APPALACHIAN POWER COMPANY
BEFORE THE
VIRGINIA STATE CORPORATION COMMISSION
CASE NO. PUR-2021 -00001

APPLICATION FOR APPROVAL AND CERTIFICATION OF ELECTRICAL TRANSMISSION LINE

Central Virginia Transmission Reliability Project

VOLUME 3 OF 4

DEQ Supplements

January 2021

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VDEQ SUPPLEMENT

Central Virginia Transmission Reliability Project

Component 1:
Joshua Falls – Riverville – Gladstone 138 kV Transmission Lines

Amherst, Appomattox, Campbell, and Nelson Counties, Virginia

Prepared For:
Appalachian Power Company

Prepared by:
POWER Engineers, Inc.

December 2020

Based on consultations with the Virginia Department of Environmental Quality (VDEQ), POWER Engineers, Inc. (POWER) on behalf of Appalachian Power Company (Appalachian Power or the Company) has developed this VDEQ Supplement to facilitate review and analysis of the Joshua Falls – Riverville – Gladstone 138 kilovolt (kV) Transmission Lines Component of the Central Virginia Transmission Reliability Project (CVTRP) by the VDEQ and other relevant agencies.

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1.0 PROJECT DESCRIPTION

Appalachian Power Company (Appalachian Power or the Company) is planning to upgrade the local electric transmission grid in five central Virginia counties: Amherst, Appomattox, Albemarle, Campbell and Nelson ("the Central Virginia Transmission Reliability Project" or "CVTRP"). The CVTRP provides a new electrical source for the region, increases reliability to customers and supports the retirement of aging equipment. The Company's application to the Virginia State Corporation Commission (SCC), describes the overall need and necessity for the CVTRP.

The CVTRP has been broken into four components. This Virginia Department of Environmental Quality (VDEQ) supplement will focus on the Joshua Falls – Riverville – Gladstone 138-kV Transmission Lines Component (Component 1 or the Project). Component 1 involves constructing approximately 11 miles of a new 138 kV transmission line between the Joshua Falls Substation and Riverville Substation (the Joshua Falls – Riverville 138 kV Transmission Line), and approximately six miles of a new 138 kV transmission line between the Riverville Substation and Central Virginia Electric Cooperative's (CVEC) Gladstone Substation (the Gladstone – Riverville 138 kV Transmission Line). The Riverville Substation will be expanded as part of the electrical upgrades and will require relocating approximately 1,000 feet of the existing Amherst – Riverville 138 kV transmission line. A substation site selection process was not required for the substations associated with Component 1 as they are existing. Component 1 is located in Amherst, Appomattox, Campbell, and Nelson counties.

A siting effort was undertaken to determine the alignment for the Joshua Falls – Riverville and Gladstone – Riverville 138-kV Transmission Lines (the Proposed Route). From the Joshua Falls Substation in Campbell County, the Proposed Route (Alternative Routes D and E) extends generally northeast through Appomattox County and crosses the James River to reach the Riverville Substation. From the Riverville Substation, the Proposed Route continues northeast through Amherst and Nelson counties to reach CVEC's Gladstone Substation for approximately six miles.

Structure type may vary along the line route depending on the needs of the Project; however, the Company plans to primarily use galvanized steel H-frame structures or three-pole dead end structures to build the new 138 kV transmission line within a new 100-foot right-of-way. Lattice tower structures will be used to cross the James River in order to meet span constructability and engineering requirements. The anticipated structure heights of the proposed 138 kV transmission line range from 55 feet to 100 feet tall with an average structure height of approximately 70 feet. The anticipated river crossing structure heights of the proposed 138 kV transmission line range from 80 feet to 120 feet, with an average height of 100 feet.

2.0 ENVIRONMENTAL ANALYSIS

On behalf of the Company, POWER solicited input from a number of state and federal environmental agencies regarding the CVTRP. Responses were received from 17 representatives of various federal, state, and local agencies, and are included as Attachment C to the *Joshua Falls – Riverville – Gladstone Siting Study*, located in Volume 2 of the Application. POWER also obtained relevant environmental data from field verification, online databases and other available sources.

A. Air Quality

Component 1 does not involve the construction or expansion of any thermal emission generating sources and therefore no direct operational emissions are anticipated. During construction, emissions from heavy equipment and dust would occur, but kept at a minimum. No permanent impacts on air quality are anticipated, and temporary impacts will only last the duration of the construction phase. The Company does not expect to burn cleared material but, if burning becomes necessary, the Company will coordinate with the responsible locality to obtain permits and will comply with conditions imposed by the locality. The Company's tree-clearing methods can be found in Section II.A.7 of the SCC Response to Guidelines in Volume 1 of the Application.

B. Water Source

The Joshua Falls – Riverville – Gladstone 138 kV Transmission Lines Component crosses six sub-watersheds: Alabama Creek – James River (Hydrologic Unit Code [HUC]12 02080203802); Allen's Creek – James River (HUC12 02080203405); Wreck Island Creek (HUC12 02080203404); Christian Mill Creek – James River (HUC12 02080203403); Stonewall Creek – James River (HUC12 02080203402); and Archer Creek – James River (HUC12 02080203401). Component 1 is located in the Middle James – Buffalo sub-basin (HUC8 02080203). No water source is required for either the transmission line or substation operation. The Company requested comments on all components for the CVTRP from the Virginia Department of Health's Office of Drinking Water in a letter dated January 30, 2020. The Office of Drinking Water did not respond to this request for the potential location of public groundwater wells or surface water intakes. Additionally, no response was received from the VDEQ Office of Wetland and Stream Protection.

The Project Team submitted a project review request to the Virginia Department of Conservation (VDCR), Virginia Natural Heritage Program on January 30, 2020 and a response was received on March 6, 2020 (Attachment C of the *Joshua Falls – Riverville – Gladstone Siting Study* in Volume 2 of the Application). The VDCR noted the Allens Creek Stream Conservation Unit is located between the Riverville and Gladstone (CVEC) substations and are unavoidably crossed by Alternative Routes E and F to reach the Gladstone (CVEC) Substation; however, the Proposed Route crosses Allens Creek once and Alternative Route F crosses the creek three times. Alternative Routes B – D do not cross any known stream conservation units according to VDCR. Proper erosion and sediment controls will be used in order to control storm water runoff to rivers, streams, and wetlands.

The Virginia Marine Resources Commission (VMRC) noted in a letter dated February 24, 2020, that pursuant to Section 28.2-1200 et seq. of the Code of Virginia, they have jurisdiction over any encroachments in, on, or over the beds of the bays, ocean, rivers, streams, or creeks which are the property of the Commonwealth. Any jurisdictional impacts will be reviewed by VMRC during the Joint Permit Application process, as required. In a letter dated March 3, 2020, the VDEQ Blue Ridge Regional Office did not indicate any water resource concerns for the CVTRP, including Component 1 (Attachment C of the *Joshua Falls – Riverville – Gladstone Siting Study*).

C. Discharge of Cooling Waters

No discharge of cooling waters is associated with the Project.

D. Tidal Wetlands

No tidal wetlands are associated with the Project.

E. Non-tidal Wetlands Impact Consultation

A desktop wetland and stream delineation report was prepared in December 2020 and identified potential wetlands and streams for Component 1 of the CVTRP. The desktop features were identified within the ROWs of the Joshua Falls – Riverville – Gladstone 138-kV Transmission Lines to be built and Alternative Routes considered. In addition, the report concludes that one potential wetland is present within the ROW rebuild portion of the Amherst – Riverville 138 kV transmission line connecting to Riverville Substation. The desktop wetland and stream delineation report for the Joshua Falls – Riverville – Gladstone 138-kV Transmission Lines Component is included as Attachment 2.E.1 of this supplement. For methodologies used to delineate wetlands and streams from a desktop perspective, please see as Attachment 2.E.1. The results are briefly summarized below.

The tables below show the criteria used to determine the wetland and stream probability within 100-foot-wide ROWs of the Joshua Falls – Riverville – Gladstone 138-kV Transmission Lines Component. The current potential streams and wetlands were assigned a probability of low potential, moderate potential, or high potential of being a regulated resource.

WETLAND PROBABILITY	ASSESSMENT CRITERIA
High	• Aerial imagery (color and CIR) and/or topography combined with **two** other indicators such as NWI wetlands, NHD streams, or hydric soils.
Moderate	• Aerial imagery (color and CIR) and/or topography combined with **one** other indicator such as NWI wetlands, NHD streams, or hydric soils.
Low	• Presence of only hydric soils with no topographic or aerial imagery indicator. • Areas identified as wetland with topography and/or aerial photography only. • Presence of only floodplains with no topographic or aerial imagery indicator.

STREAM PROBABILITY	ASSESSMENT CRITERIA
High	• Streams identified with NHD and aerial imagery (color and CIR).
Moderate	• Streams identified with aerial imagery (color and CIR) and/or topography combined with one other indicator such as NWI wetlands or hydric soils.
Low	• Areas identified as streams with topography or aerial photography only.

Alternative Route A (Joshua Falls – Riverville)

Alternative Route A is mostly located on the north side of the James River in Amherst County. Alternative Route A crosses the James River north of the Joshua Falls Substation and continues generally northeast in Amherst County and turns south to reach the Riverville Substation. Alternative Route A includes an approximately 1,700-foot span across the James River, a USACE Section 10 navigable waterway. Alternative Route A is 11.6 miles and is located in Amherst (11.1 miles) and Campbell (0.5 mile) counties. Within a 100-foot-wide ROW, the desktop wetland and stream delineation identified 10 potential wetlands (totaling 5.15 acres) and 17 streams (totaling 2,712 linear feet). The results of the desktop wetland and stream delineations for Alternative Route A is summarized in the table below.

ALTERNATIVE ROUTE A: DESKTOP WETLAND AND STREAM DELINEATION RESULTS			
PROBABILITY LEVEL	**WATER OF THE UNITED STATES TYPE**	**NUMBER OF OCCURRENCES**	**ACREAGE/LINEAR FOOTAGE WITHIN ROW**
High			
	PUB	2	1.25 ac.
	Streams	16	2,607 feet
Moderate			
	PFO	2	1.57 ac.
	PSS/PFO	1	0.36 ac.
	Streams	0	0 feet
Low			
	PFO	4	1.83 ac.
	PSS	1	0.14 ac.
	Streams	1	105 feet
	Wetland Total	**10**	**5.15 ac.**
	Stream Total	**17**	**2,712 feet**

Alternative Route B (Joshua Falls – Riverville)

Alternative Route B exits the Joshua Falls Substation to the south and is the northernmost route considered on the south side of the James River. Alternative Route B continues generally northeast and north of major residential roadways like Appomattox County Road (CR) 605 and Tin Top Place, then crosses the James River to reach the proposed Riverville Substation expansion from the south. Alternative Route B is 10.5 miles and is located in Amherst (0.6 mile), Appomattox (8.6 miles) and Campbell (1.3 miles) counties. Within a 100-foot-wide ROW, the desktop wetland and stream delineation identified 12 potential wetlands (totaling 5.24 acres) and 21 streams (totaling 2,284 linear feet). The results of the desktop wetland and stream delineations for Alternative Route B is summarized in the table below.

ALTERNATIVE ROUTE B: DESKTOP WETLAND AND STREAM DELINEATION RESULTS			
PROBABILITY LEVEL	**WATER OF THE UNITED STATES TYPE**	**NUMBER OF OCCURRENCES**	**ACREAGE/LINEAR FOOTAGE WITHIN ROW**
High			
	PFO[1]	2	0.89 ac.
	PUB	1	0.50 ac.
	Streams	16	1,682 feet
Moderate			
	PFO[2]	2	0.63 ac.
	Streams	0	0 feet
Low			
	PFO	5	2.29 ac.
	PFO/PSS	2	0.93 ac.
	Streams	5	602 feet
	Wetland Total	**12**	**5.24 ac.**
	Stream Total	**21**	**2,284 feet**

[1] Two high probability PFO wetlands (totaling 0.89 acre) are located at the James River crossing and the southern Alternative Routes, including Alternative Route B, would span high above the water to avoid tree clearing and impacts to the wetland.
[2] Two moderate probability PFO wetlands (totaling 0.63 acre) are located at the James River crossing and the southern Alternative Routes, including Alternative Route B, would span high above the water to avoid tree clearing and impacts to the wetland.

Alternative Route C (Joshua Falls – Riverville)

Alternative Route C exits the Joshua Falls Substation to the south and follows the same trajectory of Alternative B but diverts south to avoid crossing Chestnut Mountain. Alternative Route C continues as the southernmost route on the south side of Appomattox CR 605 then joins Alternative Route B to cross the James River to reach the proposed Riverville Substation expansion. Alternative Route C is 11.1 miles and is located in Amherst (0.6 mile), Appomattox (9.2 miles) and Campbell (1.3 miles) counties. Within a 100-foot-wide ROW, the desktop wetland and stream delineation identified 17 potential wetlands (totaling 6.17 acres) and 28 streams (totaling 3,434 linear feet). The results of the desktop wetland and stream delineations for Alternative Route C is summarized in the table below.

ALTERNATIVE ROUTE C: DESKTOP WETLAND AND STREAM DELINEATION RESULTS			
PROBABILITY LEVEL	**WATER OF THE UNITED STATES TYPE**	**NUMBER OF OCCURRENCES**	**ACREAGE/LINEAR FOOTAGE WITHIN ROW**
High			
	PFO[1]	2	0.89 ac.
	PUB	1	0.50 ac.
	Streams	21	2,472 feet
Moderate			
	PFO[2]	2	0.63 ac.
	Streams	1	122 feet
Low			
	PFO	8	3.17 ac.
	PSS	2	0.18 ac.
	PFO/PSS	2	0.80 ac.
	Streams	6	814 feet
	Wetland Total	**17**	**6.17 ac.**
	Stream Total	**28**	**3,408 feet**

[1] Two high probability PFO wetlands (totaling 0.89 acre) are located at the James River crossing and the southern Alternative Routes, including Alternative Route C, would span high above the water to avoid tree clearing and impacts to the wetland.
[2] Two moderate probability PFO wetlands (totaling 0.63 acre) are located at the James River crossing and the southern Alternative Routes, including Alternative Route C, would span high above the water to avoid tree clearing and impacts to the wetland.

Alternative Route D (Joshua Falls – Riverville, Proposed Route)

Alternative Route D is a combination of Alternative Routes B and C; Alternative Route D remains south of Chestnut Mountain and north of Appomattox CR 605. Alternative Route D joins Alternative Routes B and C to cross the James River to reach the proposed Riverville Substation expansion. Alternative Route D is 11.1 miles and is located in Amherst (0.6 mile), Appomattox (9.2 miles) and Campbell (1.3 miles) counties. Within a 100-foot-wide ROW, the desktop wetland and stream delineation identified 13 potential wetlands (totaling 5.52 acres) and 24 streams (totaling 2,737 linear feet). The results of the desktop wetland and stream delineations for Alternative Route D, the Proposed Route, is summarized in the table below.

ALTERNATIVE ROUTE D (PROPOSED ROUTE): DESKTOP WETLAND AND STREAM DELINEATION RESULTS			
PROBABILITY LEVEL	**WATER OF THE UNITED STATES TYPE**	**NUMBER OF OCCURRENCES**	**ACREAGE/LINEAR FOOTAGE WITHIN ROW**
High			
	PFO[1]	2	0.89 ac.
	PUB	1	0.50 ac.
	Streams	17	1,782 feet
Moderate			
	PFO[2]	2	0.63 ac.
	Streams	0	0 feet
Low			
	PFO	5	1.96 ac.
	PFO/PSS	3	1.54 ac.
	Streams	7	955 feet
	Wetland Total	**13**	**5.52 ac.**
	Stream Total	**24**	**2,737 feet**

[1] Two high probability PFO wetlands (totaling 0.89 acre) are located at the James River crossing and the southern Alternative Routes, including Alternative Route D (Proposed Route), would span high above the water to avoid tree clearing and impacts to the wetland.
[2] Two moderate probability PFO wetlands (totaling 0.63 acre) are located at the James River crossing and the southern Alternative Routes, including Alternative Route D (Proposed Route), would span high above the water to avoid tree clearing and impacts to the wetland.

Alternative Route E (Gladstone – Riverville, Proposed Route)

Alternative Route E is the northernmost route connecting the Riverville and Gladstone (CVEC) substations. Alternative Route E is 6.3 miles and is located in Amherst (3.2 miles) and Nelson (3.1 miles) counties. Within a 100-foot-wide ROW, the desktop wetland and stream delineation identified four potential wetlands (totaling 2.50 acres) and 13 streams (totaling 1,705 linear feet). The results of the desktop wetland and stream delineations for Alternative Route E, the Proposed Route, is summarized in the table below.

