-3 percent slopes, rarely flooded NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** X
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:
Flat field of Johnson grass. Point taken upland of slight depressions within sorghum field.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? **Yes** ____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: USP-0051

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
50% of total cover:	20% of total cover:		
Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	=Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 5)			
1. *Sorghum halepense*	40	Yes	FACU
2. *Digitaria sanguinalis*	20	Yes	FACU
3. *Setaria parviflora*	10	No	FAC
4. *Eleusine indica*	10	No	FACU
5. *Panicum dichotomiflorum*	5	No	FACW
6.			
7.			
8.			
9.			
10.			
11.			
	85 =Total Cover		
50% of total cover: 43	20% of total cover: 17		
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	5	x 2 =	10
FAC species	10	x 3 =	30
FACU species	70	x 4 =	280
UPL species	0	x 5 =	0
Column Totals:	85 (A)		320 (B)

Prevalence Index = B/A = 3.76

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody Vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: USP-0051

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 4/2	90	7.5YR 4/4	10	C	PL/M	Loamy/Clayey	
6-12	10YR 5/2	95	7.5YR 4/4	5	C	PL/M	Loamy/Clayey	
12-18	10YR 4/1	90	7.5YR 4/4	10	C	PL/M	Loamy/Clayey	Mn+ Concretions

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Mucky Mineral (F1) **(MLRA 136)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- X Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 122, 136)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147, 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (F21) **(outside MLRA 127, 147, 148)**
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region
See ERDC/EL TR-12-9; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp:11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Route US 63 City/County: Osage Sampling Date: 0915/2022
Applicant/Owner: MoDOT State: MO Sampling Point: USP-0052
Investigator(s): Ray Finnochiaro, Michael Lehmann Section, Township, Range: T43NR10WS26
Landform (hillside, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-5
Subregion (LRR or MLRA): LRR N, MLRA 116B Lat: 38.435131 Long: -91.997324 Datum: NAD83
Soil Map Unit Name: Racoon silt loam, 0-3 percent slopes, rarely flooded NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:
Flat field of Johnson grass. Small linear depressions within field. Point taken here.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? **Yes** ____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: USP-0052

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
50% of total cover:	20% of total cover:		
Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	=Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 5)			
1. *Sorghum halepense*	65	Yes	FACU
2. *Digitaria ciliaris*	20	No	FAC
3. *Setaria faberi*	20	No	UPL
4.	1	No	
5.	1	No	
6.	1	No	
7.			
8.			
9.			
10.			
11.			
	108 =Total Cover		
50% of total cover: 54	20% of total cover: 22		
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	20	x 3 =	60
FACU species	65	x 4 =	260
UPL species	20	x 5 =	100
Column Totals:	105 (A)		420 (B)

Prevalence Index = B/A = 4.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody Vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: USP-0052

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 4/3	99	10YR 5/6	1	C	M	Loamy/Clayey	
10-16	10YR 5/2	90	7.5YR 4/4	10	C	PL	Loamy/Clayey	5/2 and 4/3 matrix

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Mucky Mineral (F1) **(MLRA 136)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 122, 136)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147, 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (F21) **(outside MLRA 127, 147, 148)**
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region
See ERDC/EL TR-12-9; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp:11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Route US 63 City/County: Osage Sampling Date: 09/27/2022
Applicant/Owner: MoDOT State: MO Sampling Point: WSP-0050
Investigator(s): Michael Lehmann, Robin Ledford Section, Township, Range: T43NR10WS35
Landform (hillside, terrace, etc.): Toeslope corridor Local relief (concave, convex, none): Slight concavity Slope (%): 5-7
Subregion (LRR or MLRA): LRR N, MLRA 116B Lat: 38.434095 Long: -91.994231 Datum: NAD83
Soil Map Unit Name: Jamesfin silt loam, 0-3 percent slopes, occaisionally flooded NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
Swale corridor at base of terraced slope within flat agricultural field-likely managed for sorghum hay.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: WSP-0050

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
50% of total cover:	20% of total cover:		
Sapling/Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	=Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 5)			
1. *Panicum dichotomiflorum*	50	Yes	FACW
2. *Setaria pumila*	45	Yes	FAC
3. *Eleusine indica*	30	No	FACU
4. *Persicaria pensylvanica*	25	No	FACW
5. *Sorghum halepense*	20	No	FACU
6. *Rumex crispus*	5	No	FAC
7.			
8.			
9.			
10.			
11.			
	175 =Total Cover		
50% of total cover: 88	20% of total cover: 35		
Woody Vine Stratum (Plot size: 5)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	75	x 2 =	150
FAC species	50	x 3 =	150
FACU species	50	x 4 =	200
UPL species	0	x 5 =	0
Column Totals:	175 (A)		500 (B)

Prevalence Index = B/A = 2.86

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody Vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WSP-0050

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 4/2	80	7.5YR 4/4	20	C	PL/M	Loamy/Clayey	
8-14	10YR 5/2	90	7.5YR 4/4	10	C	PL/M	Loamy/Clayey	
14-20	10YR 4/1	80	7.5YR 4/4	20	C	PL/M	Loamy/Clayey	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Mucky Mineral (F1) **(MLRA 136)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 122, 136)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147, 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (F21) **(outside MLRA 127, 147, 148)**
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

Soil likely relic and has been turned over during agricultural practices

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region
See ERDC/EL TR-12-9; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp:11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Route US 63 City/County: Osage Sampling Date: 0915/2022
Applicant/Owner: MoDOT State: MO Sampling Point: USP-0055
Investigator(s): Ray Finnochiaro, Michael Lehmann Section, Township, Range: T43NR10WS35
Landform (hillside, terrace, etc.): Terrace Local relief (concave, convex, none): Concave Slope (%): 0-3
Subregion (LRR or MLRA): LRR N, MLRA 116B Lat: 38.433538 Long: -91.991349 Datum: NAD83
Soil Map Unit Name: Jamesfin silt loam, 0-3 percent slopes, frequently flooded NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area**
Hydric Soil Present?	Yes ____	No X	**within a Wetland?** **Yes** ____ **No** X
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
Terrace along stream bank. Both sides of existing HWY 63, below bridge.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: USP-0055

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
50% of total cover:	20% of total cover:		
Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	=Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 5)			
1. *Phalaris arundinacea*	95	Yes	FACW
2. *Solidago altissima*	2	No	FACU
3. *Verbesina alternifolia*	2	No	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	99 =Total Cover		
50% of total cover: 50	20% of total cover: 20		
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	95	x 2 =	190
FAC species	2	x 3 =	6
FACU species	2	x 4 =	8
UPL species	0	x 5 =	0
Column Totals:	99 (A)		204 (B)

Prevalence Index = B/A = 2.06

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody Vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: USP-0055

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 3/2	100					Loamy/Clayey	
12-18	10YR 3/2	99	7.5YR 5/6	1	C	PL	Loamy/Clayey	
18-24	10YR 3/2	98	7.5YR 5/6	2	C	PL/M	Loamy/Clayey	Prominent redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Mucky Mineral (F1) **(MLRA 136)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 122, 136)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147, 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (F21) **(outside MLRA 127, 147, 148)**
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

Three soil pits dug. No redox within. Well drained

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region
See ERDC/EL TR-12-9; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp:11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Route US 63 City/County: Osage Sampling Date: 0915/2022
Applicant/Owner: MoDOT State: MO Sampling Point: USP-0060
Investigator(s): Ray Finnochiaro, Michael Lehmann Section, Township, Range: T43NR10WS35
Landform (hillside, terrace, etc.): Field Local relief (concave, convex, none): Slight concavity Slope (%): 0-1
Subregion (LRR or MLRA): LRR N, MLRA 116B Lat: 38.433538 Long: -91.991349 Datum: NAD83
Soil Map Unit Name: Jamesfin silt loam, 0-3 percent slopes, occasionally flooded NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** X
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:
Downslope of existing HWY 63 berm within field.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? **Yes** ____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: USP-0060

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
50% of total cover:	20% of total cover:		

Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	=Total Cover		
50% of total cover:	20% of total cover:		

Herb Stratum (Plot size: 5)			
1. *Digitaria sanguinalis*	45	Yes	FACU
2. *Sorghum halepense*	25	Yes	FACU
3. *Setaria faberi*	10	No	UPL
4. *Echinochloa muricata*	10	No	FACW
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	90 =Total Cover		
50% of total cover: 45	20% of total cover: 18		

Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	10	x 2 =	20
FAC species	0	x 3 =	0
FACU species	70	x 4 =	280
UPL species	10	x 5 =	50
Column Totals:	90 (A)		350 (B)

Prevalence Index = B/A = 3.89

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody Vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: USP-0060

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-9	10YR 4/1	95	7.5YR 4/6	5	C	PL	Loamy/Clayey	No gravel
9-16	10YR 4/2	60	7.5YR 4/6	40	C	PL/M	Loamy/Clayey	Gravel within

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Mucky Mineral (F1) **(MLRA 136)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- X Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 122, 136)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147, 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (F21) **(outside MLRA 127, 147, 148)**
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Gravel

Depth (inches): 16

Hydric Soil Present? **Yes** X **No** ___

Remarks:

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region
See ERDC/EL TR-12-9; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp:11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Route US 63 City/County: Osage Sampling Date: 09/15/2022
Applicant/Owner: MoDOT State: MO Sampling Point: USP-0065
Investigator(s): Michael Lehmann, Robin Ledford, Ray Finnochiaro Section, Township, Range: T43NR10WS35
Landform (hillside, terrace, etc.): Toeslope corridor Local relief (concave, convex, none): Slight concavity Slope (%): 0-3
Subregion (LRR or MLRA): LRR N, MLRA 116B Lat: 38.432084 Long: -91.990204 Datum: NAD83
Soil Map Unit Name: Jamesfin silt loam, 0-3 percent slopes, frequnetly flooded NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area**
Hydric Soil Present?	Yes ____	No X	**within a Wetland?** **Yes** ____ **No** X
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
Bank terrace above Maries River within forested corridor. NWI mapped PFO. Maries River incised below bank by 10 feet

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1)
- ____ Sediment Deposits (B2)
- X Drift Deposits (B3)
- ____ Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Aquatic Fauna (B13)
- ____ True Aquatic Plants (B14)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres on Living Roots (C3)
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Tilled Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Drift deposits include dead wood an dleaves in trees from high water events

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: USP-0065

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer negundo*	65	Yes	FAC
2. *Platanus occidentalis*	25	Yes	FACW
3. *Juglans nigra*	20	No	FACU
4. *Maclura pomifera*	20	No	UPL
5.			
6.			
7.			
	130	=Total Cover	
50% of total cover: 65		20% of total cover:	26
Sapling/Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
		=Total Cover	
50% of total cover:		20% of total cover:	
Herb Stratum (Plot size: 5)			
1. *Dicliptera brachiata*	75	Yes	FACW
2. *Elymus virginicus*	35	Yes	FACW
3. *Laportea canadensis*	20	No	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	130	=Total Cover	
50% of total cover: 65		20% of total cover:	26
Woody Vine Stratum (Plot size: 5)			
1.			
2.			
3.			
4.			
5.			
		=Total Cover	
50% of total cover:		20% of total cover:	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	135	x 2 =	270
FAC species	85	x 3 =	255
FACU species	20	x 4 =	80
UPL species	20	x 5 =	100
Column Totals:	260 (A)		705 (B)

Prevalence Index = B/A = 2.71

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody Vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: USP-0065

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-12	10YR 3/2	100					Loamy/Clayey	
12-16	10YR 4/2	99	7.5YR 4/6	1	C	PL/M	Loamy/Clayey	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Mucky Mineral (F1) **(MLRA 136)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 122, 136)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147, 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (F21) **(outside MLRA 127, 147, 148)**
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

Mapped as hydric soil, but concentrions not seen until after 12" deep and is less than 2% of matrix color. Three soil pits dug to confirm.

Appendix B
Stream Characterization Forms

STREAM CHARACTERIZATION FORM

Project Name:	Route 63 EIS Re-evaluation	Stream ID:	OC-STR-0010
Project Number:	325222277	Personnel:	MLL, CMM
Location/ Station:		Date(m/d/y):	9/27/2022

FIELD DETERMINATION

STREAM FLOW

Type of Flow* ……☒ Ephemeral ☐ Intermittent ☐ Perennial | **Water Present** …. ☐ Yes ☒ No

Flow Direction** (cardinal, ordinal): east

Notes (Source, condition, stream name): stream connects wetland as it flows through culvert beneath US63

STREAM SIZE

Estimated Width at top of bank	5	feet
Estimated Height to top of bank	3	feet
OHWM present	**☒ Yes**	**☐ No**
Estimated Width at OHWM	2	feet
Estimated Height at OHWM	0.5	feet
Evidence of OHWM***		
Clear shoreline	☐ Yes	☒ No
Natural shelving	☐ Yes	☒ No
Natural bank line	☒ Yes	☐ No
Soil change	☒ Yes	☐ No
Vegetation loss	☒ Yes	☐ No
Presence of litter/debris	☒ Yes	☐ No

STREAM QUALITY

Riffles/pools present at stream crossing	☐ Yes	☒ No
Meanders present at stream crossing	☐ Yes	☒ No
Wetlands adjacent to stream crossing	☒ Yes	☐ No

Wetland ID: OC-WET-0001, -0002, and -0003

Substrate: ☐ Bedrock ☐ Boulder ☒ Cobble ☐ Gravel ☒ Clay ☐ Sand ☒ Silt ☒ Muck ☒ Woody ☐ Other**:**

Riparian corridor present at stream crossing	☐ Yes	☒ No
Estimation of corridor width:		feet
Riparian corridor present upstream	☒ Yes	☐ No
Riparian corridor present downstream	☐ Yes	☒ No
Stream within forest stand containing potential bat roost trees	☐ Yes	☒ No

Dominant Vegetation in Channel & Bank: see wetland data forms for OC-WET-0002 and -OC-WET-0003

Notes regarding other characteristics (ex. caving banks, farmed to edge of stream, etc.):

STREAM CHARACTERIZATION FORM

JURISDICTIONAL CHANNEL	☒ Yes	☐ No

OFFICE DETERMINATION

USGS 7.5 minute topographic map

Dashed Blueline – Intermittent	☒ Yes	☐ No
Solid Blueline – Perennial	☐ Yes	☒ No

NWI map

Riverine classification	☒ Yes	☐ No
Adjacent wetlands	☒ Yes	☐ No

Aerial photo (if available)

Riparian corridor shown.....	☐ Yes	☒ No
Evidence of channelization.....	☒ Yes	☐ No

Notes:

*** Stream flows defined**:

Ephemeral stream flows for a short period only after precipitation events and is fed completely by above-ground sources.

Intermittent streams are fed partially by groundwater and will typically run consistently during the wetter times of year (spring to early summer in Midwest) and dry up during the drier times of the year except during and for short durations after substantial rainfall events.

Perennial streams are characterized by continual year-round flow that is fed in large part by groundwater supplemented by surface flows from ephemeral and intermittent tributaries following rainfall events.

**** Flow Direction:** describe the "compass direction of the water flow (north, south, southwest, etc.)

*****OHWM Features Defined**: That line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas. (USACE 2012)

Clear Shoreline:
Natural Shelving:
Natural Bank Line:
Soil Change:
Vegetation Loss:
Presences of Litter/Debris:

STREAM CHARACTERIZATION FORM

Project Name:	Route 63 EIS Re-evaluation	Stream ID:	OC-STR-0011
Project Number:	325222277	Personnel:	RR, CMM
Location/ Station:		Date(m/d/y):	9/15/2022

FIELD DETERMINATION

STREAM FLOW

Type of Flow* ……☒ Ephemeral ☐ Intermittent ☐ Perennial | **Water Present** …. ☐ Yes ☒ No

Flow Direction** (cardinal, ordinal): east

Notes (Source, condition, stream name): culverted stream from US63

STREAM SIZE

Estimated Width at top of bank	4	feet
Estimated Height to top of bank	2	feet
OHWM present	**☒ Yes**	**☐ No**
Estimated Width at OHWM	1	feet
Estimated Height at OHWM	0.5	feet

Evidence of OHWM***

Clear shoreline	☐ Yes	☒ No
Natural shelving	☐ Yes	☒ No
Natural bank line	☒ Yes	☐ No
Soil change	☒ Yes	☐ No
Vegetation loss	☒ Yes	☐ No
Presence of litter/debris	☒ Yes	☐ No

STREAM QUALITY

Riffles/pools present at stream crossing	☐ Yes	☒ No
Meanders present at stream crossing	☐ Yes	☒ No
Wetlands adjacent to stream crossing	☒ Yes	☐ No

Wetland ID: OC-WET-0003

Substrate: ☐ Bedrock ☐ Boulder ☐ Cobble ☐ Gravel ☐ Clay ☒ Sand ☒ Silt ☒ Muck ☐ Woody ☐ Other**:**

Riparian corridor present at stream crossing	☐ Yes	☒ No
Estimation of corridor width:		feet
Riparian corridor present upstream	☐ Yes	☐ No
Riparian corridor present downstream	☒ Yes	☐ No
Stream within forest stand containing potential bat roost trees	☐ Yes	☒ No

Dominant Vegetation in Channel & Bank: see wetland data forms for OC-WET-0002 and -OC-WET-0003

Notes regarding other characteristics (ex. caving banks, farmed to edge of stream, etc.):

STREAM CHARACTERIZATION FORM

JURISDICTIONAL CHANNEL	☒ Yes	☐ No

OFFICE DETERMINATION

USGS 7.5 minute topographic map

Dashed Blueline – Intermittent	☒ Yes	☐ No
Solid Blueline – Perennial	☐ Yes	☒ No

NWI map

Riverine classification	☒ Yes	☐ No
Adjacent wetlands	☒ Yes	☐ No

Aerial photo (if available)

Riparian corridor shown.....	☐ Yes	☒ No
Evidence of channelization.....	☒ Yes	☐ No

Notes:

*** Stream flows defined**:

Ephemeral stream flows for a short period only after precipitation events and is fed completely by above-ground sources.

Intermittent streams are fed partially by groundwater and will typically run consistently during the wetter times of year (spring to early summer in Midwest) and dry up during the drier times of the year except during and for short durations after substantial rainfall events.

Perennial streams are characterized by continual year-round flow that is fed in large part by groundwater supplemented by surface flows from ephemeral and intermittent tributaries following rainfall events.

**** Flow Direction:** describe the "compass direction of the water flow (north, south, southwest, etc.)

*****OHWM Features Defined**: That line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas. (USACE 2012)

Clear Shoreline:
Natural Shelving:
Natural Bank Line:
Soil Change:
Vegetation Loss:
Presences of Litter/Debris:

STREAM CHARACTERIZATION FORM

Project Name:	Route 63 EIS Re-evaluation	Stream ID:	OC-STR-0015
Project Number:	325222277	Personnel:	MLL, CMM
Location/ Station:		Date(m/d/y):	9/27/2022

FIELD DETERMINATION

STREAM FLOW

Type of Flow* ……☒ Ephemeral ☐ Intermittent ☐ Perennial | **Water Present** …. ☐ Yes ☒ No

Flow Direction** (cardinal, ordinal): east

Notes (Source, condition, stream name): narrow, well entrenched stream draining crop fields to west before flowing into OC-STR-0020

STREAM SIZE

Estimated Width at top of bank	5	feet
Estimated Height to top of bank	3	feet
OHWM present	**☒ Yes**	**☐ No**
Estimated Width at OHWM	2	feet
Estimated Height at OHWM	1	feet

Evidence of OHWM***

Clear shoreline	☐ Yes	☒ No
Natural shelving	☐ Yes	☒ No
Natural bank line	☒ Yes	☐ No
Soil change	☐ Yes	☒ No
Vegetation loss	☒ Yes	☐ No
Presence of litter/debris	☐ Yes	☒ No

STREAM QUALITY

Riffles/pools present at stream crossing	☐ Yes	☒ No
Meanders present at stream crossing	☐ Yes	☒ No
Wetlands adjacent to stream crossing	☐ Yes	☒ No

Wetland ID:

Substrate: ☐ Bedrock ☐ Boulder ☐ Cobble ☐ Gravel ☒ Clay ☒ Sand ☒ Silt ☐ Muck ☐ Woody ☐ Other**:**

Riparian corridor present at stream crossing	☒ Yes	☐ No
Estimation of corridor width:	75	feet
Riparian corridor present upstream	☒ Yes	☐ No
Riparian corridor present downstream	☒ Yes	☐ No
Stream within forest stand containing potential bat roost trees	☒ Yes	☐ No

Dominant Vegetation in Channel & Bank: American elm, honeylocust, Virginia rye, bush honeysuckle, coralberry, *Viola* sp. *Persicaria virginiana*

Notes regarding other characteristics (ex. caving banks, farmed to edge of stream, etc.):

STREAM CHARACTERIZATION FORM

JURISDICTIONAL CHANNEL	☒ Yes	☐ No

OFFICE DETERMINATION

USGS 7.5 minute topographic map

Dashed Blueline – Intermittent	☐ Yes	☒ No
Solid Blueline – Perennial	☐ Yes	☒ No

NWI map

Riverine classification	☐ Yes	☒ No
Adjacent wetlands	☐ Yes	☒ No

Aerial photo (if available)

Riparian corridor shown.....	☒ Yes	☐ No
Evidence of channelization.....	☐ Yes	☒ No

Notes:

*** Stream flows defined**:

Ephemeral stream flows for a short period only after precipitation events and is fed completely by above-ground sources.

Intermittent streams are fed partially by groundwater and will typically run consistently during the wetter times of year (spring to early summer in Midwest) and dry up during the drier times of the year except during and for short durations after substantial rainfall events.

Perennial streams are characterized by continual year-round flow that is fed in large part by groundwater supplemented by surface flows from ephemeral and intermittent tributaries following rainfall events.

**** Flow Direction:** describe the "compass direction of the water flow (north, south, southwest, etc.)

*****OHWM Features Defined**: That line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas. (USACE 2012)

Clear Shoreline:
Natural Shelving:
Natural Bank Line:
Soil Change:
Vegetation Loss:
Presences of Litter/Debris:

STREAM CHARACTERIZATION FORM

Project Name:	Route 63 EIS Re-evaluation	Stream ID:	OC-STR-0020
Project Number:	325222277	Personnel:	MLL, CMM
Location/ Station:		Date(m/d/y):	9/27/2022

FIELD DETERMINATION

STREAM FLOW

Type of Flow* ……☐ Ephemeral ☐ Intermittent ☒ Perennial | **Water Present** …. ☒ Yes ☐ No

Flow Direction** (cardinal, ordinal): east

Notes (Source, condition, stream name): broad, shallow grade blueliine stream; channel constricts and becomes more entrenched near culvert under US63

STREAM SIZE

Estimated Width at top of bank	35	feet
Estimated Height to top of bank	6	feet
OHWM present	**☒ Yes**	**☐ No**
Estimated Width at OHWM	20	feet
Estimated Height at OHWM	3	feet
Evidence of OHWM***		
Clear shoreline	☐ Yes	☒ No
Natural shelving	☒ Yes	☐ No
Natural bank line	☒ Yes	☐ No
Soil change	☒ Yes	☐ No
Vegetation loss	☒ Yes	☐ No
Presence of litter/debris	☒ Yes	☐ No

STREAM QUALITY

Riffles/pools present at stream crossing	☒ Yes	☐ No
Meanders present at stream crossing	☒ Yes	☐ No
Wetlands adjacent to stream crossing	☐ Yes	☒ No

Wetland ID:

Substrate: ☐ Bedrock ☒ Boulder ☒ Cobble ☐ Gravel ☐ Clay ☐ Sand ☐ Silt ☐ Muck ☐ Woody ☐ Other**:**

Riparian corridor present at stream crossing	☒ Yes	☐ No
Estimation of corridor width:	~300	feet
Riparian corridor present upstream	☒ Yes	☐ No
Riparian corridor present downstream	☒ Yes	☐ No
Stream within forest stand containing potential bat roost trees	☒ Yes	☐ No

Dominant Vegetation in Channel & Bank: American elm, sycamore, box elder, sugarberry, bush honeysuckle, coralberry, snakeroot

Notes regarding other characteristics (ex. caving banks, farmed to edge of stream, etc.):

STREAM CHARACTERIZATION FORM

JURISDICTIONAL CHANNEL	☒ Yes	☐ No

OFFICE DETERMINATION

USGS 7.5 minute topographic map

Dashed Blueline – Intermittent	☒ Yes	☐ No
Solid Blueline – Perennial	☐ Yes	☒ No

NWI map

Riverine classification	☒ Yes	☐ No
Adjacent wetlands	☐ Yes	☒ No

Aerial photo (if available)

Riparian corridor shown.....	☒ Yes	☐ No
Evidence of channelization.....	☒ Yes	☐ No

Notes:

*** Stream flows defined**:

Ephemeral stream flows for a short period only after precipitation events and is fed completely by above-ground sources.

Intermittent streams are fed partially by groundwater and will typically run consistently during the wetter times of year (spring to early summer in Midwest) and dry up during the drier times of the year except during and for short durations after substantial rainfall events.

Perennial streams are characterized by continual year-round flow that is fed in large part by groundwater supplemented by surface flows from ephemeral and intermittent tributaries following rainfall events.

**** Flow Direction:** describe the "compass direction of the water flow (north, south, southwest, etc.)

*****OHWM Features Defined**: That line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas. (USACE 2012)

Clear Shoreline:
Natural Shelving:
Natural Bank Line:
Soil Change:
Vegetation Loss:
Presences of Litter/Debris:

STREAM CHARACTERIZATION FORM

Project Name:	Route 63 EIS Re-evaluation	Stream ID:	OC-STR-0025a
Project Number:	325222277	Personnel:	MLL, RL
Location/ Station:		Date(m/d/y):	9/14/2022

FIELD DETERMINATION

STREAM FLOW

Type of Flow* ……☐ Ephemeral ☒ Intermittent ☐ Perennial | **Water Present** …. ☒ Yes ☐ No

Flow Direction** (cardinal, ordinal): north

Notes (Source, condition, stream name): intermittent reach of stream – transitions to ephemeral (OC-STR-0025b)

STREAM SIZE

Estimated Width at top of bank	30	feet
Estimated Height to top of bank	20	feet
OHWM present	**☒ Yes**	**☐ No**
Estimated Width at OHWM	5-10	feet
Estimated Height at OHWM	2	feet
Evidence of OHWM***		
Clear shoreline	☐ Yes	☒ No
Natural shelving	☒ Yes	☐ No
Natural bank line	☒ Yes	☐ No
Soil change	☒ Yes	☐ No
Vegetation loss	☒ Yes	☐ No
Presence of litter/debris	☒ Yes	☐ No

STREAM QUALITY

Riffles/pools present at stream crossing	☒ Yes	☐ No
Meanders present at stream crossing	☒ Yes	☐ No
Wetlands adjacent to stream crossing	☐ Yes	☒ No

Wetland ID:

Substrate: ☒ Bedrock ☒ Boulder ☒ Cobble ☐ Gravel ☐ Clay ☐ Sand ☐ Silt ☐ Muck ☒ Woody ☐ Other**:**

Riparian corridor present at stream crossing	☒ Yes	☐ No
Estimation of corridor width:	50	feet
Riparian corridor present upstream	☒ Yes	☐ No
Riparian corridor present downstream	☒ Yes	☐ No
Stream within forest stand containing potential bat roost trees	☒ Yes	☐ No

Dominant Vegetation in Channel & Bank: American elm, honey locust, chinkapin oak, post oak

Notes regarding other characteristics (ex. caving banks, farmed to edge of stream, etc.):

Low water crossing in stream

STREAM CHARACTERIZATION FORM

JURISDICTIONAL CHANNEL	☒ Yes	☐ No

OFFICE DETERMINATION

USGS 7.5 minute topographic map

Dashed Blueline – Intermittent	☒ Yes	☐ No
Solid Blueline – Perennial	☐ Yes	☒ No

NWI map

Riverine classification	☒ Yes	☐ No
Adjacent wetlands	☐ Yes	☒ No

Aerial photo (if available)

Riparian corridor shown.....	☒ Yes	☐ No
Evidence of channelization.....	☒ Yes	☐ No

Notes:

*** Stream flows defined**:

Ephemeral stream flows for a short period only after precipitation events and is fed completely by above-ground sources.

Intermittent streams are fed partially by groundwater and will typically run consistently during the wetter times of year (spring to early summer in Midwest) and dry up during the drier times of the year except during and for short durations after substantial rainfall events.

Perennial streams are characterized by continual year-round flow that is fed in large part by groundwater supplemented by surface flows from ephemeral and intermittent tributaries following rainfall events.

**** Flow Direction:** describe the "compass direction of the water flow (north, south, southwest, etc.)

*****OHWM Features Defined**: That line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas. (USACE 2012)

Clear Shoreline:
Natural Shelving:
Natural Bank Line:
Soil Change:
Vegetation Loss:
Presences of Litter/Debris:

STREAM CHARACTERIZATION FORM

Project Name:	Route 63 EIS Re-evaluation	Stream ID:	OC-STR-0025b
Project Number:	325222277	Personnel:	MLL, RL
Location/ Station:		Date(m/d/y):	9/14/2022

FIELD DETERMINATION

STREAM FLOW

Type of Flow* ……☒ Ephemeral ☐ Intermittent ☐ Perennial | **Water Present** …. ☐ Yes ☒ No

Flow Direction** (cardinal, ordinal): north

Notes (Source, condition, stream name): ephemeral reach of stream – transitions to intermittent (OC-STR-0025a)

STREAM SIZE

Estimated Width at top of bank	25	feet
Estimated Height to top of bank	7	feet
OHWM present	**☒ Yes**	**☐ No**
Estimated Width at OHWM	10	feet
Estimated Height at OHWM	2.5	feet
Evidence of OHWM***		
Clear shoreline	☐ Yes	☒ No
Natural shelving	☒ Yes	☐ No
Natural bank line	☒ Yes	☐ No
Soil change	☒ Yes	☐ No
Vegetation loss	☒ Yes	☐ No
Presence of litter/debris	☒ Yes	☐ No

STREAM QUALITY

Riffles/pools present at stream crossing	☒ Yes	☐ No
Meanders present at stream crossing	☒ Yes	☐ No
Wetlands adjacent to stream crossing	☐ Yes	☒ No

Wetland ID:

Substrate: ☒ Bedrock ☒ Boulder ☒ Cobble ☐ Gravel ☐ Clay ☐ Sand ☐ Silt ☐ Muck ☒ Woody ☐ Other**:**

Riparian corridor present at stream crossing	☒ Yes	☐ No
Estimation of corridor width:	10	feet
Riparian corridor present upstream	☒ Yes	☐ No
Riparian corridor present downstream	☒ Yes	☐ No
Stream within forest stand containing potential bat roost trees	☒ Yes	☐ No

Dominant Vegetation in Channel & Bank: American elm, honey locust, chinkapin oak, post oak

Notes regarding other characteristics (ex. caving banks, farmed to edge of stream, etc.):

STREAM CHARACTERIZATION FORM

JURISDICTIONAL CHANNEL	☒ Yes	☐ No

OFFICE DETERMINATION

USGS 7.5 minute topographic map

Dashed Blueline – Intermittent	☒ Yes	☐ No
Solid Blueline – Perennial	☐ Yes	☒ No

NWI map

Riverine classification	☒ Yes	☐ No
Adjacent wetlands	☐ Yes	☒ No

Aerial photo (if available)

Riparian corridor shown.....	☒ Yes	☐ No
Evidence of channelization.....	☒ Yes	☐ No

Notes:

*** Stream flows defined**:

Ephemeral stream flows for a short period only after precipitation events and is fed completely by above-ground sources.

Intermittent streams are fed partially by groundwater and will typically run consistently during the wetter times of year (spring to early summer in Midwest) and dry up during the drier times of the year except during and for short durations after substantial rainfall events.

Perennial streams are characterized by continual year-round flow that is fed in large part by groundwater supplemented by surface flows from ephemeral and intermittent tributaries following rainfall events.

**** Flow Direction:** describe the "compass direction of the water flow (north, south, southwest, etc.)

*****OHWM Features Defined**: That line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas. (USACE 2012)

Clear Shoreline:
Natural Shelving:
Natural Bank Line:
Soil Change:
Vegetation Loss:
Presences of Litter/Debris:

STREAM CHARACTERIZATION FORM

Project Name:	Route 63 EIS Re-evaluation	Stream ID:	OC-STR-0026
Project Number:	325222277	Personnel:	MLL, CMM
Location/ Station:		Date(m/d/y):	9/27/2022

FIELD DETERMINATION

STREAM FLOW

Type of Flow* ……☒ Ephemeral ☐ Intermittent ☐ Perennial | **Water Present** …. ☐ Yes ☒ No

Flow Direction** (cardinal, ordinal): west

Notes (Source, condition, stream name): small but well-defined stream flowing downhill from east of US63 to OC-STR-0025a

STREAM SIZE

Estimated Width at top of bank	10	feet
Estimated Height to top of bank	4	feet
OHWM present	☒ **Yes**	☐ **No**
Estimated Width at OHWM	4	feet
Estimated Height at OHWM	1	feet
Evidence of OHWM***		
Clear shoreline	☐ Yes	☒ No
Natural shelving	☒ Yes	☐ No
Natural bank line	☒ Yes	☐ No
Soil change	☒ Yes	☐ No
Vegetation loss	☒ Yes	☐ No
Presence of litter/debris	☒ Yes	☐ No

STREAM QUALITY

Riffles/pools present at stream crossing	☐ Yes	☒ No
Meanders present at stream crossing	☐ Yes	☒ No
Wetlands adjacent to stream crossing	☐ Yes	☒ No

Wetland ID:

Substrate: ☐ Bedrock ☐ Boulder ☒ Cobble ☒ Gravel ☐ Clay ☒ Sand ☐ Silt ☐ Muck ☒ Woody ☐ Other**:**

Riparian corridor present at stream crossing	☒ Yes	☐ No
Estimation of corridor width:	30	feet
Riparian corridor present upstream	☒ Yes	☐ No
Riparian corridor present downstream	☒ Yes	☐ No
Stream within forest stand containing potential bat roost trees	☒ Yes	☐ No

Dominant Vegetation in Channel & Bank: American elm, persimmon, shingle oak, sycamore, coralberry, bush honeysuckle

Notes regarding other characteristics (ex. caving banks, farmed to edge of stream, etc.):

Pasture abuts immediately to the north and south

STREAM CHARACTERIZATION FORM

JURISDICTIONAL CHANNEL	☒ Yes	☐ No

OFFICE DETERMINATION

USGS 7.5 minute topographic map		
Dashed Blueline – Intermittent	☐ Yes	☒ No
Solid Blueline – Perennial	☐ Yes	☒ No
NWI map		
Riverine classification	☐ Yes	☒ No
Adjacent wetlands	☐ Yes	☒ No
Aerial photo (if available)		
Riparian corridor shown	☒ Yes	☐ No
Evidence of channelization	☐ Yes	☒ No

Notes:

*** Stream flows defined**:

Ephemeral stream flows for a short period only after precipitation events and is fed completely by above-ground sources.

Intermittent streams are fed partially by groundwater and will typically run consistently during the wetter times of year (spring to early summer in Midwest) and dry up during the drier times of the year except during and for short durations after substantial rainfall events.

Perennial streams are characterized by continual year-round flow that is fed in large part by groundwater supplemented by surface flows from ephemeral and intermittent tributaries following rainfall events.

