



November 10, 2025

Mr. Adam Michels, Permit Coordinator
Division of Environmental Analysis
Kentucky Transportation Cabinet
200 Mero Street
Frankfort, Kentucky 40622

**Subject: Preconstruction Notification for Nationwide Permit 14 and Request for Individual Water Quality Certification
KY 32 (Brown Ridge Road) Major Widening
Elliott County, Kentucky
KYTC Item No.: 9-8802.00**

Dear Mr. Michels:

ICF Jones & Stokes, Inc. (ICF) is pleased to submit this Preconstruction Notification for Nationwide Permit 14 and Request for Individual Water Quality Certification in support of the proposed widening/curve correction of KY 32 (KYTC Item No.: 9-8802.00) southeast of Sandy Hook, Elliott County, Kentucky. The proposed project involves the major widening/curve correction of a 1.0 mile section of KY 32 from 9.2 to 10.2 mile marker. The project would result in permanent and temporary impacts to 2,361 linear feet (0.223-acre) of stream and 0.228-acre of wetland.

Please contact Rick Larsen (502) 259-0470 or Scott Slankard at (502) 259-0454 with any questions you have regarding this submittal.

Sincerely,

A handwritten signature in blue ink that reads "Scott A. Slankard".

Scott A. Slankard
Project Ecologist

A handwritten signature in blue ink that reads "Rick Larsen".

Rick Larsen
Senior Ecologist

cc: Andrew Logsdon – KYTC DEA
Crystal Byrd – USACE
Samantha Vogeler - KDOW

Attachments:

Appendix A: DA Permit Application and Application for WQC
Appendix B: Summary of Impacts & Compensatory Mitigation Worksheets
Appendix C: Figures and Design Plans
Appendix D: Section 106 Consultation
Appendix E: Section 7 Consultation

Appendix F: Photographs

Appendix G: Assessment Data Forms

Appendix H: Jurisdictional Determination Forms

APPENDIX A
DA PERMIT APPLICATION
&
APPLICATION FOR WQC

25. Is any portion of the nationwide permit activity already complete? Yes No If Yes, describe the completed work:

26. List the name(s) of any species listed as endangered or threatened under the Endangered Species Act that might be affected by the proposed NWP activity or utilize the designated critical habitat that might be affected by the proposed NWP activity. (see instructions)
Gray bat, Indiana bat, northern long-eared bat, and Virginia big-eared bat. See Appendix E for Section 7 consultation.

27. List any historic properties that have the potential to be affected by the proposed NWP activity or include a vicinity map indicating the location of the historic property or properties. (see instructions)
See Appendix D for Section 106 consultation.

28. For a proposed NWP activity that will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, identify the Wild and Scenic River or the "study river":

29. If the proposed NWP activity also requires permission from the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers federally authorized civil works project, have you submitted a written request for section 408 permission from the Corps district having jurisdiction over that project? Yes No
If "yes", please provide the date your request was submitted to the Corps district:

30. If the terms of the NWP(s) you want to use require additional information to be included in the PCN, please include that information in this space or provide it on an additional sheet of paper marked Block 30. (see instructions)

31. Pre-construction notification is hereby made for one or more nationwide permit(s) to authorize the work described in this notification. I certify that the information in this pre-construction notification is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

Adam Michels Digitally signed by Adam Michels 2025-10-28
Date: 2025.10.28 12:26:50 -04'00'

SIGNATURE OF APPLICANT

DATE

SIGNATURE OF AGENT

DATE

The pre-construction notification must be signed by the person who desires to undertake the proposed activity (applicant) and, if the statement in Block 11 has been filled out and signed, the authorized agent.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than \$10,000 or imprisoned not more than five years or both.

**COMMONWEALTH OF KENTUCKY
ENERGY AND ENVIRONMENT CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION
DIVISION OF WATER**

**APPLICATION FOR PERMIT TO CONSTRUCT ACROSS OR ALONG A STREAM
AND / OR WATER QUALITY CERTIFICATION**

Chapter 151 of the Kentucky Revised Statutes requires approval from the Division of Water prior to any construction or other activity in or along a stream that could in any way obstruct flood flows or adversely impact water quality. *If the project involves work in a stream, such as bank stabilization, dredging or relocation, a 401 Water Quality Certification (WQC) from the Division of Water will be required.* This completed form will be forwarded to the Water Quality Branch for WQC processing. The project may not start until all necessary approvals are received from the KDOW. For questions concerning the WQC process, contact the WQC section at 502/564-3410.

If the project will disturb more than 1 acre of soil, A Notice of Intent for Storm Water Discharges will also be required. Forms can be obtained at <http://water.kv.gov/permitting/pages/generalpermits.aspx>

1. **OWNER:** Kentucky Transportation Cabinet (Attn. Adam Michels)
Give name of person(s), company, governmental unit, or other owner of proposed project.
MAILING ADDRESS: 200 Mero Street, Frankfort, KY 40622

TELEPHONE #: 502.782.5024 **EMAIL:** adam.michels@ky.gov

2. **AGENT:** Rick Larsen, ICF Jones & Stokes, Inc.
Give name of person(s) submitting application, if other than owner.
ADDRESS: 8055 Warwick Ave., Louisville, KY 40222

TELEPHONE #: 502.265.0470 **EMAIL:** rick.larsen@icf.com

3. **ENGINEER:** _____ **P.E. NUMBER:** _____
Contact Division of Water if waiver can be granted.
TELEPHONE #: _____ **EMAIL:** _____

4. **DESCRIPTION OF CONSTRUCTION:** The proposed project involves the major widening/curve correction of
List the items to be constructed in the floodplain
KY 32 (Brown Ridge Road) southeast of Sandy Hook, Elliott County, Kentucky. The project includes the
major widening/curve correction of a 1.0 mile section of KY 32 from 9.2 to 10.2 mile marker. The proposed
project would result in permanent and temporary impacts to 2,361 linear feet (0.223-acre) of stream and
0.228-acre of wetlands (see Appendix B). KYTC Item No.: 9-8802.00

5. **COUNTY:** Elliott **NEAREST COMMUNITY:** Sandy Hook

6. **USGS QUAD NAME** Isonville **LATITUDE/LONGITUDE:** 38.080783, -83.113735

7. **STREAM NAME:** Unnamed tributary to Little Sandy River & Butcher Branch **WATERSHED SIZE (in acres):** 3,907 & 5,997

8. **LINEAR FEET OF STREAM and/or ACRES OF WETLAND IMPACTED:** 2,361f. stream & 0.228-acre of wetland

9. **DIRECTIONS TO SITE:** From Frankfort follow I-64 E to Flemingsburg Rd in Morehead. Take KY-32 E
towards Sandy Hook. Turn right onto State Hwy 173. Turn left onto State Hwy 556. Turn left onto Main St.
Turn right on KY-32 and project begins approximately 0.3 miles.

10. **IS ANY PORTION OF THE REQUESTED PROJECT NOW COMPLETE?** Yes No If yes, identify the completed portion on the drawings you submit and indicate the date activity was completed. DATE: _____
11. **ESTIMATED BEGIN CONSTRUCTION DATE:** _____
12. **ESTIMATED END CONSTRUCTION DATE:** _____
13. **HAS A PERMIT BEEN RECEIVED FROM THE US ARMY, CORPS OF ENGINEERS?** Yes No If yes, attach a copy of that permit.
14. **THE APPLICANT *MUST* ADDRESS PUBLIC NOTICE:**

(a) **PUBLIC NOTICE HAS BEEN GIVEN FOR THIS PROPOSAL BY THE FOLLOWING MEANS:**

Public notice in newspaper having greatest circulation in area (provide newspaper clipping or affidavit)
 Adjacent property owner(s) affidavits (Contact Division of Water for requirements)

(b) **I REQUEST WAIVER OF PUBLIC NOTICE BECAUSE:**

 Contact Division of Water for requirements.

15. **I HAVE CONTACTED THE FOLLOWING CITY OR COUNTY OFFICIALS CONCERNING THIS PROJECT:**

 Give name and title of person(s) contacted and provide copy of any approval city or county may have issued.

16. **LIST OF ATTACHMENTS:** _____

List plans, profiles, or other drawings and data submitted. Attach a copy of a 7.5 minute USGS topographic map clearly showing the project location.

17. **I, _____ (owners Initials) CERTIFY THAT THE OWNER OWNS OR HAS EASEMENT RIGHTS ON ALL PROPERTY ON WHICH THIS PROJECT WILL BE LOCATED OR ON WHICH RELATED CONSTRUCTION WILL OCCUR (for dams, this includes the area that would be impounded during the design flood).**

18. **REMARKS:** _____

I hereby request approval for construction across or along a stream as described in this application and any accompanying documents. To the best of my knowledge, all the information provided is true and correct.

SIGNATURE: Adam Michels
 Owner or Agent sign here. (If signed by Agent, a Power of Attorney should be attached.)

DATE: 10-28-2025

SIGNATURE OF LOCAL FLOODPLAIN COORDINATOR:

 Permit application will be returned to applicant if not properly endorsed by the local floodplain coordinator.

DATE: _____

SUBMIT APPLICATION AND ATTACHMENTS TO:

Floodplain Management Section
 Division of Water
 300 Sower Boulevard
 Frankfort, KY 40601

- or -

DOWFloodplain@ky.gov

§401 Water Quality Certification Pre-Filing Meeting Request Form

Federal regulation 40 CFR 121.4 requires the applicant to submit a pre-filing meeting request before filing a *Certification Request*. More information may be viewed on the [U.S. EPA Overview of §401 Certification](#) webpage.



KENTUCKY ENERGY & ENVIRONMENT CABINET

This form may be used to request the pre-filing meeting and submitted to the Division of Water at 401WQC@ky.gov. This form may be submitted with the *Application to Construct Across or Along a Stream and/or Water Quality Certification*.

The information requested below will allow the Division of Water to provide guidance for filing a *§401 Water Quality Certification Request* once a complete application has been received and reviewed.

Contact the [Water Quality Certification](#) Section at 401WQC@ky.gov or 502-564-3410 with any questions.

SECTION I – Applicant Information (property owner or easement holder)

Applicant Name: Kentucky Transportation Cabinet (Attn. Adam Michels)

E-mail Address: adam.michels@ky.gov

The [Application for Permit to Construct Across or Along A Stream and/or Water Quality Certification \(Form DOW 7116, July 2008\)](#) is required for Individual Water Quality Certification.

Attached
 Submitted

AI Number (leave blank if unknown):

Date: October 28, 2025

SECTION II – Alternate Contact/ Consultant Information (Optional, a consultant is not required)

Alternate Name: Rick Larsen, ICF

E-Mail Address: rick.larsen@icf.com

SECTION III – The federal license or permit(s) required for the activity (check all that apply)

Section 404 Permit Section 10 Permit Nationwide Permit (NWP) No.: 14 LOP (Section 10/404)
 Section 10/404 Regional General Permit TVA 26a Permit Federal Energy Regulatory Commission

SECTION IV – Project Site Information

Site or Project Name: KY 32 (Brown Ridge Road)
Major Widening, KYTC Item No.: 9-8802.00

Latitude & Longitude (decimal degrees): 38.081560, -83.115280

4a. Water Resource proposed for alteration: Stream/River Wetland

4b. Name of Water Resource (access watermaps.ky.gov for more information): Headwaters of Butcher Branch & unnamed tributary to Little Sandy River

4c. Surface Water Resource Impacts (permanent and temporary):
Linear feet of stream/river: 2,361 Average stream/river width (feet): 3 Acreage of wetland: 0.228

4d. Has a Jurisdictional Determination been received from the U.S. Army Corps of Engineers? Yes No

4e. Are the streams and/or wetlands that will be impacted identified by the Division of Water as **Outstanding State or National Resource Water, Cold Water Aquatic Habitat, or Exceptional Waters?** (access watermaps.ky.gov and [Water Quality Certification Viewer](#) for more information) Yes No

Form continues on the next page

4f.	Are the streams and/or wetland that will be impacted identified by the Division of Water as impaired for warm water or cold water aquatic habitat where the parameter or source is related to habitat? (access watermaps.ky.gov and Water Quality Certification Viewer for more information)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
4g.	Are the streams and/or wetland that will be impacted identified by the Division of Water as full support for warm water or cold water aquatic habitat? (access watermaps.ky.gov and Water Quality Certification Viewer for more information)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
SECTION V – Project Description (some items may not apply)		
5a.	Description of the proposed project, including but not limited to the size, depth, length of the project, types of materials proposed for use, and anticipated timeline for construction and operation.	<input checked="" type="checkbox"/> Attached
5b.	Table of impacts: If there are multiple discharge locations that are not continuous, please include a separate table or figure listing the coordinate location (in decimal degrees) of each surface water impact, linear feet/ acreage of impact, name of waterbody, and stream flow type (ephemeral, intermittent, perennial).	<input checked="" type="checkbox"/> Attached
5c.	Site plans and description of site development, including but not limited to maps of surface waters and proposed surface water impacts within the project area.	<input checked="" type="checkbox"/> Attached
5d.	Proposed temporary impacts to surface waters: linear feet of temporary stream impacts, acreage of temporary wetland impacts, and the proposed plans for restoration.	<input checked="" type="checkbox"/> Attached
5e.	Preliminary Jurisdictional Determination (PJD) and/or Approved Jurisdictional Determination (AJD) issued by the U.S. Army Corps of Engineers.	<input type="checkbox"/> Attached
5f.	Compensatory mitigation proposal or compensatory mitigation statement for impacts to surface waters.	<input checked="" type="checkbox"/> Attached
5g.	Description of best management practices (BMPs) to be implemented to minimize the impacts to surface waters, including sedimentation and erosion control measures.	<input checked="" type="checkbox"/> Attached
5h.	For dredge activities: Dredge methods, disposal areas, proposed volume of material to be extracted, record of the most recent mussel survey if available.	<input type="checkbox"/> Attached
5i.	Endangered Species Act (ESA) Section 7 consultation or concurrence documentation, biological surveys, and/or other pertinent information regarding the presence of federally threatened or endangered aquatic species.	<input checked="" type="checkbox"/> Attached
5j.	Other information pertinent to the project.	<input type="checkbox"/> Attached

Submit the completed form and attachments through email to 401WQC@ky.gov.

APPENDIX B
SUMMARY OF IMPACTS
&
COMPENSATORY MITIGATION WORKSHEETS

SUMMARY OF IMPACTS
KY 32 (Brown Ridge Road) Major Widening
Elliott County, Kentucky
KYTC Item No.: 9-88022.00

Anticipated impacts and compensatory mitigation associated with the project are described below in more detail and summarized in the provided Table 1: Summary of Impacts.

Project Purpose: The purpose of this project is to improve horizontal, vertical, and width deficiencies within a portion of KY 32 between approximate mile points 9.2 and 10.2.

Project Description: The proposed project involves the major widening/curve correction of KY 32 (Brown Ridge Road) southeast of Sandy Hook, Elliott County, Kentucky. The project includes the major widening/curve correction of a 1.0-mile section of KY 32 from 9.2 to 10.2-mile marker.

Piping/Culverts and Roadway: The widening of KY 32 will result in permanent impacts to 872 linear feet (0.100-acre) of perennial stream, 1,127 linear feet (0.085-acre) of intermittent stream, and 0.228-acre of wetland associated with construction activities. Roadway construction includes grading, filling, ditching, piping, paving, and guardrail installation.

Temporary Construction Access: Heavy equipment may need to enter project streams during construction of the proposed roadway. Once construction activities are complete, all temporary work pads, coffer dams, fills, etc. will be removed in their entirety and the affected areas will be returned to pre-construction elevations. Construction access activities are expected to result in temporary impacts to approximately 362 linear feet (0.037-acre) of stream.

Water Control Structures: The use of a coffer dam(s) may be necessary during construction of the pipes/culverts to isolate the work area and minimize stream impacts.

Temporary Impacts Restoration Plan: Temporary fills and, if necessary, cofferdams will be installed to maintain normal downstream flows and minimize flooding to the maximum extent practicable. All temporary fill will consist of shot rock or rip rap and be placed in a manner that will not be eroded by expected high flows. All temporary fills will be removed in their entirety and the affected areas will be returned to pre-construction elevations.

Logging Disturbance: Portions of the Prewitt parcel were extensively logged in the spring of 2025, prior to KYTC right-of-way acquisition. Logging activities (skidder roads) within the proposed roadway "disturbance limits" include approximately 342 linear feet (0.020-acre) of intermittent stream (S-04 and S-08), 123 linear feet (0.011-acre) of ephemeral stream (S-05), and 0.146-acre of wetland (W-1).

Compensatory Mitigation: The KYTC proposes to compensate for unavoidable impacts to streams 1, 4, 10, 14, Butcher Branch (1,384 linear feet) and wetlands (0.228 acre) through the purchase of credits from an approved mitigation bank(s) in the service area and/or the in-lieu fee (ILF) program. See Appendix F for photographs of impacted waters requiring mitigation.

Stream – Unavoidable impacts to intermittent (512 linear feet), and perennial (872 linear feet) Waters of the United States (WOTUS) will require compensatory mitigation totaling 537.7 Ecological Integrity Units (EIU) credits, if purchased or debited through an approved mitigation bank/advanced site. A RIBITS search on July 23, 2025 identified two mitigation banks with available stream credits in the Big Sandy River primary service area. If approved bank credits are unavailable at letting, the KYTC proposes to purchase EIU credits from the ILF program administered by the Kentucky Department of Fish and Wildlife Resources (KDFWR). This includes a 20 percent increase for temporal loss required when purchasing credits from the ILF program. As such, the required credit purchase will total 645.2 for impacts to intermittent and perennial streams. See attached RIBITS credit search report.

Wetland – Unavoidable WOTUS wetland impacts (0.228-acre) requiring compensatory mitigation total 0.5 Adjusted Mitigation Unit (AMU) if an approved wetland mitigation bank is available. A RIBITS search, accessed July 23, 2025, returned no wetland bank in the Big Sandy River service area, but should one become available prior to project letting, the KYTC will provide mitigation via purchase from the approved mitigation bank. Therefore, the KYTC proposes to provide mitigation for unavoidable impacts to these features via purchase of wetland credit from the Wetland ILF program administered by the KDFWR. A 20 percent increase for temporal loss is required when purchasing credits from the ILF program; thus, the required credit purchase will total 0.5 AMU credit. See attached RIBITS credit search report.

Table 1: Summary of Impacts
 KY 32 Major Widening
 Elliott County, Kentucky
 KYTC Item No.: 9-8802.00

Station	Sheet	Resource Type	Name	HUC 14	Latitude/Longitude (Decimal Degrees)	Impact Length (L.f.)	Avg. Impact Width	Acreage of Impact	Impact Type	HUC Drainage Area (ac.)	RBP Score	Riffle Pool Complex	Mitigation
Single and Complete Crossing #1													
21+07 to 21+17	R3	Intermittent Stream	S-01	5090104010050	38.083977, -83.122178	11	5	0.001	Temporary Construction Access	3,907	119	No	No
21+17 to 23+37	R3	Intermittent Stream	S-01	5090104010050	38.083647, -83.121396	236	5	0.027	Piping	3,907	119	No	Yes
23+37 to 23+54	R3	Intermittent Stream	S-01	509104010050	38.083646, -83.121285	24	5	0.003	Ditching	3,907	119	No	Yes
26+41 to 30+00	R3	PEM Wetland	W-01	5090104010050	38.082766, -83.120156	NA	NA	0.016	Fill	3,907	NA	NA	Yes
26+49 to 28+63	R3	PSS Wetland	W-01	5090104010050	38.082867, -83.120245	NA	NA	0.212	Fill	3,907	NA	NA	Yes
27+49 to 28+43	R3	Intermittent Stream	S-04	5090104010050	38.082825, -83.120241	170	2	0.008	Fill	3,907	62	No	Yes
#1 Stream Impact Total						441		0.039					
#1 Wetland Impact Total								0.228					
Single and Complete Crossing #2													
37+17 to 38+30	R5	Intermittent Stream	S-01	509104010050	38.082402, -83.116325	124	5	0.014	Temporary Construction Access	3,907	119	No	No
42+12 to 42+80	R5	Intermittent Stream	S-01	509104010050	38.081967, -83.115349	72	5	0.008	Temporary Construction Access	3,907	119	No	No
#2 Stream Impact Total						196		0.022					
Single and Complete Crossing #3													
45+06 to 45+72	R7	Intermittent Stream	S-06	5090104010050	38.081481, -83.114558	176	3	0.012	Piping	3,907	145	No	No
45+72 to 45+78	R7	Intermittent Stream	S-06	5090104010050	38.081128, -83.114531	15	3	0.001	Temporary Construction Access	3,907	145	No	No
#3 Stream Impact Total						191		0.013					
Single and Complete Crossing #4													
50+07 to 50+10	R7	Intermittent Stream	S-08	5090104010050	38.081096, -83.112957	8	3	0.001	Temporary Construction Access	3,907	93	No	No
50+10 to 50+91	R7	Intermittent Stream	S-08	5090104010050	38.081072, -83.112958	149	3	0.010	Piping	3,907	93	No	No
50+91 to 51+00	R7	Intermittent Stream	S-08	5090104010050	38.080677, -83.112812	15	3	0.001	Temporary Construction Access	3,907	93	No	No
#4 Stream Impact Total						172		0.012					

Table 1: Summary of Impacts
 KY 32 Major Widening
 Elliott County, Kentucky
 KYTC Item No.: 9-8802.00

Station	Sheet	Resource Type	Name	HUC 14	Latitude/Longitude (Decimal Degrees)	Impact Length (l.f.)	Avg. Impact Width	Acreage of Impact	Impact Type	HUC Drainage Area (ac.)	RBP Score	Rifle Pool Complex	Mitigation
Single and Complete Crossing #5													
57+04 to 57+07	R7	Intermittent Stream	S-13	5090104020030	38.079815, -83.111109	9	2	0.001	Temporary Construction Access	5,997	119	No	No
57+07 to 57+20	R7	Intermittent Stream	S-13	5090104020030	38.079961, -83.110938	136	2	0.006	Piping	5,997	119	No	No
57+20 to 57+24	R7	Intermittent Stream	S-13	5090104020030	38.080074, -83.110750	6	2	0.001	Temporary Construction Access	5,997	119	No	No
#5 Stream Impact Total						151		0.008					
Single and Complete Crossing #6													
62+06 to 62+43	R9	Intermittent Stream	S-11	5090104020030	38.079089, -83.109543	154	4	0.014	Piping	5,997	137	No	No
62+16 to 62+19	R9	Intermittent Stream	S-11	5090104020030	38.078918, -83.109687	9	4	0.001	Temporary Construction Access	5,997	137	No	No
62+43 to 62+ 46	R9	Intermittent Stream	S-11	5090104020030	38.079218, -83.109366	5	4	0.001	Temporary Construction Access	5,997	137	No	No
#6 Stream Impact Total						168		0.016					
Single and Complete Crossing #7													
67+53 to 67+83	R9	Perennial Stream	Butcher Branch	5090104020030	38.079021, -83.107714	34	5	0.004	Temporary Construction Access	5,997	123	No	No
67+75 to 68+06	R9	Intermittent Stream	S-14	5090104020030	38.079151, -83.107634	35	2	0.002	Temporary Construction Access	5,997	117	No	No
67+83 to 68+59	R9	Perennial Stream	Butcher Branch	5090104020030	38.078939, -83.107528	90	5	0.010	Piping	5,997	123	No	Yes
68+59 to 69+67	R9	Perennial Stream	Butcher Branch	5090104020030	38.078816, -83.107209	115	5	0.013	Ditching	5,997	123	No	Yes
69+65 to 69+68	R9	Intermittent Stream	S-14	5090104020030	38.078974, -83.107029	10	2	0.001	Temporary Construction Access	5,997	117	No	No
69+67 to 70+68	R9	Perennial Stream	Butcher Branch	5090104020030	38.078748, -83.106844	102	5	0.012	Piping	5,997	123	No	Yes
69+68 to 69+75	R9	Intermittent Stream	S-14	5090104020030	38.078940, -83.107011	17	2	0.001	Ditching	5,997	117	No	Yes
69+75 to 69+89	R9	Intermittent Stream	S-14	5090104020030	38.078904, -83.106971	19	2	0.001	Piping	5,997	117	No	Yes

Table 1: Summary of Impacts
 KY 32 Major Widening
 Elliott County, Kentucky
 KYTC Item No.: 9-8802.00

Station	Sheet	Resource Type	Name	HUC 14	Latitude/Longitude (Decimal Degrees)	Impact Length (l.f.)	Avg. Impact Width	Acreage of Impact	Impact Type	HUC Drainage Area (ac.)	RBP Score	Rifle Pool Complex	Mitigation
70+68 to 73+55	R9	Perennial Stream	Butcher Branch	5090104020030	38.078746, -83.106176	286	5	0.033	Ditching	5,997	123	No	Yes
73+87 to 73+97	R9	Perennial Stream	Butcher Branch	5090104020030	38.078720, -83.105543	10	5	0.001	Piping	5,997	123	No	Yes
75+80 to 78+47	R11	Perennial Stream	Butcher Branch	5090104020030	38.078696, -83.104446	269	5	0.031	Ditching	5,997	123	No	Yes
75+94 to 75+95	R11	Intermittent Stream	S-10	5090104020030	38.078933, -83.104839	9	3	0.001	Temporary Construction Access	5,997	58	No	No
75+93 to 75+95	R11	Intermittent Stream	S-10	5090104020030	38.078886, -83.104843	26	3	0.002	Piping	5,997	58	No	Yes
75+93 to 75+95	R11	Intermittent Stream	S-10	5090104020030	38.078729, -83.104838	20	3	0.001	Piping	5,997	58	No	Yes
		#7 Stream Impact Total				1042		0.112					
Project Total		Temporary Stream Impacts				362		0.037					
		Permanent Stream Impacts				1,999		0.185					
		Stream Impact Total				2,361		0.223					
		Wetland Impact Total						0.228					
		WOTUS Loss (acres)				0.413							

Notice: The credit totals shown do **NOT** reflect any credit reservations or pending transactions.
It is the responsibility of potential purchasers to contact the Sponsor and obtain written confirmation of credit availability.

Latitude: 38.08156, **Longitude** -83.11528
State: Kentucky
County: Elliott
8-digit Hydrologic Unit Code: 05090104
USFWS Field Office: Kentucky
USACE District: Louisville
NMFS Region: Southeast
BLM State Office: Eastern States

Search Criteria for banks, ILF sites, NRDA sites, umbrella sites, BLM project/program sites:

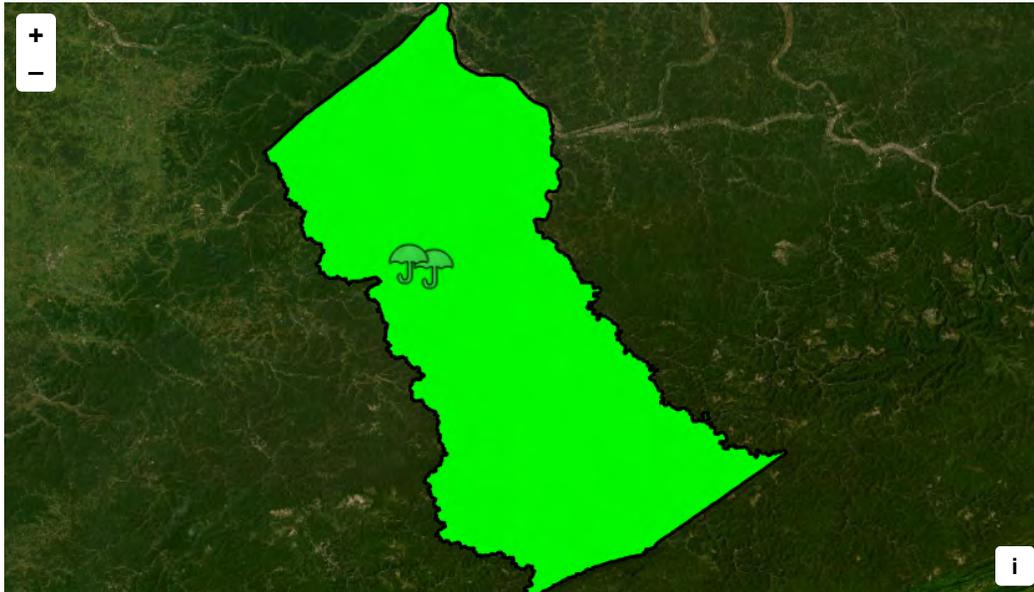
- ONLY approved and public
- with available credits greater than zero
- excluding single client
- with any wetland
- with any stream
- with service areas of rank Primary, Secondary, Tertiary

Search Criteria for ILF programs:

- ONLY approved and public
- with available advance credits greater than zero
- with any wetland
- with any stream

Banks and Sites in Primary Service Area 2
Banks and Sites in Secondary Service Area 0
Banks and Sites in Tertiary Service Area 0
ILF Program Advance Credits 1

Banks and Sites in Primary Service Area



1) Bank: EIP-KSWMBI-Little Sandy Stream Mitigation Bank (LRL-2012-607).

Bank Type: Private Commercial

Total Acres:

Distance to impact: 8 miles from bank location or centroid of bank footprint

USACE Permit No: LRL-2012-607

[Back to top](#)

Bank States: Kentucky
 Comments: This bank is located in Elliott County, Kentucky (38.0415, -82.9106) This site is associated with the umbrella instrument for Kentucky Stream and Wetland Mitigation Bank (Corps ID No. LRL-2013-739).
 Bank Sponsor: **EIP Credit Co., LLC**
 c/o Joseph Williams
 5550 Newbury Street, Suite B
 Baltimore, MD 21209
 Email: joe@ecosystempartners.com
 Phone: (410) 982-0240

Bank Sponsor POC:
Kevin Roush
Assistant Director of Markets
 Sales POC
 5550 Newbury Street, Suite B
 Baltimore, MD 21209
 Email: kevin@ecosystempartners.com
 Cell Phone: (304) 719-2511

Regulatory Bank Manager:
Mr. Todd Williams
 US Army Corps of Engineers Louisville District, Eastern Kentucky Regulatory Office
 845 Sassafras Creek Road
 Sassafras, KY 41759
 Email: christopher.t.williams@usace.army.mil
 Phone: (606) 642-3446

Credit Type Credit Classifications Group Name Available Credits Jurisdiction Assessment Method

Stream	Stream	7159	Federal	Eastern Kentucky Stream Assessment Protocol
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Notes:

2) Bank: EIP-KSWMBI-Big Sandy Mitigation Bank (LRL-2012-606)

Bank Type: Private Commercial
 Total Acres:
 Distance to impact: 11 miles from bank location or centroid of bank footprint
 USACE Permit No: LRL-2012-606
 Bank States: Kentucky
 Comments: This bank is located in Lawrence County, Kentucky (38.040606°; -82.912619°). This site is associated with the umbrella instrument for Kentucky Stream and Wetland Mitigation Bank (Corps ID No. LRL-2013-739).
 Bank Sponsor: **EIP Credit Co., LLC**
 c/o Joseph Williams
 5550 Newbury Street, Suite B
 Baltimore, MD 21209
 Email: joe@ecosystempartners.com
 Phone: (410) 982-0240

Bank Sponsor POC:
Kevin Roush
Assistant Director of Markets
 Sales POC
 5550 Newbury Street, Suite B
 Baltimore, MD 21209
 Email: kevin@ecosystempartners.com
 Cell Phone: (304) 719-2511

Regulatory Bank Manager:
Mr. Todd Williams
 US Army Corps of Engineers Louisville District, Eastern Kentucky Regulatory Office

Kentucky Department of Fish and Wildlife Resources
#1 Sportman's Lane
Frankfort, KY 40501
Email: clifford.scott@ky.gov
Phone: (502) 564-5101

Regulatory Program Manager:

Mrs. Patti Grace-Jarrett

Louisville District Corps of Engineers
Room 752, P.O. Box 59
Louisville, KY 40201-0059
Email: Patti.G.Jarrett@usace.army.mil
Phone: (502) 315-6687
Fax: (502) 315-6677

Credit Type Subdivision Service Area

Advance Credits

Stream	Big Sandy River Area 224,780.66
Wetland	Big Sandy River Area 93.639

Notes:

EII Calculation for High Gradient Streams in Eastern Kentucky Coalfield (Version 2002.6)
**** (Family Level Taxonomy - All Habitats) ****

Project ID: 9-8802.00

Stream/Reach: S-01

Assessment Objectives:

EII	Model
NA	Ecological Integrity Index (MBI + Habitat Integrity + Conductivity)
0.49	Ecological Integrity Index (Habitat Integrity + Conductivity)

Variables	Measure	Units	
Enter quantitative or categorical measure from Field Data Sheet in shaded cells			
RBP Habitat Parameters			
1. <i>Epifaunal Substrate</i>	16	no units	
2. <i>Embeddedness</i>	10	no units	
3. <i>Velocity/Depth Regime</i>	10	no units	
4. <i>Sediment Deposition</i>	11	no units	
5. <i>Channel Flow Status</i>	15	no units	
6. <i>Channel Alteration</i>	11	no units	
7. <i>Freq. Of Riffles (bends)</i>	17	no units	
8. <i>Bank stability (both combined)</i>	7	no units	
9. <i>Veg. Protection (both combined)</i>	13	no units	
10. <i>Riparian Width (both combined)</i>	9	no units	
Total Habitat Score	119	no units	Subindex
Habitat Integrity Index			0.29
Macroinvertebrate Data - Family Level (All Habitats)			
11. <i>Family Taxa Richness</i>		# of taxa sampled	
12. <i>Family EPT Richness</i>		# of EPT species sampled	
13. <i>% Ephemeroptera</i>		% Mayflies (0-100)	
14. <i>% Chironomidae & Oligochaeta</i>		% Midges & Worms (0-100)	
15. <i>mFBI</i>		no units	
Macroinvertebrate Bioassessment	NA	no units	NA
Conductivity	260	microMHOs	0.69



EII Calculation for High Gradient Streams in Eastern Kentucky Coalfield (Version 2002.6)
 (Family Level Taxonomy - All Habitats)

Project ID: 9-8802.00

Stream/Reach: S-04

Assessment Objectives:

EII	Model
NA	Ecological Integrity Index (MBI + Habitat Integrity + Conductivity)
0.35	Ecological Integrity Index (Habitat Integrity + Conductivity)

Variables	Measure	Units	
Enter quantitative or categorical measure from Field Data Sheet in shaded cells			
RBP Habitat Parameters			
1. <i>Epifaunal Substrate</i>	3	no units	
2. <i>Embeddedness</i>	4	no units	
3. <i>Velocity/Depth Regime</i>	7	no units	
4. <i>Sediment Deposition</i>	5	no units	
5. <i>Channel Flow Status</i>	13	no units	
6. <i>Channel Alteration</i>	11	no units	
7. <i>Freq. Of Riffles (bends)</i>	5	no units	
8. <i>Bank stability (both combined)</i>	6	no units	
9. <i>Veg. Protection (both combined)</i>	4	no units	
10. <i>Riparian Width (both combined)</i>	4	no units	
Total Habitat Score	62	no units	Subindex
Habitat Integrity Index			0.10
Macroinvertebrate Data - Family Level (All Habitats)			
11. <i>Family Taxa Richness</i>		# of taxa sampled	
12. <i>Family EPT Richness</i>		# of EPT species sampled	
13. <i>% Ephemeroptera</i>		% Mayflies (0-100)	
14. <i>% Chironomidae & Oligochaeta</i>		% Midges & Worms (0-100)	
15. <i>mFBI</i>		no units	
Macroinvertebrate Bioassessment	NA	no units	NA
Conductivity	290	microMHOs	0.60



EII Calculation for High Gradient Streams in Eastern Kentucky Coalfield (Version 2002.6)
**** (Family Level Taxonomy - All Habitats) ****

Project ID: 9-8802.00

Stream/Reach: S-10

Assessment Objectives:

EII	Model
NA	Ecological Integrity Index (MBI + Habitat Integrity + Conductivity)
0.48	Ecological Integrity Index (Habitat Integrity + Conductivity)

Variables	Measure	Units	
Enter quantitative or categorical measure from Field Data Sheet in shaded cells			
RBP Habitat Parameters			
1. <i>Epifaunal Substrate</i>	3	no units	
2. <i>Embeddedness</i>	2	no units	
3. <i>Velocity/Depth Regime</i>	6	no units	
4. <i>Sediment Deposition</i>	2	no units	
5. <i>Channel Flow Status</i>	13	no units	
6. <i>Channel Alteration</i>	12	no units	
7. <i>Freq. Of Riffles (bends)</i>	4	no units	
8. <i>Bank stability (both combined)</i>	4	no units	
9. <i>Veg. Protection (both combined)</i>	8	no units	
10. <i>Riparian Width (both combined)</i>	4	no units	
Total Habitat Score	58	no units	Subindex
Habitat Integrity Index			0.10
Macroinvertebrate Data - Family Level (All Habitats)			
11. <i>Family Taxa Richness</i>		# of taxa sampled	
12. <i>Family EPT Richness</i>		# of EPT species sampled	
13. <i>% Ephemeroptera</i>		% Mayflies (0-100)	
14. <i>% Chironomidae & Oligochaeta</i>		% Midges & Worms (0-100)	
15. <i>mFBI</i>		no units	
Macroinvertebrate Bioassessment	NA	no units	NA
Conductivity	200	microMHOs	0.86



EII Calculation for High Gradient Streams in Eastern Kentucky Coalfield (Version 2002.6)
**** (Family Level Taxonomy - All Habitats) ****

Project ID: 9-8802.00

Stream/Reach: S-14

Assessment Objectives:

EII	Model
NA	Ecological Integrity Index (MBI + Habitat Integrity + Conductivity)
0.41	Ecological Integrity Index (Habitat Integrity + Conductivity)

Variables	Measure	Units	
>>>>>>> Enter quantitative or categorical measure from Field Data Sheet in shaded cells			
RBP Habitat Parameters			
1. <i>Epifaunal Substrate</i>	13	no units	
2. <i>Embeddedness</i>	6	no units	
3. <i>Velocity/Depth Regime</i>	7	no units	
4. <i>Sediment Deposition</i>	6	no units	
5. <i>Channel Flow Status</i>	15	no units	
6. <i>Channel Alteration</i>	14	no units	
7. <i>Freq. Of Riffles (bends)</i>	15	no units	
8. <i>Bank stability (both combined)</i>	14	no units	
9. <i>Veg. Protection (both combined)</i>	16	no units	
10. <i>Riparian Width (both combined)</i>	11	no units	
Total Habitat Score	117	no units	Subindex
Habitat Integrity Index			0.27
Macroinvertebrate Data - Family Level (All Habitats)			
11. <i>Family Taxa Richness</i>		# of taxa sampled	
12. <i>Family EPT Richness</i>		# of EPT species sampled	
13. <i>% Ephemeroptera</i>		% Mayflies (0-100)	
14. <i>% Chironomidae & Oligochaeta</i>		% Midges & Worms (0-100)	
15. <i>mFBI</i>		no units	
Macroinvertebrate Bioassessment	NA	no units	NA
Conductivity	310	microMHOs	0.54



EII Calculation for High Gradient Streams in Eastern Kentucky Coalfield (Version 2002.6)
 (Family Level Taxonomy - All Habitats)

Project ID: 9-8802.00

Stream/Reach: Butcher Branch

Assessment Objectives:

EII	Model
NA	Ecological Integrity Index (MBI + Habitat Integrity + Conductivity)
0.36	Ecological Integrity Index (Habitat Integrity + Conductivity)

Variables	Measure	Units	
Enter quantitative or categorical measure from Field Data Sheet in shaded cells			
RBP Habitat Parameters			
1. Epifaunal Substrate	11	no units	
2. Embeddedness	12	no units	
3. Velocity/Depth Regime	9	no units	
4. Sediment Deposition	13	no units	
5. Channel Flow Status	16	no units	
6. Channel Alteration	12	no units	
7. Freq. Of Riffles (bends)	16	no units	
8. Bank stability (both combined)	14	no units	
9. Veg. Protection (both combined)	16	no units	
10. Riparian Width (both combined)	4	no units	
Total Habitat Score	123	no units	Subindex
Habitat Integrity Index			0.33
Macroinvertebrate Data - Family Level (All Habitats)			
11. Family Taxa Richness		# of taxa sampled	
12. Family EPT Richness		# of EPT species sampled	
13. % Ephemeroptera		% Mayflies (0-100)	
14. % Chironomidae & Oligochaeta		% Midges & Worms (0-100)	
15. mFBI		no units	
Macroinvertebrate Bioassessment	NA	no units	NA
Conductivity	370	microMHOs	0.40



Eastern Kentucky Stream Assessment Protocol

EIU Calculator for In-Lieu Fee

Loss of Ecological Integrity/running ft **UNITS**
due to Project Impacts = **EII (0-1)**

Impact Length = (ft)

Ecological Integrity Units (EIU)

EIUs needed to provide mitigation

*(adjusted to offset
cumulative impacts)

Eastern Kentucky Stream Assessment Protocol

EIU Calculator for In-Lieu Fee

Loss of Ecological Integrity/running ft **UNITS**
due to Project Impacts = **EII (0-1)**

Impact Length = (ft)

Ecological Integrity Units (EIU)

EIUs needed to provide mitigation

*(adjusted to offset
cumulative impacts)

Eastern Kentucky Stream Assessment Protocol

EIU Calculator for In-Lieu Fee

Loss of Ecological Integrity/running ft **UNITS**
due to Project Impacts = **EII (0-1)**

Impact Length = (ft)

Ecological Integrity Units (EIU)

EIUs needed to provide mitigation

*(adjusted to offset
cumulative impacts)

Eastern Kentucky Stream Assessment Protocol

EIU Calculator for In-Lieu Fee

Loss of Ecological Integrity/running ft **UNITS**
due to Project Impacts = **EII (0-1)**

Impact Length = (ft)

Ecological Integrity Units (EIU)

EIUs needed to provide mitigation

*(adjusted to offset
cumulative impacts)

Butcher Branch

Eastern Kentucky Stream Assessment Protocol

EIU Calculator for In-Lieu Fee

Loss of Ecological Integrity/running ft **UNITS**
due to Project Impacts = **EII (0-1)**

Impact Length = (ft)

Ecological Integrity Units (EIU)

EIUs needed to provide mitigation

*(adjusted to offset
cumulative impacts)