ALTERNATIVE ROUTE E (PROPOSED ROUTE): DESKTOP WETLAND AND STREAM DELINEATION RESULTS			
PROBABILITY LEVEL	**WATER OF THE UNITED STATES TYPE**	**NUMBER OF OCCURRENCES**	**ACREAGE/LINEAR FOOTAGE WITHIN ROW**
High			
	PUB	1	0.01 ac.
	Streams	11	1,481 feet
Moderate			
	PUB	1	0.10 ac.
	Streams	2	224 feet
Low			
	PFO	2	2.39 ac.
	Streams	0	0 feet
	Wetland Total	**4**	**2.50 ac.**
	Stream Total	**13**	**1,705 feet**

Alternative Route F (Gladstone – Riverville)

Alternative Route F is the southernmost route connecting the Riverville and Gladstone substations. Alternative Route F is 5.5 miles and is located in Amherst (three miles) and Nelson (2.5 miles) counties. Within a 100-foot-wide ROW, the desktop wetland and stream delineation identified five potential wetlands (totaling 2.22 acres) and seven streams (totaling 934 linear feet). The results of the desktop wetland and stream delineations for Alternative Route F is summarized in the table below.

ALTERNATIVE ROUTE F: DESKTOP WETLAND AND STREAM DELINEATION RESULTS			
PROBABILITY LEVEL	**WATER OF THE UNITED STATES TYPE**	**NUMBER OF OCCURRENCES**	**ACREAGE/LINEAR FOOTAGE WITHIN ROW**
High			
	NWI	0	0 ac.
	Streams	7	934 feet
Moderate			
	NWI	0	0 ac.
	Streams	0	0 feet
Low			
	PFO/PSS	5	2.22 ac.
	Streams	0	0 feet
	Wetland Total	**5**	**2.22 ac.**

ALTERNATIVE ROUTE F: DESKTOP WETLAND AND STREAM DELINEATION RESULTS			
PROBABILITY LEVEL	**WATER OF THE UNITED STATES TYPE**	**NUMBER OF OCCURRENCES**	**ACREAGE/LINEAR FOOTAGE WITHIN ROW**
	Stream Total	**7**	**934 feet**

A summary of the desktop wetland and stream resources identified for Component 1 is provided in Attachment 2.E.1. The Joshua Falls – Riverville 138-kV Transmission Line Proposed Route ROW (Alternative Route D) includes 13 wetlands with a total combined area of 5.52 acres and crosses 24 streams with a total combined linear footage of 2,737 feet. The Gladstone – Riverville 138-kV Transmission Line Proposed Route ROW (Alternative Route E) includes four wetlands with a total combined area of 2.5 acres and crosses 13 streams with a total combined linear footage of 1,705 feet. Lastly, one high probability PUB wetland (totaling 0.5 acres) was identified within the 100-foot-wide ROW at the Amherst – Riverville 138-kV transmission line relocation (Attachment A of Attachment 2.E.1); however, the PUB wetland is a retention pond on the Greif Paper Mill property.

F. Solid and Hazardous Waste

A database search was conducted to identify solid and hazardous waste sites in the Joshua Falls – Riverville – Gladstone 138-kV Transmission Lines Component. The database search included the USEPA's National Priority List (NPL); the USEPA's Superfund Enterprise Management System; the USEPA's Resource Conservation and Recovery Act Information System (RCRA); the USEPA's Toxics Release Inventory (TRI); the VDEQ's Solid Waste Management Facilities; and the VDEQ's Voluntary Remediation Program (VRP). Results from the solid and hazardous waste database search are included in Attachment 2.F.1 to this supplement.

The USEPA's Superfund NPL online mapper identified no NPL sites in proximity to the Joshua Falls – Riverville – Gladstone 138 kV Transmission Lines Component in addition to the Superfund Enterprise Management System (database last updated November 2019). The RCRA includes information on facilities that generate, transport, store, treat, and/or dispose of hazardous waste as defined by RCRA. Facilities are classified as large quantity generators, small quantity generators, or conditionally exempt small quantity generators depending on the amount of waste they handle. The USEPA's RCRA database identified no RCRA facilities in the vicinity of the Joshua Falls – Riverville – Gladstone 138 kV Transmission Line Component (database last updated October 2020). The USEPA's TRI database includes information about toxic chemical releases and pollution prevention activities reported by industrial and federal facilities. The TRI database identified a total of five TRI sites within a 15-mile radius of the Joshua Falls – Riverville – Gladstone 138 kV Transmission Lines Component (database last updated 2019). The TRI site identified in closest proximity to Component 1 is located on the Greif Paper Mill and near the Riverville Substation. In addition, no facilities registered in the Virginia Voluntary Remediation Program (VRP) database (last updated November 2019) are in proximity to the Joshua Falls – Riverville – Gladstone 138 kV Transmission Lines component.

There are six convenience centers and collection sites operated and located in Amherst County, seven in Appomattox County, eleven in Campbell County, and four in Nelson County. The Stonewall Convenience Center in Appomattox County is the closest convenience center, located approximately 2 miles from the Joshua Falls – Riverville – Gladstone 138 kV Transmission Lines Component. Nelson County is a member of the Region 2000 Services Authority, which serves the four collections centers

in the county, although none are located within five miles of Component 1 and the Region 2000 Services Authority is located approximately 4.5 miles away.

Care will be taken to operate and maintain construction equipment to prevent any fuel or oil spills. Any waste created by the construction crews will be disposed of in a proper manner and recycled where appropriate and will be further detailed in the Company's stormwater pollution prevention plan, a component of the Virginia Stormwater Management Program, which will be submitted to the VDEQ. Based on the information obtained from the USEPA and the VDEQ databases, it is anticipated the Component 1 will not impact contaminated soils or groundwater during construction. The Company will monitor soil and groundwater quality in areas of soil disturbance locations, which will be outlined in the stormwater pollution prevention plan.

G. Natural Heritage, Threatened and Endangered Species

A USFWS Information for Planning and Consultation (IPaC) report was generated to verify potential habitat occurrences of threatened and endangered species. Two USFWS-listed species (Northern long-eared bat, listed as threatened, and the Gray Bat, listed as endangered) were identified to potentially occur within the Component 1 area. The IPaC is included as Attachment D to the *Joshua Falls – Riverville – Gladstone Siting Study*, located in Volume 2 of this Application.

The Project Team submitted a project review request to the VDCR, Virginia Natural Heritage Program on January 30, 2020 and a response was received on March 6, 2020 (see Attachment C to the *Joshua Falls – Riverville – Gladstone Siting Study*). The VDCR noted the James River is designated as a "Threatened and Endangered Species" Water by the Virginia Department of Wildlife Resources (VDWR) for the Green floater (*Lasmigona subviridis*), but did not have any concerns or other listed species for the Company, and provided recommendations in the letter.

The Project Team submitted a project review request to the Virginia Department of Wildlife Resources (VDWR) [previously the Virginia Department of Game and Inland Fisheries (VDGIF)]. The Company did not receive comments from the VDWR. A review of the VDWR's online mapper was used to view sensitive species and resulted in five USFWS-listed species (Northern long-eared bat, James spinymussel, Gray Bat, Roanoke Logperch, and yellow lance) within a 3 mile radius of the Joshua Falls – Riverville – Gladstone 138 kV Transmission Lines Component. The Joshua Falls – Riverville – Gladstone 138 kV Transmission Lines Component area is not located in proximity to any potential Northern long-eared bat, little brown bat, or tri-colored bat habitat and roost tree locations according to the information obtained in VDWR's online mappers (various survey dates). One bald eagle nest documented by The Center for Conservation Biology's (CCB) Eagle Nest Locator was located about three miles southwest of the Joshua Falls Substation. The USFWS eagle guidance recommends that a 660-foot buffer between project activities and eagle nests be maintained. No other eagle nest locations were identified in close proximity to the Joshua Falls – Riverville – Gladstone 138 kV Transmission Lines Component.

A total of 12 state-listed species could occur within the Joshua Falls – Riverville – Gladstone 138 kV Transmission Lines Component based on the VDWR list. The full list can be found in Attachment 2.G.1 and in the below table.

VDWR-LISTED SPECIES WITHIN 10 MILES OF COMPONENT 1	
SPECIES NAME	**STATUS**
Little brown bat	Endangered
Tri-colored bat	Endangered
Spirit supercoil	Endangered
Brook floater	Endangered
Eastern tiger salamander	Endangered
Peregrine falcon	Threatened
Loggerhead shrike	Threatened
Henslow's sparrow	Threatened
Atlantic pigtoe	Threatened
Orangefin madtom	Threatened
Green floater	Threatened
Carolina darter	Threatened

The Company will coordinate with the USFWS, the VDWR, and the VDCR as appropriate to minimize impacts on these resources through the environmental permitting phase of the CVTRP.

H. Erosion and Sediment Control

The Company's General Erosion and Sediment Control Specifications for the Construction and Maintenance of Electric Utility Lines are submitted annually to the VDEQ for all upcoming projects. The approved General Erosion and Sediment Control Specifications will be implemented for all transmission facility construction related to the proposed CVTRP, including the Joshua Falls – Riverville – Gladstone 138 kV Transmission Lines Component, which will require substation construction, ROW clearing, transmission structure erection, and a new substation entrance road. In addition, a site-specific erosion and sediment control plan will be prepared as required by the VDEQ.

I. Archaeological, Historic, Scenic, Cultural or Architectural Resources

Per *the Guidelines for Assessing Impacts of Proposed Electric Transmission Lines and Associated Facilities on Historic Resources in the Commonwealth of Virginia* (2008) or simply Guidelines, issued by the Virginia Department of Historic Resources (VDHR), POWER, who contracted Dutton + Associates, completed a Pre-Application Analysis (see Attachment 2.I.1). The below table summarizes these results. The Company will continue to work with the VDHR to minimize impacts to cultural resources as the CVTRP progresses.

CONSIDERED RESOURCES WITHIN TIERED STUDY AREAS FOR JOSHUA FALLS – RIVERVILLE 138-KV ALTERNATIVE ROUTES					
Radial Buffer From Component 1 (Miles)	**Considered Resources**	**Alternative Route A**	**Alternative Route B**	**Alternative Route C**	**Alternative Route D (Proposed Route)**
0.0 to 1.5	National Historic Landmarks	None	None	None	None
0.0 to 1.0	NRHP (listed) (e.g., Historic Landscapes, Battlefields, Rural Historic District)	Edge Hill (VDHR# 005-0005) **Approx. 0.4 mile** Galts Mill Complex (VDHR# 005-5037) **Approx. 0.9 mile** Brightwells Mill Complex (VDHR# 005-0035) **Approx. 0.9 mile**	Edge Hill (VDHR# 005-0005) **Approx. 0.7 mile**	Edge Hill (VDHR# 005-0005) **Approx. 0.7 mile**	Edge Hill (VDHR# 005-0005) **Approx. 0.7 mile**
0.0 to 0.5	NRHP-eligible (determined by VDHR)	None	None	None	None
0.00 (within ROW)	Archaeological sites	None	None	None	None

CONSIDERED RESOURCES WITHIN TIERED STUDY AREAS FOR GLADSTONE – RIVERVILLE 138-KV ALTERNATIVE ROUTES			
Radial Buffer From Component 1 (Miles)	**Considered Resources**	**Alternative Route E (Proposed Route)**	**Alternative Route F**
0.0 to 1.5	National Historic Landmarks	None	None
0.0 to 1.0	NRHP (listed) (e.g., Historic Landscapes, Battlefields, Rural Historic District)	Edge Hill (VDHR# 005-0005) **Approx. 0.9 mile**	Edge Hill (VDHR# 005-0005) **Approx. 0.9 mile**
0.0 to 0.5	NRHP-eligible (determined by VDHR)	None	None
0.00 (within ROW)	Archaeological sites	None	None

Three NRHP-listed resources are located within one mile of Component 1: Edge Hill (VDHR# 005-0005), Brightwells Mill Complex (VDHR# 005-0035), and the Galts Mill Complex (VDHR# 005-5037). The Galts Mill Complex and Brightwells Mill Complex are located approximately 1.3 and 2.6 miles, respectively, from the nearest portion of Alternative Route D (Proposed Route). The Edge Hill property is located approximately 0.7 mile from Alternative Routes B – D, and near the Greif Paper Mill, an industrial land use, and a low-density residential area. The intervening landscape between the Alternative Routes B – D and Edge Hill is rolling and mostly wooded. The Proposed Route for the Joshua Falls – Riverville 138 kV Transmission Line (Alternative Route D) crosses the James River from the opposite side of the resource and is approximately 0.7 mile downstream from Edge Hill and

around a slight bend in the river, which is likely to be screened by topography and vegetation. Alternative Routes E and F are located approximately 0.9 mile east of the Edge Hill property and will be screened by the intervening topography and the Greif Paper Mill. Based on the Pre-Application Analysis, the Edge Hill resource will not be visible from the proposed transmission line given the intervening topography and surrounding developed land uses, including the industrial Greif Paper Mill. None of the Alternative Routes are anticipated to pose any more than a minimal impact to any NRHP-listed resource. Alternative Routes B, C, and D on the south side of the James River are recommended to pose no impact to the Brightwells Mill Complex or Galts Mill Complex, and will pose no more than a minimal impact to Edge Hill. Alternative Route A, on the north side of the James River, is recommended to pose no more than a minimal impact to all three NRHP-listed resources. Between the Riverville and Gladstone (CVEC) substations, Alternative Routes E and F are recommended to pose no impact to the Edge Hill. There are no known NRHP-eligible sites within 0.5 mile or Archaeological sites in the ROW of any Alternative Routes considered for Component 1.

J. Chesapeake Bay Preservation Areas

Construction, installation, operation, and maintenance of electric transmission lines are conditionally exempt from the Chesapeake Bay Act as stated in the exemption for public utilities, railroads, public roads, and facilities in 9 VAC 10-20-150. The Company will meet applicable conditions.

K. Wildlife Resources

As noted in Section 2.G, two federally-listed species may be found within one mile of the Joshua Falls – Riverville – Gladstone 138 kV Transmission Lines Component area, according to the IPaC. Consultation with the USFWS, the VDWR and the VDCR will be on-going as the CVTRP progresses. As required, the Company will perform the appropriate surveys to determine if protected species are present and to coordinate with the USFWS and the VDWR as appropriate to minimize impacts on these species and their habitat.

L. Recreation, Agricultural, and Forest Resources

The Joshua Falls – Riverville – Gladstone 138 kV Transmission Lines Component is expected to have minimal impact on recreation, agricultural, and forest resources after review of available planning documents and meetings with local staff. There are no local parks, designated wilderness areas, or game lands located in the Study Area or in proximity to any Alternative Route. In a letter received from the VDCR on March 6, 2020, no State Natural Area Preserves were identified in the Project Area, including the 138-kV line routes. There are two public boat launches maintained by the VDWR in the Study Area: one is located upstream of the Joshua Falls Substation (boat slide launch) and the second is a state conservation land located east of Riverville and where US Route 60 crosses the James River (concrete boat ramp). The James River corridor within the Study Area has been designated by VDCR as a potentially scenic river and includes recreational activities such as canoeing, kayaking and fishing. The Proposed Route unavoidably crosses the James River, but

impacts to recreation are minimized at the crossing based on the distance from public river access points and a high crossing above the river.

Approximately 109 acres of farmland of statewide importance[1] and approximately 41 acres of prime and unique farmland soil[2] is crossed by the Proposed Route 100-foot-wide ROW. These designations are established by the United States Department of Agriculture's Natural Resources Conservation Service based on soil characteristics. Nevertheless, impacts on agricultural land from the Project are expected to be minimal. The permanent loss of soils or farmable land would be generally limited to the structure foundation locations. Further, the minimum ground-to-conductor clearance is sufficient to accommodate typical farming equipment, so agricultural activities can continue within the ROW and are not anticipated to be impacted.

As part of the routing evaluations, the Siting Team considered the extent to which the Project would have impacts on forest resources in the Commonwealth of Virginia. The Company requested comments on the CVTRP from the Virginia Department of Forestry (VDOF) in a letter dated January 30, 2020. One VDOF conservation easement is located within 100 feet of the Proposed Route, but the ROW does not cross the easement. Additionally, no existing or proposed VOF easements are crossed by the Proposed Route or any Alternative Route ROWs. Approximately 160 acres of tree clearing is anticipated for the Proposed Route ROW based on digitizing aerial photography. The Company's tree clearing methods use the VDOF's BMPs for water quality. Specific sections of the BMPs that are pertinent to transmission line clearing operations include:

- Equipment Maintenance and Litter
- Harvest Closure (rehabilitation of the ROW after construction)
- Revegetation of Disturbed Areas

The Company will utilize the above BMPs for the CVTRP. Further discussion of ROW clearing, rehabilitation and maintenance can be found in Section II.A.7 of the SCC Response to Guidelines in Volume 1 of the Application.