**** Flow Direction:** describe the "compass direction of the water flow (north, south, southwest, etc.)

*****OHWM Features Defined**: That line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas. (USACE 2012)

Clear Shoreline:
Natural Shelving:
Natural Bank Line:
Soil Change:
Vegetation Loss:
Presences of Litter/Debris:

STREAM CHARACTERIZATION FORM

Project Name:	Route 63 EIS Re-evaluation	Stream ID:	OC-STR-0027
Project Number:	325222277	Personnel:	MLL, CMM
Location/ Station:		Date(m/d/y):	9/27/2022

FIELD DETERMINATION

STREAM FLOW

Type of Flow* ……☒ Ephemeral ☐ Intermittent ☐ Perennial | **Water Present** …. ☐ Yes ☒ No

Flow Direction** (cardinal, ordinal): east

Notes (Source, condition, stream name): well entrenched tributary that drains to OC-STR-0025a

STREAM SIZE

Estimated Width at top of bank	10	feet
Estimated Height to top of bank	5	feet
OHWM present	**☒ Yes**	**☐ No**
Estimated Width at OHWM	4	feet
Estimated Height at OHWM	1	feet
Evidence of OHWM***		
Clear shoreline	☐ Yes	☒ No
Natural shelving	☒ Yes	☐ No
Natural bank line	☒ Yes	☐ No
Soil change	☒ Yes	☐ No
Vegetation loss	☒ Yes	☐ No
Presence of litter/debris	☒ Yes	☐ No

STREAM QUALITY

Riffles/pools present at stream crossing	☐ Yes	☒ No
Meanders present at stream crossing	☒ Yes	☐ No
Wetlands adjacent to stream crossing	☐ Yes	☒ No

Wetland ID:

Substrate: ☒ Bedrock ☒ Boulder ☒ Cobble ☒ Gravel ☐ Clay ☒ Sand ☐ Silt ☐ Muck ☒ Woody ☐ Other**:**

Riparian corridor present at stream crossing	☒ Yes	☐ No
Estimation of corridor width:	~50	feet
Riparian corridor present upstream	☒ Yes	☐ No
Riparian corridor present downstream	☒ Yes	☐ No
Stream within forest stand containing potential bat roost trees	☒ Yes	☒ No

Dominant Vegetation in Channel & Bank: American elm, black walnut, sugarberry, sycamore, coralberry, bush honeysuckle, Virginia creeper

Notes regarding other characteristics (ex. caving banks, farmed to edge of stream, etc.):

STREAM CHARACTERIZATION FORM

JURISDICTIONAL CHANNEL	☒ Yes	☐ No

OFFICE DETERMINATION

USGS 7.5 minute topographic map

Dashed Blueline – Intermittent	☐ Yes	☒ No
Solid Blueline – Perennial	☐ Yes	☒ No

NWI map

Riverine classification	☐ Yes	☒ No
Adjacent wetlands	☐ Yes	☒ No

Aerial photo (if available)

Riparian corridor shown.....	☒ Yes	☐ No
Evidence of channelization.....	☒ Yes	☐ No

Notes:

*** Stream flows defined**:

Ephemeral stream flows for a short period only after precipitation events and is fed completely by above-ground sources.

Intermittent streams are fed partially by groundwater and will typically run consistently during the wetter times of year (spring to early summer in Midwest) and dry up during the drier times of the year except during and for short durations after substantial rainfall events.

Perennial streams are characterized by continual year-round flow that is fed in large part by groundwater supplemented by surface flows from ephemeral and intermittent tributaries following rainfall events.

**** Flow Direction:** describe the "compass direction of the water flow (north, south, southwest, etc.)

*****OHWM Features Defined**: That line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas. (USACE 2012)

Clear Shoreline:
Natural Shelving:
Natural Bank Line:
Soil Change:
Vegetation Loss:
Presences of Litter/Debris:

STREAM CHARACTERIZATION FORM

Project Name:	Route 63 EIS Re-evaluation	Stream ID:	OC-STR-0028
Project Number:	325222277	Personnel:	MLL, CMM, RF, RR, RL
Location/ Station:		Date(m/d/y):	9/14/2022

FIELD DETERMINATION

STREAM FLOW

Type of Flow* ……☐ Ephemeral ☒ Intermittent ☐ Perennial | **Water Present** …. ☒ Yes ☐ No

Flow Direction** (cardinal, ordinal): east

Notes (Source, condition, stream name): spring-fed tributary to OC-STR-0025a with a steep grade and fairly well entrenched; old well house present at start of tributary

STREAM SIZE

Estimated Width at top of bank	30	feet
Estimated Height to top of bank	7	feet
OHWM present	**☒ Yes**	**☐ No**
Estimated Width at OHWM	5	feet
Estimated Height at OHWM	1.5	feet
Evidence of OHWM***		
Clear shoreline	☐ Yes	☒ No
Natural shelving	☒ Yes	☐ No
Natural bank line	☒ Yes	☐ No
Soil change	☒ Yes	☐ No
Vegetation loss	☒ Yes	☐ No
Presence of litter/debris	☐ Yes	☒ No

STREAM QUALITY

Riffles/pools present at stream crossing	☒ Yes	☐ No
Meanders present at stream crossing	☒ Yes	☐ No
Wetlands adjacent to stream crossing	☐ Yes	☒ No

Wetland ID:

Substrate: ☒ Bedrock ☒ Boulder ☒ Cobble ☐ Gravel ☒ Clay ☐ Sand ☐ Silt ☒ Muck ☐ Woody ☐ Other**:**

Riparian corridor present at stream crossing	☒ Yes	☐ No
Estimation of corridor width:	~50	feet
Riparian corridor present upstream	☒ Yes	☐ No
Riparian corridor present downstream	☒ Yes	☐ No
Stream within forest stand containing potential bat roost trees	☒ Yes	☐ No

Dominant Vegetation in Channel & Bank: sugarberry, coralberry, wingstem, black walnut

Notes regarding other characteristics (ex. caving banks, farmed to edge of stream, etc.):

Cattle crossing midway down tributary at which point banks are trampled down

STREAM CHARACTERIZATION FORM

JURISDICTIONAL CHANNEL	☒ Yes	☐ No

OFFICE DETERMINATION

USGS 7.5 minute topographic map		
Dashed Blueline – Intermittent	☐ Yes	☒ No
Solid Blueline – Perennial	☐ Yes	☒ No
NWI map		
Riverine classification	☐ Yes	☒ No
Adjacent wetlands	☐ Yes	☒ No
Aerial photo (if available)		
Riparian corridor shown	☒ Yes	☐ No
Evidence of channelization	☒ Yes	☐ No

Notes:

*** Stream flows defined**:

Ephemeral stream flows for a short period only after precipitation events and is fed completely by above-ground sources.

Intermittent streams are fed partially by groundwater and will typically run consistently during the wetter times of year (spring to early summer in Midwest) and dry up during the drier times of the year except during and for short durations after substantial rainfall events.

Perennial streams are characterized by continual year-round flow that is fed in large part by groundwater supplemented by surface flows from ephemeral and intermittent tributaries following rainfall events.

**** Flow Direction:** describe the "compass direction of the water flow (north, south, southwest, etc.)

*****OHWM Features Defined**: That line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas. (USACE 2012)

Clear Shoreline:
Natural Shelving:
Natural Bank Line:
Soil Change:
Vegetation Loss:
Presences of Litter/Debris:

STREAM CHARACTERIZATION FORM

Project Name:	Route 63 EIS Re-evaluation	Stream ID:	OC-STR-0030
Project Number:	325222277	Personnel:	MLL, CMM
Location/ Station:		Date(m/d/y):	9/27/2022

FIELD DETERMINATION

STREAM FLOW

Type of Flow* ……☒ Ephemeral ☐ Intermittent ☐ Perennial | **Water Present** …. ☐ Yes ☒ No

Flow Direction** (cardinal, ordinal): north

Notes (Source, condition, stream name): narrow, shallow-bedded stream which broadens at its confluence with OC-STR-0025a

STREAM SIZE

Estimated Width at top of bank	7	feet
Estimated Height to top of bank	3	feet
OHWM present	**☒ Yes**	**☐ No**
Estimated Width at OHWM	5	feet
Estimated Height at OHWM	1	feet

Evidence of OHWM***

Clear shoreline		☐ Yes	☒ No
Natural shelving		☒ Yes	☐ No
Natural bank line		☒ Yes	☐ No
Soil change		☒ Yes	☐ No
Vegetation loss	partly	☒ Yes	☐ No
Presence of litter/debris		☐ Yes	☒ No

STREAM QUALITY

Riffles/pools present at stream crossing	☒ Yes	☐ No
Meanders present at stream crossing	☒ Yes	☐ No
Wetlands adjacent to stream crossing	☐ Yes	☒ No

Wetland ID:

Substrate: ☐ Bedrock ☒ Boulder ☒ Cobble ☒ Gravel ☐ Clay ☒ Sand ☐ Silt ☐ Muck ☒ Woody ☐ Other**:**

Riparian corridor present at stream crossing	☒ Yes	☐ No
Estimation of corridor width:	~75	feet
Riparian corridor present upstream	☒ Yes	☐ No
Riparian corridor present downstream	☒ Yes	☐ No
Stream within forest stand containing potential bat roost trees	☒ Yes	☐ No

Dominant Vegetation in Channel & Bank: sugarberry, red cedar, pecan, American elm, multiflora rose

Notes regarding other characteristics (ex. caving banks, farmed to edge of stream, etc.):

STREAM CHARACTERIZATION FORM

JURISDICTIONAL CHANNEL	☒ Yes	☐ No

OFFICE DETERMINATION

USGS 7.5 minute topographic map		
Dashed Blueline – Intermittent	☒ Yes	☐ No
Solid Blueline – Perennial	☐ Yes	☒ No
NWI map		
Riverine classification	☒ Yes	☐ No
Adjacent wetlands	☒ Yes	☐ No
Aerial photo (if available)		
Riparian corridor shown	☒ Yes	☐ No
Evidence of channelization	☒ Yes	☐ No

Notes:

*** Stream flows defined**:

Ephemeral stream flows for a short period only after precipitation events and is fed completely by above-ground sources.

Intermittent streams are fed partially by groundwater and will typically run consistently during the wetter times of year (spring to early summer in Midwest) and dry up during the drier times of the year except during and for short durations after substantial rainfall events.

Perennial streams are characterized by continual year-round flow that is fed in large part by groundwater supplemented by surface flows from ephemeral and intermittent tributaries following rainfall events.

**** Flow Direction:** describe the "compass direction of the water flow (north, south, southwest, etc.)

*****OHWM Features Defined**: That line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas. (USACE 2012)

Clear Shoreline:
Natural Shelving:
Natural Bank Line:
Soil Change:
Vegetation Loss:
Presences of Litter/Debris:

STREAM CHARACTERIZATION FORM

Project Name:	Route 63 EIS Re-evaluation	Stream ID:	OC-STR-0040
Project Number:	325222277	Personnel:	MLL, CMM
Location/ Station:		Date(m/d/y):	9/27/2022

FIELD DETERMINATION

STREAM FLOW

Type of Flow* ……☒ Ephemeral ☐ Intermittent ☐ Perennial | **Water Present** …. ☐ Yes ☒ No

Flow Direction** (cardinal, ordinal): east

Notes (Source, condition, stream name): narrow, winding bed that drains to OC-STR-0025a

STREAM SIZE

Estimated Width at top of bank	5	feet
Estimated Height to top of bank	2	feet
OHWM present	**☒ Yes**	**☐ No**
Estimated Width at OHWM	3	feet
Estimated Height at OHWM	.5	feet

Evidence of OHWM***

Clear shoreline	☐ Yes	☒ No
Natural shelving	☒ Yes	☐ No
Natural bank line	☒ Yes	☐ No
Soil change	☒ Yes	☐ No
Vegetation loss	☒ Yes	☐ No
Presence of litter/debris	☐ Yes	☒ No

STREAM QUALITY

Riffles/pools present at stream crossing	☒ Yes	☐ No
Meanders present at stream crossing	☒ Yes	☐ No
Wetlands adjacent to stream crossing	☐ Yes	☒ No

Wetland ID:

Substrate: ☐ Bedrock ☒ Boulder ☒ Cobble ☒ Gravel ☐ Clay ☒ Sand ☐ Silt ☐ Muck ☒ Woody ☐ Other**:**

Riparian corridor present at stream crossing	☒ Yes	☐ No
Estimation of corridor width:	~50	feet
Riparian corridor present upstream	☒ Yes	☐ No
Riparian corridor present downstream	☒ Yes	☐ No
Stream within forest stand containing potential bat roost trees	☒ Yes	☐ No

Dominant Vegetation in Channel & Bank: sycamore, sugarberry, coralberry, bush honeysuckle, snakeroot

Notes regarding other characteristics (ex. caving banks, farmed to edge of stream, etc.):

STREAM CHARACTERIZATION FORM

JURISDICTIONAL CHANNEL	☒ Yes	☐ No

OFFICE DETERMINATION

USGS 7.5 minute topographic map

Dashed Blueline – Intermittent	☐ Yes	☒ No
Solid Blueline – Perennial	☐ Yes	☒ No

NWI map

Riverine classification	☐ Yes	☒ No
Adjacent wetlands	☐ Yes	☒ No

Aerial photo (if available)

Riparian corridor shown.....	☒ Yes	☐ No
Evidence of channelization.....	☒ Yes	☐ No

Notes:

*** Stream flows defined**:

Ephemeral stream flows for a short period only after precipitation events and is fed completely by above-ground sources.

Intermittent streams are fed partially by groundwater and will typically run consistently during the wetter times of year (spring to early summer in Midwest) and dry up during the drier times of the year except during and for short durations after substantial rainfall events.

Perennial streams are characterized by continual year-round flow that is fed in large part by groundwater supplemented by surface flows from ephemeral and intermittent tributaries following rainfall events.

**** Flow Direction:** describe the "compass direction of the water flow (north, south, southwest, etc.)

*****OHWM Features Defined**: That line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas. (USACE 2012)

Clear Shoreline:
Natural Shelving:
Natural Bank Line:
Soil Change:
Vegetation Loss:
Presences of Litter/Debris:

STREAM CHARACTERIZATION FORM

Project Name:	Route 63 EIS Re-evaluation	Stream ID:	OC-STR-0050
Project Number:	325222277	Personnel:	RR, CMM
Location/ Station:		Date(m/d/y):	9/16/2022

FIELD DETERMINATION

STREAM FLOW

Type of Flow* ……☒ Ephemeral ☐ Intermittent ☐ Perennial | **Water Present** …. ☐ Yes ☒ No

Flow Direction** (cardinal, ordinal): northeast

Notes (Source, condition, stream name): defined bed and bank begin in low narrow valley

STREAM SIZE

Estimated Width at top of bank	10	feet
Estimated Height to top of bank	3.5	feet
OHWM present	☒ **Yes**	☐ **No**
Estimated Width at OHWM	2	feet
Estimated Height at OHWM	.5	feet

Evidence of OHWM***

Clear shoreline	☐ Yes	☒ No
Natural shelving	☒ Yes	☐ No
Natural bank line	☒ Yes	☐ No
Soil change	☐ Yes	☒ No
Vegetation loss	☒ Yes	☐ No
Presence of litter/debris	☐ Yes	☒ No

STREAM QUALITY

Riffles/pools present at stream crossing	☐ Yes	☒ No
Meanders present at stream crossing	☐ Yes	☒ No
Wetlands adjacent to stream crossing	☐ Yes	☒ No

Wetland ID:

Substrate: ☐ Bedrock ☐ Boulder ☐ Cobble ☐ Gravel ☒ Clay ☒ Sand ☐ Silt ☐ Muck ☐ Woody ☐ Other**:**

Riparian corridor present at stream crossing	☒ Yes	☐ No
Estimation of corridor width:	~50	feet
Riparian corridor present upstream	☒ Yes	☐ No
Riparian corridor present downstream	☒ Yes	☐ No
Stream within forest stand containing potential bat roost trees	☒ Yes	☐ No

Dominant Vegetation in Channel & Bank: cottonwood, red cedar, goldenrod, ragweed, cockle bur

Notes regarding other characteristics (ex. caving banks, farmed to edge of stream, etc.):

STREAM CHARACTERIZATION FORM

JURISDICTIONAL CHANNEL	**☒ Yes**	**☐ No**

OFFICE DETERMINATION

USGS 7.5 minute topographic map

Dashed Blueline – Intermittent	☒ Yes	☐ No
Solid Blueline – Perennial	☐ Yes	☒ No

NWI map

Riverine classification	☒ Yes	☐ No
Adjacent wetlands	☐ Yes	☒ No

Aerial photo (if available)

Riparian corridor shown.....	☒ Yes	☐ No
Evidence of channelization.....	☒ Yes	☐ No

Notes:

*** Stream flows defined**:

Ephemeral stream flows for a short period only after precipitation events and is fed completely by above-ground sources.

Intermittent streams are fed partially by groundwater and will typically run consistently during the wetter times of year (spring to early summer in Midwest) and dry up during the drier times of the year except during and for short durations after substantial rainfall events.

Perennial streams are characterized by continual year-round flow that is fed in large part by groundwater supplemented by surface flows from ephemeral and intermittent tributaries following rainfall events.

**** Flow Direction:** describe the "compass direction of the water flow (north, south, southwest, etc.)

*****OHWM Features Defined**: That line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas. (USACE 2012)

Clear Shoreline:
Natural Shelving:
Natural Bank Line:
Soil Change:
Vegetation Loss:
Presences of Litter/Debris:

STREAM CHARACTERIZATION FORM

Project Name:	Route 63 EIS Re-evaluation	Stream ID:	OC-STR-0060
Project Number:	325222277	Personnel:	RR, CMM
Location/ Station:		Date(m/d/y):	9/16/2022

FIELD DETERMINATION

STREAM FLOW

Type of Flow* ……☒ Ephemeral ☐ Intermittent ☐ Perennial | **Water Present** …. ☐ Yes ☒ No

Flow Direction** (cardinal, ordinal): west

Notes (Source, condition, stream name): rocky, poorly defined high gradient stream flowing to pond, OC-OW-0040

STREAM SIZE

Estimated Width at top of bank	15	feet
Estimated Height to top of bank	3	feet
OHWM present	☒ **Yes**	☐ **No**
Estimated Width at OHWM	2	feet
Estimated Height at OHWM	.5	feet
Evidence of OHWM***		
Clear shoreline	☐ Yes	☒ No
Natural shelving	☒ Yes	☐ No
Natural bank line	☒ Yes	☐ No
Soil change	☒ Yes	☐ No
Vegetation loss	☒ Yes	☐ No
Presence of litter/debris	☒ Yes	☐ No

STREAM QUALITY

Riffles/pools present at stream crossing	☒ Yes	☐ No
Meanders present at stream crossing	☒ Yes	☐ No
Wetlands adjacent to stream crossing	☐ Yes	☒ No

Wetland ID:

Substrate: ☒ Bedrock ☒ Boulder ☒ Cobble ☒ Gravel ☐ Clay ☒ Sand ☐ Silt ☐ Muck ☐ Woody ☐ Other**:**

Riparian corridor present at stream crossing	☒ Yes	☐ No
Estimation of corridor width:	>100	feet
Riparian corridor present upstream	☒ Yes	☐ No
Riparian corridor present downstream	☒ Yes	☐ No
Stream within forest stand containing potential bat roost trees	☒ Yes	☐ No

Dominant Vegetation in Channel & Bank: chinkapin oak, red cedar, sycamore, sugarberry

Notes regarding other characteristics (ex. caving banks, farmed to edge of stream, etc.):

STREAM CHARACTERIZATION FORM

JURISDICTIONAL CHANNEL	☒ Yes	☐ No

OFFICE DETERMINATION

USGS 7.5 minute topographic map		
Dashed Blueline – Intermittent	☐ Yes	☒ No
Solid Blueline – Perennial	☐ Yes	☒ No
NWI map		
Riverine classification	☐ Yes	☒ No
Adjacent wetlands	☐ Yes	☒ No
Aerial photo (if available)		
Riparian corridor shown	☒ Yes	☐ No
Evidence of channelization	☐ Yes	☒ No

Notes:

*** Stream flows defined**:

Ephemeral stream flows for a short period only after precipitation events and is fed completely by above-ground sources.

Intermittent streams are fed partially by groundwater and will typically run consistently during the wetter times of year (spring to early summer in Midwest) and dry up during the drier times of the year except during and for short durations after substantial rainfall events.

Perennial streams are characterized by continual year-round flow that is fed in large part by groundwater supplemented by surface flows from ephemeral and intermittent tributaries following rainfall events.

**** Flow Direction:** describe the "compass direction of the water flow (north, south, southwest, etc.)

*****OHWM Features Defined**: That line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas. (USACE 2012)

Clear Shoreline:
Natural Shelving:
Natural Bank Line:
Soil Change:
Vegetation Loss:
Presences of Litter/Debris:

STREAM CHARACTERIZATION FORM

Project Name:	Route 63 EIS Re-evaluation	Stream ID:	OC-STR-0070
Project Number:	325222277	Personnel:	RR, CMM
Location/ Station:		Date(m/d/y):	9/16/2022

FIELD DETERMINATION

STREAM FLOW

Type of Flow* ……☐ Ephemeral ☒ Intermittent ☐ Perennial | **Water Present** …. ☒ Yes ☐ No

Flow Direction** (cardinal, ordinal): northwest

Notes (Source, condition, stream name): fairly well incised stream flowing down significant grade hillslope. Water is deeper pools; potentially spring fed; flows to OC-STR-0080

STREAM SIZE

Estimated Width at top of bank	30	feet
Estimated Height to top of bank	5	feet
OHWM present	**☒ Yes**	**☐ No**
Estimated Width at OHWM	3	feet
Estimated Height at OHWM	1	feet

Evidence of OHWM***

Clear shoreline	☐ Yes	☒ No
Natural shelving	☒ Yes	☐ No
Natural bank line	☒ Yes	☐ No
Soil change	☒ Yes	☐ No
Vegetation loss	☐ Yes	☒ No
Presence of litter/debris	☒ Yes	☐ No

STREAM QUALITY

Riffles/pools present at stream crossing	☒ Yes	☐ No
Meanders present at stream crossing	☒ Yes	☐ No
Wetlands adjacent to stream crossing	☐ Yes	☒ No

Wetland ID:

Substrate: ☐ Bedrock ☒ Boulder ☒ Cobble ☒ Gravel ☐ Clay ☒ Sand ☐ Silt ☐ Muck ☐ Woody ☒ Other: leaf litter

Riparian corridor present at stream crossing	☒ Yes	☐ No
Estimation of corridor width:	>100	feet
Riparian corridor present upstream	☒ Yes	☐ No
Riparian corridor present downstream	☒ Yes	☐ No
Stream within forest stand containing potential bat roost trees	☒ Yes	☐ No

Dominant Vegetation in Channel & Bank: sycamore, red cedar, American hophornbeam, black locust, persimmon

Notes regarding other characteristics (ex. caving banks, farmed to edge of stream, etc.):

STREAM CHARACTERIZATION FORM

JURISDICTIONAL CHANNEL	☒ Yes	☐ No

OFFICE DETERMINATION

USGS 7.5 minute topographic map

Dashed Blueline – Intermittent	☐ Yes	☒ No
Solid Blueline – Perennial	☐ Yes	☒ No

NWI map

Riverine classification	☐ Yes	☒ No
Adjacent wetlands	☐ Yes	☒ No

Aerial photo (if available)

Riparian corridor shown.....	☒ Yes	☐ No
Evidence of channelization.....	☒ Yes	☐ No

Notes:

*** Stream flows defined**:

Ephemeral stream flows for a short period only after precipitation events and is fed completely by above-ground sources.

Intermittent streams are fed partially by groundwater and will typically run consistently during the wetter times of year (spring to early summer in Midwest) and dry up during the drier times of the year except during and for short durations after substantial rainfall events.

Perennial streams are characterized by continual year-round flow that is fed in large part by groundwater supplemented by surface flows from ephemeral and intermittent tributaries following rainfall events.

**** Flow Direction:** describe the "compass direction of the water flow (north, south, southwest, etc.)

*****OHWM Features Defined**: That line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas. (USACE 2012)

Clear Shoreline:
Natural Shelving:
Natural Bank Line:
Soil Change:
Vegetation Loss:
Presences of Litter/Debris:

STREAM CHARACTERIZATION FORM

Project Name:	Route 63 EIS Re-evaluation	Stream ID:	OC-STR-0080
Project Number:	325222277	Personnel:	RR, CMM
Location/ Station:		Date(m/d/y):	9/16/2022

FIELD DETERMINATION

STREAM FLOW

Type of Flow* ……☐ Ephemeral ☒ Intermittent ☐ Perennial | **Water Present** …. ☒ Yes ☐ No

Flow Direction** (cardinal, ordinal): northwest

Notes (Source, condition, stream name): fairly low grade, broad stream channel with water in deeper pools; impounded for pond, OC-STR-0080

STREAM SIZE

Estimated Width at top of bank	25	feet
Estimated Height to top of bank	2.5	feet
OHWM present	**☒ Yes**	**☐ No**
Estimated Width at OHWM	8	feet
Estimated Height at OHWM	1	feet
Evidence of OHWM***		
Clear shoreline	☐ Yes	☒ No
Natural shelving	☒ Yes	☐ No
Natural bank line	☒ Yes	☐ No
Soil change	☒ Yes	☐ No
Vegetation loss	☒ Yes	☐ No
Presence of litter/debris	☒ Yes	☐ No

STREAM QUALITY

Riffles/pools present at stream crossing	☒ Yes	☐ No
Meanders present at stream crossing	☒ Yes	☐ No
Wetlands adjacent to stream crossing	☐ Yes	☒ No

Wetland ID:

Substrate: ☐ Bedrock ☒ Boulder ☒ Cobble ☒ Gravel ☒ Clay ☒ Sand ☒ Silt ☒ Muck ☐ Woody ☐ Other:

Riparian corridor present at stream crossing	☒ Yes	☐ No
Estimation of corridor width:	>100	feet
Riparian corridor present upstream	☒ Yes	☐ No
Riparian corridor present downstream	☒ Yes	☐ No
Stream within forest stand containing potential bat roost trees	☒ Yes	☐ No

Dominant Vegetation in Channel & Bank: sycamore, American elm, black walnut, red cedar, multiflora roase, *Pericaria punctata*

Notes regarding other characteristics (ex. caving banks, farmed to edge of stream, etc.):

Cattle-trampled banks

STREAM CHARACTERIZATION FORM

JURISDICTIONAL CHANNEL	☒ Yes	☐ No

OFFICE DETERMINATION

USGS 7.5 minute topographic map

Dashed Blueline – Intermittent	☐ Yes	☒ No
Solid Blueline – Perennial	☐ Yes	☒ No

NWI map

Riverine classification	☒ Yes	☐ No
Adjacent wetlands	☐ Yes	☒ No

Aerial photo (if available)

Riparian corridor shown.....	☒ Yes	☐ No
Evidence of channelization.....	☒ Yes	☐ No

Notes:

*** Stream flows defined**:

Ephemeral stream flows for a short period only after precipitation events and is fed completely by above-ground sources.

Intermittent streams are fed partially by groundwater and will typically run consistently during the wetter times of year (spring to early summer in Midwest) and dry up during the drier times of the year except during and for short durations after substantial rainfall events.

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**** Flow Direction:** describe the "compass direction of the water flow (north, south, southwest, etc.)

*****OHWM Features Defined**: That line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas. (USACE 2012)

Clear Shoreline:
Natural Shelving:
Natural Bank Line:
Soil Change:
Vegetation Loss:
Presences of Litter/Debris:

STREAM CHARACTERIZATION FORM

Project Name:	Route 63 EIS Re-evaluation	Stream ID:	OC-STR-0090
Project Number:	325222277	Personnel:	MLL, CMM
Location/ Station:		Date(m/d/y):	9/27/2022

FIELD DETERMINATION

STREAM FLOW

Type of Flow* ……☐ Ephemeral ☒ Intermittent ☐ Perennial | **Water Present** …. ☒ Yes ☐ No

Flow Direction** (cardinal, ordinal): west

Notes (Source, condition, stream name): bedrock bed; well entrenched and fairly broad; flows through fairly deep valley

STREAM SIZE

Estimated Width at top of bank	20	feet
Estimated Height to top of bank	4	feet
OHWM present	**☒ Yes**	**☐ No**
Estimated Width at OHWM	10	feet
Estimated Height at OHWM	1	feet
Evidence of OHWM***		
Clear shoreline	☐ Yes	☒ No
Natural shelving	☒ Yes	☐ No
Natural bank line	☒ Yes	☐ No
Soil change	☒ Yes	☐ No
Vegetation loss	☒ Yes	☐ No
Presence of litter/debris	☒ Yes	☐ No

STREAM QUALITY

Riffles/pools present at stream crossing	☒ Yes	☐ No
Meanders present at stream crossing	☒ Yes	☐ No
Wetlands adjacent to stream crossing	☐ Yes	☒ No

Wetland ID:

Substrate: ☒ Bedrock ☐ Boulder ☒ Cobble ☒ Gravel ☐ Clay ☒ Sand ☐ Silt ☒ Muck ☐ Woody ☐ Other:

Riparian corridor present at stream crossing	☒ Yes	☐ No
Estimation of corridor width:	>50	feet
Riparian corridor present upstream	☒ Yes	☐ No
Riparian corridor present downstream	☒ Yes	☐ No
Stream within forest stand containing potential bat roost trees	☐ Yes	☒ No

Dominant Vegetation in Channel & Bank: sugarberry, bush honeysuckle, red cedar, *Quercus shumardi*

Notes regarding other characteristics (ex. caving banks, farmed to edge of stream, etc.):

Instream cattle damage; pasture immediately adjacent to the south

STREAM CHARACTERIZATION FORM

JURISDICTIONAL CHANNEL	☒ Yes	☐ No

OFFICE DETERMINATION

USGS 7.5 minute topographic map

Dashed Blueline – Intermittent	☒ Yes	☐ No
Solid Blueline – Perennial	☐ Yes	☒ No

NWI map

Riverine classification	☒ Yes	☐ No
Adjacent wetlands	☐ Yes	☒ No

Aerial photo (if available)

Riparian corridor shown.....	☒ Yes	☐ No
Evidence of channelization.....	☒ Yes	☐ No

Notes:

*** Stream flows defined**:

Ephemeral stream flows for a short period only after precipitation events and is fed completely by above-ground sources.

Intermittent streams are fed partially by groundwater and will typically run consistently during the wetter times of year (spring to early summer in Midwest) and dry up during the drier times of the year except during and for short durations after substantial rainfall events.

Perennial streams are characterized by continual year-round flow that is fed in large part by groundwater supplemented by surface flows from ephemeral and intermittent tributaries following rainfall events.

**** Flow Direction:** describe the "compass direction of the water flow (north, south, southwest, etc.)

*****OHWM Features Defined**: That line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas. (USACE 2012)

Clear Shoreline:
Natural Shelving:
Natural Bank Line:
Soil Change:
Vegetation Loss:
Presences of Litter/Debris:

STREAM CHARACTERIZATION FORM

Project Name:	Route 63 EIS Re-evaluation	Stream ID:	OC-STR-0100
Project Number:	325222277	Personnel:	MLL, RF
Location/ Station:		Date(m/d/y):	9/16/2022

FIELD DETERMINATION

STREAM FLOW

Type of Flow* ……☐ Ephemeral ☒ Intermittent ☐ Perennial | **Water Present** …. ☐ Yes ☒ No

Flow Direction** (cardinal, ordinal): north

Notes (Source, condition, stream name): dry – some water near cow pasture and pools made from cattle trampling

STREAM SIZE

Estimated Width at top of bank	16	feet
Estimated Height to top of bank	3	feet
OHWM present	**☒ Yes**	**☐ No**
Estimated Width at OHWM	5	feet
Estimated Height at OHWM	1	feet
Evidence of OHWM***		
Clear shoreline	☐ Yes	☒ No
Natural shelving	☒ Yes	☐ No
Natural bank line	☒ Yes	☐ No
Soil change	☒ Yes	☐ No
Vegetation loss	☒ Yes	☐ No
Presence of litter/debris	☒ Yes	☐ No

STREAM QUALITY

Riffles/pools present at stream crossing	☒ Yes	☐ No
Meanders present at stream crossing	☒ Yes	☐ No
Wetlands adjacent to stream crossing	☐ Yes	☒ No

Wetland ID:

Substrate: ☒ Bedrock ☐ Boulder ☒ Cobble ☒ Gravel ☐ Clay ☒ Sand ☐ Silt ☒ Muck ☐ Woody ☐ Other:

Riparian corridor present at stream crossing	☒ Yes	☐ No
Estimation of corridor width:	0 - >100	feet
Riparian corridor present upstream	☒ Yes	☐ No
Riparian corridor present downstream	☒ Yes	☐ No
Stream within forest stand containing potential bat roost trees	☒ Yes	☐ No

Dominant Vegetation in Channel & Bank: goldenrod, red cedar, sycamore, hackberry, black walnut, greenbriar, Japanese honeysuckle

Notes regarding other characteristics (ex. caving banks, farmed to edge of stream, etc.):

STREAM CHARACTERIZATION FORM

JURISDICTIONAL CHANNEL	☒ Yes	☐ No

OFFICE DETERMINATION

USGS 7.5 minute topographic map

Dashed Blueline – Intermittent	☒ Yes	☐ No
Solid Blueline – Perennial	☐ Yes	☒ No

NWI map

Riverine classification	☒ Yes	☐ No
Adjacent wetlands	☐ Yes	☒ No

Aerial photo (if available)

Riparian corridor shown.....	☒ Yes	☐ No
Evidence of channelization.....	☒ Yes	☐ No

Notes:

*** Stream flows defined**:

Ephemeral stream flows for a short period only after precipitation events and is fed completely by above-ground sources.

Intermittent streams are fed partially by groundwater and will typically run consistently during the wetter times of year (spring to early summer in Midwest) and dry up during the drier times of the year except during and for short durations after substantial rainfall events.

Perennial streams are characterized by continual year-round flow that is fed in large part by groundwater supplemented by surface flows from ephemeral and intermittent tributaries following rainfall events.

**** Flow Direction:** describe the "compass direction of the water flow (north, south, southwest, etc.)

*****OHWM Features Defined**: That line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas. (USACE 2012)

Clear Shoreline:
Natural Shelving:
Natural Bank Line:
Soil Change:
Vegetation Loss:
Presences of Litter/Debris:

STREAM CHARACTERIZATION FORM

Project Name:	Route 63 EIS Re-evaluation	Stream ID:	OC-STR-0110
Project Number:	325222277	Personnel:	MLL, RF
Location/ Station:		Date(m/d/y):	9/15/2022

FIELD DETERMINATION

STREAM FLOW

Type of Flow* ……☒ Ephemeral ☐ Intermittent ☐ Perennial | **Water Present** …. ☐ Yes ☒ No

Flow Direction** (cardinal, ordinal): west

Notes (Source, condition, stream name): drains from OC-OW-0080 to OC-STR-0120 off site

STREAM SIZE

Estimated Width at top of bank	6	feet
Estimated Height to top of bank	3	feet
OHWM present	☒ **Yes**	☐ **No**
Estimated Width at OHWM	2	feet
Estimated Height at OHWM	0.5	feet
Evidence of OHWM***		
Clear shoreline	☐ Yes	☒ No
Natural shelving	☐ Yes	☒ No
Natural bank line	☒ Yes	☐ No
Soil change	☐ Yes	☒ No
Vegetation loss	☒ Yes	☐ No
Presence of litter/debris	☒ Yes	☐ No

STREAM QUALITY

Riffles/pools present at stream crossing	☐ Yes	☒ No
Meanders present at stream crossing	☒ Yes	☐ No
Wetlands adjacent to stream crossing	☐ Yes	☒ No

Wetland ID:

Substrate: ☐ Bedrock ☐ Boulder ☐ Cobble ☐ Gravel ☒ Clay ☐ Sand ☒ Silt ☐ Muck ☒ Woody ☐ Other:

Riparian corridor present at stream crossing	☒ Yes	☐ No
Estimation of corridor width:	0 - 40	feet
Riparian corridor present upstream	☒ Yes	☐ No
Riparian corridor present downstream	☒ Yes	☐ No
Stream within forest stand containing potential bat roost trees	☒ Yes	☐ No

Dominant Vegetation in Channel & Bank: black walnut, Virginia wildrye, Bidens frondose, Persicaria amphibia, Canadian wood nettle, coralberry, Japanese and bush honeysuckle

Notes regarding other characteristics (ex. caving banks, farmed to edge of stream, etc.):

STREAM CHARACTERIZATION FORM

JURISDICTIONAL CHANNEL	☒ Yes	☐ No

OFFICE DETERMINATION

USGS 7.5 minute topographic map		
Dashed Blueline – Intermittent	☐ Yes	☒ No
Solid Blueline – Perennial	☐ Yes	☒ No
NWI map		
Riverine classification	☐ Yes	☒ No
Adjacent wetlands	☐ Yes	☒ No
Aerial photo (if available)		
Riparian corridor shown	☒ Yes	☐ No
Evidence of channelization	☒ Yes	☐ No

Notes:

*** Stream flows defined**:

Ephemeral stream flows for a short period only after precipitation events and is fed completely by above-ground sources.