Wetland 01

Wetland Mitigation Calculator

AMU Calculator for In-Lieu Fee

Impact Area= UNITS
acres

Pond Creek watershed? Yes or No

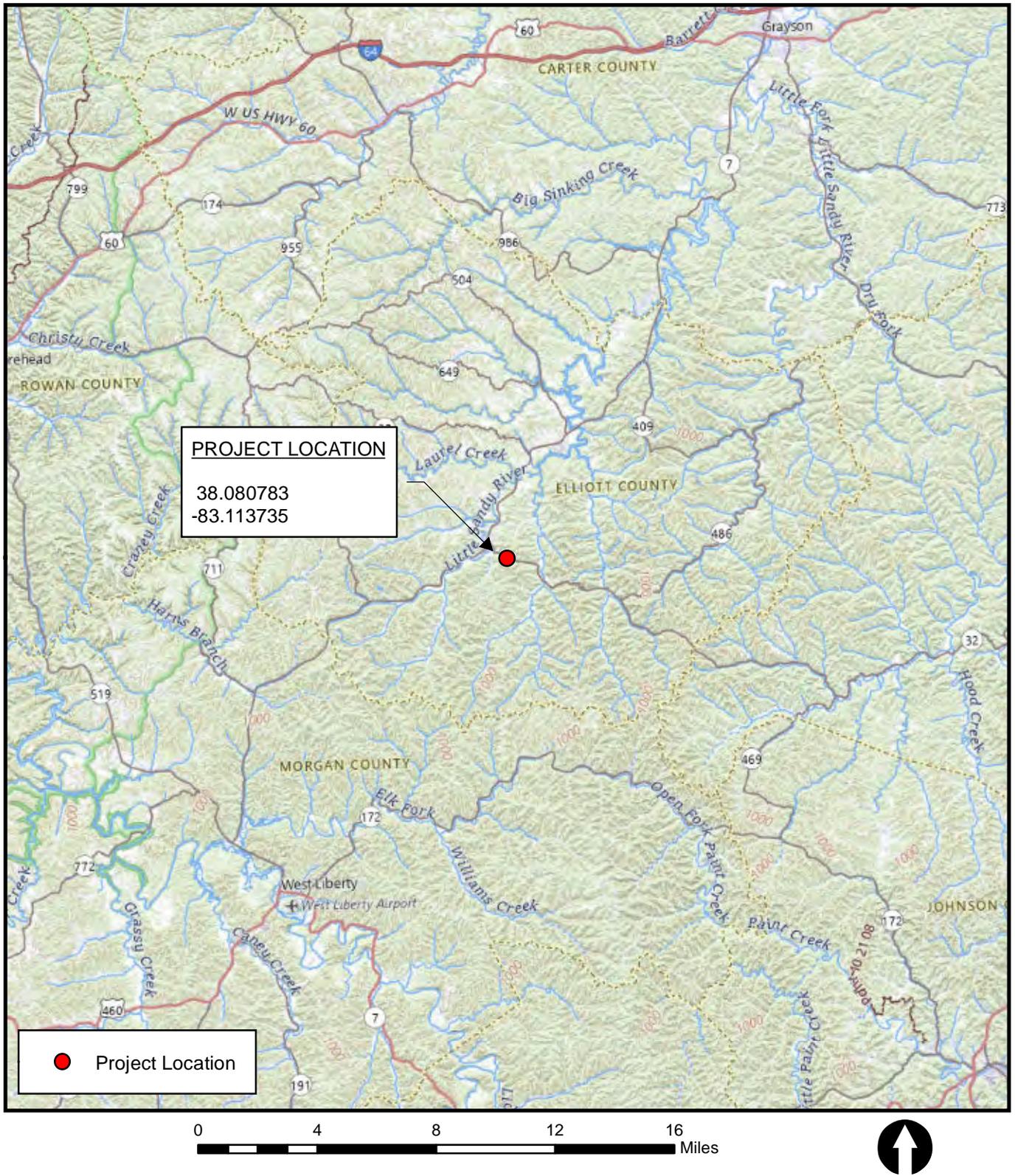
Wetland Mitigation Ratio

*Adjusted Mitigation Unit (AMU) =

*(adjusted to offset
cumulative impacts)

APPENDIX C
FIGURES AND DESIGN PLANS

Source: USGS The National Map



KY 32 MAJOR WIDENING PROJECT
ELLIOTT COUNTY, KENTUCKY
KYTC ITEM NO.: 9-8802.00

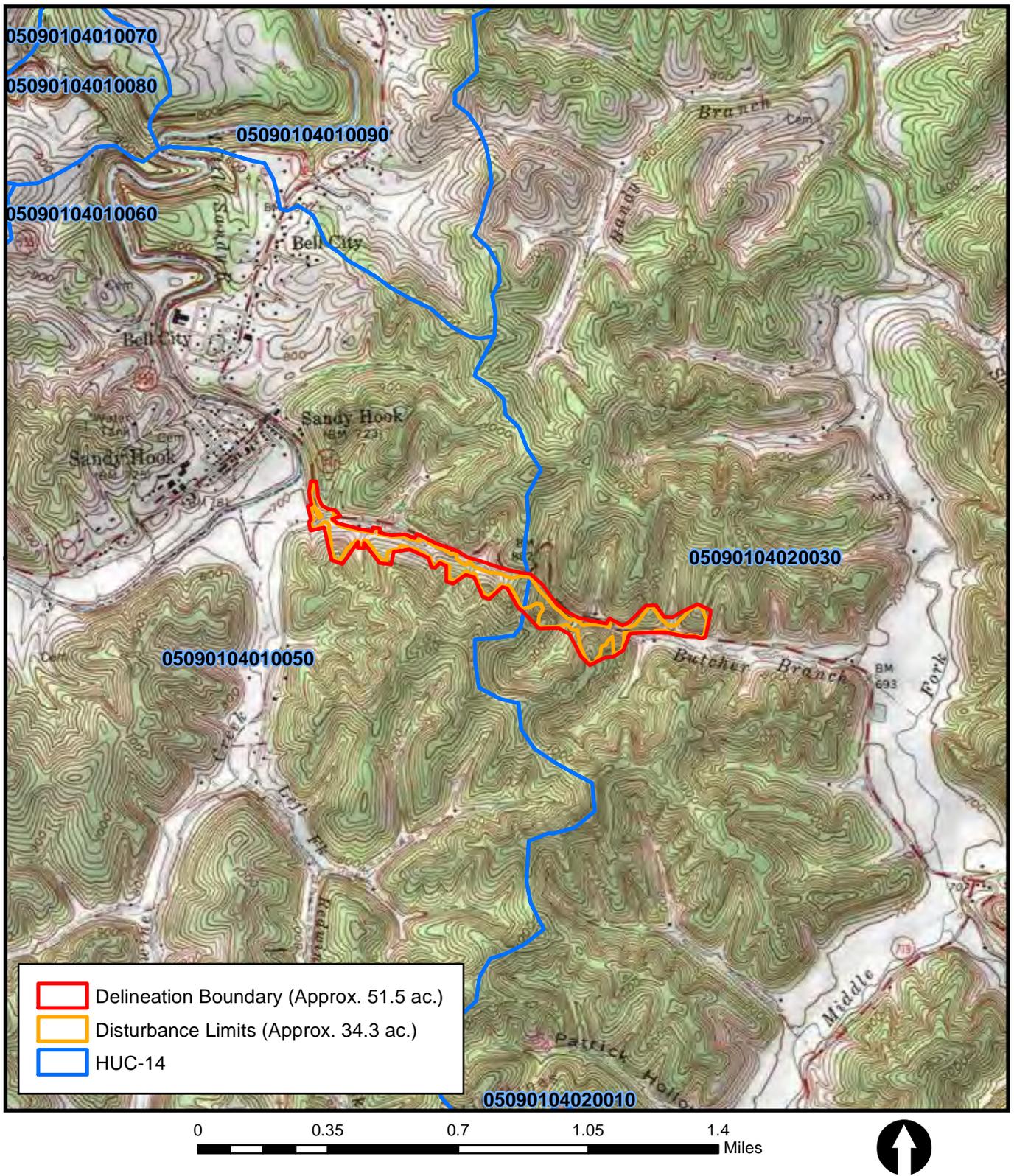


9-8802.00 PROJECT VICINITY MAP

REVISED DATE: 7-22-2025

DRAWN BY: SAS

EXHIBIT 1

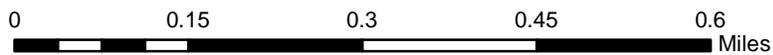
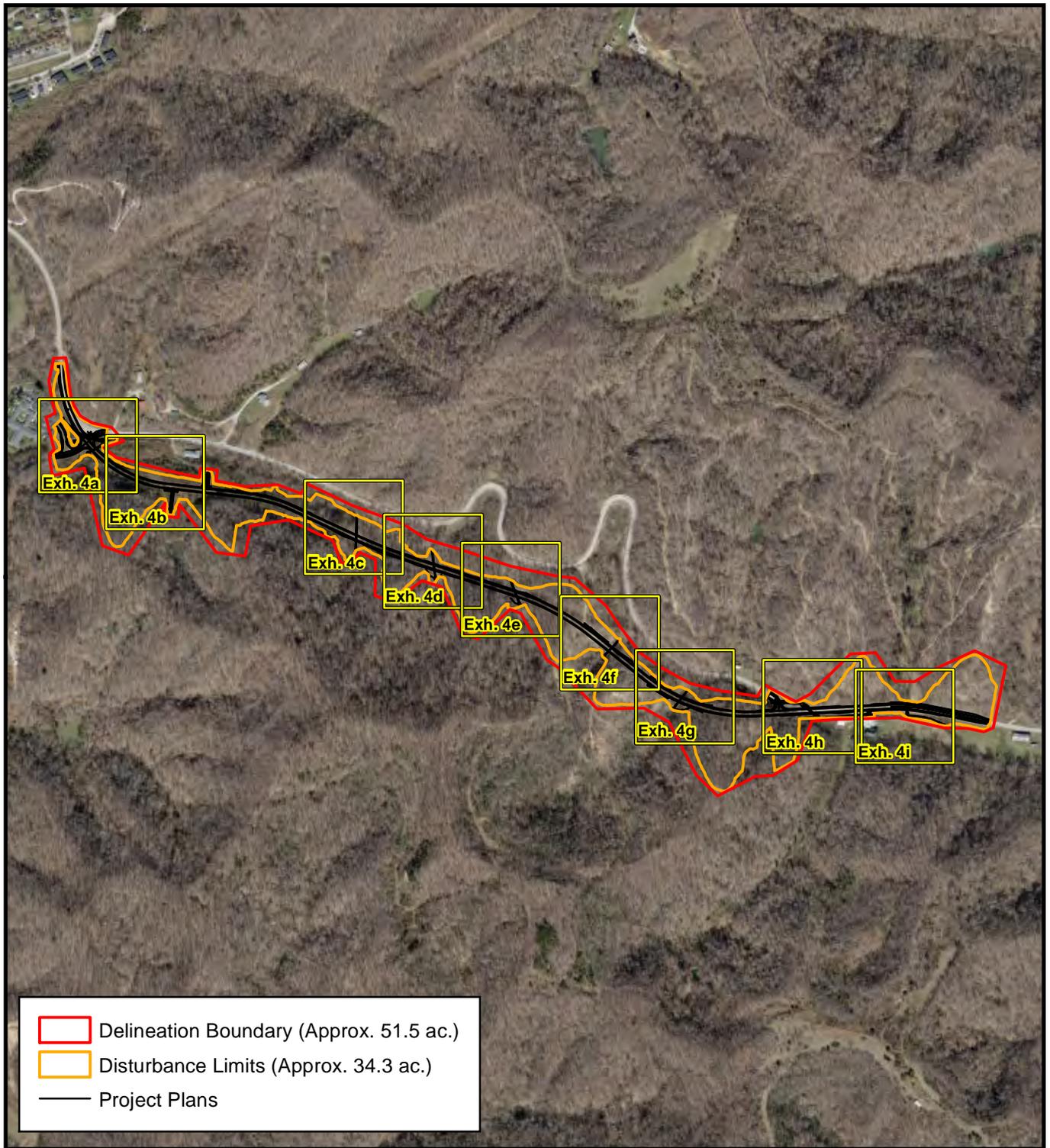


KY 32 MAJOR WIDENING PROJECT
ELLIOTT COUNTY, KENTUCKY
KYTC ITEM NO.: 9-8802.00



9-8802.00 PROJECT ALIGNMENT MAP

Source: KYAPED 3-inch Color Aerial



KY 32 MAJOR WIDENING PROJECT
ELLIOTT COUNTY, KENTUCKY
KYTC ITEM NO.: 9-8802.00

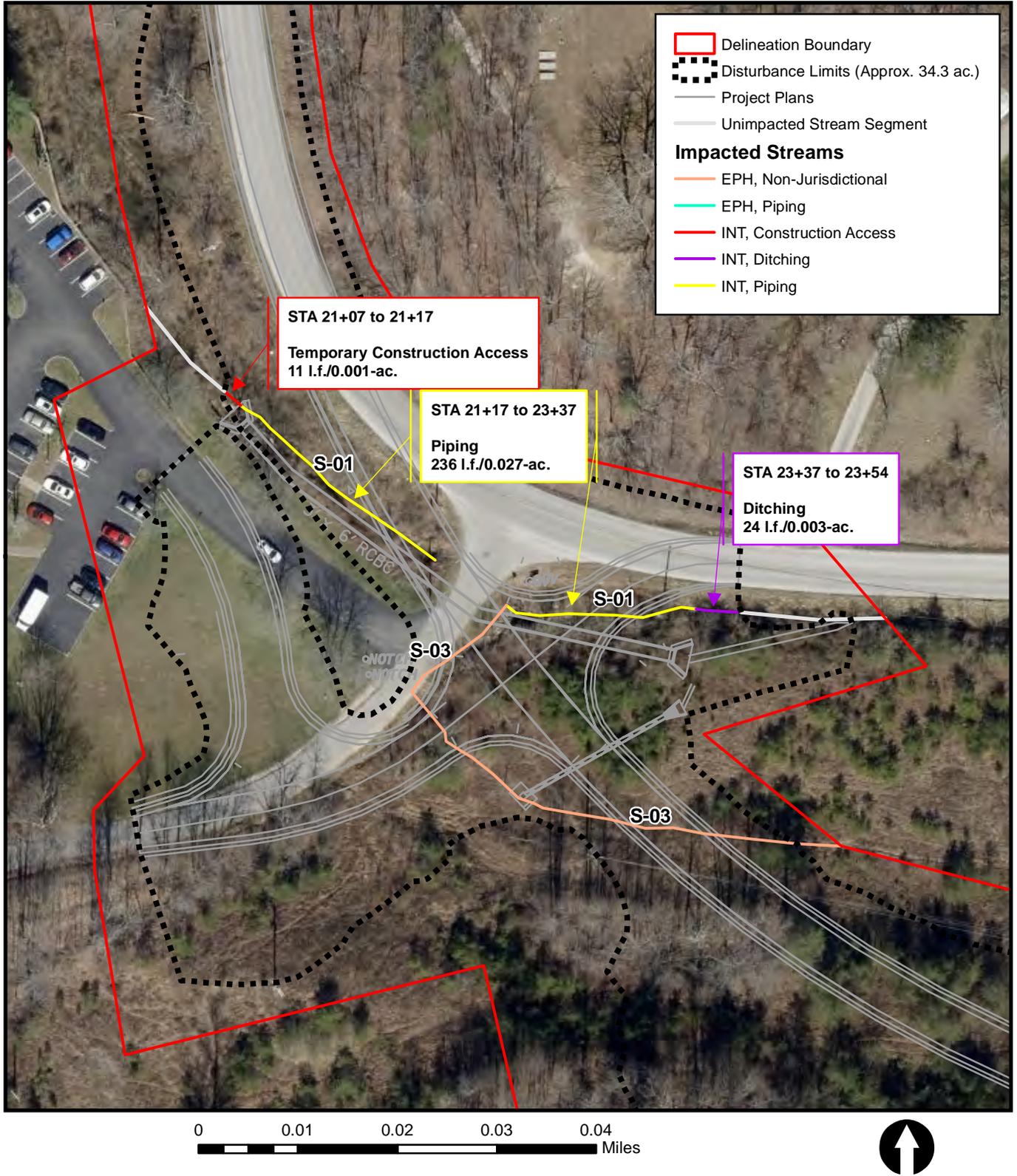


9-8802.00 IMPACTS OVERVIEW MAP

REVISED DATE: 8-15-2025 | DRAWN BY: SAS

EXHIBIT 3

Source: KYAPED 3-inch Color Aerial



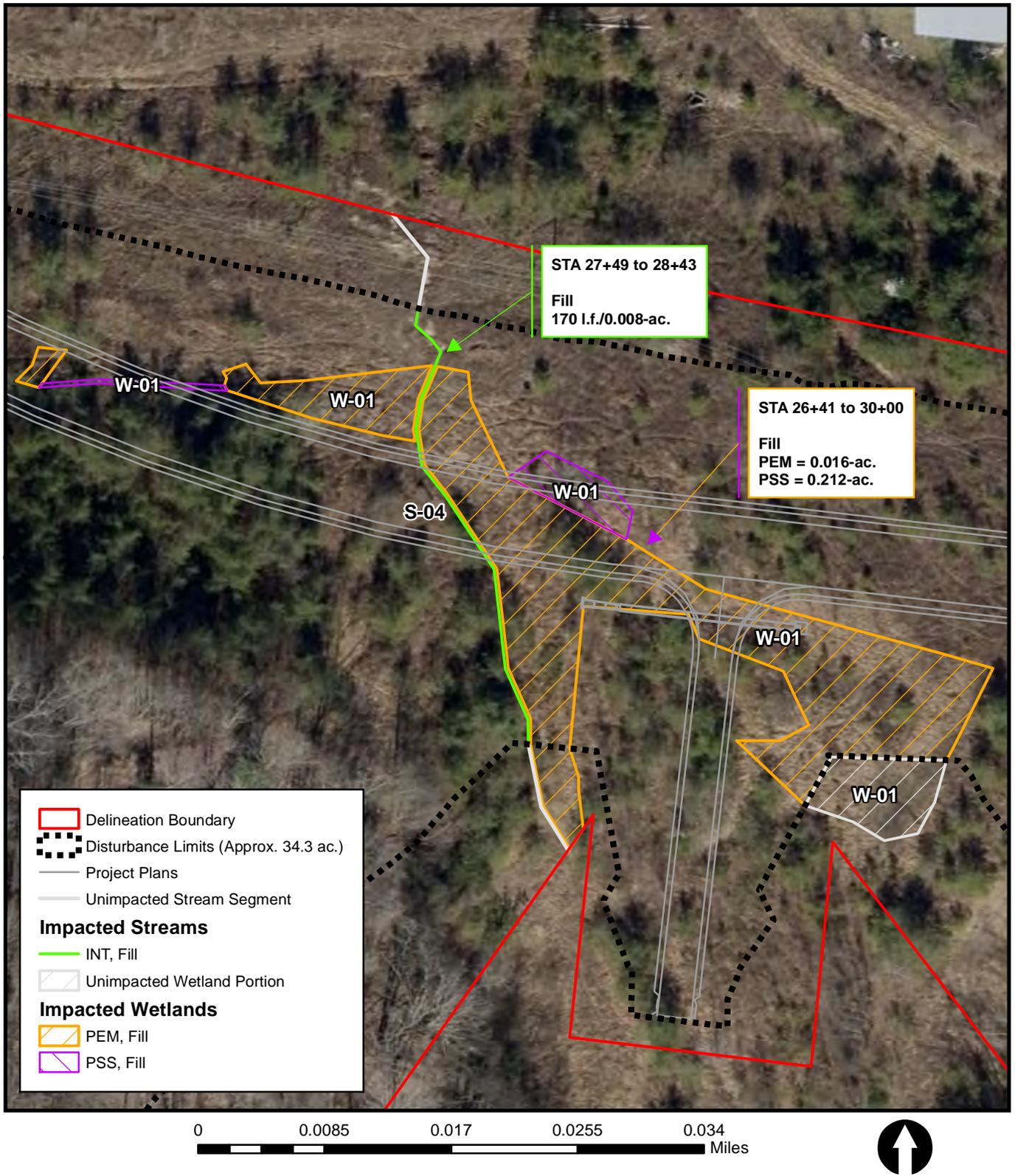
KY 32 MAJOR WIDENING PROJECT
ELLIOTT COUNTY, KENTUCKY
KYTC ITEM NO.: 9-8802.00



9-8802.00 IMPACTS DETAIL MAP

REVISED DATE: 8-22-2025 | DRAWN BY: SAS

EXHIBIT 4a

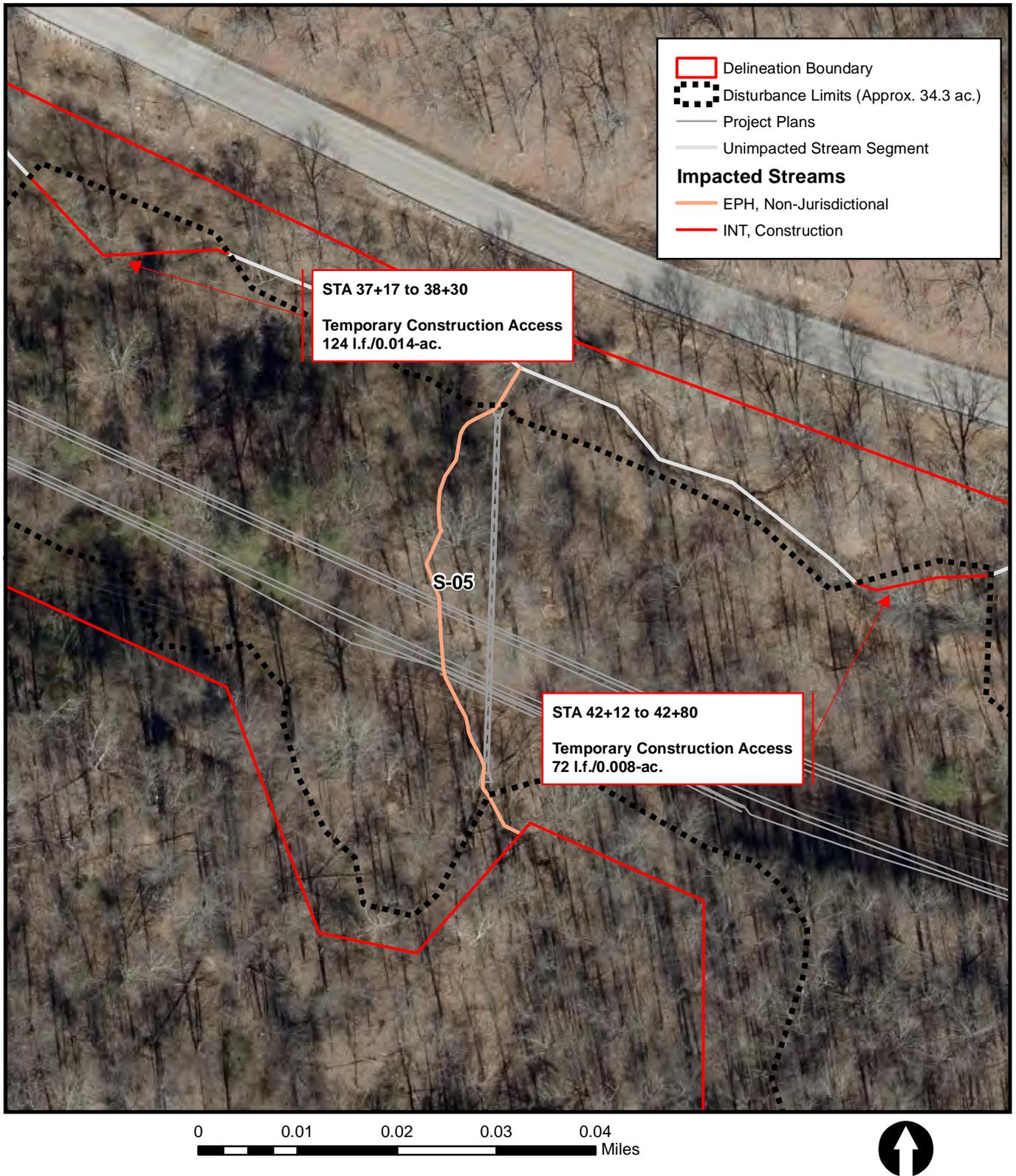


KY 32 MAJOR WIDENING PROJECT
ELLIOTT COUNTY, KENTUCKY
KYTC ITEM NO.: 9-8802.00



9-8802.00 IMPACTS DETAIL MAP

Source: KYAPED 3-inch Color Aerial



KY 32 MAJOR WIDENING PROJECT
ELLIOTT COUNTY, KENTUCKY
KYTC ITEM NO.: 9-8802.00

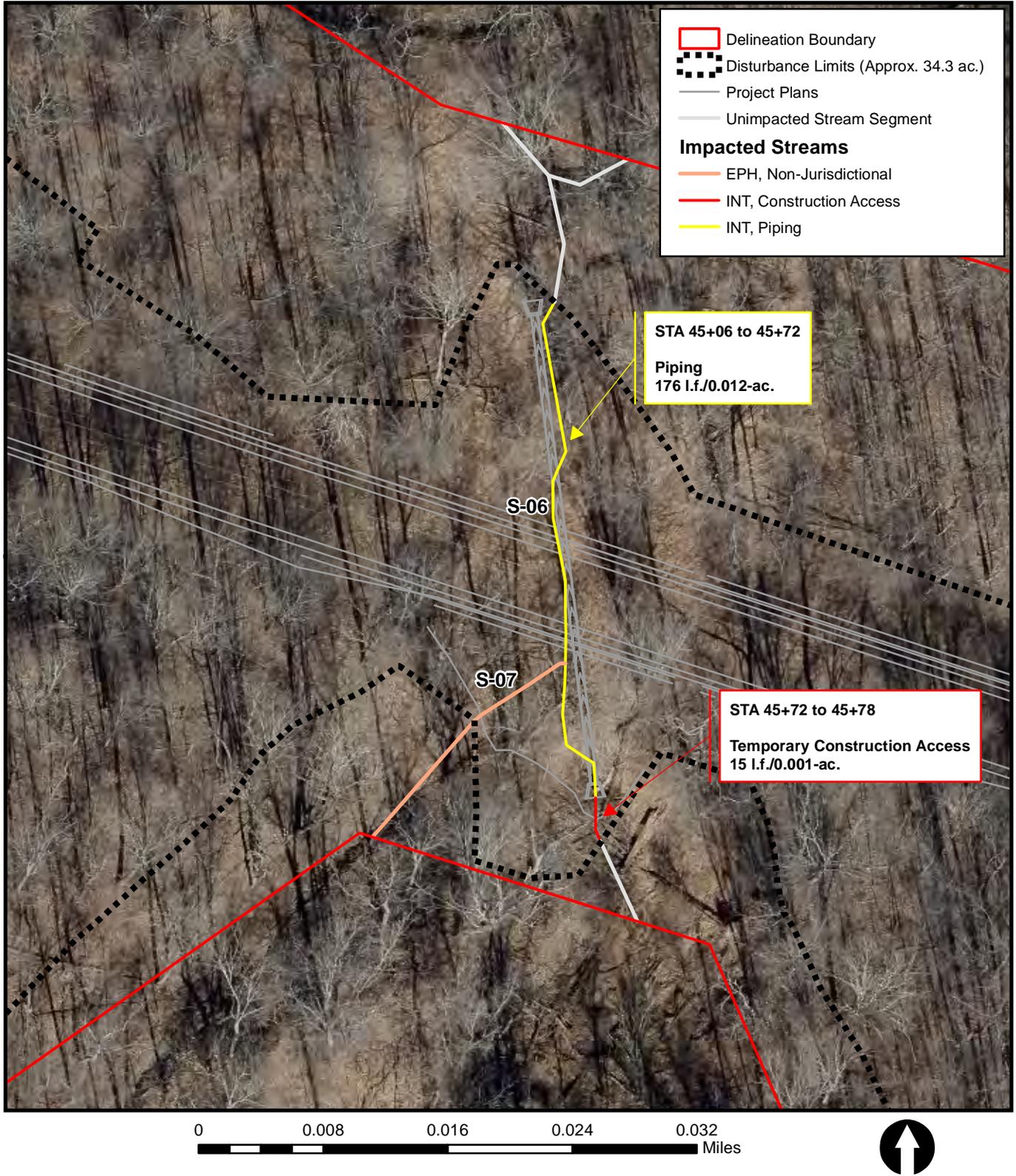


9-8802.00 IMPACTS DETAIL MAP

REVISED DATE: 8-22-2025 | DRAWN BY: SAS

EXHIBIT 4c

Source: KYAPED 3-inch Color Aerial



KY 32 MAJOR WIDENING PROJECT
ELLIOTT COUNTY, KENTUCKY
KYTC ITEM NO.: 9-8802.00

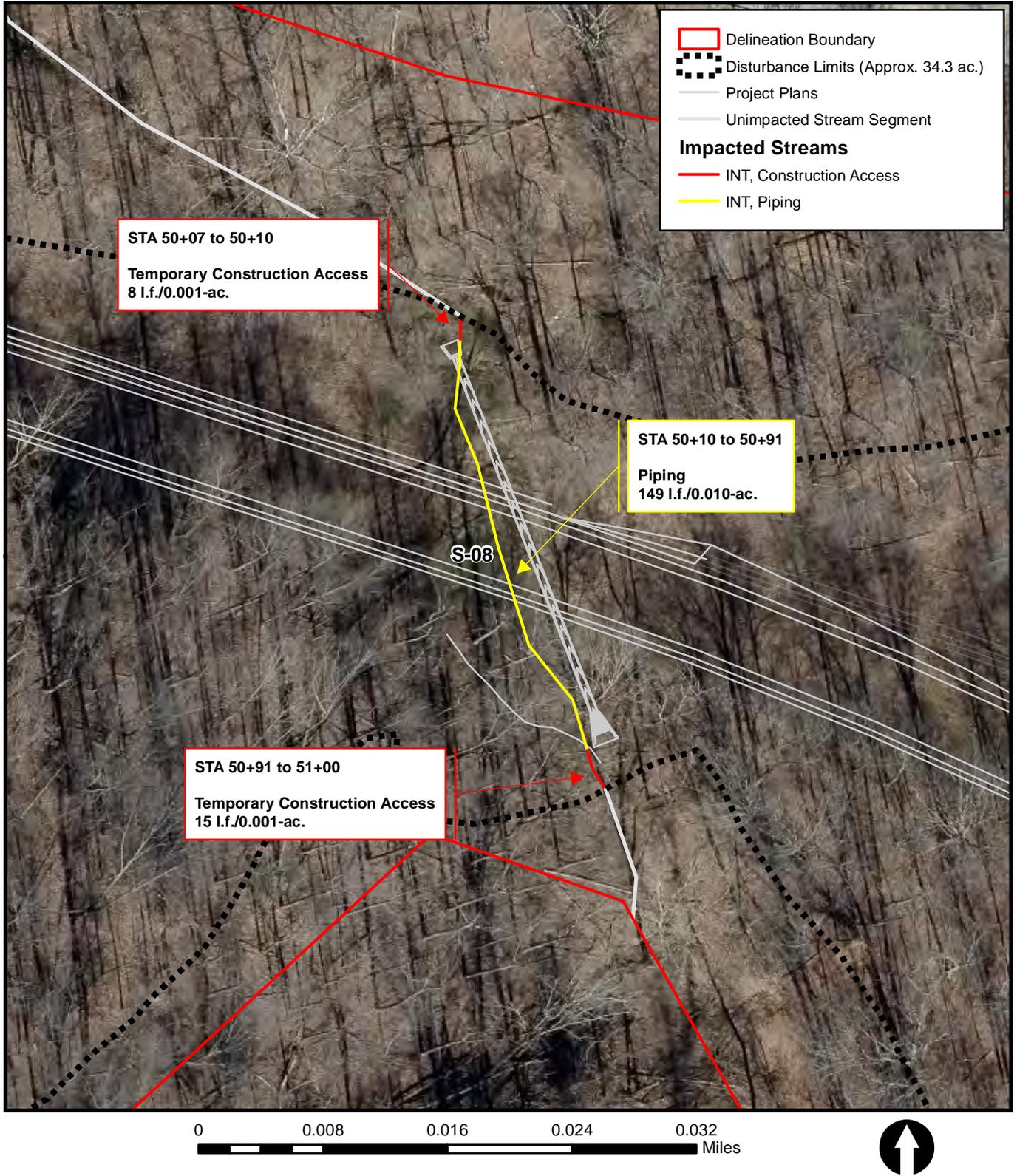


9-8802.00 IMPACTS DETAIL MAP

REVISED DATE: 8-22-2025 | DRAWN BY: SAS

EXHIBIT 4d

Source: KYAPED 3-inch Color Aerial



KY 32 MAJOR WIDENING PROJECT
ELLIOTT COUNTY, KENTUCKY
KYTC ITEM NO.: 9-8802.00



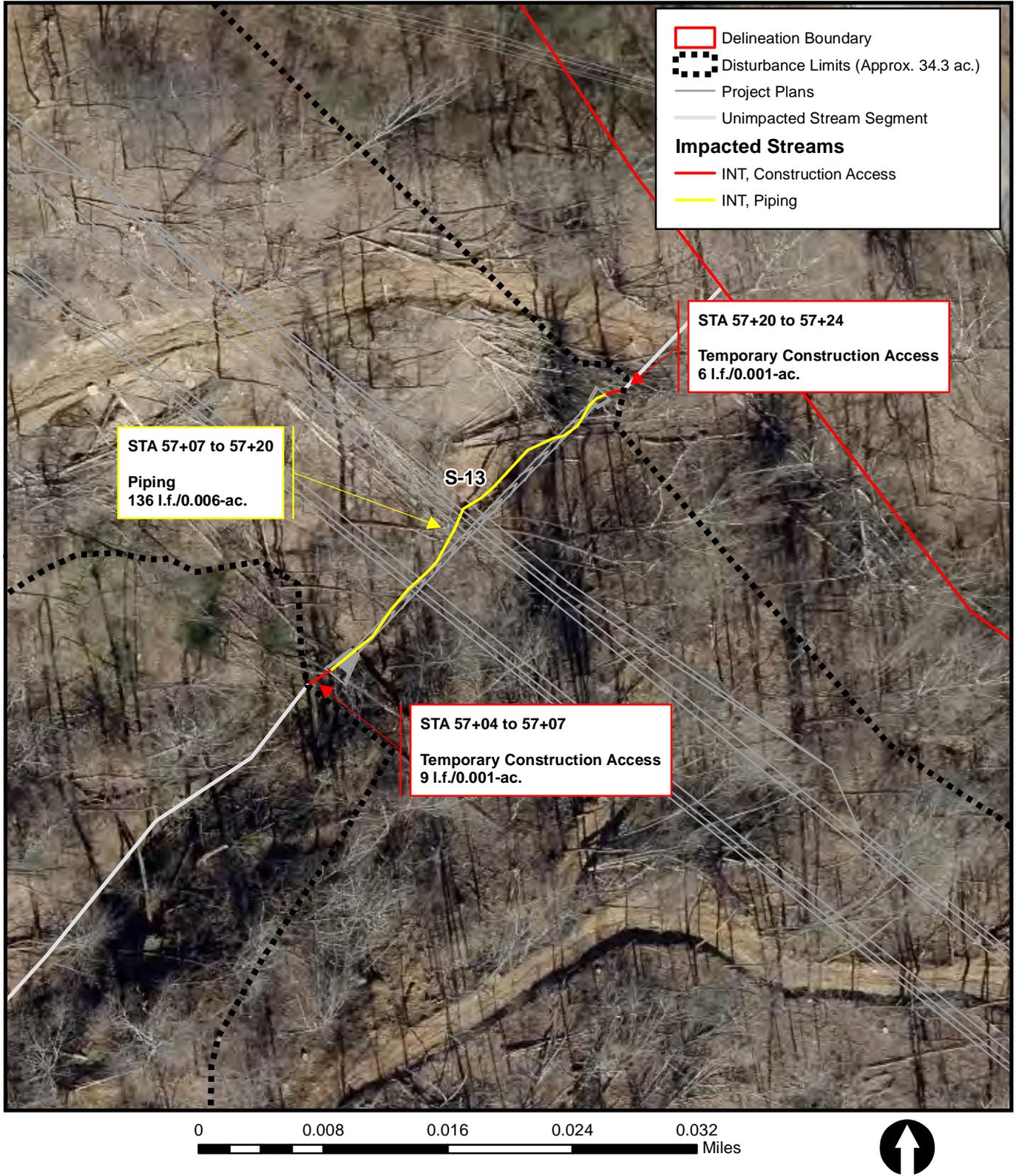
9-8802.00 IMPACTS DETAIL MAP

REVISED DATE: 8-15-2025

DRAWN BY: SAS

EXHIBIT 4e

Source: KYAPED 3-inch Color Aerial



KY 32 MAJOR WIDENING PROJECT
ELLIOTT COUNTY, KENTUCKY
KYTC ITEM NO.: 9-8802.00

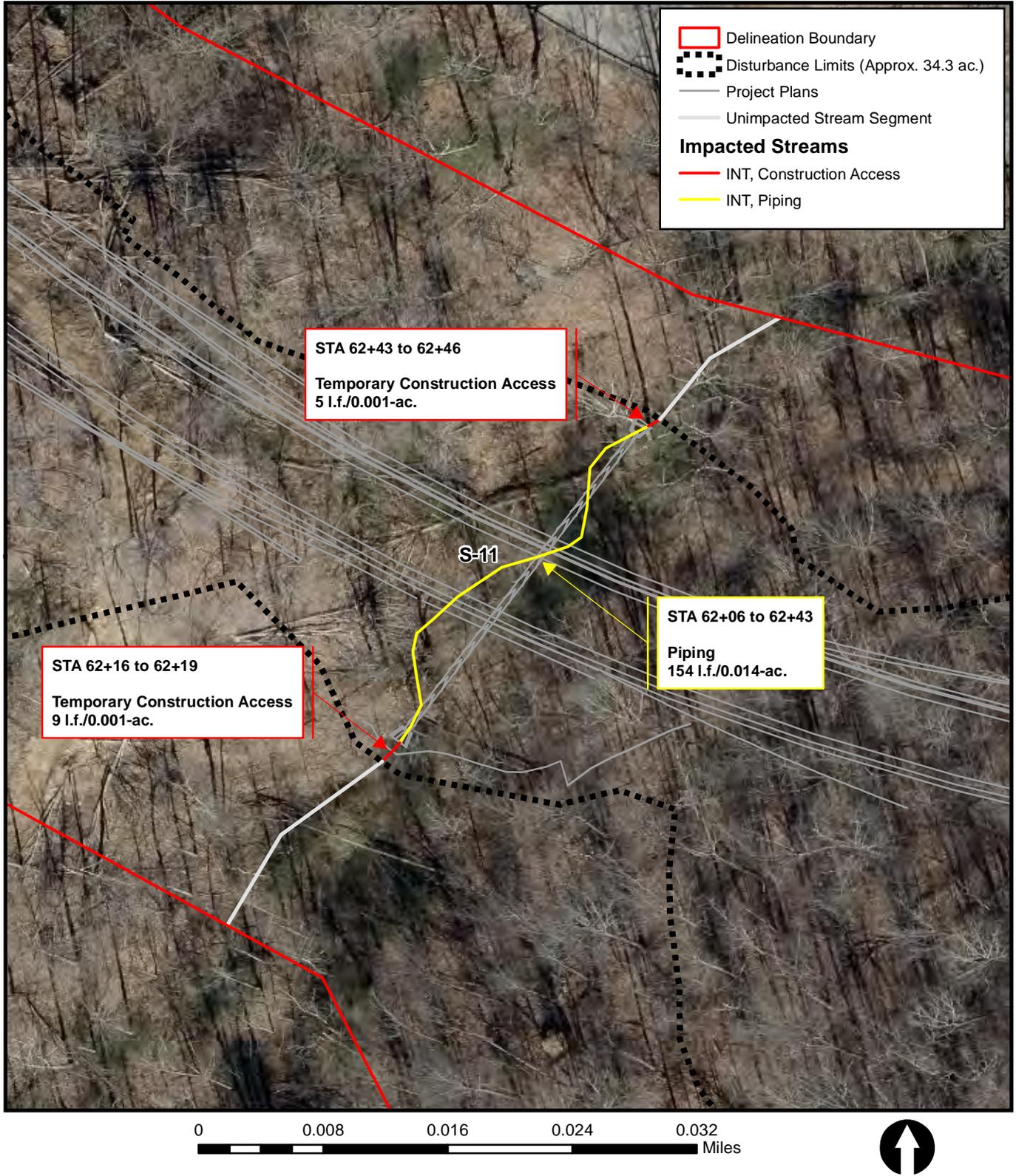


9-8802.00 IMPACTS DETAIL MAP

REVISED DATE: 8-15-2025 | DRAWN BY: SAS

EXHIBIT 4f

Source: KYAPED 3-inch Color Aerial



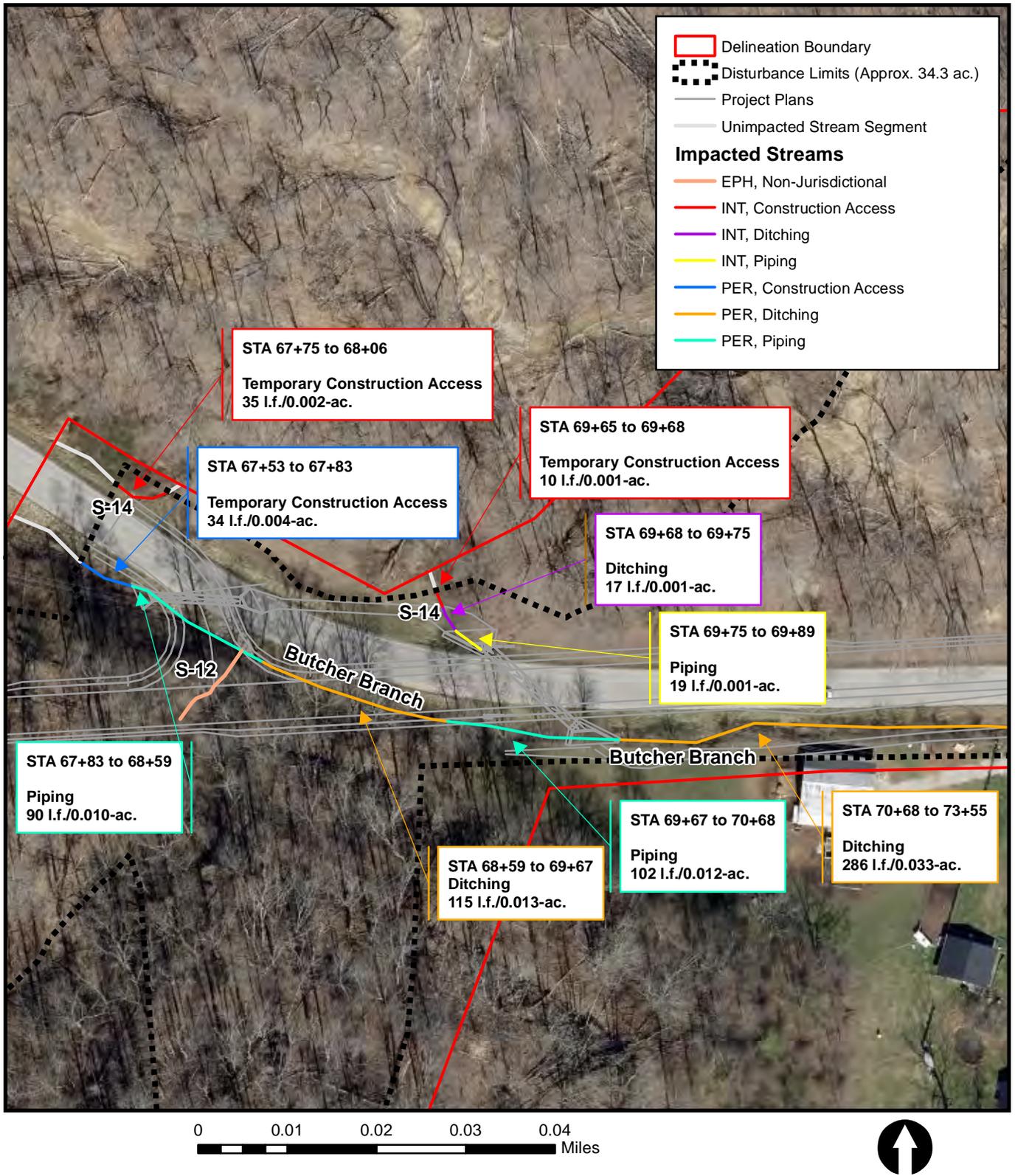
KY 32 MAJOR WIDENING PROJECT
ELLIOTT COUNTY, KENTUCKY
KYTC ITEM NO.: 9-8802.00



9-8802.00 IMPACTS DETAIL MAP

REVISED DATE: 8-15-2025 | DRAWN BY: SAS

EXHIBIT 4g



KY 32 MAJOR WIDENING PROJECT
 ELLIOT COUNTY, KENTUCKY
 KYTC ITEM NO.: 9-8802.00



9-8802.00 IMPACTS DETAIL MAP

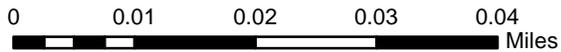


Legend

- Delineation Boundary
- Disturbance Limits (Approx. 34.3 ac.)
- Project Plans
- Unimpacted Stream Segment

Impacted Streams

- INT, Construction Access
- INT, Piping
- PER, Ditching
- PER, Piping



<p>KY 32 MAJOR WIDENING PROJECT ELLIOT COUNTY, KENTUCKY KYTC ITEM NO.: 9-8802.00</p>		<p>9-8802.00 IMPACTS DETAIL MAP</p>
<p>REVISED DATE: 8-15-2025 DRAWN BY: SAS</p>	<p>EXHIBIT 4i</p>	

ENTRANCE CHART						
STA.	LT. OR RT.	WIDTH	SQ. YDS.	PIPE	PIPE LT.	TYPE
22+00	RT	12	216.0	24" PIPE	63.00	ASPH

BEGIN CONSTRUCTION STA. 18+00.00

PI STA 12+34.51
 $\Delta = 50^{\circ}06'10"$ RT
 $T = 332.34'$
 $L = 671.70'$
 $R = 711.06'$
 $E = 73.84'$
 $e = \%$
 Runoff =
 Runout =

STA 21+17 to 23+37
 S-01 Intermittent Piping
 236 l.f./0.027-ac.