M. Use of Pesticides and Herbicides

When herbicides are used to maintain the Company's transmission ROW, they are registered with the US EPA and with the Virginia Department of Agriculture and Consumer Services. All herbicides will be used in accordance with label and manufacturer directions. Regarding herbicide applications (additionally, see Section II.A.7 of the SCC Response to Guidelines in Volume 1 of the Application):

- Herbicides will not be applied when rainfall is imminent, during rainfall, or within one day of large rain events (usually greater than one centimeter) that result in soil moisture capacity occurring above field capacity.

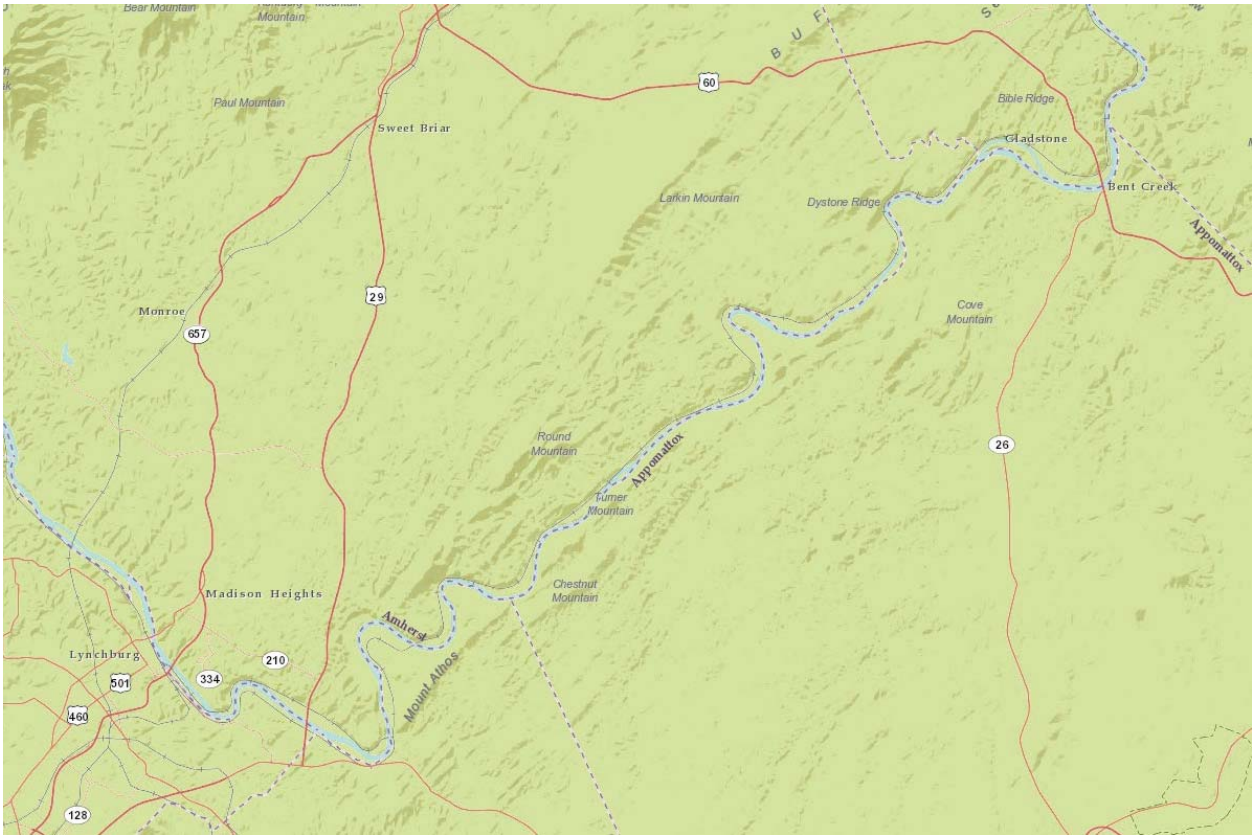
[1] Prime farmland is land that has the best combination of physical and chemical characteristics for producing crops.
[2] Soils that do not meet the prime farmland category but are still recognized for their productivity by states may qualify as soils of statewide importance.

- Buffer zones will be maintained around streams, ponds, karst features, springs, wetlands, and water supply wells in accordance and compliance with herbicide label and manufacturer directions.
- In karst features and channelized drainage ways (perennial or intermittent) draining to a karst feature, wetland-approved herbicides shall be used in accordance with label and manufacturer directions.

ATTACHMENTS

ATTACHMENT 2.F.1:
HAZARDOUS WASTE INFORMATION

Superfund National Priorities List (NPL) Where You Live Web Map



https://epa.maps.arcgis.com/apps/webappviewer/index.html?id=33cebcdfdd1b4c3a8b51d416956c41f1

Accessed 11/30/2020

- **You are here:** EPA Home
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- RCRAInfo
- Search Results

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RCRAInfo

Only RCRAInfo facility information was searched to select facilities

<< Return

Search Parameters: County Name: Amherst
State Abbreviation: Virginia
Sites: 1 Only Active

Results are based on data extracted on OCT-05-2020

No Results found.

Total Number of Facilities Retrieved: 0

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RCRAInfo

Only RCRAInfo facility information was searched to select facilities

<< Return

Search Parameters: County Name: Appomattox
State Abbreviation: Virginia
Sites: 1 Only Active

Results are based on data extracted on OCT-05-2020

No Results found.

Total Number of Facilities Retrieved: 0

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RCRAInfo

Only RCRAInfo facility information was searched to select facilities

<< Return

Search Parameters: County Name: Campbell
State Abbreviation: Virginia
Sites: 1 Only Active

Results are based on data extracted on OCT-05-2020

No Results found.

Total Number of Facilities Retrieved: 0

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RCRAInfo

Only RCRAInfo facility information was searched to select facilities

<< Return

Search Parameters: County Name: Nelson
State Abbreviation: Virginia
Sites: 1 Only Active

Results are based on data extracted on OCT-05-2020

No Results found.

Total Number of Facilities Retrieved: 0

Search Results

SEMS

Consolidated facility information (from multiple EPA systems) was searched to select facilities

<< Return

Search Parameters: County Name: Appomattox
State Abbreviation: Virginia

Results are based on data extracted on NOV-25-2019

No Results found.

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- SEMS
- Search Results

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Consolidated facility information (from multiple EPA systems) was searched to select facilities

<< Return

Search Parameters: County Name: Campbell
State Abbreviation: Virginia

Results are based on data extracted on NOV-25-2019

No Results found.

- **You are here:** EPA Home
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SEMS

Consolidated facility information (from multiple EPA systems) was searched to select facilities

<< Return

Search Parameters: County Name: Amherst
State Abbreviation: Virginia

Results are based on data extracted on NOV-25-2019

No Results found.

- **You are here:** EPA Home
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SEMS

Consolidated facility information (from multiple EPA systems) was searched to select facilities

<< Return

Search Parameters: County Name: Nelson
State Abbreviation: Virginia

Results are based on data extracted on NOV-25-2019

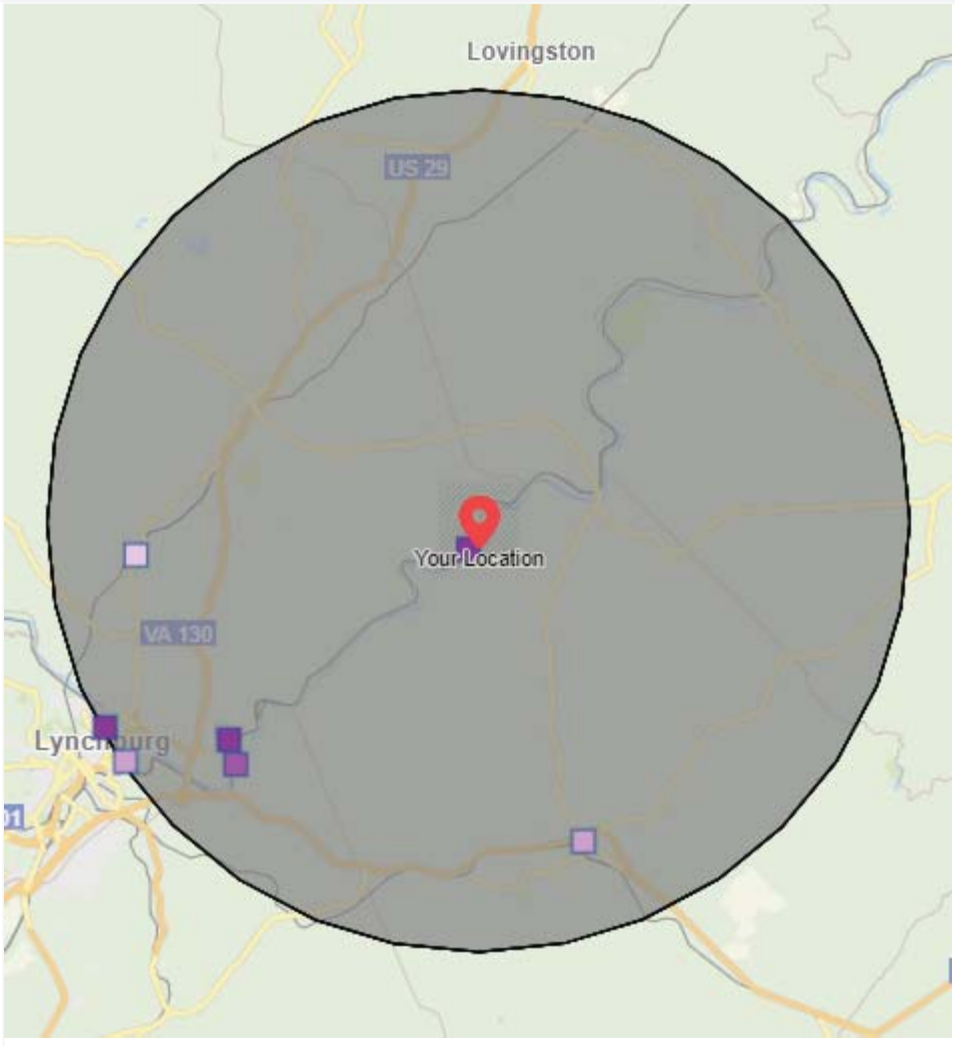
No Results found.

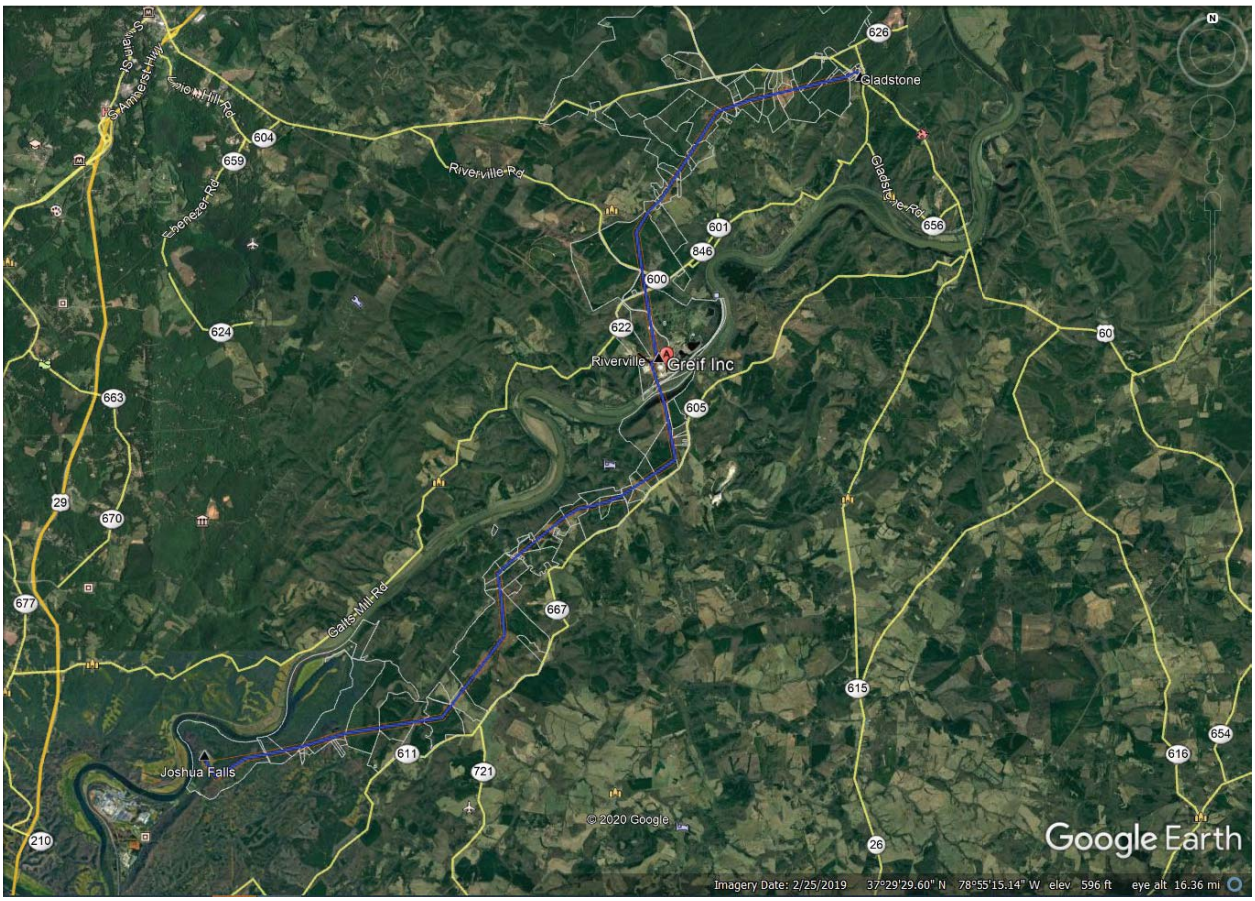
SUMMARY OF 7 FACILITIES BASED ON YOUR CURRENT SEARCH OPTIONS

TRI Search Plus - Find a Location

This map shows the location of TRI facilities for Reporting Years 2007-2019 based on your search criteria. Use the menu options on the left to learn more about these facilities.

In addition to the location options available on this page, you can also select additional search options using the filters in the **Select Filters and Options** menu at the top right.





TRI Facility closest to Joshua Falls – Riverville – Gladstone 138 kV Transmission Line component.

Accessed 12/01/2020.

ATTACHMENT 2.G.1:
VDWR RESOURCES

VaFWIS Search Report Compiled on 12/11/2020, 8:39:33 PM

Help

Known or likely to occur within a **10 mile radius around point 37.4977331 -78.8986042** in **009 Amherst County, 011 Appomattox County, 029 Buckingham County, 031 Campbell County, 125 Nelson County, VA**

View Map of Site Location

645 Known or Likely Species ordered by Status Concern for Conservation (displaying first 41) (41 species with Status* or Tier I** or Tier II**)

BOVA Code	Status*	Tier**	Common Name	Scientific Name
060017	FESE	Ia	Spinymussel, James	Parvaspina collina
010214	FESE	IIa	Logperch, Roanoke	Percina rex
050021	FESE	IIa	Bat, gray	Myotis grisescens
050022	FTST	Ia	Bat, northern long-eared	Myotis septentrionalis
060029	FTST	IIa	Lance, yellow	Elliptio lanceolata
050020	SE	Ia	Bat, little brown	Myotis lucifugus
050027	SE	Ia	Bat, tri-colored	Perimyotis subflavus
110240	SE	Ia	Supercoil, spirit	Paravitrea hera
060006	SE	Ib	Floater, brook	Alasmidonta varicosa
020052	SE	IIa	Salamander, eastern tiger	Ambystoma tigrinum
040096	ST	Ia	Falcon, peregrine	Falco peregrinus
040293	ST	Ia	Shrike, loggerhead	Lanius ludovicianus
040379	ST	Ia	Sparrow, Henslow's	Centronyx henslowii
060173	FPST	Ia	Pigtoe, Atlantic	Fusconaia masoni
060081	ST	IIa	Floater, green	Lasmigona subviridis
010127	ST	IIb	Madtom, orangefin	Noturus gilberti
010353	ST	IIc	Darter, Carolina	Etheostoma collis
040292	ST		Shrike, migrant loggerhead	Lanius ludovicianus migrans
030063	CC	IIIa	Turtle, spotted	Clemmys guttata
030031	CC	IIIc	Kingsnake, scarlet	Lampropeltis elapsoides
030012	CC	IVa	Rattlesnake, timber	Crotalus horridus
010174		Ia	Bass, Roanoke	Ambloplites cavifrons
010077		Ia	Shiner, bridle	Notropis bifrenatus
040092		Ia	Eagle, golden	Aquila chrysaetos
040040		Ia	Ibis, glossy	Plegadis falcinellus
040306		Ia	Warbler, golden-winged	Vermivora chrysoptera
080214		Ia	Stonefly, Beartown perlodid	Isoperla major
100248		Ia	Fritillary, regal	Speyeria idalia idalia
060084		Ib	Pigtoe, Virginia	Lexingtonia subplana

080216		Ib	Willowfly, cryptic	Taeniopteryx nelsoni
040213		Ic	Owl, northern saw-whet	Aegolius acadicus
020023		IIa	Salamander, mole	Ambystoma talpoideum
040052		IIa	Duck, American black	Anas rubripes
040036		IIa	Night-heron, yellow-crowned	Nyctanassa violacea violacea
040320		IIa	Warbler, cerulean	Setophaga cerulea
040140		IIa	Woodcock, American	Scolopax minor
040203		IIb	Cuckoo, black-billed	Coccyzus erythropthalmus
040105		IIb	Rail, king	Rallus elegans
040304		IIc	Warbler, Swainson's	Limnothlypis swainsonii
070138		IIc	Amphipod, Bland County	Crangonyx sp. 3
080336		IIc	Beetle, Gammon's stenelmis riffle	Stenelmis gammoni

To view **All 645 species** View 645

*FE=Federal Endangered; FT=Federal Threatened; SE=State Endangered; ST=State Threatened; FP=Federal Proposed; FC=Federal Candidate; CC=Collection Concern

**I=VA Wildlife Action Plan - Tier I - Critical Conservation Need; II=VA Wildlife Action Plan - Tier II - Very High Conservation Need; III=VA Wildlife Action Plan - Tier III - High Conservation Need;
IV=VA Wildlife Action Plan - Tier IV - Moderate Conservation Need
Virginia Widlife Action Plan Conservation Opportunity Ranking:
a - On the ground management strategies/actions exist and can be feasibly implemented.;
b - On the ground actions or research needs have been identified but cannot feasibly be implemented at this time.;
c - No on the ground actions or research needs have been identified or all identified conservation opportunities have been exhausted.