Intermittent streams are fed partially by groundwater and will typically run consistently during the wetter times of year (spring to early summer in Midwest) and dry up during the drier times of the year except during and for short durations after substantial rainfall events.

Perennial streams are characterized by continual year-round flow that is fed in large part by groundwater supplemented by surface flows from ephemeral and intermittent tributaries following rainfall events.

**** Flow Direction:** describe the "compass direction of the water flow (north, south, southwest, etc.)

*****OHWM Features Defined**: That line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas. (USACE 2012)

Clear Shoreline:
Natural Shelving:
Natural Bank Line:
Soil Change:
Vegetation Loss:
Presences of Litter/Debris:

STREAM CHARACTERIZATION FORM

Project Name:	Route 63 EIS Re-evaluation	Stream ID:	OC-STR-0120
Project Number:	325222277	Personnel:	CMM, RR, RF, MLL
Location/ Station:		Date(m/d/y):	9/15/2022

FIELD DETERMINATION

STREAM FLOW

Type of Flow* ……☐ Ephemeral ☒ Intermittent ☐ Perennial | **Water Present** …. ☒ Yes ☐ No

Flow Direction** (cardinal, ordinal): east

Notes (Source, condition, stream name): blueline stream flowing through two pastures; narrow riparian corridor; well entrenched bed

STREAM SIZE

Estimated Width at top of bank	20	feet
Estimated Height to top of bank	5	feet
OHWM present	**☒ Yes**	**☐ No**
Estimated Width at OHWM	10	feet
Estimated Height at OHWM	1.5	feet
Evidence of OHWM***		
Clear shoreline	☐ Yes	☒ No
Natural shelving	☒ Yes	☐ No
Natural bank line	☒ Yes	☐ No
Soil change	☒ Yes	☐ No
Vegetation loss	☒ Yes	☐ No
Presence of litter/debris	☒ Yes	☐ No

STREAM QUALITY

Riffles/pools present at stream crossing	☒ Yes	☐ No
Meanders present at stream crossing	☐ Yes	☒ No
Wetlands adjacent to stream crossing	☐ Yes	☒ No

Wetland ID:

Substrate: ☐ Bedrock ☒ Boulder ☒ Cobble ☒ Gravel ☒ Clay ☒ Sand ☒ Silt ☐ Muck ☒ Woody ☐ Other:

Riparian corridor present at stream crossing	☒ Yes	☐ No
Estimation of corridor width:	75	feet
Riparian corridor present upstream	☒ Yes	☐ No
Riparian corridor present downstream	☒ Yes	☐ No
Stream within forest stand containing potential bat roost trees	☒ Yes	☐ No

Dominant Vegetation in Channel & Bank: honey locust, black walnut, sugarberry, box elder, multiflora rose

Notes regarding other characteristics (ex. caving banks, farmed to edge of stream, etc.):

STREAM CHARACTERIZATION FORM

JURISDICTIONAL CHANNEL	☒ Yes	☐ No

OFFICE DETERMINATION

USGS 7.5 minute topographic map

Dashed Blueline – Intermittent	☒ Yes	☐ No
Solid Blueline – Perennial	☐ Yes	☒ No

NWI map

Riverine classification	☒ Yes	☐ No
Adjacent wetlands	☐ Yes	☒ No

Aerial photo (if available)

Riparian corridor shown.....	☒ Yes	☐ No
Evidence of channelization.....	☒ Yes	☐ No

Notes:

*** Stream flows defined**:

Ephemeral stream flows for a short period only after precipitation events and is fed completely by above-ground sources.

Intermittent streams are fed partially by groundwater and will typically run consistently during the wetter times of year (spring to early summer in Midwest) and dry up during the drier times of the year except during and for short durations after substantial rainfall events.

Perennial streams are characterized by continual year-round flow that is fed in large part by groundwater supplemented by surface flows from ephemeral and intermittent tributaries following rainfall events.

**** Flow Direction:** describe the "compass direction of the water flow (north, south, southwest, etc.)

*****OHWM Features Defined**: That line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas. (USACE 2012)

Clear Shoreline:
Natural Shelving:
Natural Bank Line:
Soil Change:
Vegetation Loss:
Presences of Litter/Debris:

STREAM CHARACTERIZATION FORM

Project Name:	Route 63 EIS Re-evaluation	Stream ID:	OC-STR-0125
Project Number:	325222277	Personnel:	MLL
Location/ Station:		Date(m/d/y):	9/16/2022

FIELD DETERMINATION

STREAM FLOW

Type of Flow* ……☒ Ephemeral ☐ Intermittent ☐ Perennial | **Water Present** …. ☐ Yes ☒ No

Flow Direction** (cardinal, ordinal): south

Notes (Source, condition, stream name): flows underneath County Road 615 through concrete culvert to OC-STR-0130

STREAM SIZE

Estimated Width at top of bank	10	feet
Estimated Height to top of bank	4	feet
OHWM present	☒ **Yes**	☐ **No**
Estimated Width at OHWM	6	feet
Estimated Height at OHWM	2	feet
Evidence of OHWM***		
Clear shoreline	☐ Yes	☒ No
Natural shelving	☐ Yes	☒ No
Natural bank line	☒ Yes	☐ No
Soil change	☐ Yes	☒ No
Vegetation loss	☒ Yes	☐ No
Presence of litter/debris	☒ Yes	☐ No

STREAM QUALITY

Riffles/pools present at stream crossing	☒ Yes	☐ No
Meanders present at stream crossing	☐ Yes	☒ No
Wetlands adjacent to stream crossing	☐ Yes	☒ No

Wetland ID:

Substrate: ☐ Bedrock ☐ Boulder ☐ Cobble ☒ Gravel ☒ Clay ☒ Sand ☐ Silt ☐ Muck ☒ Woody ☐ Other:

Riparian corridor present at stream crossing	☒ Yes	☐ No
Estimation of corridor width:	0 - >100	feet
Riparian corridor present upstream	☒ Yes	☐ No
Riparian corridor present downstream	☒ Yes	☐ No
Stream within forest stand containing potential bat roost trees	☐ Yes	☒ No

Dominant Vegetation in Channel & Bank: johnsongrass, wing-stem, black locust, American elm, box elder, ground cherry, ragweed

Notes regarding other characteristics (ex. caving banks, farmed to edge of stream, etc.):

STREAM CHARACTERIZATION FORM

JURISDICTIONAL CHANNEL	☒ Yes	☐ No

OFFICE DETERMINATION

USGS 7.5 minute topographic map

Dashed Blueline – Intermittent	☐ Yes	☒ No
Solid Blueline – Perennial	☐ Yes	☒ No

NWI map

Riverine classification	☐ Yes	☒ No
Adjacent wetlands	☐ Yes	☒ No

Aerial photo (if available)

Riparian corridor shown.....	☒ Yes	☐ No
Evidence of channelization.....	☒ Yes	☐ No

Notes:

*** Stream flows defined**:

Ephemeral stream flows for a short period only after precipitation events and is fed completely by above-ground sources.

Intermittent streams are fed partially by groundwater and will typically run consistently during the wetter times of year (spring to early summer in Midwest) and dry up during the drier times of the year except during and for short durations after substantial rainfall events.

Perennial streams are characterized by continual year-round flow that is fed in large part by groundwater supplemented by surface flows from ephemeral and intermittent tributaries following rainfall events.

**** Flow Direction:** describe the "compass direction of the water flow (north, south, southwest, etc.)

*****OHWM Features Defined**: That line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas. (USACE 2012)

Clear Shoreline:
Natural Shelving:
Natural Bank Line:
Soil Change:
Vegetation Loss:
Presences of Litter/Debris:

STREAM CHARACTERIZATION FORM

Project Name:	Route 63 EIS Re-evaluation	Stream ID:	OC-STR-0130
Project Number:	325222277	Personnel:	MLL, RF
Location/ Station:		Date(m/d/y):	9/15/2022

FIELD DETERMINATION

STREAM FLOW

Type of Flow* ……☐ Ephemeral ☒ Intermittent ☐ Perennial | **Water Present** …. ☒ Yes ☐ No

Flow Direction** (cardinal, ordinal): southeast

Notes (Source, condition, stream name): flows to Maries River

STREAM SIZE

Estimated Width at top of bank	30	feet
Estimated Height to top of bank	4	feet
OHWM present	**☒ Yes**	**☐ No**
Estimated Width at OHWM	16	feet
Estimated Height at OHWM	2	feet
Evidence of OHWM***		
Clear shoreline	☐ Yes	☒ No
Natural shelving	☒ Yes	☐ No
Natural bank line	☒ Yes	☐ No
Soil change	☒ Yes	☐ No
Vegetation loss	☒ Yes	☐ No
Presence of litter/debris	☒ Yes	☐ No

STREAM QUALITY

Riffles/pools present at stream crossing	☒ Yes	☐ No
Meanders present at stream crossing	☒ Yes	☐ No
Wetlands adjacent to stream crossing	☒ Yes	☐ No

Wetland ID: OC-WET-0050

Substrate: ☐ Bedrock ☐ Boulder ☒ Cobble ☒ Gravel ☐ Clay ☒ Sand ☐ Silt ☐ Muck ☒ Woody ☐ Other:

Riparian corridor present at stream crossing	☒ Yes	☐ No
Estimation of corridor width:	10-75	feet
Riparian corridor present upstream	☒ Yes	☐ No
Riparian corridor present downstream	☒ Yes	☐ No
Stream within forest stand containing potential bat roost trees	☒ Yes	☐ No

Dominant Vegetation in Channel & Bank: basswood, Virginia wildrye, Canadian wood nettle, Japanese honeysuckle, hackberry, box elder

Notes regarding other characteristics (ex. caving banks, farmed to edge of stream, etc.):

Well vegetated banks but eroding

STREAM CHARACTERIZATION FORM

JURISDICTIONAL CHANNEL	**☒ Yes**	**☐ No**

OFFICE DETERMINATION

USGS 7.5 minute topographic map

Dashed Blueline – Intermittent	☒ Yes	☐ No
Solid Blueline – Perennial	☐ Yes	☒ No

NWI map

Riverine classification	☒ Yes	☐ No
Adjacent wetlands	☒ Yes	☐ No

Aerial photo (if available)

Riparian corridor shown.....	☒ Yes	☐ No
Evidence of channelization.....	☒ Yes	☐ No

Notes:

*** Stream flows defined**:

Ephemeral stream flows for a short period only after precipitation events and is fed completely by above-ground sources.

Intermittent streams are fed partially by groundwater and will typically run consistently during the wetter times of year (spring to early summer in Midwest) and dry up during the drier times of the year except during and for short durations after substantial rainfall events.

Perennial streams are characterized by continual year-round flow that is fed in large part by groundwater supplemented by surface flows from ephemeral and intermittent tributaries following rainfall events.

**** Flow Direction:** describe the "compass direction of the water flow (north, south, southwest, etc.)

*****OHWM Features Defined**: That line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas. (USACE 2012)

Clear Shoreline:
Natural Shelving:
Natural Bank Line:
Soil Change:
Vegetation Loss:
Presences of Litter/Debris:

STREAM CHARACTERIZATION FORM

Project Name:	Route 63 EIS Re-evaluation	Stream ID:	OC-STR-0131
Project Number:	325222277	Personnel:	MLL, RF
Location/ Station:		Date(m/d/y):	9/15/2022

FIELD DETERMINATION

STREAM FLOW

Type of Flow* ……☒ Ephemeral ☐ Intermittent ☐ Perennial | **Water Present** …. ☐ Yes ☒ No

Flow Direction** (cardinal, ordinal): northeast

Notes (Source, condition, stream name): begins in adjacent ag field and flows to OC-STR-0130

STREAM SIZE

Estimated Width at top of bank	4	feet
Estimated Height to top of bank	2	feet
OHWM present	**☒ Yes**	**☐ No**
Estimated Width at OHWM	1.5	feet
Estimated Height at OHWM	0.5	feet

Evidence of OHWM***

Clear shoreline	☐ Yes	☒ No
Natural shelving	☐ Yes	☒ No
Natural bank line	☒ Yes	☐ No
Soil change	☐ Yes	☒ No
Vegetation loss	☒ Yes	☐ No
Presence of litter/debris	☒ Yes	☐ No

STREAM QUALITY

Riffles/pools present at stream crossing	☒ Yes	☐ No
Meanders present at stream crossing	☒ Yes	☐ No
Wetlands adjacent to stream crossing	☐ Yes	☒ No

Wetland ID: OC-WET-0050

Substrate: ☐ Bedrock ☐ Boulder ☐ Cobble ☒ Gravel ☒ Clay ☒ Sand ☐ Silt ☐ Muck ☒ Woody ☐ Other:

Riparian corridor present at stream crossing	☒ Yes	☐ No
Estimation of corridor width:	50	feet
Riparian corridor present upstream	☒ Yes	☐ No
Riparian corridor present downstream	☒ Yes	☐ No
Stream within forest stand containing potential bat roost trees	☒ Yes	☐ No

Dominant Vegetation in Channel & Bank: basswood, Virginia wildrye, Canadian wood nettle, Japanese honeysuckle, hackberry, box elder

Notes regarding other characteristics (ex. caving banks, farmed to edge of stream, etc.):

STREAM CHARACTERIZATION FORM

JURISDICTIONAL CHANNEL	☒ Yes	☐ No

OFFICE DETERMINATION

USGS 7.5 minute topographic map

Dashed Blueline – Intermittent	☐ Yes	☒ No
Solid Blueline – Perennial	☐ Yes	☒ No

NWI map

Riverine classification	☐ Yes	☒ No
Adjacent wetlands	☐ Yes	☒ No

Aerial photo (if available)

Riparian corridor shown.....	☒ Yes	☐ No
Evidence of channelization.....	☒ Yes	☐ No

Notes:

*** Stream flows defined**:

Ephemeral stream flows for a short period only after precipitation events and is fed completely by above-ground sources.

Intermittent streams are fed partially by groundwater and will typically run consistently during the wetter times of year (spring to early summer in Midwest) and dry up during the drier times of the year except during and for short durations after substantial rainfall events.

Perennial streams are characterized by continual year-round flow that is fed in large part by groundwater supplemented by surface flows from ephemeral and intermittent tributaries following rainfall events.

**** Flow Direction:** describe the "compass direction of the water flow (north, south, southwest, etc.)

*****OHWM Features Defined**: That line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas. (USACE 2012)

Clear Shoreline:
Natural Shelving:
Natural Bank Line:
Soil Change:
Vegetation Loss:
Presences of Litter/Debris:

STREAM CHARACTERIZATION FORM

Project Name:	Route 63 EIS Re-evaluation	Stream ID:	OC-STR-0132
Project Number:	325222277	Personnel:	RL, RF
Location/ Station:		Date(m/d/y):	9/15/2022

FIELD DETERMINATION

STREAM FLOW

Type of Flow* ……☒ Ephemeral ☐ Intermittent ☐ Perennial | **Water Present** …. ☐ Yes ☒ No

Flow Direction** (cardinal, ordinal): northeast

Notes (Source, condition, stream name): flows to OC-STR-0130

STREAM SIZE

Estimated Width at top of bank	16	feet
Estimated Height to top of bank	4	feet
OHWM present	**☒ Yes**	**☐ No**
Estimated Width at OHWM	5	feet
Estimated Height at OHWM	1	feet

Evidence of OHWM***

Clear shoreline	☐ Yes	☒ No
Natural shelving	☐ Yes	☒ No
Natural bank line	☒ Yes	☐ No
Soil change	☐ Yes	☒ No
Vegetation loss	☒ Yes	☐ No
Presence of litter/debris	☒ Yes	☐ No

STREAM QUALITY

Riffles/pools present at stream crossing	☒ Yes	☐ No
Meanders present at stream crossing	☒ Yes	☐ No
Wetlands adjacent to stream crossing	☐ Yes	☒ No

Wetland ID: OC-WET-0050

Substrate: ☐ Bedrock ☐ Boulder ☐ Cobble ☐ Gravel ☒ Clay ☒ Sand ☐ Silt ☐ Muck ☒ Woody ☐ Other:

Riparian corridor present at stream crossing	☒ Yes	☐ No
Estimation of corridor width:	0-100	feet
Riparian corridor present upstream	☒ Yes	☐ No
Riparian corridor present downstream	☒ Yes	☐ No
Stream within forest stand containing potential bat roost trees	☒ Yes	☐ No

Dominant Vegetation in Channel & Bank: basswood, Virginia wildrye, Canadian wood nettle, Japanese honeysuckle, hackberry, box elder

Notes regarding other characteristics (ex. caving banks, farmed to edge of stream, etc.):

STREAM CHARACTERIZATION FORM

JURISDICTIONAL CHANNEL	☒ Yes	☐ No

OFFICE DETERMINATION

USGS 7.5 minute topographic map

Dashed Blueline – Intermittent	☐ Yes	☒ No
Solid Blueline – Perennial	☐ Yes	☒ No

NWI map

Riverine classification	☐ Yes	☒ No
Adjacent wetlands	☐ Yes	☒ No

Aerial photo (if available)

Riparian corridor shown.....	☒ Yes	☐ No
Evidence of channelization.....	☒ Yes	☐ No

Notes:

*** Stream flows defined**:

Ephemeral stream flows for a short period only after precipitation events and is fed completely by above-ground sources.

Intermittent streams are fed partially by groundwater and will typically run consistently during the wetter times of year (spring to early summer in Midwest) and dry up during the drier times of the year except during and for short durations after substantial rainfall events.

Perennial streams are characterized by continual year-round flow that is fed in large part by groundwater supplemented by surface flows from ephemeral and intermittent tributaries following rainfall events.

**** Flow Direction:** describe the "compass direction of the water flow (north, south, southwest, etc.)

*****OHWM Features Defined**: That line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas. (USACE 2012)

Clear Shoreline:
Natural Shelving:
Natural Bank Line:
Soil Change:
Vegetation Loss:
Presences of Litter/Debris:

STREAM CHARACTERIZATION FORM

Project Name:	Route 63 EIS Re-evaluation	Stream ID:	OC-STR-0133
Project Number:	325222277	Personnel:	RL, RF
Location/ Station:		Date(m/d/y):	9/15/2022

FIELD DETERMINATION

STREAM FLOW

Type of Flow* ……☒ Ephemeral ☐ Intermittent ☐ Perennial | **Water Present** …. ☐ Yes ☒ No

Flow Direction** (cardinal, ordinal): northeast

Notes (Source, condition, stream name): flows to OC-STR-0130

STREAM SIZE

Estimated Width at top of bank	10	feet
Estimated Height to top of bank	2.5	feet
OHWM present	**☒ Yes**	**☐ No**
Estimated Width at OHWM	4	feet
Estimated Height at OHWM	1	feet
Evidence of OHWM***		
Clear shoreline	☐ Yes	☒ No
Natural shelving	☐ Yes	☒ No
Natural bank line	☒ Yes	☐ No
Soil change	☐ Yes	☒ No
Vegetation loss	☒ Yes	☐ No
Presence of litter/debris	☒ Yes	☐ No

STREAM QUALITY

Riffles/pools present at stream crossing	☒ Yes	☐ No
Meanders present at stream crossing	☒ Yes	☐ No
Wetlands adjacent to stream crossing	☐ Yes	☒ No

Wetland ID: OC-WET-0050

Substrate: ☐ Bedrock ☐ Boulder ☐ Cobble ☐ Gravel ☒ Clay ☐ Sand ☒ Silt ☐ Muck ☒ Woody ☐ Other:

Riparian corridor present at stream crossing	☒ Yes	☐ No
Estimation of corridor width:	0-100	feet
Riparian corridor present upstream	☒ Yes	☐ No
Riparian corridor present downstream	☒ Yes	☐ No
Stream within forest stand containing potential bat roost trees	☒ Yes	☐ No

Dominant Vegetation in Channel & Bank: basswood, Virginia wildrye, Canadian wood nettle, Japanese honeysuckle, hackberry, box elder

Notes regarding other characteristics (ex. caving banks, farmed to edge of stream, etc.):

STREAM CHARACTERIZATION FORM

JURISDICTIONAL CHANNEL	**☒ Yes**	**☐ No**

OFFICE DETERMINATION

USGS 7.5 minute topographic map		
Dashed Blueline – Intermittent	☐ Yes	☒ No
Solid Blueline – Perennial	☐ Yes	☒ No
NWI map		
Riverine classification	☐ Yes	☒ No
Adjacent wetlands	☐ Yes	☒ No
Aerial photo (if available)		
Riparian corridor shown	☒ Yes	☐ No
Evidence of channelization	☒ Yes	☐ No

Notes:

*** Stream flows defined**:

Ephemeral stream flows for a short period only after precipitation events and is fed completely by above-ground sources.

Intermittent streams are fed partially by groundwater and will typically run consistently during the wetter times of year (spring to early summer in Midwest) and dry up during the drier times of the year except during and for short durations after substantial rainfall events.

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**** Flow Direction:** describe the "compass direction of the water flow (north, south, southwest, etc.)

*****OHWM Features Defined**: That line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas. (USACE 2012)

Clear Shoreline:
Natural Shelving:
Natural Bank Line:
Soil Change:
Vegetation Loss:
Presences of Litter/Debris:

STREAM CHARACTERIZATION FORM

Project Name:	Route 63 EIS Re-evaluation	Stream ID:	OC-STR-0134
Project Number:	325222277	Personnel:	RL, RF
Location/ Station:		Date(m/d/y):	9/27/2022

FIELD DETERMINATION

STREAM FLOW

Type of Flow* ……☒ Ephemeral ☐ Intermittent ☐ Perennial | **Water Present** …. ☐ Yes ☒ No

Flow Direction** (cardinal, ordinal): east

Notes (Source, condition, stream name): flows to OC-STR-0130

STREAM SIZE

Estimated Width at top of bank	3-4	feet
Estimated Height to top of bank	1	feet
OHWM present	**☒ Yes**	**☐ No**
Estimated Width at OHWM	1	feet
Estimated Height at OHWM	0.5	feet

Evidence of OHWM***

Clear shoreline	☐ Yes	☒ No
Natural shelving	☐ Yes	☒ No
Natural bank line	☐ Yes	☒ No
Soil change	☒ Yes	☐ No
Vegetation loss	☒ Yes	☐ No
Presence of litter/debris	☒ Yes	☐ No

STREAM QUALITY

Riffles/pools present at stream crossing	☐ Yes	☒ No
Meanders present at stream crossing	☒ Yes	☐ No
Wetlands adjacent to stream crossing	☒ Yes	☐ No

Wetland ID: OC-WET-0035 and OC-WET-0040

Substrate: ☐ Bedrock ☐ Boulder ☐ Cobble ☒ Gravel ☐ Clay ☒ Sand ☒ Silt ☒ Muck ☒ Woody ☐ Other:

Riparian corridor present at stream crossing	☒ Yes	☐ No	
Estimation of corridor width:	20	feet	
Riparian corridor present upstream	☒ Yes	☐ No	
Riparian corridor present downstream	☒ Yes	☐ No	
Stream within forest stand containing potential bat roost trees	☒ Yes	☐ No	

Dominant Vegetation in Channel & Bank: Phalaris arundinacea, sugar maple, persimmon, pin oak, green ash

Notes regarding other characteristics (ex. caving banks, farmed to edge of stream, etc.):

STREAM CHARACTERIZATION FORM

JURISDICTIONAL CHANNEL	**☒ Yes**	**☐ No**

OFFICE DETERMINATION

USGS 7.5 minute topographic map		
Dashed Blueline – Intermittent	☐ Yes	☒ No
Solid Blueline – Perennial	☐ Yes	☒ No
NWI map		
Riverine classification	☐ Yes	☒ No
Adjacent wetlands	☐ Yes	☒ No
Aerial photo (if available)		
Riparian corridor shown	☒ Yes	☐ No
Evidence of channelization	☒ Yes	☐ No

Notes:

*** Stream flows defined**:

Ephemeral stream flows for a short period only after precipitation events and is fed completely by above-ground sources.

Intermittent streams are fed partially by groundwater and will typically run consistently during the wetter times of year (spring to early summer in Midwest) and dry up during the drier times of the year except during and for short durations after substantial rainfall events.

Perennial streams are characterized by continual year-round flow that is fed in large part by groundwater supplemented by surface flows from ephemeral and intermittent tributaries following rainfall events.

**** Flow Direction:** describe the "compass direction of the water flow (north, south, southwest, etc.)

*****OHWM Features Defined**: That line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas. (USACE 2012)

Clear Shoreline:
Natural Shelving:
Natural Bank Line:
Soil Change:
Vegetation Loss:
Presences of Litter/Debris:

STREAM CHARACTERIZATION FORM

Project Name:	Route 63 EIS Re-evaluation	Stream ID:	OC-STR-0140
Project Number:	325222277	Personnel:	MLL
Location/ Station:		Date(m/d/y):	9/15/2022

FIELD DETERMINATION

STREAM FLOW

Type of Flow* ……☐ Ephemeral ☐ Intermittent ☒ Perennial | **Water Present** …. ☒ Yes ☐ No

Flow Direction** (cardinal, ordinal): south

Notes (Source, condition, stream name): Maries River

STREAM SIZE

Estimated Width at top of bank	200	feet
Estimated Height to top of bank	35	feet
OHWM present	**☒ Yes**	**☐ No**
Estimated Width at OHWM	150	feet
Estimated Height at OHWM	4.5	feet

Evidence of OHWM***

Clear shoreline	☒ Yes	☐ No
Natural shelving	☒ Yes	☐ No
Natural bank line	☒ Yes	☐ No
Soil change	☒ Yes	☐ No
Vegetation loss	☒ Yes	☐ No
Presence of litter/debris	☒ Yes	☐ No

STREAM QUALITY

Riffles/pools present at stream crossing	☒ Yes	☐ No
Meanders present at stream crossing	☒ Yes	☐ No
Wetlands adjacent to stream crossing	☐ Yes	☒ No

Wetland ID: OC-WET-0035 and OC-WET-0040

Substrate: ☐ Bedrock ☐ Boulder ☐ Cobble ☒ Gravel ☒ Clay ☒ Sand ☒ Silt ☒ Muck ☒ Woody ☐ Other:

Riparian corridor present at stream crossing	☒ Yes	☐ No
Estimation of corridor width:	>100	feet
Riparian corridor present upstream	☒ Yes	☐ No
Riparian corridor present downstream	☒ Yes	☐ No
Stream within forest stand containing potential bat roost trees	☒ Yes	☐ No

Dominant Vegetation in Channel & Bank: black walnut, Osage orange, box elder, sycamore, *Dicheptera brachiata*, Canadian wood nettle, Virginia wildrye, wing-stem, goldenrod

Notes regarding other characteristics (ex. caving banks, farmed to edge of stream, etc.):

STREAM CHARACTERIZATION FORM

JURISDICTIONAL CHANNEL	**☒ Yes**	**☐ No**

OFFICE DETERMINATION

USGS 7.5 minute topographic map

Dashed Blueline – Intermittent	☐ Yes	☒ No
Solid Blueline – Perennial	☒ Yes	☐ No

NWI map

Riverine classification	☒ Yes	☐ No
Adjacent wetlands	☒ Yes	☐ No

Aerial photo (if available)

Riparian corridor shown.....	☒ Yes	☐ No
Evidence of channelization.....	☒ Yes	☐ No

Notes:

*** Stream flows defined**:

Ephemeral stream flows for a short period only after precipitation events and is fed completely by above-ground sources.

Intermittent streams are fed partially by groundwater and will typically run consistently during the wetter times of year (spring to early summer in Midwest) and dry up during the drier times of the year except during and for short durations after substantial rainfall events.

Perennial streams are characterized by continual year-round flow that is fed in large part by groundwater supplemented by surface flows from ephemeral and intermittent tributaries following rainfall events.

**** Flow Direction:** describe the "compass direction of the water flow (north, south, southwest, etc.)

*****OHWM Features Defined**: That line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas. (USACE 2012)

Clear Shoreline:
Natural Shelving:
Natural Bank Line:
Soil Change:
Vegetation Loss:
Presences of Litter/Debris:

STREAM CHARACTERIZATION FORM

Project Name:	Route 63 EIS Re-evaluation	Stream ID:	OC-STR-0160
Project Number:	325222277	Personnel:	MLL, RF
Location/ Station:		Date(m/d/y):	9/25/2022

FIELD DETERMINATION

STREAM FLOW

Type of Flow* ……☒ Ephemeral ☐ Intermittent ☐ Perennial | **Water Present** …. ☐ Yes ☒ No

Flow Direction** (cardinal, ordinal): west

Notes (Source, condition, stream name): small stream visually confirmed via highway

STREAM SIZE

Estimated Width at top of bank	4	feet
Estimated Height to top of bank	2	feet
OHWM present	**☒ Yes**	**☐ No**
Estimated Width at OHWM	2	feet
Estimated Height at OHWM	0.5	feet
Evidence of OHWM***		
Clear shoreline	☐ Yes	☒ No
Natural shelving	☐ Yes	☒ No
Natural bank line	☐ Yes	☒ No
Soil change	☒ Yes	☐ No
Vegetation loss	☒ Yes	☐ No
Presence of litter/debris	☒ Yes	☐ No

STREAM QUALITY

Riffles/pools present at stream crossing	☐ Yes	☒ No
Meanders present at stream crossing	☒ Yes	☐ No
Wetlands adjacent to stream crossing	☐ Yes	☒ No

Wetland ID: OC-WET-0035 and OC-WET-0040

Substrate: ☐ Bedrock ☐ Boulder ☒ Cobble ☐ Gravel ☐ Clay ☐ Sand ☒ Silt ☒ Muck ☒ Woody ☐ Other:

Riparian corridor present at stream crossing	☒ Yes	☐ No
Estimation of corridor width:	>50	feet
Riparian corridor present upstream	☒ Yes	☐ No
Riparian corridor present downstream	☒ Yes	☐ No
Stream within forest stand containing potential bat roost trees	☐ Yes	☒ No

Dominant Vegetation in Channel & Bank:

Notes regarding other characteristics (ex. caving banks, farmed to edge of stream, etc.):

STREAM CHARACTERIZATION FORM

JURISDICTIONAL CHANNEL	☐ **Yes**	☒ **No**

OFFICE DETERMINATION

USGS 7.5 minute topographic map

Dashed Blueline – Intermittent	☐ Yes	☒ No
Solid Blueline – Perennial	☐ Yes	☒ No

NWI map

Riverine classification	☐ Yes	☒ No
Adjacent wetlands	☐ Yes	☒ No

Aerial photo (if available)

Riparian corridor shown.....	☒ Yes	☐ No
Evidence of channelization.....	☐ Yes	☒ No

Notes:

Appears to be unassociated or connected to other WOTUS

*** Stream flows defined**:

Ephemeral stream flows for a short period only after precipitation events and is fed completely by above-ground sources.

Intermittent streams are fed partially by groundwater and will typically run consistently during the wetter times of year (spring to early summer in Midwest) and dry up during the drier times of the year except during and for short durations after substantial rainfall events.

Perennial streams are characterized by continual year-round flow that is fed in large part by groundwater supplemented by surface flows from ephemeral and intermittent tributaries following rainfall events.

**** Flow Direction:** describe the "compass direction of the water flow (north, south, southwest, etc.)

*****OHWM Features Defined**: That line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas. (USACE 2012)

Clear Shoreline:
Natural Shelving:
Natural Bank Line:
Soil Change:
Vegetation Loss:
Presences of Litter/Debris:

Appendix C
Photographic Log

MoDOT Route 63 Westphalia Section Photographic Log

Included below is a representative photographic log of delineated WOTUS features encountered within the Westphalia Section of the Route 63 Environmental Impact Statement Re-evaluation Project

09/27/2022

Photo 1. OC-WSP-0002

View looking north and upslope from OC-WET-0002 within the median between Route 63 north and southbound lanes.

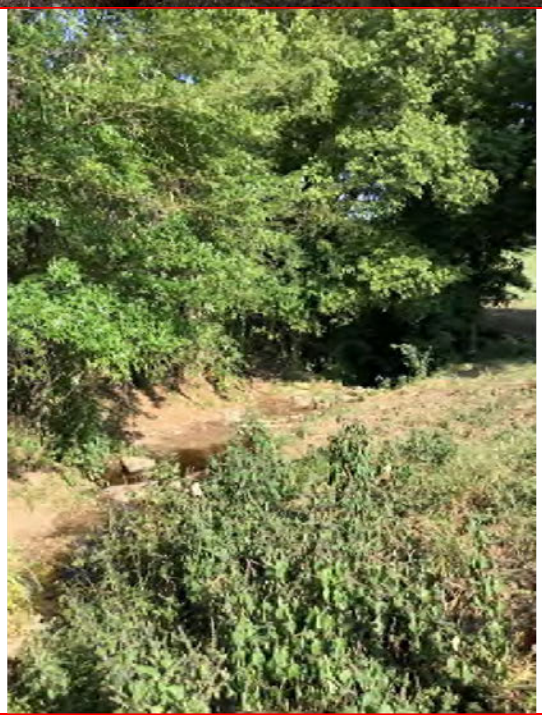
09/27/2022

Photo 2. OC-WET-0003

View looking north. Culvert from OC-STR-0010 runs beneath Route 63 to the right (east).

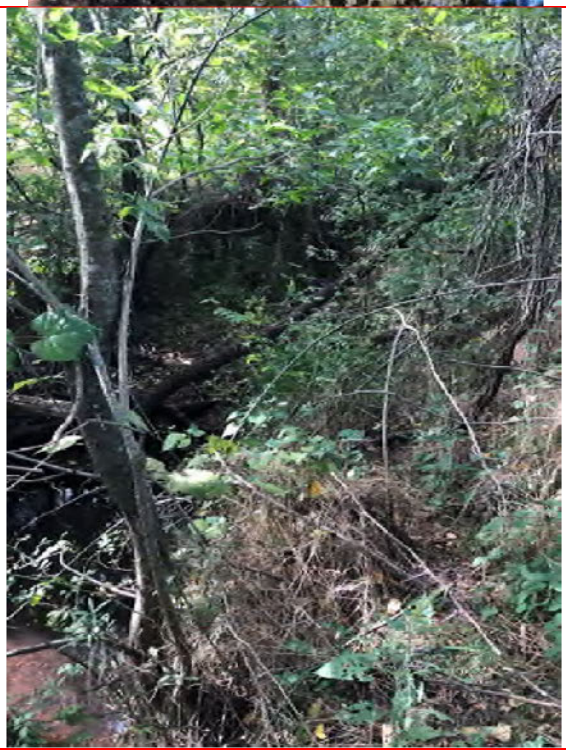
	**09/15/2022** **Photo 3. OC-WSP-0010** Old cattle pond (OC-WET-0010). Artificially bound on two sides by small berms, and by hillslopes on other sides.
	**09/27/2022** **Photo 4. OC-STR-0020** Perennial stream, looking downstream.

	**09/15/2022** **Photo 5. OC-WSP-0024** Small depressional, forested wetland OC-WET-0024. Likely an old cattle pond.
	**09/14/2022** **Photo 6. OC-STR-0025b** OC-STR-0025 changes from intermittent to ephemeral as it moves upstream into higher elevations

	**09/16/2022** **Photo 7. OC-OW-0040** Two streams connect to OC-OW-0040, OC-STR-0080 and OC-STR-0060
	**09/14/2022** **Photo 8. OC-STR-0028** Spring fed tributary of OC-STR-0025.

	**09/15/2022** **Photo 9. OC-WSP-0035b** OC-WET-0035 exists as a wet area within a managed sorghum field.
	**09/15/2022** **Photo 10. OC-WSP-0050** OC-WET-0050 sits at the toeslope of a terraced sorghum field, where water drains east toward OC-STR-0130.