STA 23+37 to 23+54
 S-01 Intermittent Ditching
 24 l.f./0.003-ac.

STA 27+49 to 28+43
 S-04 Intermittent Fill
 170 l.f./0.008-ac.

STA 26+41 to 30+00
 W-01 Fill
 PEM = 0.016-ac.
 PSS = 0.212-ac.

STA 21+07 to 21+17
 S-01 Intermittent Temporary Construction Access
 11 l.f./0.001-ac.

END CONSTRUCTION STA. 1+95.00

BEGIN CONSTRUCTION STA. 0+11.00

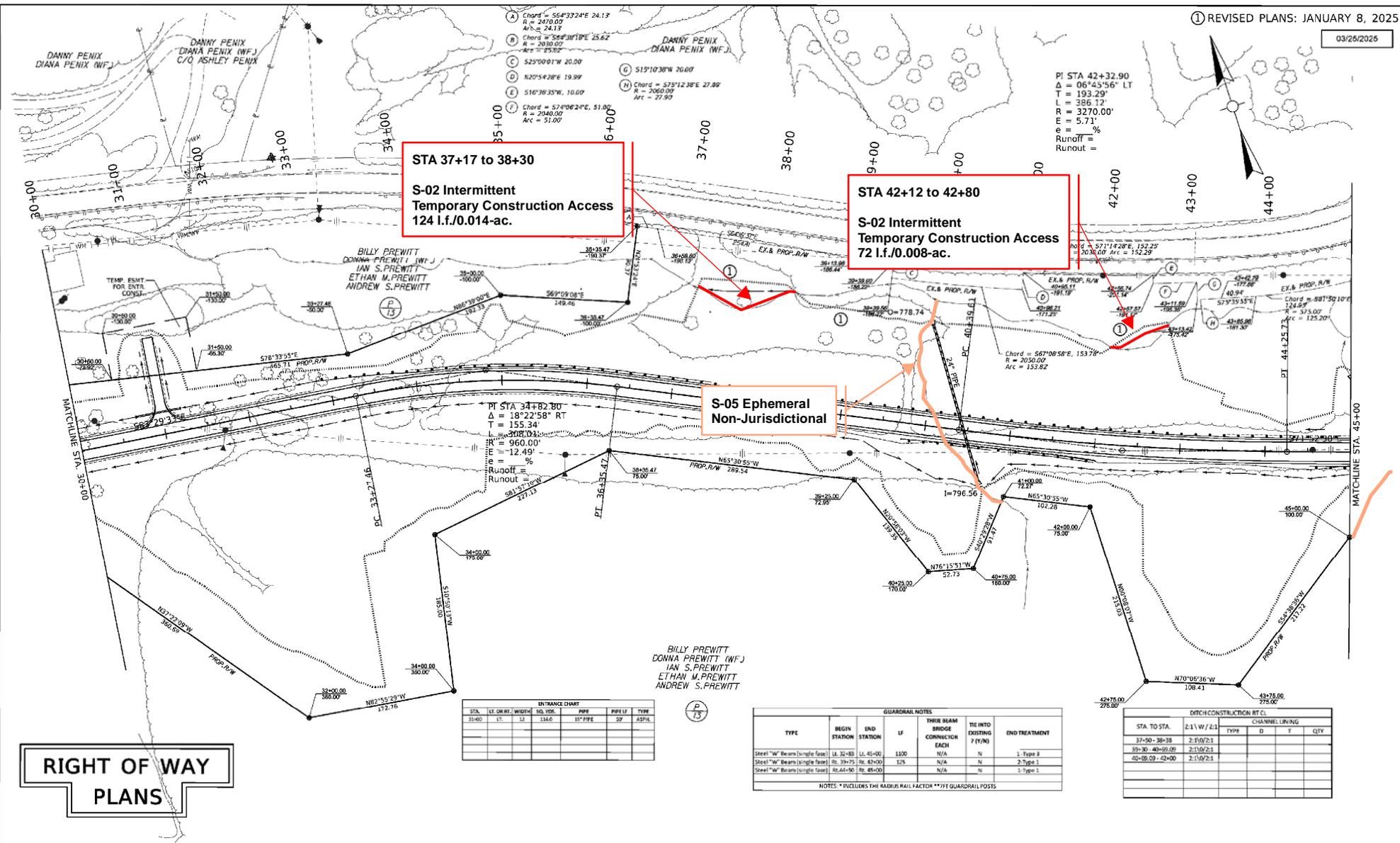
END CONSTRUCTION STA. 102+25.00

S-03 Ephemeral Non-Jurisdictional

- (A) $N86^{\circ}38'40"E$ 30.00
- (B) Chord = $21^{\circ}31'21"E$ 128.59
- (C) $R = 450.00$ Arc = 129.63
- (D) $S22^{\circ}07'13"E$ 7.32
- (E) Chord = $S27^{\circ}27'42"E$ 47.45
- (F) $R = 255.00$ Arc = 47.55
- (G) $S37^{\circ}11'40"W$ 10.00
- (H) Chord = $S40^{\circ}43'09"E$ 73.30
- (I) $R = 365.00$ Arc = 73.33
- (J) $S48^{\circ}42'07"E$ 2.37
- (K) Chord = $S54^{\circ}38'30"E$ 60.02
- (L) $R = 290.00$ Arc = 60.13
- (M) $S31^{\circ}00'07"W$ 13.69
- (N) Chord = $S36^{\circ}09'57"E$ 3.07
- (O) $R = 200.00$ Arc = 3.03
- (P) Chord = $S67^{\circ}27'33"E$ 19.97
- (Q) $R = 290.00$ Arc = 19.97
- (R) $S21^{\circ}12'54"W$ 10.00
- (S) Chord = $S29^{\circ}19'49"E$ 42.36
- (T) $R = 300.00$ Arc = 42.36
- (U) $S77^{\circ}50'24"E$ 2.18
- (V) Chord = $S87^{\circ}50'07"E$ 120.29
- (W) $R = 675.00$ Arc = 120.33
- (X) Chord = $N57^{\circ}39'33"E$ 144.13
- (Y) $R = 230.00$ Arc = 146.60
- (Z) $N35^{\circ}43'57"E$ 44.73
- (AA) $N37^{\circ}10'07"E$ 19.12
- (AB) Chord = $N87^{\circ}04'26"E$ 36.37
- (AC) $R = 230.00$ Arc = 31.37
- (AD) $S39^{\circ}41'27"W$ 45.24

① REVISED PLANS: JANUARY 8, 2025

03/26/2025



STA 37+17 to 38+30
S-02 Intermittent
Temporary Construction Access
124 l.f./0.014-ac.

STA 42+12 to 42+80
S-02 Intermittent
Temporary Construction Access
72 l.f./0.008-ac.

S-05 Ephemeral
Non-Jurisdictional

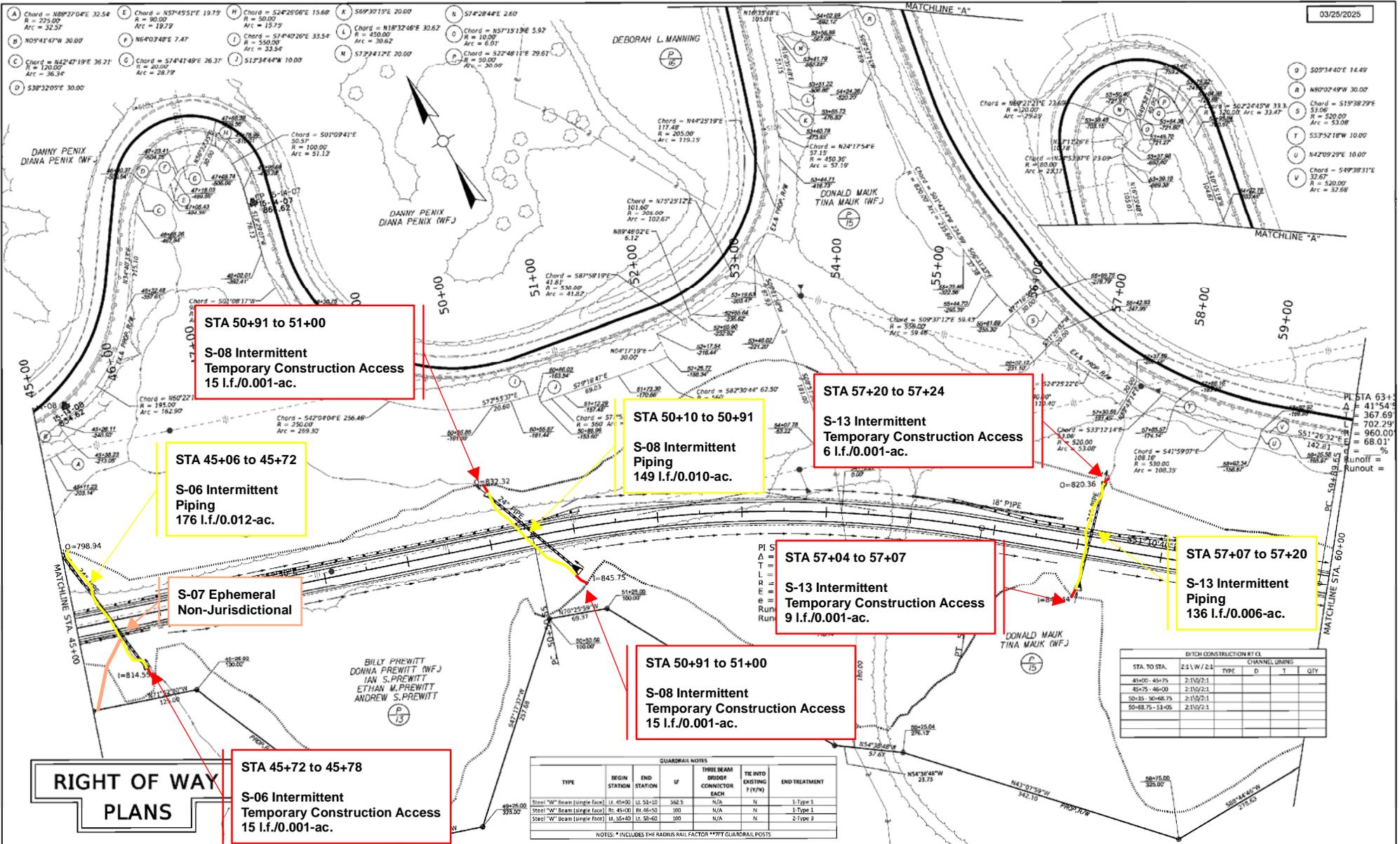
RIGHT OF WAY
PLANS

ENTRANCE CHART						
STA.	LT. OR RT.	WIDTH	SO. VRS.	PIPE	PIPE LF	TYPE
31+00	LT.	12	134.0	15" PIPE	50'	ASPH.

GUARDRAIL NOTES						
TYPE	BEGIN STATION	END STATION	LF	THREE BEAM BRIDGE CONNECTOR EACH	TIE INTO EXISTING F (Y/N)	END TREATMENT
Steel "W" Beams (single face)	18.32+83	Li. 45+00	1130	N/A	N	1. Type 3
Steel "W" Beams (single face)	18.39+75	18.45+00	25	N/A	N	2. Type 1
Steel "W" Beams (single face)	21.44+50	18.45+00	N/A	N	N	1. Type 1

DITCH CONSTRUCTION BY CL			
STA. TO STA.	Z:11 W/ Z:1	CHANNEL LINING	
		TYPE	D T CTY
33+00 - 39+38	2:11/0/2:1		
39+30 - 40+61.00	2:11/0/2:1		
42+05.00 - 42+00	2:11/0/2:1		





STA 50+91 to 51+00
S-08 Intermittent Temporary Construction Access
15 l.f./0.001-ac.

STA 45+06 to 45+72
S-06 Intermittent Piping
176 l.f./0.012-ac.

S-07 Ephemeral Non-Jurisdictional

STA 50+10 to 50+91
S-08 Intermittent Piping
149 l.f./0.010-ac.

STA 57+20 to 57+24
S-13 Intermittent Temporary Construction Access
6 l.f./0.001-ac.

STA 57+04 to 57+07
S-13 Intermittent Temporary Construction Access
9 l.f./0.001-ac.

STA 57+07 to 57+20
S-13 Intermittent Piping
136 l.f./0.006-ac.

STA 50+91 to 51+00
S-08 Intermittent Temporary Construction Access
15 l.f./0.001-ac.

STA 45+72 to 45+78
S-06 Intermittent Temporary Construction Access
15 l.f./0.001-ac.

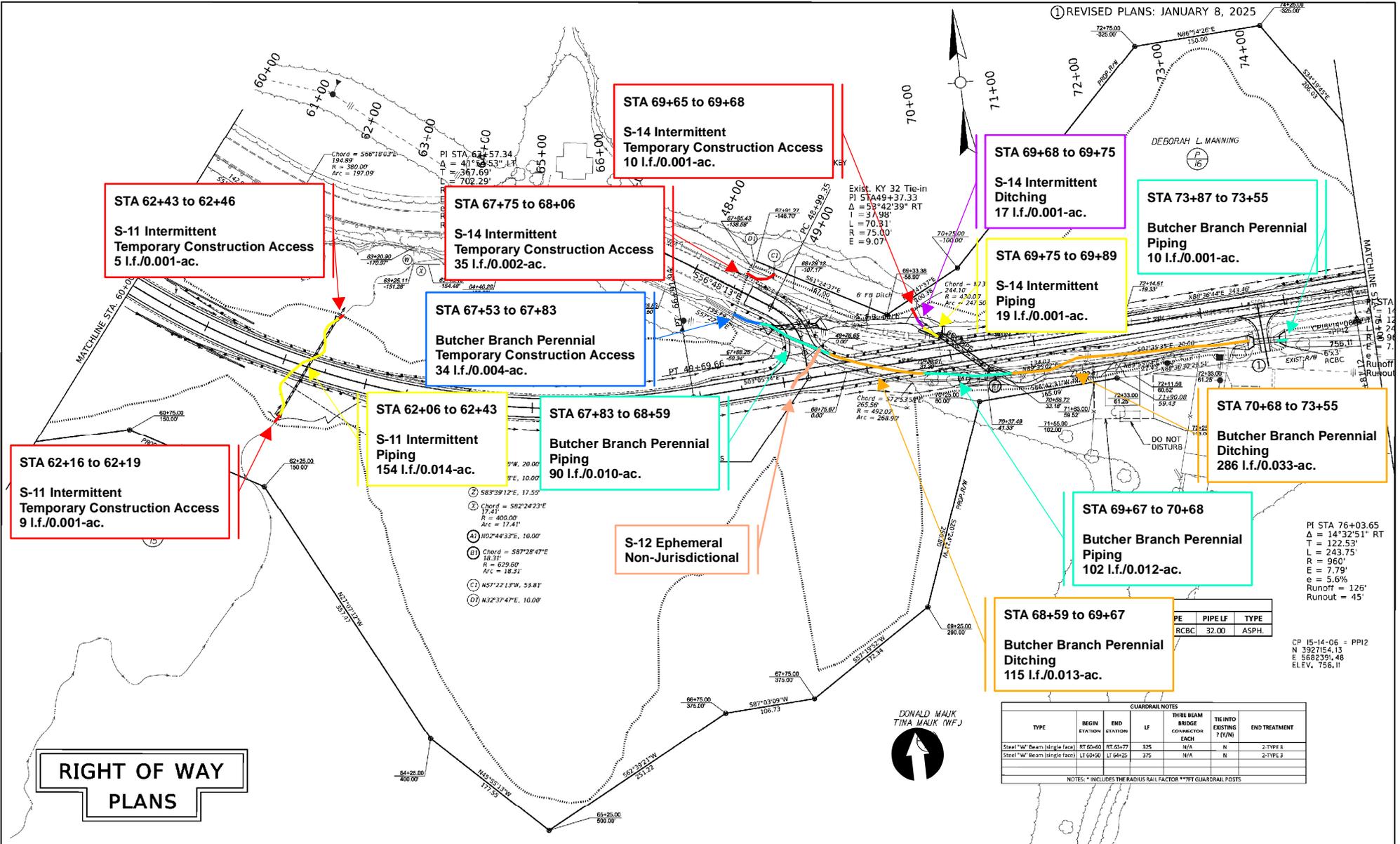
RIGHT OF WAY PLANS

GUARDRAIL NOTES						
TYPE	BEGIN STATION	END STATION	LF	THREE BEAM BRIDGE CONNECTION EACH	FE INTO EXISTING P (Y/N)	END TREATMENT
Steel "W" Beam (single face)	St. 45+00	St. 53+20	562.5	N/A	N	1-Type 1
Steel "W" Beam (single face)	St. 45+00	St. 45+50	100	N/A	N	1-Type 1
Steel "W" Beam (single face)	St. 50+40	St. 50+60	100	N/A	N	2-Type 3

NOTES: * INCLUDES THE RADIUS RAIL FACTOR **9FT GUARDRAIL POSTS

BATCH CONSTRUCTION BY CL				
STA. TO STA.	Z1/L/W/Z1	TYPE	D	T
45+06-45+75	2:1/10/2:1			
45+75-46+00	2:1/10/2:1			
50+35-50+48.75	2:1/10/2:1			
50+68.75-53+05	2:1/10/2:1			

REVISED PLANS: JANUARY 8, 2025



STA 62+43 to 62+46
S-11 Intermittent Temporary Construction Access
5 l.f./0.001-ac.

STA 67+75 to 68+06
S-14 Intermittent Temporary Construction Access
35 l.f./0.002-ac.

STA 69+65 to 69+68
S-14 Intermittent Temporary Construction Access
10 l.f./0.001-ac.

STA 69+68 to 69+75
S-14 Intermittent Ditching
17 l.f./0.001-ac.

STA 73+87 to 73+55
Butcher Branch Perennial Piping
10 l.f./0.001-ac.

STA 67+53 to 67+83
Butcher Branch Perennial Temporary Construction Access
34 l.f./0.004-ac.

STA 69+75 to 69+89
S-14 Intermittent Piping
19 l.f./0.001-ac.

STA 62+16 to 62+19
S-11 Intermittent Temporary Construction Access
9 l.f./0.001-ac.

STA 62+06 to 62+43
S-11 Intermittent Piping
154 l.f./0.014-ac.

STA 67+83 to 68+59
Butcher Branch Perennial Piping
90 l.f./0.010-ac.

STA 70+68 to 73+55
Butcher Branch Perennial Ditching
286 l.f./0.033-ac.

S-12 Ephemeral Non-Jurisdictional

STA 69+67 to 70+68
Butcher Branch Perennial Piping
102 l.f./0.012-ac.

STA 68+59 to 69+67
Butcher Branch Perennial Ditching
115 l.f./0.013-ac.

PI STA 76+03.65
Δ = 14°32'51" RT
T = 122.53'
L = 243.75'
R = 950'
E = 7.79'
e = 5.6%
Runoff = 125'
Runoff = 45'

CP 15-14-06 = PPI2
N 3927154.13
E 5682391.48
ELEV. 756.11

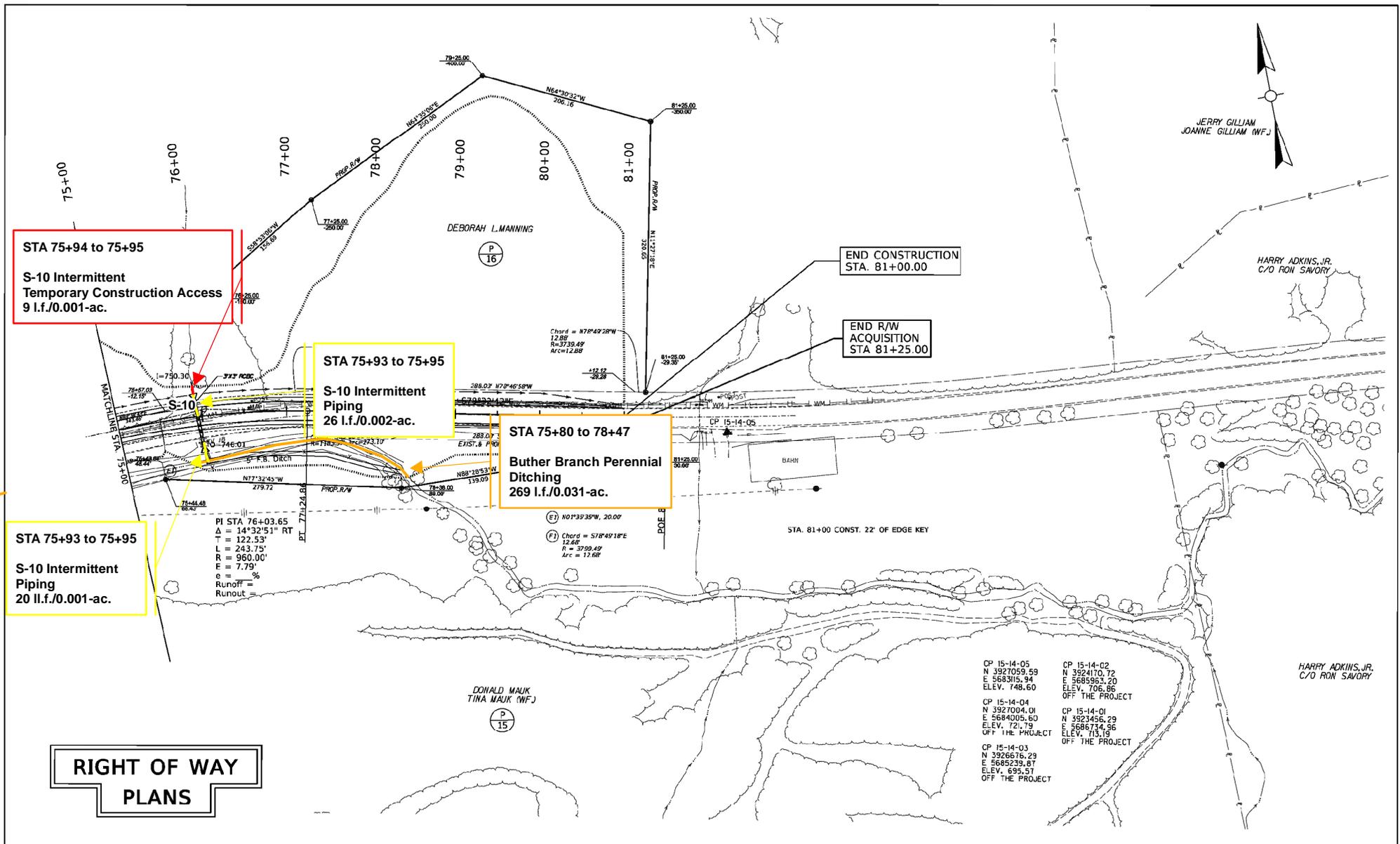
PE	PIPE LF	TYPE
RCBC	92.00	ASPH.

GUARDRAIL NOTES						
TYPE	BEGIN STATION	END STATION	LF	THREE BEAM BRIDGE CONNECTOR EACH	TIE INTO ? (W/N)	END TREATMENT
Steel "W" Beam (single face)	RT 60+60	RT 63+77	375	N/A	N	2-TYPE 3
Steel "W" Beam (single face)	LT 60+90	LT 64+25	375	N/A	N	2-TYPE 3

NOTES: * INCLUDES THE RADIUS RAIL FACTOR ** 7 FT GUARDRAIL POSTS



RIGHT OF WAY PLANS



STA 75+94 to 75+95
S-10 Intermittent
Temporary Construction Access
9 l.f./0.001-ac.

STA 75+93 to 75+95
S-10 Intermittent
Piping
26 l.f./0.002-ac.

STA 75+80 to 78+47
Buther Branch Perennial
Ditching
269 l.f./0.031-ac.

STA 75+93 to 75+95
S-10 Intermittent
Piping
20 l.f./0.001-ac.

RIGHT OF WAY
PLANS

PI STA 76+03.65
 $\Delta = 14^{\circ}32'51''$ RT
 $T = 122.53'$
 $L = 243.75'$
 $R = 960.00'$
 $E = 7.79'$
 $e = \%$
 Runoff =
 Runout =

CP 15-14-05
 N 3927059.59
 E 5683115.94
 ELEV. 748.60
 OFF THE PROJECT

CP 15-14-02
 N 3924170.72
 E 5685963.20
 ELEV. 706.86
 OFF THE PROJECT

CP 15-14-04
 N 3927004.01
 E 5684005.60
 ELEV. 721.79
 OFF THE PROJECT

CP 15-14-01
 N 3923456.29
 E 5686734.86
 ELEV. 713.19
 OFF THE PROJECT

CP 15-14-03
 N 3926616.29
 E 5685239.87
 ELEV. 695.57
 OFF THE PROJECT



COMMONWEALTH OF KENTUCKY

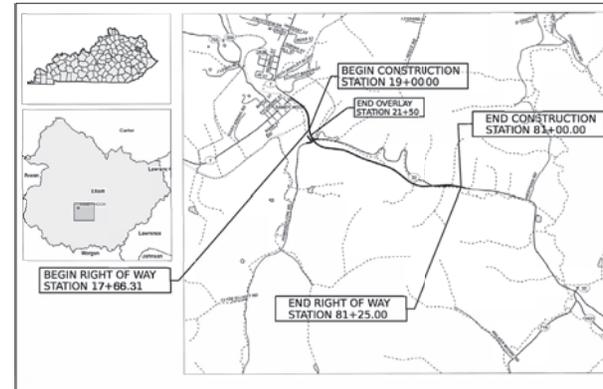
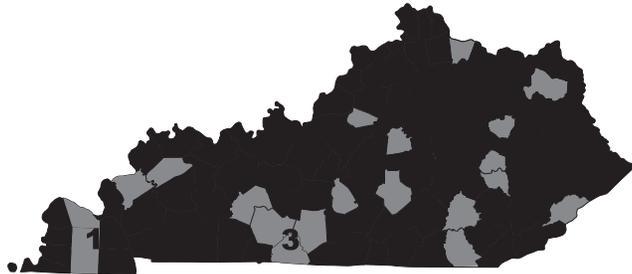
DEPARTMENT OF HIGHWAYS



PLANS OF PROPOSED PROJECT

Elliott County

Brown Ridge Road (KY 32)



LAYOUT MAP

**RIGHT OF WAY
PLANS**

THE CONTROL OF ACCESS ON THIS
PROJECT SHALL BE BY PERMIT

THIS PROJECT IS OFF THE NH SYSTEM



DESIGN CRITERIA	
CLASS OF HIGHWAY	RURAL MAJOR COLLECTOR
TYPE OF TERRAIN	ROLLING
DESIGN SPEED	45 MPH
REQUIRED NPSD	360'
REQUIRED PSD	N/A
LEVEL OF SERVICE	N/A
ADT PRESENT (2012)	1199
ADT FUTURE (2022)	1199
DHV	X
D %	X
T % (2012)	5.42%
GEOGRAPHIC COORDINATES	
LATITUDE	38 DEGREES 04 MINUTES 53 SECONDS NORTH
LONGITUDE	83 DEGREES 05 MINUTES 45 SECONDS WEST
DESIGNED	
% RESTRICTED SD	X
LEVEL OF SERVICE	X
MAX. DISTANCE W/O PASSING	X

SHEET NO.	DESCRIPTION
R1	LAYOUT SHEET
R2-R2A	TYPICAL SECTIONS-SUMMARY OF QUANTITIES
R2B	LEGEND SHEET
R3-R13	PLAN AND PROFILE SHEETS
R14	RIGHT OF WAY SUMMARY SHEETS
R15-R17	RIGHT OF WAY STRIP MAP SHEETS
R18	RIGHT OF WAY MONUMENTS SHEET
R19-R21	COORDINATE CONTROL SHEETS
SHEETS NOT INCLUDED IN TOTAL SHEETS	

LENGTH <u>2500.00</u> LIN. FT. <u>1.420</u> MILES	LENGTH _____ LIN. FT. _____ MILES	LENGTH _____ LIN. FT. _____ MILES	LENGTH _____ LIN. FT. _____ MILES
ADDED <input type="checkbox"/> FOR EQUALITIES <u>0</u> LIN. FT.	ADDED <input type="checkbox"/> FOR EQUALITIES _____ LIN. FT.	ADDED <input type="checkbox"/> FOR EQUALITIES _____ LIN. FT.	ADDED <input type="checkbox"/> FOR EQUALITIES _____ LIN. FT.
DEDUCTED <input type="checkbox"/> NOT INCLUDED	DEDUCTED <input type="checkbox"/> NOT INCLUDED	DEDUCTED <input type="checkbox"/> NOT INCLUDED	DEDUCTED <input type="checkbox"/> NOT INCLUDED
RAILROAD CROSSINGS NO. <u>N/A</u> LIN. FT.	RAILROAD CROSSINGS NO. _____ LIN. FT.	RAILROAD CROSSINGS NO. _____ LIN. FT.	RAILROAD CROSSINGS NO. _____ LIN. FT.
BRIDGES <u>N/A</u> LIN. FT.	BRIDGES _____ LIN. FT.	BRIDGES _____ LIN. FT.	BRIDGES _____ LIN. FT.

PROJECT NUMBER: FD52 032 0032 009-011 STP 5255 (024)	RECOMMENDED BY: _____ PROJECT MANAGER DATE: _____	LETTING DATE: _____
PROJECT DESCRIPTION: BROWN RIDGE ROAD (KY 32)	PLAN APPROVED BY: _____ STATE HIGHWAY ENGINEER DATE: _____	ITEM NO. 9-8802.00 COUNTY OF ELLIOTT
		SHEET NO. R1

RIGHT OF WAY REVISION NO. 1

REVISED PLANS DATE: JANUARY 8, 2025

SHEETS REVISED: R3, R5 AND R9

PARCELS INVOLVED: P15

REMARKS:

R3: REMOVED ENTRANCE AT LT STA 17+51.82 FROM ENTRANCE CHART.
R5: REVISED FILL SLOPE FROM 2:1 TO 2.5:1, LT STA 37+50 TO 43+50
WHICH AFFECTED THE DISTURBED LIMIT LINE.
R9&P15: ENTRANCE CONST. AT RT STA 73+65.

ALL REVISIONS HAVE BEEN DENOTED BY WITH A Q SYMBOL.

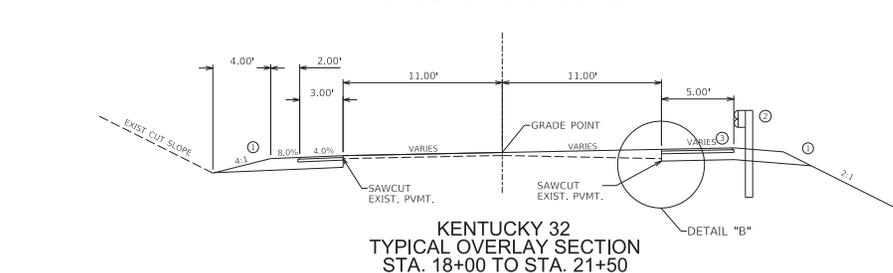
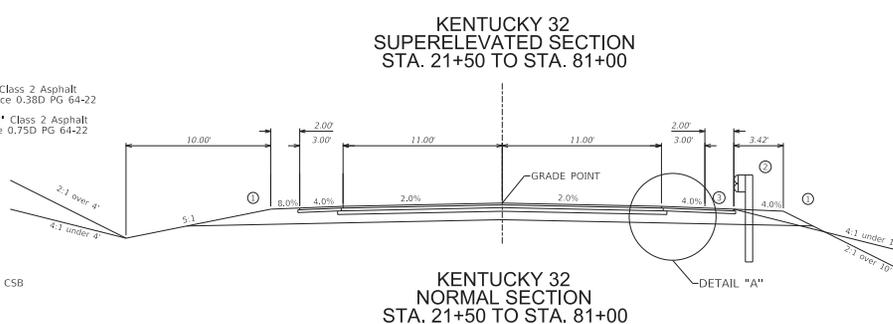
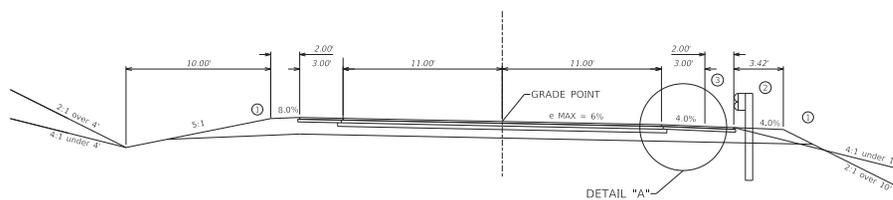
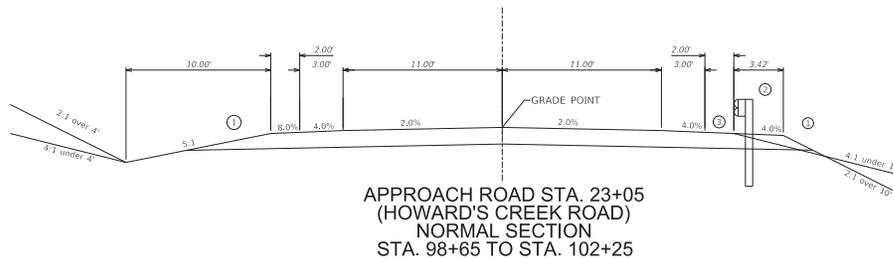


COMMONWEALTH OF KENTUCKY
DEPARTMENT OF HIGHWAYS



DRAWING TITLE: RIGHT OF WAY REVISION SHEET

TYPICAL SECTIONS KY 32/HOWARD'S CREEK ROAD



SEE CROSS SECTIONS FOR SLOPES OUTSIDE THE LIMITS OF SHOULDERS

- ① ASPHALT SEAL REQUIRED FROM PAVED SHOULDER TO A POINT 2' DOWN THE SLOPE
- TWO APPLICATIONS OF THE FOLLOWING:

ASPHALT SEAL COAT 2.4 LB/SOYD
ASPHALT SEAL AGGREGATE 20 LB/SOYD

- ② SHOULDER SHALL BE WIDENED 3.42' FOR GUARDRAIL

- ③ CONSTRUCT PAVED SHOULDER TO THE FACE OF GUARDRAIL WHERE APPLICABLE.

KY 32 NEW CONSTRUCTION WITH ASPHALT PAVEMENT

TRAFFIC LANES

12.25' BASE — 6" CRUSHED STONE BASE (CSB)
2.25" CL2 ASPH BASE 0.75D PG64-22
3" CL2 ASPH BASE 0.75D PG64-22

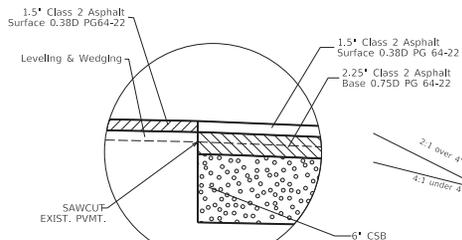
1.50" SURFACE — 1.50" CL2 ASPH SURF 0.38D PG64-22

SHOULDERS

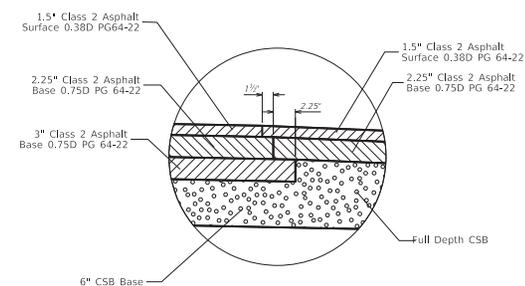
12.25' BASE — FULL DEPTH CRUSHED STONE BASE (CSB)
3" CL2 ASPH BASE 0.75D PG64-22

1.50" SURFACE — 1.50" CL2 ASPH SURF 0.38D PG64-22

ASPHALT SEAL (TWO APPLICATIONS) — ASPHALT SEAL COAT, 2.4 LBS/SY
ASPHALT SEAL AGGREGATE, 20 LBS/SY (SIZE 8 OR 9M)



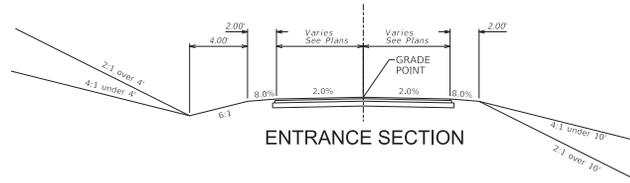
DETAIL "B"



DETAIL "A"

**RIGHT OF WAY
PLANS**

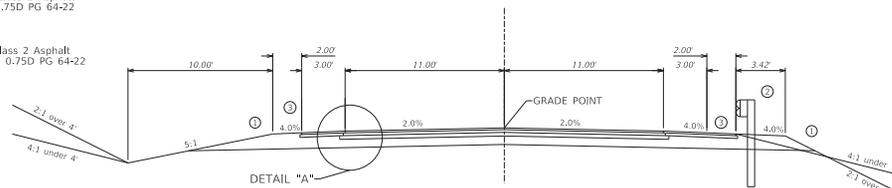
TYPICAL SECTIONS KY 32/HOWARD'S CREEK ROAD



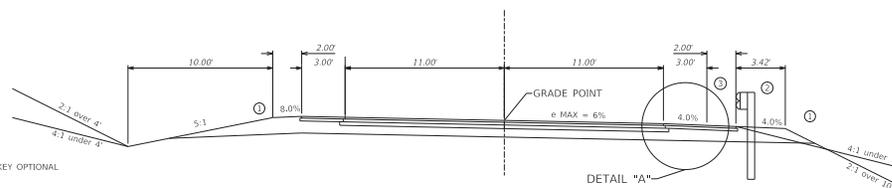
ENTRANCE SECTION



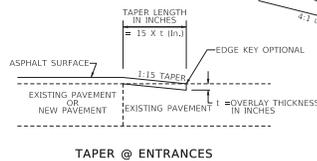
APPROACH ROAD STA. 101+48.24
(REHABILITATION CENTER ENTRANCE)
SUPERELEVATED SECTION
STA. 0+00 TO STA. 2+50



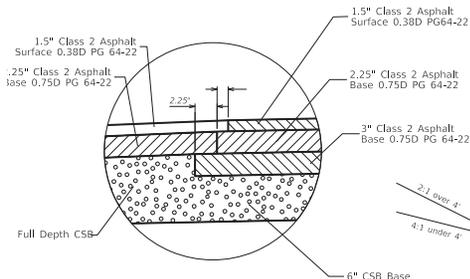
APPROACH ROAD STA. 101+48.24
(REHABILITATION CENTER ENTRANCE)
NORMAL SECTION
STA. 0+00 TO STA. 2+50



APPROACH ROAD STA. 23+05
(HOWARD'S CREEK ROAD)
SUPERELEVATED SECTION
STA. 98+65 TO STA. 102+25



TAPER @ ENTRANCES



DETAIL "A"

SEE CROSS SECTIONS FOR SLOPES OUTSIDE THE LIMITS OF SHOULDERS

- ASPHALT SEAL REQUIRED FROM PAVED SHOULDER TO A POINT 2' DOWN THE SLOPE TWO APPLICATIONS OF THE FOLLOWING:
ASPHALT SEAL COAT 2.4 LB/SOYD
ASPHALT SEAL AGGREGATE 20 LB/SOYD
- SHOULDER AND BERM SHALL BE WIDENED 3.42' FOR GUARDRAIL
- CONSTRUCT PAVED SHOULDER TO THE FACE OF GUARDRAIL WHERE APPLICABLE.

KY 32 NEW CONSTRUCTION WITH ASPHALT PAVEMENT

TRAFFIC LANES

12.25' BASE — 6" CRUSHED STONE BASE (CSB)
2.25" CL2 ASPH BASE 0.75D PG64-22
3" CL2 ASPH BASE 0.75D PG64-22

1.50" SURFACE — 1.50" CL2 ASPH SURF 0.38D PG64-22

SHOULDER

12.25' BASE — FULL DEPTH CRUSHED STONE BASE (CSB)
3" CL2 ASPH BASE 0.75D PG64-22

1.50" SURFACE — 1.50" CL2 ASPH SURF 0.38D PG64-22

ASPHALT SEAL (TWO APPLICATIONS) — ASPHALT SEAL COAT, 2.4 LBS/SY
ASPHALT SEAL AGGREGATE, 20 LBS/SY (SIZE 8 OR 9M)

KY 32 ENTRANCE CONSTRUCTION

RESIDENTIAL (ASPHALT)

6" BASE — 4" DEPTH CSB
2" CL2 ASPH BASE 0.75D PG64-22

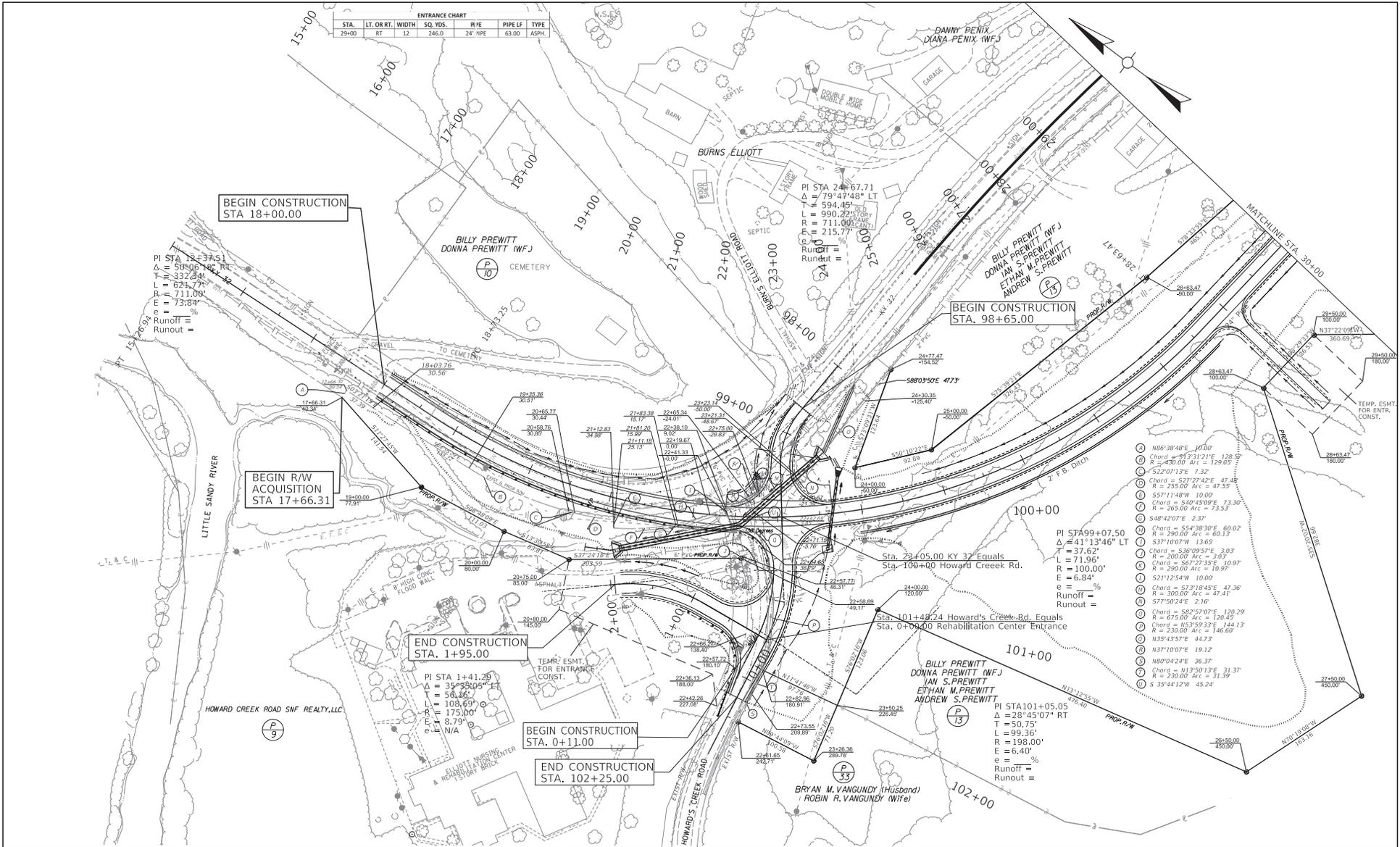
1.50" SURFACE — 1.50" CL2 ASPH SURF 0.38D PG64-22

COMMERCIAL (ASPHALT)

8" BASE — 6" DEPTH CSB
2" CL2 ASPH BASE 0.75D PG64-22

1.50" SURFACE — 1.50" CL2 ASPH SURF 0.38D PG64-22

RIGHT OF WAY
PLANS



STA.	LT. OR RT.	WIDTH	SQ. YDS.	PI/E	PIPE LF	TYPE
29+00	RT	12	246.0	24" PIPE	63.00	ASPH.