Anadromous Fish Use Streams (3 records)

View Map of All Anadromous Fish Use Streams

Stream ID	Stream Name	Reach Status	Anadromous Fish Species			View Map
			Different Species	Highest TE*	Highest Tier**	
P188	Tye River	Potential	0			Yes
P189	James River 4	Potential	0			Yes
P50	David creek	Potential	0			Yes

Impediments to Fish Passage (8 records)

View Map of All Fish Impediments

ID	Name	River	View Map
963	EARLEY DAM	ROCKY CREEK	Yes
832	HIGHWAY CULVERT	TAYLORS CREEK	Yes
833	HIGHWAY CULVERT	WALKERS FORD CREEK	Yes
964	IZAAK WALTON DAM	PARTRIDGE CREEK	Yes
987	LAWSON DAM	BUCK CREEK	Yes
831	PIEDMONT DAM	BUFFALO RIVER	Yes
834	TWO ARCH CMP	STONEWALL CREEK	Yes
970	WENNINGS DAM	TR-PARTRIDGE CREEK	Yes

Threatened and Endangered Waters (82 Reaches - displaying first 20)

View Map of All Threatened and Endangered Waters

Stream Name	T&E Waters Species						View Map
	Highest TE*	BOVA Code, Status*, Tier**, Common & Scientific Name					
Tye River (0100420)	FESE	060017	FESE	Ia	Spinymussel, James	Parvaspina collina	Yes
		060081	ST	IIa	Floater, green	Lasmigona subviridis	
Tye River (0100916)	FESE	060017	FESE	Ia	Spinymussel, James	Parvaspina collina	Yes
		060081	ST	IIa	Floater, green	Lasmigona subviridis	
Tye River (0106500)	FESE	060017	FESE	Ia	Spinymussel, James	Parvaspina collina	Yes
		060081	ST	IIa	Floater, green	Lasmigona subviridis	
Tye River (088683)	FESE	060017	FESE	Ia	Spinymussel, James	Parvaspina collina	Yes
		060081	ST	IIa	Floater, green	Lasmigona subviridis	
Tye River (088970)	FESE	060017	FESE	Ia	Spinymussel, James	Parvaspina collina	Yes
		060081	ST	IIa	Floater, green	Lasmigona subviridis	
Tye River (090252)	FESE	060017	FESE	Ia	Spinymussel, James	Parvaspina collina	Yes
		060081	ST	IIa	Floater, green	Lasmigona subviridis	
Tye River (093135)	FESE	060017	FESE	Ia	Spinymussel, James	Parvaspina collina	Yes
		060081	ST	IIa	Floater, green	Lasmigona subviridis	
Tye River (093206)	FESE	060017	FESE	Ia	Spinymussel, James	Parvaspina collina	Yes
		060081	ST	IIa	Floater, green	Lasmigona subviridis	
Tye River (094695)	FESE	060017	FESE	Ia	Spinymussel, James	Parvaspina collina	Yes
		060081	ST	IIa	Floater, green	Lasmigona subviridis	

Tye River (098219)	FESE	060017	FESE	Ia	Spinymussel, James	Parvaspina collina	Yes
		060081	ST	IIa	Floater, green	Lasmigona subviridis	
Tye River (098480)	FESE	060017	FESE	Ia	Spinymussel, James	Parvaspina collina	Yes
		060081	ST	IIa	Floater, green	Lasmigona subviridis	
Tye River (098879)	FESE	060017	FESE	Ia	Spinymussel, James	Parvaspina collina	Yes
		060081	ST	IIa	Floater, green	Lasmigona subviridis	
(0141747)	ST	060081	ST	IIa	Floater, green	Lasmigona subviridis	Yes
(0145496)	ST	060081	ST	IIa	Floater, green	Lasmigona subviridis	Yes
(0149677)	ST	060081	ST	IIa	Floater, green	Lasmigona subviridis	Yes
(0152147)	ST	060081	ST	IIa	Floater, green	Lasmigona subviridis	Yes
(0157758)	ST	060081	ST	IIa	Floater, green	Lasmigona subviridis	Yes
(092958)	ST	060081	ST	IIa	Floater, green	Lasmigona subviridis	Yes
(093443)	ST	060081	ST	IIa	Floater, green	Lasmigona subviridis	Yes
(096901)	ST	060081	ST	IIa	Floater, green	Lasmigona subviridis	Yes
James River (0100124)	ST	060081	ST	IIa	Floater, green	Lasmigona subviridis	Yes
James River (0100134)	ST	060081	ST	IIa	Floater, green	Lasmigona subviridis	Yes
James River (0100632)	ST	060081	ST	IIa	Floater, green	Lasmigona subviridis	Yes

To view **All 82 Threatened and Endangered Waters records** View 82

Managed Trout Streams

N/A

Bald Eagle Concentration Areas and Roosts

N/A

Bald Eagle Nests

N/A

Habitat Predicted for Aquatic WAP Tier I & II Species (5 Reaches)

View Map Combined Reaches from Below of Habitat Predicted for WAP Tier I & II Aquatic Species

Stream Name	Tier Species						View Map
	Highest TE*	BOVA Code, Status*, Tier**, Common & Scientific Name					
Buffalo River (20802031)	ST	060081	ST	IIa	Floater, green	Lasmigona subviridis	Yes
James River (20802031)	FPST	060081	ST	IIa	Floater, green	Lasmigona subviridis	Yes
		060173	FPST	Ia	Pigtoe, Atlantic	Fusconaia masoni	
James River (20802031)	ST	060081	ST	IIa	Floater, green	Lasmigona subviridis	Yes
James River (20802032)	ST	060081	ST	IIa	Floater, green	Lasmigona subviridis	Yes
Piney River (20802031)	ST	060081	ST	IIa	Floater, green	Lasmigona subviridis	Yes
Piney River (20802031)	ST	060081	ST	IIa	Floater, green	Lasmigona subviridis	Yes

Habitat Predicted for Terrestrial WAP Tier I & II Species

N/A

Virginia Breeding Bird Atlas Blocks (12 records)

View Map of All Query Results
Virginia Breeding Bird Atlas Blocks

BBA ID	Atlas Quadrangle Block Name	Breeding Bird Atlas Species			View Map
		Different Species	Highest TE*	Highest Tier**	
38093	Amherst, CW	71		III	Yes
38096	Amherst, SE	51		III	Yes
39106	Arrington, SE	50		III	Yes

39096	Buffalo Ridge, SE	61		II	Yes
40096	Gladstone, SE	53		III	Yes
40095	Gladstone, SW	3		IV	Yes
38081	Kelly, NW	2			Yes
38086	Kelly, SE	63		III	Yes
40105	Shipman, SW	1			Yes
39081	Stonewall, NW	1			Yes
39086	Stonewall, SE	59		III	Yes
40086	Vera, SE	66		III	Yes

Public Holdings: (3 names)

Name	Agency	Level
Appomattox Court House National Historical Park	National Park Service	Federal
James River State Park	VA Dept. of Conservation and Recreation	State
Appomattox-Buckingham State Forest	VA Dept. of Forestry	State

Summary of BOVA Species Associated with Cities and Counties of the Commonwealth of Virginia:

FIPS Code	City and County Name	Different Species	Highest TE	Highest Tier
009	Amherst	394	FESE	I
011	Appomattox	338	FTSE	I
029	Buckingham	358	FTSE	I
031	Campbell	364	FTSE	I
125	Nelson	396	FTSE	I

USGS 7.5' Quadrangles:
Rustburg
Kelly
Amherst
Concord
Stonewall
Buffalo Ridge
Arrington
Appomattox
Vera
Gladstone
Shipman
Holiday Lake
Saint Joy

USGS NRCS Watersheds in Virginia:

N/A

USGS National 6th Order Watersheds Summary of Wildlife Action Plan Tier I, II, III, and IV Species:

HU6 Code	USGS 6th Order Hydrologic Unit	Different Species	Highest TE	Highest Tier
JA01	Appomattox River-Wolf Creek	46	FTSE	I
JM13	James River-Beck Creek	53	FTST	I
JM14	James River-Stonewall Creek	57	FTST	I
JM15	James River-Christian Mill Creek	47	FTST	I
JM16	Wreck Island Creek	46	SS	I
JM17	James River-Allens Creek	56	FTSE	I
JM18	Bent Creek	40	SS	II
JM19	David Creek	44	SS	II
JM20	James River-Alabama Creek	52	FTST	I
JM27	Tye River-Brown Creek	61	ST	I
JM29	Buffalo River-Stonewall Creek	51	ST	I
JM30	Rutledge Creek	49	ST	I
JM31	Buffalo River-Rocky Creek	59	ST	I
JM33	Tye River-Joe Creek	50	ST	I
JM34	James River-Mallorys Creek	53	FTST	I
JM51	Slate River-Grease Creek	46	FTST	I
JM52	North River-Meadow Creek	42	SS	II
RU65	Falling River-Reedy Creek	48	FESE	I

Compiled on 12/11/2020, 8:39:33 PM V1066477.0 report=V searchType= R dist= 16090 poi= 37.4977331 -78.8986042

ATTACHMENT 2.I.1:
VDHR PRE-APPLICATION ANALYSIS

REPORT >

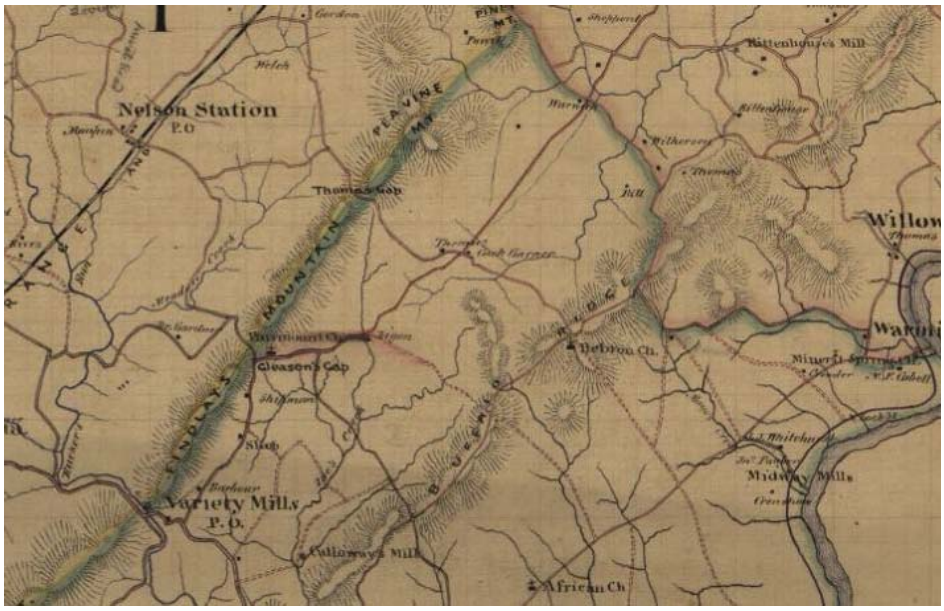
SCC Pre-Application Analysis Cultural Resources for Component 1 (Joshua Falls-Riverville-Gladstone 138 kV Transmission Lines) Of the Central Virginia Transmission Reliability Project

LOCATION > Amherst, Appomattox, Campbell, and Nelson Counties, Virginia

DATE> DECEMBER 2020

PREPARED FOR >

POWER Engineers, Inc.



PREPARED BY >

Dutton + Associates, LLC

PROJECT REVIEW # >

Dutton + Associates

CULTURAL RESOURCE SURVEY, PLANNING, AND MANAGEMENT

SCC Pre-Application Analysis
Cultural Resources for Component 1
(Joshua Falls-Riverville-Gladstone 138 kV Transmission Lines)
of the Central Virginia Transmission Reliability Project

Amherst, Appomattox, Campbell, and Nelson Counties, Virginia

***PREPARED FOR*:**
POWER ENGINEERS, INC.
11 South 12th St
Suite 315
Richmond, VA 23219

***PREPARED BY*:**
DUTTON + ASSOCIATES, LLC
1115 Crowder Drive
Midlothian, Virginia 23236
804.897-1960

PRINCIPAL INVESTIGATOR:
Robert J. Taylor, Jr. M.A.

December 2020

ABSTRACT

Dutton + Associates, LLC (D+A) conducted a Pre-Application Analysis (Analysis) of cultural resources for the Joshua Falls-Riverville-Gladstone 138 kV Transmission Lines Component (Component 1) in Amherst, Appomattox, Campbell, and Nelson Counties as part of the Central Virginia Transmission Reliability Project (CVTRP). The Analysis was performed for POWER Engineers, Inc. on behalf of Appalachian Power Company (Appalachian Power) in support of a Virginia State Corporation Commission (SCC) application. The Analysis was completed in accordance with Virginia Department of Historic Resources' (VDHR) guidance titled "Guidelines for Assessing Impacts of Proposed Electric Transmission Lines and Associated Facilities on Historic Resources in the Commonwealth of Virginia" (January 2008).

As part of the CVTRP, Appalachian Power proposes to build approximately 17 miles of new single-circuit 138-kV transmission line to connect the existing Joshua Falls and Riverville substations, owned by the Company, and the Gladstone Substation, owned by the Central Virginia Electric Cooperative (CVEC). Four Alternative Routes (Alternative Routes A – D) were considered to connect the Joshua Falls and Riverville substations for the Joshua Falls – Riverville 138-kV Transmission Line. Two Alternative Routes (Alternative Routes E and F) were considered to connect the Riverville Substation and CVEC's Gladstone Substation for the Gladstone – Riverville 138-kV Transmission Line. Component 1 of the CVTRP will be built within a new 100-foot-wide right-of-way (ROW). The anticipated structure heights of the proposed 138-kV transmission lines range from 55 feet to 100 feet tall, with an average structure height of approximately 70 feet. The anticipated river crossing structure heights of the proposed 138-kV transmission line range from 80 feet to 120 feet, with an average height of 100 feet.

The background research conducted as part of this Analysis was guided by VDHR guidance and designed to identify all previously recorded National Historic Landmarks (NHL) located within 1.5 miles of each Alternative Route, all historic properties listed in the National Register of Historic Places (NRHP) or battlefields located within 1.0 mile of each Alternative Route, all historic properties considered eligible for listing in the NRHP located within 0.5 mile of each Alternative Route, and all archaeological sites located directly within or adjacent to the ROW for each Alternative Route. Historic properties include architectural and archaeological (terrestrial and underwater) resources, historic and cultural landscapes, battlefields, and historic districts. For each historic property within the defined tiers, a review of existing documentation and a field reconnaissance was undertaken to assess each property's significant character-defining features, as well as the character of its current setting. Following identification of historic properties, D+A assessed the potential for impacts to any identified properties as a result of Component 1 of the CVTRP. Specific attention was given to determining whether or not construction related to Component 1 could introduce new visual elements into the property's viewshed or directly impact the property through construction, which would either directly or indirectly alter those qualities or characteristics that qualify the historic property for listing in the NRHP.