	**09/27/2022** **Photo 11. OC-WET-0040 and OC-STR-0134** OC-WET-0040 is a forested, riparian wetland extension of OC-WET-0035, and which follows along ephemeral stream, OC-STR-0134.
	**09/15/2022** **Photo 12. OC-STR-0110** Ephemeral stream flows from impounded pond OC-OW-0080.

	**09/15/2022** **Photo 13. OC-STR-0130** Intermittent stream flows within and along proposed corridor just south of Westphalia, Missouri.
	**09/15/2022** **Photo 14. OC-STR-0120** Intermittent stream holding water during dry period, runs within and along proposed corridor.

	**09/15/2022** **Photo 15. OC-OW-0080** Impounded open water body.
	**09/15/2022** **Photo 16. OC-OW-0080** Back side of open water impoundment. Beginning of ephemeral stream OC-STR-0110.

	**09/15/2022** **Photo 17. Maries River (OC-STR-0140)** Perennially flowing Maries River near southernmost extent of Westphalia section. Flows beneath existing Route 63.
	**09/15/2022** **Photo 18. OC-USP-0065** North bank of Maries River, upland.

Appendix E

Floodplain Map Index and

Technical Memorandum

Osage, Maries, Phelps Counties
Route 63
CD0007
April 2025

23CFR Section 650 Subpart A Technical Memorandum

23 CFR Section 650.111 (c) Location studies shall include discussion of the following items, commensurate with the significance of the risk or environmental impact, for all alternatives containing encroachments and for those actions which would support base floodplain development.

(1) **The risks associated with implementation of the action are as follows:**

The project will relocate an approximately 47-mile portion of the existing Route 63 in Osage, Maries, and Phelps Counties. Up to approximately 9,772 linear feet of 100-year floodplain within the Westphalia Section currently programmed and under design by MoDOT will be impacted and will not increase the potential for loss of life or property; therefore, the project is not considered a significant risk.

(2) **The impacts on natural and beneficial floodplain values:**

Natural and beneficial floodplain values include, but are not limited to, fish, wildlife, plants, open space, natural beauty, scientific study, outdoor recreation, agriculture, forestry, natural moderation of floods, water quality maintenance, and groundwater.

There are no significant encroachments associated with this project and the proposed work will not impact the natural and beneficial floodplain values.

(3) The support of probable incompatible floodplain development:

As defined by the FHWA, the support of incompatible base floodplain development will encourage, allow, serve, or otherwise facilitate incompatible base floodplain development, such as commercial development or urban growth.

The proposed Project improvements would maintain local and regional access to existing urban areas and facilities and would not create new access to undeveloped lands. Therefore, this highway improvement Project would not support any incompatible floodplain development.

(4) The measures to minimize floodplain impacts associated with the action:

According to a review of current FEMA National Flood Hazard Layer mapping for the project corridor, multiple areas of improvement will occur in Zone A—100-year floodplain requiring a floodplain development permit form the State Emergency Management Agency (SEMA). Hydraulic studies and analysis will be performed as part of the design process and used to ensure that there is no increase in the floodwater elevation.

(5) **The measures to restore and preserve the natural and beneficial floodplain values impacted by the action:**

There will be limited impacts to the natural and beneficial floodplain values of the floodplains along this project corridor. Because there will be temporary soil disturbance during construction activities, sediment and erosion control best management practices will be used during construction and disturbed areas will be seeded following construction.

23 CFR Section 650.111 (d) Location studies shall include evaluation and discussion of the practicability of alternatives to any significant encroachments or any support of incompatible floodplain development.

As defined in 23 CFR 650.105, a significant encroachment involves a significant potential for interruption or termination of a transportation facility which is needed for emergency vehicles or provides a community's only evacuation route, a significant risk meaning potential for loss of life or property, or a significant adverse impact on natural and beneficial floodplain values.

This project does not result in significant potential for interruption or termination of this transportation facility, which is needed for emergency vehicles or a community's only evacuation route. It also does not result in a significant risk or potential for loss of life or property. This project does not result in a substantial adverse impact on natural and beneficial floodplain values. This highway improvement project will maintain local and regional access to existing rural and agricultural areas and will not support any incompatible floodplain development.

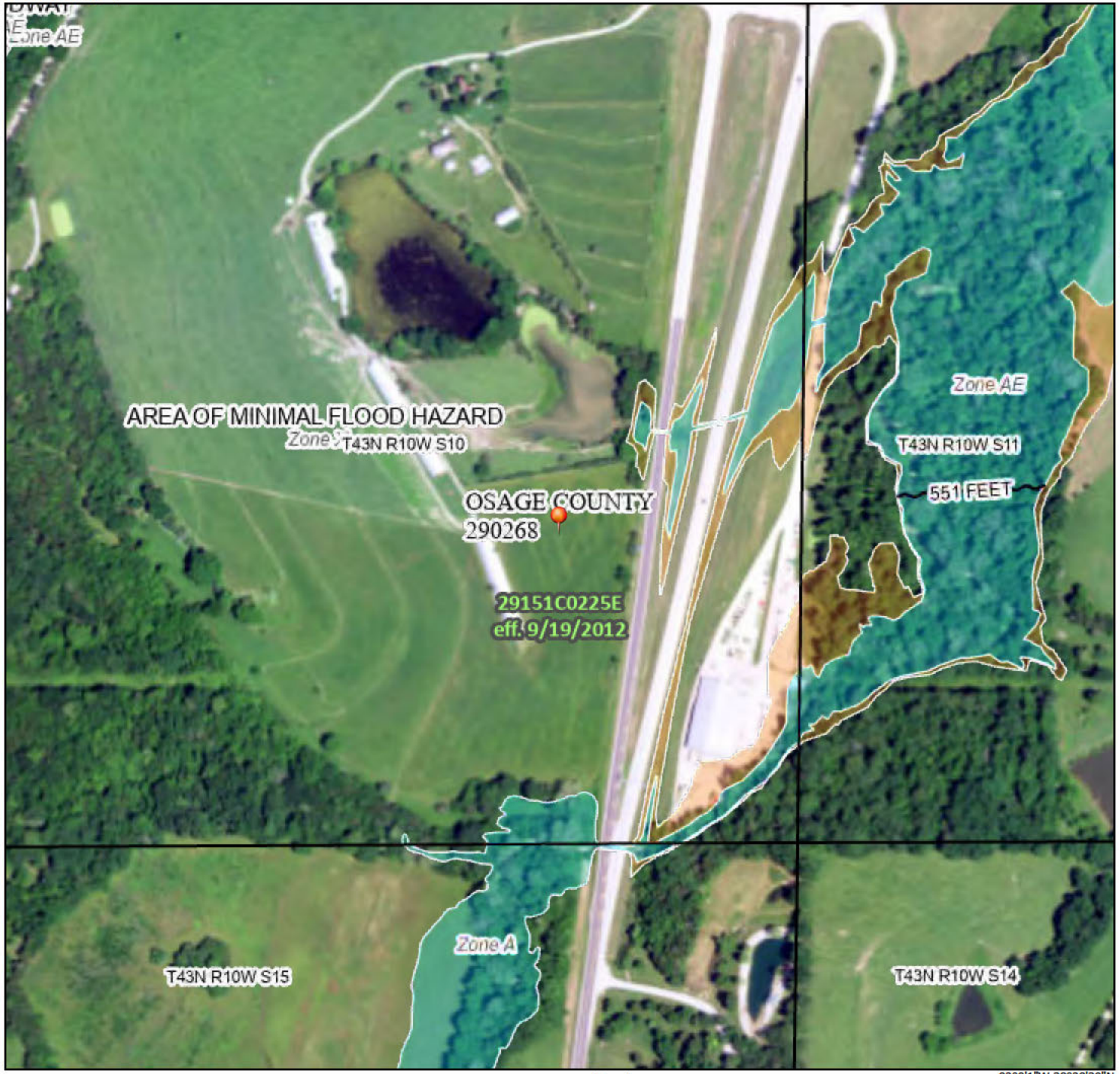
There are no significant encroachments as a result of this project and it does not support incompatible floodplain development.

This project will not cause a greater risk within a floodplain that potentially impacts an adjacent structure.

National Flood Hazard Layer FIRMette

FEMA

92°0'38"W 38°29'7"N



92°0'1"W 38°28'39"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 4/22/2024 at 4:35 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette

FEMA

92°0'44"W 38°28'45"N

92°0'7"W 38°28'17"N

Feet

0 250 500 1,000 1,500 2,000

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

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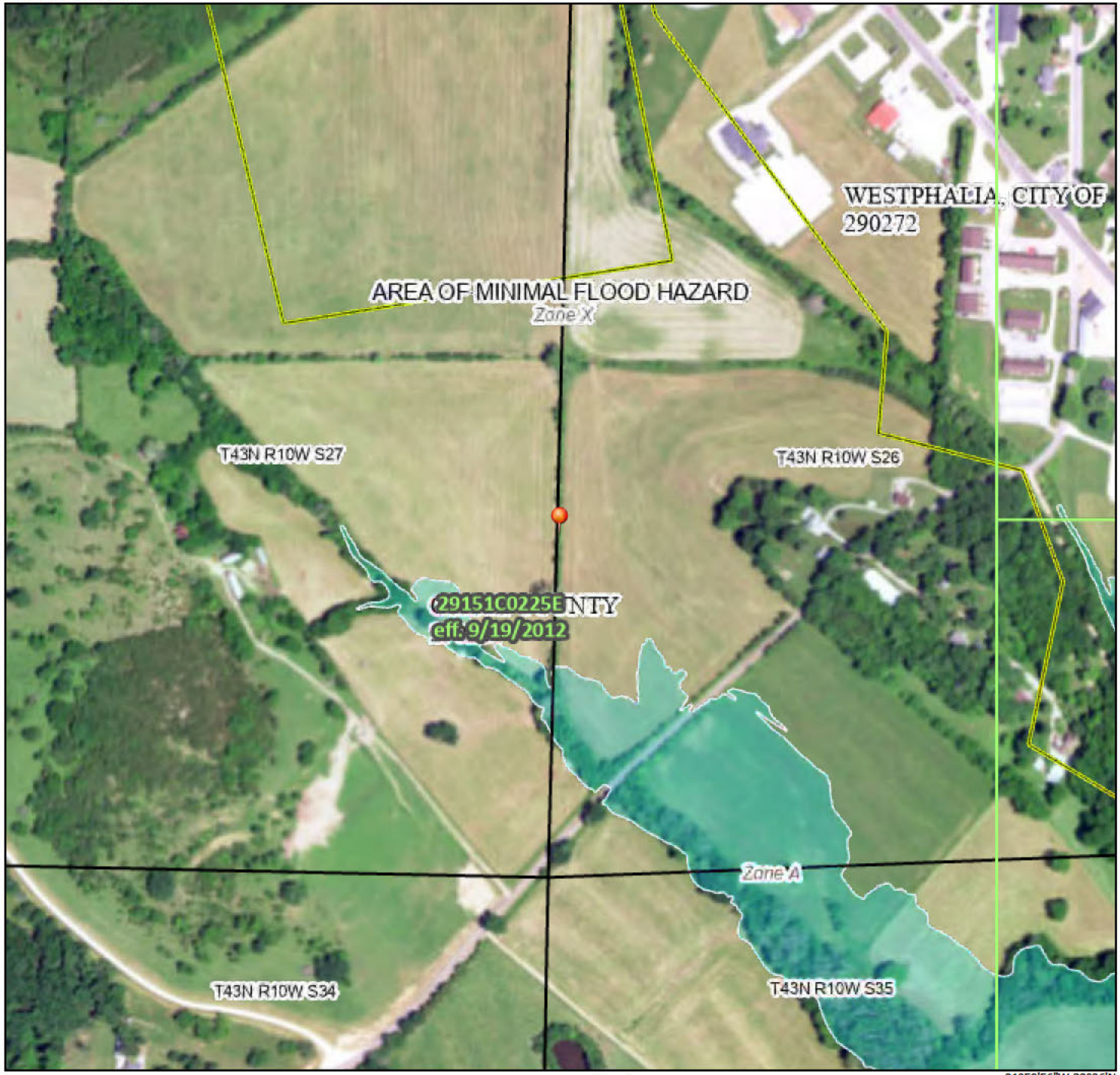
The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 4/22/2024 at 4:36 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette

FEMA

92°0'33"W 38°26'29"N



91°59'56"W 38°26'N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 4/22/2024 at 4:39 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette

FEMA

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 4/22/2024 at 4:41 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette

FEMA

91°59'51"W 38°26'16"N

91°59'14"W 38°25'48"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 4/22/2024 at 4:43 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette

FEMA

91°59'32"W 38°26'2"N

91°58'55"W 38°25'34"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

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OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
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- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

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NOTES TO USERS

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Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was NAD 1983 State Plane Missouri Central, zone 2402. The **Horizontal datum** was NAD 83, GRS80 spheroid. Differences in datum, spheroid, or projection used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

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NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

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Based on updated topographic information, this map reflects more detailed and up-to-date **stream channel configurations and floodplain delineations** than those shown on the previous FIRM for this jurisdiction. As a result, the Flood Profiles and Floodway Data tables may reflect stream channel distances that differ from what is shown on the map. Also, the road to floodplain relationships for unrevised streams may differ from what is shown on previous maps.

The "profile base lines" depicted on this map represent the hydraulic modeling baselines that match the flood profiles in the FIS report. As a result of improved topographic data the "profile base line," in some cases, may deviate significantly from the channel centerline or appear outside the SFHA.

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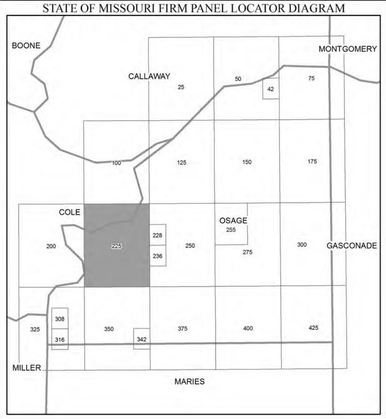
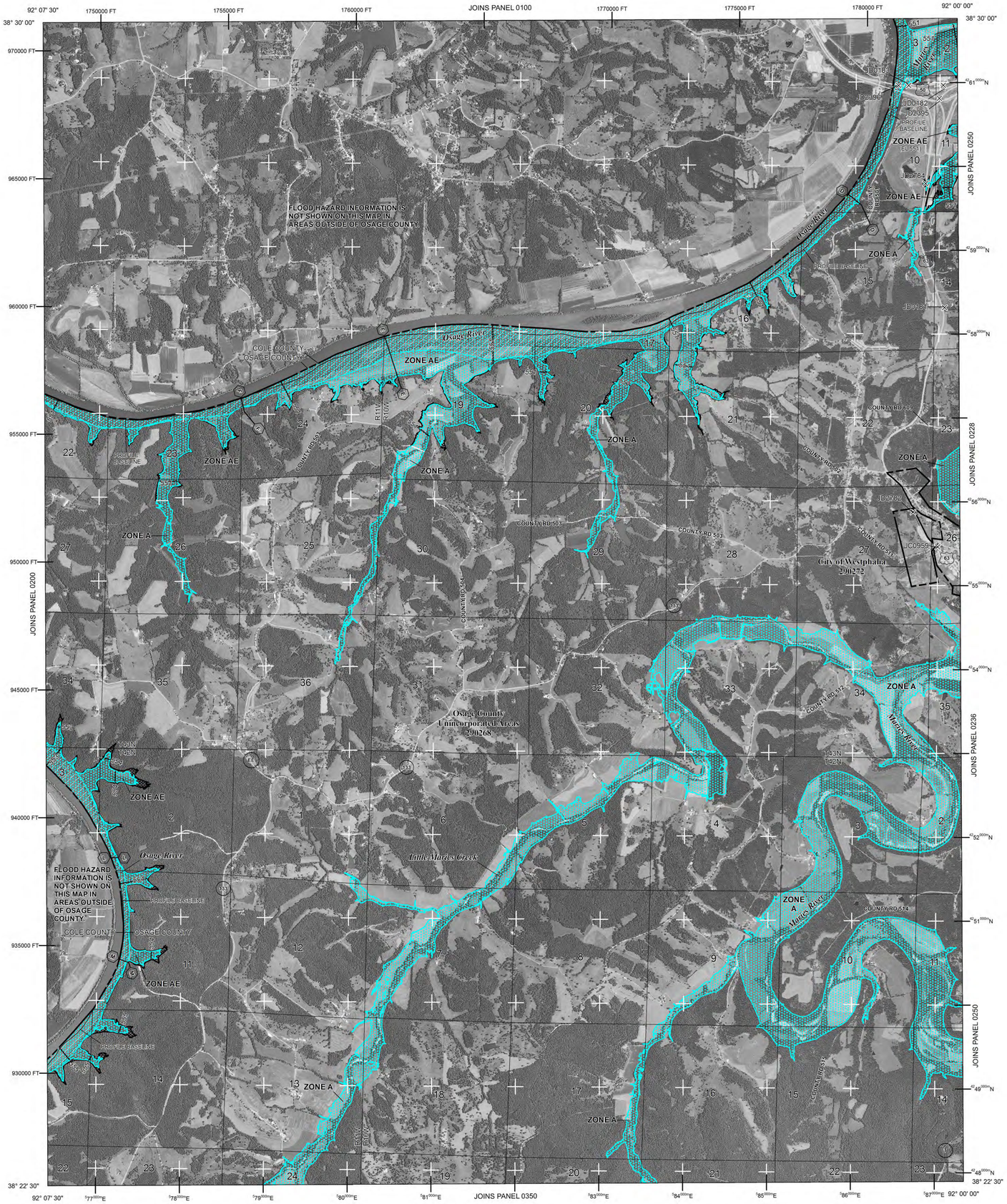
STATE OF MISSOURI FIRM PANEL LOCATOR DIAGRAM





LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAS)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

	1% annual chance floodplain boundary
	0.2% annual chance floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

A — A	Cross section line
23 — 23	Transect line
87°07'45", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
42°76'000"E	1000-meter Universal Transverse Mercator grid values, zone 15
600000 FT	5000-foot grid ticks: Missouri State Plane coordinate system, central zone (FIPS 2402), Transverse Mercator projection
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
● M1.5	River Mile
	Road or Railroad Bridge

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
September 2, 2005

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
September 19, 2012 - to reflect udated topographic information

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 2000'
1000 0 2000 4000 FEET
600 0 600 1200 METERS

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0225E

FIRM
FLOOD INSURANCE RATE MAP

OSAGE COUNTY, MISSOURI
AND INCORPORATED AREAS

PANEL 225 OF 425
(SEE LOCATOR DIAGRAM OR MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
OSAGE COUNTY	290268	0225	E
WESTPHALIA, CITY OF	290272	0225	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
29151C0225E

MAP REVISED
SEPTEMBER 19, 2012

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

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The **projection** used in the preparation of this map was NAD 1983 State Plane Missouri Central, zone 2402. The **Horizontal datum** was NAD 83, GRS80 spheroid. Differences in datum, spheroid, or projection used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following address:

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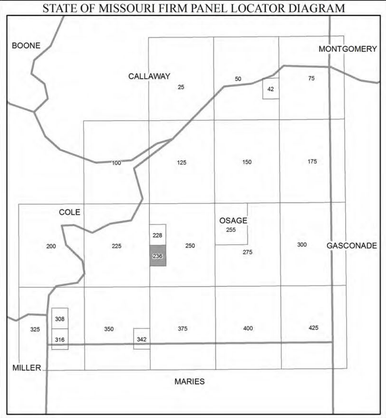
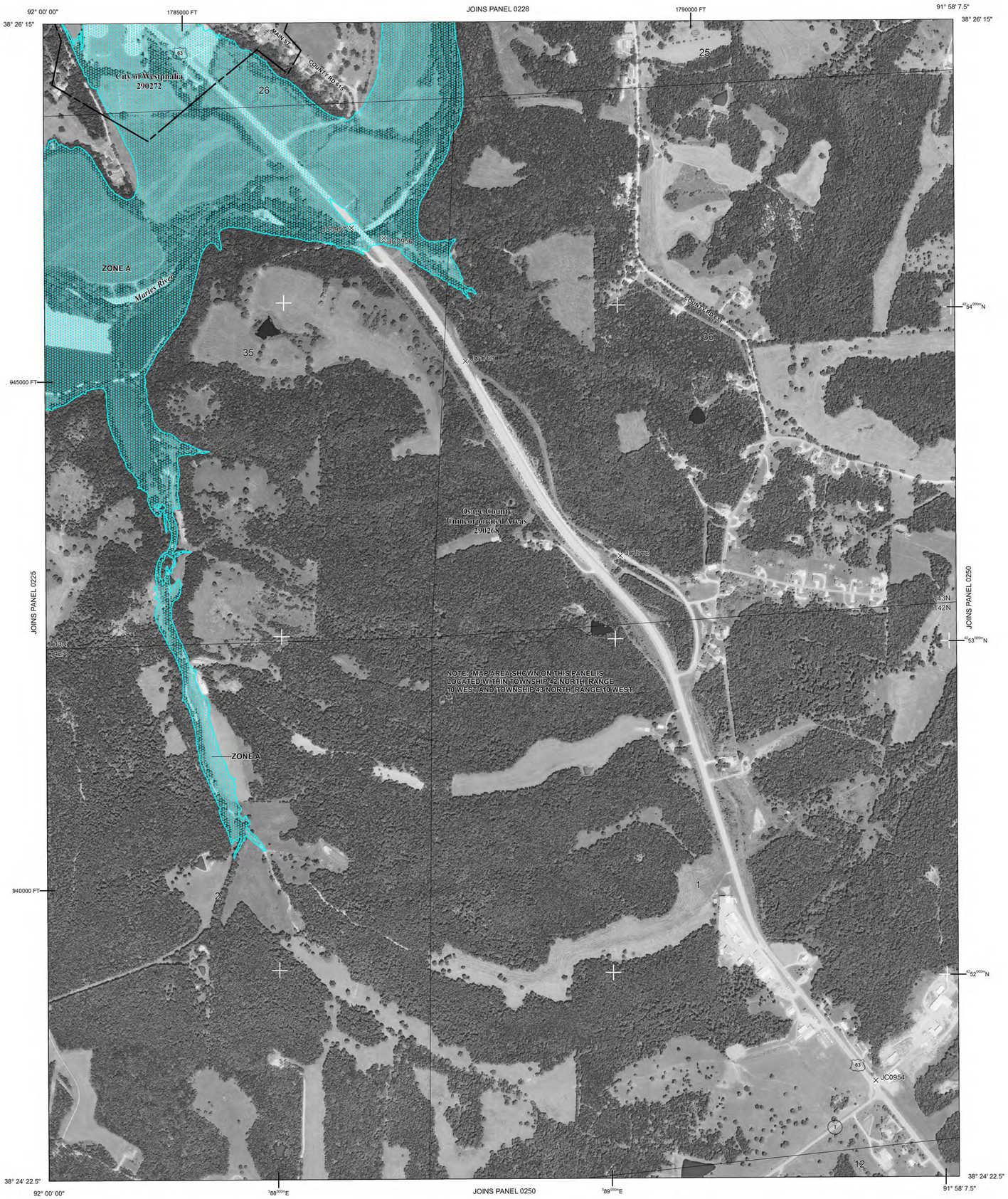
STATE OF MISSOURI FIRM PANEL LOCATOR DIAGRAM





LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
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ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

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OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAS)

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	1% annual chance floodplain boundary
	0.2% annual chance floodplain boundary
	Floodway boundary
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	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
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(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

A — A	Cross section line
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4276000mE	1000-meter Universal Transverse Mercator grid values, zone 15
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● M1.5	River Mile
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EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
September 2, 2005

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
September 19, 2012 - to reflect udated topographic information

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MAP SCALE 1" = 500'
250 0 500 1000 FEET
150 0 150 300 METERS

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0236E

FIRM
FLOOD INSURANCE RATE MAP

OSAGE COUNTY, MISSOURI
AND INCORPORATED AREAS

PANEL 236 OF 425
(SEE LOCATOR DIAGRAM OR MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
OSAGE COUNTY	290268	0236	E
WESTPHALIA, CITY OF	290272	0236	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
29151C0236E

MAP REVISED
SEPTEMBER 19, 2012

Federal Emergency Management Agency

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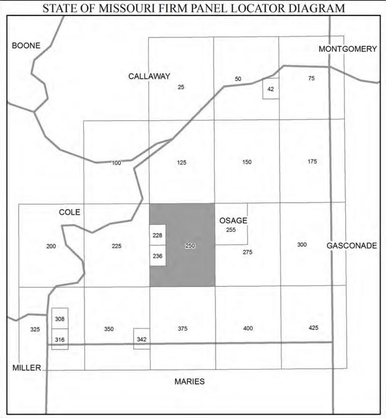
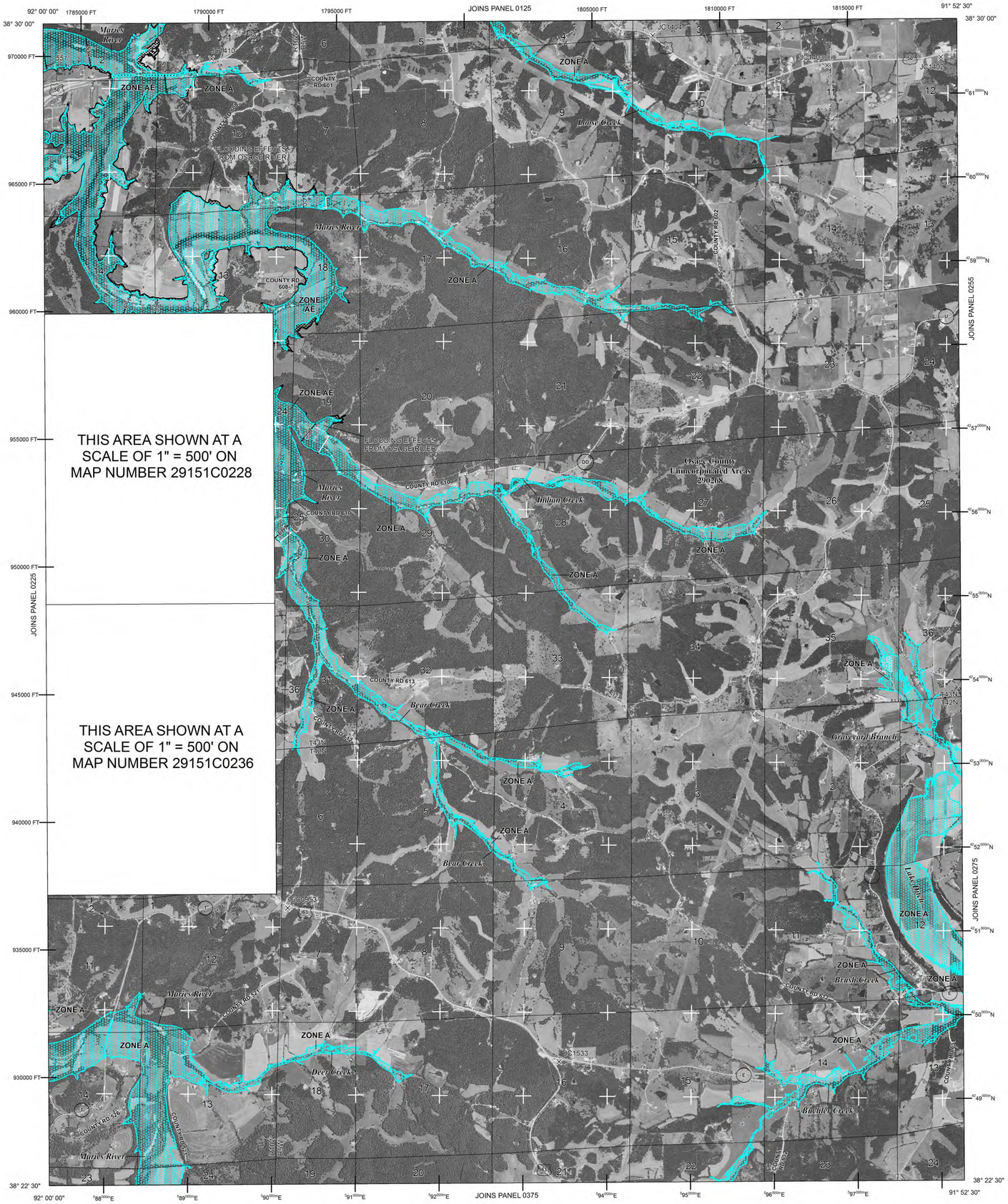
STATE OF MISSOURI FIRM PANEL LOCATOR DIAGRAM





LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

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ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAS)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

	1% annual chance floodplain boundary
	0.2% annual chance floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

A — A	Cross section line
23 — 23	Transect line
87°07'45", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
42°76'000"E	1000-meter Universal Transverse Mercator grid values, zone 15
600000 FT	5000-foot grid ticks: Missouri State Plane coordinate system, central zone (FIPS 2402), Transverse Mercator projection
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
● M1.5	River Mile
	Road or Railroad Bridge

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
September 2, 2005

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
September 19, 2012 - to reflect udated topographic information

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 2000'
1000 0 2000 4000 FEET
600 0 600 1200 METERS

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0250E

FIRM
FLOOD INSURANCE RATE MAP

OSAGE COUNTY, MISSOURI
AND INCORPORATED AREAS

PANEL 250 OF 425
(SEE LOCATOR DIAGRAM OR MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
OSAGE COUNTY	290268	0250	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
29151C0250E

MAP REVISED
SEPTEMBER 19, 2012

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was NAD 1983 State Plane Missouri Central, zone 2402. The **Horizontal datum** was NAD 83, GRS80 spheroid. Differences in datum, spheroid, or projection used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit its website at http://www.ngs.noaa.gov/.

Base map information shown on this FIRM was provided in digital format by the U.S. Farm Service Agency, National Agricultural Imagery Program (NAIP), published in 2010 at a scale of 1:12000.

Based on updated topographic information, this map reflects more detailed and up-to-date **stream channel configurations and floodplain delineations** than those shown on the previous FIRM for this jurisdiction. As a result, the Flood Profiles and Floodway Data tables may reflect stream channel distances that differ from what is shown on the map. Also, the road to floodplain relationships for unrevised streams may differ from what is shown on previous maps.

The "profile base lines" depicted on this map represent the hydraulic modeling baselines that match the flood profiles in the FIS report. As a result of improved topographic data the "profile base line," in some cases, may deviate significantly from the channel centerline or appear outside the SFHA.

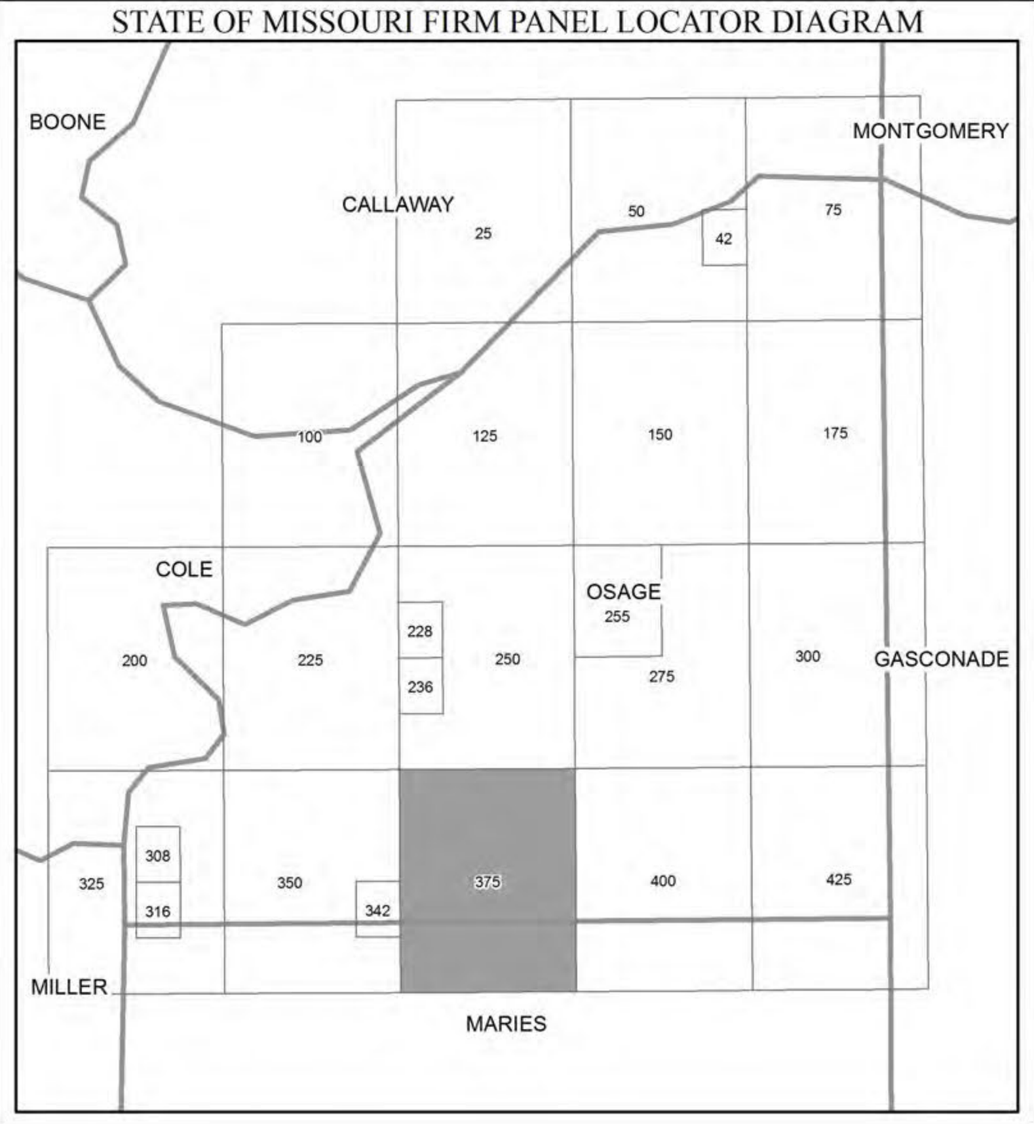
Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

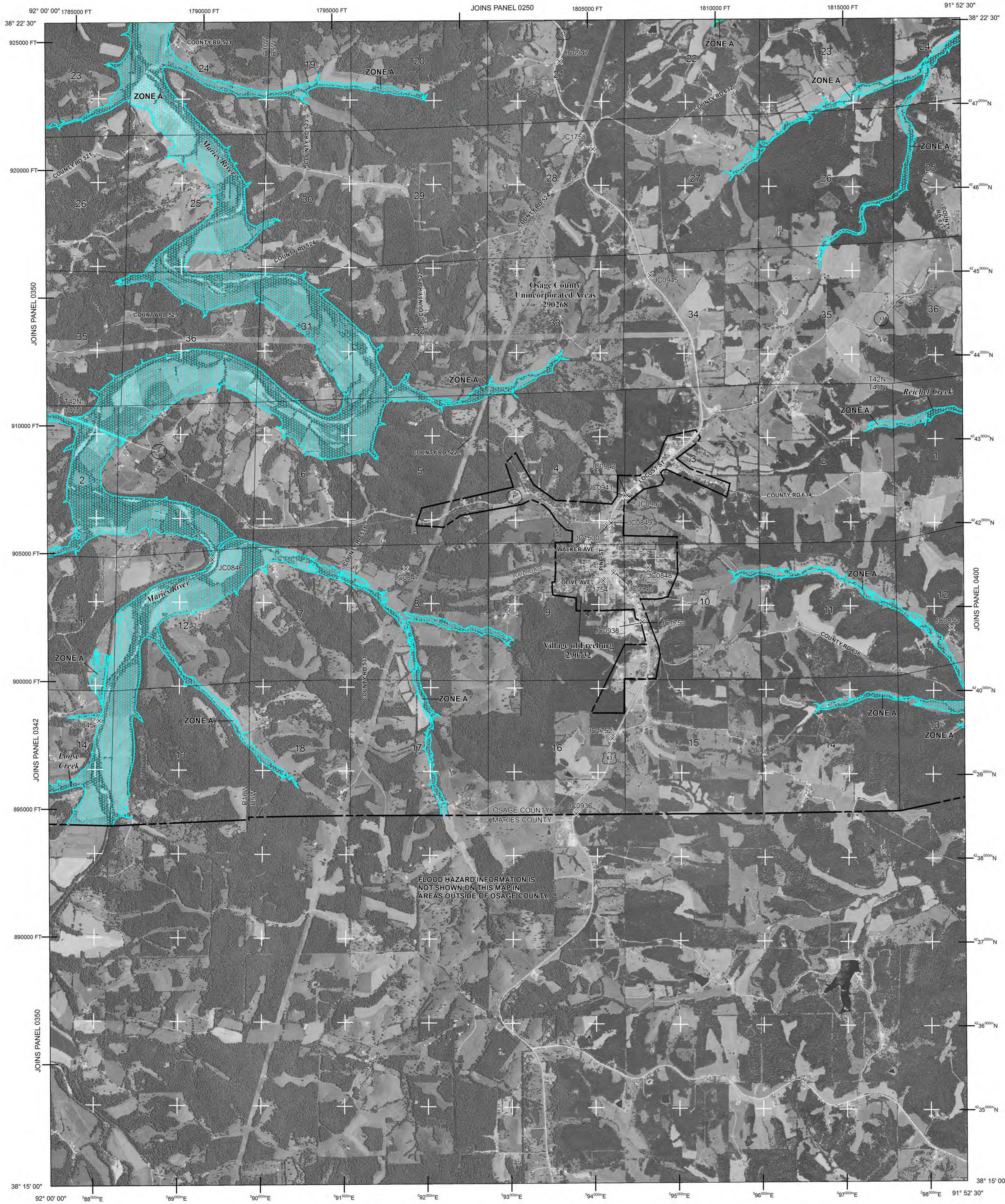
Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** (MSC) via the FEMA Map Information eXchange (FMIX) at 1-877-336-2627 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. The MSC may also be reached by Fax at 1-800-358-9620 and its website at http://msc.fema.gov/.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/business/nfip/.