PI STA 15+37.51
 $\Delta = 50^{\circ}06'10"$ RT
 $T = 332.24'$
 $L = 625.77'$
 $R = 711.00'$
 $E = 73.84'$
 $e = \%$
 Runoff =
 Runout =

BEGIN CONSTRUCTION
 STA 18+00.00

BEGIN R/W
 ACQUISITION
 STA 17+66.31

END CONSTRUCTION
 STA. 1+95.00

BEGIN CONSTRUCTION
 STA. 0+11.00

END CONSTRUCTION
 STA. 102+25.00

BEGIN CONSTRUCTION
 STA. 98+65.00

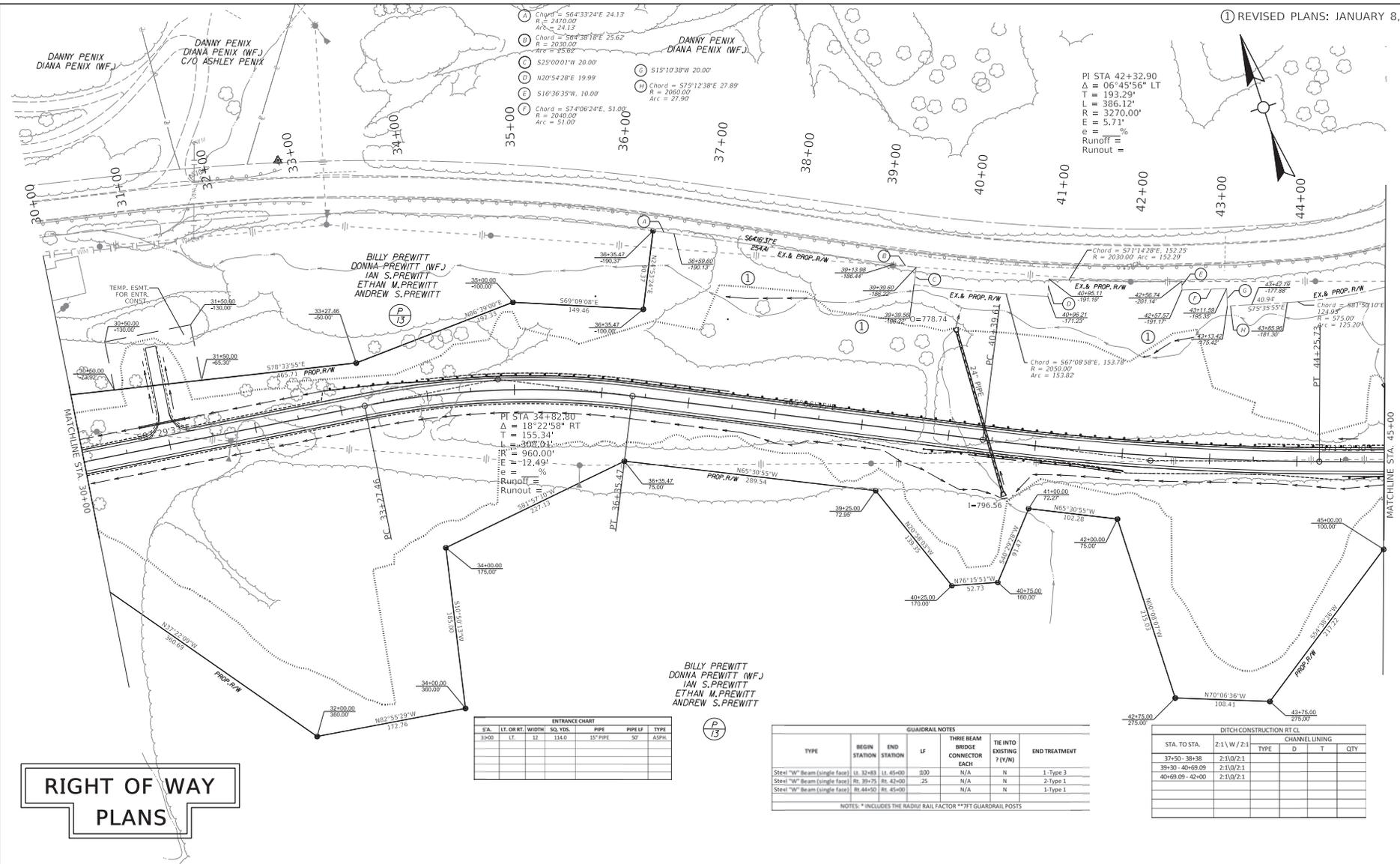
PI STA 99+07.50
 $\Delta = 41^{\circ}13'46"$ LT
 $T = 37.62'$
 $L = 71.96'$
 $R = 100.00'$
 $E = 6.84'$
 $e = \%$
 Runoff =
 Runout =

PI STA 101+05.05
 $\Delta = 28^{\circ}45'07"$ RT
 $T = 50.75'$
 $L = 99.36'$
 $R = 198.00'$
 $E = 6.40'$
 $e = \%$
 Runoff =
 Runout =

- ① Chord = 58°38'48" 10.00'
- ② Chord = 55°31'21" 128.65'
- ③ R = 430.00 Arc = 129.05'
- ④ 52°07'13" 7.32'
- ⑤ Chord = 52°22'42" 47.48'
- ⑥ R = 255.00 Arc = 47.55'
- ⑦ 55°11'48" 10.00'
- ⑧ Chord = 54°04'09" 73.30'
- ⑨ R = 265.00 Arc = 73.53'
- ⑩ 54°42'07" 2.37'
- ⑪ Chord = 54°38'30" 60.02'
- ⑫ R = 290.00 Arc = 60.12'
- ⑬ 53°10'07" 13.65'
- ⑭ Chord = 53°09'57" 3.03'
- ⑮ R = 200.00 Arc = 3.03'
- ⑯ Chord = 58°23'35" 10.97'
- ⑰ R = 290.00 Arc = 10.97'
- ⑱ 52°12'54" 10.00'
- ⑲ Chord = 57°18'45" 47.36'
- ⑳ R = 300.00 Arc = 47.41'
- ㉑ 57°50'24" 2.16'
- ㉒ Chord = 58°25'07" 129.29'
- ㉓ R = 675.00 Arc = 129.45'
- ㉔ Chord = 53°59'33" 144.13'
- ㉕ R = 290.00 Arc = 146.60'
- ㉖ N35°43'57"E 44.73'
- ㉗ N37°10'07"E 19.12'
- ㉘ N80°04'24"E 36.37'
- ㉙ Chord = N13°50'13"E 31.37'
- ㉚ R = 290.00 Arc = 31.39'
- ㉛ 53°44'12" 45.24'



① REVISED PLANS: JANUARY 8, 2025



PI STA 42+32.90
 $\Delta = 06^{\circ}45'56''$ LT
 $T = 193.29'$
 $L = 386.12'$
 $R = 3270.00'$
 $e = 5.71'$
 $e = \%$
 $Runout =$

- A Chord = 564'332.4'E 24.13
R = 2470.00
- B Chord = 564'381.8'E 25.62
R = 2030.00
- C 519'10'38"W 20.00
- D 519'10'38"W 20.00
- E Chord = 572'123.8'E 27.89
R = 2060.00
- F Chord = 572'062.4'E, 51.00
R = 2060.00

PI STA 34+82.90
 $\Delta = 18^{\circ}22'58''$ RT
 $T = 155.34'$
 $L = 308.03'$
 $R = 960.00'$
 $e = 12.49'$
 $e = \%$
 $Runout =$

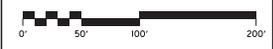
BILLY PREWITT
 DONNA PREWITT (WF.)
 IAN S. PREWITT
 ETHAN M. PREWITT
 ANDREW S. PREWITT

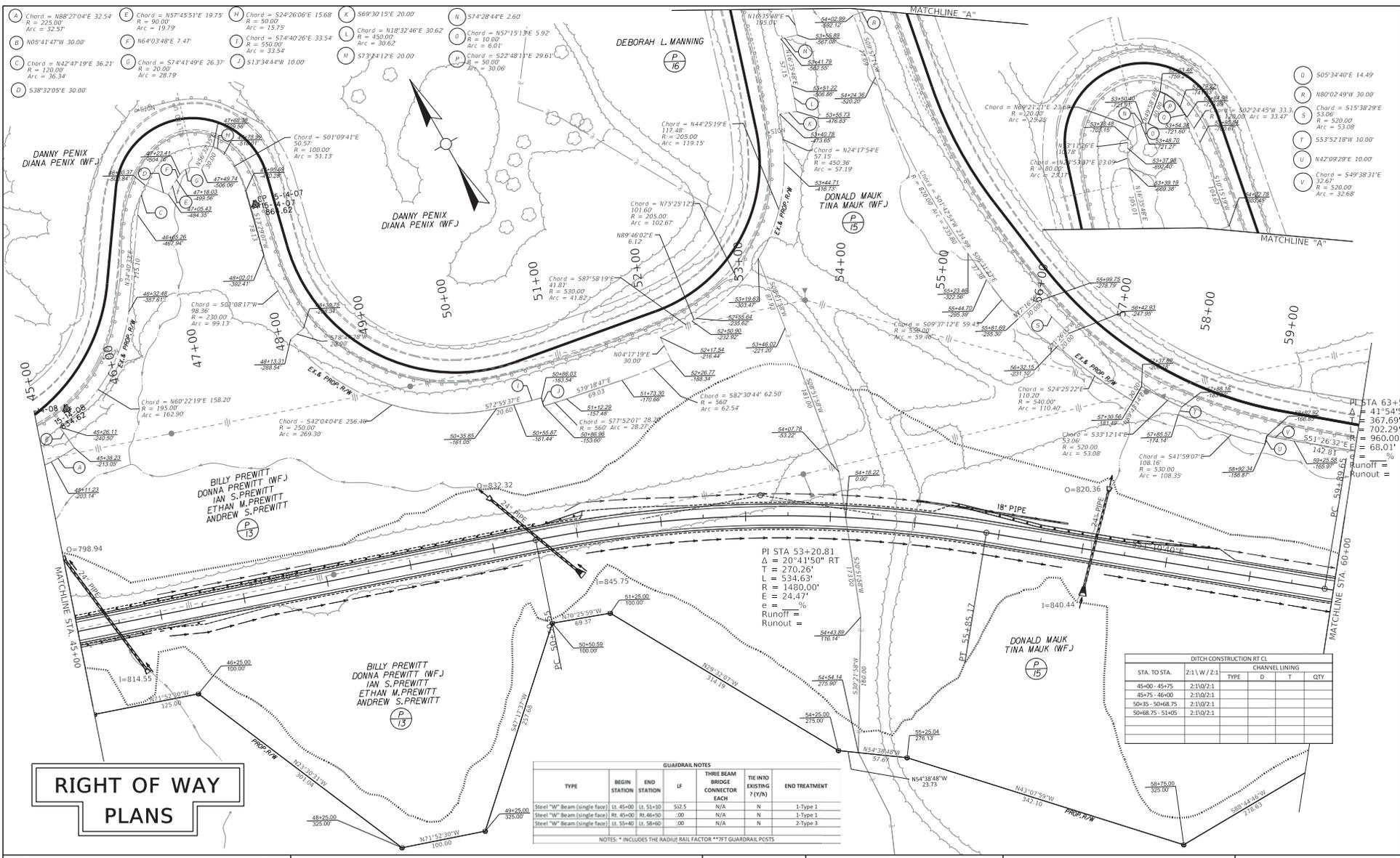
**RIGHT OF WAY
 PLANS**

STA.	LT. OR RT.	WIDTH	SQ. YDS.	PIPE	PIPE LF	TYPE
33+00	LT.	13	118.0	18" PIPE	50'	ASPH.

TYPE	BEGIN STATION	END STATION	LF	THREE BEAM BRIDGE CONNECTOR EACH	TIE INTO EXISTING FIVM	END TREATMENT
Steel "W" Beam (single face)	31.32+88	31.45+00	100	N/A	N	1-Type 3
Steel "W" Beam (single face)	39+75	39.42+00	25	N/A	N	2-Type 1
Steel "W" Beam (single face)	44+50	44.45+00	5	N/A	N	1-Type 1

STA. TO STA.	Z:1\W / Z:1	CHANNEL LINING	QTY
37+50 - 38+38	2:1/0/2:1		
39+30 - 40+69.09	2:1/0/2:1		
40+69.09 - 42+00	2:1/0/2:1		





RIGHT OF WAY PLANS

GUARDRAIL NOTES

TYPE	BEGIN STATION	END STATION	LF	THREE BEAM BRIDGE CONNECTOR EACH	THE INTO EXISTING ? (Y/N)	END TREATMENT
Steel "W" Beam (single face)	St. 45+00	St. 51+30	52.5	N/A	N	1-Type 1
Steel "W" Beam (single face)	St. 45+00	St. 46+50	.00	N/A	N	1-Type 1
Steel "W" Beam (single face)	St. 55+40	St. 58+00	.00	N/A	N	2-Type 3

NOTES: * INCLUDES THE RADHIL RAIL FACTOR **PT GUARDRAIL POSTS

DITCH CONSTRUCTION RT CL

STA. TO STA.	Z:1 W / Z:1	CHANNEL LINING	TYPE	D	T	QTY
45+00 - 45+75	2:1/10/2:1					
45+75 - 46+00	2:1/10/2:1					
50+35 - 50+68.75	2:1/10/2:1					
50+68.75 - 51+05	2:1/10/2:1					

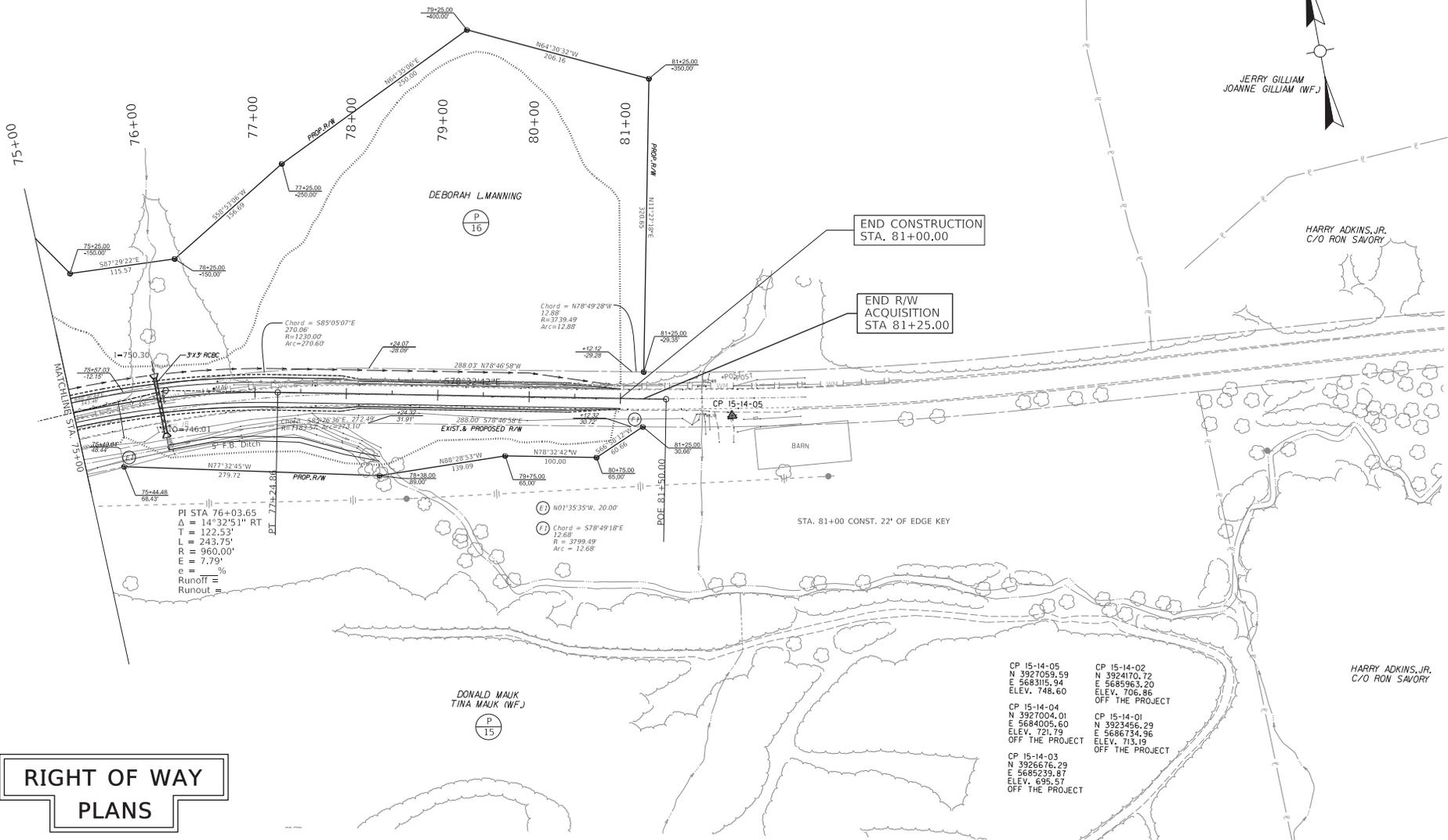
COMMONWEALTH OF KENTUCKY
DEPARTMENT OF HIGHWAYS

DRAWING TITLE: PLAN SHEET KENTUCKY 32

HORIZONTAL SCALE
SCALE: 1" = 50'

STA 45+00 TO 60+00

ITEM NO. 9-8802.00 COUNTY OF ELLIOTT
SHEET NO. R7



END CONSTRUCTION
STA. 81+00.00

END R/W
ACQUISITION
STA 81+25.00

**RIGHT OF WAY
PLANS**

- CP 15-14-05
N 3927059.59
E 5683115.94
ELEV. 748.60
- CP 15-14-02
N 3924170.72
E 5685963.20
ELEV. 706.86
OFF THE PROJECT
- CP 15-14-04
N 3927004.01
E 5684005.60
ELEV. 721.19
OFF THE PROJECT
- CP 15-14-01
N 3923456.29
E 5686134.96
ELEV. 713.19
OFF THE PROJECT
- CP 15-14-03
N 3926676.29
E 5685239.87
ELEV. 695.57
OFF THE PROJECT

APPENDIX D
SECTION 106 CONSULTATION



ANDY BESHEAR
GOVERNOR

TOURISM, ARTS AND HERITAGE CABINET
KENTUCKY HERITAGE COUNCIL
THE STATE HISTORIC PRESERVATION OFFICE

LINDY CASEBIER
SECRETARY

JACQUELINE COLEMAN
LT. GOVERNOR

410 HIGH STREET
FRANKFORT, KENTUCKY 40601
(502) 564-7005
www.heritage.ky.gov

CRAIG A. POTTS
EXECUTIVE DIRECTOR &
STATE HISTORIC PRESERVATION OFFICER

September 15, 2025

Daniel Peake, Director
Division of Environmental Analysis
Kentucky Transportation Cabinet
200 Metro Street
Frankfort, Kentucky 40622

RE: *Phase I Archaeological Survey for the Proposed Modifications to KY-32
Outside of Sandy Hook, Elliot County, Kentucky*
Report by: Jonas Yates, Amanda Dellagnello, and Liam Gardiner
KYTC #: 9-8802.00

Dear Mr. Peake,

Thank you for your submission of a Phase I survey report. We understand that the Federal Highway Administration is the lead federal agency. The report discusses the survey results of approximately 26.9 acres. No cultural resources were identified during this investigation.

Our office concurs with KYTC's determination of **No Historic Properties Affected** and accept this report without revisions.

Should you have any questions, please do not hesitate to contact Stephanie Dooley of my staff via email at stephanie.dooley@ky.gov.

Sincerely,

Craig Potts
Executive Director and
State Historic Preservation Officer

KHC #s: 242045; prev. 252037
cp: sd
e.cc: Dan Davis (KYTC)



An Equal Opportunity Employer M/F/D



Received
1/19/2018

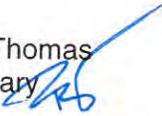
Matthew G. Bevin
Governor

**COMMONWEALTH OF KENTUCKY
TRANSPORTATION CABINET**

Frankfort, Kentucky 40622
www.transportation.ky.gov/

Greg Thomas
Secretary

MEMORANDUM

TO: Greg Thomas
Secretary 

THROUGH: Patty Dunaway, P.E.
State Highway Engineer 

THROUGH: Paul Looney, P.E., Executive Director
Office of Project Development 

THROUGH: Kevin Moore, Executive Director
Office of Legal Services

FROM: David M. Waldner, P.E., Director
Division of Environmental Analysis 

DATE: November 2, 2017

SUBJECT: **Memorandum of Agreement**
KY 32 Major widening and curve correction
Elliott County, Kentucky
Item No. 9-8802.00

Attached for your review and signature is a Memorandum of Agreement (MOA) pursuant to 36 CFR § 800.6(a), regulations implementing Section 106 of the National Historic Preservation Act (16 USC § 470f now cited in 54 USC 306108). The attached MOA was developed in coordination with the Federal Highway Administration (FHWA), the State Historic Preservation Office (SHPO), and the Kentucky Transportation Cabinet (KYTC). The MOA addresses areas that could not be examined archaeologically due to right-of-entry or landowner concerns. Work in these areas will be deferred until parcels are purchased or right-of-entry has been obtained.

This office requests that the Office of Legal Services review and sign approving as to form and content and then forward through the others listed above in routing to Secretary Thomas for approval. Once the MOA is signed, please return the MOA to the Division of Environmental Analysis for coordination with the other signatories.

If you have any questions regarding this request, please contact me.

Attachment
DMW/DBD

c: D. Burgin, K. Mynhier (District 9), D. Davis





MATTHEW G. BEVIN
GOVERNOR

**TOURISM, ARTS AND HERITAGE CABINET
KENTUCKY HERITAGE COUNCIL
THE STATE HISTORIC PRESERVATION OFFICE**

REGINA STIVERS
DEPUTY SECRETARY

DON PARKINSON
SECRETARY

THE BARSTOW HOUSE
410 HIGH STREET
FRANKFORT, KENTUCKY 40601
PHONE (502) 564-7005
FAX (502) 564-5820
www.heritage.ky.gov

CRAIG A. POTTS
EXECUTIVE DIRECTOR
& STATE HISTORIC
PRESERVATION OFFICER

January 05, 2018

Mr. David M. Waldner, P. E., Director
Division of Environmental Analysis
Kentucky Transportation Cabinet
200 Mero Street
Frankfort, KY 40622

**Re: Memorandum of Agreement
Deferred Phase I Archaeological Survey on Parcel 13
KY 32 widening and curve correction east of Sandy Hook
Elliott County
KYTC Item Number 9-8802.00**

Dear Mr. Waldner,

Enclosed please find the signed Memorandum of Agreement (MOA) that addresses a project area that could not be examined archaeologically due to lack of landowner permission. The MOA provides for the deferral of archaeology in this area until the parcel is purchased or right-of-entry is obtained. My staff has reviewed the enclosed MOA.

Should the project plans change, or should additional information become available regarding cultural resources or citizens' concerns regarding impacts to cultural resources, please submit that information to our office as additional consultation may be warranted. Should you have any questions, feel free to contact Bill Huser of my staff at 502.564.7005, extension 4563.

Sincerely,

Craig A. Potts,
Executive Director and
State Historic Preservation Officer

CP: BH, KHC # 50577
cc: Dan Davis



MATTHEW G. BEVIN
GOVERNOR

TOURISM, ARTS AND HERITAGE CABINET
KENTUCKY HERITAGE COUNCIL
THE STATE HISTORIC PRESERVATION OFFICE

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www.heritage.ky.gov

CRAIG A. POTTS
EXECUTIVE DIRECTOR
& STATE HISTORIC
PRESERVATION OFFICER

December 6, 2016

Mr. David M. Waldner, P.E., Director
Division of Environmental Analysis
Kentucky Transportation Cabinet
200 Mero Street, 5th Floor
Frankfort, KY 40622

**Re: Cultural Historic Survey for Proposed Realignment of KY 32, Elliott County, Kentucky
(CDM Smith, Ball)
Revised letter
Item No. 9-8802.00**

Dear Mr. Waldner:

Thank you for submitting the above-listed report, which we received on November 11, 2016. We understand the project is located on a small portion of Sandy Hook and extends south of town and the current project includes three alternatives. We further understand that there were 9 previously recorded resources and 6 previously unidentified historic resources within the Area of Potential Effect (APE). Two of the previously surveyed resources were no longer extant and none of the other 7 previously surveyed properties appear eligible for inclusion on the National Register of Historic Places (NRHP). It was recommended that only 1, site EL 158, of the previously unidentified historic resources appear eligible for inclusion on the NRHP. We concur that EL 158 appears to be eligible for inclusion on the NRHP. We further concur with the recommended finding of **No Adverse Effect** for the overall above-listed project.

Should the project plans change, or should additional information become available regarding cultural resources please submit that information to our office as additional consultation may be warranted. If you have any questions please contact Amanda Kincaid of my staff at 502.564.7005, ext. 147.

Sincerely,

Craig A. Potts,
Executive Director and
State Historic Preservation Officer

CP: ak 47987
cc: Amanda Abner (KYTC-DEA)

MEMORANDUM OF AGREEMENT

**PURSUANT TO 36 CFR § 800.6
FOR
PHASED IDENTIFICATION AND EVALUATION OF HISTORIC PROPERTIES
ON PARCEL 13
OF THE KY 32 MAJOR WIDENING AND CURVE CORRECTION
FROM MP 9.2 TO MP 10.2 EAST OF SANDY HOOK
ELLIOTT COUNTY, KENTUCKY**

Kentucky Transportation Cabinet Item No. 9-8802.00

Responsible Parties:

Federal Highway Administration - Kentucky Division
John C. Watts Federal Building
330 W. Broadway
Frankfort, KY 40601

Kentucky State Historic Preservation Office
300 Washington Street
Frankfort, Kentucky 40601

Invited Signatory:

Kentucky Transportation Cabinet
200 Mero Street
Frankfort, Kentucky 40622

UNDERTAKING: Major widening and curve correction of KY 32 from MP 9.2 to MP 10.2 east of Sandy Hook, in Elliott County, Kentucky, Item # 9-8802.00 (the Project)

STATE: Kentucky

AGENCY: Federal Highway Administration

WHEREAS, the Federal Highway Administration (FHWA), as a federal agency, is responsible for assuring compliance with Section 106 of the National Historic Preservation Act of 1966 (16 USC § 470f now cited in 54 USC 306108) (the Act) and pursuant to 36 CFR Part 800, regulations implementing the Act; and

WHEREAS, the Kentucky Heritage Council/State Historic Preservation Officer (SHPO) is responsible for the protection of historic resources within the Commonwealth; and

WHEREAS, the Federal Highway Administration (FHWA) has determined that the full accountability for potentially significant archaeological resources is not possible on all proposed undertakings of the Project during the Planning, Project Development, and/or subsequent project phases, due to property owner objections, or other circumstances beyond agency authority and control; and

WHEREAS, the accountability for impacts to archaeological resources must, therefore, be deferred to future project phases as potential impacts to these resources are determined and/or wherein access to areas of the undertaking may be legally gained; and

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

STIPULATIONS

The FHWA shall ensure that the following measures are undertaken and completed. The FHWA may delegate to the KYTC any or all of its responsibilities identified within this document.

I. Archaeological Investigations

The FHWA and KYTC shall ensure that all archaeological investigations required pursuant to this agreement shall be carried out under the direct supervision in the field of an Archaeologist who meets or exceeds the qualifications for professionalism set forth in the Secretary of the Interior's "Standards for Archaeology and Historic Preservation Projects" (48 FR 44738-39) (Secretary's Standards).

All work must comply with the version of the SHPO's "Specifications for Archaeological Field Work and Assessment Reports" (SHPO Specifications) in place at the execution of this MOU.

KYTC, through the use of project funds, shall bear the costs for all archaeological investigations, including fieldwork, analyses, reporting, curation, and any data recovery/mitigation measures that are required.

A. Phase I Intensive Archaeological Survey

Phase I archaeological survey shall be conducted for all undisturbed parcels not previously surveyed within the Project right-of-way, prior to the initiation of any ground disturbing activities, such as utility relocation or construction,

to determine if they contain archaeological sites that are eligible for listing in the National Register of Historic Places (NRHP). Upon completion of the survey, a report shall be prepared in accordance with SHPO Specifications and shall be submitted by the FHWA/KYTC to the SHPO for review and comment.

B. Phase II Archaeological Testing

If Phase I survey (see Section I.A above) identifies archaeological sites considered by the FHWA/KYTC, in consultation with the SHPO, to be potentially eligible for listing in the NRHP and they cannot be avoided, they shall be further tested for eligibility prior to the initiation of any ground disturbing activities. Ground disturbing activities may include, but are not limited to, utility relocations or construction. Upon completion of the testing, a report shall be prepared in accordance with the SHPO Specifications and shall be submitted to the SHPO for review and comment.

C. Adverse Effects to NRHP-Eligible or –Listed Archaeological Sites

If the investigations identify archaeological sites that FHWA and SHPO agree are eligible for listing in the NRHP, these shall be avoided and preserved in place wherever possible.

1. If NRHP-eligible or –listed site(s) are identified during the Phase II testing and FHWA and SHPO determine that the site(s) shall be adversely affected by the Project, consultation shall continue to determine if the site(s) can be avoided or if the impacts can be minimized.
2. If the Project's impacts to the eligible or listed sites cannot be avoided or minimized, they must be mitigated through either Phase III data recovery investigations or through alternative mitigation efforts to be determined through consultation between the signatories to this MOA.

D. Human Remains

Procedures for addressing the treatment of human remains and grave goods shall be guided by the Advisory Council on Historic Preservation's (ACHP) Policy Statement Regarding Treatment of Burial Sites, Human Remains, and Funerary Objects" (adopted by the ACHP February 23, 2007), the KYTC's Right of Way Manual Section 1300, and other applicable state and local laws. If human remains are found during Project activities, construction activities in the immediate vicinity of those areas shall be halted and the County Coroner contacted. If the remains are determined to be of archaeological context, the KYTC Division of Environmental Analysis District archaeologist shall be notified. KYTC's archaeologist shall in turn notify the SHPO staff, FHWA personnel, and other parties as necessary. If

associated burial items, sacred items, or items of cultural patrimony are discovered, work must stop in the immediate vicinity of the discovery and the KYTC archaeologist shall be notified.

If the discovery is of prehistoric Native American origin, the FHWA shall provide written notification and documentation to the SHPO, federally recognized Indian Tribes, and other parties deemed appropriate by the FHWA who have requested such notification. The FHWA shall consult with these parties to discuss avoidance, minimization of disturbance, or protocols for disinterment.

E. Curation

The FHWA/KYTC shall ensure that all materials and records resulting from the archaeological investigations are curated in Kentucky in accordance with 36 CFR Part 79 at an institution acceptable to the SHPO.

F. Unanticipated Discoveries

1. If, during the implementation of The Project, a previously unidentified historic property is discovered or a previously identified historic property is affected in an unanticipated manner, KYTC shall ensure that all work within a reasonable area of the discovery shall cease until such time as a treatment plan can be developed and implemented as set forth below.
2. KYTC shall require the contractor to take all reasonable measures to clearly mark and avoid harm to the property until the FHWA concludes consultation with the SHPO, Indian Tribes, and other parties deemed appropriate by the FHWA (hereafter in this section, the "Parties").
3. Upon being notified of the discovery, the FHWA shall implement procedures set forth in 36 CFR 800.13(b).
4. Within forty-eight (48) hours of notification of the discovery, or at the very earliest opportunity thereafter, the FHWA shall contact the Parties, and provide written details of the discovery.
5. Within forty-eight (48) hours of the discovery, or at the very earliest opportunity thereafter, a qualified professional archaeologist and the KYTC shall conduct an on-site evaluation to consider eligibility, effects, and possible treatment measures. The Parties may participate in the on-site evaluation and shall be notified in advance of the location, date, and time.
6. If, based on the on-site evaluation, the FHWA determines that a historic property is being adversely affected, then the Parties shall consult to determine an appropriate treatment plan, and the FHWA or KYTC at the

FHWA's request, shall develop a treatment plan. The plan shall be submitted to the Parties for review and comment within seven (7) days of receipt of the proposed plan. The FHWA shall take comments received into account in developing and implementing the final plan.

7. If the FHWA and the Parties agree the site is not eligible for the NRHP, then ground-disturbing work may proceed.
8. If the FHWA and the Parties cannot reach agreement regarding eligibility, effects, or treatment, then they shall follow the provisions outlined in the Dispute Resolution Stipulation under Section (I) below.

II. Dispute Resolution

Should the SHPO object within thirty (30) days to any plans, specifications, reports or other actions submitted or undertaken pursuant to this MOA, the FHWA, KYTC shall consult with the SHPO to resolve the objection. If the FHWA and the KYTC determine that the objection cannot be resolved, the FHWA shall request the further comments of the ACHP pursuant to 36 CFR 800.6(b). Any ACHP comment provided in response to such a request shall be taken into account by the FHWA in accordance with 36 CFR 800.6(c)(2) with reference only to the subject of the dispute; the FHWA's responsibility to carry out all actions under this MOA that are not the subjects of the dispute shall remain unchanged.

III. Terms

The terms of this agreement shall be completed within five years of its execution. If terms have not been completed by the anniversary date of its execution (i.e., the date on which the FHWA signed the document), the document shall be considered extended for an additional year every year thereafter until all provisions have been completed.

IV. Opt-Out

Any modification or amendment of this agreement shall be in writing.

Termination of this agreement by any party shall be preceded by written notice delivered to other signatories a minimum of thirty (30) days prior to the anticipated date of termination and shall clearly state the reason for said action.

FEDERAL HIGHWAY ADMINISTRATION, KENTUCKY DIVISION

BY:  Date: 1-22-2018
John D. Ballantyne, Program Delivery Team Leader

KENTUCKY STATE HISTORIC PRESERVATION OFFICER

BY:  Date: 1-4-18
Craig Potts, Executive Director, Kentucky Heritage Council

INVITED SIGNATORY:

KENTUCKY TRANSPORTATION CABINET

BY:  Date: 12/5/17
Greg Thomas, Secretary

Approved as to form and legality:

BY:  Date: 11-7-17
Office of Legal Services

APPENDIX E
SECTION 7 CONSULTATION



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Kentucky Ecological Services Field Office
330 West Broadway, Suite 265
Frankfort, Kentucky 40601
(502) 695-0468

October 24, 2025

Danny Peake
Division of Environmental Analysis
Kentucky Transportation Cabinet
200 Mero Street
Frankfort, Kentucky 40601

Re: FWS 2025-0067194; KYTC Item No. 9-8802; KY-32 Major Widening in Elliott County, Kentucky

Dear Danny Peake:

The U.S. Fish and Wildlife Service's (Service) Kentucky Field Office (KFO) has reviewed the above referenced request for concurrence and biological assessment received September 10, 2025. The KFO offers the following comments in accordance with the Endangered Species Act (ESA) of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*).

Project Description

According to the information provided, the proposed project is the widening of KY 32 from mile point 9.2 to mile point 10.2 in Elliott County. to improve 3.21 miles of roadway along KY 1980 from US 68 to US27. The current roadway has many substandard horizontal and vertical curves that do not meet sight distance criteria. The proposed project would correct geometric deficiencies while also providing continuous access. Impacts to the landscape include typical road construction activities and tree removal for construction access and grading to allow for proper drainage.

Federally Listed Species

The Kentucky Transportation Cabinet (KYTC) have determined that the proposed action has the potential to affect the gray bat (*Myotis grisescens*), Indiana bat (*Myotis sodalis*), northern long-eared bat (*Myotis septentrionalis*) (NLEB), and Virginia big-eared bat (*Corynorhinus townsendii virginianus*).

Indiana Bats, Gray Bats, Northern Long-eared Bats, and Virginia Big-eared Bats

RES, Inc. qualified biologists conducted mist net surveys within the vicinity of the proposed project area between June 2 through June 10, 2025. The survey was conducted in accordance with the Service's "2025 Range-Wide Indiana Bat Summer Survey Guidelines." During the mist netting surveys, 16 bats were captured representing three species; however, no federally listed bats were captured. Therefore, we believe that the Indiana bat, gray bat, NLEB, and Virginia

big-eared bat are not likely to be using habitat in the proposed project area during the summer. In addition, biologists conducted a field survey of the project area and its 1-km buffer to identify any potential caves and/or features that could be used as winter habitat. No suitable caves and/or cave-like features were identified. Based on these results, the proposed project is not anticipated to adversely affect suitable winter habitat for these species. The Service concurs that the proposed project is not likely to adversely affect the aforementioned species.

Conclusion

In view of these findings, we believe that the requirements of section 7 of the Endangered Species Act have been fulfilled for this project. Your obligations under section 7 must be reconsidered, however, if: (1) new information reveals that the proposed action may affect listed species in a manner or to an extent not previously considered, (2) the proposed action is subsequently modified to include activities, which were not considered during this consultation, or (3) new species are listed, or critical habitat designated.

If you have any questions regarding the information that we have provided, please contact Phil DeGarmo at (502) 695-0468 extension 46110 or Phil_DeGarmo@fws.gov.

Sincerely,

For Joshua Lillpop
 Acting Field Supervisor

cc: Andrew Logsdon, KYTC, Frankfort

APPENDIX F
PHOTOGRAPHS



Photograph 1: Wetland 1 (W-1). June 12, 2025. Station 26+41 to 30+00, Sheet No. R3, PEM Wetland.



Photograph 2: Wetland 1 (W-1). June 12, 2025. Station 26+49 to 28+63, Sheet No. R3, PSS Wetland.



Photograph 3: Stream S-01 (Intermittent). June 12, 2025. Station 21+07 to 23+54, Sheet No. R3, 119 RBP score.



Photograph 4: Stream S-04 (Intermittent). June 12, 2025. Station 27+49 to 28+43, Sheet No. R3, 62 RBP score.



Photograph 5: Stream S-10 (Intermittent). July 3, 2025. Station 75+94 to 75+95, Sheet No. R11, 58 RBP score.



Photograph 6: Stream S-14 (Intermittent). July 3, 2025. Station 67+75 to 69+89, Sheet No. R9, 117 RBP score.



Photograph 7: Butcher Branch (Perennial). July 3, 2025. Station 67+53 to 78+47, Sheet No. R9/R11, 123 RBP score.

APPENDIX G
ASSESSMENT DATA FORMS

Station Visit Information

Locale Name:	S-01	Project:	KY 32	Trip:		County:	Elliott
Station ID:		Loc. Desc.:	9-8802	Visit Date:	6/12/2025		
Field Lead:	Scott Slankard	Primary Bioregion:		Secondary Bioregion:		Visit Start Time:	10:30 am
Team:	ICF (SS, HL)	Stream Perm.	Eph <input checked="" type="checkbox"/> Int <input type="checkbox"/> Per <input type="checkbox"/>	Stream Type (HW or WA):		Visit Finish Time:	10:40 am

STATION POINT VERIFICATION

WEATHER

K-WADE Target Point	Field GPS Location	Nav. to Target Point Within GPS Error?	Target On Correct Stream?	Field GPS Error (m)	GPS Final	K-WADE Station Update	Scouring Rain In Last 14 Days	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N
Lat:	38.08366					Staff:	Now: Circle 1	HR SR IS <input checked="" type="checkbox"/> CS CO SSH
Long:	-83.12144	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N			Date:	Past 24hr:	HR SR IS <input checked="" type="checkbox"/> CS CO SSH

Stream Shading

STREAM FLOW (Circle 1)

INSTREAM FEATURES

RIFFLE/RUN/POOL SEQ.