Review of the Virginia Department of Historic Resources (VDHR) Virginia Cultural Resource Information System (VCRIS) inventory records revealed there are no NHLs located within 1.5 miles of any Alternative Route, three (3) properties listed in the NRHP and no battlefields located within 1.0 mile of at least one Alternative Route, and no additional properties that have been determined eligible for listing in the NRHP within 0.5-miles of any Alternative Route.

The VCRIS also revealed there are two (2) previously recorded archaeological sites within or adjacent to one of the Alternative Routes. Of these, one has been determined not eligible for listing in the NRHP by the VDHR and the other has not been formally evaluated.

*Site visit and viewshed assessment for these properties revealed that each resource has the potential to be impacted by one or more Alternative Routes; however, none of the Alternative Routes are anticipated to pose any more than a minimal impact to any NRHP-listed resource. Of the Joshua Falls-Riverville Alternative Routes, those on the south side of the River (Alternative Routes B, C, and D) are recommended to pose **no impact** to the Brightwells Mill Complex or Galts Mill Complex and will pose no more than a **minimal impact** to Edge Hill. Alternative Route A is recommended to pose no more than a **minimal impact** to all three resources. Of the two Riverville-Gladstone Alternative Routes (Alternative Routes E and F), both are recommended to pose **no impact** to any of the three NRHP-listed resources.*

Table of Potential impacts for Joshua Falls-Riverville 138 kV Alternative Routes

VDHR ID #	Resource Name	Alternative Route A	Alternative Route B	Alternative Route C	Alternative Route D
005-0005	**Edge Hill**	Minimal Impact	Minimal Impact	Minimal Impact	Minimal Impact
005-5035	**Brightwells Mill Complex**	Minimal Impact	No Impact	No Impact	No Impact
005-0037	**Galts Mill Complex**	Minimal Impact	No Impact	No Impact	No Impact

Table of potential impacts for the Gladstone – Riverville 138 kV Alternative Routes.

VDHR #	Resource Name	Alternative Route E	Alternative Route F
005-0005	**Edge Hill**	*No Impact*	*No Impact*
005-5035	**Brightwells Mill Complex**	*No Impact*	*No Impact*
005-0037	**Galts Mill Complex**	*No Impact*	*No Impact*

With regards to archaeology, there are two known sites within or immediately adjacent to at least one of the Alternative Routes. These include a prehistoric artifact scatter that has been determined not eligible for listing in the NRHP by the VDHR, and a nineteenth century road trace that has not been formally evaluated. No archaeological field work was conducted as part of this effort and previously recorded sites within or adjacent to Component 1 were not visited or assessed at this time, but should be assessed for existing conditions and project impacts as additional project construction details become available.

Table of potential impacts for archaeological sites.

Resource	Joshua Falls – Riverville				Gladstone – Riverville	
	Alternative Route A	Alternative Route B	Alternative Route C	Alternative Route D	Alternative Route E	Alternative Route F
44CP0273 (Pre-Contact Artifact scatter - VDHR: Not Eligible)	*No Impact*	*TBD*	*TBD*	*TBD*	*No Impact*	*No Impact*
44AH0543 (19th Century Road Trace - Not Evaluated)	*No Impact*	*No Impact*	*No Impact*	*No Impact*	*TBD*	*No Impact*

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1. INTRODUCTION

In November 2020, Dutton + Associates, LLC (D+A) conducted a Pre-Application Analysis (Analysis) of cultural resources for the Joshua Falls – Riverville – Gladstone 138 kV Transmission LineS Component (Component 1) in Amherst, Appomattox, Campbell and Nelson Counties, Virginia. Component 1 is component of the Central Virginia Transmission Reliability Project (CVTRP). The analysis was performed for POWER Engineers, Inc. on behalf of Appalachian Power Company (Appalachian Power) in support of a Virginia State Corporation Commission (SCC) application. The analysis was conducted in accordance with Virginia Department of Historic Resources' (VDHR) guidance titled *Guidelines for Assessing Impacts of Proposed Electric Transmission Lines and Associated Facilities on Historic Resources in the Commonwealth of Virginia* (January 2008) and Commonwealth of Virginia State Corporation Commission Division of Public Utility Regulation *Guidelines for Transmission Line Applications Filed Under Title 56 of the Code of Virginia* (August 2017).

This analysis was performed at a level that meets the purpose and intent of VDHR and the SCC's guidance. It provides information on the presence of previously recorded National Historic Landmark (NHL) properties located within a 1.5 mile buffer area established around Component 1, properties listed on the National Register of Historic Places (NRHP), battlefields, and historic landscapes located within a 1.0 mile buffer around Component 1, properties previously determined eligible for listing in the NRHP located within a 0.5 mile buffer area around Component 1, and previously identified archaeological resources directly within Component 1. This analysis will not satisfy Section 106 identification and evaluation requirements in the event federal permits or licenses are needed; however, it can be used as a planning document to assist in making decisions under Section 106 as to whether further cultural resource identification efforts may be warranted.

This report contains a research design which describes the scope and methodology of the analysis, discussion of previously identified historic properties, and an assessment of potential impacts. D+A Senior Architectural Historian Robert J. Taylor, Jr. M.A. served as Principal Investigator and oversaw the general course of the Analysis and supervised all aspects of the work. Copies of all notes, maps, correspondence, and historical research materials are on file at the D+A main office in Midlothian, Virginia.

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2. PROJECT DESCRIPTION

The Joshua Falls – Riverville – Gladstone 138 kV Transmissions Line Component or Component 1 of Appalachian Power's Central Virginia Transmission Reliability Project (CVTRP). The CVTRP will upgrade the local electric transmission grid in five central Virginia counties: Amherst, Appomattox, Albemarle, Campbell, and Nelson. The CVTRP provides a new electrical source for the region, increases reliability to customers and supports the retirement of aging equipment. Component 1 involves building approximately 17 miles of new single-circuit 138-kV transmission line to connect the existing Joshua Falls and Riverville substations, owned by the Company, and the Gladstone Substation, owned by the Central Virginia Electric Cooperative (CVEC) (**Figure 2-1**).

Four Alternative Routes (A, B, C, and D) were considered for the Joshua Falls – Riverville 138-kV Transmission Line and two Alternative Routes (E and F) were considered for the Gladstone – Riverville 138-kV Transmission Line. Between the Joshua Falls and Riverville substations, Alternative Route A is located on the north side of the James River and Alternative Routes B, C, and D are located on the south side of the river. Between the Riverville and Gladstone (CVEC) substations, Alternative Routes E and F are on the north side of the river. Alternative Routes D and E were selected as the Proposed Route for the Joshua Falls – Riverville – Gladstone 138 kV Transmission Lines.

The Alternative Routes are illustrated in **Figure 2-2**. Component 1 will be built within a new 100-foot-wide right-of-way (ROW). Transmission line structure type may vary along the line route depending on topography and the needs of Component 1; however, the Company primarily plans to use galvanized steel H-frame structures or three-pole dead end structures to build the new transmission line. Lattice tower structures will likely be used to span across the James River to meet engineering requirements. The new 138-kV transmission structures will be approximately 55 to 100 feet tall, with an average structure height of approximately 70 feet. The anticipated river crossing structure heights of the proposed 138 kV transmission line range from 80 feet to 120 feet, with an average height of 100 feet (**Figures 2-3 through 2-5**).

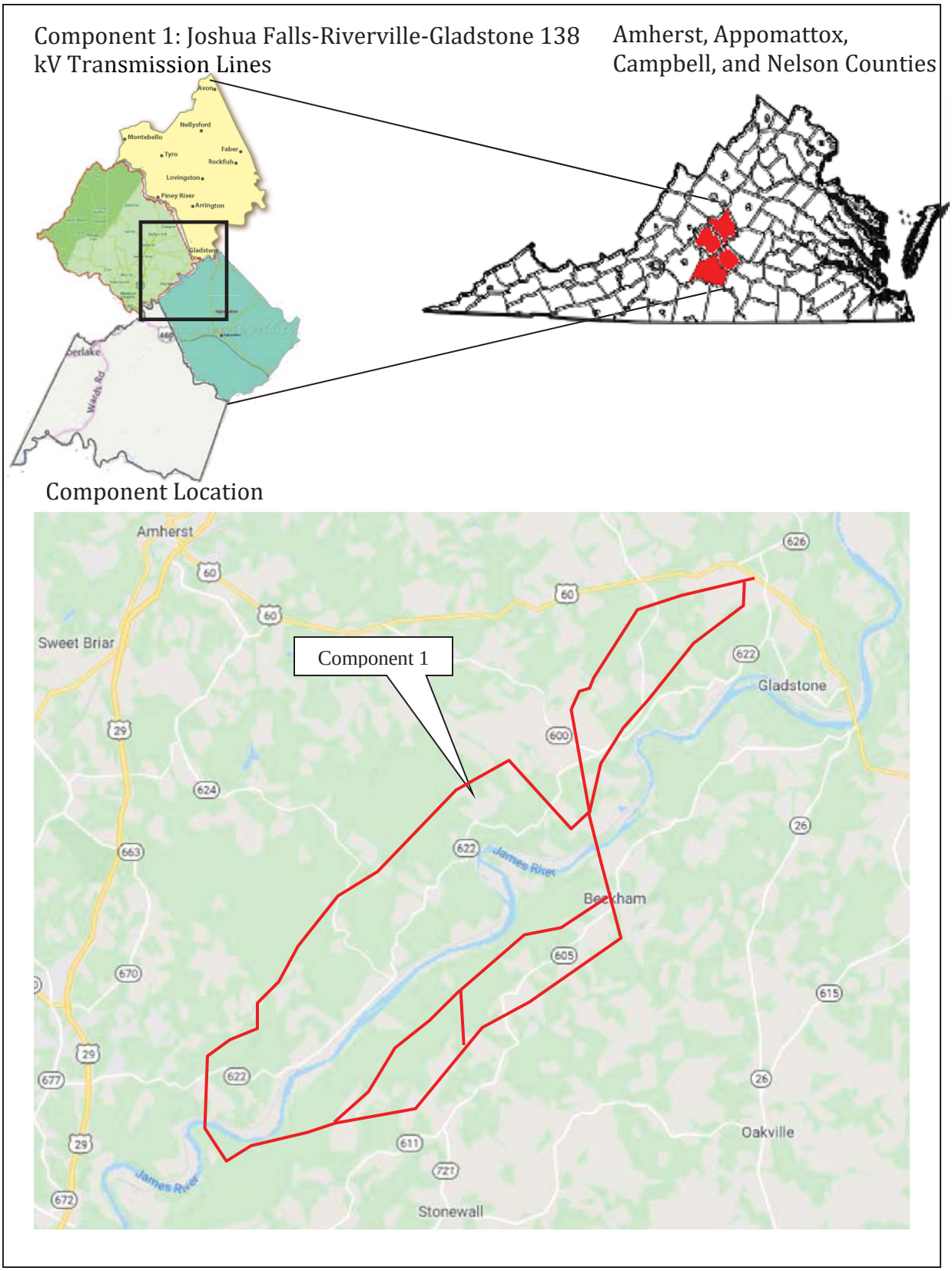


Figure 2-1: General location of Component 1.

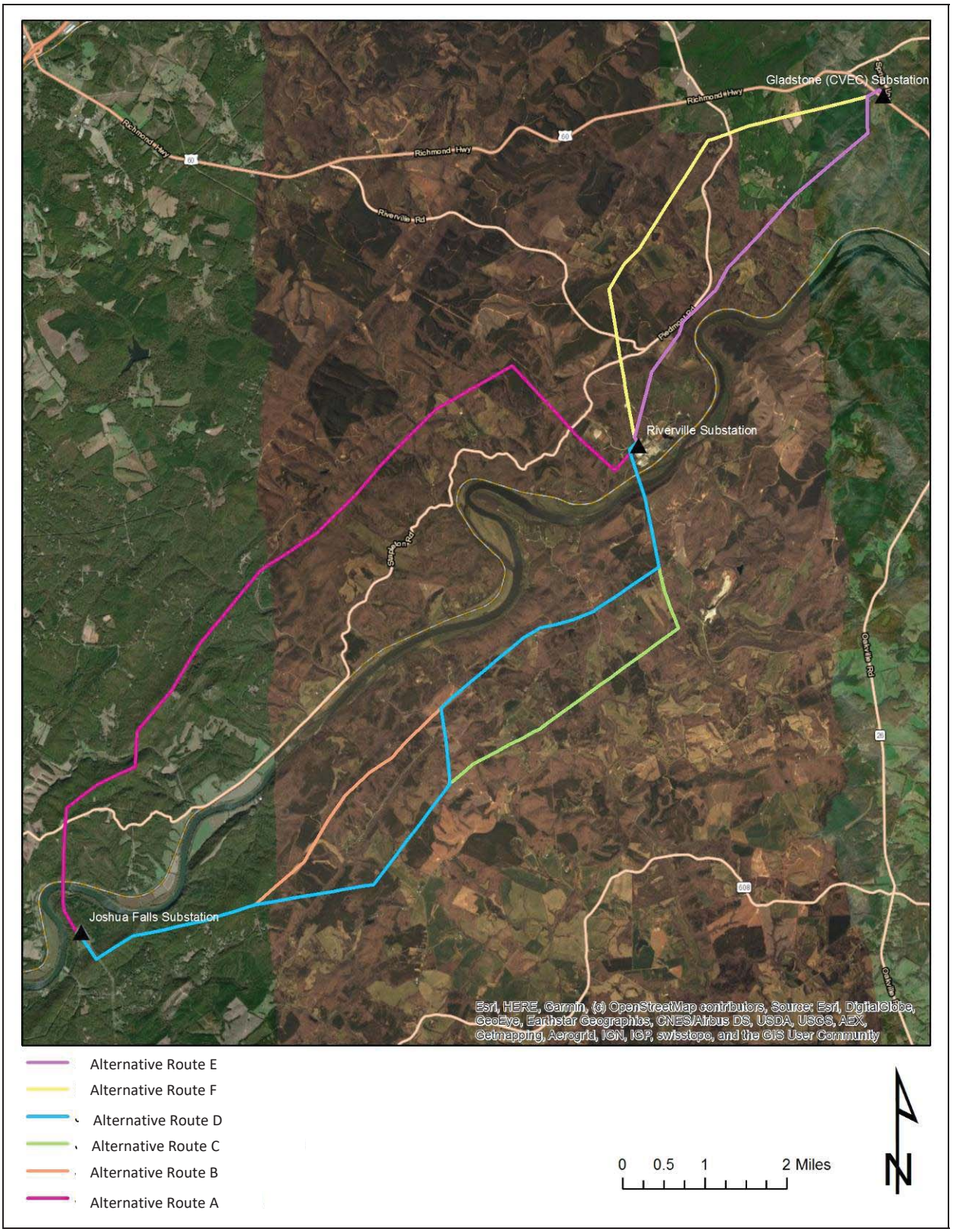
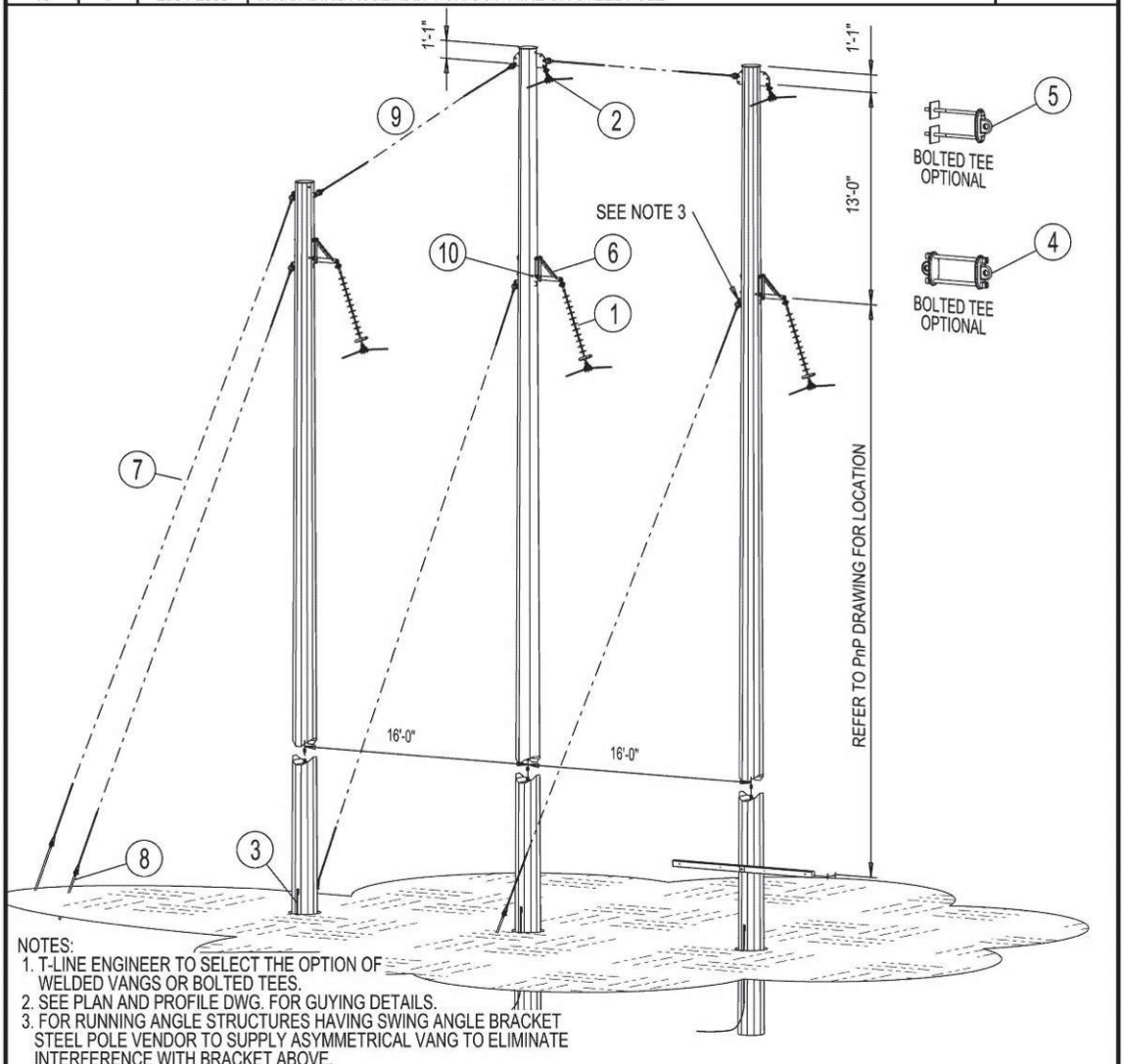


Figure 2-2: Overview map of Alternative Routes for Component 1.