STATE OF MISSOURI FIRM PANEL LOCATOR DIAGRAM





LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAS)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

1% annual chance floodplain boundary
0.2% annual chance floodplain boundary
Floodway boundary
Zone D boundary
CBRS and OPA boundary
Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513 — Base Flood Elevation line and value; elevation in feet*
(EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

(A)———(A)	Cross section line
(23)-------(23)	Transect line
87°07'45", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
$^{42}76^{000m}$E	1000-meter Universal Transverse Mercator grid values, zone 15
600000 FT	5000-foot grid ticks: Missouri State Plane coordinate system, central zone (FIPS 2402), Transverse Mercator projection
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
• M1.5	River Mile
	Road or Railroad Bridge

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
September 2, 2005

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
September 19, 2012 - to reflect udated topographic information

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 2000'

1000 0 2000 4000 FEET

600 0 600 1200 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0375E

FIRM
FLOOD INSURANCE RATE MAP

OSAGE COUNTY, MISSOURI
AND INCORPORATED AREAS

PANEL 375 OF 425
(SEE LOCATOR DIAGRAM OR MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

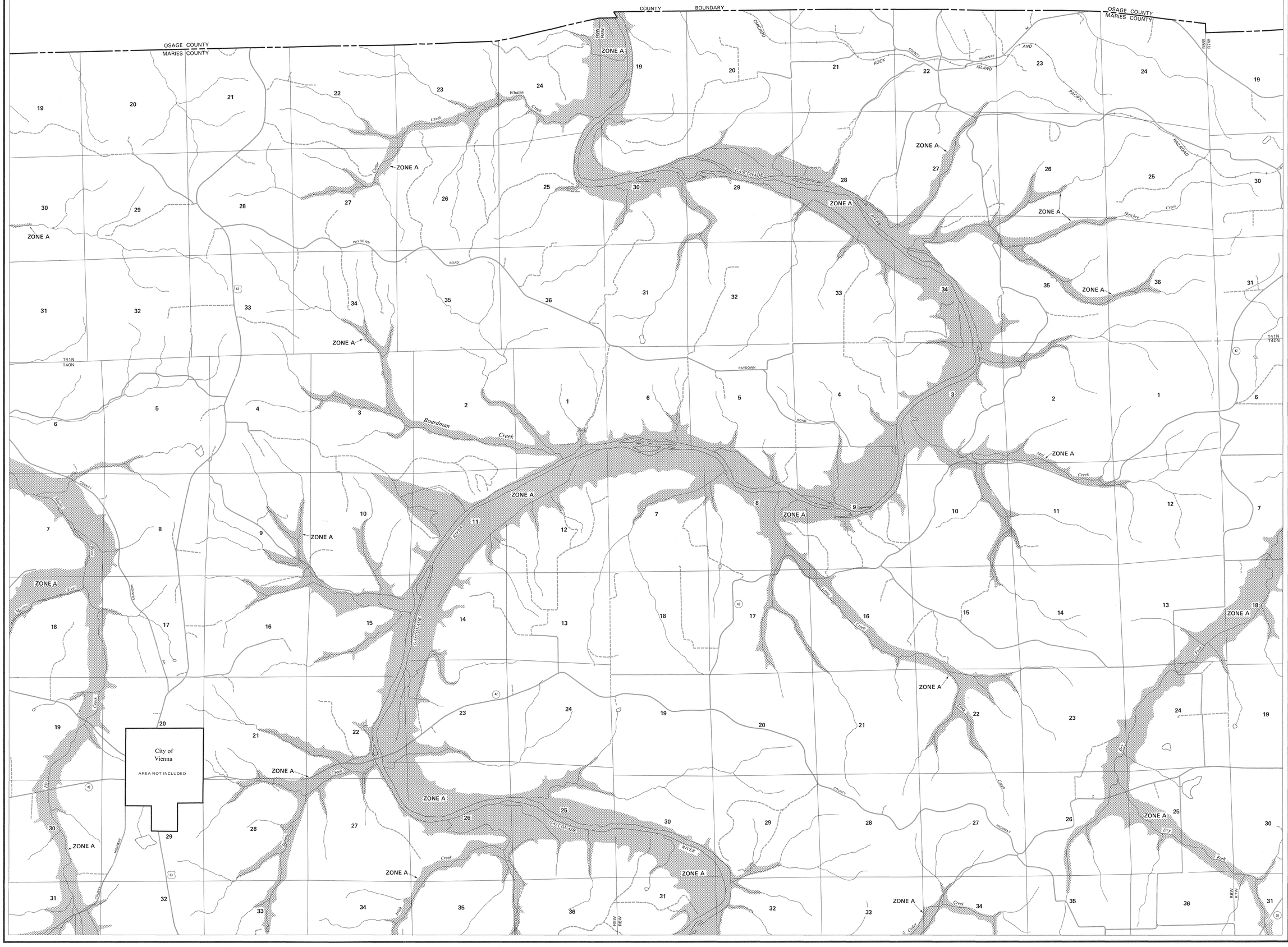
COMMUNITY	NUMBER	PANEL	SUFFIX
FREEBURG, VILLAGE OF	290732	0375	E
OSAGE COUNTY	290268	0375	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
29151C0375E

MAP REVISED
SEPTEMBER 19, 2012

Federal Emergency Management Agency



KEY TO MAP

SPECIAL FLOOD HAZARD AREA — ZONE A

Note: These maps may not include all Special Flood Hazard Areas in the community. After a more detailed study, the Special Flood Hazard Areas shown on these maps may be modified, and other areas added.

To determine if flood insurance is available in this community, contact your insurance agent, or call the National Flood Insurance Program, at (800) 638-6620.

INITIAL IDENTIFICATION DATE
FEBRUARY 1, 1984

APPROXIMATE SCALE
2000 0 2000 FEET

NATIONAL FLOOD INSURANCE PROGRAM

FHBM
FLOOD HAZARD BOUNDARY MAP

COUNTY OF
MARIES,
MISSOURI
(UNINCORPORATED AREAS)

PANEL 50 OF 175

CONVERTED BY LETTER
EFFECTIVE 7/1/87

COMMUNITY-PANEL NUMBER
290816 0050 A

EFFECTIVE DATE:
FEBRUARY 1, 1984

Federal Emergency Management Agency

KEY TO MAP

SPECIAL FLOOD HAZARD AREA — ZONE A

Note: These maps may not include all Special Flood Hazard Areas in the community. After a more detailed study, the Special Flood Hazard Areas shown on these maps may be modified, and other areas added.

To determine if flood insurance is available in this community, contact your insurance agent, or call the National Flood Insurance Program, at (800) 638-6620.

INITIAL IDENTIFICATION DATE
FEBRUARY 1, 1984

APPROXIMATE SCALE
2000 0 2000 FEET

NATIONAL FLOOD INSURANCE PROGRAM

FHBM
FLOOD HAZARD BOUNDARY MAP

COUNTY OF
MARIES,
MISSOURI
(UNINCORPORATED AREAS)

PANEL 125 OF 175

CONVERTED BY LETTER
EFFECTIVE 7/1/87

COMMUNITY-PANEL NUMBER
290816 0125 A

EFFECTIVE DATE:
FEBRUARY 1, 1984

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' National Geodetic Vertical Datum of 1929 (NGVD 29). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations tables in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevation tables should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Missouri State Plane Central zone 4426 (FIPSZONE 2402). The **horizontal datum** was NAD83. Differences in datum, spheroid, projection or state plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the National Geodetic Vertical Datum of 1929. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following address:

Spatial Reference System Division
National Geodetic Survey, NOAA
Silver Spring Metro Center
1315 East-West Highway
Silver Spring, Maryland 20910
(301) 713-3191

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit its website at http://www.ngs.noaa.gov/.

Base Map information shown on this FIRM was provided by Phelps County Assessor's Office. Photography was flown in 2004 by Sanborn of St. Louis. 100 feet is equivalent to ½ foot pixels.

The **profile base lines** depicted on this map represent the hydraulic modeling baselines that match the flood profiles in the FIS report. As a result of improved topographic data, the **profile base line**, in some cases, may deviate significantly from the channel centerline or appear outside the SFHA.

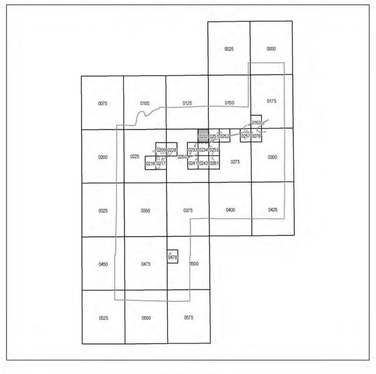
Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at http://www.msc.fema.gov/.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/.

PANEL INDEX



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100 year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard may include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A No Base Flood Elevations determined.

ZONE AE Base Flood Elevations determined.

ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.

ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE AR Area of special flood hazard formerly protected from the 1% annual chance flood event by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.

ZONE A99 Area to be protected for 1% annual chance flood event by a Federal flood protection system under construction; no Base Flood Elevations determined.

ZONE V Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.

ZONE VE Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside of the 0.2% annual chance floodplain.

ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway Boundary
- Zone D Boundary
- CBRS and OPA boundary
- Boundary Dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 10) — Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the National Geodetic Vertical Datum of 1929

- (A)—(A) Cross section line
- (23)- - - -(23) Transect line
- -85° 03' 45.0", 41° 24' 22.5" Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
- 4587000 M 1000-meter Universal Transverse Mercator grid values, zone 15
- 2250000 FT 5000-foot grid ticks: Missouri State Plane Central Coordinate System, 4426 zone (FIPSZONE 2402) Transverse Mercator
- KA0015 ✕ Bench mark (see explanation in Notes to Users section of this FIRM panel)
- ● M1.5 River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
FEBRUARY 20, 2008

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'
250 0 500 1000 FEET
150 0 150 300 METERS

NFIP NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0232D

FIRM

FLOOD INSURANCE RATE MAP

PHELPS COUNTY, MISSOURI

AND INCORPORATED AREAS

PANEL 232 OF 575
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
PHELPS COUNTY	290824	0232	D
ROLLA, CITY OF	290285	0232	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
29161C0232D
EFFECTIVE DATE
FEBRUARY 20, 2008

Federal Emergency Management Agency

Appendix F

Noise Analysis Technical Memorandum

Project Technical Memorandum

Date:	April 25, 2025
From:	WSP
Subject:	Noise Analysis
To:	Missouri Department of Transportation, Central District

Prepared by:	NMR, 04-24-2025
Checked by:	CJH, 04-25-2025
Revision No.:	1

1.0 Introduction

This memorandum provides the results of the traffic noise modeling analysis performed by WSP in April 2025, in support of the U.S. Route 63 (Route 63) Environmental Impact Statement (EIS) Re-Evaluation (Project) in Osage, Maries, and Phelps Counties, Missouri. The EIS re-evaluation is being conducted for the improvement of 47 miles of Route 63 south of Jefferson City to a four-lane divided highway on both existing and new alignment. The proposed improvements to Route 63 require a re-evaluation of the "*Route 63 – Osage, Maries, Phelps Counties, Missouri Final Environmental Impact Statement"* (Final EIS) which was completed in 2009. The Preferred Alternative corridor from the EIS ranges from approximately 300 feet to approximately 750 feet wide, extending from south of the Route 50/Route 63 interchange in Osage County to near Rolla in Phelps County. The exact location of the alignment has not yet been designed. Therefore, like the 2009 EIS, the re-evaluation considers potential impacts within the entire width and length of the Preferred Alternative corridor.

Funding has been programmed by MoDOT in the 2023 – 2027 Missouri State Transportation Improvement Program (STIP) for construction of the northernmost 5.78 miles of the Route 63 Preferred Alternative corridor near Westphalia. This portion of the Preferred Alternative is a relocation of existing Route 63 to a western bypass of Westphalia.

The purpose of this noise analysis is to provide a preliminary screening analysis for potential traffic noise impacts along the proposed corridor in the Westphalia section, to consider the feasibility and reasonableness of noise abatement measures, and to determine the applicability of the 2009 EIS findings for noise impacts.

2.0 Noise Background and Regulations

2.1 Noise Background

Sound is caused by the vibration of air molecules, and loudness is measured on a logarithmic scale using units of decibels (dB). Sound is composed of a wide range of frequencies; however, the human ear is not uniformly sensitive to all frequencies. Therefore, the "A" weighted scale was devised to correspond with the sensitivity of the human ear. The A-weighting generally weighs more heavily on noise levels in the humanly audible range and screens out noise levels that cannot be heard but are still generated, such as a high frequency dog whistle. The A-weighted unit is used because:

1. it is easily measured,

2. it approximates the sensitivity of the human ear to sounds of different frequencies,
3. it matches attitudinal surveys of noise annoyance better than other noise measurements, and
4. it has been adopted as the basic unit of environmental noise by many agencies around the world in dealing with community noise issues.

The equivalent sound level is the steady-state, A-weighted sound level, which contains the same amount of acoustic energy as the actual time-varying, A-weighted sound level over a specified period of time. If the time period is one hour, the descriptor is the hourly equivalent sound level or Leq(h), which is widely used by state highway agencies as a descriptor of traffic noise. It is generally the equivalent level of sound [in decibels or dB(A)], which represents the level of sound, held constant over a specified period of time, and which reflects the same amount of energy as the actual fluctuating noise over that time period. Leq is based on the energy average, not a noise level average.

2.2 Federal Regulations

Traffic noise analyses are required for all projects considered a Type I project. The Federal regulations define Type I projects as any of the following:

- The construction of a highway on new location;
- The physical alteration of an existing highway where there is either:
    - *Substantial Horizontal Alteration*. A project that halves the distance between the traffic noise source and the closest receptor between the existing condition to the future build condition, or
    - *Substantial Vertical Alteration*. A project that removes shielding therefore exposing the line-of-sight between the receptor and the traffic noise source; (this is done by either altering the vertical alignment of the highway or by altering the topography between the highway traffic noise source and the receptor);
- The addition of a through-traffic lane(s); (this includes the addition of a through traffic lane that functions as a High-Occupancy Vehicle (HOV) lane, High-Occupancy Toll (HOT) lane, bus lane, or truck climbing lane);
- The addition of an auxiliary lane, except for when the auxiliary lane is a turn lane;
- The addition or relocation of interchange lanes or ramps added to a quadrant to complete an existing partial interchange;
- Restriping existing pavement for the purpose of adding a through-traffic lane or an auxiliary lane; or
- The addition of a new or substantial alteration of a weigh station, rest stop, ride-share lot or toll plaza.

This proposed Route 63 improvements would be characterized as a Type I noise project as it involves substantial alteration of an existing highway and the addition of through-traffic lanes.

The Federal regulations establish noise abatement criteria to consider noise levels where noise abatement should be evaluated. Five separate noise abatement criteria (NAC) based upon land use are used by the Federal Highway Administration (FHWA) to assess potential noise impacts. Per FHWA, a traffic noise impact occurs when noise levels approach or exceed the NAC listed in Table 2-1. In determining the applicable noise activity category for the study area, existing and

proposed land use was reviewed. The applicable NAC for all residential noise receptors evaluated is 67 dB(A).

Table 2-1. FHWA Noise Abatement Criteria

Activity Category	Activity Criteria[1]		Evaluation Location	Activity Description
	Leq(h)	L10(h)		
A	57	60	Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B[2]	67	70	Exterior	Residential.
C	67	70	Exterior	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	52	55	Interior	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E[2]	72	75	Exterior	Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included in A-D or F.
F	--	--	--	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing.
G	--	--	--	Undeveloped lands that are not permitted.

[1] The Leq(h) and L10(h) Activity Criteria values are for impact determination only, and not design standards for noise abatement measures.

[2] Includes undeveloped lands for development for this activity category.

Source: Table 1 to Part 772 – Noise Abatement Criteria, FR Doc. 2010-15848 Filed 7-12-10; 8:45 am

2.3 MoDOT Policy

Based on the FHWA regulations, state highway authorities are allowed to establish the noise level determined to approach the NAC and to define a substantial increase in traffic noise levels. MoDOT defines noise impacts as follows:

- Design-year traffic noise levels are predicted to approach, meet, or exceed the NAC, with approach defined as 1 dB(A) less than the NAC [for example, the approach value for the residential NAC of 67 dB(A) would be 66 dB(A)].

- Design-year traffic noise levels are predicted to substantially increase over the existing traffic generated noise levels. A substantial increase is defined as an increase of 15 dBA or more above the existing noise level.

3.0 Traffic Noise Analysis

3.1 Receptors

MoDOT defines a noise receptor as a discrete or representative location of a noise sensitive area(s), for any of the land uses listed in the Noise Abatement Criteria Table (Table 2-1).

For this analysis, noise receptors included any noise sensitive land uses located within 500 feet of the edge of the Preferred Alternative corridor. Previously identified noise receptors from the 2009 EIS were confirmed using aerial photography and field checks. In addition, new receptors within the Westphalia Section of the corridor have been identified based on changes in land uses. Forty-three receptors were identified along the approximately 6-mile Westphalia section of the Route 63 Preferred Alternative corridor, shown in the attached Figure set. The majority of the receptors are residential (Category B), with three outdoor recreational areas (Category C) including a soccer complex, playground, and baseball field.

3.2 Existing Noise Level Determinations

Due to the current lack of design details and preliminary nature of this screening, baseline noise measurements were not used. Existing noise levels for the identified receptors were estimated based on the peak hour noise levels measured during the preparation of 2009 EIS. Receptors were assumed to have peak hour levels equal to those located at similar distances from the existing Route 63 alignment. Based on these estimates, existing noise levels at identified receptors range from 50 dBA to 59 dBA.

3.3 Methodology

Traffic Noise Model 2.5 (TNM 2.5) was used to determine predicted noise levels for the proposed Route 63 improvements in the Westphalia section, as described in the Route 63 EIS Re-evaluation. Based on the predominantly rural setting and limited number of sensitive noise receptors within 500 feet of the Preferred Alternative corridor, the model was run as a “flat terrain”, or straight-line model as described in MoDOT EPG 127.13.12.2 Noise Screening Analysis Procedure. The straight line model was prepared as follows for this screening analysis:

- Model inputs consisting of the existing and proposed roadway alignment and traffic data, volume, speed, and composition (trucks and cars) for the proposed design year (2051) build conditions.
    - As the proposed alignment within the corridor footprint (up to approximately 750 feet wide) has yet to be determined, model inputs for the proposed alignment used an approximate alignment centered on the corridor centerline. The exception is in the segment south of the Maries River where the proposed alignment is anticipated to utilize the existing Route 63 roadway in addition to acquired right of way to the east.
    - Traffic volumes are based on the peak hour demand volume of the roadway segments within the Westphalia section for design year 2051, as determined in WSP’s Traffic Needs Assessment.
- The proposed roadway is assumed to be a four-lane divided highway with a width of 110 feet from outside edge of travel lane to outside edge of travel lane. This footprint is

consistent with a rural four-lane divided typical section and with the Preferred Alternative selected in the 2009 EIS.

- Model inputs also include an approximate alignment for a two-lane, approximately 0.5-mile roadway segment connecting the Preferred Alternative with existing Route 63 near the intersection with County Road 512. The connector is assumed to have 12-foot-wide lanes with no median. Traffic volumes were derived from traffic counts on the existing roadways serving Westphalia.
- Although the placement of the proposed alignment within the corridor is an estimate, noise receptors that fall within the approximated alignment are assumed to be displaced and will not be considered as noise receptors.
- Elevation data is not incorporated into the model.

3.4 Traffic

Projected traffic volumes in the Westphalia section of the Route 63 study corridor were obtained from Highway Capacity Software reports prepared for WSP's Traffic Needs Assessment. The highest peak hour demand volume for the roadway segments within the Westphalia section, for a four-lane divided scenario in design year 2051, is 948 vehicles (24% trucks) per hour traveling northbound and 814 vehicles (28% trucks) per hour traveling southbound. The anticipated posted speed along Route 63 is 65 miles per hour (mph).

4.0 Results

Estimated existing and 2051 Build noise levels for all receptors within the Westphalia section are shown in Table 4-1.

Table 4-1. Noise Impact Summary

Receptor	Land Use Category / NAC (dBA)	Approximate Distance from Route 63 Existing Alignment (ft)	Existing Noise Level* (dBA)	Build 2051 L_{Aeq1h} Calculated (dBA)	Build 2051 Increase Over Existing (dB)	Impact Under Build 2051 Conditions
1	B / 67	570	54	56.5	2.5	-
2	B / 67	388	54	56.9	2.9	-
3	B / 67	334	54	55.1	1.1	-
4	B / 67	1,068	52	61.0	9.0	-
5	C / 67	433	54	**66.2**	12.2	Approaches NAC
6	B / 67	179	59	55.2	-3.8	-
7	C / 67	363	54	53.9	-0.1	-
8	B / 67	1,930	52	56.3	4.3	-
9	B / 67	1,910	52	63.0	11.0	-
10	B / 67	1,946	52	**74.7**	22.7	Substantial increase; exceeds NAC
11	B / 67	2,572	50	59.1	9.1	-
12	B / 67	1,483	52	60.3	8.3	-
13	B / 67	1,430	52	56.7	4.7	-
14	B / 67	1,544	52	55.0	3.0	-
15	B / 67	2,123	52	56.5	4.5	-
16	B / 67	2,245	52	54.4	2.4	-
17	B / 67	3,445	50	**77.5**	27.5	Substantial increase; exceeds NAC
18	B / 67	2,924	50	62.9	12.9	-
19	B / 67	2,798	50	60.8	10.8	-
20	B / 67	3,275	50	**79.7**	29.7	Substantial increase; exceeds NAC
21	B / 67	3,601	50	61.8	11.8	-
22	B / 67	4,180	50	52.5	2.5	-
23	B / 67	2,667	50	58.4	8.4	-
24	B / 67	2,952	50	61.3	11.3	-
25	B / 67	1,423	52	55.4	3.4	-
26	B / 67	1,045	54	62.3	8.3	-

26a	B / 67	1,470	52	59.1	7.1	-
26b	B / 67	375	54	54.6	0.6	-
26c	B / 67	208	59	56.0	-3.0	-
26d	B / 67	124	59	53.2	-5.8	-
27	B / 67	954	54	**66.0**	12.0	Approaches NAC
28	B / 67	961	54	**72.9**	18.9	Substantial increase; exceeds NAC
29	B / 67	1,196	52	58.9	6.9	-
30	C / 67	387	54	**66.0**	12.0	Approaches NAC
31	B / 67	165	59	**68.6**	9.6	Exceeds NAC
32	B / 67	623	54	57.7	3.7	-
33	B / 67	138	59	**67.4**	8.4	Exceeds NAC
34	B / 67	600	54	58.3	4.3	
35	B / 67	296	54	63.4	9.4	
36	B / 67	418	54	60.7	6.7	-
37	B / 67	143	59	**73.1**	14.1	Exceeds NAC
38	B / 67	463	54	56.6	2.6	-
39	B / 67	307	54	56.9	2.9	-

*Estimated based on the peak hour noise levels measured during the preparation of 2009 EIS. Receptors were assumed to have peak hour levels equal to those located at similar distances from the existing Route 63 alignment.

Boldface and highlighted indicates the noise levels approach (within 1 dB), meet or exceed the NAC, or noise levels that are a substantial increase (15 dBA or greater) from existing levels.

The existing peak hour estimated noise levels for the receptors in the Westphalia section range from 50 dBA to 59 dBA, based on noise levels measured at similar distances from the existing Route 63 alignment during the preparation of 2009 EIS. The 2051 traffic noise levels for the Build alternative as predicted by TNM range from 52.5 dBA at Receptor 22 to 79.7 dBA at Receptor 20. Ten receptors, eight single-family residences and two recreational areas (sports fields), would potentially experience noise impacts under the Build scenario. All ten receptors are considered impacted due to noise levels approaching, meeting, or exceeding the NAC; four are also considered impacted as they would experience a substantial increase (15 dBA or greater) in noise levels from the existing condition. Several of the impacted residences are located very close to the approximated alignment and may instead be displaced depending on the final design.

5.0 Noise Abatement Evaluation

When traffic noise impacts are identified, noise abatement shall be considered and evaluated for feasibility and reasonableness.

Feasibility

Feasibility is the ability to provide abatement in a given location considering the acoustic and engineering limitations of the site. Acoustic feasibility refers to noise abatement measure(s) ability to achieve the minimum noise reduction at impacted receptors. MoDOT requires at least a 5 dBA insertion loss for a minimum of 2 first-row, impacted receptors for noise abatement to be considered feasible. Engineering feasibility refers primarily to physical constraints and other constructability constraints, such as topography, access, drainage, safety, maintenance, and presence of other noise sources. In general, if these factors are too extreme or cannot be accommodated in providing the minimum noise reduction, noise abatement will be deemed infeasible. For reasons of safety (primarily wind load and clear space concerns), a noise wall's height is limited to 20 feet. The wall height criterion alone cannot be used to consider noise abatement infeasible.

Reasonableness

Each of the three required reasonableness factors listed below must be met.

Mandatory Reasonableness Factors:

1. Viewpoints of owners and residents of the benefitted receptors will be obtained. These will usually be obtained by ballot through mailings or at a public forum;
2. Noise abatement measures shall not exceed 1,300 square feet per benefitted receptor, in the case of noise walls. Where noise walls are not options, other noise abatement techniques may be considered, but cannot exceed $46,000 per benefitted receptor. In order to ensure that the noise abatement parameters remain current, the wall area limit and cost per benefited receptor shall be recalculated at an interval not to exceed every five years. The updated values may not be used to analyze noise abatement calculations from previous years. MoDOT does not allow cost averaging; and
3. Noise abatement measures must provide a minimum reduction of 7 dBA for 100 percent of benefitted, first-row receptors.

Most of the impacted receptors in the Westphalia section are isolated, making noise abatement infeasible in those areas. However, there is one location with two adjacent, first-row, impacted receptors (Receptors 27 and 28, single-family residences on Hatchery Lane) that could potentially be benefited by abatement measures (see attached Figure set, page 2 of 3). As abatement cannot be ruled out based on preliminary feasibility and reasonableness factors, MoDOT will conduct further noise analysis when the design is progressed.

6.0 Noise Contours Outside of the Westphalia Section

Outside the Westphalia section of the study corridor, individual noise receptors were not identified, as no specific improvements have been programmed in these sections. Alternatively, TMN 2.5 was used to develop noise contours using a methodology similar to that described in Section 3.3. Projected traffic volumes for remaining sections outside of the Westphalia section were obtained from Highway Capacity Software reports prepared for WSP's Traffic Needs Assessment. A straight-line model was utilized, assuming a 110-foot wide alignment, and traffic input was adjusted as volumes along the remainder of the corridor are lower than the Westphalia section. The highest peak hour demand volume for the roadway segments outside the Westphalia section, for a four-lane divided scenario in design year 2051, is 705 vehicles (18% trucks) per hour traveling northbound and 699 vehicles (18% trucks) per hour traveling southbound. Table 6-1 provides noise level contours at various distances, measured from the outside edge of pavement.

Table 6-1. Noise Contours for Study Corridor Outside Westphalia Section

Distance from Outside Edge of Pavement (ft)	Build 2051 Noise Level Contour (dBA)
0	79.7
50	73.1
100	68.4
150	65.6
200	63.7
250	62.3
300	61.2
400	59.3
500	57.4
600	55.7
700	54.2
800	53.0
900	51.9
1,000	51.0

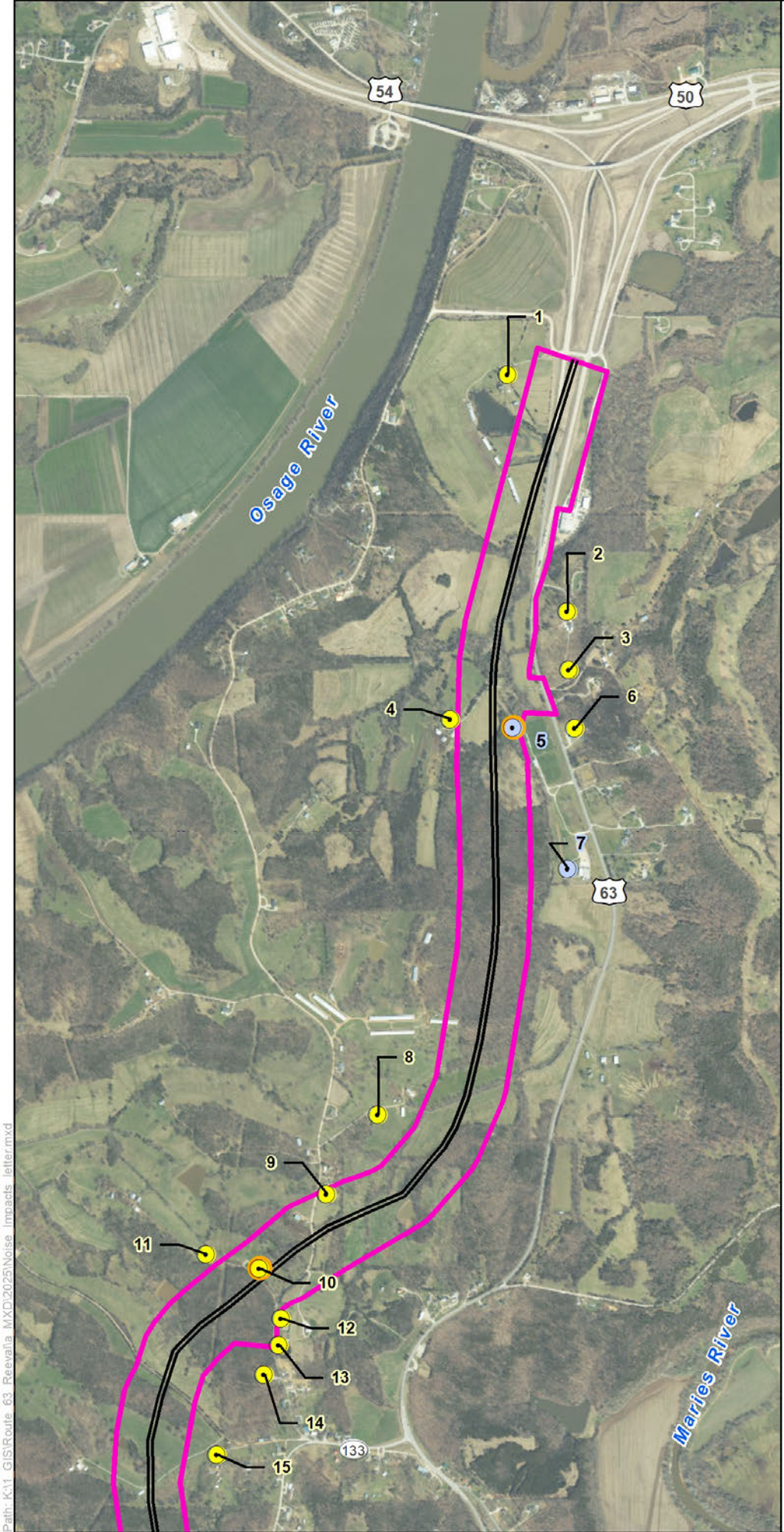
Further noise analysis will be required when planning and design of the sections outside Westphalia are programmed by MoDOT.

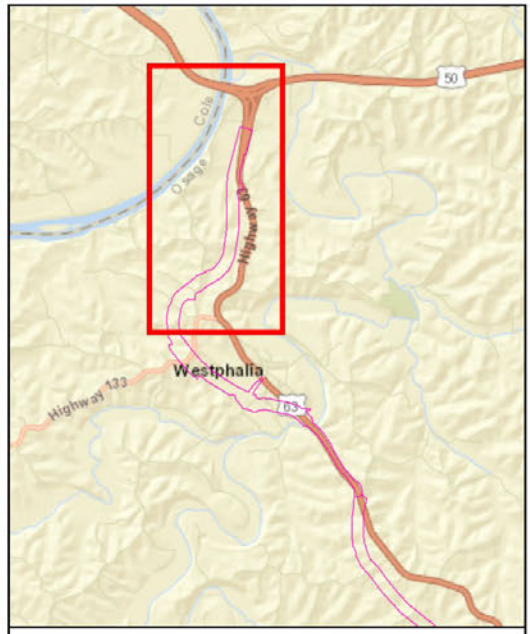
7.0 References

MoDOT, Engineering Policy Guide (EPG), Section 127.13, Noise, website https://epg.modot.org/index.php/127.13_Noise, accessed May 2023.

FHWA, Highway Traffic Noise: Analysis and Abatement Guidance, FHWA-HEP-10-025, December 2011.