Leafed Out?	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	Dry Pooled Low	Average Wetted Width (m):	12 ft	# of riffles in reach
General Shading (Circle 1)	Full <input checked="" type="checkbox"/> Partial None	<input checked="" type="checkbox"/> Seasonal Normal	Maximum Depth (m):	1 ft	# of runs in reach
		Above Normal Flood	Reach Length (m):	50 m	# of pools in reach

LOCAL WATERSHED FEATURES (Major Land Use: Check all that are present)

CHANNEL ALTERATIONS- Full, Partial or Not/None

Surface Mining		Construction		Pasture/Grazing		Dredging:	F P <input checked="" type="checkbox"/> N	Channelization:	<input checked="" type="checkbox"/> F <input type="checkbox"/> P <input type="checkbox"/> N
Deep Mining		Commercial	<input checked="" type="checkbox"/>	Silviculture		RIPARIAN VEGETATION			
Oil Wells		Industrial		Urban Runoff	<input checked="" type="checkbox"/>	Dom. Veg. Type:	Herbs Grasses <input checked="" type="checkbox"/> Shrubs <input checked="" type="checkbox"/> Trees	# of Strata:	
Land Disposal		Row Crops		Storm Sewers		Dom. Taxa:			
Residential	<input checked="" type="checkbox"/>	Forest	<input checked="" type="checkbox"/>	Permitted Outfalls					

HYDRAULIC STRUCTURES (Check all that are present)

Dams:		Bridge Abutments:		Fords:		Islands:		Waterfalls:		Berms:	
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FIELD METER DATA

Temp (°C):		DO (mg/l):		DO %Sat:		pH (SU):		Sp. Cond (µS/cm):	260	Discharge CFS Uncert.	
------------	--	------------	--	----------	--	----------	--	-------------------	-----	-------------------------	--

FIELD ACTIVITIES

Activity Completed?	Collectors	Collection Information (Check all that apply and/or enter/circle necessary information)									
Algae:		QualMHC:		Visual Form:		R4MULTI:		Other:			
Fish:		Equip:		BPEF Seine Barge		EF Seconds:		Seine Minutes:			
Habitat:		Habitat data other than RBP?									
Invertebrate:		1m ² riffle + MH:		MACS 20-Jab:		Other:					
Multihabs Sampled Y/N or # Jabs	Undercuts/Roots:	Sticks/Wood:	Leaf Packs:	Water Willow:	Aufwuchs:	Supplemental:					
	Bedrock/Hardpan:	Silt/Sand/Fine Gravel:	Rock Pick:	Emergent Veg:	Wood Sample:						
Chemistry:		H ₂ SO ₄ Lot #:		HNO ₃ Lot #:							
Multi-Probe:		Inst. ID:		Cal. Date:							
Discharge:		Inst. ID:		Beam Check:							
Other:		Other Desc:									

SUBSTRATE CHARACTERIZATION

Site Not Sampled (Reason) - Please Add Comments

Substrate Category	% Riffle:	% Run:	% Pool:	Reach Total
Silt/Clay (<0.06 mm)				
Sand (0.06 – 2 mm)				
Gravel (2-64 mm)				
Cobble (64 – 256 mm)				
Boulders (>256 mm)				
Bedrock/Hardpan Clay				

Land Owner Denial
Too Deep/Impounded
Site Not Found
Unsafe
Dry
Other (See Comments)

Reach Location Description:		Weather Choices:	HR = Heavy Rain SR = Steady Rain IS = Intermittent Showers CS = Clear Sunny CO = Cloudy Overcast SSH = Snow Sleet
Initial Data Review By:		Initial Data Review Date:	Date Entered:

Habitat Parameter	Condition Category																					
	Optimal					Suboptimal					Marginal					Poor						
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	
1. Epifaunal Substrate/ Available Cover Score 16	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are <u>not</u> new fall and <u>not</u> transient).					40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of new fall, but not yet prepared for colonization (may rate at high end of scale).					20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.					Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.						
2. Embeddedness Score 10	Gravel, cobble, boulder, and bedrock are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space					Gravel, cobble, boulder and bedrock are 25-50% surrounded by fine sediment.					Gravel, cobble, boulder, and bedrock are 50-75% surrounded by fine sediment.					Gravel, cobble, boulder, and bedrock are more than 75% surrounded by fine sediment.						
3. Velocity/ Depth Regime Score 10	All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (Slow is < 0.3 m/s, deep is > 0.5 m.)					Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes).					Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low).					Dominated by 1 velocity/ depth regime (usually slow-deep).						
4. Sediment Deposition Score 11	Little or no enlargement of islands or point bars and less than 5% (<20% for low-gradient streams) of the bottom affected by sediment deposition.					Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% (20-50% for low-gradient) of the bottom affected; slight deposition in pools.					Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% (50-80% for low-gradient) of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.					Heavy deposits of fine material, increased bar development; more than 50% (80% for low-gradient) of the bottom changing frequently; pools almost absent due to substantial sediment deposition.						
5. Channel Flow Status Score 15	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.					Water fills >75% of the available channel; or <25% of channel substrate is exposed.					Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.					Very little water in channel and mostly present as standing pools.						
6. Channel Alteration Score 11	Channelization or dredging absent or minimal; stream with normal pattern.					Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr.) may be present, but recent channelization is not present.					Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.					Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.						
7. Frequency of Riffles (or bends) Score 17	Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important.					Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15.					Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25.					Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25.						
Left/Right Bank	10	9	8	7	6	5	4	3	2	1	0	10	9	8	7	6	5	4	3	2	1	0
8. Bank Stability LB 4 ----- RB 3	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.					Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.					Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.					Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.						
9. Vegetative Protection LB 7 ----- RB 6	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.					70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.					50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.					Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.						
10. Riparian Vegetative Zone Width LB 8 ----- RB 1	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.					Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.					Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.					Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.						

Total Score:	Notes/Comments:
119	

General Notes:
Stream is culverted and runs next to roadway for its entire reach within project area

Sediment Notes:

Station Visit Information

Locale Name:	S-03	Project:	KY 32	Trip:		County:	Elliott	
Station ID:		Loc. Desc.:	9-8802	Visit Date:	6/12/2025			
Field Lead:	Scott Slankard	Primary Bioregion:		Secondary Bioregion:		Visit Start Time:	1:35 pm	
Team:	ICF (SS, HL)		Stream Perm.	<input checked="" type="checkbox"/> Eph <input type="checkbox"/> Int <input type="checkbox"/> Per	Stream Type (HW or WA):		Visit Finish Time:	1:45 pm

STATION POINT VERIFICATION

WEATHER

K-WADE Target Point	Field GPS Location	Nav. to Target Point Within GPS Error?	Target On Correct Stream?	Field GPS Error (m)	GPS Final	K-WADE Station Update	Scouring Rain In Last 14 Days	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N
Lat:	38.08347					Staff:	Now: Circle 1	<input checked="" type="checkbox"/> HR <input type="checkbox"/> SR <input type="checkbox"/> IS <input checked="" type="checkbox"/> CS <input type="checkbox"/> CO <input type="checkbox"/> SSH
Long:	-83.12176	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N			Date:	Past 24hr:	<input checked="" type="checkbox"/> HR <input type="checkbox"/> SR <input type="checkbox"/> IS <input checked="" type="checkbox"/> CS <input type="checkbox"/> CO <input type="checkbox"/> SSH

Stream Shading

STREAM FLOW (Circle 1)

INSTREAM FEATURES

RIFFLE/RUN/POOL SEQ.

Leafed Out?	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	Dry <input checked="" type="checkbox"/> Pooled <input type="checkbox"/> Low	Average Wetted Width (m):	2 ft	# of riffles in reach
General Shading (Circle 1)	Full Partial <input checked="" type="checkbox"/> None	<input checked="" type="checkbox"/> Seasonal Normal	Maximum Depth (m):	0 ft	# of runs in reach
		Above Normal Flood	Reach Length (m):	50 m	# of pools in reach

LOCAL WATERSHED FEATURES (Major Land Use: Check all that are present)

CHANNEL ALTERATIONS- Full, Partial or Not/None

Surface Mining		Construction		Pasture/Grazing		Dredging:	F P <input checked="" type="checkbox"/> N	Channelization:	F <input checked="" type="checkbox"/> P <input type="checkbox"/> N
Deep Mining		Commercial	<input checked="" type="checkbox"/>	Silviculture	<input checked="" type="checkbox"/>	RIPARIAN VEGETATION			
Oil Wells		Industrial		Urban Runoff		Dom. Veg. Type:	<input checked="" type="checkbox"/> Herbs <input type="checkbox"/> Grasses	# of Strata:	3
Land Disposal		Row Crops		Storm Sewers			<input checked="" type="checkbox"/> Shrubs <input checked="" type="checkbox"/> Trees		
Residential	<input checked="" type="checkbox"/>	Forest	<input checked="" type="checkbox"/>	Permitted Outfalls		Dom. Taxa:	sycamore, cherry, maple		

HYDRAULIC STRUCTURES (Check all that are present)

Dams:		Bridge Abutments:		Fords:		Islands:		Waterfalls:		Berms:	
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FIELD METER DATA

Temp (°C):		DO (mg/l):		DO %Sat:		pH (SU):		Sp. Cond (µS/cm):	260	Discharge CFS Uncert.	
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FIELD ACTIVITIES

Activity Completed?	Collectors	Collection Information (Check all that apply and/or enter/circle necessary information)									
Algae:		QualMHC:		Visual Form:		R4MULTI:		Other:			
Fish:		Equip:	<input checked="" type="checkbox"/> BPEF <input type="checkbox"/> Seine <input type="checkbox"/> Barge	EF Seconds:		Seine Minutes:					
Habitat:		Habitat data other than RBP?									
Invertebrate:		1m ² riffle + MH:		MACS 20-Jab:		Other:					
Multihabs Sampled Y/N or # Jabs	Undercuts/Roots:	<input type="checkbox"/> Sticks/Wood:	<input type="checkbox"/> Leaf Packs:	<input type="checkbox"/> Water Willow:	<input type="checkbox"/> Aufwuchs:	<input type="checkbox"/> Supplemental:					
	Bedrock/Hardpan:	<input type="checkbox"/> Silt/Sand/Fine Gravel:	<input type="checkbox"/> Rock Pick:	<input type="checkbox"/> Emergent Veg:	<input type="checkbox"/> Wood Sample:	<input type="checkbox"/>					
Chemistry:		H ₂ SO ₄ Lot #:		HNO ₃ Lot #:							
Multi-Probe:		Inst. ID:		Cal. Date:							
Discharge:		Inst. ID:		Beam Check:							
Other:		Other Desc:									

SUBSTRATE CHARACTERIZATION

Site Not Sampled (Reason) - Please Add Comments

Substrate Category	% Riffle:	% Run:	% Pool:	Reach Total
Silt/Clay (<0.06 mm)				
Sand (0.06 – 2 mm)				
Gravel (2-64 mm)				
Cobble (64 – 256 mm)				
Boulders (>256 mm)				
Bedrock/Hardpan Clay				

Land Owner Denial
Too Deep/Impounded
Site Not Found
Unsafe
Dry
Other (See Comments)

Reach Location Description:		Weather Choices:	HR = Heavy Rain SR = Steady Rain IS = Intermittent Showers CS = Clear Sunny CO = Cloudy Overcast SSH = Snow Sleet
Initial Data Review By:		Initial Data Review Date:	Date Entered:

Habitat Parameter	Condition Category																																																						
	Optimal					Suboptimal					Marginal					Poor																																							
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0																																		
1. Epifaunal Substrate/ Available Cover	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are <u>not</u> new fall and <u>not</u> transient).					40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of new fall, but not yet prepared for colonization (may rate at high end of scale).					20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.					Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.																																							
Score	1																																																						
2. Embeddedness	Gravel, cobble, boulder, and bedrock are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space					Gravel, cobble, boulder and bedrock are 25-50% surrounded by fine sediment.					Gravel, cobble, boulder, and bedrock are 50-75% surrounded by fine sediment.					Gravel, cobble, boulder, and bedrock are more than 75% surrounded by fine sediment.																																							
Score	8																																																						
3. Velocity/ Depth Regime	All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (Slow is < 0.3 m/s, deep is > 0.5 m.)					Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes).					Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low).					Dominated by 1 velocity/ depth regime (usually slow-deep).																																							
Score	1																																																						
4. Sediment Deposition	Little or no enlargement of islands or point bars and less than 5% (<20% for low-gradient streams) of the bottom affected by sediment deposition.					Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% (20-50% for low-gradient) of the bottom affected; slight deposition in pools.					Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% (50-80% for low-gradient) of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.					Heavy deposits of fine material, increased bar development; more than 50% (80% for low-gradient) of the bottom changing frequently; pools almost absent due to substantial sediment deposition.																																							
Score	10																																																						
5. Channel Flow Status	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.					Water fills >75% of the available channel; or <25% of channel substrate is exposed.					Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.					Very little water in channel and mostly present as standing pools.																																							
Score	0																																																						
6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.					Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr.) may be present, but recent channelization is not present.					Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.					Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.																																							
Score	11																																																						
7. Frequency of Riffles (or bends)	Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important.					Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15.					Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25.					Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25.																																							
Score	1																																																						
Left/Right Bank	10					9					8					7					6					5					4					3					2					1					0				
8. Bank Stability	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.					Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.					Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.					Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.																																							
LB	5																																																						
RB	5																																																						
9. Vegetative Protection	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.					70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.					50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.					Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.																																							
LB	5																																																						
RB	5																																																						
10. Riparian Vegetative Zone Width	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.					Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.					Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.					Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.																																							
LB	2																																																						
RB	2																																																						
Total Score:	Notes/Comments:																																																						
56																																																							
General Notes:																																																							
Sediment Notes:																																																							

Station Visit Information

Locale Name:	S-04	Project:	KY 32	Trip:		County:	Elliott
Station ID:		Loc. Desc.:	9-8802	Visit Date:	6/12/2025		
Field Lead:	Scott Slankard	Primary Bioregion:		Secondary Bioregion:		Visit Start Time:	10:30 am
Team:	ICF (SS, HL)	Stream Perm.	Eph <input checked="" type="checkbox"/> Int <input type="checkbox"/> Per <input type="checkbox"/>	Stream Type (HW or WA):		Visit Finish Time:	11:00 am

STATION POINT VERIFICATION

WEATHER

K-WADE Target Point	Field GPS Location	Nav. to Target Point Within GPS Error?	Target On Correct Stream?	Field GPS Error (m)	GPS Final	K-WADE Station Update	Scouring Rain In Last 14 Days	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N
Lat:	38.08258					Staff:	Now: Circle 1	HR SR IS <input checked="" type="checkbox"/> CS CO SSH
Long:	-83.12016	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N			Date:	Past 24hr:	HR SR IS <input checked="" type="checkbox"/> CS CO SSH

Stream Shading

STREAM FLOW (Circle 1)

INSTREAM FEATURES

RIFFLE/RUN/POOL SEQ.

Leafed Out?	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	Dry <input checked="" type="checkbox"/> Pooled Low	Average Wetted Width (m):	1	# of riffles in reach
General Shading (Circle 1)	Full <input checked="" type="checkbox"/> Partial None	<input checked="" type="checkbox"/> Seasonal Normal	Maximum Depth (m):	.2	# of runs in reach
		Above Normal Flood	Reach Length (m):	50 m	# of pools in reach

LOCAL WATERSHED FEATURES (Major Land Use: Check all that are present)

CHANNEL ALTERATIONS- Full, Partial or Not/None

Surface Mining		Construction		Pasture/Grazing		Dredging:	<input checked="" type="checkbox"/> F <input type="checkbox"/> P <input type="checkbox"/> N	Channelization:	<input checked="" type="checkbox"/> F <input type="checkbox"/> P <input type="checkbox"/> N
Deep Mining		Commercial	<input checked="" type="checkbox"/>	Silviculture	<input checked="" type="checkbox"/>	RIPARIAN VEGETATION			
Oil Wells		Industrial		Urban Runoff		Dom. Veg. Type:	<input checked="" type="checkbox"/> Herbs <input checked="" type="checkbox"/> Grasses <input checked="" type="checkbox"/> Shrubs <input checked="" type="checkbox"/> Trees	# of Strata:	2
Land Disposal		Row Crops		Storm Sewers		Dom. Taxa:	Trees		
Residential	<input checked="" type="checkbox"/>	Forest	<input checked="" type="checkbox"/>	Permitted Outfalls					

HYDRAULIC STRUCTURES (Check all that are present)

Dams:		Bridge Abutments:		Fords:		Islands:		Waterfalls:		Berms:	
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FIELD METER DATA

Temp (°C):		DO (mg/l):		DO %Sat:		pH (SU):		Sp. Cond (µS/cm):	290	Discharge CFS Uncert.	
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FIELD ACTIVITIES

Activity Completed?	Collectors	Collection Information (Check all that apply and/or enter/circle necessary information)									
Algae:		QualMHC:		Visual Form:		R4MULTI:		Other:			
Fish:		Equip:	<input checked="" type="checkbox"/> BPEF <input checked="" type="checkbox"/> Seine <input checked="" type="checkbox"/> Barge	EF Seconds:		Seine Minutes:					
Habitat:		Habitat data other than RBP?									
Invertebrate:		1m ² riffle + MH:		MACS 20-Jab:		Other:					
Multihabs Sampled Y/N or # Jabs	Undercuts/Roots:	<input type="checkbox"/> Sticks/Wood:	<input type="checkbox"/> Leaf Packs:	<input type="checkbox"/> Water Willow:	<input type="checkbox"/> Aufwuchs:	<input type="checkbox"/> Supplemental:					
	Bedrock/Hardpan:	<input type="checkbox"/> Silt/Sand/Fine Gravel:	<input type="checkbox"/> Rock Pick:	<input type="checkbox"/> Emergent Veg:	<input type="checkbox"/> Wood Sample:	<input type="checkbox"/>					
Chemistry:		H ₂ SO ₄ Lot #:		HNO ₃ Lot #:							
Multi-Probe:		Inst. ID:		Cal. Date:							
Discharge:		Inst. ID:		Beam Check:							
Other:		Other Desc:									

SUBSTRATE CHARACTERIZATION

Site Not Sampled (Reason) - Please Add Comments

Substrate Category	% Riffle:	% Run:	% Pool:	Reach Total
Silt/Clay (<0.06 mm)				
Sand (0.06 – 2 mm)				
Gravel (2-64 mm)				
Cobble (64 – 256 mm)				
Boulders (>256 mm)				
Bedrock/Hardpan Clay				

Land Owner Denial
Too Deep/Impounded
Site Not Found
Unsafe
Dry
Other (See Comments)

Reach Location Description:		Weather Choices:	HR = Heavy Rain SR = Steady Rain IS = Intermittent Showers CS = Clear Sunny CO = Cloudy Overcast SSH = Snow Sleet
Initial Data Review By:		Initial Data Review Date:	Date Entered:

Habitat Parameter	Condition Category																				
	Optimal					Suboptimal					Marginal					Poor					
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
1. Epifaunal Substrate/ Available Cover Score 3	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are <u>not</u> new fall and <u>not</u> transient).					40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of new fall, but not yet prepared for colonization (may rate at high end of scale).					20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.					Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.					
2. Embeddedness Score 4	Gravel, cobble, boulder, and bedrock are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space					Gravel, cobble, boulder and bedrock are 25-50% surrounded by fine sediment.					Gravel, cobble, boulder, and bedrock are 50-75% surrounded by fine sediment.					Gravel, cobble, boulder, and bedrock are more than 75% surrounded by fine sediment.					
3. Velocity/ Depth Regime Score 7	All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (Slow is < 0.3 m/s, deep is > 0.5 m.)					Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes).					Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low).					Dominated by 1 velocity/ depth regime (usually slow-deep).					
4. Sediment Deposition Score 5	Little or no enlargement of islands or point bars and less than 5% (<20% for low-gradient streams) of the bottom affected by sediment deposition.					Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% (20-50% for low-gradient) of the bottom affected; slight deposition in pools.					Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% (50-80% for low-gradient) of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.					Heavy deposits of fine material, increased bar development; more than 50% (80% for low-gradient) of the bottom changing frequently; pools almost absent due to substantial sediment deposition.					
5. Channel Flow Status Score 13	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.					Water fills >75% of the available channel; or <25% of channel substrate is exposed.					Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.					Very little water in channel and mostly present as standing pools.					
6. Channel Alteration Score 11	Channelization or dredging absent or minimal; stream with normal pattern.					Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr.) may be present, but recent channelization is not present.					Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.					Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.					
7. Frequency of Riffles (or bends) Score 5	Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important.					Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15.					Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25.					Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25.					
Left/Right Bank	10	9				8	7	6			5	4	3			2	1	0			
8. Bank Stability LB 3 ----- RB 3	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.					Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.					Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.					Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.					
9. Vegetative Protection LB 2 ----- RB 2	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.					70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.					50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.					Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.					
10. Riparian Vegetative Zone Width LB 2 ----- RB 2	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.					Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.					Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.					Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.					
Total Score:		Notes/Comments:																			
62																					
General Notes:																					
Sediment Notes:																					

Station Visit Information

Locale Name:	S-05	Project:	KY 32	Trip:		County:	Elliott	
Station ID:		Loc. Desc.:	9-8802	Visit Date:	6/12/2025			
Field Lead:	Scott Slankard	Primary Bioregion:		Secondary Bioregion:		Visit Start Time:	11:30 am	
Team:	ICF (SS, HL)		Stream Perm.	<input checked="" type="checkbox"/> Eph <input type="checkbox"/> Int <input type="checkbox"/> Per	Stream Type (HW or WA):		Visit Finish Time:	11:45 pm

STATION POINT VERIFICATION

WEATHER

K-WADE Target Point	Field GPS Location	Nav. to Target Point Within GPS Error?	Target On Correct Stream?	Field GPS Error (m)	GPS Final	K-WADE Station Update	Scouring Rain In Last 14 Days	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N
Lat:	38.08203					Staff:	Now: Circle 1	<input checked="" type="checkbox"/> HR <input type="checkbox"/> SR <input type="checkbox"/> IS <input checked="" type="checkbox"/> CS <input type="checkbox"/> CO <input type="checkbox"/> SSH
Long:	-83.11633	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N			Date:	Past 24hr:	<input checked="" type="checkbox"/> HR <input type="checkbox"/> SR <input type="checkbox"/> IS <input checked="" type="checkbox"/> CS <input type="checkbox"/> CO <input type="checkbox"/> SSH

Stream Shading

STREAM FLOW (Circle 1)

INSTREAM FEATURES

RIFFLE/RUN/POOL SEQ.

Leafed Out?	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	<input checked="" type="checkbox"/> Dry <input type="checkbox"/> Pooled <input type="checkbox"/> Low	Average Wetted Width (m):	4 ft	# of riffles in reach	
General Shading (Circle 1)	Full <input checked="" type="checkbox"/> Partial <input type="checkbox"/> None	Seasonal Normal	Maximum Depth (m):	.25 ft	# of runs in reach	
		Above Normal Flood	Reach Length (m):	50 m	# of pools in reach	

LOCAL WATERSHED FEATURES (Major Land Use: Check all that are present)

CHANNEL ALTERATIONS- Full, Partial or Not/None

Surface Mining		Construction		Pasture/Grazing		Dredging:	<input type="checkbox"/> F <input type="checkbox"/> P <input checked="" type="checkbox"/> N	Channelization:	<input type="checkbox"/> F <input type="checkbox"/> P <input checked="" type="checkbox"/> N
Deep Mining		Commercial		Silviculture	<input checked="" type="checkbox"/>	RIPARIAN VEGETATION			
Oil Wells		Industrial		Urban Runoff		Dom. Veg. Type:	<input checked="" type="checkbox"/> Herbs <input type="checkbox"/> Grasses <input checked="" type="checkbox"/> Shrubs <input checked="" type="checkbox"/> Trees	# of Strata:	2
Land Disposal		Row Crops		Storm Sewers		Dom. Taxa:			
Residential		Forest	<input checked="" type="checkbox"/>	Permitted Outfalls					

HYDRAULIC STRUCTURES (Check all that are present)

Dams:	Earthen	Bridge Abutments:		Fords:		Islands:		Waterfalls:		Berms:	
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FIELD METER DATA

Temp (°C):		DO (mg/l):		DO %Sat:		pH (SU):		Sp. Cond (µS/cm):	260	Discharge CFS Uncert.	
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FIELD ACTIVITIES

Activity Completed?	Collectors	Collection Information (Check all that apply and/or enter/circle necessary information)									
Algae:		QualMHC:		Visual Form:		R4MULTI:		Other:			
Fish:		Equip:	<input type="checkbox"/> BPEF <input type="checkbox"/> Seine <input type="checkbox"/> Barge	EF Seconds:		Seine Minutes:					
Habitat:		Habitat data other than RBP?									
Invertebrate:		1m ² riffle + MH:		MACS 20-Jab:		Other:					
Multihabs Sampled Y/N or # Jabs	Undercuts/Roots:	<input type="checkbox"/> Sticks/Wood:	<input type="checkbox"/> Leaf Packs:	<input type="checkbox"/> Water Willow:	<input type="checkbox"/> Aufwuchs:	<input type="checkbox"/> Supplemental:					
	Bedrock/Hardpan:	<input type="checkbox"/> Silt/Sand/Fine Gravel:	<input type="checkbox"/> Rock Pick:	<input type="checkbox"/> Emergent Veg:	<input type="checkbox"/> Wood Sample:						
Chemistry:		H ₂ SO ₄ Lot #:		HNO ₃ Lot #:							
Multi-Probe:		Inst. ID:		Cal. Date:							
Discharge:		Inst. ID:		Beam Check:							
Other:		Other Desc:									

SUBSTRATE CHARACTERIZATION

Site Not Sampled (Reason) - Please Add Comments

Substrate Category	% Riffle:		% Run:		% Pool:		Reach Total	
Silt/Clay (<0.06 mm)								
Sand (0.06 – 2 mm)								
Gravel (2-64 mm)								
Cobble (64 – 256 mm)								
Boulders (>256 mm)								
Bedrock/Hardpan Clay								

Land Owner Denial
Too Deep/Impounded
Site Not Found
Unsafe
Dry
Other (See Comments)

Reach Location Description:		Weather Choices:		HR = Heavy Rain SR = Steady Rain IS = Intermittent Showers CS = Clear Sunny CO = Cloudy Overcast SSH = Snow Sleet
Initial Data Review By:		Initial Data Review Date:		Date Entered:

Habitat Parameter	Condition Category																					
	Optimal					Suboptimal					Marginal					Poor						
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	
1. Epifaunal Substrate/ Available Cover Score 1	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are <u>not</u> new fall and <u>not</u> transient).					40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of new fall, but not yet prepared for colonization (may rate at high end of scale).					20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.					Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.						
2. Embeddedness Score 3	Gravel, cobble, boulder, and bedrock are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space					Gravel, cobble, boulder and bedrock are 25-50% surrounded by fine sediment.					Gravel, cobble, boulder, and bedrock are 50-75% surrounded by fine sediment.					Gravel, cobble, boulder, and bedrock are more than 75% surrounded by fine sediment.						
3. Velocity/ Depth Regime Score 1	All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (Slow is < 0.3 m/s, deep is > 0.5 m.)					Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes).					Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low).					Dominated by 1 velocity/ depth regime (usually slow-deep).						
4. Sediment Deposition Score 5	Little or no enlargement of islands or point bars and less than 5% (<20% for low-gradient streams) of the bottom affected by sediment deposition.					Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% (20-50% for low-gradient) of the bottom affected; slight deposition in pools.					Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% (50-80% for low-gradient) of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.					Heavy deposits of fine material, increased bar development; more than 50% (80% for low-gradient) of the bottom changing frequently; pools almost absent due to substantial sediment deposition.						
5. Channel Flow Status Score 0	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.					Water fills >75% of the available channel; or <25% of channel substrate is exposed.					Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.					Very little water in channel and mostly present as standing pools.						
6. Channel Alteration Score 11	Channelization or dredging absent or minimal; stream with normal pattern.					Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr.) may be present, but recent channelization is not present.					Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.					Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.						
7. Frequency of Riffles (or bends) Score 1	Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important.					Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15.					Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25.					Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25.						
Left/Right Bank	10	9	8	7	6	5	4	3	2	1	0	10	9	8	7	6	5	4	3	2	1	0
8. Bank Stability LB 9 ----- RB 9	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.					Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.					Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.					Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.						
9. Vegetative Protection LB 8 ----- RB 8	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.					70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.					50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.					Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.						
10. Riparian Vegetative Zone Width LB 5 ----- RB 5	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.					Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.					Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.					Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.						
Total Score:		Notes/Comments:																				
66																						
General Notes:																						
Sediment Notes:																						

Station Visit Information

Locale Name:	S-06	Project:	KY 32	Trip:		County:	Elliott	
Station ID:		Loc. Desc.:	9-8802	Visit Date:	6/12/2025			
Field Lead:	Scott Slankard	Primary Bioregion:		Secondary Bioregion:		Visit Start Time:	11:50 am	
Team:	ICF (SS, HL)		Stream Perm.:	<input checked="" type="checkbox"/> Eph <input type="checkbox"/> Int <input type="checkbox"/> Per	Stream Type (HW or WA):		Visit Finish Time:	12:00 pm

STATION POINT VERIFICATION

WEATHER

K-WADE Target Point	Field GPS Location	Nav. to Target Point Within GPS Error?	Target On Correct Stream?	Field GPS Error (m)	GPS Final	K-WADE Station Update	Scouring Rain In Last 14 Days	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N
Lat:	38.08149					Staff:	Now: Circle 1	<input checked="" type="checkbox"/> HR <input type="checkbox"/> SR <input type="checkbox"/> IS <input checked="" type="checkbox"/> CS <input type="checkbox"/> CO <input type="checkbox"/> SSH
Long:	-83.11454	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N			Date:	Past 24hr:	<input checked="" type="checkbox"/> HR <input type="checkbox"/> SR <input type="checkbox"/> IS <input checked="" type="checkbox"/> CS <input type="checkbox"/> CO <input type="checkbox"/> SSH

Stream Shading

STREAM FLOW (Circle 1)

INSTREAM FEATURES

RIFFLE/RUN/POOL SEQ.

Leafed Out?	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	Dry <input checked="" type="checkbox"/> Pooled <input type="checkbox"/> Low	Average Wetted Width (m):	3 ft	# of riffles in reach
General Shading (Circle 1)	<input checked="" type="checkbox"/> Full <input type="checkbox"/> Partial <input type="checkbox"/> None	<input checked="" type="checkbox"/> Seasonal Normal	Maximum Depth (m):	1 ft	# of runs in reach
		Above Normal <input type="checkbox"/> Flood	Reach Length (m):	50 m	# of pools in reach

LOCAL WATERSHED FEATURES (Major Land Use: Check all that are present)

CHANNEL ALTERATIONS- Full, Partial or Not/None

Surface Mining		Construction		Pasture/Grazing		Dredging:	<input type="checkbox"/> F <input type="checkbox"/> P <input checked="" type="checkbox"/> N	Channelization:	<input type="checkbox"/> F <input type="checkbox"/> P <input checked="" type="checkbox"/> N
Deep Mining		Commercial	<input checked="" type="checkbox"/>	Silviculture	<input checked="" type="checkbox"/>	RIPARIAN VEGETATION			
Oil Wells		Industrial		Urban Runoff		Dom. Veg. Type:	<input checked="" type="checkbox"/> Herbs <input type="checkbox"/> Grasses <input checked="" type="checkbox"/> Shrubs <input checked="" type="checkbox"/> Trees	# of Strata:	2
Land Disposal		Row Crops		Storm Sewers		Dom. Taxa:	beech, poplar, maple		
Residential	<input checked="" type="checkbox"/>	Forest	<input checked="" type="checkbox"/>	Permitted Outfalls					

HYDRAULIC STRUCTURES (Check all that are present)

Dams:		Bridge Abutments:		Fords:		Islands:		Waterfalls:		Berms:	
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FIELD METER DATA

Temp (°C):		DO (mg/l):		DO %Sat:		pH (SU):		Sp. Cond (µS/cm):	70	Discharge CFS Uncert.	
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FIELD ACTIVITIES

Activity Completed?		Collectors		Collection Information (Check all that apply and/or enter/circle necessary information)							
Algae:				QualMHC:		Visual Form:		R4MULTI:		Other:	
Fish:				Equip:	<input type="checkbox"/> BPEF <input type="checkbox"/> Seine <input type="checkbox"/> Barge	EF Seconds:		Seine Minutes:			
Habitat:				Habitat data other than RBP?							
Invertebrate:				1m ² riffle + MH:		MACS 20-Jab:		Other:			
Multihabs Sampled Y/N or # Jabs		Undercuts/Roots:	<input type="checkbox"/>	Sticks/Wood:	<input type="checkbox"/>	Leaf Packs:	<input type="checkbox"/>	Water Willow:	<input type="checkbox"/>	Aufwuchs:	<input type="checkbox"/>
		Bedrock/Hardpan:	<input type="checkbox"/>	Silt/Sand/Fine Gravel:	<input type="checkbox"/>	Rock Pick:	<input type="checkbox"/>	Emergent Veg:	<input type="checkbox"/>	Wood Sample:	<input type="checkbox"/>
Chemistry:				H ₂ SO ₄ Lot #:		HNO ₃ Lot #:					
Multi-Probe:				Inst. ID:		Cal. Date:					
Discharge:				Inst. ID:		Beam Check:					
Other:				Other Desc:							

SUBSTRATE CHARACTERIZATION

Site Not Sampled (Reason) - Please Add Comments

Substrate Category	% Riffle:	% Run:	% Pool:	Reach Total
Silt/Clay (<0.06 mm)				
Sand (0.06 – 2 mm)				
Gravel (2-64 mm)				
Cobble (64 – 256 mm)				
Boulders (>256 mm)				
Bedrock/Hardpan Clay				

Land Owner Denial
Too Deep/Impounded
Site Not Found
Unsafe
Dry
Other (See Comments)

Reach Location Description:		Weather Choices:		HR = Heavy Rain SR = Steady Rain IS = Intermittent Showers CS = Clear Sunny CO = Cloudy Overcast SSH = Snow Sleet
Initial Data Review By:		Initial Data Review Date:		Date Entered:

Habitat Parameter	Condition Category																					
	Optimal					Suboptimal					Marginal					Poor						
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	
1. Epifaunal Substrate/ Available Cover Score 11	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are <u>not</u> new fall and <u>not</u> transient).					40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of new fall, but not yet prepared for colonization (may rate at high end of scale).					20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.					Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.						
2. Embeddedness Score 11	Gravel, cobble, boulder, and bedrock are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space					Gravel, cobble, boulder and bedrock are 25-50% surrounded by fine sediment.					Gravel, cobble, boulder, and bedrock are 50-75% surrounded by fine sediment.					Gravel, cobble, boulder, and bedrock are more than 75% surrounded by fine sediment.						
3. Velocity/ Depth Regime Score 5	All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (Slow is < 0.3 m/s, deep is > 0.5 m.)					Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes).					Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low).					Dominated by 1 velocity/ depth regime (usually slow-deep).						
4. Sediment Deposition Score 15	Little or no enlargement of islands or point bars and less than 5% (<20% for low-gradient streams) of the bottom affected by sediment deposition.					Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% (20-50% for low-gradient) of the bottom affected; slight deposition in pools.					Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% (50-80% for low-gradient) of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.					Heavy deposits of fine material, increased bar development; more than 50% (80% for low-gradient) of the bottom changing frequently; pools almost absent due to substantial sediment deposition.						
5. Channel Flow Status Score 15	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.					Water fills >75% of the available channel; or <25% of channel substrate is exposed.					Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.					Very little water in channel and mostly present as standing pools.						
6. Channel Alteration Score 20	Channelization or dredging absent or minimal; stream with normal pattern.					Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr.) may be present, but recent channelization is not present.					Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.					Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.						
7. Frequency of Riffles (or bends) Score 18	Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important.					Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15.					Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25.					Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25.						
Left/Right Bank	10	9	8	7	6	5	4	3	2	1	0	10	9	8	7	6	5	4	3	2	1	0
8. Bank Stability LB 9 RB 9	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.					Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.					Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.					Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.						
9. Vegetative Protection LB 8 RB 8	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.					70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.					50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.					Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.						
10. Riparian Vegetative Zone Width LB 8 RB 8	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.					Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.					Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.					Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.						

Total Score:	Notes/Comments:
145	

General Notes:

Sediment Notes:

Station Visit Information

Locale Name:	S-07	Project:	KY 32	Trip:		County:	Elliott	
Station ID:		Loc. Desc.:	9-8802	Visit Date:	6/12/2025			
Field Lead:	Scott Slankard	Primary Bioregion:		Secondary Bioregion:		Visit Start Time:	12:05 pm	
Team:	ICF (SS, HL)		Stream Perm.:	<input checked="" type="checkbox"/> Eph <input type="checkbox"/> Int <input type="checkbox"/> Per	Stream Type (HW or WA):		Visit Finish Time:	12:15 pm

STATION POINT VERIFICATION

WEATHER

K-WADE Target Point	Field GPS Location	Nav. to Target Point Within GPS Error?	Target On Correct Stream?	Field GPS Error (m)	GPS Final	K-WADE Station Update	Scouring Rain In Last 14 Days	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N
Lat:	38.08088					Staff:	Now: Circle 1	<input checked="" type="checkbox"/> HR <input type="checkbox"/> SR <input type="checkbox"/> IS <input checked="" type="checkbox"/> CS <input type="checkbox"/> CO <input type="checkbox"/> SSH
Long:	-83.11292	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N			Date:	Past 24hr:	<input checked="" type="checkbox"/> HR <input type="checkbox"/> SR <input type="checkbox"/> IS <input checked="" type="checkbox"/> CS <input type="checkbox"/> CO <input type="checkbox"/> SSH

Stream Shading

STREAM FLOW (Circle 1)

INSTREAM FEATURES

RIFFLE/RUN/POOL SEQ.

Leafed Out?	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	Dry <input checked="" type="checkbox"/> Pooled <input type="checkbox"/> Low	Average Wetted Width (m):	3 ft	# of riffles in reach
General Shading (Circle 1)	<input checked="" type="checkbox"/> Full <input type="checkbox"/> Partial <input type="checkbox"/> None	<input checked="" type="checkbox"/> Seasonal Normal	Maximum Depth (m):	1 ft	# of runs in reach
		Above Normal <input type="checkbox"/> Flood	Reach Length (m):	50 m	# of pools in reach

LOCAL WATERSHED FEATURES (Major Land Use: Check all that are present)

CHANNEL ALTERATIONS- Full, Partial or Not/None

Surface Mining		Construction		Pasture/Grazing		Dredging:	<input type="checkbox"/> F <input type="checkbox"/> P <input checked="" type="checkbox"/> N	Channelization:	<input type="checkbox"/> F <input type="checkbox"/> P <input checked="" type="checkbox"/> N
Deep Mining		Commercial	<input checked="" type="checkbox"/>	Silviculture	<input checked="" type="checkbox"/>	RIPARIAN VEGETATION			
Oil Wells		Industrial		Urban Runoff		Dom. Veg. Type:	<input checked="" type="checkbox"/> Herbs <input type="checkbox"/> Grasses	# of Strata:	2
Land Disposal		Row Crops		Storm Sewers			<input checked="" type="checkbox"/> Shrubs <input checked="" type="checkbox"/> Trees		
Residential	<input checked="" type="checkbox"/>	Forest	<input checked="" type="checkbox"/>	Permitted Outfalls		Dom. Taxa:	Beech, Tulip poplar, Sugar Maple		

HYDRAULIC STRUCTURES (Check all that are present)

Dams:		Bridge Abutments:		Fords:		Islands:		Waterfalls:		Berms:	
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FIELD METER DATA

Temp (°C):		DO (mg/l):		DO %Sat:		pH (SU):		Sp. Cond (µS/cm):	70	Discharge CFS Uncert.:	
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FIELD ACTIVITIES

Activity Completed?	Collectors	Collection Information (Check all that apply and/or enter/circle necessary information)									
Algae:		QualMHC:		Visual Form:		R4MULTI:		Other:			
Fish:		Equip:	<input type="checkbox"/> BPEF <input type="checkbox"/> Seine <input type="checkbox"/> Barge	EF Seconds:		Seine Minutes:					
Habitat:		Habitat data other than RBP?									
Invertebrate:		1m ² riffle + MH:		MACS 20-Jab:		Other:					
Multihabs Sampled Y/N or # Jabs	Undercuts/Roots:	<input type="checkbox"/> Sticks/Wood:	<input type="checkbox"/> Leaf Packs:	<input type="checkbox"/> Water Willow:	<input type="checkbox"/> Aufwuchs:	<input type="checkbox"/> Supplemental:					
	Bedrock/Hardpan:	<input type="checkbox"/> Silt/Sand/Fine Gravel:	<input type="checkbox"/> Rock Pick:	<input type="checkbox"/> Emergent Veg:	<input type="checkbox"/> Wood Sample:	<input type="checkbox"/>					
Chemistry:		H ₂ SO ₄ Lot #:		HNO ₃ Lot #:							
Multi-Probe:		Inst. ID:		Cal. Date:							
Discharge:		Inst. ID:		Beam Check:							
Other:		Other Desc:									

SUBSTRATE CHARACTERIZATION

Site Not Sampled (Reason) - Please Add Comments

Substrate Category	% Riffle:	% Run:	% Pool:	Reach Total
Silt/Clay (<0.06 mm)				
Sand (0.06 – 2 mm)				
Gravel (2-64 mm)				
Cobble (64 – 256 mm)				
Boulders (>256 mm)				
Bedrock/Hardpan Clay				

Land Owner Denial
Too Deep/Impounded
Site Not Found
Unsafe
Dry
Other (See Comments)

Reach Location Description:		Weather Choices:	HR = Heavy Rain SR = Steady Rain IS = Intermittent Showers CS = Clear Sunny CO = Cloudy Overcast SSH = Snow Sleet
Initial Data Review By:		Initial Data Review Date:	Date Entered:

Habitat Parameter	Condition Category																					
	Optimal					Suboptimal					Marginal					Poor						
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	
1. Epifaunal Substrate/ Available Cover Score 5	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are <u>not</u> new fall and <u>not</u> transient).					40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of new fall, but not yet prepared for colonization (may rate at high end of scale).					20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.					Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.						
2. Embeddedness Score 6	Gravel, cobble, boulder, and bedrock are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space					Gravel, cobble, boulder and bedrock are 25-50% surrounded by fine sediment.					Gravel, cobble, boulder, and bedrock are 50-75% surrounded by fine sediment.					Gravel, cobble, boulder, and bedrock are more than 75% surrounded by fine sediment.						
3. Velocity/ Depth Regime Score 1	All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (Slow is < 0.3 m/s, deep is > 0.5 m.)					Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes).					Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low).					Dominated by 1 velocity/ depth regime (usually slow-deep).						
4. Sediment Deposition Score 5	Little or no enlargement of islands or point bars and less than 5% (<20% for low-gradient streams) of the bottom affected by sediment deposition.					Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% (20-50% for low-gradient) of the bottom affected; slight deposition in pools.					Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% (50-80% for low-gradient) of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.					Heavy deposits of fine material, increased bar development; more than 50% (80% for low-gradient) of the bottom changing frequently; pools almost absent due to substantial sediment deposition.						
5. Channel Flow Status Score 3	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.					Water fills >75% of the available channel; or <25% of channel substrate is exposed.					Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.					Very little water in channel and mostly present as standing pools.						
6. Channel Alteration Score 20	Channelization or dredging absent or minimal; stream with normal pattern.					Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr.) may be present, but recent channelization is not present.					Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.					Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.						
7. Frequency of Riffles (or bends) Score 16	Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important.					Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15.					Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25.					Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25.						
Left/Right Bank	10	9	8	7	6	5	4	3	2	1	0	10	9	8	7	6	5	4	3	2	1	0
8. Bank Stability LB ----- 6 RB ----- 7	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.					Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.					Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.					Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.						
9. Vegetative Protection LB ----- 9 RB ----- 9	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.					70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.					50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.					Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.						
10. Riparian Vegetative Zone Width LB ----- 10 RB ----- 10	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.					Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.					Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.					Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.						

Total Score:	Notes/Comments:
107	

General Notes:

Sediment Notes:

Station Visit Information

Locale Name:	S-08	Project:	KY 32	Trip:		County:	Elliott
Station ID:		Loc. Desc.:	9-8802	Visit Date:	6/12/2025		
Field Lead:	Scott Slankard	Primary Bioregion:		Secondary Bioregion:		Visit Start Time:	12:45 pm
Team:	ICF (SS, HL)	Stream Perm.	Eph <input checked="" type="checkbox"/> Int <input type="checkbox"/> Per <input type="checkbox"/>	Stream Type (HW or WA):		Visit Finish Time:	1:10 pm

STATION POINT VERIFICATION

WEATHER

K-WADE Target Point	Field GPS Location	Nav. to Target Point Within GPS Error?	Target On Correct Stream?	Field GPS Error (m)	GPS Final	K-WADE Station Update	Scouring Rain In Last 14 Days	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N
Lat:	38.08088					Staff:	Now: Circle 1	HR SR IS <input checked="" type="checkbox"/> CS CO SSH
Long:	-83.11292	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N			Date:	Past 24hr:	HR SR IS <input checked="" type="checkbox"/> CS CO SSH

Stream Shading

STREAM FLOW (Circle 1)

INSTREAM FEATURES

RIFFLE/RUN/POOL SEQ.