REF. DRAWINGS

ITEM	QTY.	ASSEMBLY	DESCRIPTION	
1	3	11B6-2722	138KV SUSPENSION INSULATOR, POLYMER, 25K, W/CORONA RING	
2	2	30T0-1102	OHGW, SUSPENSION, CONCRETE, STEEL OR WOOD POLE	
3	3	21SE-1456	GROUND ROD FOR DIRECT EMBEDDED STEEL POLE	
4	2	71A0-1232	3/4 IN FLAT DEAD-END TEE, BACK TO BACK	
5	6	71A0-1231	3/4 IN FLAT DEAD-END TEE	
6	3	71A0-1133	SWINGING ANGLE BRACKET	
7	4	42C0-1117	GUY WIRE ASSEMBLY (AW), MEDIUM (25K) CORROSIVE ZONE	
8	4	50A0-1106	SCREW ANCHOR 3 HELIX	
9	2	42C0-1118	SPAN GUY WIRE ASSEMBLY (AW), MEDIUM (25K),CORROSIVE ZONE	
10	6	25S1-2305	GROUNDING ASSEMBLY FOR GUY WIRE ON STEEL POLE	



NOTES:
1. T-LINE ENGINEER TO SELECT THE OPTION OF WELDED VANGS OR BOLTED TEES.
2. SEE PLAN AND PROFILE DWG. FOR GUYING DETAILS.
3. FOR RUNNING ANGLE STRUCTURES HAVING SWING ANGLE BRACKET STEEL POLE VENDOR TO SUPPLY ASYMMETRICAL VANG TO ELIMINATE INTERFERENCE WITH BRACKET ABOVE.

REV	DESCRIPTION	BY	DATE
3	UPDATED VANG TYPE/ LOCATION	BDG	08/21/17

AMERICAN ELECTRIC POWER

TRANSMISSION LINE STANDARDS

POLYMER - 138KV SINGLE CIRCUIT, LIGHT RUNNING ANGLE W/CORONA RING, ON BRACKET, STEEL, 4LB4

ENGR: | DRAWN: SAS | CHECKED: McP | APPROVED: JCN | DATE: 10/25/12

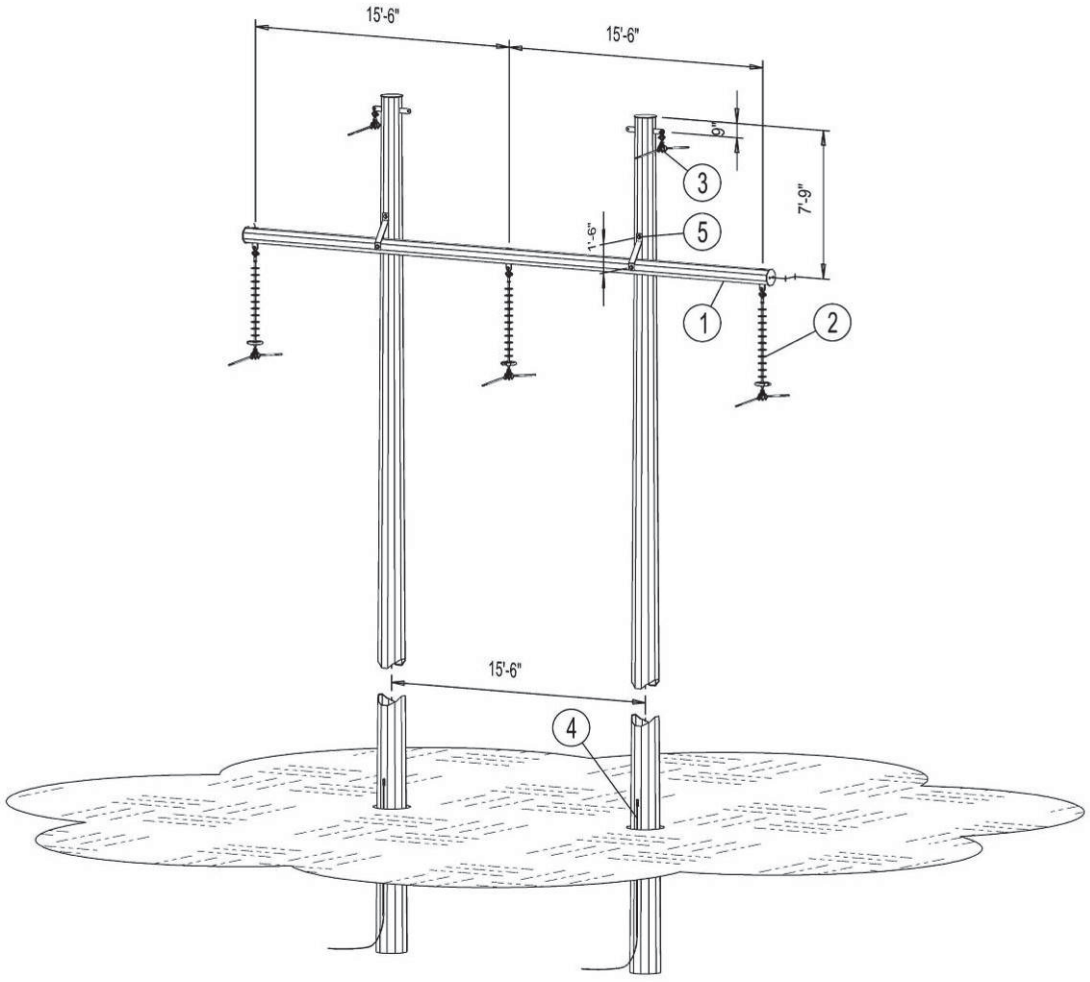
DRAWING No. CS34-2462 | SHEET No. 1 | REV. No. 4

Archive ID: 906-364

Figure 2-3: Representative proposed three-pole structures

REF. DRAWINGS

ITEM	QTY.	ASSEMBLY	DESCRIPTION	
1	1	74D0-1268	138KV LIGHT SUSPENSION CROSSARM 32 FT - CONCRETE OR STEEL H-FRAME - GALVANIZED	
2	3	11B6-2722	138KV SUSPENSION INSULATOR, POLYMER, 25K, W/CORONA RING	
3	2	30T0-1102	OHGW, SUSPENSION, CONCRETE, STEEL OR WOOD POLE	
4	2	21SE-1456	GROUND ROD FOR DIRECT EMBEDDED STEEL POLE	
5	2	71A0-1971	A449 1IN - HIGH STRENGTH DOUBLE ARMING BOLT, CONCRETE OR STEEL	



REV	DESCRIPTION	BY	DATE
1	REVISED BILL OF MATERIAL	McP	04/30/15

AEP AMERICAN ELECTRIC POWER

TRANSMISSION LINE STANDARDS
POLYMER - 138KV LIGHT SUSPENSION W/CORONA RING, H-FRAME, GALVANIZED STEEL

ENGR:	DRAWN: SAS	CHECKED: McP	APPROVED: JCN	DATE: 10/23/12

DRAWING No. CS45-2468 | SHEET No. 1 | REV. No. 1

Archive ID: 905-530

Figure 2-4: Representative proposed H-frame structures

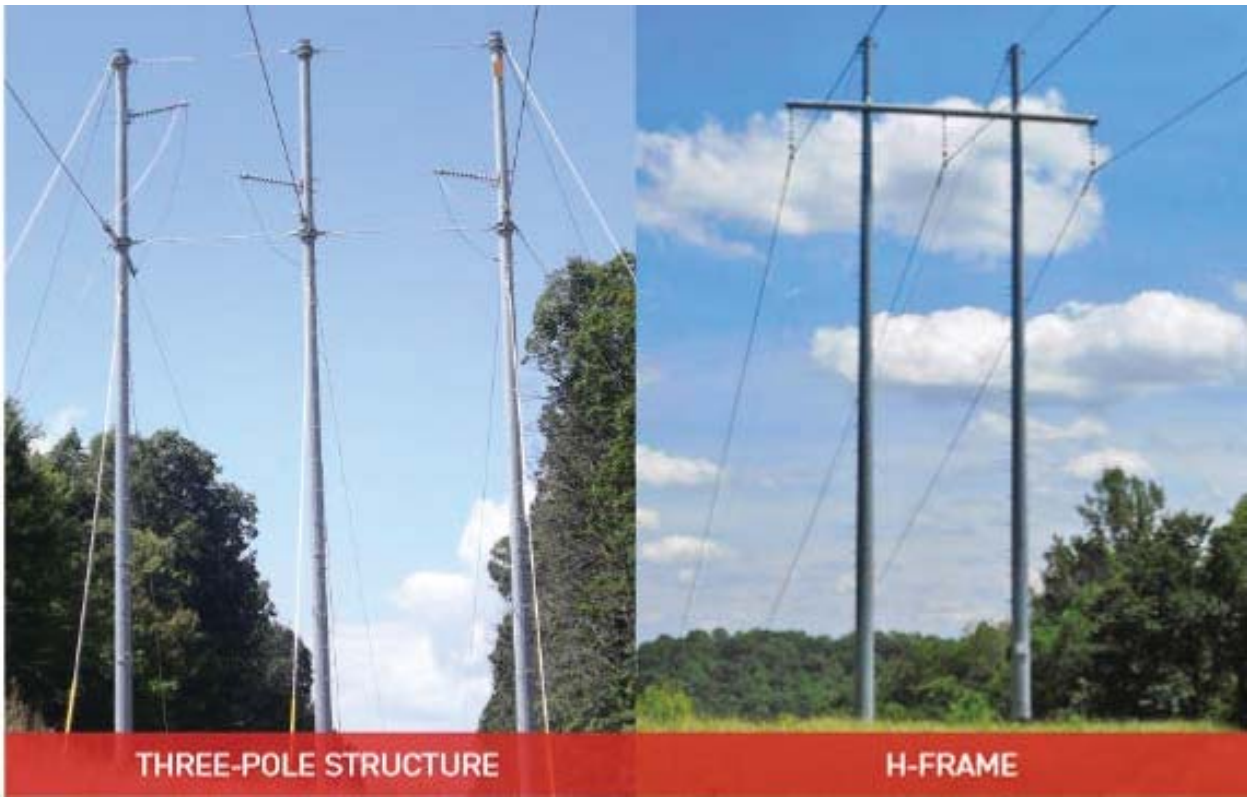


Figure 2-5: Representative typical structures

3. RESEARCH DESIGN

The intent of this effort was to identify all known historic properties within the vicinity of Component 1 in order to assess them for potential impacts brought about by Component 1. As there are multiple Alternative Routes being studied, each was investigated and assessed separately as part of this effort.

Historic properties include architectural and archaeological (terrestrial and underwater) resources, historic and cultural landscapes, battlefields, and historic districts. For each previously recorded historic property, an examination of property documentation, current aerial photography, and a field reconnaissance was undertaken to assess each property's integrity of feeling, setting, and association, and to provide photo documentation of the property including views toward Component 1. The D+A personnel who directed and conducted this survey meet the professional qualification standards of the Department of the Interior (48 FR 44738-9).

ARCHIVAL RESEARCH

In November 2020, D+A conducted archival research with the goal of identifying all previously recorded historic properties and any additional historic property locations referred to in historic documents and other archives. Background research was conducted at the VDHR and on the internet and included the following sources:

- VDHR Virginia Cultural Resource Information System (V-CRIS) site files; and
- National Park Service (NPS), American Battlefield Protection Program (ABPP), maps and related documentation.

Data collection was performed according to VDHR guidance in *Guidelines for Assessing Impacts of Proposed Electric Transmission Lines and Associated Facilities on Historic Resources in the Commonwealth of Virginia* (January 2008) and was organized in a multi-tier approach. As such, the effort was designed to identify all previously recorded NHL's located within 1.5 miles of Component 1, all historic properties listed in the NRHP, battlefields, and historic landscapes located within 1.0 mile of Component 1, all historic properties previously determined eligible for listing in the NRHP located within 0.5 mile of Component 1, and all properties located directly within Component 1.

FIELD RECONNAISSANCE

Field reconnaissance included visual inspection of those previously recorded historic properties listed in the NRHP located within 1.0 mile of Component 1, and all properties considered eligible for listing in the NRHP within 0.5 mile of Component 1. Visual inspection included digital photo documentation of each property's existing conditions including its setting and views toward Component 1. Photographs were taken of primary resource elevations, general setting, and existing viewsheds. All photographs were taken from public right-of-way or where

property access was granted. No subsurface archaeological testing was conducted as part of this effort.

ASSESSMENT OF POTENTIAL IMPACTS

Following identification and field inspection of historic properties, D+A assessed each resource for potential impacts brought about by Component 1. Assessment of impacts was conducted through a combination of field inspection, digital photography, photo simulation, and review of topography and aerial photography. Photo simulation was conducted from public vantage points on or near each resource deemed the most likely to have visibility of the project. The photo simulation entailed digital photography, towards the project, which was then loaded into a computer with location coordinates and ground-elevation. The transmission line structures to be rebuilt as part of this project were then also computer modeled to represent the location, height, and configuration following construction. These models were then overlaid onto the digital photograph so that the existing (unaltered) view can be compared with the simulated view that illustrates the proposed structures, as they would appear on the landscape.

When assessing impacts, D+A considered those qualities and characteristics that qualify the property for listing and whether Component 1 had the potential to alter or diminish the integrity of the property and its associated significance. Specific attention was given to determining whether or not Component 1 would introduce new visual elements into a property's viewshed, which would either directly or indirectly alter those qualities or characteristics that qualify the historic property for listing in the NRHP. Identified impacts were characterized as severe (fully visible and incompatible with character-defining viewshed or setting), moderate (partially visible and incompatible with character-defining viewshed or setting), or minimal (not visible and/or not out of character with existing viewscape).

REPORT PREPARATION

The results of the archival resource, field inspection, and analysis were synthesized and summarized in a summary report accompanied by maps, illustrations, and photographs as appropriate. All research material and documentation generated by this project is on file at D+A's office in Midlothian, Virginia.

4. ARCHIVES SEARCH

This section includes a summary of efforts to identify previously known and recorded cultural resources in the vicinity of the Alternative Routes. It includes lists, maps, and descriptive data on all previously conducted cultural resource surveys within the overall study area, as well as previously recorded architectural resources and archaeological sites within the tiered project buffers for each Alternative Route according to the VDHR archives and VCRIS database.

PREVIOUSLY SURVEYED AREAS

VDHR and VCRIS records indicate that there have been four (4) prior Phase I cultural resource surveys within 1.0 mile of the overall study area, including two that directly overlap or include portions of an Alternative Route. These surveys are at a minimum archaeological in nature, although some include architectural resources as well. The four surveys were conducted for a bridge replacement project, pipeline project and projects involving transmission lines and the Joshua Falls substation. The previously conducted cultural resource surveys are listed in **Table 4-1** and illustrated in **Figure 4-1**.