Figure Set





Area of Detail

Legend

- Preferred Alternative Study Corridor
- Approximate Roadway Alignment (4-Lane Divided)

Noise Abatement Category

- Class B
- Class B - Impacted
- Class C
- Class C - Impacted

1,000 0 1,000
Feet

N

Route 63 Noise Impacts
Westphalia Section
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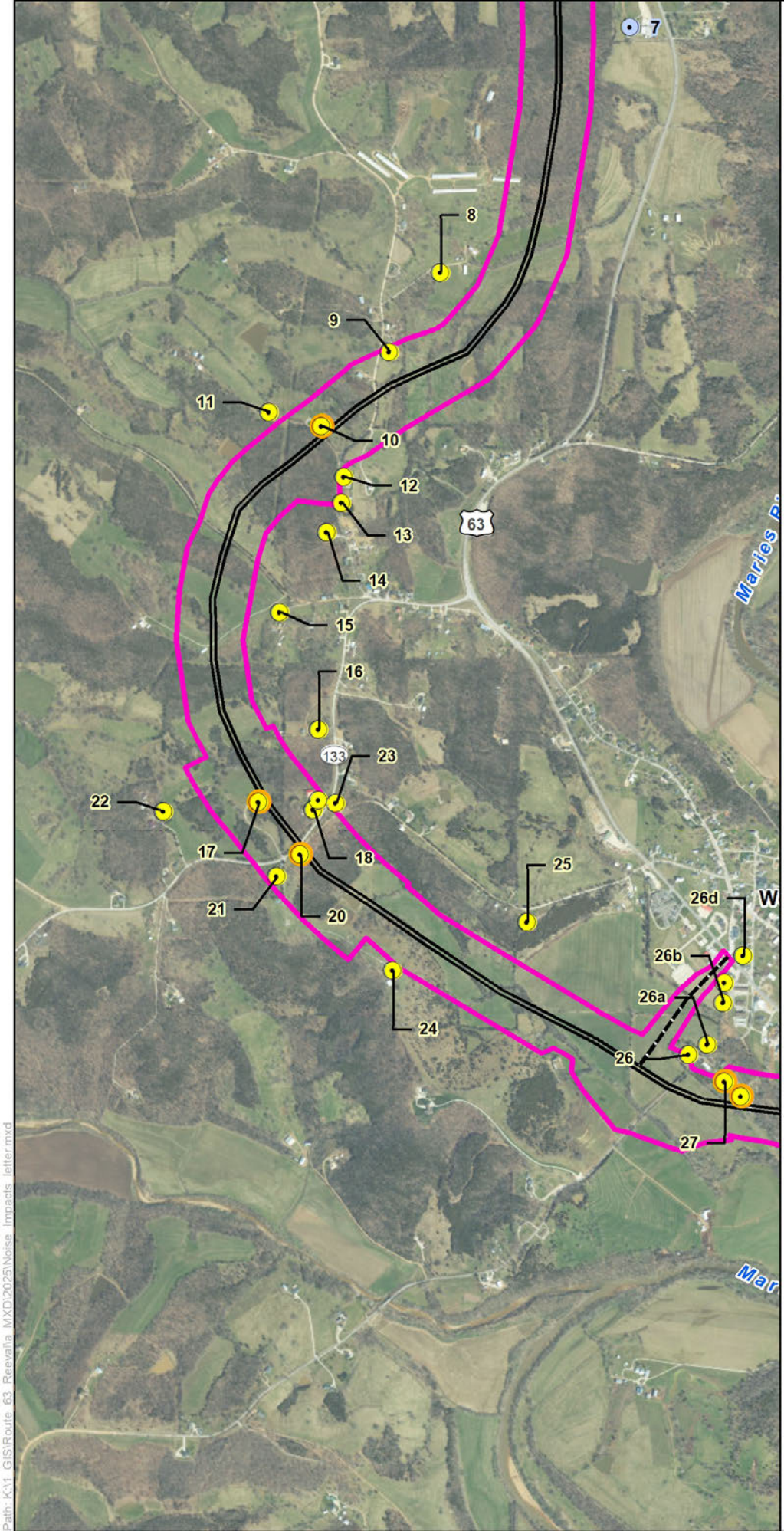
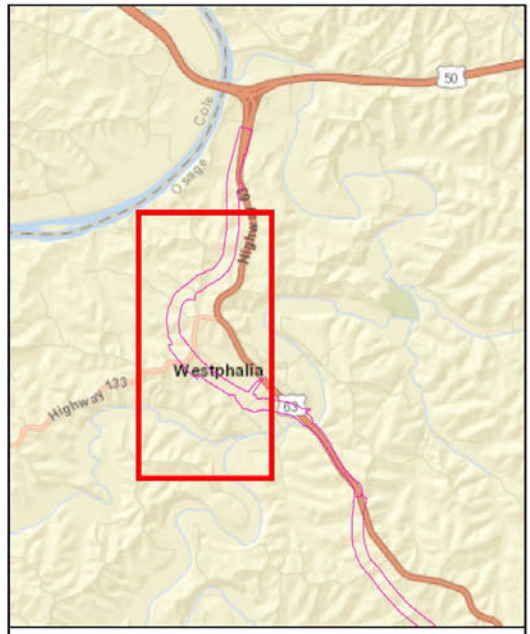
Route 63 EIS
Re-evaluation Project
MoDOT Job No. CD0007
Westphalia Section

Job No.	325222277
Drawn By:	DJH
Reviewed By:	RLL
Date:	4/25/2025

WSP





Area of Detail

Legend

- Preferred Alternative Study Corridor
- Approximate Roadway Alignment (4-Lane Divided)
- Approximate Connector Alignment (2-Lane)

Noise Abatement Category

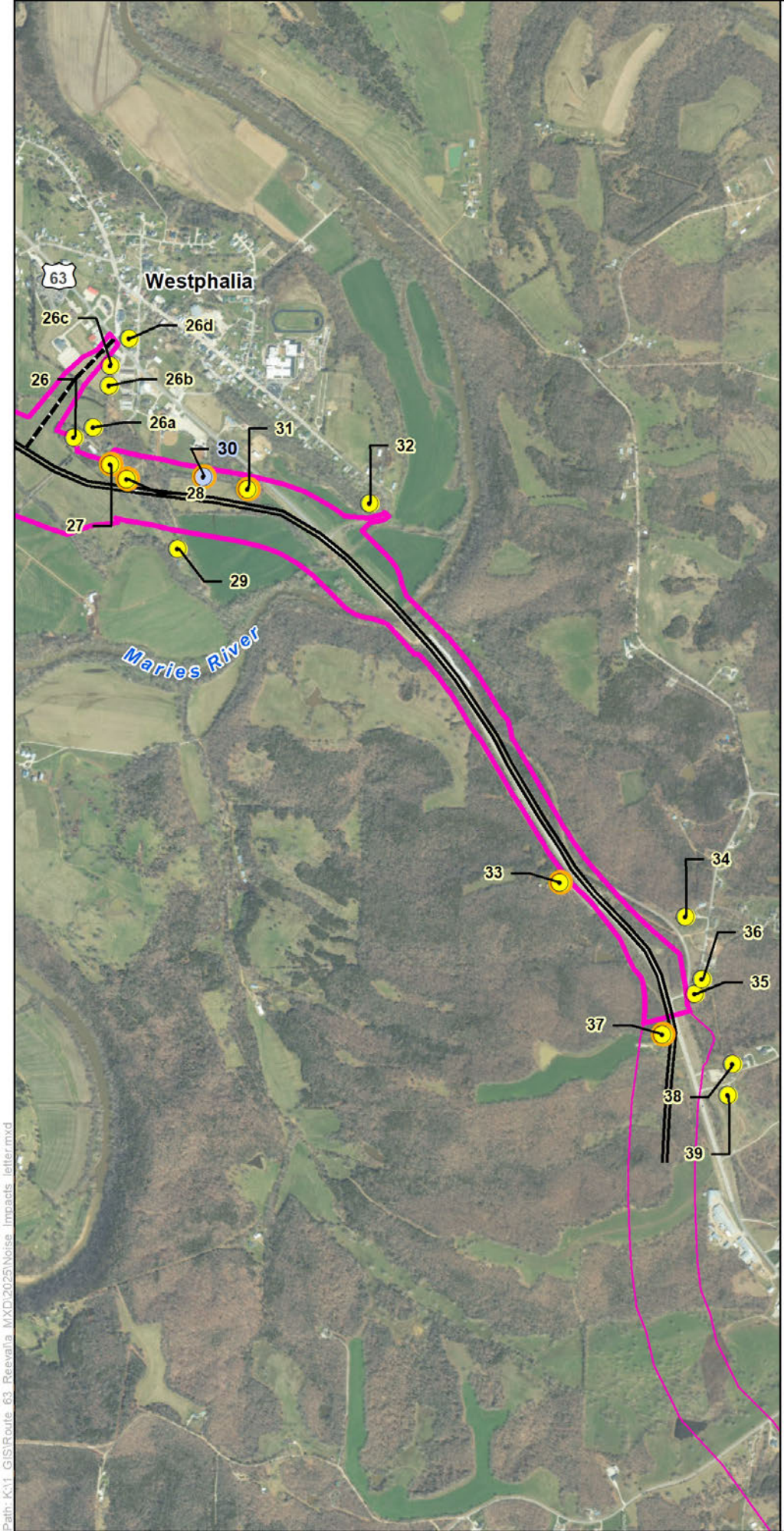
- Class B
- Class B - Impacted
- Class C
- Class C - Impacted

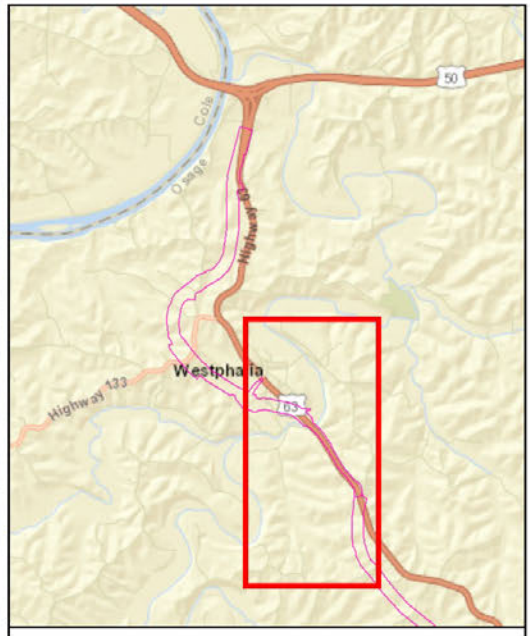
1,000 0 1,000
Feet

Route 63 Noise Impacts
Westphalia Section
Page 2 of 3

Route 63 EIS
Re-evaluation Project
MoDOT Job No. CD0007
Westphalia Section

Job No.	325222277
Drawn By:	DJH
Reviewed By:	RLL
Date:	4/25/2025





Area of Detail

Legend

- Preferred Alternative Study Corridor
- Approximate Roadway Alignment (4-Lane Divided)
- Approximate Connector Alignment (2-Lane)

Noise Abatement Category

- Class B
- Class B - Impacted
- Class C
- Class C - Impacted

1,000 0 1,000
Feet

N

Route 63 Noise Impacts
Westphalia Section
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Route 63 EIS
Re-evaluation Project
MoDOT Job No. CD0007
Westphalia Section

Job No.	325222277
Drawn By:	DJH
Reviewed By:	RLL
Date:	4/25/2025

WSP

Appendix G

Protected Species Habitat Suitability Report

Missouri Department of Transportation (MoDOT)

Route 63 Environmental Impact Statement Re-evaluation Project

MoDOT Job Number CD0007

Protected Species Habitat Suitability Report
Westphalia Section
Osage County, Missouri

This report was prepared by WSP USA Environment & Infrastructure Inc. (WSP USA) (formerly known as Wood Environment & Infrastructure Solutions, Inc.), employer identification number (EIN) -91-1641772.

Report for

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Contents

List of Abbreviations and Acronyms

CWA	Clean Water Act
CFR	Code of Federal Regulations
ESA	Endangered Species Act
EIS	Environmental Impact Statement
FS	forest stand
GIS	geographical information system
GPS	global positioning system
HUD	heads up digitized
MDC	Missouri Department of Conservation
MDNR	Missouri Department of Natural Resources
MoDOT	Missouri Department of Transportation
NHD	National Hydrography Dataset
NOAA	National Oceanic and Atmospheric Administration
NWI	National Wetland Inventory
NRCS	Natural Resources Conservation Service
PBRT	potential bat roost tree
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WNS	white nose syndrome
WSP USA	WSP USA Environment & Infrastructure Inc.

1. INTRODUCTION AND PROJECT DESCRIPTION

This report provides the results of the protected species habitat suitability assessment conducted by WSP USA Environment & Infrastructure Inc. (WSP USA) in support of the Missouri Department of Transportation (MoDOT) Route 63 Environmental Impact Statement (EIS) Re-evaluation Project (Project). In 2009, MoDOT, in coordination with the Federal Highway Administration, prepared and approved an EIS as required under the National Environmental Policy Act for the improvement of 47 miles of Route 63 in Osage, Maries, and Phelps Counties, Missouri. The purpose of the proposed improvement considered in the 2009 EIS was to correct deficiencies on existing Route 63; to ease congestion throughout the entire route, especially in the communities of Westphalia, Freeburg, Vienna, and Vichy; and to provide four-lane design continuity along the Route 63 corridor. Currently, MoDOT is preparing an EIS Re-evaluation of the 47-mile corridor of Route 63 proposed for improvement. Although funding for construction is not currently available for the entire corridor, MoDOT has secured funding for the Westphalia Section of the study corridor. Therefore, this report examines only the approximate 6-mile Westphalia Section, which is also the northern reach of the overall study corridor.

Waters of the U.S. are those water features subject to U.S. Army Corps of Engineers (USACE) jurisdiction and that require authorization under Section 404 of the Clean Water Act (CWA) for dredge or fill activities. In conjunction with CWA Section 404 permitting, MoDOT must consult with the U.S. Fish and Wildlife Service (USFWS) under Section 7 of the Endangered Species Act (ESA). Under the ESA of 1973, as amended, and its implementing regulations at 50 CFR Part 402, federal agencies must consult with the USFWS to determine whether any action it authorizes may affect federally listed endangered or threatened species or result in adverse modification or destruction of USFWS designated critical habitat for such species. Although design plans for the Westphalia Section are unknown at this time, MoDOT anticipates that CWA Section 404 permitting will be needed for construction of this segment of Route 63 once plans are determined. Therefore, this protected species habitat suitability report has been prepared to assist MoDOT with USFWS Section 7 consultation associated with future Section 404 permitting.

Endangered species are those determined to be in danger of extinction through all or a significant portion of their range. Threatened species are those likely to become endangered within the foreseeable future. Critical habitat is habitat needed to support recovery of listed species and includes specific areas within the geographical area occupied by the species at the time of listing that contain physical or biological features essential to conservation of the species. These areas may require special management considerations or protection. Specific areas outside of the occupied area may also be determined by USFWS to be essential for conservation.

1.1 LOCATION

The Westphalia Section of the Project (project area or proposed project corridor) includes an approximate 6-mile section of the EIS' preferred alternative corridor that bypasses Westphalia and comprises approximately 542 acres. As illustrated on **Figure 1-1**, the northern terminus of the project corridor is near the intersection of Route 63 and Highway 50 (approximate coordinates: 38.485356, -92.003433) and the southern terminus is near the intersection of Route 63 and Highway 611 (approximate coordinates: 38.419771, -91.978477). The project corridor is in Osage County, Missouri (Sections 10, 11, 15, 22, 26, 27, 35, and 36, Township 43 North, Range 10 West, and Section 01, Township 42 North, Range 10 West).

2. METHODOLOGY

2.1 DESKTOP REVIEW

To identify federal and state listed threatened, endangered, protected species, and critical habitat that could potentially occur in the project area, WSP USA reviewed the USFWS Information for Planning and Consultation (IPaC) website, which lists eight species potentially occurring in the project area as either endangered, threatened, or candidate for listing. Federally listed species include three mammals, one fish, three clams (mussels), and one insect. No critical habitats are mapped within the project area (USFWS 2022a). Further, MoDOT, USFWS, and WSP USA participated in a scoping meeting on August 8, 2022, to inform USFWS about the Project and the upcoming construction associated with the Westphalia Section of the Project. During the meeting, USFWS representatives, John Weber and Andy Roberts, requested that the little brown bat (*Myotis lucifugus*), which is currently under review for ESA listing, and tricolored bat (*Perimyotis subflavus*), which is proposed for listing as endangered, be added to the protected species assessment review. The addition of these bat species increases the number of mammals reviewed to five. The resulting list of protected species potentially occurring in the project area is presented below in **Table 2-1** and included as **Appendix A**. The Missouri Department of Conservation (MDC) Natural Heritage Database was also reviewed for the state status of listed protected species. The preliminary MDC Natural Heritage Database report advised to consult USFWS due to records of ESA-listed species and possibly records of state-listed species. The protected state status of each assessed species was reviewed in MDC's 2021 Missouri Species and Communities of Conservation Concern Checklist (MDC 2021).

TABLE 2-1 PROTECTED SPECIES POTENTIALLY OCCURRING IN THE PROJECT AREA

	Common Name	Scientific Name	Federal Status[1]	State Status[2]
Mammals	Gray bat	*Myotis grisescens*	E	E
	Indiana bat	*Myotis sodalis*	E	E
	Northern long-eared bat	*Myotis septentrionalis*	T	E
	Little brown bat	*Myotis lucifugus*	UR	S2
	Tricolored bat	*Perimyotis subflavus*	PE	S2
Fish	Niangua Darter	*Etheostoma nianguae*	T	E
Clams	Pink Mucket (pearlymussel)	*Lampsilis abrupta*	E	E
	Scaleshell Mussel	*Leptodea leptodon*	E	E
	Spectaclecase (mussel)	*Cumberlandia monodonta*	E	N/A
Insects	Monarch butterfly	*Danaus Plexippus*	C	N/A

[1] Federal Status: E=endangered, T=threatened, PE=proposed endangered, UR= under review, C=candidate (USFWS 2022a)
[2] State Status: E=endangered, S2=Imperiled (Imperiled in the state because of rarity due to very restricted range, very few populations or occurrences, steep declines, or other factors making it very vulnerable to extirpation from the state (MDC 2021).

A variety of existing data sources were reviewed as planning tools prior to field reconnaissance to support and enhance the identification of potential protected species habitat. Data sources reviewed include:

- Natural Resources Conservation Service (NRCS) soil survey maps,
- National Wetland Inventory (NWI) maps,
- National Hydrography Dataset (NHD),
- U.S. Geological Survey (USGS) topographic maps, and
- Google Earth recent and historical aerial imagery.
- Missouri Department of Natural Resources' (MDNR's) Geosciences Technical Resource Assessment Tool (GeoSTRAT)

For the desktop review, a project-specific ArcView geographical information system (GIS) Webmap was created with the above datasets. Identified potential forest stands which may be

able to support potential suitable habitat for listed bat species were given a unique identification number and heads up digitized (HUD) into the GIS database. Further, water and cave resources potentially occurring in the project area were identified in GeoSTRAT and digitized. Forest stands (FS) which, from desktop resources, appeared to contain mature deciduous trees near sufficient water resources were identified as potential bat habitat prior to field verification.

2.2 FIELD VERIFICATION

Following desktop review, a field survey of the project corridor was conducted between September 14 and September 29, 2022, by a team of two to four biologists with expertise and specific knowledge regarding local flora and fauna. The protected species habitat suitability survey included a general assessment of the project area to identify potentially suitable habitat and document evidence of protected or listed species within the project area. The project vicinity includes forested tracts, edge habitat, and water resources, indicative of a high potential for bat roosting and foraging. Forest resources that were mapped during the desktop review were field checked to verify that each mapped FS identified contained at least one potential bat roost tree (PBRT) exhibiting characteristics following the 2022 USFWS Range-Wide Indiana Bat & Northern Long-Eared Bat Survey ***Guidelines***. Those forest stands that exhibited potential bat roosting and foraging habitat were labelled “present” whereas those forest stands that exhibited young or unsuitable tree species and little roosting potential were labelled “absent.”

Water resources within the project area were identified to determine the extent of potentially suitable habitat for aquatic species. While Maries River was identified to possibly support listed aquatic species, including the Niangua darter which has recorded populations near the Route 63 bridge over the Maries River, significant bridge improvements are not anticipated. Further, final routing has not been determined. Therefore, surveys for listed fish or mussels did not occur. Once design plans for the Westphalia Section are completed and potential impact areas identified, aquatic surveys may be performed at a future date as necessary.

The monarch butterfly is known to be present in the Midwest and in the vicinity of the project area; however, as the species is a candidate for official listing, there are currently no legal protections for the butterfly. Therefore, it is assumed that monarch butterfly habitat is present within the project area, but field surveys to identify the extent of potential butterfly habitat were not conducted.

2.3 ACOUSTIC SURVEY

In addition to the potential suitable habitat assessment conducted by WSP USA, Environmental Solutions & Innovations, Inc. (ESI) conducted an acoustic survey of the Westphalia Section project area in August 2022. Survey methods are presented in ESI’s resulting report*, Listed Bat Surveys for Missouri Department of Transportation Route 63 Project, Westphalia Section in Osage County, Missouri*, which is included as **Appendix B**.

3. ENVIRONMENTAL SETTING

3.1 ECOREGIONS

Ecoregions are those areas that possess similar ecosystems and similarity in the type, quality, and quantity of environmental resources (Bryce et al., 1999). The project area is located in the Ozark Highlands (39) Level III Ecoregion within the Osage/Gasconade Hills (39e) Level IV Ecoregion. Chapman et al. describe this ecoregion as comprised of moderately dissected hills with steep slopes and narrow valleys, karst features, and dendritic spring-fed perennial streams. Local elevation ranges from 600 to 1,100 feet with local relief ranging from 150 to 300 feet. Steep slopes and narrow ridges of carbonate and sandstone underlie soils which are rocky and thin. Outcrops of Gasconade dolomite with some sandstone are found throughout the region along with areas of Roubidoux sandstone, Jefferson City-Cotter dolomites, and scattered Mississippian limestone outliers in the western portion. Numerous caves, springs, calcareous wet meadows, losing streams, and streams with entrenched valley meanders are common. Streams flow generally northward and drain into the Missouri River. The potential natural vegetation is predominantly mixed oak forest, with oak-pine forest, and some pine forests in the southeast areas of the region. Some small limestone and sandstone glades are present. Land use and cover include forestry, recreation, and pasture (Chapman et al. 2002).

3.2 USGS TOPOGRAPHY

USGS topographic maps indicate that the project corridor traverses primarily steeply sloped terrain, crossing two floodplains. USGS-mapped streams in the project corridor include the Maries River, five of its intermittent tributaries, and three intermittent tributaries to the Osage River which is located west of the project area. One mapped pond is depicted near the northern terminus of the project area (USGS 2021, 2021a). USGS topographic mapping is shown on **Figure 1-1.**

3.3 LAND COVER

The 2019 National Land Cover Database (NLCD) identified 13 land cover classifications within the project area. The land cover classifications are grouped into general land use types such as cultivated crops, developed, emergent herbaceous wetlands, deciduous forest, herbaceous, open water, and woody wetlands. The approximate 542-acre project area is dominated by deciduous forest and/ or mixed forest land cover types combining to total 228 acres, where forested lands comprised approximately 42 percent of the project area. The next largest land cover type within the project area hay/pasture comprising 212 acres (**Table 3-1**).

TABLE 3-1 LAND COVER IN THE PROJECT AREA

Land Cover Class	Project Area (acres)
Barren Land	6.3
Cultivated Crops	2.9
Deciduous Forest	138.9
Developed, High Intensity	0.2
Developed, Low Intensity	27.8
Developed, Medium Intensity	25.5
Developed, Open Space	25.5
Evergreen Forest	5.0
Hay/Pasture	212.0
Herbaceous	6.6
Mixed Forest	88.7
Open Water	1.4
Woody Wetlands	1.6
Grand Total	**542.4**

Source: NLCD. 2019.

4. SPECIES DESCRIPTIONS

4.1 MAMMALS

4.1.1 GRAY BAT

The gray bat was listed as Endangered under ESA on April 28, 1976 [41 FR 17736 17740; 28 April 1976: Final Listing: Endangered]. A recovery plan for the species was completed on July 1, 1982. Critical habitat has not been designated by the USFWS for this species. This bat can reach up to four inches in length and weigh up to 16 grams, making it the largest species of *Myotis* found in the eastern United States. Gray bats are distinguished from other bats by the unicolored fur on their backs. Following their molt in July or August, gray bats have dark grey fur which often bleaches to a chestnut brown or russet color (USFWS 2022c).

The gray bat occupies a limited geographic range in limestone karst areas of the southeastern U.S. The species is mainly found in Alabama, northern Arkansas, Kentucky, Missouri, and Tennessee, and surrounding states (USFWS 2009). Gray bats can be found in caves year-round and do not usually use trees for roosting in the summer as other bat species do (USFWS 2022c). Some gray bats are also known to use storm sewers (Decher and Choate 1995), bridges (Cervone and Yeager 2016), quarries, mines (Brack et al. 1984), and other man-made buildings and tunnels (MDC 2022a) for roosting.

Approximately 80% of the gray bat population occurs in only nine caves (McClanahan 2012), and Missouri contains approximately 20% of the known total gray bat population, most of the caves residing south of the Missouri River and are particularly abundant in the Ozarks (MDC 2016b).

Gray bats roost, breed, rear young, and hibernate in caves/hibernacula year-round. Specifically, gray bats are true “cave bats”, meaning they require caves for both winter hibernation and summer roosting, and use separate caves for hibernation and summer roosting, as they may migrate hundreds of kilometers between summer roosts and hibernacula, or use transient or stopover caves along the way. Mating occurs in September and October as bats return to winter caves. By November, most gray bats are hibernating. Adult females begin to emerge in late March, followed by juveniles and adult males. Females store sperm over winter and become pregnant the following spring. Between a few hundred to thousands of pregnant females form a single maternity colony. Males and non-reproductive females gather in smaller bachelor colonies. Pups are born in late May or early June and begin to fly 20 to 25 days after birth. Gray bats feed primarily on flying insects over rivers and lakes. Aquatic insects, particularly mayflies, make up most of their diet (EKU 2012, IDNR 2016, USFWS 2022c). Foraging generally takes place over water; although, wetlands and open field corridors are used as well. Gray bats especially use wooded stream corridors and linear tree plantings as travel lanes between cave openings and preferred foraging areas (EKU 2012, IDNR 2016).

4.1.2 INDIANA BAT AND NORTHERN LONG-EARED BAT

The USFWS listed the Indiana bat as being in danger of extinction on March 11, 1967 [32 FR 4001; 11 March 1967] and this bat is currently listed as endangered under the ESA (USFWS 2019). The most current range-wide estimate of the population is 457,000, which is believed to be half of the 1967 population when the species was listed (USFWS 2022b,d). On April 2, 2015, USFWS published a notice in the Federal Register regarding its final decision to list the northern long-eared bat as threatened under the ESA and issued an interim 4(d) rule exempting certain activities from the ESA take prohibition [80 FR 17973 18033]. A final 4(d) rule was announced

on January 14, 2016 and took effect on February 16, 2016 [81 FR 1900 1922]. Most recently, the USFWS issued a proposed rule to reclassify the northern long-eared bat as endangered, which will go into effect January 30, 2023 [87 FR 16442 (March 23, 2022)]. Critical habitat has been established for Indiana bats; however, not for northern long-eared bats, (USFWS 2022b,d).

Dramatic population declines in both species is mostly attributed to white-nose syndrome (WNS), human disturbances to hibernacula, as well as habitat loss. Both species' populations are expected to continue in their decline as habitat is depleted, and as WNS spreads throughout their respective ranges (USFWS 2022d,e).

Suitable summer habitat for Indiana bats and northern long-eared bats consists of a wide variety of forested habitats where they roost, forage, and travel and may also include some adjacent and interspersed non-forested habitats such as emergent wetlands and adjacent edges of agricultural fields, old fields, and pastures. This includes forests and woodlots containing potential roosts (i.e., live trees and/or snags ≥5 inches diameter at breast height (dbh) for Indiana bats, ≥3 inches dbh for northern long-eared bats) that have exfoliating bark, cracks, crevices, and/or hollows), as well as linear features such as fencerows, riparian forests, and other wooded corridors. These wooded areas may be dense or loose aggregates of trees with variable amounts of canopy closure. Individual trees may be considered suitable habitat when they exhibit the characteristics of a potential roost tree and are located within 1,000 feet (305 meters) of other forested habitat. Both bats have also been observed roosting in human-made structures, such as bridges and bat houses (artificial roost structures); therefore, these structures should also be considered potential summer habitat. Both bats typically occupy their summer habitat from mid-May through mid-August each year and the species may arrive or leave some time before or after this period (USFWS 2022b).

Examples of unsuitable habitat for both the Indiana and northern long-eared bat include:

- Individual trees that are greater than 1,000 feet from forested areas.
- Trees found in highly developed urban areas (e.g., street trees, downtown areas).
- A pure stand of less than 3-inch dbh trees that are not mixed with larger trees.

Tree species that both species of bat have been known to roost and establish maternity colonies include hickories (*Carya* spp.), oaks (*Quercus* spp.), elms (*Ulmus* spp.), ashes (*Fraxinus* spp.), maples (*Acer* spp.), and poplar (*Populus* spp.) trees. Some tree species, primarily hickories, and to a lesser extent, oaks, provide adequate bark characteristics in living trees. Space between exfoliating bark and the trunk of the tree appears to be the primary characteristic needed for bats to use a particular tree. While it is generally accepted that Indiana bats use floodplain and riparian forests for their primary habitats during the summer, research also has indicated the importance of upland forest for roost locations. In upland situations, Indiana bats forage among the canopies of forests, ponds, and waterbodies, and often along the borders of agricultural fields and pastures (USFWS 2007, USFWS 2022b). Northern long-eared bats emerge from their roosts at dusk to forage through the understory of forested hillsides and ridges feeding on insects. The average foraging distance from their roost is approximately 1.5 miles (Jackson 2004, USFWS 2022b).

4.1.3 LITTLE BROWN BAT

Currently, there is no legal protection for the little brown bat; however, the USFWS conducted a status review in 2016 due to the little brown bat's susceptibility to WNS. The status review specifically focused on the eastern subspecies and their severe population decline. Despite these declines, USFWS found that listing was not warranted at the time (Tinsley 2016, MDC

2022c). Currently, federal listing status is under review, an effort led by the Northeast Region (Region 5) of the USFWS (USFWS 2022f).

The extent of the little brown bat's range is widespread throughout North America and including most of the contiguous U.S.; although, this species is mostly absent in the Great Plains, with most of the population existing in the eastern U.S. north of South Carolina, Georgia, and Alabama (USFWS 2022g). Total global population size is estimated to be over 100,000, however populations have declined significantly especially within the eastern portion of its range (Frick et al. 2010). The main threat to little brown bats is WNS, which is the culprit for several regional extirpations (O'Keefe et al 2019). An eastern regional species extinction has been projected to occur with near certainty before 2026 as WNS spreads rapidly throughout the population (Frick et al. 2010). Prior to WNS, little brown bats were regularly found throughout most of Missouri during the summer. Presently, little brown bats are known to hibernate in 61 counties in Missouri, mostly in caves and mines in southern Missouri; although, exceptions exist in both northeastern (Marion County) and northwestern Missouri (north of Kansas City) (MDC 2022b).

Much of their foraging activity is associated with aquatic habitats and they tend to use nearby roosting habitat that includes man-made structures, and less frequently, tree hollows and caves. They will migrate between structures or caves in winter to trees and other structures during the summer but will generally stay within 62 miles of their hibernacula (MDC 2022b).

4.1.4 TRICOLORED BAT

On June 14, 2016, a petition from the Center for Biological Diversity was submitted to the USFWS to list the tricolored bat as endangered status. A 90-day species review of five species, including the tricolored bat, was submitted by the USFWS on December 20, 2017, to determine if the petitioned actions were warranted (FR 2017). Conjunctively, a species status assessment for the tricolored bat was completed on December 1, 2021, to provide an in-depth review of the current and past status of the species, in addition to the conditions needed to ensure survivorship (USFWS 2021, 2022h). Upon a complete review, the USFWS listed the tricolored bat as proposed endangered on September 14, 2022, [87 FR 56381-56393] (FR 2022).

The tricolored bat is one of the smallest bats found in the eastern U.S. that is identifiable by its tricolored fur that is commonly pale yellowish to reddish brown. Additionally, they are distinguishable by their 34 teeth as compared to the 38 teeth containing *Myotis* spp. (Barbour and Davis, 1969, USFWS 2022h).

The tricolored bat is common throughout forests in the U.S., distributed as far north as Canada, and as far south as Mexico. These bats are associated with forests with characteristic open mid- and understories, and near adjacent aquatic or riparian sources (USFWS 2021). Maternity and summer roosts may be found in live or recently dead trees containing live or dead leaf clusters, or dense foliage, along with caves, mines, and rock outcrops, as well as man-made structures such as bridges and box culverts, while hibernation sites are mostly found in caves or mines. Where caves or mines are sparse, tricolored bats have been known to hibernate in tree cavities, road culverts, or abandoned water wells (Ferrara and Leberg 2005, Poissant et al. 2010, USFWS 2021). The current population in the U.S. is around 10,000 adults; however, the species has experienced a sharp decline since 2006. Regional abundance varies and may be hard to predict whether populations are increasing or decreasing regionally.

Tricolored bats have suffered severe decline from WNS (O'Keefe et al 2019), which is considered the species' most notable threat. Their preference for warmer, more humid caves or mines does not help mitigate the spread of WNS throughout their population (USFWS 2022h). Disturbance or natural and artificial roost destruction also pose a large threat to the species,

especially hibernacula habitat. Disturbance to caves or mines, deforestation, pesticide use, and the existence of wind turbines too close to habitat all play a role in decreasing population numbers (USFWS 2021, 2022h).

4.2 FISH

4.2.1 NIANGUA DARTER

Federally listed as threatened in 1985 (FR 1985), and state listed endangered in Missouri (MDC 2022c), the Niangua darters' largest remaining population resides in the Niangua and Little Niangua Rivers. Elsewhere, the species has disappeared or is declining significantly within smaller tributaries of the Osage River. The Niangua darter's now-decreased range is limited to central Missouri within these streams. It prefers clear Ozark creeks and small rivers draining Ozark topography, where they may occupy shallow pools in streams with moderate currents and gravelly substrate. The Niangua darter is a relatively large (3-4 inches), slender darter, identified by two small black spots at the base of the tailfin, and yellowish- or olive-coloured bars running down its back, with orange speckles. The fish probes for food in between crevices of gravelly substrate eating mostly nymphs, stoneflies, or mayflies. Species decline has been attributed to habitat loss, and stream channel disruption, as well as runoff pollution and subsequent declines in water quality (MDC 2022c).

4.3 CLAMS

Freshwater mussels are generally found in a variety of riparian habitats including substrates such as mud, sand, bedrock ledges, rubble, and gravel. Most mussels are found in riverine habitats buried in relatively firm rubble, gravel, and sand substrates free of silt, and are often found in riffle and shoal areas (USFWS 1985, 2010; FR 2011). IPaC has identified three endangered mussels within the vicinity of the project area (USFWS 2022a). Over the years, the reduction of suitable substrate (sand and gravel) has affected the distribution of the mussel's fish hosts, thereby indirectly affecting habitat suitability. Such enterprises that reduce sand and gravel habitats include dams, reservoirs, impoundments, and farming and mining practices that not only increase sedimentation but increase runoff pollution that has proven toxic to filter feeding organisms (USFWS 1997).

4.3.1 PINK MUCKET (PEARLYMUSSEL)

The pink mucket (pearlymussel) is a federally endangered species. Its current distribution encapsulates the eastern Midwest and a couple adjoining southern states. The mussel prefers shallow streams that provide slow riffles and suitable sandy or gravelly, yet silt-free substrate, where a healthy population of host fish are present for reproduction. The pink mucket mussel is commonly found in medium to large rivers (> 20-m wide) in silt, sand, gravel, and rubble (up to bolder-sized) substrate. This mussel prefers moderate to fast currents at water depths of 0.5 to 8 meters deep (USFWS 1985). Critical habitat has not been designated for the pink mucket (USFWS 2021b).

4.3.2 SCALESHELL MUSSEL

The scaleshell mussel is commonly found in medium to large rivers with low to medium gradients. It is found in a variety of substrates, but primarily in stable riffles, and slow to moderate currents. This mussel is often found among different species in channelled mussel

beds. (USFWS 2010). Critical habitat has not been designated for the scaleshell (USFWS 2022a).

4.3.3 SPECTACLECASE (MUSSEL)

The spectaclecase mussel is generally found in large rivers near sheltered locations away from the main current. It uses a variety of substrates in relatively shallow riffles and shoals with currents ranging from slow to swift. It tends to aggregate in firm muds, or under bedrock shelves or slabs that are protected from the current (FR 2011). Critical habitat has not been designated for the spectaclecase (USFWS 2022a).

4.4 INSECTS

4.4.1 MONARCH BUTTERFLY

Over the last two decades, the monarch butterfly population has declined dramatically. A USFWS 12-month finding was published in December of 2020 regarding a petition to list the monarch butterfly as threatened under the ESA. The 12-month review found that listing the monarch butterfly as endangered or threatened is warranted but precluded by higher priority amendment actions to the existing list of endangered or threatened plants and animals. A proposed ruling will be developed as priorities allow, and until then, the monarch butterfly is listed as a candidate species. The North American monarch butterfly population accounts for more than 90 % of the worldwide number of monarchs. North America supports two populations of monarchs - the western and eastern. These North American monarch populations have less than 10 % probability of extinction within the next 10 years (USFWS 2020 a,b).