Leafed Out?	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	Dry <input checked="" type="checkbox"/> Pooled Low	Average Wetted Width (m):	3 ft	# of riffles in reach
General Shading (Circle 1)	<input checked="" type="checkbox"/> Full <input type="checkbox"/> Partial <input type="checkbox"/> None	<input checked="" type="checkbox"/> Seasonal Normal	Maximum Depth (m):	1 ft	# of runs in reach
		Above Normal Flood	Reach Length (m):	50 m	# of pools in reach

LOCAL WATERSHED FEATURES (Major Land Use: Check all that are present)

CHANNEL ALTERATIONS- Full, Partial or Not/None

Surface Mining		Construction		Pasture/Grazing		Dredging:	<input type="checkbox"/> F <input type="checkbox"/> P <input checked="" type="checkbox"/> N	Channelization:	<input type="checkbox"/> F <input type="checkbox"/> P <input checked="" type="checkbox"/> N
Deep Mining		Commercial	<input checked="" type="checkbox"/>	Silviculture	<input checked="" type="checkbox"/>	RIPARIAN VEGETATION			
Oil Wells		Industrial		Urban Runoff		Dom. Veg. Type:	<input checked="" type="checkbox"/> Herbs <input checked="" type="checkbox"/> Grasses	# of Strata:	2
Land Disposal		Row Crops		Storm Sewers			<input checked="" type="checkbox"/> Shrubs <input checked="" type="checkbox"/> Trees		
Residential	<input checked="" type="checkbox"/>	Forest	<input checked="" type="checkbox"/>	Permitted Outfalls		Dom. Taxa:	Beech, Tulip poplar, Sugar Maple		

HYDRAULIC STRUCTURES (Check all that are present)

Dams:		Bridge Abutments:		Fords:		Islands:		Waterfalls:		Berms:	
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FIELD METER DATA

Temp (°C):		DO (mg/l):		DO %Sat:		pH (SU):		Sp. Cond (µS/cm):	310	Discharge CFS Uncert.	
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FIELD ACTIVITIES

Activity Completed?		Collectors		Collection Information (Check all that apply and/or enter/circle necessary information)							
Algae:				QualMHC:		Visual Form:		R4MULTI:		Other:	
Fish:				Equip:	<input checked="" type="checkbox"/> BPEF <input checked="" type="checkbox"/> Seine <input checked="" type="checkbox"/> Barge	EF Seconds:		Seine Minutes:			
Habitat:				Habitat data other than RBP?							
Invertebrate:				1m ² riffle + MH:		MACS 20-Jab:		Other:			
Multihabs Sampled Y/N or # Jabs		Undercuts/Roots:	<input type="checkbox"/>	Sticks/Wood:	<input type="checkbox"/>	Leaf Packs:	<input type="checkbox"/>	Water Willow:	<input type="checkbox"/>	Aufwuchs:	<input type="checkbox"/>
		Bedrock/Hardpan:	<input type="checkbox"/>	Silt/Sand/Fine Gravel:	<input type="checkbox"/>	Rock Pick:	<input type="checkbox"/>	Emergent Veg:	<input type="checkbox"/>	Wood Sample:	<input type="checkbox"/>
Chemistry:				H ₂ SO ₄ Lot #:		HNO ₃ Lot #:					
Multi-Probe:				Inst. ID:		Cal. Date:					
Discharge:				Inst. ID:		Beam Check:					
Other:				Other Desc:							

SUBSTRATE CHARACTERIZATION

Site Not Sampled (Reason) - Please Add Comments

Substrate Category	% Riffle:		% Run:		% Pool:		Reach Total	Land Owner Denial Too Deep/Impounded Site Not Found Unsafe Dry Other (See Comments)
Silt/Clay (<0.06 mm)								
Sand (0.06 – 2 mm)								
Gravel (2-64 mm)								
Cobble (64 – 256 mm)								
Boulders (>256 mm)								
Bedrock/Hardpan Clay								

Reach Location Description:		Weather Choices:		HR = Heavy Rain SR = Steady Rain IS = Intermittent Showers CS = Clear Sunny CO = Cloudy Overcast SSH = Snow Sleet
Initial Data Review By:		Initial Data Review Date:		Date Entered:

Habitat Parameter	Condition Category																					
	Optimal					Suboptimal					Marginal					Poor						
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	
1. Epifaunal Substrate/ Available Cover Score 5	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are <u>not</u> new fall and <u>not</u> transient).					40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of new fall, but not yet prepared for colonization (may rate at high end of scale).					20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.					Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.						
2. Embeddedness Score 6	Gravel, cobble, boulder, and bedrock are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space					Gravel, cobble, boulder and bedrock are 25-50% surrounded by fine sediment.					Gravel, cobble, boulder, and bedrock are 50-75% surrounded by fine sediment.					Gravel, cobble, boulder, and bedrock are more than 75% surrounded by fine sediment.						
3. Velocity/ Depth Regime Score 1	All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (Slow is < 0.3 m/s, deep is > 0.5 m.)					Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes).					Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low).					Dominated by 1 velocity/ depth regime (usually slow-deep).						
4. Sediment Deposition Score 5	Little or no enlargement of islands or point bars and less than 5% (<20% for low-gradient streams) of the bottom affected by sediment deposition.					Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% (20-50% for low-gradient) of the bottom affected; slight deposition in pools.					Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% (50-80% for low-gradient) of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.					Heavy deposits of fine material, increased bar development; more than 50% (80% for low-gradient) of the bottom changing frequently; pools almost absent due to substantial sediment deposition.						
5. Channel Flow Status Score 8	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.					Water fills >75% of the available channel; or <25% of channel substrate is exposed.					Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.					Very little water in channel and mostly present as standing pools.						
6. Channel Alteration Score 11	Channelization or dredging absent or minimal; stream with normal pattern.					Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr.) may be present, but recent channelization is not present.					Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.					Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.						
7. Frequency of Riffles (or bends) Score 6	Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important.					Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15.					Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25.					Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25.						
Left/Right Bank	10	9	8	7	6	5	4	3	2	1	0	10	9	8	7	6	5	4	3	2	1	0
8. Bank Stability LB ----- 6 RB ----- 7	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.					Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.					Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.					Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.						
9. Vegetative Protection LB ----- 9 RB ----- 9	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.					70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.					50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.					Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.						
10. Riparian Vegetative Zone Width LB ----- 10 RB ----- 10	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.					Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.					Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.					Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.						

Total Score:	Notes/Comments:
93	

General Notes:

Sediment Notes:

High Gradient Habitat Assessment Datasheet v3.1

Station Visit Information

Locale Name:	STR-10	Project:	KY32	Trip:		County:	ELLIOTT
Station ID:		Loc. Desc.:	9-8802	Visit Date:			7/4/25
Field Lead:		Primary Bioregion:		Secondary Bioregion:		Visit Start Time:	11:50
Team:	RL & SS	Stream Perm.	Eph	Int	Per	Stream Type (HW or WA):	HW
						Visit Finish Time:	

STATION POINT VERIFICATION

WEATHER

K-WADE Target Point	Field GPS Location	Nav. to Target Point Within GPS Error?	Target On Correct Stream?	Field GPS Error (m)	GPS Final	K-WADE Station Update	Scouring Rain In Last 14 Days	Y N
Lat:	38.07889					Staff:	Now: Circle 1	HR SR IS CS CO SSH
Long:	-93.10484	Y N	Y N			Date:	Past 24hr:	HR SR IS CS CO SSH

Stream Shading

STREAM FLOW (Circle 1)

INSTREAM FEATURES

RIFFLE/RUN/POOL SEQ.

Leafed Out?	Y N	Dry Pooled Low	Average Wetted Width (m):	# of riffles in reach
General Shading (Circle 1)	Full Partial None	Seasonal Normal	Maximum Depth (m):	# of runs in reach
		Above Normal Flood	Reach Length (m):	# of pools in reach

LOCAL WATERSHED FEATURES (Major Land Use: Check all that are present)

CHANNEL ALTERATIONS- Full, Partial or Not/None

Surface Mining	Construction	Pasture/Grazing	Dredging:	F P N	Channelization:	(E) P N
Deep Mining	Commercial	Silviculture	RIPARIAN VEGETATION			
Oil Wells	Industrial	Urban Runoff	Dom. Veg. Type:	Herbs Grasses Shrubs Trees	# of Strata:	
Land Disposal	Row Crops	Storm Sewers	Dom. Taxa:	MULTIFLORA ROSE CHINESE YAM		
Residential	Forest	Permitted Outfalls				

HYDRAULIC STRUCTURES (Check all that are present)

Dams:	Bridge Abutments:	Fords:	Islands:	Waterfalls:	Berms:
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FIELD METER DATA

Temp (°C):	DO (mg/l):	DO %Sat:	pH (SU):	Sp. Cond (µS/cm):	200	Discharge CFS Uncert.
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FIELD ACTIVITIES

Activity Completed?	Collectors	Collection Information (Check all that apply and/or enter/circle necessary information)				
Algae:		QualMHc:	Visual Form:	R4MULTI:	Other:	
Fish:		Equip:	BPEF Seine Barge	EF Seconds:	Seine Minutes:	
Habitat:		Habitat data other than RBP?				
Invertebrate:		1m ² riffle + MH:	MACS 20-Jab:	Other:		
Multihabs Sampled Y/N or # Jabs	Undercuts/Roots:	Sticks/Wood:	Leaf Packs:	Water Willow:	Aufwuchs:	Supplemental:
	Bedrock/Hardpan:	Silt/Sand/Fine Gravel:	Rock Pick:	Emergent Veg:	Wood Sample:	
Chemistry:		H ₂ SO ₄ Lot #:		HNO ₃ Lot #:		
Multi-Probe:		Inst. ID:		Cal. Date:		
Discharge:		Inst. ID:		Beam Check:		
Other:		Other Desc:				

SUBSTRATE CHARACTERIZATION

Site Not Sampled (Reason) - Please Add Comments

Substrate Category	% Riffle:	% Run:	% Pool:	Reach Total
Silt/Clay (<0.06 mm)				
Sand (0.06 - 2 mm)				
Gravel (2-64 mm)				
Cobble (64 - 256 mm)				
Boulders (>256 mm)				
Bedrock/Hardpan Clay				

Land Owner Denial
Too Deep/Impounded
Site Not Found
Unsafe
Dry
Other (See Comments)

Reach Location Description:	Weather Choices:	HR = Heavy Rain SR = Steady Rain IS = Intermittent Showers CS = Clear Sunny CO = Cloudy Overcast SSH = Snow Sleet
Initial Data Review By:	Initial Data Review Date:	Date Entered:

Habitat Parameter SCORE	Condition Category																				
	Optimal					Suboptimal					Marginal					Poor					
	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
1. Epifaunal Substrate/ Available Cover Score 3	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are <u>not</u> new fall and <u>not</u> transient).					40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of new fall, but not yet prepared for colonization (may rate at high end of scale).					20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.					Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.					
2. Embeddedness Score 2	Gravel, cobble, boulder, and bedrock are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space					Gravel, cobble, boulder and bedrock are 25-50% surrounded by fine sediment.					Gravel, cobble, boulder, and bedrock are 50-75% surrounded by fine sediment.					Gravel, cobble, boulder, and bedrock are more than 75% surrounded by fine sediment.					
3. Velocity/ Depth Regime Score 6	All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (Slow is < 0.3 m/s, deep is > 0.5 m.)					Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes).					Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low).					Dominated by 1 velocity/ depth regime (usually slow-deep).					
4. Sediment Deposition Score 2	Little or no enlargement of islands or point bars and less than 5% (<20% for low-gradient streams) of the bottom affected by sediment deposition.					Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% (20-50% for low-gradient) of the bottom affected; slight deposition in pools.					Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% (50-80% for low-gradient) of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.					Heavy deposits of fine material, increased bar development; more than 50% (80% for low-gradient) of the bottom changing frequently; pools almost absent due to substantial sediment deposition.					
5. Channel Flow Status Score 13	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.					Water fills >75% of the available channel; or <25% of channel substrate is exposed.					Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.					Very little water in channel and mostly present as standing pools.					
6. Channel Alteration Score 12	Channelization or dredging absent or minimal; stream with normal pattern.					Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr.) may be present, but recent channelization is not present.					Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.					Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.					
7. Frequency of Riffles (or bends) Score 4	Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important.					Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15.					Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25.					Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25.					
Left/Right Bank	10 9					8 7 6					5 4 3					2 1 0					
8. Bank Stability LB 2 RB 2	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.					Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.					Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.					Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.					
9. Vegetative Protection LB 3 RB 5	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.					70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.					50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.					Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.					
10. Riparian Vegetative Zone Width LB 1 RB 3	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.					Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.					Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.					Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.					
Total Score: 58	Notes/Comments:																				
General Notes:																					
Sediment Notes:																					

High Gradient Habitat Assessment Datasheet v3.1

Station Visit Information

Locale Name:	STR-11	Project:	KY32	Trip:		County:	Elliott
Station ID:		Loc. Desc.:	9-8802			Visit Date:	7/8/25
Field Lead:		Primary Bioregion:		Secondary Bioregion:		Visit Start Time:	1:35
Team:	RL & SS		Stream Perm.	Eph <input checked="" type="checkbox"/> Int <input type="checkbox"/> Per <input type="checkbox"/>	Stream Type (HW or WA):		Visit Finish Time:

STATION POINT VERIFICATION

K-WADE Target Point	Field GPS Location	Nav. to Target Point Within GPS Error?	Target On Correct Stream?	Field GPS Error (m)	GPS Final	K-WADE Station Update	Scouring Rain In Last 14 Days	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N
Lat:	38.07904					Staff:	Now: Circle 1	HR SR IS CS CO SSH
Long:	-83.10963	Y N	Y N			Date:	Past 24hr:	HR SR IS CS CO SSH

WEATHER

Stream Shading	STREAM FLOW (Circle 1)	INSTREAM FEATURES	RIFFLE/RUN/POOL SEQ.
Leafed Out?	Y N	Average Wetted Width (m):	# of riffles in reach
General Shading (Circle 1)	Dry Pooled Low <u>Seasonal Normal</u> Above Normal Flood	Maximum Depth (m):	# of runs in reach
Full Partial None		Reach Length (m):	# of pools in reach

LOCAL WATERSHED FEATURES (Major Land Use: Check all that are present)

Surface Mining	Construction	Pasture/Grazing	Dredging:	F P N	Channelization:	F P N
Deep Mining	Commercial	Silviculture	RIPARIAN VEGETATION			
Oil Wells	Industrial	Urban Runoff	Dom. Veg. Type:	Herbs Grasses	# of Strata:	
Land Disposal	Row Crops	Storm Sewers	Dom. Taxa:	Shrubs Trees		
Residential	Forest	Permitted Outfalls				

HYDRAULIC STRUCTURES (Check all that are present)

Dams:	Bridge Abutments:	Fords:	Islands:	Waterfalls:	Berms:
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FIELD METER DATA

Temp (°C):	DO (mg/l):	DO %Sat:	pH (SU):	Sp. Cond (µS/cm):	350	Discharge CFS Uncert.
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FIELD ACTIVITIES

Activity Completed?	Collectors	Collection Information (Check all that apply and/or enter/circle necessary information)				
Algae:		Qual/MHC:	Visual Form:	R4MULTI:	Other:	
Fish:		Equip:	BPEF Seine Barge	EF Seconds:	Seine Minutes:	
Habitat:		Habitat data other than RBP?				
Invertebrate:		1m ² riffle + MH:	MACS 20-Jab:	Other:		
Multihabs Sampled Y/N or # Jabs	Undercuts/Roots:	Sticks/Wood:	Leaf Packs:	Water Willow:	Aufwuchs:	Supplemental:
	Bedrock/Hardpan:	Silt/Sand/Fine Gravel:	Rock Pick:	Emergent Veg:	Wood Sample:	
Chemistry:		H ₂ SO ₄ Lot #:		HNO ₃ Lot #:		
Multi-Probe:		Inst. ID:		Cal. Date:		
Discharge:		Inst. ID:		Beam Check:		
Other:		Other Desc:				

SUBSTRATE CHARACTERIZATION

Substrate Category	% Riffle:	% Run:	% Pool:	Reach Total
Silt/Clay (<0.06 mm)				
Sand (0.06 - 2 mm)				
Gravel (2-64 mm)				
Cobble (64 - 256 mm)				
Boulders (>256 mm)				
Bedrock/Hardpan Clay				

Site Not Sampled (Reason) - Please Add Comments
 Land Owner Denial
 Too Deep/Impounded
 Site Not Found
 Unsafe
 Dry
 Other (See Comments)

Reach Location Description:	Weather Choices:	HR = Heavy Rain SR = Steady Rain IS = Intermittent Showers CS = Clear Sunny CO = Cloudy Overcast SSH = Snow Sleet
Initial Data Review By:	Initial Data Review Date:	Date Entered:

Habitat Parameter	Condition Category																				
	Optimal					Suboptimal					Marginal					Poor					
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
1. Epifaunal Substrate/ Available Cover 11 Score	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are <u>not</u> new fall and <u>not</u> transient).					40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of new fall, but not yet prepared for colonization (may rate at high end of scale).					20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.					Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.					
2. Embeddedness 15 Score	Gravel, cobble, boulder, and bedrock are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space					Gravel, cobble, boulder and bedrock are 25-50% surrounded by fine sediment.					Gravel, cobble, boulder, and bedrock are 50-75% surrounded by fine sediment.					Gravel, cobble, boulder, and bedrock are more than 75% surrounded by fine sediment.					
3. Velocity/ Depth Regime 10 Score	All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (Slow is < 0.3 m/s, deep is > 0.5 m.)					Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes).					Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low).					Dominated by 1 velocity/ depth regime (usually slow-deep).					
4. Sediment Deposition 13 Score	Little or no enlargement of islands or point bars and less than 5% (<20% for low-gradient streams) of the bottom affected by sediment deposition.					Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% (20-50% for low-gradient) of the bottom affected; slight deposition in pools.					Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% (50-80% for low-gradient) of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.					Heavy deposits of fine material, increased bar development; more than 50% (80% for low-gradient) of the bottom changing frequently; pools almost absent due to substantial sediment deposition.					
5. Channel Flow Status 14 Score	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.					Water fills >75% of the available channel; or <25% of channel substrate is exposed.					Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.					Very little water in channel and mostly present as standing pools.					
6. Channel Alteration 15 Score	Channelization or dredging absent or minimal; stream with normal pattern.					Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr.) may be present, but recent channelization is not present.					Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.					Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.					
7. Frequency of Riffles (or bends) 13 Score	Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important.					Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15.					Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25.					Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25.					
Left/Right Bank	10				9	8			7	6	5			4	3	2		1	0		
8. Bank Stability LB 10 RB 9	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.					Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.					Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.					Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.					
9. Vegetative Protection LB 5 RB 5	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.					70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.					50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.					Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.					
10. Riparian Vegetative Zone Width LB 10 RB 7	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.					Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.					Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.					Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.					
Total Score:		Notes/Comments:																			
137																					
General Notes:																					
Sediment Notes:																					

High Gradient Habitat Assessment Datasheet v3.1

Station Visit Information							
Locale Name:	STR-12	Project:	KY32	Trip:		County:	ELLIOTT
Station ID:		Loc. Desc.:	9-8802	Visit Date:	7/13/25		
Field Lead:		Primary Bioregion:		Secondary Bioregion:		Visit Start Time:	1:06
Team:	RL + SS	Stream Perm.:	<input checked="" type="radio"/> Eph	Int Per	Stream Type (HW or WA):		Visit Finish Time:

STATION POINT VERIFICATION						WEATHER	
K-WADE Target Point	Field GPS Location	Nav. to Target Point Within GPS Error?	Target On Correct Stream?	Field GPS Error (m)	GPS Final	K-WADE Station Update	Scouring Rain In Last 14 Days
Lat:	38.07885					Staff:	Y N
Long:	-83.10752	Y N	Y N			Date:	Now: Circle 1 HR SR IS CS CO SSH
							Past 24hr: HR SR IS CS CO SSH

Stream Shading		STREAM FLOW (Circle 1)		INSTREAM FEATURES		RIFFLE/RUN/POOL SEQ.	
Leafed Out?	Y N	Dry Pooled Low Seasonal Normal Above Normal Flood		Average Wetted Width (m):		# of riffles in reach	
General Shading (Circle 1)	Full Partial None			Maximum Depth (m):		# of runs in reach	
				Reach Length (m):		# of pools in reach	

LOCAL WATERSHED FEATURES (Major Land Use: Check all that are present)				CHANNEL ALTERATIONS- Full, Partial or Not/None			
Surface Mining		Construction		Pasture/Grazing		Dredging:	F P N
Deep Mining		Commercial		Silviculture		Channelization:	F P N
Oil Wells		Industrial		Urban Runoff		RIPARIAN VEGETATION	
Land Disposal		Row Crops		Storm Sewers		Dom. Veg. Type:	Herbs Grasses Shrubs Trees
Residential		Forest	<input checked="" type="checkbox"/>	Permitted Outfalls		Dom. Taxa:	# of Strata:

HYDRAULIC STRUCTURES (Check all that are present)							
Dams:		Bridge Abutments:		Fords:		Islands:	
						Waterfalls:	
						Berms:	

FIELD METER DATA							
Temp (°C):		DO (mg/l):		DO %Sat:		pH (SU):	
						Sp. Cond (µS/cm):	
						Discharge CFS Uncert.:	

FIELD ACTIVITIES							
Activity Completed?		Collectors		Collection Information (Check all that apply and/or enter/circle necessary information)			
Algae:				QualMHC:		Visual Form:	
Fish:				Equip:	BPEF Seine Barge	EF Seconds:	
Habitat:				Habitat data other than RBP?			
Invertebrate:				1m ² riffle + MH:		MACS 20-Jab:	
Multihabs Sampled Y/N or # Jabs		Undercuts/Roots:		Sticks/Wood:		Leaf Packs:	
		Bedrock/Hardpan:		Silt/Sand/Fine Gravel:		Water Willow:	
						Aufwuchs:	
						Supplemental:	
Chemistry:				H ₂ SO ₄ Lot #:		HNO ₃ Lot #:	
Multi-Probe:				Inst. ID:		Cal. Date:	
Discharge:				Inst. ID:		Beam Check:	
Other:				Other Desc:			

SUBSTRATE CHARACTERIZATION						Site Not Sampled (Reason) - Please Add Comments	
Substrate Category	% Riffle:		% Run:		% Pool:		
Silt/Clay (<0.06 mm)							
Sand (0.06 - 2 mm)							
Gravel (2-64 mm)							
Cobble (64 - 256 mm)							
Boulders (>256 mm)							
Bedrock/Hardpan Clay							

Reach Location Description:		Weather Choices:		HR = Heavy Rain SR = Steady Rain IS = Intermittent Showers CS = Clear Sunny CO = Cloudy Overcast SSH = Snow Sleet
Initial Data Review By:		Initial Data Review Date:		Date Entered:

Habitat Parameter	Condition Category																				
	Optimal					Suboptimal					Marginal					Poor					
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
1. Epifaunal Substrate/ Available Cover 3 Score	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are <u>not</u> new fall and <u>not</u> transient).					40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of new fall, but not yet prepared for colonization (may rate at high end of scale).					20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.					Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.					
2. Embeddedness 11 Score	Gravel, cobble, boulder, and bedrock are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space					Gravel, cobble, boulder and bedrock are 25-50% surrounded by fine sediment.					Gravel, cobble, boulder, and bedrock are 50-75% surrounded by fine sediment.					Gravel, cobble, boulder, and bedrock are more than 75% surrounded by fine sediment.					
3. Velocity/ Depth Regime 1 Score	All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (Slow is < 0.3 m/s, deep is > 0.5 m.)					Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes).					Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low).					Dominated by 1 velocity/ depth regime (usually slow-deep).					
4. Sediment Deposition 16 Score	Little or no enlargement of islands or point bars and less than 5% (<20% for low-gradient streams) of the bottom affected by sediment deposition.					Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% (20-50% for low-gradient) of the bottom affected; slight deposition in pools.					Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% (50-80% for low-gradient) of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.					Heavy deposits of fine material, increased bar development; more than 50% (80% for low-gradient) of the bottom changing frequently; pools almost absent due to substantial sediment deposition.					
5. Channel Flow Status 1 Score	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.					Water fills >75% of the available channel; or <25% of channel substrate is exposed.					Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.					Very little water in channel and mostly present as standing pools.					
6. Channel Alteration 17 Score	Channelization or dredging absent or minimal; stream with normal pattern.					Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr.) may be present, but recent channelization is not present.					Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.					Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.					
7. Frequency of Riffles (or bends) 0 Score	Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important.					Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15.					Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25.					Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25.					
Left/Right Bank	10				9	8			7	6	5			4	3	2		1	0		
8. Bank Stability LB 9 ----- RB 9	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.					Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.					Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.					Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.					
9. Vegetative Protection LB 10 ----- RB 10	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.					70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.					50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.					Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.					
10. Riparian Vegetative Zone Width LB 10 ----- RB 8	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.					Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.					Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.					Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.					
Total Score:		Notes/Comments:																			
105																					
General Notes:																					
Sediment Notes:																					

Station Visit Information							
Locale Name:	STR-13	Project:	KY32	Trip:		County:	ELLIOTT
Station ID:		Loc. Desc.:	9-8802			Visit Date:	7/3/25
Field Lead:		Primary Bioregion:		Secondary Bioregion:		Visit Start Time:	2:05
Team:	RL & SS	Stream Perm.:	Eph <input checked="" type="radio"/> Int Per	Stream Type (HW or WA):		Visit Finish Time:	

STATION POINT VERIFICATION						WEATHER	
K-WADE Target Point	Field GPS Location	Nav. to Target Point Within GPS Error?	Target On Correct Stream?	Field GPS Error (m)	GPS Final	K-WADE Station Update	Scouring Rain In Last 14 Days
Lat:	38.07998					Staff:	<input checked="" type="radio"/> Y <input type="radio"/> N
Long:	-83.11086	Y N	Y N			Date:	Now: Circle 1 HR SR IS CS CO SSH
							Past 24hr: HR SR IS CS CO SSH

Stream Shading		STREAM FLOW (Circle 1)		INSTREAM FEATURES		RIFFLE/RUN/POOL SEQ.	
Leafed Out?	Y N	Dry Pooled Low Seasonal Normal Above Normal Flood		Average Wetted Width (m):		# of riffles in reach	
General Shading (Circle 1)	Full Partial None			Maximum Depth (m):		# of runs in reach	
				Reach Length (m):		# of pools in reach	

LOCAL WATERSHED FEATURES (Major Land Use: Check all that are present)				CHANNEL ALTERATIONS- Full, Partial or Not/None			
Surface Mining		Construction		Pasture/Grazing		Dredging:	F P N
Deep Mining		Commercial		Silviculture		Channelization:	F P N
Oil Wells		Industrial		Urban Runoff		RIPARIAN VEGETATION	
Land Disposal		Row Crops		Storm Sewers		Dom. Veg. Type:	Herbs Grasses Shrubs Trees
Residential		Forest	<input checked="" type="checkbox"/>	Permitted Outfalls		Dom. Taxa:	# of Strata:

HYDRAULIC STRUCTURES (Check all that are present)							
Dams:		Bridge Abutments:		Fords:		Islands:	
						Waterfalls:	
						Berms:	

FIELD METER DATA							
Temp (°C):		DO (mg/l):		DO %Sat:		pH (SU):	
						Sp. Cond (µS/cm):	250
						Discharge CFS Uncert.:	

FIELD ACTIVITIES							
Activity Completed?		Collectors		Collection Information (Check all that apply and/or enter/circle necessary information)			
Algae:				QualMHC:		Visual Form:	
						R4MULTI:	
Fish:				Equip:	BPEF Seine Barge	EF Seconds:	
						Seine Minutes:	
Habitat:				Habitat data other than RBP?			
Invertebrate:				1m ² riffle + MH:		MACS 20-Jab:	
						Other:	
Multihabs Sampled Y/N or # Jabs		Undercuts/Roots:	Sticks/Wood:	Leaf Packs:	Water Willow:	Aufwuchs:	Supplemental:
		Bedrock/Hardpan:	Silt/Sand/Fine Gravel:	Rock Pick:	Emergent Veg:	Wood Sample:	
Chemistry:			H ₂ SO ₄ Lot #:		HNO ₃ Lot #:		
Multi-Probe:			Inst. ID:		Cal. Date:		
Discharge:			Inst. ID:		Beam Check:		
Other:			Other Desc:				

SUBSTRATE CHARACTERIZATION						Site Not Sampled (Reason) - Please Add Comments
Substrate Category	% Riffle:	% Run:	% Pool:		Reach Total	
Silt/Clay (<0.06 mm)						
Sand (0.06 - 2 mm)						
Gravel (2-64 mm)						
Cobble (64 - 256 mm)						
Boulders (>256 mm)						
Bedrock/Hardpan Clay						

Reach Location Description:		Weather Choices:	HR = Heavy Rain SR = Steady Rain IS = Intermittent Showers CS = Clear Sunny CO = Cloudy Overcast SSH = Snow Sleet
Initial Data Review By:		Initial Data Review Date:	Date Entered:

Habitat Parameter	Condition Category																				
	Optimal					Suboptimal					Marginal					Poor					
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
1. Epifaunal Substrate/ Available Cover 10 Score	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are <u>not</u> new fall and <u>not</u> transient).					40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of new fall, but not yet prepared for colonization (may rate at high end of scale).					20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.					Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.					
2. Embeddedness 8 Score	Gravel, cobble, boulder, and bedrock are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space					Gravel, cobble, boulder and bedrock are 25-50% surrounded by fine sediment.					Gravel, cobble, boulder, and bedrock are 50-75% surrounded by fine sediment.					Gravel, cobble, boulder, and bedrock are more than 75% surrounded by fine sediment.					
3. Velocity/ Depth Regime 2 Score	All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (Slow is <0.3 m/s, deep is >0.5 m.)					Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes).					Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low).					Dominated by 1 velocity/ depth regime (usually slow-deep).					
4. Sediment Deposition 9 Score	Little or no enlargement of islands or point bars and less than 5% (<20% for low-gradient streams) of the bottom affected by sediment deposition.					Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% (20-50% for low-gradient) of the bottom affected; slight deposition in pools.					Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% (50-80% for low-gradient) of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.					Heavy deposits of fine material, increased bar development; more than 50% (80% for low-gradient) of the bottom changing frequently; pools almost absent due to substantial sediment deposition.					
5. Channel Flow Status 7 Score	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.					Water fills >75% of the available channel; or <25% of channel substrate is exposed.					Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.					Very little water in channel and mostly present as standing pools.					
6. Channel Alteration 19 Score	Channelization or dredging absent or minimal; stream with normal pattern.					Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr.) may be present, but recent channelization is not present.					Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.					Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.					
7. Frequency of Riffles (or bends) 10 Score	Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important.					Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15.					Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25.					Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25.					
Left/Right Bank	10				9	8			7	6	5			4	3	2			1	0	
8. Bank Stability LB 10 ----- RB 10	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.					Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.					Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.					Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.					
9. Vegetative Protection LB 8 ----- RB 8	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.					70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.					50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.					Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.					
10. Riparian Vegetative Zone Width LB 9 ----- RB 9	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.					Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.					Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.					Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.					
Total Score: 119	Notes/Comments:																				
General Notes:																					
Sediment Notes:																					

Station Visit Information

Locale Name:	STR-14	Project:	KY 32	Trip:		County:	ELLIOTT
Station ID:		Loc. Desc.:	9-8802	Visit Date:	7/3/25		
Field Lead:		Primary Bioregion:		Secondary Bioregion:		Visit Start Time:	2:25
Team:	RL & SS	Stream Perm.	Eph	Int	Per	Stream Type (HW or WA):	
						Visit Finish Time:	

STATION POINT VERIFICATION

WEATHER

K-WADE Target Point	Field GPS Location	Nav. to Target Point Within GPS Error?	Target On Correct Stream?	Field GPS Error (m)	GPS Final	K-WADE Station Update	Scouring Rain In Last 14 Days	Y N
Lat:	38.07894					Staff:	Now: Circle 1	HR SR IS CS CO SSH
Long:	-83.10699	Y N	Y N			Date:	Past 24hr:	HR SR IS CS CO SSH

Stream Shading

STREAM FLOW (Circle 1)

INSTREAM FEATURES

RIFFLE/RUN/POOL SEQ.

Leafed Out?	Y N	Dry Pooled Low	Average Wetted Width (m):	# of riffles in reach
General Shading (Circle 1)	Full Partial None	Seasonal Normal	Maximum Depth (m):	# of runs in reach
		Above Normal Flood	Reach Length (m):	# of pools in reach

LOCAL WATERSHED FEATURES (Major Land Use: Check all that are present)

CHANNEL ALTERATIONS- Full, Partial or Not/None

Surface Mining	Construction	Pasture/Grazing	Dredging:	F P N	Channelization:	F P N
Deep Mining	Commercial	Silviculture	RIPARIAN VEGETATION			
Oil Wells	Industrial	Urban Runoff	Dom. Veg. Type:	Herbs Grasses	# of Strata:	
Land Disposal	Row Crops	Storm Sewers	Shrubs Trees			
Residential	Forest	Permitted Outfalls	Dom. Taxa:			

HYDRAULIC STRUCTURES (Check all that are present)

Dams:	Bridge Abutments:	Fords:	Islands:	Waterfalls:	Berms:
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FIELD METER DATA

Temp (°C):	DO (mg/l):	DO %Sat:	pH (SU):	Sp. Cond (µS/cm):	310	Discharge CFS Uncert.
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FIELD ACTIVITIES

Activity Completed?	Collectors	Collection Information (Check all that apply and/or enter/circle necessary information)				
Algae:		Qual/MHC:	Visual Form:	R4MULTI:	Other:	
Fish:		Equip:	BPEF Seine Barge	EF Seconds:	Seine Minutes:	
Habitat:		Habitat data other than RBP?				
Invertebrate:		1m ² riffle + MH:	MACS 20-Jab:	Other:		
Muldhabs Sampled Y/N or # Jabs	Undercuts/Roots:	Sticks/Wood:	Leaf Packs:	Water Willow:	Aufwuchs:	Supplemental:
	Bedrock/Hardpan:	Silt/Sand/Fine Gravel:	Rock Pick:	Emergent Veg:	Wood Sample:	
Chemistry:		H ₂ SO ₄ Lot #:		HNO ₃ Lot #:		
Multi-Probe:		Inst. ID:		Cal. Date:		
Discharge:		Inst. ID:		Beam Check:		
Other:		Other Desc:				

SUBSTRATE CHARACTERIZATION

Site Not Sampled (Reason) - Please Add Comments

Substrate Category	% Riffle:	% Run:	% Pool:	Reach Total
Silt/Clay (<0.06 mm)				
Sand (0.06 - 2 mm)				
Gravel (2-64 mm)				
Cobble (64 - 256 mm)				
Boulders (>256 mm)				
Bedrock/Hardpan Clay				

Land Owner Denial
Too Deep/Impounded
Site Not Found
Unsafe
Dry
Other (See Comments)

Reach Location Description:	Weather Choices:	HR = Heavy Rain SR = Steady Rain IS = Intermittent Showers CS = Clear Sunny CO = Cloudy Overcast SSH = Snow Sleet
Initial Data Review By:	Initial Data Review Date:	Date Entered:

Habitat Parameter	Condition Category																				
	Optimal					Suboptimal					Marginal				Poor						
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
1. Epifaunal Substrate/ Available Cover 13 Score	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are <u>not</u> new fall and <u>not</u> transient).					40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of new fall, but not yet prepared for colonization (may rate at high end of scale).					20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.				Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.						
2. Embeddedness 6 Score	Gravel, cobble, boulder, and bedrock are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space					Gravel, cobble, boulder and bedrock are 25-50% surrounded by fine sediment.					Gravel, cobble, boulder, and bedrock are 50-75% surrounded by fine sediment.				Gravel, cobble, boulder, and bedrock are more than 75% surrounded by fine sediment.						
3. Velocity/ Depth Regime 7 Score	All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (Slow is < 0.3 m/s, deep is > 0.5 m.)					Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes).					Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low).				Dominated by 1 velocity/ depth regime (usually slow-deep).						
4. Sediment Deposition 6 Score	Little or no enlargement of islands or point bars and less than 5% (<20% for low-gradient streams) of the bottom affected by sediment deposition.					Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% (20-50% for low-gradient) of the bottom affected; slight deposition in pools.					Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% (50-80% for low-gradient) of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.				Heavy deposits of fine material, increased bar development; more than 50% (80% for low-gradient) of the bottom changing frequently; pools almost absent due to substantial sediment deposition.						
5. Channel Flow Status 15 Score	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.					Water fills >75% of the available channel; or <25% of channel substrate is exposed.					Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.				Very little water in channel and mostly present as standing pools.						
6. Channel Alteration 14 Score	Channelization or dredging absent or minimal; stream with normal pattern.					Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr.) may be present, but recent channelization is not present.					Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.				Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.						
7. Frequency of Riffles (or bends) 15 Score	Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important.					Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15.					Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25.				Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25.						
Left/Right Bank	10	9				8	7	6			5	4	3			2	1				
8. Bank Stability LB 7 RB 7	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.					Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.					Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.				Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.						
9. Vegetative Protection LB 8 RB 8	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.					70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.					50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.				Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.						
10. Riparian Vegetative Zone Width LB 8 RB 3	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.					Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.					Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.				Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.						
Total Score: 117	Notes/Comments:																				
General Notes:																					
Sediment Notes:																					

Station Visit Information

Locale Name: BUTCHER BR.	Project: KY 32	Trip:	County: ELLIOTT
Station ID:	Loc. Desc.: BUTCHER BRANCH 9-8802	Visit Date: 7/3/25	
Field Lead:	Primary Bioregion:	Secondary Bioregion:	Visit Start Time: 11:22
Team: RL & SS	Stream Perm. Eph Int <u>Per</u>	Stream Type (HW or WA):	Visit Finish Time:

STATION POINT VERIFICATION

WEATHER

K-WADE Target Point	Field GPS Location	Nav. to Target Point Within GPS Error?	Target On Correct Stream?	Field GPS Error (m)	GPS Final	K-WADE Station Update	Scouring Rain In Last 14 Days	<u>Y</u> N
Lat:	38.07870					Staff:	Now: Circle 1	HR SR IS CS CO SSH
Long:	-83.10699	Y N	Y N			Date:	Past 24hr:	HR SR IS CS CO SSH

Stream Shading

STREAM FLOW (Circle 1)

INSTREAM FEATURES

RIFFLE/RUN/POOL SEQ.

Leafed Out?	Y N	Dry Pooled Low	Average Wetted Width (m):	# of riffles in reach
General Shading (Circle 1)	Full Partial None	<u>Seasonal Normal</u>	Maximum Depth (m):	# of runs in reach
		Above Normal Flood	Reach Length (m):	# of pools in reach

LOCAL WATERSHED FEATURES (Major Land Use: Check all that are present)

CHANNEL ALTERATIONS- Full, Partial or Not/None

Surface Mining	Construction	Pasture/Grazing	<input checked="" type="checkbox"/>	Dredging:	F P N	Channelization:	<u>(F)</u> P N
Deep Mining	Commercial	Silviculture		RIPARIAN VEGETATION			
Oil Wells	Industrial	Urban Runoff		Dom. Veg. Type:	Herbs Grasses	# of Strata:	
Land Disposal	Row Crops	Storm Sewers			Shrubs Trees		
Residential	<input checked="" type="checkbox"/> Forest	Permitted Outfalls	<input checked="" type="checkbox"/>	Dom. Taxa:	T. POPLAR, B. WALNUT, S. MAPLE		

HYDRAULIC STRUCTURES (Check all that are present)

Dams:	Bridge Abutments:	Fords:	Islands:	Waterfalls:	Berms:
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FIELD METER DATA

Temp (°C):	DO (mg/l):	DO %Sat:	pH (SU):	Sp. Cond (µS/cm):	370	Discharge CFS Uncert.
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FIELD ACTIVITIES

Activity Completed?	Collectors	Collection Information (Check all that apply and/or enter/circle necessary information)				
Algae:		Qual/MHC:	Visual Form:	R4MULTI:	Other:	
Fish:		Equip:	BPEF Seine Barge	EF Seconds:	Seine Minutes:	
Habitat:		Habitat data other than RBP?				
Invertebrate:		1m ² riffle + MH:	MACS 20-Jab:	Other:		
Multihabs Sampled Y/N or # Jabs	Undercuts/Roots: Sticks/Wood: Leaf Packs: Water Willow: Aufwuchs: Supplemental:	Bedrock/Hardpan: Silt/Sand/Fine Gravel: Rock Pick: Emergent Veg: Wood Sample:				
Chemistry:		H ₂ SO ₄ Lot #:		HNO ₃ Lot #:		
Multi-Probe:		Inst. ID:		Cal. Date:		
Discharge:		Inst. ID:		Beam Check:		
Other:		Other Desc:				

SUBSTRATE CHARACTERIZATION

Site Not Sampled (Reason) - Please Add Comments

Substrate Category	% Riffle:	% Run:	% Pool:	Reach Total
Silt/Clay (<0.06 mm)				
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Cobble (64 - 256 mm)				
Boulders (>256 mm)				
Bedrock/Hardpan Clay				

Land Owner Denial
Too Deep/Impounded
Site Not Found
Unsafe
Dry
Other (See Comments)

Reach Location Description:	Weather Choices:	HR = Heavy Rain SR = Steady Rain IS = Intermittent Showers CS = Clear Sunny CO = Cloudy Overcast SSH = Snow Sleet
Initial Data Review By:	Initial Data Review Date:	Date Entered:

Habitat Parameter	Condition Category																				
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SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
1. Epifaunal Substrate/ Available Cover 11 Score	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are <u>not</u> new fall and <u>not</u> transient).					40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of new fall, but not yet prepared for colonization (may rate at high end of scale).					20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.					Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.					
2. Embeddedness 12 Score	Gravel, cobble, boulder, and bedrock are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space					Gravel, cobble, boulder and bedrock are 25-50% surrounded by fine sediment.					Gravel, cobble, boulder, and bedrock are 50-75% surrounded by fine sediment.					Gravel, cobble, boulder, and bedrock are more than 75% surrounded by fine sediment.					
3. Velocity/ Depth Regime 9 Score	All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (Slow is < 0.3 m/s, deep is > 0.5 m.)					Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes).					Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low).					Dominated by 1 velocity/ depth regime (usually slow-deep).					
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5. Channel Flow Status 16 Score	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.					Water fills >75% of the available channel; or <25% of channel substrate is exposed.					Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.					Very little water in channel and mostly present as standing pools.					
6. Channel Alteration 12 Score	Channelization or dredging absent or minimal; stream with normal pattern.					Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr.) may be present, but recent channelization is not present.					Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.					Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.					
7. Frequency of Riffles (or bends) 16 Score	Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important.					Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15.					Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25.					Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25.					
Left/Right Bank	10 9					8 7 6					5 4 3					2 1 0					
8. Bank Stability LB 7 RB 7	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.					Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.					Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.					Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.					
9. Vegetative Protection LB 8 RB 8	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.					70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.					50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.					Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.					
10. Riparian Vegetative Zone Width LB 2 RB 2	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.					Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.					Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.					Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.					

Total Score: 123 Notes/Comments: FISH IN CHANNEL BELOW CULVERT

General Notes:

Sediment Notes:

Project/Site: KYTC Item #: 9-8802, KY-32 Relocation City/County: Elliot Sampling Date: 6-12-25
 Applicant/Owner: KYTC State: KY Sampling Point: W-1 PEM
 Investigator(s): Scott Slankard, Hunter Loyall Section, Township, Range: NA
 Landform (hillside, terrace, etc.): Terrace Local relief (concave, convex, none): concave Slope (%): 30-60
 Subregion (LRR or MLRA): LRR N Lat: 38.08299 Long: -83.12072 Datum: NAD83
 Soil Map Unit Name: Shelocta-Handshoe-Feds creek complex, 30-60 percent slopes, stony NWI classification: NA
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation N, Soil N, or Hydrology N 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 <u>X</u> No <u> </u> Hydric Soil Present? Yes <u>X</u> No <u> </u> Wetland Hydrology Present? Yes <u>X</u> No <u> </u>	Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u>
Remarks: A significant portion of this wetland was heavily disturbed by recent logging activities.	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input checked="" type="checkbox"/> Surface Water (A1) <input type="checkbox"/> True Aquatic Plants (B14) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13)	<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input checked="" type="checkbox"/> FAC-Neutral Test (D5)
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Field Observations: Surface Water Present? Yes <u>X</u> No <u> </u> Depth (inches): <u>1</u> Water Table Present? Yes <u>X</u> No <u> </u> Depth (inches): <u>0</u> Saturation Present? Yes <u>X</u> No <u> </u> Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No <u> </u>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: W-1 PEM

Tree Stratum (Plot size: <u>5'x5'</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>None</u>			
2. _____			
3. _____			
4. _____			
5. _____			
6. _____			
7. _____			
_____ = Total Cover			
50% of total cover: _____ 20% of total cover: _____			

Sapling/Shrub Stratum (Plot size: <u>5'x5'</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>None</u>			
2. _____			
3. _____			
4. _____			
5. _____			
6. _____			
7. _____			
8. _____			
9. _____			
_____ = Total Cover			
50% of total cover: _____ 20% of total cover: _____			

Herb Stratum (Plot size: <u>5'x5'</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Arthraxon hispidus</u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>
2. <u>Juncus effusus</u>	<u>30</u>	<u>Yes</u>	<u>FACW</u>
3. <u>Juncus marginatus</u>	<u>10</u>	<u>No</u>	<u>FACW</u>
4. <u>Ludwigia palustris</u>	<u>10</u>	<u>No</u>	<u>OBL</u>
5. <u>Carex vulpinoidea</u>	<u>5</u>	<u>No</u>	<u>OBL</u>
6. _____			
7. _____			
8. _____			
9. _____			
10. _____			
11. _____			
_____ = Total Cover			
50% of total cover: <u>43</u> 20% of total cover: <u>17</u>			

Woody Vine Stratum (Plot size: <u>5'x5'</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>None</u>			
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 _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)
Prevalence Index = B/A = _____	

Hydrophytic Vegetation Indicators:

 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

 3 - Prevalence Index is ≤3.0¹

 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

 Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators 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.)
 Plot sizes for trees, sapling/shrub, and woody vines altered due to small size and shape of wetland.