Table 4-1: Previously conducted cultural resource surveys within one mile of Component 1. Source: VDHR.

VDHR Survey #	Title	Author	Date
AH-034	Ninemile Bridge Replacement, CSX Transportation, Phase I Intensive Cultural Resources Survey, Amherst & Campbell Counties, Virginia	Browning Associates, Ltd.	1993
AH-058	Archaeological Survey of the Proposed Colonial Pipeline Company Expansion Project, The James River crossings, Amherst and Appomattox Counties, Virginia, Our Project Number ES-1222	Soil Systems, Inc.	1979
CP-010	Archaeological Reconnaissance of Areas of Electric Power Line Support Facilities in Campbell and Amherst Counties	Washington and Lee University	1978
CP-111	Phase I Archaeological Investigation, Earth Environmental and Civil, Inc., Joshua Falls Substation Project, Campbell County, Virginia	GAI	2019

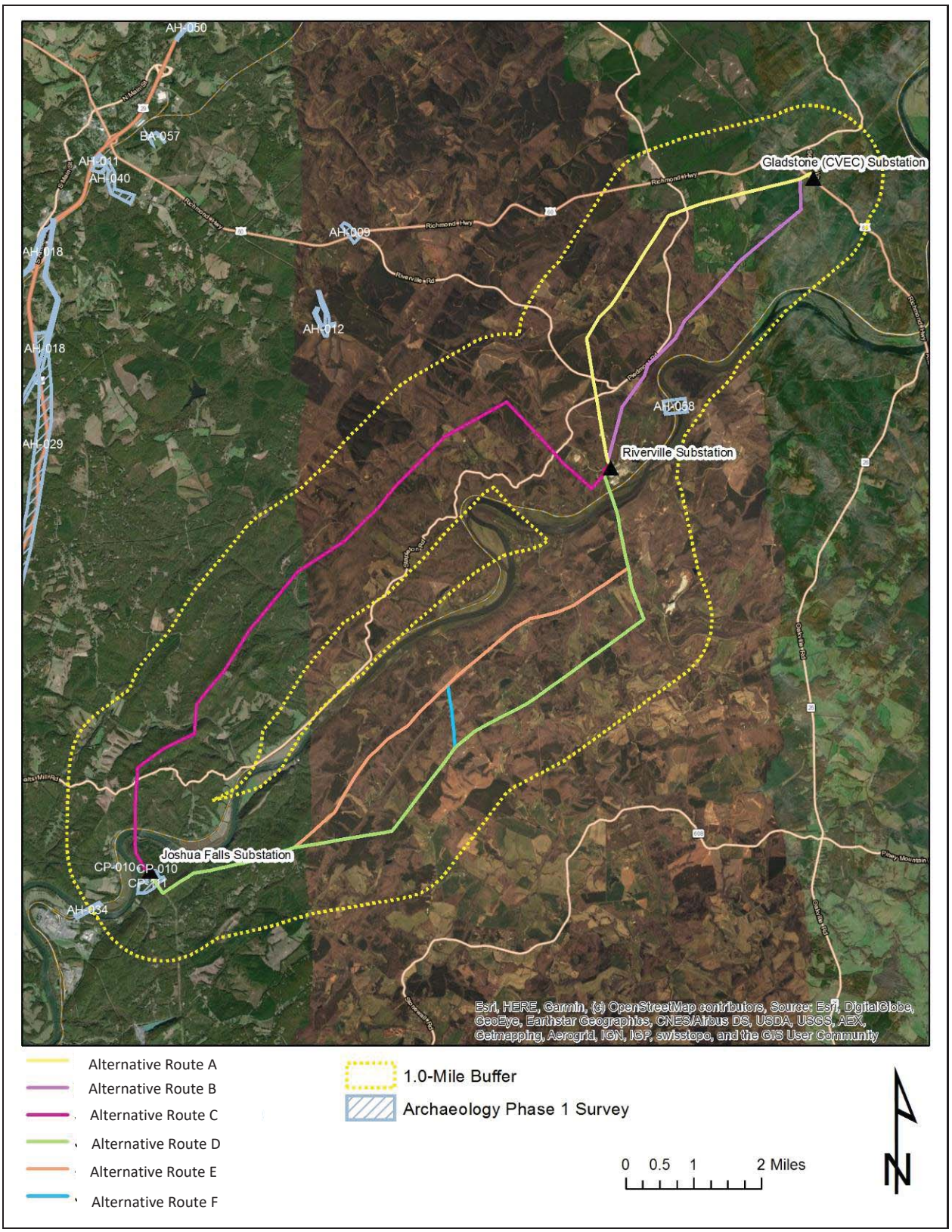


Figure 4-1: Previously conducted surveys within 1.0 mile of the alternative routes. Source: VCRIS

ALTERNATIVE ROUTE A (JOSHUA FALLS – RIVERVILLE)

Architectural Resources

Review of the VDHR VCRIS inventory records revealed a total of 40 previously recorded architectural resources are located 1.5 miles of Alternative Route A. Of these, there are no NHLs located within 1.5 miles of Alternative Route A, three (3) properties listed in the NRHP and no battlefields located within 1.0 mile of Alternative Route A, and no properties that have been determined eligible for listing in the NRHP within 0.5 mile of Alternative Route A.

Table 4-2 provides a list of NHLs, NRHP-listed, and eligible resources within their respective buffered tiers. A map of all previously recorded architectural resources within 1.5 miles of Alternative Route A is included as **Figure 4-2** and a map of NHLs, NRHP-listed, and Eligible resources in relation to the study tiers is included as **Figure 4-3**.

Table 4-2: Historic properties within their respective tiered buffer zones for Alternative Route A

Buffer(miles)	Considered Resources	VDHR #	Description
1.5	National Historic Landmarks	None	N/A
1.0	National Register Properties (Listed)	005-0005	Edge Hill, 1380 Edgehill Plantation Road
		005-5037	Galts Mill Complex/ Galts Mill Village Historic District
		005-0035	Brightwells Mill Complex
	Battlefields	None	N/A
	Historic Landscapes	None	N/A
0.5	National Register- Eligible	None	N/A

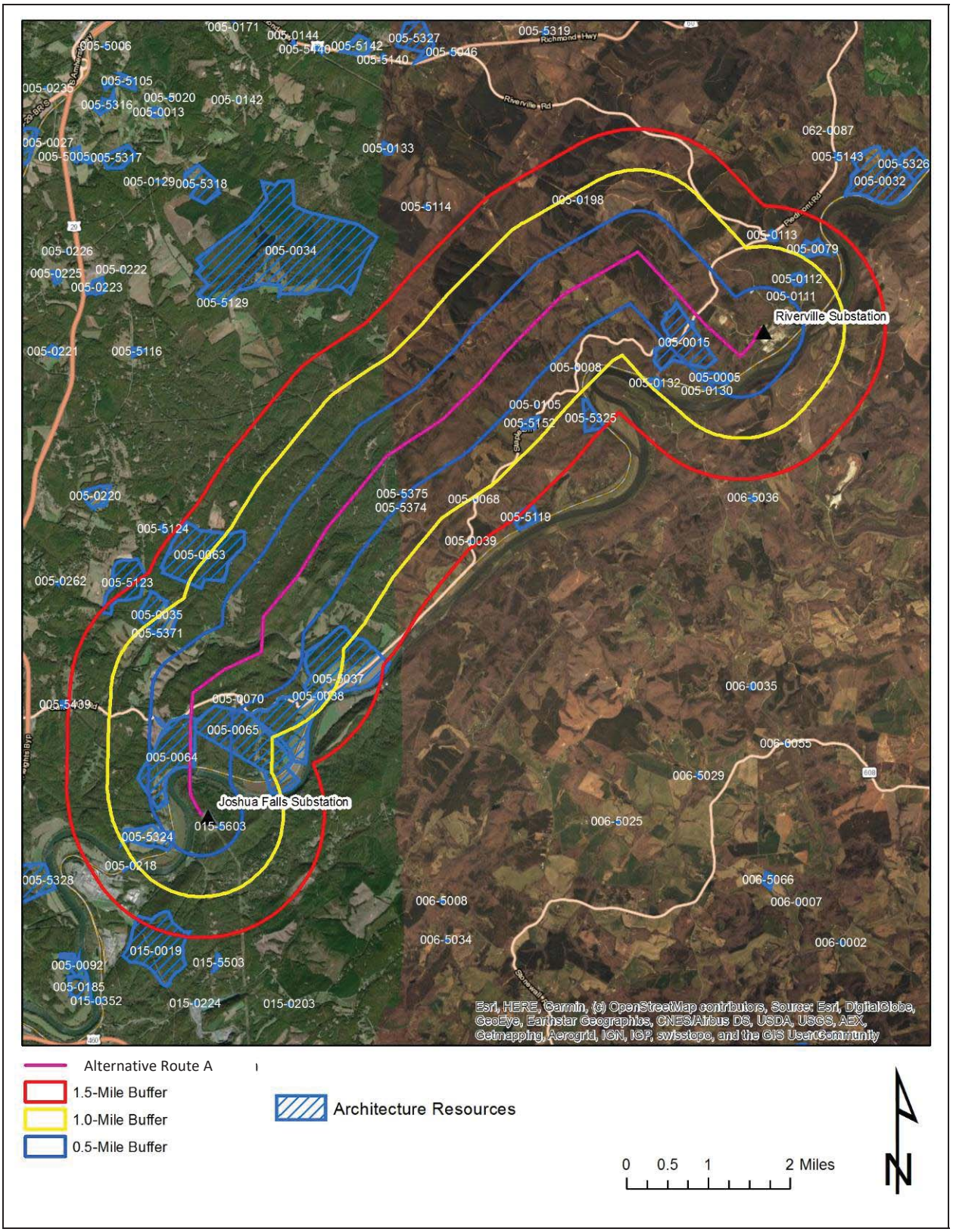


Figure 4-2: All previously recorded architectural resources located within 1.5 mile of Alternative Route A. (Source: VCRIS)

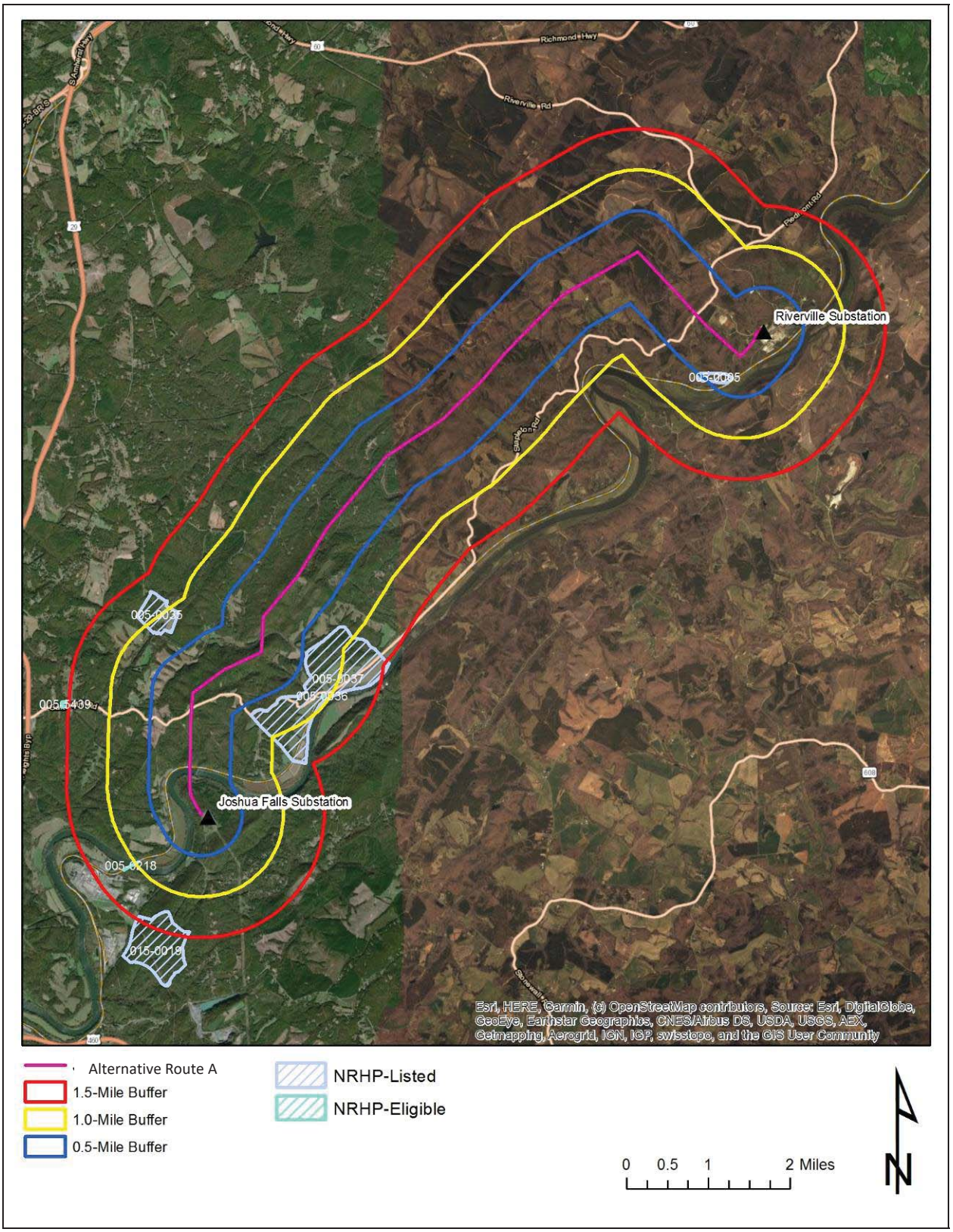


Figure 4-3: NRHP-listed and eligible architectural resources located within the defined study tiers around Alternative Route A. (Source: VCRIS)

Archaeological Resources

Review of the VDHR VCRIS records reveals there are 31 previously identified archaeological sites within 1.0 mile of Alternative Route A, none of which are located directly within or adjacent to the Alternative Route ROW. These include prehistoric camps and lithic scatters; as well as historic period canal components, cemeteries, and a school site. Of these, five sites have been determined not eligible for listing in the NRHP by the VDHR, and the remaining sites have not been formally evaluated.

Figure 4-4 illustrates the locations of the previously recorded sites in relation to the Alternative Route.

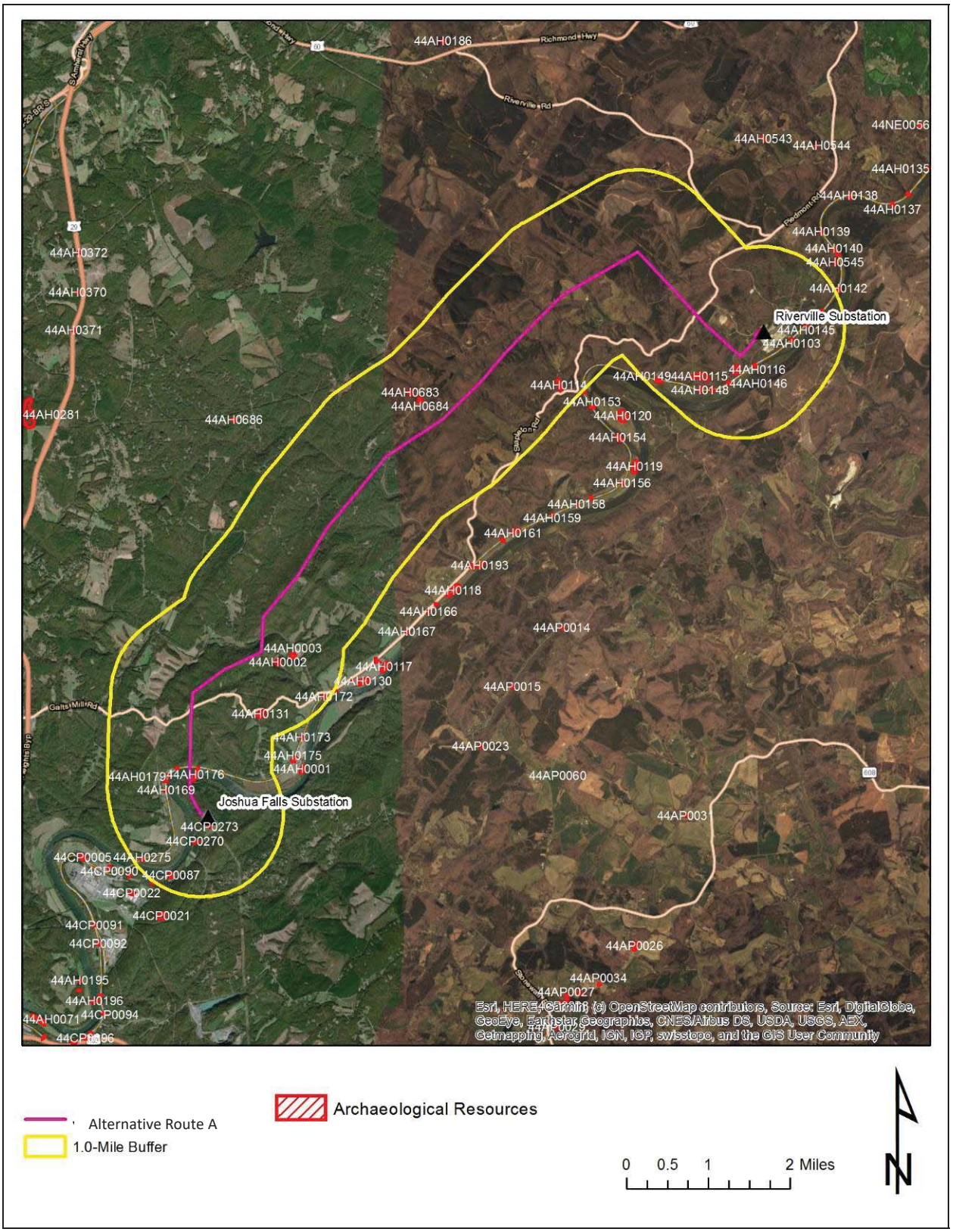


Figure 4-4: Previously identified archaeological located within 1.0 mile of Alternative Route A. (Source: VCRIS)

ALTERNATIVE ROUTE B (JOSHUA FALLS – RIVERVILLE)

Architectural Resources

Review of the VDHR VCRIS inventory records revealed a total of 30 previously recorded architectural resources are located 1.5 miles of Alternative Route B. Of these, there are no NHLs located within 1.5 miles of Alternative Route B, three (3) properties listed in the NRHP and no battlefields located within 1.0 mile of Alternative Route B, and no properties that have been determined eligible for listing in the NRHP within 0.5 mile of Alternative Route B.