North American monarch butterfly populations are notorious for their long-distance migration and lay their eggs on a host milkweed plant (*Asclepias* spp.), an obligate host that provides toxic defenses to the larvae against predators. After pupation, the monarch butterfly begins a long-distance migration to overwintering grounds. Migrations can cover distances of over 3,000 kilometers and last over two months. Toward the end of their overwintering period, usually early spring, adults mate before returning to their breeding grounds. In addition to requiring these milkweed species for larvae defense, adults require a diversity of blooming nectar resources during both breeding and migration, culminating in the need for both milkweed and diverse nectar resources year-round, especially in non-migrating populations. (USFWS 2020 a,b).

The primary drivers affecting the health of the two North American monarch populations include changes to breeding, migratory, and overwintering habitat. Specific threats include the conversion of grasslands to agriculture, urban sprawl, a widespread use of pesticides and herbicides, logging and deforestation, poor management of overwintering habitat, the effects of climate change, disease, predation, and a decline in nectar resources. The most influential driver for the recovery of the monarch is the availability, distribution, and quality of host milkweed species, as well as suitable overwintering habitat (USFWS 2020 a,b).

5. RESULTS

Results of the protected species habitat suitability review of the project area are summarized herein. The project area is comprised of fragmented forest stands intermingled with agricultural fields and livestock pastures. Forest stands generally consist of deciduous hardwoods with softer deciduous tree species occurring along streams. More details on tree species and habitat characteristics can be found in ESI's report, included as **Appendix B**. Forest Stands and their presence or absence determination of whether the stand is suitable for bat roosting and/or foraging are shown in **Figure 5-1** and listed in **Table 5-2**. The detector site locations from ESI's acoustic survey are also depicted in **Figure 5-1**. A representative photographic log of potential bat roost trees and FSs in the project area is included as **Appendix C**. A summary of findings regarding the potential for suitable habitat to be present in the project area as well as the potential impacts that may occur to listed species is provided in **Table 5-1**.

TABLE 5-1 PROTECTED SPECIES WITHIN PROJECT AREA

	Common Name	Potentially Suitable Habitat Present	Potential Impact Type
Mammals	Gray bat	Yes	Foraging only
	Indiana bat	Yes	Roosting/Foraging
	Northern long-eared bat	Yes	Roosting/Foraging
	Little brown bat	Yes	Roosting/Foraging
	Tricolored bat	Yes	Roosting/Foraging
Fish	Niangua Darter	Yes	Maries River/Perennial Streams
Clams	Pink Mucket (pearlymussel)	Yes	Maries River
	Scaleshell Mussel	Yes	Maries River
	Spectaclecase (mussel)	Yes	Maries River
Insects	Monarch butterfly	Yes	Wildflower/Milkweed

5.1 MAMMALS

5.1.1 GRAY BAT

The project area is comprised of moderately dissected hills with steep slopes and narrow valleys, karst features, and dendritic spring-fed perennial streams intermixed with livestock and agricultural crop fields. Numerous caves, springs, calcareous wet meadows, losing streams, and streams with entrenched valley meanders are common within this area of Missouri. According the MDNR GeoSTRAT, at least four caves are located in close proximity to the project area. In August 2022, ESI conducted acoustic surveys following USFWS 2022 *Guidelines* and detected evidence of the gray bat, among other common bat species. See ESI's report in **Appendix B** for more details.

Further, and although not very common, gray bats have sometimes been known to inhabit man-made structures for roosting. Some potentially suitable structures within the project area may include culverts, bridges, old or abandoned barns, or other man-made structures. No caves or structures that would be considered suitable habitat for roosting were identified during field surveys within the currently proposed project limits, however various suitable roosting habitat likely exists nearby. As the project progresses and routing plans are finalized, suitable structures may be impacted and/ or small caves may be found, in which case further field determination or analysis may be needed. Therefore, due to proximity of at least four known caves, suitable foraging habitat for the gray bat has been identified within the project area.

5.1.2 INDIANA BAT AND NORTHERN LONG-EARED BAT

In August 2022, ESI conducted acoustic surveys following USFWS 2022 *Guidelines* and did not find Indiana or northern long-eared bat protective buffers. Maximum likelihood analysis in Kpro did not indicate the potential presence of either of these bat species; therefore, project call files were not visually vetted. See ESI's report in **Appendix B** for more details. However, the project area could be considered potential foraging habitat given the amount of suitable roosting habitat, proximity to water features, and open corridors. Where suitable tree roosting snags or cavities exist, potentially suitable roosting habitat is presumed. Potentially suitable roosting habitat was identified by WSP biologists within FSs that contain suitable snags or cavities. Although potentially suitable habitat was found for the Indiana and northern long-eared bats, acoustic surveys did not indicate the presence of these species in the project area. Therefore, in our opinion, these protected species are not likely to occur in the project area, so may be exempt from USFWS conservative tree clearing restrictions.

5.1.3 LITTLE BROWN BAT

In August 2022, ESI conducted acoustic surveys following USFWS 2022 *Guidelines* and detected evidence of the little brown bat in the project area. See ESI's report in **Appendix B** for more details. The project area could be considered potential foraging habitat given the amount of suitable roosting habitat, proximity to water features, and open corridors. Where structures such as old barns, bridges, or large culverts exist, and where suitable tree roosting snags or cavities exist, potentially suitable roosting habitat is presumed. Potentially suitable roosting habitat was identified by WSP biologists within forest stands that contain suitable snags or cavities. Although the little brown bat is not currently under ESA protections, given that this species' status is under review and evidence of its presence was detected, further considerations for this bat may need addressed once design plans are determined and Section 404 permitting and Section 7 consultation is initiated.

5.1.4 TRICOLORED BAT

In August 2022, ESI conducted acoustic surveys following USFWS 2022 *Guidelines* and detected evidence of the tricolored bat in the project area. See ESI's report in **Appendix B** for more details. The project area could be considered potential foraging habitat given the amount of suitable roosting habitat, proximity to water features, and open corridors. Where structures such as old barns, bridges, or large culverts exist, and where suitable tree roosting snags, cavities, or dense canopy foliage exist, potentially suitable roosting habitat is presumed. Potentially suitable roosting habitat was identified by WSP biologists within forest stands that contain suitable snags or cavities, as well as dense canopy foliage in alive, declining, or recently dead trees. Although the tricolored bat is not currently under ESA protections, given that this species' status is proposed endangered and evidence of its presence was detected, further considerations for this bat may need addressed once design plans are determined and Section 404 permitting and Section 7 consultation is initiated.

TABLE 5-2 POTENTIALLY SUITABLE HABITAT STANDS IN THE PROJECT AREA

Forest Stand ID	Suitable Habitat	Latitude	Longitude
OC-FS-0020	**Present**	38.483708	-92.003024
OC-FS-0030	**Present**	38.477905	-92.006362
OC-FS-0040	**Present**	38.475676	-92.006094
OC-FS-0045	**Present**	38.474463	-92.005685
OC-FS-0050	**Present**	38.468046	-92.006990
OC-FS-0060	**Present**	38.460216	-92.008835
OC-FS-0070	**Present**	38.460194	-92.010979
OC-FS-0080	**Present**	38.457627	-92.013100
OC-FS-0090	**Present**	38.457887	-92.015138
OC-FS-0100	**Present**	38.455633	-92.016766
OC-FS-0105	**Present**	38.455627	-92.018482
OC-FS-0110	**Present**	38.452796	-92.020306
OC-FS-0120	**Present**	38.450973	-92.020795
OC-FS-0130	**Present**	38.44995	-92.019910
OC-FS-0140	**Present**	38.445994	-92.018656
OC-FS-0145	**Present**	38.444241	-92.019113
OC-FS-0150	**Present**	38.44328	-92.015936
OC-FS-0160	**Present**	38.441863	-92.014273
OC-FS-0170	**Present**	38.43929	-92.008713
OC-FS-0180	**Present**	38.437452	-92.002269
OC-FS-0190	**Present**	38.436473	-92.000476
OC-FS-0195	Absent	38.436704	-91.999487
OC-FS-0200	**Present**	38.435357	-91.998622
OC-FS-0210	**Present**	38.434992	-91.994420
OC-FS-0215	**Present**	38.432378	-91.990923
OC-FS-0220	Absent	38.431514	-91.989153
OC-FS-0225	Absent	38.429815	-91.987345
OC-FS-0230	**Present**	38.431682	-91.988062
OC-FS-0235	Absent	38.429542	-91.985930
OC-FS-0240	Absent	38.426466	-91.983756
OC-FS-0241	Absent	38.424288	-91.981952
OC-FS-0245	Absent	38.422637	-91.980447
OC-FS-0255	**Present**	38.421954	-91.979437
OC-FS-0260	**Present**	38.420682	-91.978207
OC-FS-0265	**Present**	38.419571	-91.979147
TOTAL	**28/35 Present**		

5.2 AQUATIC SPECIES

Aquatic surveys were not conducted as part of this assessment. Within the project area, Maries River and one other perennial stream exhibit potential to support the Niangua darter. While the Maries River may be able to support listed clam species, the perennial stream appears to lack such characteristics suitable for clam habitat. Depending on final design plans, further aquatic studies may need conducted.

5.3 INSECTS

5.3.1 MONARCH BUTTERFLY

As the open fields within the project area are generally agriculturally managed, natural vegetation communities that might harbour important nectar sources or host milkweed plants are mostly prevented from maturing and flowering. Additionally, much of the existing project area is forested and prevents wildflower or milkweed growth. However, several herbaceous corridors along Route 63, fallow fields, and edge habitat exhibited native wildflowers, including milkweed. Therefore, the project area contains suitable monarch butterfly habitat; however, this species is not yet federally protected and is in candidate status. Further considerations for the monarch butterfly may need addressed once design plans are determined and Section 404 permitting and Section 7 consultation is initiated.

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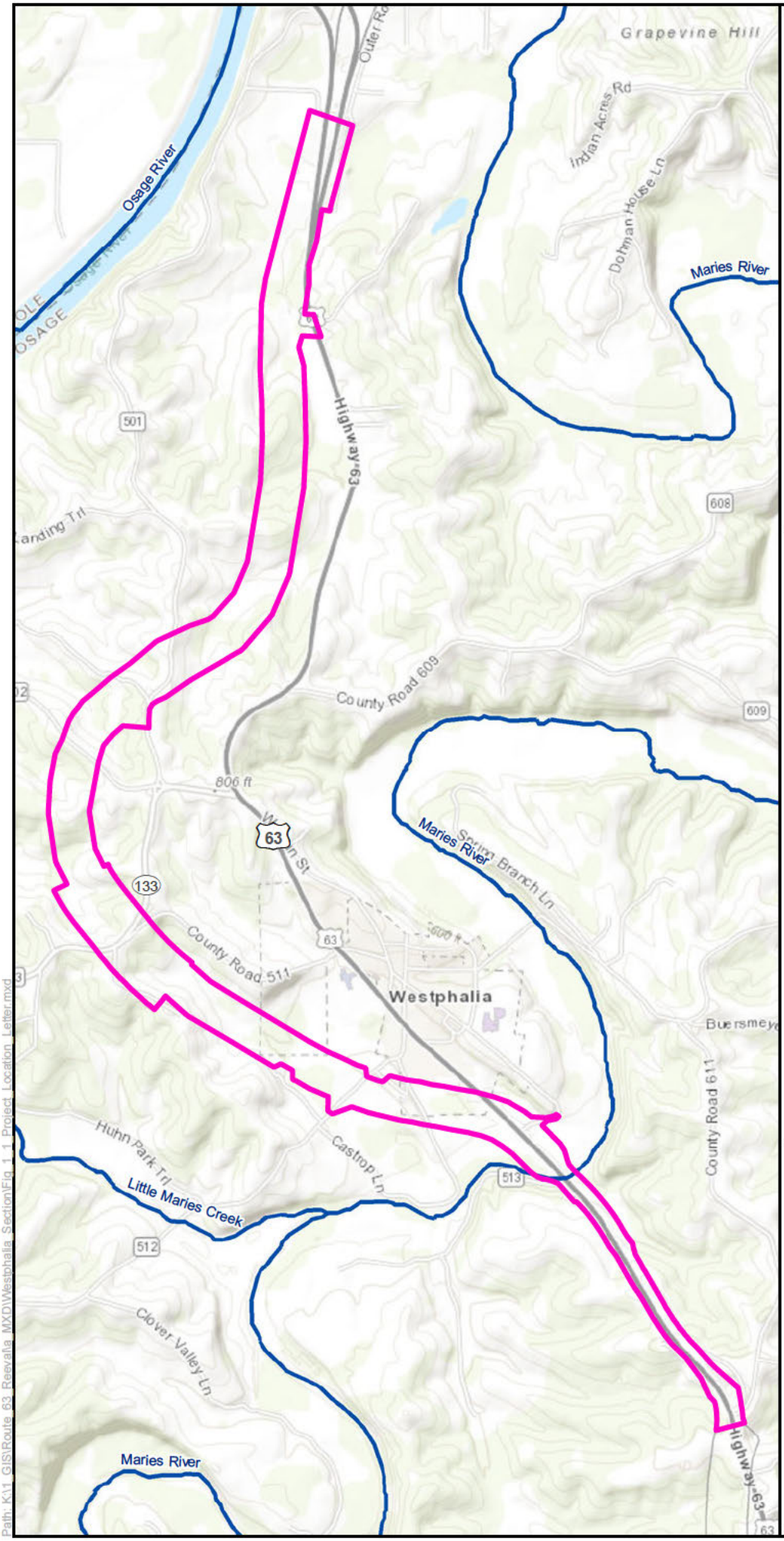
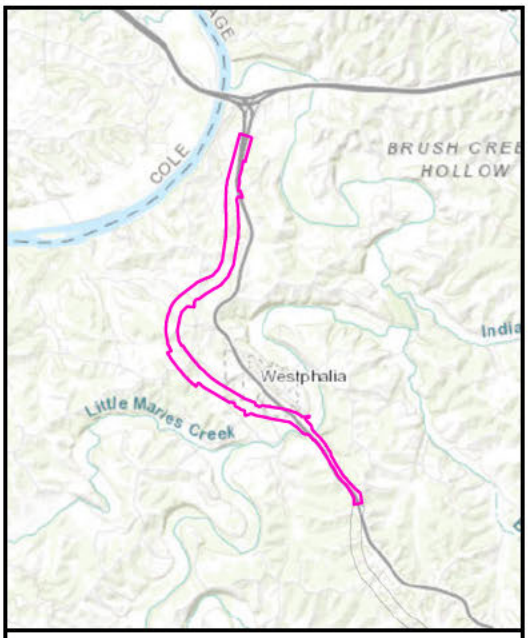
Figures

FIGURE 6-1 PROJECT LOCATION

FIGURE 5-1 PROTECTED SPECIES HABITAT SUITABILITY FINDINGS





Area of Detail

Legend

- Westphalia Section
- Stream

0.5 0 0.5

Miles

Figure 1-1.
Project Location

Route 63 EIS
Re-evaluation Project
MoDOT Job No. CD0007
Westphalia Section

Job No.	325222277
Drawn By:	DJH
Reviewed By:	RLL
Date:	12/20/2022

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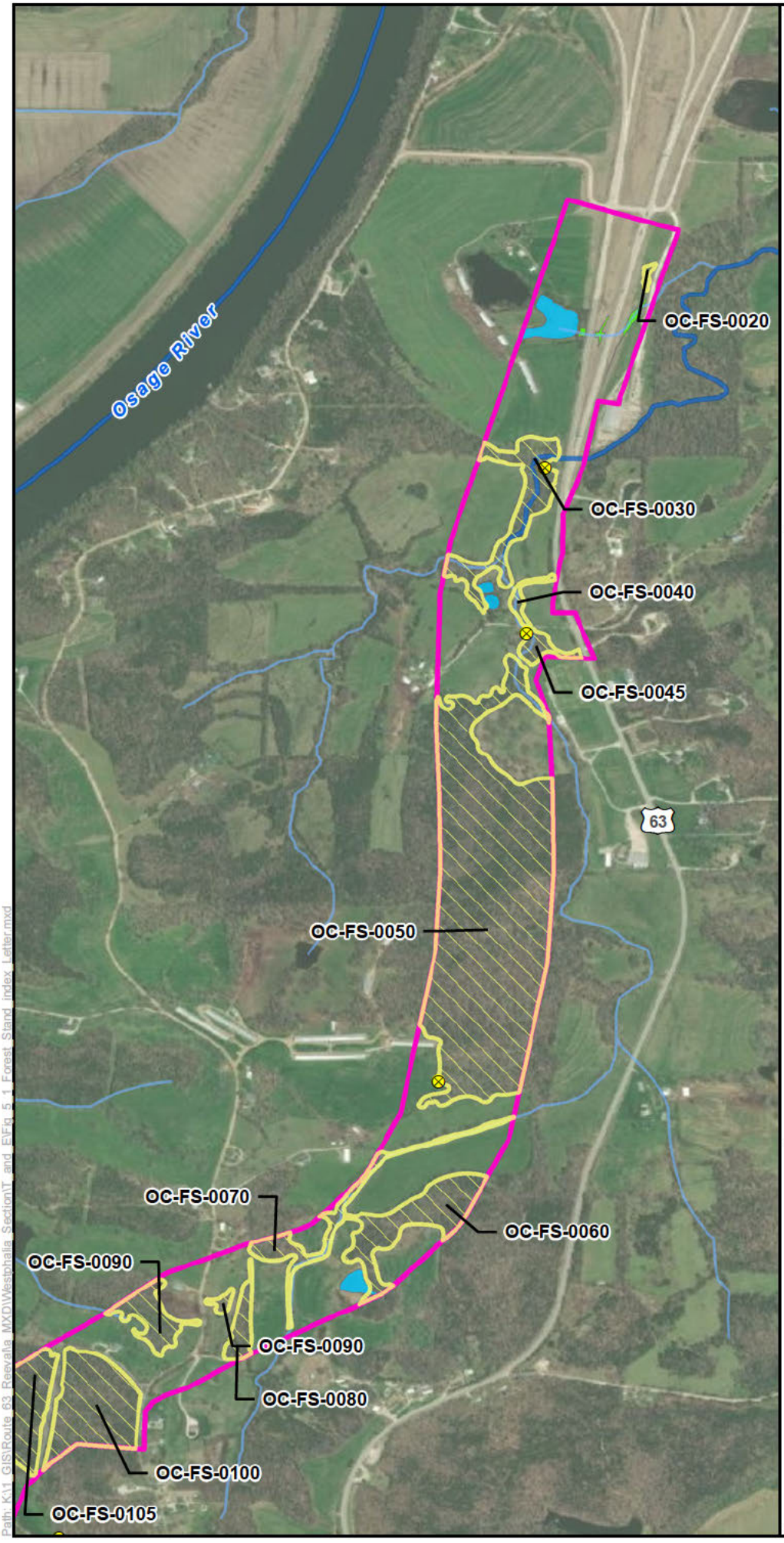

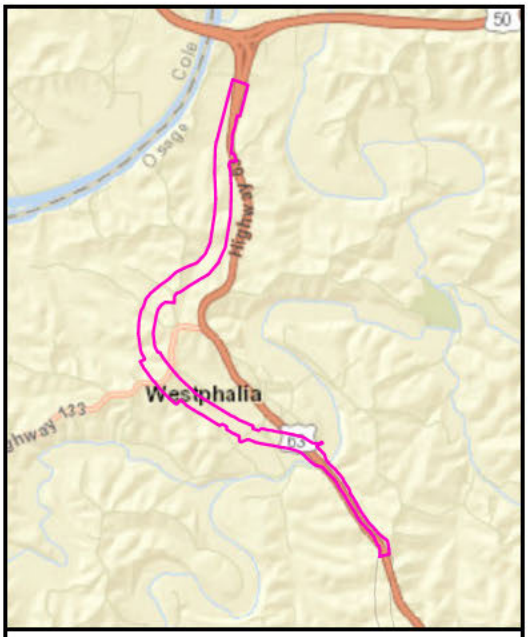

Area of Detail

Legend

- Acoustic Detectors

Forest Stand (WSP delineated)
- PBRT Present
- PBRT Absent

Water Resource (WSP delineated)
- Emergent
- Forested
- Open Water
- NHD Stream
- Perennial Streams

Preferred Alternative Project Area
- Westphalia Section

1,000 0 1,000
Feet

N

Figure 5-1.
Protected Species Habitat Suitability Findings
Page 1 of 5

Route 63 EIS
Re-evaluation Project
MoDOT Job No. CD0007
Westphalia Section

Job No.	325222277
Drawn By:	DJH
Reviewed By:	RLL
Date:	12/21/2022

WSP

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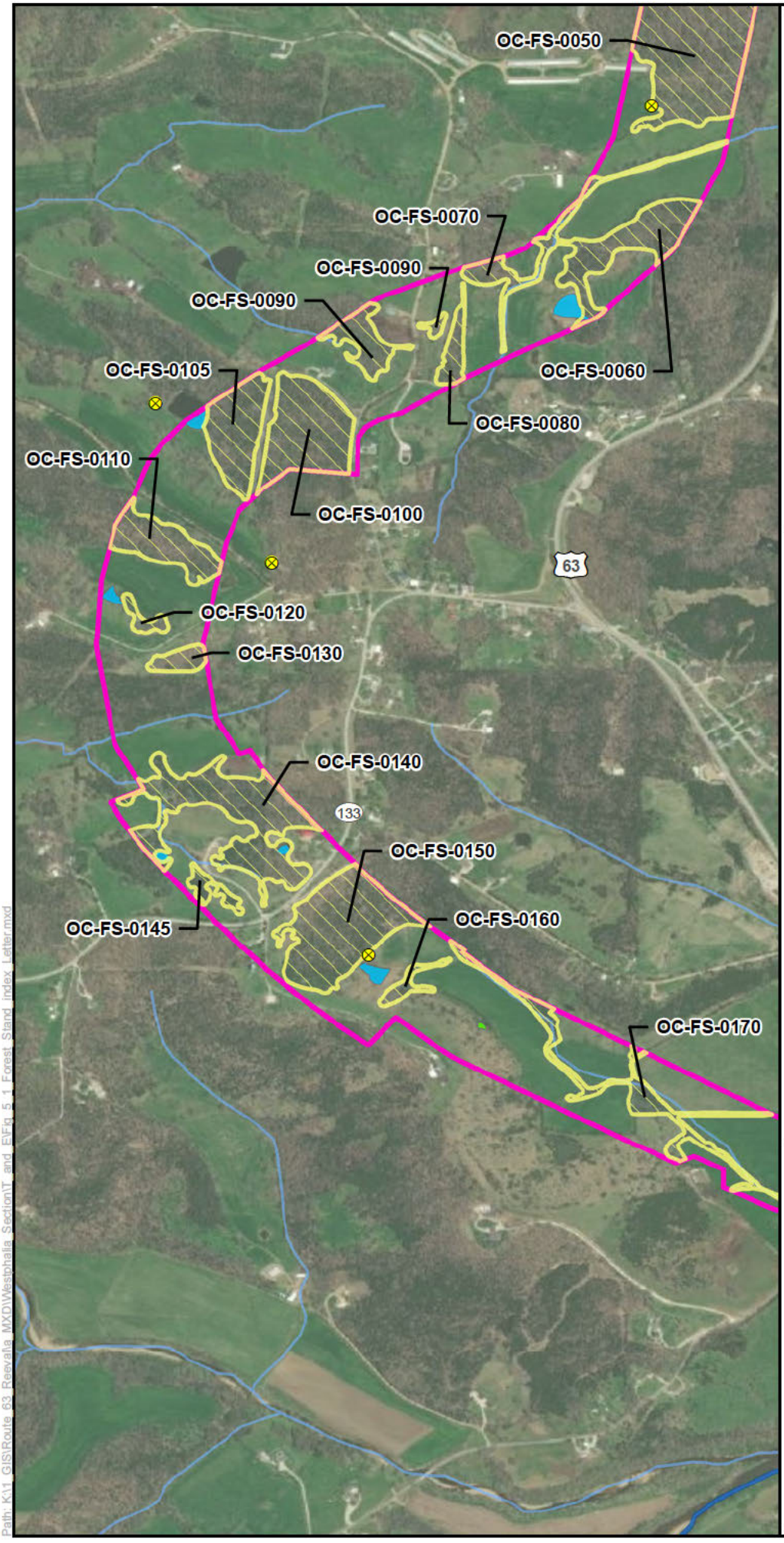

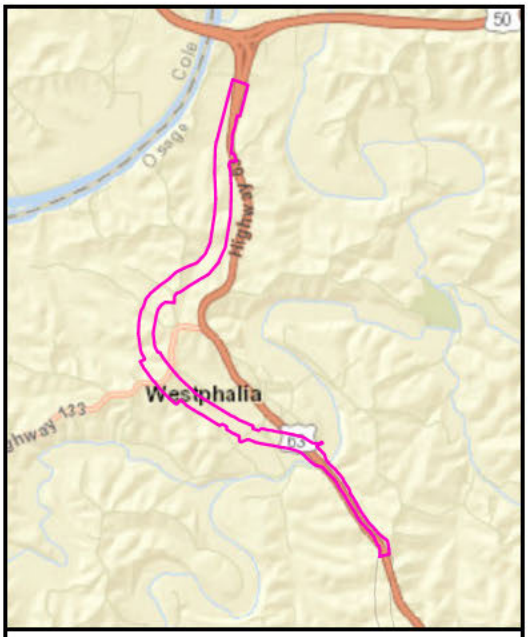

Area of Detail

Legend

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- Open Water
- NHD Stream
- Perennial Streams

Preferred Alternative Project Area
- Westphalia Section

1,000 0 1,000
Feet

N

Figure 5-1.
Protected Species Habitat Suitability Findings
Page 2 of 5

Route 63 EIS
Re-evaluation Project
MoDOT Job No. CD0007
Westphalia Section

Job No.	325222277
Drawn By:	DJH
Reviewed By:	RLL
Date:	12/21/2022

WSP

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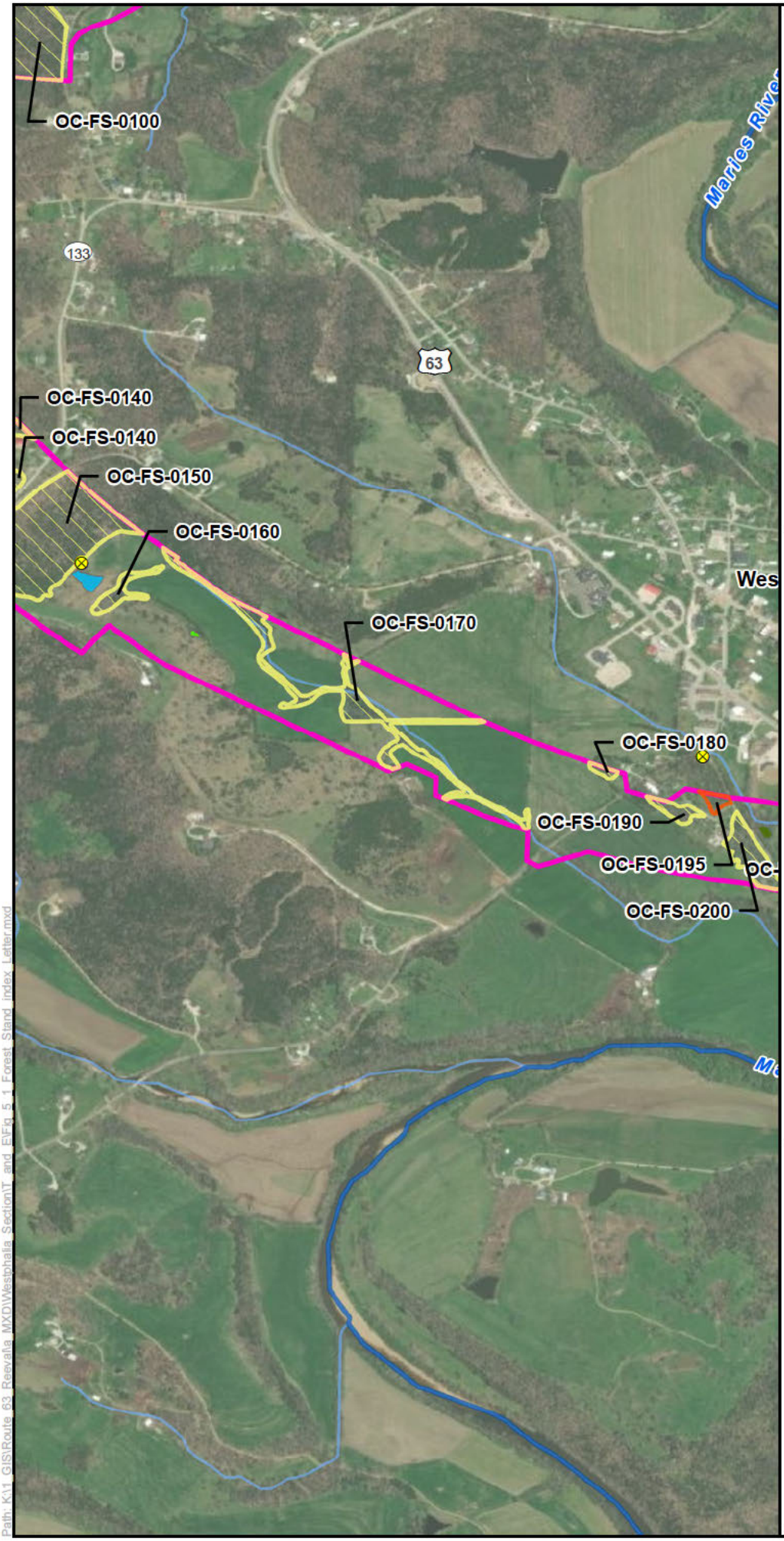

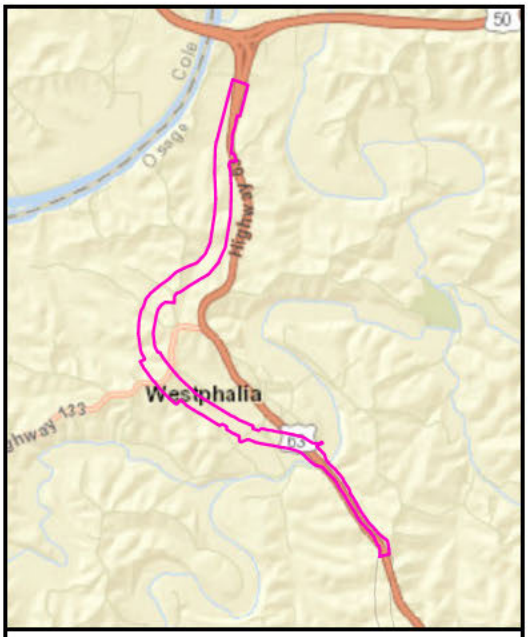

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Legend

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Water Resource (WSP delineated)
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- Forested
- Open Water
- NHD Stream
- Perennial Streams

Preferred Alternative Project Area
- Westphalia Section

1,000 0 1,000
Feet

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Figure 5-1.
Protected Species Habitat Suitability Findings
Page 3 of 5

Route 63 EIS
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MoDOT Job No. CD0007
Westphalia Section

Job No.	325222277
Drawn By:	DJH
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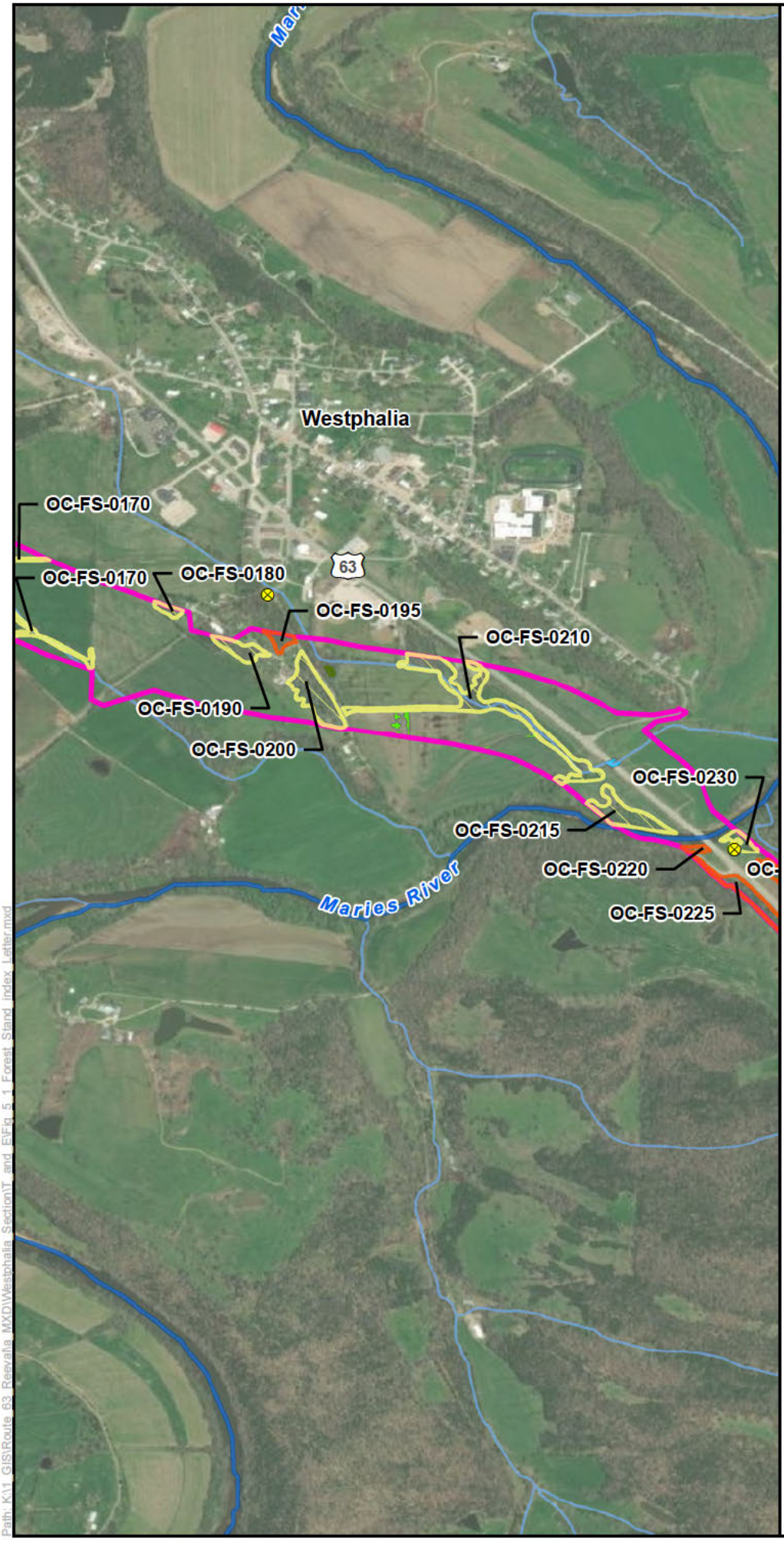

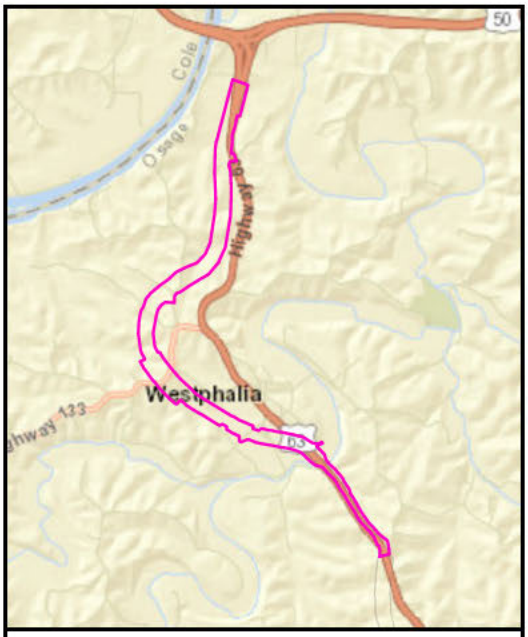

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Legend

- Acoustic Detectors
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  - NHD Stream
  - Perennial Streams
- Preferred Alternative Project Area
  - Westphalia Section