SOIL

Sampling Point: W-1 PEM

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR 3/2	90	10YR 5/6	10	C	M	Mucky Loam/Clay	Prominent redox concentrations

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: 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 Soils³:

- 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)

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

Restrictive Layer (if observed):

Type: bedrock
 Depth (inches): 3

Hydric Soil Present? Yes No

Remarks:

Project/Site: KYTC Item #: 9-8802, KY-32 Relocation City/County: Elliot Sampling Date: 6-12-25
 Applicant/Owner: KYTC State: KY Sampling Point: W-1 PSS
 Investigator(s): Scott Slankard, Hunter Loyall Section, Township, Range: NA
 Landform (hillside, terrace, etc.): Terrace Local relief (concave, convex, none): concave Slope (%): 30-60
 Subregion (LRR or MLRA): LRR N Lat: 38.08281 Long: -83.12012 Datum: NAD83
 Soil Map Unit Name: Shelocta-Handshoe-Feds creek complex, 30-60 percent slopes, stony NWI classification: NA
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation N, Soil N, or Hydrology N 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 <u>X</u> No <u> </u> Hydric Soil Present? Yes <u>X</u> No <u> </u> Wetland Hydrology Present? Yes <u>X</u> No <u> </u>	Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u>
Remarks: A significant portion of this wetland was heavily disturbed by recent logging activities.	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ True Aquatic Plants (B14) ___ High Water Table (A2) ___ Hydrogen Sulfide Odor (C1) <u>X</u> Saturation (A3) <u>X</u> Oxidized Rhizospheres on Living Roots (C3) ___ Water Marks (B1) ___ Presence of Reduced Iron (C4) ___ Sediment Deposits (B2) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Drift Deposits (B3) ___ Thin Muck Surface (C7) ___ Algal Mat or Crust (B4) ___ Other (Explain in Remarks) ___ Iron Deposits (B5) ___ Inundation Visible on Aerial Imagery (B7) ___ Water-Stained Leaves (B9) ___ Aquatic Fauna (B13)	<u>Secondary Indicators (minimum of two required)</u> ___ 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) <u>X</u> FAC-Neutral Test (D5)
--	---

Field Observations: Surface Water Present? Yes <u> </u> No <u>X</u> Depth (inches): <u>1</u> Water Table Present? Yes <u> </u> No <u>X</u> Depth (inches): <u>0</u> Saturation Present? Yes <u>X</u> No <u> </u> Depth (inches): <u>6</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No <u> </u>
---	---

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

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: W-1 PSS

Tree Stratum (Plot size: <u>5'x10'</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Populus deltoides</u>	<u>5</u>	<u>Yes</u>	<u>FAC</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
	<u>5</u> =Total Cover		
	50% of total cover: <u>3</u>	20% of total cover: <u>1</u>	

Sapling/Shrub Stratum (Plot size: <u>5'x10'</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Salix nigra</u>	<u>25</u>	<u>Yes</u>	<u>OBL</u>
2. <u>Platanus occidentalis</u>	<u>25</u>	<u>Yes</u>	<u>FACW</u>
3. <u>Acer saccharum</u>	<u>1</u>	<u>No</u>	<u>FACU</u>
4. <u>Elaeagnus umbellata</u>	<u>1</u>	<u>No</u>	<u>UPL</u>
5. <u>Ulmus</u>	<u>1</u>	<u>No</u>	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
	<u>53</u> =Total Cover		
	50% of total cover: <u>27</u>	20% of total cover: <u>11</u>	

Herb Stratum (Plot size: <u>5'x5'</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>None</u>	_____	_____	_____
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: <u>5'x10'</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>None</u>	_____	_____	_____
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 _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)
Prevalence Index = B/A = _____	

Hydrophytic Vegetation Indicators:

1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is >50%

3 - Prevalence Index is ≤3.0¹

4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

 Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators 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 _____

Remarks: (Include photo numbers here or on a separate sheet.)
 Plot sizes for trees, sapling/shrub, and woody vines altered due to small size and shape of wetland. Recent logging activities had impacted the soil, hydrology and vegetation within the wetland. As a result, no herbaceous vegetation was present.

SOIL

Sampling Point: W-1 PSS

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	10YR 4/1	85	10YR 4/6	15	C	M	Mucky Loam/Clay	Prominent redox concentrations

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: 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 Soils³:

- 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)

³Indicators 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

Remarks:

Project/Site: KYTC Item #: 9-8802, KY-32 Relocation City/County: Elliot Sampling Date: 6-12-25
 Applicant/Owner: KYTC State: KY Sampling Point: W-1 UPL
 Investigator(s): Scott Slankard, Hunter Loyall Section, Township, Range: NA
 Landform (hillside, terrace, etc.): Terrace Local relief (concave, convex, none): concave Slope (%): 30-60
 Subregion (LRR or MLRA): LRR N Lat: 38.08301 Long: -83.12063 Datum: NAD83
 Soil Map Unit Name: Shelocta-Handshoe-Feds creek complex, 30-60 percent slopes, stony NWI classification: NA
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation N, Soil N, or Hydrology N 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 <u> </u>	No <u>X</u>	Is the Sampled Area within a Wetland? Yes <u> </u> No <u>X</u>
Hydric Soil Present?	Yes <u> </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u> </u>	No <u>X</u>	

Remarks:
 A significant portion of this wetland was heavily disturbed by recent logging activities.

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ True Aquatic Plants (B14) ___ High Water Table (A2) ___ Hydrogen Sulfide Odor (C1) ___ Saturation (A3) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Water Marks (B1) ___ Presence of Reduced Iron (C4) ___ Sediment Deposits (B2) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Drift Deposits (B3) ___ Thin Muck Surface (C7) ___ Algal Mat or Crust (B4) ___ Other (Explain in Remarks) ___ Iron Deposits (B5) ___ Inundation Visible on Aerial Imagery (B7) ___ Water-Stained Leaves (B9) ___ Aquatic Fauna (B13)	<u>Secondary Indicators (minimum of two required)</u> ___ 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 <u> </u> No <u>X</u> Depth (inches): <u> </u> Water Table Present? Yes <u> </u> No <u>X</u> Depth (inches): <u> </u> Saturation Present? Yes <u> </u> No <u>X</u> Depth (inches): <u> </u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u> </u> No <u>X</u>
--	---

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

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: W-1 UPL

Tree Stratum (Plot size: <u>5'x5'</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>None</u>			
2. _____			
3. _____			
4. _____			
5. _____			
6. _____			
7. _____			
_____ = Total Cover			
50% of total cover: _____ 20% of total cover: _____			

Sapling/Shrub Stratum (Plot size: <u>5'x5'</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>None</u>			
2. _____			
3. _____			
4. _____			
5. _____			
6. _____			
7. _____			
8. _____			
9. _____			
_____ = Total Cover			
50% of total cover: _____ 20% of total cover: _____			

Herb Stratum (Plot size: <u>5'x5'</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Anthoxanthum odoratum</u>	<u>25</u>	<u>Yes</u>	<u>FACU</u>
2. <u>Solidago</u>	<u>25</u>	<u>Yes</u>	
3. <u>Microstegium vimineum</u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>
4. <u>Bromus</u>	<u>15</u>	<u>No</u>	
5. <u>Juncus marginatus</u>	<u>5</u>	<u>No</u>	<u>FACW</u>
6. <u>Desmodium</u>	<u>5</u>	<u>No</u>	
7. _____			
8. _____			
9. _____			
10. _____			
11. _____			
_____ = Total Cover			
50% of total cover: <u>50</u> 20% of total cover: <u>20</u>			

Woody Vine Stratum (Plot size: <u>5'x5'</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>None</u>			
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 _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)
Prevalence Index = B/A = _____	

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0¹

___ 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators 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.)
 Plot sizes for trees, sapling/shrub, and woody vines altered to stay in upland.

SOIL

Sampling Point: W-1 UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	10YR 4/3	100					Loamy/Clayey	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: 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 Soils³:

- 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)

³Indicators 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:

APPENDIX H
JURISDICTIONAL DETERMINATION FORMS

U.S. Army Corps of Engineers (USACE)
PRELIMINARY JURISDICTIONAL DETERMINATION (PJD)

For use of this form, see Sec 404 CWA, Sec 10 RHA, Sec 103 MPRSA;
the proponent agency is CECW-COR.

Form Approved -
OMB No. 0710-0024
Expires 2027-09-30

DATA REQUIRED BY THE PRIVACY ACT OF 1974

Authority Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Program of the U.S. Army Corps of Engineers; Final Rule for 33 CFR Parts 320-332.

Principal Purpose This form is used by USACE staff in evaluating your request to determine whether there are any aquatic resources within the review area that may be subject to federal jurisdiction under the regulatory authorities referenced above.

Routine Uses This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public, and may be made available as part of a public notice or FOIA request as required by federal law. Your name and property location where federal jurisdiction is to be determined will be included in any resulting jurisdictional determination (JD), which may be made available to the public on the District's website and/or on the Headquarters USACE website.

Disclosure Submission of requested information is voluntary; however, if information is not provided, the request for a JD cannot be evaluated nor can a PJD be issued.

The Agency Disclosure Notice (ADN)

The public reporting burden for this collection of information, 0710-0024, is estimated to average 25 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or burden reduction suggestions to the Department of Defense, Washington Headquarters Services, at whs.mc-alex.esd.mbx.dd-dod-information-collections@mail.mil. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

SECTION I - BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR PJD:

B. NAME AND ADDRESS OF PERSON REQUESTING PJD:

Kentucky Transportation Cabinet (Attn. Adam Michels), 200 Mero Street, Frankfort, KY 40622

C. DISTRICT OFFICE, FILE NAME, AND NUMBER:

D. PROJECT LOCATION AND BACKGROUND INFORMATION:

(USE THE TABLE BELOW TO DOCUMENT MULTIPLE AQUATIC RESOURCES AND/OR AQUATIC RESOURCES AT DIFFERENT SITES)

State: Kentucky County/Parish/Borough: Elliott City: Sandy Hook

Center coordinates of site (lat/long in degree decimal format): Latitude: 38.08078 ° Longitude: -83.11373 °

Universal Transverse Mercator: _____

Name of nearest waterbody: Butcher Branch

E. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

Office (Desk) Determination. Date: _____

Field Determination

Date(s): _____

TABLE OF AQUATIC RESOURCES IN REVIEW AREA WHICH "MAY BE" SUBJECT TO REGULATORY JURISDICTION.

Site Number	Latitude (decimal degrees)	Longitude (decimal degrees)	Estimated amount of aquatic resource in review area (acreage and linear feet, if applicable)	Type of aquatic resource (i.e., wetland vs. non-wetland waters)	Geographic authority to which the aquatic resource "may be" subject (i.e., Section 404 or Section 10/404)
		See	Attached	Table	

Site Number	Latitude (decimal degrees)	Longitude (decimal degrees)	Estimated amount of aquatic resource in review area (acreage and linear feet, if applicable)	Type of aquatic resource (i.e., wetland vs. non-wetland waters)	Geographic authority to which the aquatic resource "may be" subject (i.e., Section 404 or Section 10/404)

1) The Corps of Engineers believes that there may be jurisdictional aquatic resources in the review area, and the requestor of this PJD is hereby advised of his or her option to request and obtain an approved JD (AJD) for that review area based on an informed decision after having discussed the various types of JDs and their characteristics and circumstances when they may be appropriate.

2) In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "preconstruction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an AJD for the activity, the permit applicant is hereby made aware that: (1) the permit applicant has elected to seek a permit authorization based on a PJD or no JD whatsoever, which do not make an official determination of jurisdictional aquatic resources; (2) the applicant has the option to request an AJD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an AJD could possibly result in less compensatory mitigation being required or different special conditions; (3) the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the USACE has determined to be necessary; (5) undertaking any activity in reliance upon the subject permit authorization without requesting an AJD constitutes the applicant's acceptance of the use of the PJD or reliance on no JD whatsoever; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of USACE permit authorization based on a PJD or no JD whatsoever constitutes agreement that all aquatic resources in the review area affected in any way by that activity will be treated as jurisdictional, and waives any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an AJD or a PJD, the JD will be processed as soon as practicable. Further, an AJD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331. If, during an administrative appeal, it becomes appropriate to make an official determination whether geographic jurisdiction exists over aquatic resources in the review area, or to provide an official delineation of jurisdictional aquatic resources in the review area, the USACE will provide an AJD to accomplish that result, as soon as is practicable. This PJD finds that there "may be" waters of the U.S. and/or that there "may be" navigable waters of the U.S. on the subject review area, and identifies all aquatic features in the review area that could be affected by the proposed activity, based on the following information:

F. SUPPORTING DATA. Data reviewed for PJD (check all that apply)

Checked items should be included in subject file. Appropriately reference sources below where indicated for all checked items:

Maps, plans, plots or plat submitted by or on behalf of the PJD requestor:

Map: Delineated Features Maps Attached

Data sheets prepared/submitted by or on behalf of the PJD requestor.

Office concurs with data sheets/delineation report.

Office does not concur with data sheets/delineation report.

Rationale: _____

Data sheets prepared by the USACE:

Corps navigable waters' study:

U.S. Geological Survey Hydrologic Atlas:

- USGS NHD data.
- USGS 8 and 12 digit HUC maps.
- U.S. Geological Survey map(s). Cite scale & quad name:
7.5-minute Isonville, KY

USDA Natural Resources Conservation Service Soil Survey.
Citation: Web Soil Survey (SSURGO)

National Wetlands Inventory map(s).
Cite Name: _____

State/Local Wetland Inventory map(s):
Kentucky Statewide GIS Layer

FEMA/FIRM maps:

100-year Floodplain Elevation is: _____ . (National Geodectic Vertical Datum of 1929)

Photographs: Aerial (*Name & Date*): KY APED 3-inch Color Aerial
 or Other (*Name & Date*): Site Photographs Attached

Previous determination(s). File no. and date of response letter:

Other information (*please specify*):
NJD/NRPW S-03e, S-05e, S-07e, & S-12e are included on AJD forms.

IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the USACE and should not be relied upon for later jurisdictional determinations.

Name of Regulatory Staff Member Completing PJD	Date	Signature of Regulatory Staff Member Completing PJD
Name of Person Requesting PJD	Date	Signature of Person Requesting PJD (<i>REQUIRED, unless obtaining the Signature is Impracticable</i>)
Rick Larsen	2025-08-25	Rick Larsen  Digitally signed by Rick Larsen Date: 2025.08.25 16:49:04 -04'00'

¹ Districts may establish timeframes for requester to return signed PJD forms. If the requester does not respond within the established time frame, the district may presume concurrence and no additional follow up is necessary prior to finalizing an action.

TABLE OF AQUATIC RESOURCES IN REVIEW AREA WHICH "MAY BE" SUBJECT TO REGULATORY JURISDICTION.

Site number	Latitude (decimal degrees)	Longitude (decimal degrees)	Estimated amount of aquatic resource in review area (acreage and linear feet, if applicable)	Type of aquatic resource (i.e., wetland vs. non-wetland waters)	Geographic authority to which the aquatic resource "may be" subject (i.e., Section 404 or Section 10/404)
W-1	38.082766	-83.120156	0.246-ac.	Wetland PEM	Section 404
W-1	38.082867	-83.120245	0.016-ac.	Wetland PSS	Section 404
Butcher Branch	38.078817	-83.107213	1,154 l.f.	Non-Wetland PER	Section 404
S-01	38.083647	-83.121396	1,224 l.f.	Non-Wetland INT	Section 404
S-04	38.082825	-83.120241	249 l.f.	Non-Wetland INT	Section 404
S-06	38.081607	-83.114576	265 l.f.	Non-Wetland INT	Section 404
S-08	38.081082	-83.112958	447 l.f.	Non-Wetland INT	Section 404
S-10	38.078897	-83.104844	170 l.f.	Non-Wetland INT	Section 404
S-11	38.079088	-83.109549	300 l.f.	Non-Wetland INT	Section 404
S-13	38.079957	-83.110940	376 l.f.	Non-Wetland INT	Section 404
S-14	38.078914	-83.106988	145 l.f.	Non-Wetland INT	Section 404

APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD):

B. DISTRICT OFFICE, FILE NAME, AND NUMBER:

C. PROJECT LOCATION AND BACKGROUND INFORMATION:

State: KY County/parish/borough: Elliot City: Sandy Hook
Center coordinates of site (lat/long in degree decimal format): Lat. 38.08078° **N**, Long. -83.11373° **W**.
Universal Transverse Mercator:

Name of nearest waterbody: Butcher Branch

Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Ohio River

Name of watershed or Hydrologic Unit Code (HUC): 5090104010050

Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.

Check if other sites (e.g., offsite mitigation sites, disposal sites, etc...) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

Office (Desk) Determination. Date:

Field Determination. Date(s):

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There **Are no** "navigable waters of the U.S." within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [Required]

Waters subject to the ebb and flow of the tide.

Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.

Explain: .

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There **Are no** "waters of the U.S." within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [Required]

1. Waters of the U.S.

a. Indicate presence of waters of U.S. in review area (check all that apply):¹

- TNWs, including territorial seas
- Wetlands adjacent to TNWs
- Relatively permanent waters² (RPWs) that flow directly or indirectly into TNWs
- Non-RPWs that flow directly or indirectly into TNWs
- Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
- Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
- Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
- Impoundments of jurisdictional waters
- Isolated (interstate or intrastate) waters, including isolated wetlands

b. Identify (estimate) size of waters of the U.S. in the review area:

Non-wetland waters: linear feet: width (ft) and/or acres.

Wetlands: acres.

c. Limits (boundaries) of jurisdiction based on: **Pick List**

Elevation of established OHWM (if known): Undetermined.

2. Non-regulated waters/wetlands (check if applicable):³

- Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional. Explain: **Stream S-03e is a 1st order, ephemeral stream near the beginning of the project. Stream S-03e generally flows west into Stream S-01i, which flows into the Little Sandy River. It has a bankful depth of approximately 6 inches and width of one foot. Stream S-03e was dry during field delineations and does not contribute relatively permanent flow to downstream waters, so is not considered jurisdictional. See attached photo log for a picture of Stream S-03e. Additionally, other streams and one wetland on the project site are covered separately under a PJD.**

¹ Boxes checked below shall be supported by completing the appropriate sections in Section III below.

² For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).

³ Supporting documentation is presented in Section III.F.

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. TNW

Identify TNW: .

Summarize rationale supporting determination: .

2. Wetland adjacent to TNW

Summarize rationale supporting conclusion that wetland is “adjacent”:

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are “relatively permanent waters” (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody⁴ is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. Characteristics of non-TNWs that flow directly or indirectly into TNW

(i) General Area Conditions:

Watershed size: **Pick List**

Drainage area: **Pick List**

Average annual rainfall: inches

Average annual snowfall: inches

(ii) Physical Characteristics:

(a) Relationship with TNW:

Tributary flows directly into TNW.

Tributary flows through **Pick List** tributaries before entering TNW.

Project waters are **Pick List** river miles from TNW.

Project waters are **Pick List** river miles from RPW.

Project waters are **Pick List** aerial (straight) miles from TNW.

Project waters are **Pick List** aerial (straight) miles from RPW.

Project waters cross or serve as state boundaries. Explain: .

Identify flow route to TNW⁵: .

Tributary stream order, if known: .

⁴ Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.

⁵ Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

(b) General Tributary Characteristics (check all that apply):

- Tributary is:** Natural
 Artificial (man-made). Explain: _____
 Manipulated (man-altered). Explain: _____

Tributary properties with respect to top of bank (estimate):

- Average width: _____ feet
Average depth: _____ feet
Average side slopes: **Pick List**.

Primary tributary substrate composition (check all that apply):

- | | | |
|--|--|-----------------------------------|
| <input type="checkbox"/> Silts | <input type="checkbox"/> Sands | <input type="checkbox"/> Concrete |
| <input type="checkbox"/> Cobbles | <input type="checkbox"/> Gravel | <input type="checkbox"/> Muck |
| <input type="checkbox"/> Bedrock | <input type="checkbox"/> Vegetation. Type/% cover: _____ | |
| <input type="checkbox"/> Other. Explain: _____ | | |

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: _____

Presence of run/riffle/pool complexes. Explain: _____

Tributary geometry: **Pick List**

Tributary gradient (approximate average slope): _____ %

(c) Flow:

Tributary provides for: **Pick List**

Estimate average number of flow events in review area/year: **Pick List**

Describe flow regime: _____

Other information on duration and volume: _____

Surface flow is: **Pick List. Characteristics:** _____

Subsurface flow: **Pick List. Explain findings:** _____

Dye (or other) test performed: _____

Tributary has (check all that apply):

- | | |
|---|---|
| <input type="checkbox"/> Bed and banks | |
| <input type="checkbox"/> OHWM ⁶ (check all indicators that apply): | |
| <input type="checkbox"/> clear, natural line impressed on the bank | <input type="checkbox"/> the presence of litter and debris |
| <input type="checkbox"/> changes in the character of soil | <input type="checkbox"/> destruction of terrestrial vegetation |
| <input type="checkbox"/> shelving | <input type="checkbox"/> the presence of wrack line |
| <input type="checkbox"/> vegetation matted down, bent, or absent | <input type="checkbox"/> sediment sorting |
| <input type="checkbox"/> leaf litter disturbed or washed away | <input type="checkbox"/> scour |
| <input type="checkbox"/> sediment deposition | <input type="checkbox"/> multiple observed or predicted flow events |
| <input type="checkbox"/> water staining | <input type="checkbox"/> abrupt change in plant community |
| <input type="checkbox"/> other (list): _____ | |
| <input type="checkbox"/> Discontinuous OHWM. ⁷ Explain: _____ | |

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):

- | | |
|--|--|
| <input checked="" type="checkbox"/> High Tide Line indicated by: | <input checked="" type="checkbox"/> Mean High Water Mark indicated by: |
| <input type="checkbox"/> oil or scum line along shore objects | <input type="checkbox"/> survey to available datum; |
| <input type="checkbox"/> fine shell or debris deposits (foreshore) | <input type="checkbox"/> physical markings; |
| <input type="checkbox"/> physical markings/characteristics | <input type="checkbox"/> vegetation lines/changes in vegetation types. |
| <input type="checkbox"/> tidal gauges | |
| <input type="checkbox"/> other (list): _____ | |

(iii) **Chemical Characteristics:**

Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).

Explain: _____

Identify specific pollutants, if known: _____

⁶A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.

⁷Ibid.

(iv) **Biological Characteristics. Channel supports (check all that apply):**

- Riparian corridor. Characteristics (type, average width):
- Wetland fringe. Characteristics:
- Habitat for:
 - Federally Listed species. Explain findings:
 - Fish/spawn areas. Explain findings:
 - Other environmentally-sensitive species. Explain findings:
 - Aquatic/wildlife diversity. Explain findings:

2. **Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW**

(i) **Physical Characteristics:**

(a) General Wetland Characteristics:

Properties:

Wetland size: acres

Wetland type. Explain:

Wetland quality. Explain:

Project wetlands cross or serve as state boundaries. Explain:

(b) General Flow Relationship with Non-TNW:

Flow is: **Pick List**. Explain:

Surface flow is: **Pick List**

Characteristics:

Subsurface flow: **Pick List**. Explain findings:

Dye (or other) test performed:

(c) Wetland Adjacency Determination with Non-TNW:

Directly abutting

Not directly abutting

Discrete wetland hydrologic connection. Explain:

Ecological connection. Explain:

Separated by berm/barrier. Explain:

(d) Proximity (Relationship) to TNW

Project wetlands are **Pick List** river miles from TNW.

Project waters are **Pick List** aerial (straight) miles from TNW.

Flow is from: **Pick List**.

Estimate approximate location of wetland as within the **Pick List** floodplain.

(ii) **Chemical Characteristics:**

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain:

Identify specific pollutants, if known:

(iii) **Biological Characteristics. Wetland supports (check all that apply):**

- Riparian buffer. Characteristics (type, average width):
- Vegetation type/percent cover. Explain:
- Habitat for:
 - Federally Listed species. Explain findings:
 - Fish/spawn areas. Explain findings:
 - Other environmentally-sensitive species. Explain findings:
 - Aquatic/wildlife diversity. Explain findings:

3. **Characteristics of all wetlands adjacent to the tributary (if any)**

All wetland(s) being considered in the cumulative analysis: **Pick List**

Approximately () acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

Directly abuts? (Y/N) Size (in acres) Directly abuts? (Y/N) Size (in acres)

Summarize overall biological, chemical and physical functions being performed: .

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D: .
2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .
3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:

- TNWs: linear feet width (ft), Or, acres.
 Wetlands adjacent to TNWs: acres.

2. **RPWs that flow directly or indirectly into TNWs.**

- Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial: .
- Tributaries of TNW where tributaries have continuous flow “seasonally” (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally: .

Provide estimates for jurisdictional waters in the review area (check all that apply):

- Tributary waters: linear feet width (ft).
 Other non-wetland waters: acres.

Identify type(s) of waters: .

3. Non-RPWs⁸ that flow directly or indirectly into TNWs.

- Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional waters within the review area (check all that apply):

- Tributary waters: linear feet width (ft).
 Other non-wetland waters: acres.

Identify type(s) of waters: .

4. Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.

- Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.
 Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

- Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

5. Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.

- Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

6. Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.

- Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional wetlands in the review area: acres.

7. Impoundments of jurisdictional waters.⁹

As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.

- Demonstrate that impoundment was created from "waters of the U.S.," or
 Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
 Demonstrate that water is isolated with a nexus to commerce (see E below).

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):¹⁰

- which are or could be used by interstate or foreign travelers for recreational or other purposes.
 from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
 which are or could be used for industrial purposes by industries in interstate commerce.
 Interstate isolated waters. Explain: .
 Other factors. Explain: .

Identify water body and summarize rationale supporting determination: .

⁸See Footnote # 3.

⁹To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.

¹⁰Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA Memorandum Regarding CWA Act Jurisdiction Following Rapanos.

Provide estimates for jurisdictional waters in the review area (check all that apply):

- Tributary waters: linear feet width (ft).
- Other non-wetland waters: acres.
- Identify type(s) of waters: .
- Wetlands: acres.

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):

- If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
- Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
 - Prior to the Jan 2001 Supreme Court decision in "SWANCC," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
- Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: .
- Other: (explain, if not covered above): **Stream S-03e is a 1st order ephemeral channel that does not demonstrate relatively permanent flow within the reach and is considered a non-relatively permanent water and therefore does not meet the definition of an (a)(3) tributary.**

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):

- Non-wetland waters (i.e., rivers, streams): linear feet width (ft).
- Lakes/ponds: acres.
- Other non-wetland waters: acres. List type of aquatic resource: .
- Wetlands: acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):

- Non-wetland waters (i.e., rivers, streams): **302** linear feet, **1** width (ft).
- Lakes/ponds: acres.
- Other non-wetland waters: acres. List type of aquatic resource: .
- Wetlands: acres.

SECTION IV: DATA SOURCES.

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):

- Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: .
- Data sheets prepared/submitted by or on behalf of the applicant/consultant.
 - Office concurs with data sheets/delineation report.
 - Office does not concur with data sheets/delineation report.
- Data sheets prepared by the Corps: .
- Corps navigable waters' study: .
- U.S. Geological Survey Hydrologic Atlas: .
 - USGS NHD data.
 - USGS 8 and 12 digit HUC maps.
- U.S. Geological Survey map(s). Cite scale & quad name: 7.5-minute Isonville, KY topographic quadrangle.
- USDA Natural Resources Conservation Service Soil Survey. Citation: Web Soil Survey (SSURGO) Available: <https://websoilsurvey.nrcs.usda.gov/app/>.
- National wetlands inventory map(s). Cite name: .
- State/Local wetland inventory map(s): Kentucky statewide GIS layer.
- FEMA/FIRM maps: .
- 100-year Floodplain Elevation is: (National Geodetic Vertical Datum of 1929)
- Photographs: Aerial (Name & Date): KY APED 3-inch color aerial, 2022-2024.
 - or Other (Name & Date): Applicant photos, June 12, 2025.
- Previous determination(s). File no. and date of response letter: .
- Applicable/supporting case law: .
- Applicable/supporting scientific literature: .
- Other information (please specify): .

B. ADDITIONAL COMMENTS TO SUPPORT JD: .

APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD):

B. DISTRICT OFFICE, FILE NAME, AND NUMBER:

C. PROJECT LOCATION AND BACKGROUND INFORMATION:

State: KY County/parish/borough: Elliot City: Sandy Hook
Center coordinates of site (lat/long in degree decimal format): Lat. 38.08078° **N**, Long. -83.11373° **W**.
Universal Transverse Mercator:

Name of nearest waterbody: Butcher Branch

Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Ohio River

Name of watershed or Hydrologic Unit Code (HUC): 5090104010050

Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.

Check if other sites (e.g., offsite mitigation sites, disposal sites, etc...) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

Office (Desk) Determination. Date:

Field Determination. Date(s):

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There **Are no** "navigable waters of the U.S." within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [Required]

Waters subject to the ebb and flow of the tide.

Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.

Explain: .

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There **Are no** "waters of the U.S." within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [Required]

1. Waters of the U.S.

a. Indicate presence of waters of U.S. in review area (check all that apply):¹

- TNWs, including territorial seas
- Wetlands adjacent to TNWs
- Relatively permanent waters² (RPWs) that flow directly or indirectly into TNWs
- Non-RPWs that flow directly or indirectly into TNWs
- Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
- Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
- Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
- Impoundments of jurisdictional waters
- Isolated (interstate or intrastate) waters, including isolated wetlands

b. Identify (estimate) size of waters of the U.S. in the review area:

Non-wetland waters: linear feet: width (ft) and/or acres.

Wetlands: acres.

c. Limits (boundaries) of jurisdiction based on: **Pick List**

Elevation of established OHWM (if known): Undetermined.

2. Non-regulated waters/wetlands (check if applicable):³

- Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional. Explain: **Stream S-05e is a 1st order, ephemeral stream near the middle of the project. Stream S-05e generally flows north into intermittent Stream S-01i, which flows into the Little Sandy River. It has a bankful depth of approximately 6 inches and width of five feet, Stream S-05e was dry during field delineations and does not contribute relatively permanent flow to downstream waters, so is not considered jurisdictional. See attached photo log for a picture of Stream S-05e. Additionally, other streams and one wetland on the project site are covered separately under a PJD.**

¹ Boxes checked below shall be supported by completing the appropriate sections in Section III below.

² For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).

³ Supporting documentation is presented in Section III.F.

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. TNW

Identify TNW: .

Summarize rationale supporting determination: .

2. Wetland adjacent to TNW

Summarize rationale supporting conclusion that wetland is “adjacent”: .

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are “relatively permanent waters” (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody⁴ is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. Characteristics of non-TNWs that flow directly or indirectly into TNW

(i) General Area Conditions:

Watershed size: **Pick List**

Drainage area: **Pick List**

Average annual rainfall: inches

Average annual snowfall: inches

(ii) Physical Characteristics:

(a) Relationship with TNW:

Tributary flows directly into TNW.

Tributary flows through **Pick List** tributaries before entering TNW.

Project waters are **Pick List** river miles from TNW.

Project waters are **Pick List** river miles from RPW.

Project waters are **Pick List** aerial (straight) miles from TNW.

Project waters are **Pick List** aerial (straight) miles from RPW.

Project waters cross or serve as state boundaries. Explain: .

Identify flow route to TNW⁵: .

Tributary stream order, if known: .

⁴ Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.

⁵ Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

(b) General Tributary Characteristics (check all that apply):

- Tributary is:** Natural
 Artificial (man-made). Explain: _____
 Manipulated (man-altered). Explain: _____

Tributary properties with respect to top of bank (estimate):

- Average width: _____ feet
Average depth: _____ feet
Average side slopes: **Pick List**.

Primary tributary substrate composition (check all that apply):

- | | | |
|--|--|-----------------------------------|
| <input type="checkbox"/> Silts | <input type="checkbox"/> Sands | <input type="checkbox"/> Concrete |
| <input type="checkbox"/> Cobbles | <input type="checkbox"/> Gravel | <input type="checkbox"/> Muck |
| <input type="checkbox"/> Bedrock | <input type="checkbox"/> Vegetation. Type/% cover: _____ | |
| <input type="checkbox"/> Other. Explain: _____ | | |

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: _____

Presence of run/riffle/pool complexes. Explain: _____

Tributary geometry: **Pick List**

Tributary gradient (approximate average slope): _____ %

(c) Flow:

Tributary provides for: **Pick List**

Estimate average number of flow events in review area/year: **Pick List**

Describe flow regime: _____

Other information on duration and volume: _____

Surface flow is: **Pick List. Characteristics:** _____

Subsurface flow: **Pick List. Explain findings:** _____

Dye (or other) test performed: _____

Tributary has (check all that apply):

- | | |
|---|---|
| <input type="checkbox"/> Bed and banks | |
| <input type="checkbox"/> OHWM ⁶ (check all indicators that apply): | |
| <input type="checkbox"/> clear, natural line impressed on the bank | <input type="checkbox"/> the presence of litter and debris |
| <input type="checkbox"/> changes in the character of soil | <input type="checkbox"/> destruction of terrestrial vegetation |
| <input type="checkbox"/> shelving | <input type="checkbox"/> the presence of wrack line |
| <input type="checkbox"/> vegetation matted down, bent, or absent | <input type="checkbox"/> sediment sorting |
| <input type="checkbox"/> leaf litter disturbed or washed away | <input type="checkbox"/> scour |
| <input type="checkbox"/> sediment deposition | <input type="checkbox"/> multiple observed or predicted flow events |
| <input type="checkbox"/> water staining | <input type="checkbox"/> abrupt change in plant community |
| <input type="checkbox"/> other (list): _____ | |
| <input type="checkbox"/> Discontinuous OHWM. ⁷ Explain: _____ | |

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):

- | | |
|--|--|
| <input checked="" type="checkbox"/> High Tide Line indicated by: | <input checked="" type="checkbox"/> Mean High Water Mark indicated by: |
| <input type="checkbox"/> oil or scum line along shore objects | <input type="checkbox"/> survey to available datum; |
| <input type="checkbox"/> fine shell or debris deposits (foreshore) | <input type="checkbox"/> physical markings; |
| <input type="checkbox"/> physical markings/characteristics | <input type="checkbox"/> vegetation lines/changes in vegetation types. |
| <input type="checkbox"/> tidal gauges | |
| <input type="checkbox"/> other (list): _____ | |

(iii) **Chemical Characteristics:**

Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).

Explain: _____

Identify specific pollutants, if known: _____

⁶A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.

⁷Ibid.

(iv) **Biological Characteristics. Channel supports (check all that apply):**

- Riparian corridor. Characteristics (type, average width):
- Wetland fringe. Characteristics:
- Habitat for:
 - Federally Listed species. Explain findings:
 - Fish/spawn areas. Explain findings:
 - Other environmentally-sensitive species. Explain findings:
 - Aquatic/wildlife diversity. Explain findings:

2. **Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW**

(i) **Physical Characteristics:**

(a) General Wetland Characteristics:

Properties:

Wetland size: acres

Wetland type. Explain:

Wetland quality. Explain:

Project wetlands cross or serve as state boundaries. Explain:

(b) General Flow Relationship with Non-TNW:

Flow is: **Pick List**. Explain:

Surface flow is: **Pick List**

Characteristics:

Subsurface flow: **Pick List**. Explain findings:

Dye (or other) test performed:

(c) Wetland Adjacency Determination with Non-TNW:

Directly abutting

Not directly abutting

Discrete wetland hydrologic connection. Explain:

Ecological connection. Explain:

Separated by berm/barrier. Explain:

(d) Proximity (Relationship) to TNW

Project wetlands are **Pick List** river miles from TNW.

Project waters are **Pick List** aerial (straight) miles from TNW.

Flow is from: **Pick List**.

Estimate approximate location of wetland as within the **Pick List** floodplain.

(ii) **Chemical Characteristics:**

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain:

Identify specific pollutants, if known:

(iii) **Biological Characteristics. Wetland supports (check all that apply):**

- Riparian buffer. Characteristics (type, average width):
- Vegetation type/percent cover. Explain:
- Habitat for:
 - Federally Listed species. Explain findings:
 - Fish/spawn areas. Explain findings:
 - Other environmentally-sensitive species. Explain findings:
 - Aquatic/wildlife diversity. Explain findings:

3. **Characteristics of all wetlands adjacent to the tributary (if any)**

All wetland(s) being considered in the cumulative analysis: **Pick List**

Approximately () acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

Directly abuts? (Y/N) Size (in acres) Directly abuts? (Y/N) Size (in acres)

Summarize overall biological, chemical and physical functions being performed: .

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D: .
2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .
3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:

- TNWs: linear feet width (ft), Or, acres.
 Wetlands adjacent to TNWs: acres.

2. **RPWs that flow directly or indirectly into TNWs.**

- Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial: .
- Tributaries of TNW where tributaries have continuous flow “seasonally” (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally: .

Provide estimates for jurisdictional waters in the review area (check all that apply):

- Tributary waters: linear feet width (ft).
 Other non-wetland waters: acres.

Identify type(s) of waters: .

3. Non-RPWs⁸ that flow directly or indirectly into TNWs.

- Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional waters within the review area (check all that apply):

- Tributary waters: linear feet width (ft).
 Other non-wetland waters: acres.

Identify type(s) of waters: .

4. Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.

- Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.
 Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .
 Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

5. Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.

- Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

6. Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.

- Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional wetlands in the review area: acres.

7. Impoundments of jurisdictional waters.⁹

As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.

- Demonstrate that impoundment was created from "waters of the U.S.," or
 Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
 Demonstrate that water is isolated with a nexus to commerce (see E below).

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):¹⁰

- which are or could be used by interstate or foreign travelers for recreational or other purposes.
 from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
 which are or could be used for industrial purposes by industries in interstate commerce.
 Interstate isolated waters. Explain: .
 Other factors. Explain: .

Identify water body and summarize rationale supporting determination: .

⁸See Footnote # 3.

⁹To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.

¹⁰Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA Memorandum Regarding CWA Act Jurisdiction Following Rapanos.

Provide estimates for jurisdictional waters in the review area (check all that apply):

- Tributary waters: linear feet width (ft).
- Other non-wetland waters: acres.
- Identify type(s) of waters: .
- Wetlands: acres.

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):

- If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
- Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
 - Prior to the Jan 2001 Supreme Court decision in "SWANCC," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
- Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: .
- Other: (explain, if not covered above): **Stream S-05e is a 1st order ephemeral channel that does not demonstrate relatively permanent flow within the reach and is considered a non-relatively permanent water and therefore does not meet the definition of an (a)(3) tributary.**

permanent flow within the reach and is considered a non-relatively permanent water and therefore does not meet the definition of an (a)(3) tributary.

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):

- Non-wetland waters (i.e., rivers, streams): linear feet width (ft).
- Lakes/ponds: acres.
- Other non-wetland waters: acres. List type of aquatic resource: .
- Wetlands: acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):

- Non-wetland waters (i.e., rivers, streams): **280** linear feet, **4** width (ft).
- Lakes/ponds: acres.
- Other non-wetland waters: acres. List type of aquatic resource: .
- Wetlands: acres.

SECTION IV: DATA SOURCES.

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):

- Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: .
- Data sheets prepared/submitted by or on behalf of the applicant/consultant.
 - Office concurs with data sheets/delineation report.
 - Office does not concur with data sheets/delineation report.
- Data sheets prepared by the Corps: .
- Corps navigable waters' study: .
- U.S. Geological Survey Hydrologic Atlas: .
 - USGS NHD data.
 - USGS 8 and 12 digit HUC maps.
- U.S. Geological Survey map(s). Cite scale & quad name: 7.5-minute Isonville, KY topographic quadrangle.
- USDA Natural Resources Conservation Service Soil Survey. Citation: Web Soil Survey (SSURGO) Available: <https://websoilsurvey.nrcs.usda.gov/app/>.
- National wetlands inventory map(s). Cite name: .
- State/Local wetland inventory map(s): Kentucky statewide GIS layer.
- FEMA/FIRM maps: .
- 100-year Floodplain Elevation is: (National Geodetic Vertical Datum of 1929)
- Photographs: Aerial (Name & Date): KY APED 3-inch color aerial, 2022-2024.
 - or Other (Name & Date): Applicant photo, June 12, 2025.
- Previous determination(s). File no. and date of response letter: .
- Applicable/supporting case law: .
- Applicable/supporting scientific literature: .
- Other information (please specify): .

B. ADDITIONAL COMMENTS TO SUPPORT JD:

APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD):

B. DISTRICT OFFICE, FILE NAME, AND NUMBER:

C. PROJECT LOCATION AND BACKGROUND INFORMATION:

State: KY County/parish/borough: Elliot City: Sandy Hook
Center coordinates of site (lat/long in degree decimal format): Lat. 38.08078° **N**, Long. -83.11373° **W**.
Universal Transverse Mercator:

Name of nearest waterbody: Butcher Branch

Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Ohio River

Name of watershed or Hydrologic Unit Code (HUC): 5090104010050

Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.

Check if other sites (e.g., offsite mitigation sites, disposal sites, etc...) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

Office (Desk) Determination. Date:

Field Determination. Date(s):

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There **Are no** "navigable waters of the U.S." within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [Required]

Waters subject to the ebb and flow of the tide.

Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.

Explain: .

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There **Are no** "waters of the U.S." within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [Required]

1. Waters of the U.S.

a. Indicate presence of waters of U.S. in review area (check all that apply):¹

- TNWs, including territorial seas
- Wetlands adjacent to TNWs
- Relatively permanent waters² (RPWs) that flow directly or indirectly into TNWs
- Non-RPWs that flow directly or indirectly into TNWs
- Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
- Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
- Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
- Impoundments of jurisdictional waters
- Isolated (interstate or intrastate) waters, including isolated wetlands

b. Identify (estimate) size of waters of the U.S. in the review area:

Non-wetland waters: linear feet: width (ft) and/or acres.

Wetlands: acres.

c. Limits (boundaries) of jurisdiction based on: **Pick List**

Elevation of established OHWM (if known): Undetermined.

2. Non-regulated waters/wetlands (check if applicable):³

- Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional. Explain: **Stream S-07e is a 1st order, ephemeral stream near the middle of the project. Stream S-07e generally flows northeast into intermittent Stream S-06i, which flows into Stream S-01i. It has a bankful depth of approximately eight inches and width of three feet. Stream S-07e was dry during field delineations and does not contribute relatively permanent flow to downstream waters, so is not considered jurisdictional. See attached photo log for a picture of Stream S-07e. Additionally, other streams and one wetland on the project site are covered separately under a PJD.**

¹ Boxes checked below shall be supported by completing the appropriate sections in Section III below.