1,000 0 1,000
Feet

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Figure 5-1.
Protected Species Habitat Suitability Findings
Page 4 of 5

Route 63 EIS
Re-evaluation Project
MoDOT Job No. CD0007
Westphalia Section

Job No.	325222277
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Reviewed By:	RLL
Date:	12/21/2022

WSP

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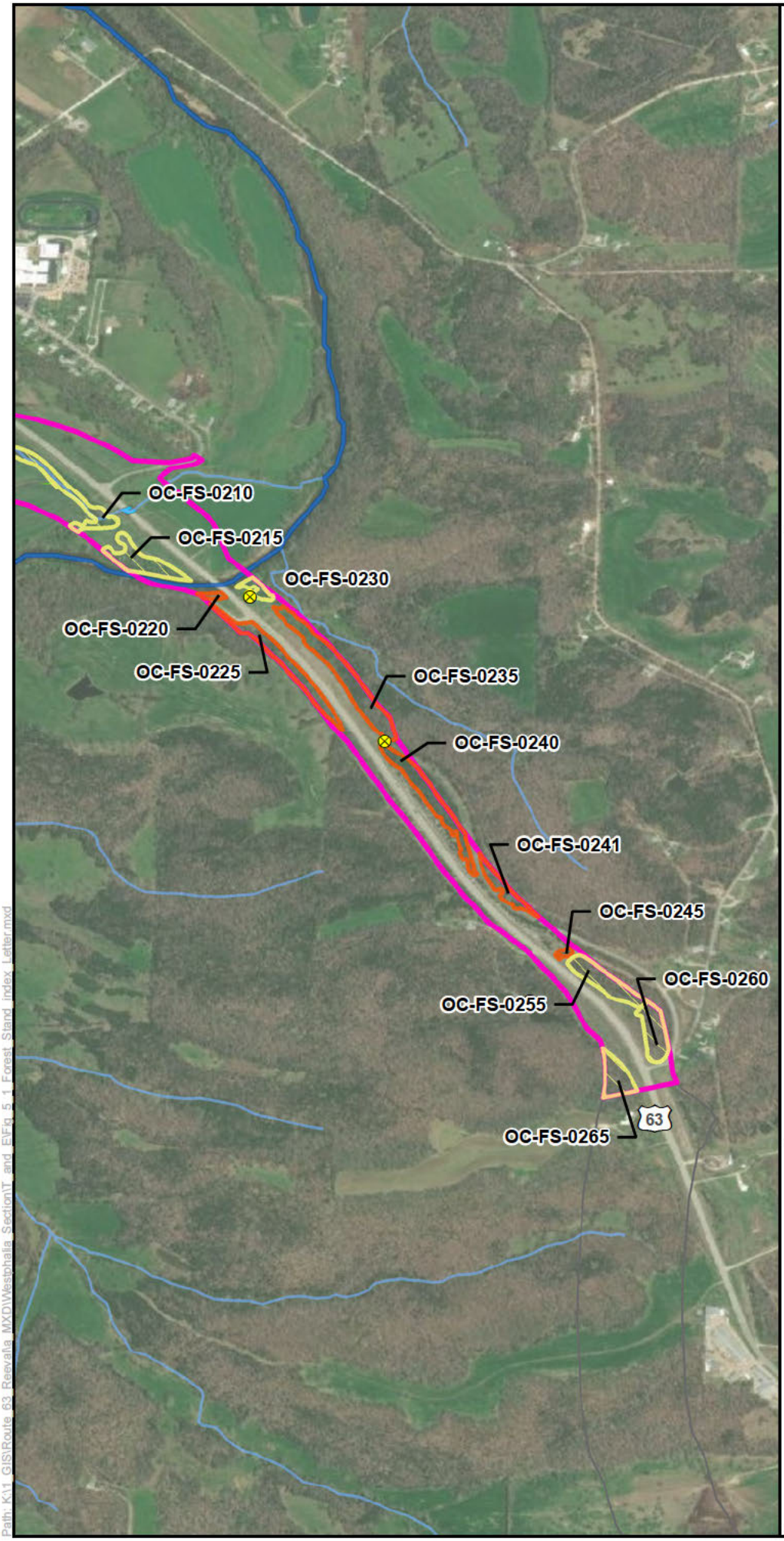

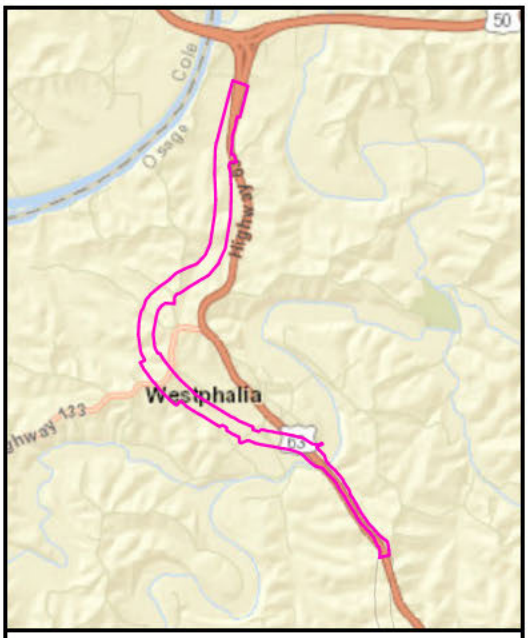

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- Acoustic Detectors
- Forest Stand (WSP delineated)
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- Preferred Alternative Project Area
  - Westphalia Section

1,000 0 1,000
Feet

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Figure 5-1.
Protected Species Habitat Suitability Findings
Page 5 of 5

Route 63 EIS
Re-evaluation Project
MoDOT Job No. CD0007
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Appendix A
USFWS and MDC Unofficial Species Lists

IPaC **U.S. Fish & Wildlife Service**

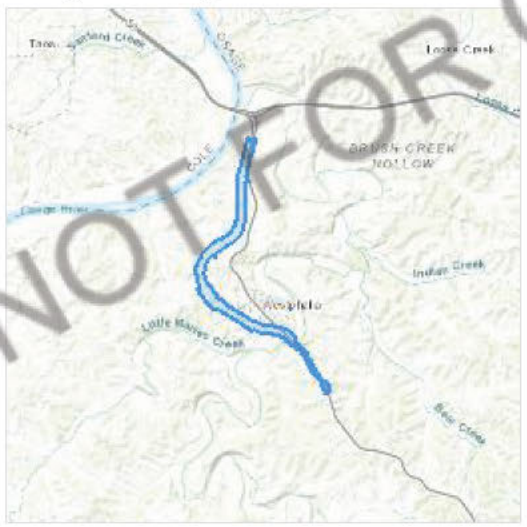
IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Osage County, Missouri



Local office

Missouri Ecological Services Field Office

(573) 234-2132
(573) 234-2181

101 Park Deville Drive

Suite A
Columbia, MO 65203-0057

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

---

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).

2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Gray Bat Myotis grisescens Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/6329	Endangered
Indiana Bat Myotis sodalis Wherever found There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/5949	Endangered
Northern Long-eared Bat Myotis septentrionalis Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9045	Threatened

Fishes

NAME	STATUS
Niangua Darter Etheostoma nianguae Wherever found There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/7157	Threatened

Clams

NAME	STATUS
Pink Mucket (pearlymussel) Lampsilis abrupta Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/7829	Endangered

Scaleshell Mussel Leptodea leptodon — Endangered
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/5881

Spectaclecase (mussel) Cumberlandia monodonta — Endangered
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/7867

Insects

NAME	STATUS
Monarch Butterfly Danaus plexippus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9743	Candidate

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern https://www.fws.gov/program/migratory-birds/species

- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)

Bald Eagle Haliaeetus leucocephalus — Breeds Sep 1 to Jul 31
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Chimney Swift Chaetura pelagica — Breeds Mar 15 to Aug 25
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Kentucky Warbler Oporornis formosus — Breeds Apr 20 to Aug 20
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Lesser Yellowlegs Tringa flavipes — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9679

Prothonotary Warbler Protonotaria citrea — Breeds Apr 1 to Jul 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Red-headed Woodpecker Melanerpes erythrocephalus — Breeds May 10 to Sep 10
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Wood Thrush Hylocichla mustelina — Breeds May 10 to Aug 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season ( )
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

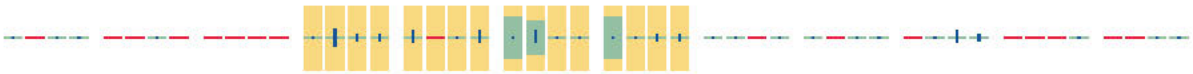
No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

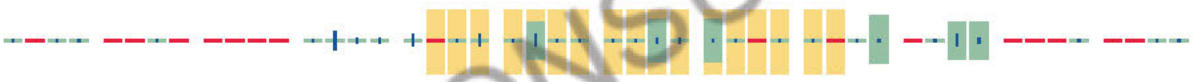
probability of presence breeding season survey effort no data

Lesser Yellowlegs BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

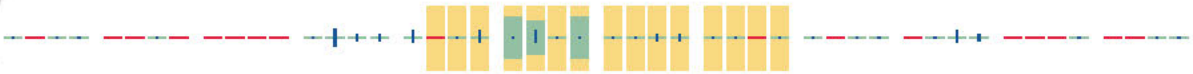
Prothonotary Warbler BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Red-headed Woodpecker BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Wood Thrush BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bir does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin

Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn

more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Coastal Barrier Resources System

Projects within the John H. Chafee Coastal Barrier Resources System (CBRS) may be subject to the restrictions on federal expenditures and financial assistance and the consultation requirements of the Coastal Barrier Resources Act (CBRA) (16 U.S.C. 3501 et seq.). For more information, please contact the local Ecological Services Field Office or visit the CBRA Consultations website. The CBRA website provides tools such as a flow chart to help determine whether consultation is required and a template to facilitate the consultation process.

THERE ARE NO KNOWN COASTAL BARRIERS AT THIS LOCATION.

Data limitations

The CBRS boundaries used in IPaC are representations of the controlling boundaries, which are depicted on the official CBRS maps. The boundaries depicted in this layer are not to be considered authoritative for in/out determinations close to a CBRS boundary (i.e., within the "CBRS Buffer Zone" that appears as a hatched area on either side of the boundary). For projects that are very close to a CBRS boundary but do not clearly intersect a unit, you may contact the Service for an official determination by following the instructions here: https://www.fws.gov/service/coastal-barrier-resources-system-property-documentation

Data exclusions

CBRS units extend seaward out to either the 20- or 30-foot bathymetric contour (depending on the location of the unit). The true seaward extent of the units is not shown in the CBRS data, therefore projects in the offshore areas of units (e.g., dredging, breakwaters, offshore wind energy or oil and gas projects) may be subject to CBRA even if they do not intersect the CBRS data. For additional information, please contact CBRA@fws.gov.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

WETLAND INFORMATION IS NOT AVAILABLE AT THIS TIME

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the NWI map to view wetlands at this location.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also

been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

Missouri Department of Conservation

Missouri Department of Conservation's Mission is to protect and manage the forest, fish, and wildlife resources of the state and to facilitate and provide opportunities for all citizens to use, enjoy and learn about these resources.

Natural Heritage Review Level Three Report: Species Listed Under the Federal Endangered Species Act

There are records of species listed under the Federal Endangered Species Act, and possibly also records for species listed Endangered by the state, or Missouri Species and/or Natural Communities of Conservation Concern within or near the the defined Project Area. Please contact the U.S. Fish and Wildlife Service and the Missouri Department of Conservation for further coordination.

Foreword: Thank you for accessing the Missouri Natural Heritage Review Website developed by the Missouri Department of Conservation with assistance from the U.S. Fish and Wildlife Service, the U.S. Army Corps of Engineers, Missouri Department of Transportation and NatureServe. The purpose of this website is to provide information to federal, state and local agencies, organizations, municipalities, corporations and consultants regarding sensitive fish, wildlife, plants, natural communities and habitats to assist in planning, designing and permitting stages of projects.

PROJECT INFORMATION

Project Name and ID Number: Westphalia Section Prelim #11583
Project Description: Proposed alternate for Westphalia bypass, Osage Co, Maries River
Project Type: Transportation, Roads
Contact Person: Robin Ledford
Contact Information: robin.ledford@woodplc.com or 636-386-9493

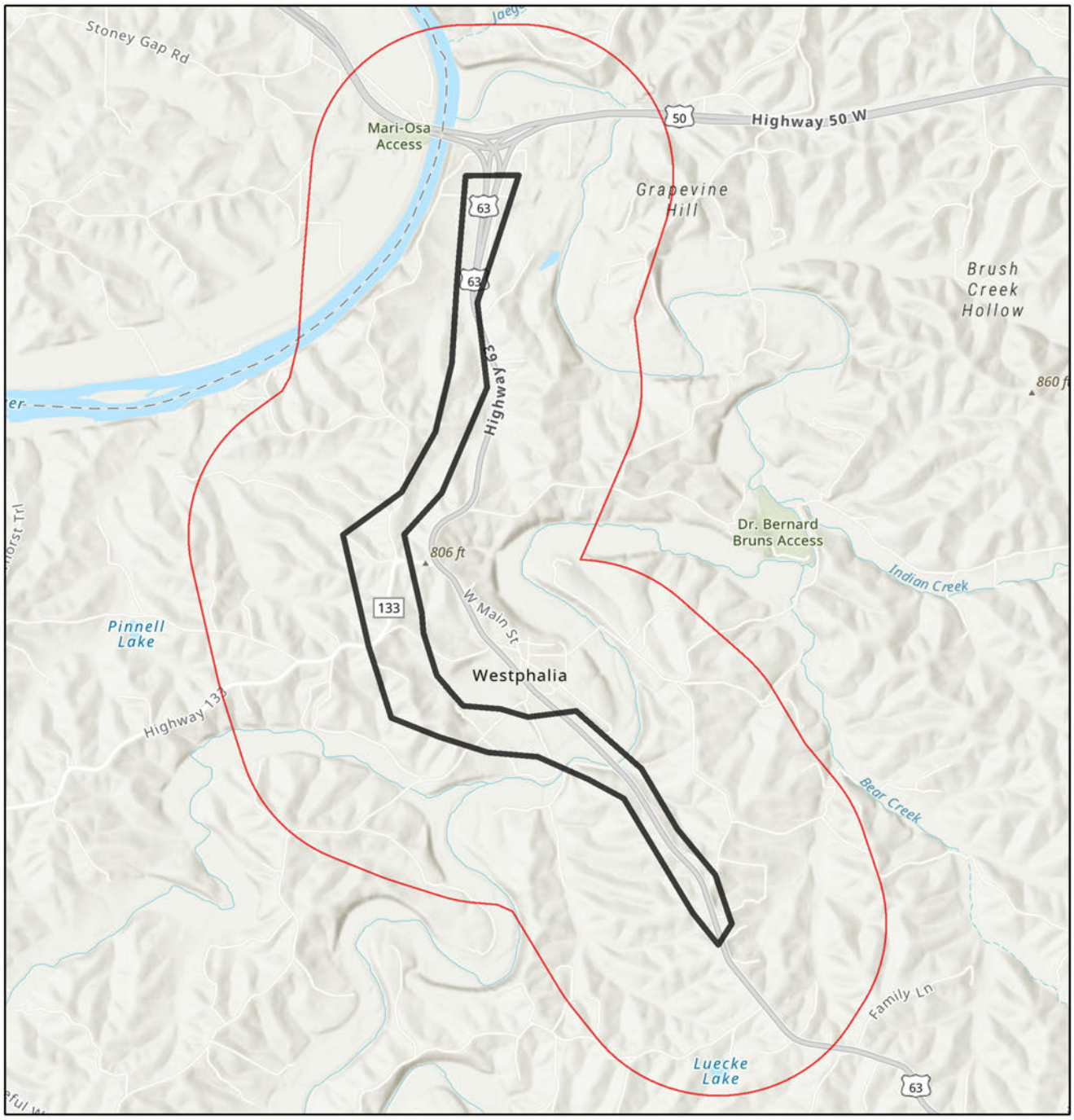
Disclaimer: This NATURAL HERITAGE REVIEW REPORT identifies if a species or natural community tracked by the Natural Heritage Program is known to occur within or near the project area submitted, and shares recommendations to avoid or minimize project impacts to sensitive species or natural habitats. Incorporating information from the Natural Heritage Program into project plans is an important step in reducing impacts to Missouri's sensitive natural resources. If an occurrence record is present, or the proposed project might affect federally listed species, the user must contact the Department of Conservation or U.S. Fish and Wildlife Service for more information.

This Natural Heritage Review Report is not a site clearance letter for the project. Rather, it identifies public lands and records of sensitive resources located close to and/or potentially affected by the proposed project. If project plans or location change, this report may no longer be valid. Because land use conditions change and animals move, the existence of an occurrence record does not mean the species/habitat is still present. Therefore, reports include information about records near but not necessarily on the project site. Lack of an occurrence record does not mean that a sensitive species or natural community is not present on or near the project area. On-site verification is the responsibility of the project. However, the Natural Heritage Program is only one reference that should be used to evaluate potential adverse project impacts and additional information (e.g. wetland or soils maps, on-site inspections or surveys) should be considered. Reviewing current landscape and habitat information, and species' biological characteristics would additionally ensure that Missouri Species of Conservation Concern are appropriately identified and addressed in planning efforts.

U.S. Fish and Wildlife Service – Endangered Species Act (ESA) Coordination: Lack of a Natural Heritage Program occurrence record for federally listed species in your project area does not mean the species is not present, as the area may never have been surveyed. Presence of a Natural Heritage Program occurrence record does not mean the project will result in negative impacts. This report does not fulfill Endangered Species Act consultation with the U.S. Fish and Wildlife Service (USFWS) for listed species. Direct contact with the USFWS may be necessary to complete consultation and it is required for actions with a federal connection, such as federal funding or a federal permit; direct contact is also required if ESA concurrence is necessary. Visit IPaC: Home (fws.gov) to initiate USFWS Information for Planning and Conservation (IPaC) consultation. This site was developed to help streamline the USFWS environmental review process and is a first step in ESA coordination. Contact the Columbia Missouri Ecological Field Services Office (573-234-2132, or by mail at 101 Park Deville Drive, Suite A, Columbia, MO 65203) for more information.

Transportation Projects: If the project involves the use of Federal Highway Administration transportation funds, these recommendations may not fulfill all contract requirements. Please contact the Missouri Department of Transportation at 573-526-4778 or visit Home Page | Missouri Department of Transportation (modot.org) for additional information on recommendations.

Westphalia Section Prelim



October 13, 2022

1:58,200

0 0.5 1 2 mi

0 0.75 1.5 3 km

Buffered Project Boundary

Project Boundary

Esri, NASA, NGA, USGS, Missouri Dept. of Conservation, Missouri DNR, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, USDA

Species or Communities of Conservation Concern within the Area:

There are records of species listed under the Federal Endangered Species Act, and possibly also records for species listed Endangered by the state, or Missouri Species and/or Natural Communities of Conservation Concern within or near the defined Project Area. Please contact the U.S. Fish and Wildlife Service and the Missouri Department of Conservation for further coordination.

Email (preferred): NaturalHeritageReview@mdc.mo.gov
MDC Natural Heritage Review
Science Branch
P.O. Box 180
Jefferson City, MO
65102-0180
Phone: 573-522-4115 ext. 3182

U.S. Fish and Wildlife Service
Ecological Service
101 Park Deville Drive
Suite A
Columbia, MO
65203-0007
Phone: 573-234-2132

Other Special Search Results:

The project occurs on or near public land, Mari-Osa Access, please contact MDC.

Project Type Recommendations:

Transportation - Roads: New and Maintenance projects typically change the plants and animals that live on the right-of-way or in the vicinity. Minimize erosion and sedimentation/runoff to nearby streams and lakes by carefully adhering to any Clean Water Act permit conditions; and include design elements to manage stormwater so that present water discharge rates from the site to streams during heavy rain events are not increased. Revegetation of disturbed areas is recommended to minimize erosion, as is restoration with native plant species compatible with the local landscape and wildlife needs. Annuals like ryegrass may be combined with native perennials for quicker green-up. Avoid aggressive exotic perennials such as crown vetch and sericea lespedeza.

Maintenance of ground cover in utility corridors can have significant implications for sensitive resources. Native plant species typically require low maintenance over the long term, and provide more benefits to native wildlife. Use silt fences and/or vegetative filter strips to buffer streams and drainages, and monitor those after rain events and until a well-rooted ground cover is reestablished. Please see Best Management Practices for Construction and Development Projects Affecting Missouri Rivers and Streams (mo.gov).

Project Location and/or Species Recommendations:

Endangered Species Act Coordination - Indiana bats *(Myotis sodalis*, federal- and state-listed endangered) and **Northern long-eared bats** (*Myotis septentrionalis,* federal-listed threatened) may occur near the project area. Both of these species of bats hibernate during winter months in caves and mines. During the summer months, they roost and raise young under the bark of trees in wooded areas, often riparian forests and upland forests near perennial streams. During project activities, avoid degrading stream quality and where possible leave snags standing and preserve mature forest canopy. Do not enter caves known to harbor Indiana bats or Northern long-eared bats, especially from September to April. **If any trees need to be removed for your project, please contact the U.S. Fish and Wildlife Service (Ecological Services, 101 Park Deville Drive, Suite A, Columbia, Missouri 65203-0007; Phone 573-234-2132 ext. 100 for Ecological Services) for further coordination under the Endangered Species Act.**

The project site submitted and evaluated is on or near Sensitive Aquatic Species Waters Osage River, an important stream for freshwater mussel and amphibian populations. These streams were so designated because they have highly diverse mussel communities and mussel and amphibian species identified as Species of Conservation Concern. These streams are important to maintaining, restoring, or avoiding future listing of Species of Conservation Concern. Impacts to these aquatic species and habitats can be reduced by avoiding or minimizing activities that disturb the stream substrate, including rock placement, dredging, trenching, and wetted gravel bar disturbance; and avoid introducing heavy sediment loads, chemical or organic pollutants. These streams also are included as a Missouri Nationwide Permit Regional Condition (Number 7) that must be considered if working under if working under a Clean Water Act Section 404 Permit issued by the U.S. Army Corps of Engineers (http://www.nwk.usace.army.mil/Missions/RegulatoryBranch/NationWidePermit...). A list of all streams designated under this Condition is available at http://www.nwk.usace.army.mil/Portals/29/docs/regulatory/nationwidepermi....

The project location submitted and evaluated is within the geographic range of nesting Bald Eagles in Missouri. Bald Eagles (*Haliaeetus leucocephalus*) may nest near streams or water bodies in the project area. Nests are large and fairly easy to identify. Adults begin nesting activity in late December and January and young birds leave the nest in late spring to early summer. While no longer listed as endangered, eagles continue to be protected by the federal government under the Bald and Golden Eagle Protection Act. Work managers should be alert for nesting areas within 1500 meters of project activities, and follow federal guidelines at: Do I need an eagle take permit? | U.S. Fish & Wildlife Service (fws.gov) if eagle nests are seen.

The submitted project location is within the range of the Gray Myotis (i.e., Gray Bat) in Missouri. Depending on habitat conditions of your project's location, Gray Myotis (*Myotis grisescens*, federal and state-listed endangered) could occur within the project area, as they forage over streams, rivers, lakes, and reservoirs. Avoid entry or disturbance of any cave inhabited by Gray Myotis and when possible retain forest vegetation along the stream and from the cave opening to the stream. Please see BMPs for Construction and Development Projects Gray Bat (mo.gov).

The project site submitted and evaluated is on or near Fish Spawning Stream Reaches Little Maries River, one of 138 state-designated fish spawning stream segments. These stream reaches were so designated because they have highly diverse fish communities, fish Species of Conservation Concern present, and because they are important to maintaining, restoring, or avoiding future listing of Species of Conservation Concern. These stream reaches also are included as a Missouri Nationwide Permit Regional Condition (Number 2) that must be considered if working under a Clean Water Act Section 404 Permit issued by the U.S. Army Corps of Engineers (http://www.nwk.usace.army.mil/Missions/RegulatoryBranch/NationWidePermit...). A list of all stream reaches is available at http://www.nwk.usace.army.mil/Portals/29/docs/regulatory/nationwidepermi... . Activities that alter or destabilize stream bottoms or banks should be avoided during the important fish spawning period for that stream, in order to not disrupt fish spawning (i.e., laying and fertilizing fish eggs.) The sensitive spawning period for this stream is March 15th to June 15th. At all times, avoid habitat destruction or introducing heavy sediment loads, chemical or organic pollutants.

The project site submitted and evaluated is on or near Fish Spawning Stream Reaches Maries River, one of 138 state-designated fish spawning stream segments. These stream reaches were so designated because they have highly diverse fish communities, fish Species of Conservation Concern present, and because they are important to maintaining, restoring, or avoiding future listing of Species of Conservation Concern. These stream reaches also are included as a Missouri Nationwide Permit Regional Condition (Number 2) that must be considered if working under a Clean Water Act Section 404 Permit issued by the U.S. Army Corps of Engineers (http://www.nwk.usace.army.mil/Missions/RegulatoryBranch/NationWidePermit...). A list of all stream reaches is available at http://www.nwk.usace.army.mil/Portals/29/docs/regulatory/nationwidepermi... . Activities that alter or destabilize stream bottoms or banks should be avoided during the important fish spawning period for that stream, in order to not disrupt fish spawning (i.e., laying and fertilizing fish eggs.) The sensitive spawning period for this stream is March 15th to June 15th. At all times, avoid habitat destruction or introducing heavy sediment loads, chemical or organic pollutants.

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Invasive exotic species are a significant issue for fish, wildlife and agriculture in Missouri. Seeds, eggs, and larvae may be moved to new sites on boats or construction equipment. Please inspect and clean equipment thoroughly before moving between project sites. See Managing Invasive Species in Your Community | Missouri Department of Conservation (mo.gov) for more information.

- Remove any mud, soil, trash, plants or animals from equipment before leaving any water body or work area.
- Drain water from boats and machinery that have operated in water, checking motor cavities, live-well, bilge and transom wells, tracks, buckets, and any other water reservoirs.
- When possible, wash and rinse equipment thoroughly with hard spray or HOT water (>140° F, typically available at do-it-yourself car wash sites), and dry in the hot sun before using again.

Streams and Wetlands – Clean Water Act Permits: Streams and wetlands in the project area should be protected from activities that degrade habitat conditions. For example, soil erosion, water pollution, placement of fill, dredging, in-stream activities, and riparian corridor removal, can modify or diminish aquatic habitats. Streams and wetlands may be protected under the Clean Water Act and require a permit for any activities that result in fill or other modifications to the site. Conditions provided within the U.S. Army Corps of Engineers (USACE) Clean Water Act Section 404 permit (Kansas City District Regulatory Branch (army.mil)) and the Missouri Department of Natural Resources (DNR) issued Clean Water Act Section 401 Water Quality Certification (Section 401 Water Quality Certification | Missouri Department of Natural Resources (mo.gov)), if required, should help minimize impacts to the aquatic organisms and aquatic habitat within the area. Depending on your project type, additional permits may be required by the Missouri Department of Natural Resources, such as permits for stormwater, wastewater treatment facilities, and confined animal feeding operations. Visit Wastewater Permits | Missouri Department of Natural Resources (mo.gov) for more information on DNR permits. Visit both the USACE and DNR for more information on Clean Water Act permitting.

For further coordination with the Missouri Department of Conservation and the U.S. Fish and Wildlife Services, please see the contact information below:

Email (preferred): NaturalHeritageReview@mdc.mo.gov
MDC Natural Heritage Review
Science Branch
P.O. Box 180
Jefferson City, MO
65102-0180
Phone: 573-522-4115 ext. 3182

U.S. Fish and Wildlife Service
Ecological Service
101 Park Deville Drive
Suite A
Columbia, MO
65203-0007
Phone: 573-234-2132

Miscellaneous Information

FEDERAL Concerns are species/habitats protected under the Federal Endangered Species Act and that have been known near enough to the project site to warrant consideration. For these, project managers must contact the U.S. Fish and Wildlife Service Ecological Services (101 Park Deville Drive Suite A, Columbia, Missouri 65203-0007; Phone 573-234-2132; Fax 573-234-2181) for consultation.

STATE Concerns are species/habitats known to exist near enough to the project site to warrant concern and that are protected under the Wildlife Code of Missouri (RSMo 3 CSR 1 0). "State Endangered Status" is determined by the Missouri Conservation Commission under constitutional authority, with requirements expressed in the Missouri Wildlife Code, rule 3CSR 1 0-4.111. Species tracked by the Natural Heritage Program have a "State Rank" which is a numeric rank of relative rarity. Species tracked by this program and all native Missouri wildlife are protected under rule 3CSR 10-4.110 General Provisions of the Wildlife Code.

See Missouri Species and Communities of Conservation Concern Checklist (mo.gov) for a complete list of species and communities of conservation concern. Detailed information about the animals and some plants mentioned may be accessed at Mofwis Search Results. Please contact the Missouri Department of Conservation to request printed copies of any materials linked in this document.

Appendix B
ESI's *Listed Bat Surveys for Missouri Department of Transportation Route 63 Project, Westphalia Section in Osage County, Missouri, 5 October, 2022*

MoDOT Route 63 Protected Species Habitat Suitability Report-Westphalia Section

Photographic Log

Included below is a representative photographic log of delineated habitat features encountered within the Westphalia Section of the Route 63 Environmental Impact Statement Re-evaluation Project.

09/15/2022

Photo 1. OC-FS-0030

Small, perennial stream with forested corridor

09/15/2022

Photo 2. OC-FS-0030

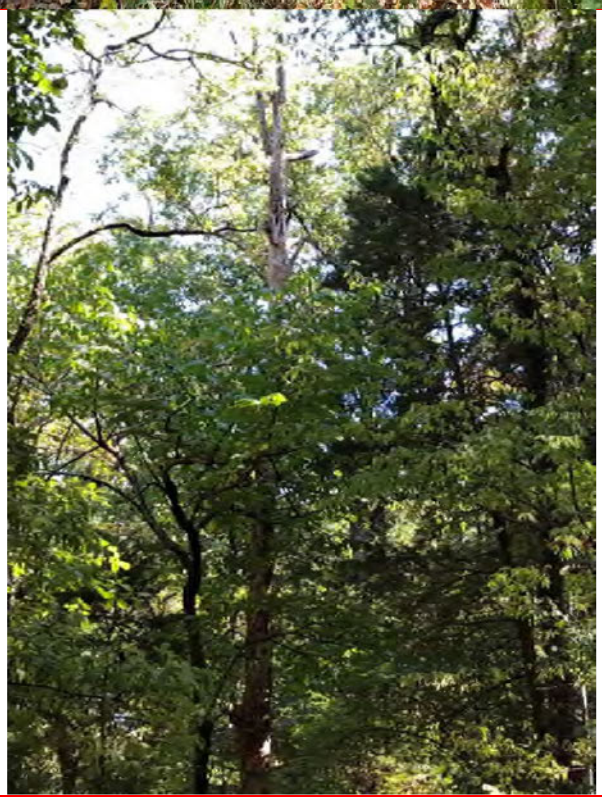
Open water habitat just south of OC-FS-0030, which lay in the background

	**09/15/2022** **Photo 3. OC-FS-0040** Suitable bat roost habitat and transmission line corridor cutting through
	**09/15/2022** **Photo 4. OC-FS-0050** Large deciduous forest stand with numerous potential bat roost trees

09/15/2022

Photo 5. OC-FS-0050

North end of OC-FS-0050



09/15/2022

Photo 6. OC-FS-0060

In heart of OC-FS-0050

09/15/2022

Photo 7. OC-FSP-0130

Forested residential area with snags

09/16/2022

Photo 8. OC-FS-0140

Forest stand, OC-FS-0140

	**09/14/2022** **Photo 9. OC-FS-0160** Forested areas between cattle grazing fields with snags
	**09/15/2022** **Photo 10. OC-FS-0170** Large white oak with peeling bark, crevices, and hollows within forested riparian stream corridor

Appendix H

E-Start Hazardous Waste Records

MISSOURI DEPARTMENT OF NATURAL RESOURCES

Missouri E-START Site/Facility Summary

This is an advisory about environmental conditions that could affect use of the property identified on the map below. Any property use limitations are intended to ensure safe use of the property after the cleanup of contamination in the soil and/or groundwater. This advisory identifies the governmental agencies that oversaw the site's cleanup, and provides contacts for further information.

Although this map and its underlying data sets have been compiled by the Missouri Department of Natural Resources (Department), no warranty, expressed or implied, is made by the Department as to the accuracy of the data and related materials. The act of distribution shall not constitute any such warranty, and no responsibility is assumed by the Department in the use of these data or related materials.

Site Map

Other Reported Petroleum Facilities with No Known Release

Facility Identification Number	ST0019852
Release Identification Number(s)	
Site/Facility Name	LEROY'S 63 MINI MART
Address	HCR 63 BOX 4
City	WESTPHALIA
Zip	65085
County	OSAGE
Facility Type	Other Known Petroleum Facilities
Status	Other Reported Petroleum Facilities with No Known Release
Summary	An AST facility as defined by Section 319.100 RSMo or other petroleum facility was reported to the Department of Natural Resources located at this location. The Department of Natural Resources is not aware of a release from this facility.
Lead Regulatory Agency	DNR/Hazardous Waste Program/Tanks Section
Contact Information	Long-Term Stewardship Unit To report a problem with information about a site location, please contact us at LTS@dnr.mo.gov, (573) 526-8913, or (800) 361-4827.

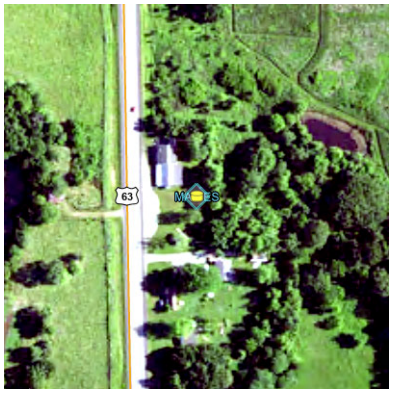
MISSOURI DEPARTMENT OF NATURAL RESOURCES

Missouri E-START Site/Facility Summary

This is an advisory about environmental conditions that could affect use of the property identified on the map below. Any property use limitations are intended to ensure safe use of the property after the cleanup of contamination in the soil and/or groundwater. This advisory identifies the governmental agencies that oversaw the site's cleanup, and provides contacts for further information.

Although this map and its underlying data sets have been compiled by the Missouri Department of Natural Resources (Department), no warranty, expressed or implied, is made by the Department as to the accuracy of the data and related materials. The act of distribution shall not constitute any such warranty, and no responsibility is assumed by the Department in the use of these data or related materials.

Site Map



No Further Action Letter Issued with Restriction

Facility Identification Number	ST0019015
Release Identification Number(s)	R008634 Inactive
Site/Facility Name	ROGERS MARKET & FEED
Address	15232 HWY 63 S
City	VICHY
Zip	65580
County	MARIES
Facility Type	Former Underground Storage Tank Facilities
Status	No Further Action Letter Issued with Restriction
Summary	A petroleum or hazardous substance storage tank closure or regulated release was addressed under the Missouri Risk-Based Corrective Action Guidance for Petroleum Storage Tanks. Evaluation of environmental media found that concentrations of any remaining contaminants, if present, do not pose an unacceptable risk to human health or the environment provided that Activity & Use Limitations applied to this property remain in place. Please review the Department of Natural Resources site file for more information.
Contaminants of Concern Remaining On-Site	Petroleum constituents
Activity & Use Limitations	10 CSR 23-3 Well Construction / Location Rules Apply
Lead Regulatory Agency	DNR/Hazardous Waste Program/Tanks Section
Contact Information	Long-Term Stewardship Unit To report a problem with information about a site location, please contact us at LTS@dnr.mo.gov, (573) 526-8913, or (800) 361-4827.