² For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).

³ Supporting documentation is presented in Section III.F.

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. TNW

Identify TNW: .

Summarize rationale supporting determination: .

2. Wetland adjacent to TNW

Summarize rationale supporting conclusion that wetland is “adjacent”:

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are “relatively permanent waters” (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody⁴ is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. Characteristics of non-TNWs that flow directly or indirectly into TNW

(i) General Area Conditions:

Watershed size: **Pick List**

Drainage area: **Pick List**

Average annual rainfall: inches

Average annual snowfall: inches

(ii) Physical Characteristics:

(a) Relationship with TNW:

Tributary flows directly into TNW.

Tributary flows through **Pick List** tributaries before entering TNW.

Project waters are **Pick List** river miles from TNW.

Project waters are **Pick List** river miles from RPW.

Project waters are **Pick List** aerial (straight) miles from TNW.

Project waters are **Pick List** aerial (straight) miles from RPW.

Project waters cross or serve as state boundaries. Explain: .

Identify flow route to TNW⁵: .

Tributary stream order, if known: .

⁴ Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.

⁵ Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

(b) General Tributary Characteristics (check all that apply):

- Tributary is:** Natural
 Artificial (man-made). Explain: _____
 Manipulated (man-altered). Explain: _____

Tributary properties with respect to top of bank (estimate):

- Average width: _____ feet
Average depth: _____ feet
Average side slopes: **Pick List**.

Primary tributary substrate composition (check all that apply):

- | | | |
|--|--|-----------------------------------|
| <input type="checkbox"/> Silts | <input type="checkbox"/> Sands | <input type="checkbox"/> Concrete |
| <input type="checkbox"/> Cobbles | <input type="checkbox"/> Gravel | <input type="checkbox"/> Muck |
| <input type="checkbox"/> Bedrock | <input type="checkbox"/> Vegetation. Type/% cover: _____ | |
| <input type="checkbox"/> Other. Explain: _____ | | |

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: _____

Presence of run/riffle/pool complexes. Explain: _____

Tributary geometry: Pick List

Tributary gradient (approximate average slope): _____ %

(c) Flow:

Tributary provides for: Pick List

Estimate average number of flow events in review area/year: Pick List

Describe flow regime: _____

Other information on duration and volume: _____

Surface flow is: Pick List. Characteristics: _____

Subsurface flow: Pick List. Explain findings: _____

Dye (or other) test performed: _____

Tributary has (check all that apply):

- | | |
|---|---|
| <input type="checkbox"/> Bed and banks | |
| <input type="checkbox"/> OHWM ⁶ (check all indicators that apply): | |
| <input type="checkbox"/> clear, natural line impressed on the bank | <input type="checkbox"/> the presence of litter and debris |
| <input type="checkbox"/> changes in the character of soil | <input type="checkbox"/> destruction of terrestrial vegetation |
| <input type="checkbox"/> shelving | <input type="checkbox"/> the presence of wrack line |
| <input type="checkbox"/> vegetation matted down, bent, or absent | <input type="checkbox"/> sediment sorting |
| <input type="checkbox"/> leaf litter disturbed or washed away | <input type="checkbox"/> scour |
| <input type="checkbox"/> sediment deposition | <input type="checkbox"/> multiple observed or predicted flow events |
| <input type="checkbox"/> water staining | <input type="checkbox"/> abrupt change in plant community |
| <input type="checkbox"/> other (list): _____ | |
| <input type="checkbox"/> Discontinuous OHWM. ⁷ Explain: _____ | |

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):

- | | |
|--|--|
| <input checked="" type="checkbox"/> High Tide Line indicated by: | <input checked="" type="checkbox"/> Mean High Water Mark indicated by: |
| <input type="checkbox"/> oil or scum line along shore objects | <input type="checkbox"/> survey to available datum; |
| <input type="checkbox"/> fine shell or debris deposits (foreshore) | <input type="checkbox"/> physical markings; |
| <input type="checkbox"/> physical markings/characteristics | <input type="checkbox"/> vegetation lines/changes in vegetation types. |
| <input type="checkbox"/> tidal gauges | |
| <input type="checkbox"/> other (list): _____ | |

(iii) **Chemical Characteristics:**

Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).

Explain: _____

Identify specific pollutants, if known: _____

⁶A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.

⁷Ibid.

(iv) **Biological Characteristics. Channel supports (check all that apply):**

- Riparian corridor. Characteristics (type, average width):
- Wetland fringe. Characteristics:
- Habitat for:
 - Federally Listed species. Explain findings:
 - Fish/spawn areas. Explain findings:
 - Other environmentally-sensitive species. Explain findings:
 - Aquatic/wildlife diversity. Explain findings:

2. **Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW**

(i) **Physical Characteristics:**

(a) General Wetland Characteristics:

Properties:

Wetland size: acres

Wetland type. Explain:

Wetland quality. Explain:

Project wetlands cross or serve as state boundaries. Explain:

(b) General Flow Relationship with Non-TNW:

Flow is: **Pick List**. Explain:

Surface flow is: **Pick List**

Characteristics:

Subsurface flow: **Pick List**. Explain findings:

Dye (or other) test performed:

(c) Wetland Adjacency Determination with Non-TNW:

Directly abutting

Not directly abutting

Discrete wetland hydrologic connection. Explain:

Ecological connection. Explain:

Separated by berm/barrier. Explain:

(d) Proximity (Relationship) to TNW

Project wetlands are **Pick List** river miles from TNW.

Project waters are **Pick List** aerial (straight) miles from TNW.

Flow is from: **Pick List**.

Estimate approximate location of wetland as within the **Pick List** floodplain.

(ii) **Chemical Characteristics:**

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain:

Identify specific pollutants, if known:

(iii) **Biological Characteristics. Wetland supports (check all that apply):**

- Riparian buffer. Characteristics (type, average width):
- Vegetation type/percent cover. Explain:
- Habitat for:
 - Federally Listed species. Explain findings:
 - Fish/spawn areas. Explain findings:
 - Other environmentally-sensitive species. Explain findings:
 - Aquatic/wildlife diversity. Explain findings:

3. **Characteristics of all wetlands adjacent to the tributary (if any)**

All wetland(s) being considered in the cumulative analysis: **Pick List**

Approximately () acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

Directly abuts? (Y/N) Size (in acres) Directly abuts? (Y/N) Size (in acres)

Summarize overall biological, chemical and physical functions being performed: .

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D: .
2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .
3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:

TNWs: linear feet width (ft), Or, acres.
 Wetlands adjacent to TNWs: acres.

2. **RPWs that flow directly or indirectly into TNWs.**

Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial: .
 Tributaries of TNW where tributaries have continuous flow “seasonally” (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally: .

Provide estimates for jurisdictional waters in the review area (check all that apply):

- Tributary waters: linear feet width (ft).
 Other non-wetland waters: acres.

Identify type(s) of waters: .

3. Non-RPWs⁸ that flow directly or indirectly into TNWs.

- Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional waters within the review area (check all that apply):

- Tributary waters: linear feet width (ft).
 Other non-wetland waters: acres.

Identify type(s) of waters: .

4. Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.

- Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.
 Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .
 Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

5. Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.

- Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

6. Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.

- Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional wetlands in the review area: acres.

7. Impoundments of jurisdictional waters.⁹

As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.

- Demonstrate that impoundment was created from "waters of the U.S.," or
 Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
 Demonstrate that water is isolated with a nexus to commerce (see E below).

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):¹⁰

- which are or could be used by interstate or foreign travelers for recreational or other purposes.
 from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
 which are or could be used for industrial purposes by industries in interstate commerce.
 Interstate isolated waters. Explain: .
 Other factors. Explain: .

Identify water body and summarize rationale supporting determination: .

⁸See Footnote # 3.

⁹To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.

¹⁰Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA Memorandum Regarding CWA Act Jurisdiction Following Rapanos.

Provide estimates for jurisdictional waters in the review area (check all that apply):

- Tributary waters: linear feet width (ft).
- Other non-wetland waters: acres.
Identify type(s) of waters: .
- Wetlands: acres.

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):

- If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
- Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
 - Prior to the Jan 2001 Supreme Court decision in "SWANCC," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
- Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: .
- Other: (explain, if not covered above): **Stream S-07e is a 1st order ephemeral channel that does not demonstrate relatively permanent flow within the reach and is considered a non-relatively permanent water and therefore does not meet the definition of an (a)(3) tributary.**

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):

- Non-wetland waters (i.e., rivers, streams): linear feet width (ft).
- Lakes/ponds: acres.
- Other non-wetland waters: acres. List type of aquatic resource: .
- Wetlands: acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):

- Non-wetland waters (i.e., rivers, streams): **89** linear feet, **3** width (ft).
- Lakes/ponds: acres.
- Other non-wetland waters: acres. List type of aquatic resource: .
- Wetlands: acres.

SECTION IV: DATA SOURCES.

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):

- Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: .
- Data sheets prepared/submitted by or on behalf of the applicant/consultant.
 - Office concurs with data sheets/delineation report.
 - Office does not concur with data sheets/delineation report.
- Data sheets prepared by the Corps: .
- Corps navigable waters' study: .
- U.S. Geological Survey Hydrologic Atlas: .
 - USGS NHD data.
 - USGS 8 and 12 digit HUC maps.
- U.S. Geological Survey map(s). Cite scale & quad name: 7.5-minute Isonville, KY topographic quadrangle.
- USDA Natural Resources Conservation Service Soil Survey. Citation: Web Soil Survey (SSURGO) Available: <https://websoilsurvey.nrcs.usda.gov/app/>.
- National wetlands inventory map(s). Cite name: .
- State/Local wetland inventory map(s): Kentucky statewide GIS layer.
- FEMA/FIRM maps: .
- 100-year Floodplain Elevation is: (National Geodetic Vertical Datum of 1929)
- Photographs: Aerial (Name & Date): KY APED 3-inch color aerial, 2022-2024.
or Other (Name & Date): Applicant photos, June 12, 2025.
- Previous determination(s). File no. and date of response letter: .
- Applicable/supporting case law: .
- Applicable/supporting scientific literature: .
- Other information (please specify): .

B. ADDITIONAL COMMENTS TO SUPPORT JD:

APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD):

B. DISTRICT OFFICE, FILE NAME, AND NUMBER:

C. PROJECT LOCATION AND BACKGROUND INFORMATION:

State: KY County/parish/borough: Elliot City: Sandy Hook
Center coordinates of site (lat/long in degree decimal format): Lat. 38.08078° **N**, Long. -83.11373° **W**.
Universal Transverse Mercator:

Name of nearest waterbody: Butcher Branch

Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Ohio River

Name of watershed or Hydrologic Unit Code (HUC): 5090104020030

Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.

Check if other sites (e.g., offsite mitigation sites, disposal sites, etc...) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

Office (Desk) Determination. Date:

Field Determination. Date(s):

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There **Are no** "navigable waters of the U.S." within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [Required]

Waters subject to the ebb and flow of the tide.

Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.

Explain: .

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There **Are no** "waters of the U.S." within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [Required]

1. Waters of the U.S.

a. Indicate presence of waters of U.S. in review area (check all that apply):¹

- TNWs, including territorial seas
- Wetlands adjacent to TNWs
- Relatively permanent waters² (RPWs) that flow directly or indirectly into TNWs
- Non-RPWs that flow directly or indirectly into TNWs
- Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
- Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
- Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
- Impoundments of jurisdictional waters
- Isolated (interstate or intrastate) waters, including isolated wetlands

b. Identify (estimate) size of waters of the U.S. in the review area:

Non-wetland waters: linear feet: width (ft) and/or acres.

Wetlands: acres.

c. Limits (boundaries) of jurisdiction based on: **Pick List**

Elevation of established OHWM (if known): Undetermined.

2. Non-regulated waters/wetlands (check if applicable):³

- Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional. Explain: **Stream S-12e is a 1st order, ephemeral stream near the end of the project. Stream S-12e generally flows northeast into Butcher Branch, which flows into Middle Fork. It has a bankful depth of approximately 3 inches and width of two feet. Stream S-12e was dry during field delineations and does not contribute relatively permanent flow to downstream waters, so is not considered jurisdictional. See attached photo log for a picture of Stream S-12e. Additionally, other streams and one wetland on the project site are covered separately under a PJD.**

¹ Boxes checked below shall be supported by completing the appropriate sections in Section III below.

² For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).

³ Supporting documentation is presented in Section III.F.

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. TNW

Identify TNW: .

Summarize rationale supporting determination: .

2. Wetland adjacent to TNW

Summarize rationale supporting conclusion that wetland is “adjacent”:

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are “relatively permanent waters” (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody⁴ is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. Characteristics of non-TNWs that flow directly or indirectly into TNW

(i) General Area Conditions:

Watershed size: **Pick List**

Drainage area: **Pick List**

Average annual rainfall: inches

Average annual snowfall: inches

(ii) Physical Characteristics:

(a) Relationship with TNW:

Tributary flows directly into TNW.

Tributary flows through **Pick List** tributaries before entering TNW.

Project waters are **Pick List** river miles from TNW.

Project waters are **Pick List** river miles from RPW.

Project waters are **Pick List** aerial (straight) miles from TNW.

Project waters are **Pick List** aerial (straight) miles from RPW.

Project waters cross or serve as state boundaries. Explain: .

Identify flow route to TNW⁵: .

Tributary stream order, if known: .

⁴ Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.

⁵ Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

(b) General Tributary Characteristics (check all that apply):

- Tributary is:** Natural
 Artificial (man-made). Explain: _____
 Manipulated (man-altered). Explain: _____

Tributary properties with respect to top of bank (estimate):

- Average width: _____ feet
Average depth: _____ feet
Average side slopes: **Pick List**.

Primary tributary substrate composition (check all that apply):

- | | | |
|--|--|-----------------------------------|
| <input type="checkbox"/> Silts | <input type="checkbox"/> Sands | <input type="checkbox"/> Concrete |
| <input type="checkbox"/> Cobbles | <input type="checkbox"/> Gravel | <input type="checkbox"/> Muck |
| <input type="checkbox"/> Bedrock | <input type="checkbox"/> Vegetation. Type/% cover: _____ | |
| <input type="checkbox"/> Other. Explain: _____ | | |

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: _____

Presence of run/riffle/pool complexes. Explain: _____

Tributary geometry: Pick List

Tributary gradient (approximate average slope): _____ %

(c) Flow:

Tributary provides for: Pick List

Estimate average number of flow events in review area/year: Pick List

Describe flow regime: _____

Other information on duration and volume: _____

Surface flow is: Pick List. Characteristics: _____

Subsurface flow: Pick List. Explain findings: _____

Dye (or other) test performed: _____

Tributary has (check all that apply):

- | | |
|---|---|
| <input type="checkbox"/> Bed and banks | |
| <input type="checkbox"/> OHWM ⁶ (check all indicators that apply): | |
| <input type="checkbox"/> clear, natural line impressed on the bank | <input type="checkbox"/> the presence of litter and debris |
| <input type="checkbox"/> changes in the character of soil | <input type="checkbox"/> destruction of terrestrial vegetation |
| <input type="checkbox"/> shelving | <input type="checkbox"/> the presence of wrack line |
| <input type="checkbox"/> vegetation matted down, bent, or absent | <input type="checkbox"/> sediment sorting |
| <input type="checkbox"/> leaf litter disturbed or washed away | <input type="checkbox"/> scour |
| <input type="checkbox"/> sediment deposition | <input type="checkbox"/> multiple observed or predicted flow events |
| <input type="checkbox"/> water staining | <input type="checkbox"/> abrupt change in plant community |
| <input type="checkbox"/> other (list): _____ | |
| <input type="checkbox"/> Discontinuous OHWM. ⁷ Explain: _____ | |

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):

- | | |
|--|--|
| <input checked="" type="checkbox"/> High Tide Line indicated by: | <input checked="" type="checkbox"/> Mean High Water Mark indicated by: |
| <input type="checkbox"/> oil or scum line along shore objects | <input type="checkbox"/> survey to available datum; |
| <input type="checkbox"/> fine shell or debris deposits (foreshore) | <input type="checkbox"/> physical markings; |
| <input type="checkbox"/> physical markings/characteristics | <input type="checkbox"/> vegetation lines/changes in vegetation types. |
| <input type="checkbox"/> tidal gauges | |
| <input type="checkbox"/> other (list): _____ | |

(iii) **Chemical Characteristics:**

Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).

Explain: _____

Identify specific pollutants, if known: _____

⁶A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.

⁷Ibid.

(iv) **Biological Characteristics. Channel supports (check all that apply):**

- Riparian corridor. Characteristics (type, average width):
- Wetland fringe. Characteristics:
- Habitat for:
 - Federally Listed species. Explain findings:
 - Fish/spawn areas. Explain findings:
 - Other environmentally-sensitive species. Explain findings:
 - Aquatic/wildlife diversity. Explain findings:

2. **Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW**

(i) **Physical Characteristics:**

(a) General Wetland Characteristics:

Properties:

Wetland size: acres

Wetland type. Explain:

Wetland quality. Explain:

Project wetlands cross or serve as state boundaries. Explain:

(b) General Flow Relationship with Non-TNW:

Flow is: **Pick List**. Explain:

Surface flow is: **Pick List**

Characteristics:

Subsurface flow: **Pick List**. Explain findings:

Dye (or other) test performed:

(c) Wetland Adjacency Determination with Non-TNW:

Directly abutting

Not directly abutting

Discrete wetland hydrologic connection. Explain:

Ecological connection. Explain:

Separated by berm/barrier. Explain:

(d) Proximity (Relationship) to TNW

Project wetlands are **Pick List** river miles from TNW.

Project waters are **Pick List** aerial (straight) miles from TNW.

Flow is from: **Pick List**.

Estimate approximate location of wetland as within the **Pick List** floodplain.

(ii) **Chemical Characteristics:**

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain:

Identify specific pollutants, if known:

(iii) **Biological Characteristics. Wetland supports (check all that apply):**

- Riparian buffer. Characteristics (type, average width):
- Vegetation type/percent cover. Explain:
- Habitat for:
 - Federally Listed species. Explain findings:
 - Fish/spawn areas. Explain findings:
 - Other environmentally-sensitive species. Explain findings:
 - Aquatic/wildlife diversity. Explain findings:

3. **Characteristics of all wetlands adjacent to the tributary (if any)**

All wetland(s) being considered in the cumulative analysis: **Pick List**

Approximately () acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

Directly abuts? (Y/N) Size (in acres) Directly abuts? (Y/N) Size (in acres)

Summarize overall biological, chemical and physical functions being performed: .

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D: .
2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .
3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:

TNWs: linear feet width (ft), Or, acres.
 Wetlands adjacent to TNWs: acres.

2. **RPWs that flow directly or indirectly into TNWs.**

Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial: .
 Tributaries of TNW where tributaries have continuous flow “seasonally” (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally: .

Provide estimates for jurisdictional waters in the review area (check all that apply):

- Tributary waters: linear feet width (ft).
 Other non-wetland waters: acres.
Identify type(s) of waters: .

3. Non-RPWs⁸ that flow directly or indirectly into TNWs.

- Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional waters within the review area (check all that apply):

- Tributary waters: linear feet width (ft).
 Other non-wetland waters: acres.
Identify type(s) of waters: .

4. Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.

- Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.
 Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .
 Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

5. Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.

- Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

6. Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.

- Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional wetlands in the review area: acres.

7. Impoundments of jurisdictional waters.⁹

As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.

- Demonstrate that impoundment was created from "waters of the U.S.," or
 Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
 Demonstrate that water is isolated with a nexus to commerce (see E below).

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):¹⁰

- which are or could be used by interstate or foreign travelers for recreational or other purposes.
 from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
 which are or could be used for industrial purposes by industries in interstate commerce.
 Interstate isolated waters. Explain: .
 Other factors. Explain: .

Identify water body and summarize rationale supporting determination: .

⁸See Footnote # 3.

⁹To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.

¹⁰Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA Memorandum Regarding CWA Act Jurisdiction Following Rapanos.

Provide estimates for jurisdictional waters in the review area (check all that apply):

- Tributary waters: linear feet width (ft).
- Other non-wetland waters: acres.
Identify type(s) of waters: .
- Wetlands: acres.

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):

- If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
- Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
 - Prior to the Jan 2001 Supreme Court decision in "SWANCC," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
- Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: .
- Other: (explain, if not covered above): **Stream S-12e is a 1st order ephemeral channel that does not demonstrate relatively permanent flow within the reach and is considered a non-relatively permanent water and therefore does not meet the definition of an (a)(3) tributary.**

permanent flow within the reach and is considered a non-relatively permanent water and therefore does not meet the definition of an (a)(3) tributary.

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):

- Non-wetland waters (i.e., rivers, streams): linear feet width (ft).
- Lakes/ponds: acres.
- Other non-wetland waters: acres. List type of aquatic resource: .
- Wetlands: acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):

- Non-wetland waters (i.e., rivers, streams): **56** linear feet, **2** width (ft).
- Lakes/ponds: acres.
- Other non-wetland waters: acres. List type of aquatic resource: .
- Wetlands: acres.

SECTION IV: DATA SOURCES.

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):

- Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: .
- Data sheets prepared/submitted by or on behalf of the applicant/consultant.
 - Office concurs with data sheets/delineation report.
 - Office does not concur with data sheets/delineation report.
- Data sheets prepared by the Corps: .
- Corps navigable waters' study: .
- U.S. Geological Survey Hydrologic Atlas: .
 - USGS NHD data.
 - USGS 8 and 12 digit HUC maps.
- U.S. Geological Survey map(s). Cite scale & quad name: 7.5-minute Isonville, KY topographic quadrangle.
- USDA Natural Resources Conservation Service Soil Survey. Citation: Web Soil Survey (SSURGO) Available: <https://websoilsurvey.nrcs.usda.gov/app/>.
- National wetlands inventory map(s). Cite name: .
- State/Local wetland inventory map(s): Kentucky statewide GIS layer.
- FEMA/FIRM maps: .
- 100-year Floodplain Elevation is: (National Geodetic Vertical Datum of 1929)
- Photographs: Aerial (Name & Date): KY APED 3-inch color aerial, 2022-2024.
or Other (Name & Date): Applicant photos, July 3, 2025.
- Previous determination(s). File no. and date of response letter: .
- Applicable/supporting case law: .
- Applicable/supporting scientific literature: .
- Other information (please specify): .

B. ADDITIONAL COMMENTS TO SUPPORT JD:

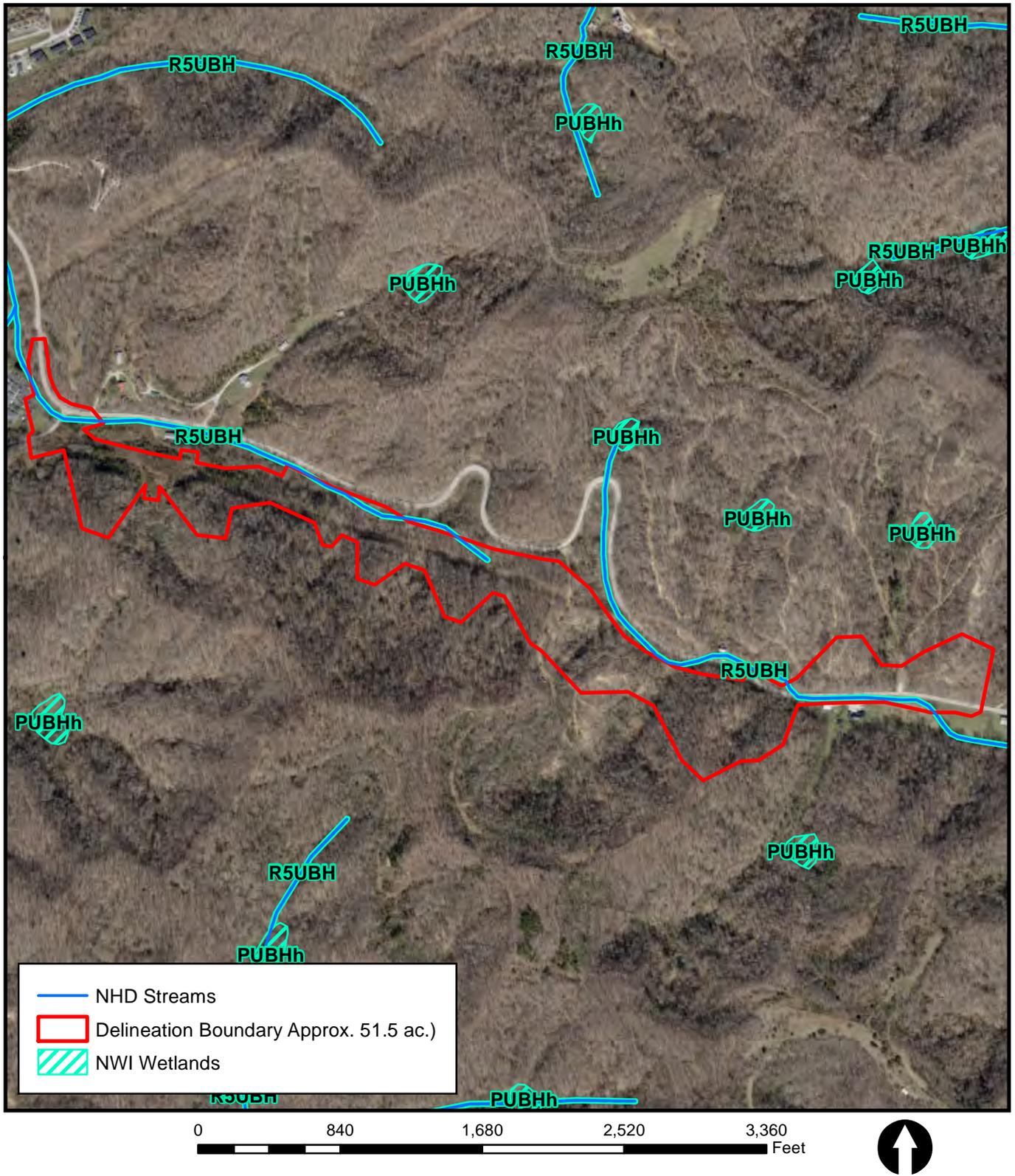


WETLAND AND STREAM DELINEATION
ELLIOT COUNTY, KENTUCKY
KYTC ITEM NO.: 9-8802.00



PROJECT LOCATION MAP

Source: KY APED 3-inch Color Aerial



WETLAND AND STREAM DELINEATION
ELLIOT COUNTY, KENTUCKY
KYTC ITEM NO.: 9-8802.00



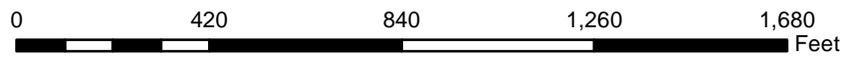
NWI AND NHD Map

REVISED DATE: 8-15-2025

DRAWN BY: SAS

FIGURE 2

Source: KY APED 3-inch Color Aerial



WETLAND AND STREAM DELINEATION
ELLIOT COUNTY, KENTUCKY
KYTC ITEM NO.: 9-8802.00



SITE SOILS MAP #1

REVISED DATE: 8-15-2025 | DRAWN BY: SAS

FIGURE 3a

Source: KY APED 3-inch Color Aerial



0 420 840 1,260 1,680 Feet



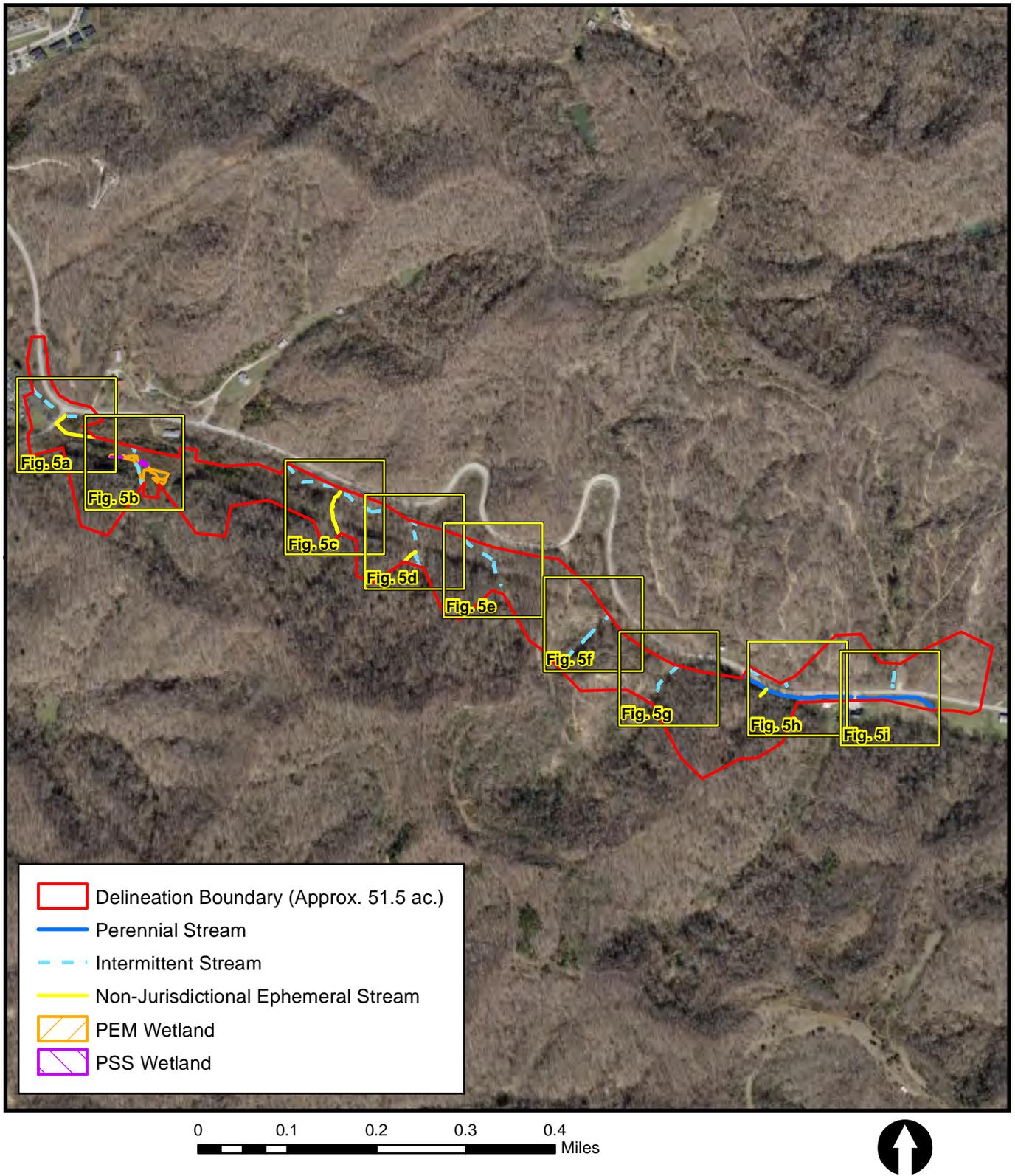
WETLAND AND STREAM DELINEATION
ELLIOT COUNTY, KENTUCKY
KYTC ITEM NO.: 9-8802.00



SITE SOILS MAP #2

REVISED DATE: 8-15-2025 | DRAWN BY: SAS

FIGURE 3b

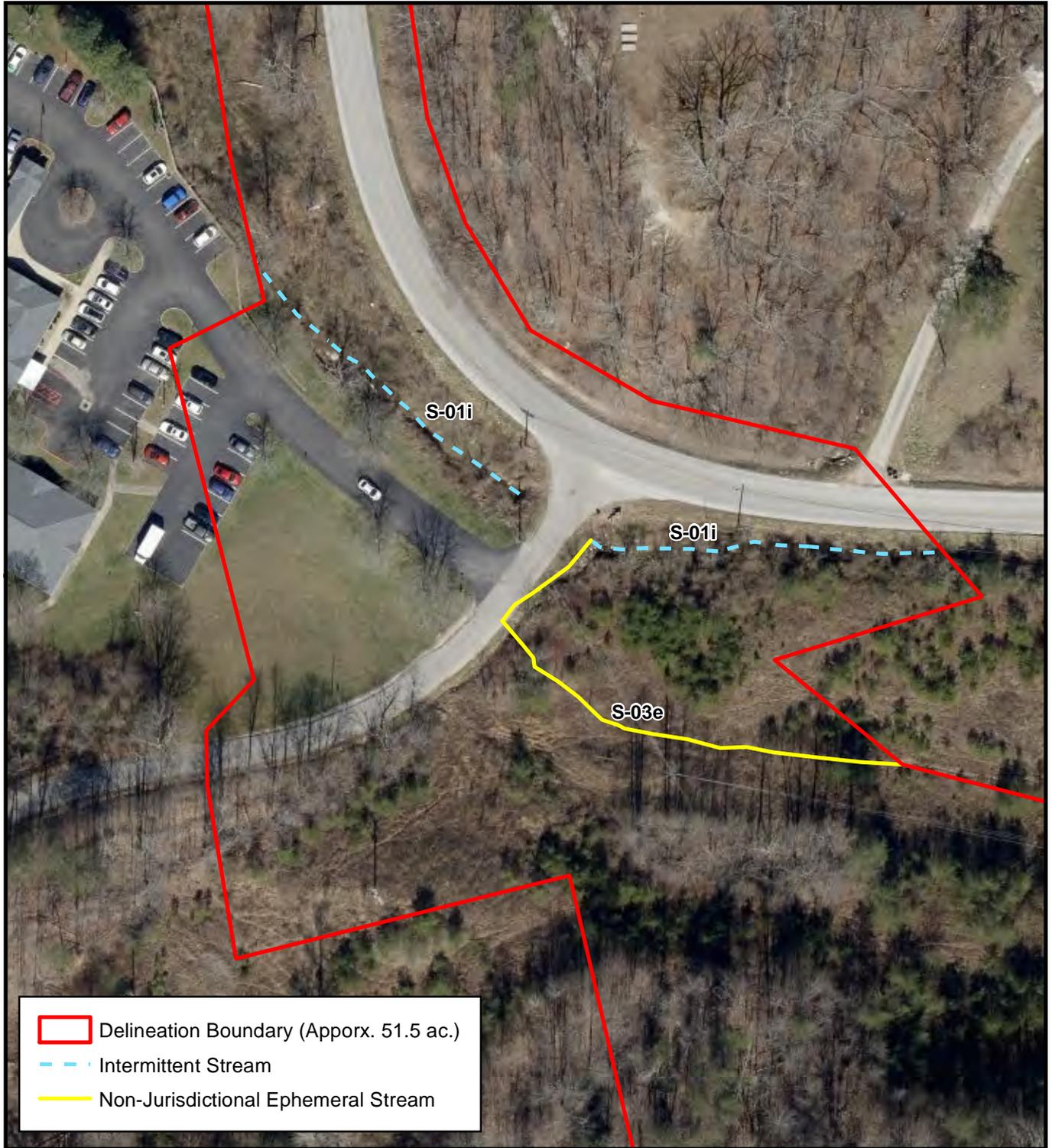


KY 32 RELOCATION PROJECT
ELLIOT COUNTY, KENTUCKY
KYTC ITEM NO.: 9-8802.00



DELINEATED FEATURES MAP

Source: KYAPED 3-inch Color Aerial



- Delineation Boundary (Apporx. 51.5 ac.)
- Intermittent Stream
- Non-Jurisdictional Ephemeral Stream

0 0.01 0.02 0.03 0.04 Miles



KY 32 RELOCATION PROJECT
ELLIOT COUNTY, KENTUCKY
KYTC ITEM NO.: 9-8802.00

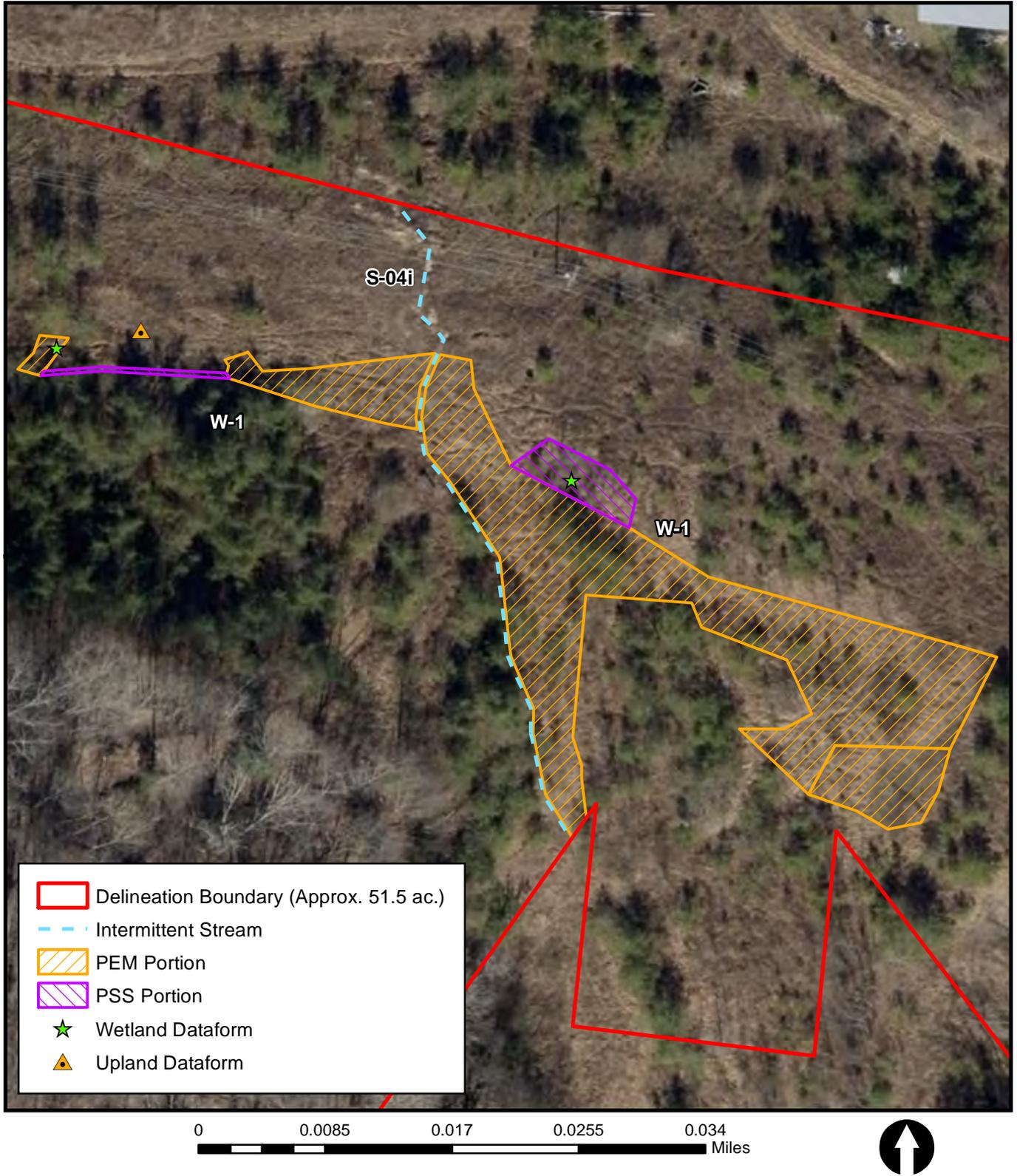


DELINEATED FEATURES DETAIL MAP

REVISED DATE: 8-15-2025 | DRAWN BY: SAS

FIGURE 5a

Source: KYAPED 3-inch Color Aerial



KY 32 RELOCATION PROJECT
ELLIOT COUNTY, KENTUCKY
KYTC ITEM NO.: 9-8802.00



DELINEATED FEATURES DETAIL MAP

REVISED DATE: 8-15-2025

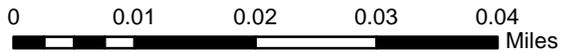
DRAWN BY: SAS

FIGURE 5b

Source: KYAPED 3-inch Color Aerial



	Delineation Boundary (Approx. 51.5 ac.)
	Intermittent Stream
	Non-Jurisdictional Ephemeral Stream



KY 32 RELOCATION PROJECT
ELLIOT COUNTY, KENTUCKY
KYTC ITEM NO.: 9-8802.00



DELINEATED FEATURES DETAIL MAP

REVISED DATE: 8-15-2025 | DRAWN BY: SAS

FIGURE 5c

Source: KYAPED 3-inch Color Aerial



-  Delineation Boundary
-  Intermittent Stream
-  Non-Jurisdictional Ephemeral Stream

KY 32 RELOCATION PROJECT
ELLIOT COUNTY, KENTUCKY
KYTC ITEM NO.: 9-8802.00



DELINEATED FEATURES DETAIL MAP

REVISED DATE: 8-15-2025 | DRAWN BY: SAS

FIGURE 5d

Source: KYAPED 3-inch Color Aerial



0 0.01 0.02 0.03 0.04 Miles



KY 32 RELOCATION PROJECT
ELLIOT COUNTY, KENTUCKY
KYTC ITEM NO.: 9-8802.00



DELINEATED FEATURES DETAIL MAP

REVISED DATE: 8-15-2025 | DRAWN BY: SAS

FIGURE 5e

Source: KYAPED 3-inch Color Aerial



0 0.01 0.02 0.03 0.04 Miles



KY 32 RELOCATION PROJECT
ELLIOT COUNTY, KENTUCKY
KYTC ITEM NO.: 9-8802.00



DELINEATED FEATURES DETAIL MAP

REVISED DATE: 8-15-2025 | DRAWN BY: SAS

FIGURE 5f

Source: KYAPED 3-inch Color Aerial



KY 32 RELOCATION PROJECT
ELLIOT COUNTY, KENTUCKY
KYTC ITEM NO.: 9-8802.00



DELINEATED FEATURES DETAIL MAP

REVISED DATE: 8-15-2025 | DRAWN BY: SAS

FIGURE 5g

Source: KYAPED 3-inch Color Aerial



KY 32 RELOCATION PROJECT
ELLIOT COUNTY, KENTUCKY
KYTC ITEM NO.: 9-8802.00



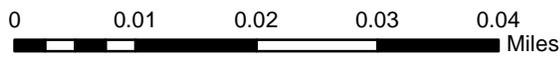
DELINEATED FEATURES DETAIL MAP

REVISED DATE: 8-15-2025

DRAWN BY: SAS

FIGURE 5h

Source: KYAPED 3-inch Color Aerial



KY 32 RELOCATION PROJECT
ELLIOT COUNTY, KENTUCKY
KYTC ITEM NO.: 9-8802.00



DELINEATED FEATURES DETAIL MAP

REVISED DATE: 8-15-2025

DRAWN BY: SAS

FIGURE 5i



Photograph 1: Wetland 1 (W-1) PEM.



Photograph 2: Wetland 1 (W-1) PSS.



Photograph 3: Stream S-01i (Intermittent).



Photograph 4: Stream S-03e (Ephemeral). Stream S-03e does not contribute relatively permanent flow to stream waters and therefore it is not considered to be subject to USACE jurisdiction.



Photograph 5: Stream S-04i (Intermittent).



Photograph 6: Stream S-05e (Ephemeral). Stream S-05e does not contribute relatively permanent flow to stream waters and therefore it is not considered to be subject to USACE jurisdiction.



Photograph 7: Stream S-06i (Intermittent).



Photograph 8: Stream S-07e (Ephemeral). Stream S-07e does not contribute relatively permanent flow to stream waters and therefore it is not considered to be subject to USACE jurisdiction.



Photograph 9: Stream S-08i (Intermittent).



Photograph 10: Stream S-10i (Intermittent).



Photograph 11: Stream S-11i (Intermittent).



Photograph 12: Stream S-12e (Ephemeral). Stream S-12e does not contribute relatively permanent flow to stream waters and therefore it is not considered to be subject to USACE jurisdiction.



Photograph 13: Stream S-13i (Intermittent).



Photograph 14: Stream S-14i (Intermittent).



Photograph 15: Butcher Branch (Perennial).