Table 4-3 provides a list of NHLs, NRHP-listed, and eligible resources within their respective buffered tiers. A map of all previously recorded architectural resources within 1.5 miles of Alternative Route B is included as **Figure 4-5** and a map of NHLs, NRHP-listed, and Eligible resources in relation to the study tiers is included as **Figure 4-6**.

Table 4-3: Historic properties within their respective tiered buffer zones for the Alternative Route B

Buffer(miles)	Considered Resources	VDHR #	Description
1.5	National Historic Landmarks	None	N/A
1.0	National Register Properties (Listed)	005-0005	Edge Hill, 1380 Edgehill Plantation Road
		005-5037	Galts Mill Complex/ Galts Mill Village Historic District
		005-0035	Brightwells Mill Complex
	Battlefields	None	N/A
	Historic Landscapes	None	N/A
0.5	National Register- Eligible	None	N/A

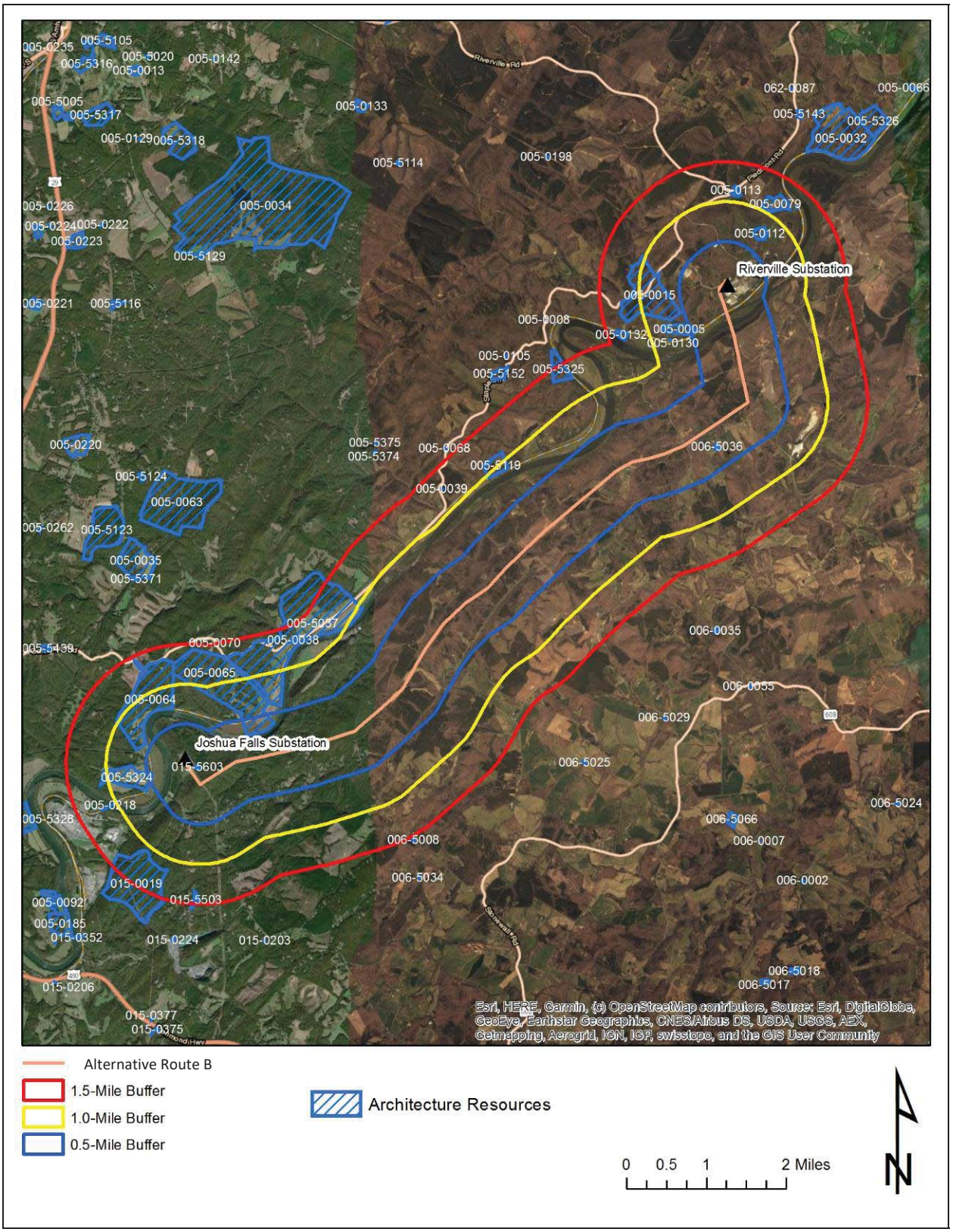


Figure 4-5: All previously recorded architectural resources located within 1.5 mile of Alternative Route B. (Source: VCRIS)

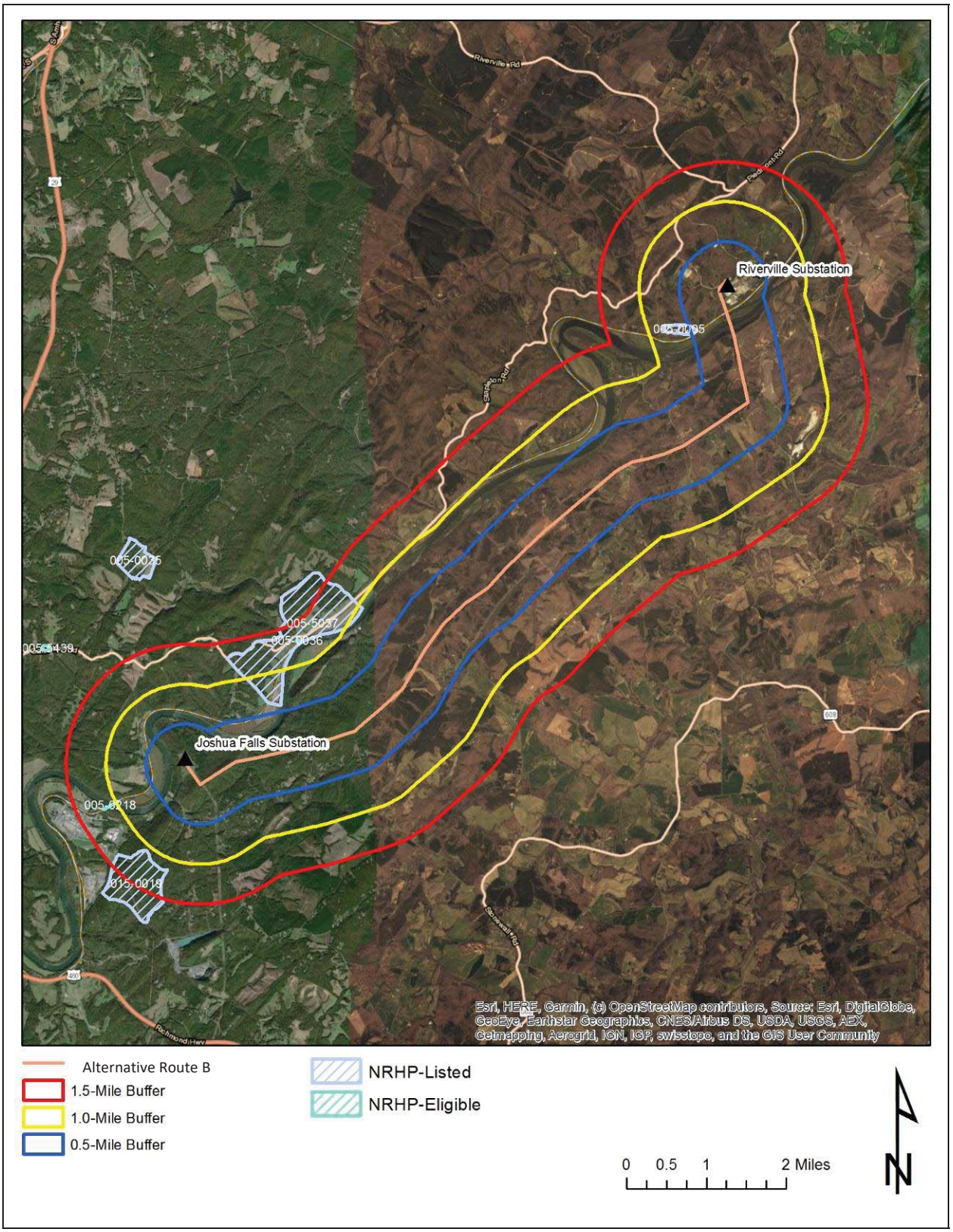


Figure 4-6: NRHP-listed and eligible architectural resources located within the defined study tiers around Alternative Route B. (Source: VCRIS)

Archaeological Resources

Review of the VDHR VCRIS records reveals there are 43 previously identified archaeological sites within 1.0 mile of Alternative Route B, one of which is located within or adjacent to the Alternative Route ROW. The sites within 1.0 mile include prehistoric camps, villages, and lithic scatters; as well as historic canal components and an iron furnace. Of these, five sites have been determined not eligible for listing in the NRHP by the VDHR, and the remaining sites have not been formally evaluated. The one site located adjacent to or within the Alternative Route B ROW is a prehistoric artifact scatter that has been determined not eligible.

Table 4-4 lists the previously recorded archaeological resource within or adjacent to the Alternative Route ROW and **Figure 4-7** illustrates the locations of all previously recorded sites in relation to Alternative Route B.

Table 4-4: Previously recorded archaeological resource set adjacent to or within the Alternative Route B.

VDHR ID #	Type	Temporal Association	NRHP Status
44CP0273	Artifact scatter	Pre-Contact	DHR Staff: Not Eligible

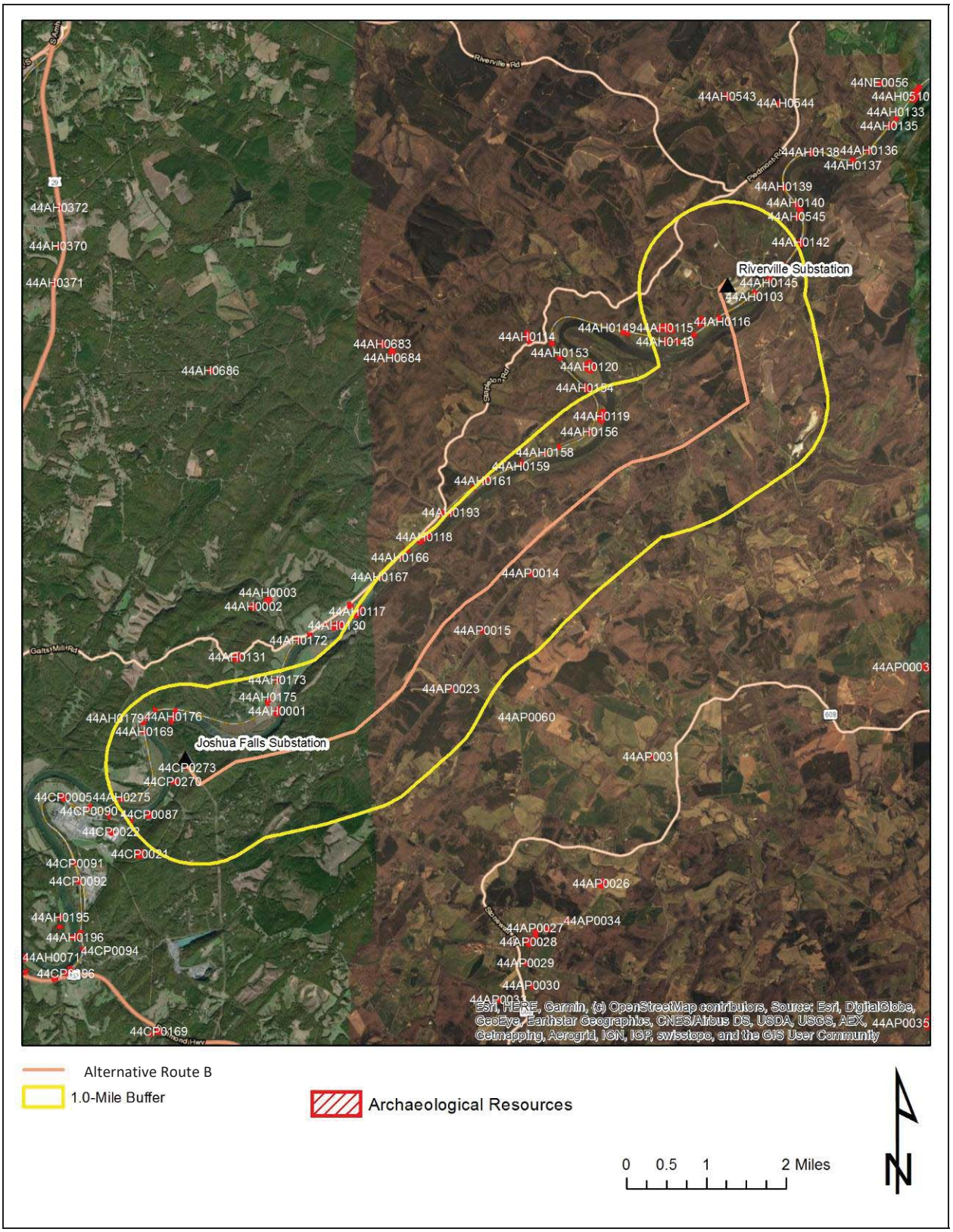


Figure 4-7: Previously identified archaeological located within 1.0 mile of Alternative Route B. (Source: VCRIS)

ALTERNATIVE ROUTE C (JOSHUA FALLS – RIVERVILLE)

Architectural Resources

Review of the VDHR VCRIS inventory records revealed a total of 29 previously recorded architectural resources are located 1.5 miles of Alternative Route C. Of these, there are no NHLs located within 1.5 miles of Alternative Route C, two (2) properties listed in the NRHP and no battlefields located within 1.0 mile of Alternative Route C, and no properties that have been determined eligible for listing in the NRHP within 0.5 mile of Alternative Route C.

Table 4-5 provides a list of NHLs, NRHP-listed, and eligible resources within their respective buffered tiers. A map of all previously recorded architectural resources within 1.5 miles of Alternative Route C is included as **Figure 4-8** and a map of NHLs, NRHP-listed, and Eligible resources in relation to the study tiers is included as **Figure 4-9**.

Table 4-5: Historic properties within their respective tiered buffer zones for Alternative Route C

Buffer(miles)	Considered Resources	VDHR #	Description
1.5	National Historic Landmarks	None	N/A
1.0	National Register Properties (Listed)	005-0005	Edge Hill, 1380 Edgehill Plantation Road
		005-5037	Galts Mill Complex/ Galts Mill Village Historic District
	Battlefields	None	N/A
	Historic Landscapes	None	N/A
0.5	National Register- Eligible	None	N/A

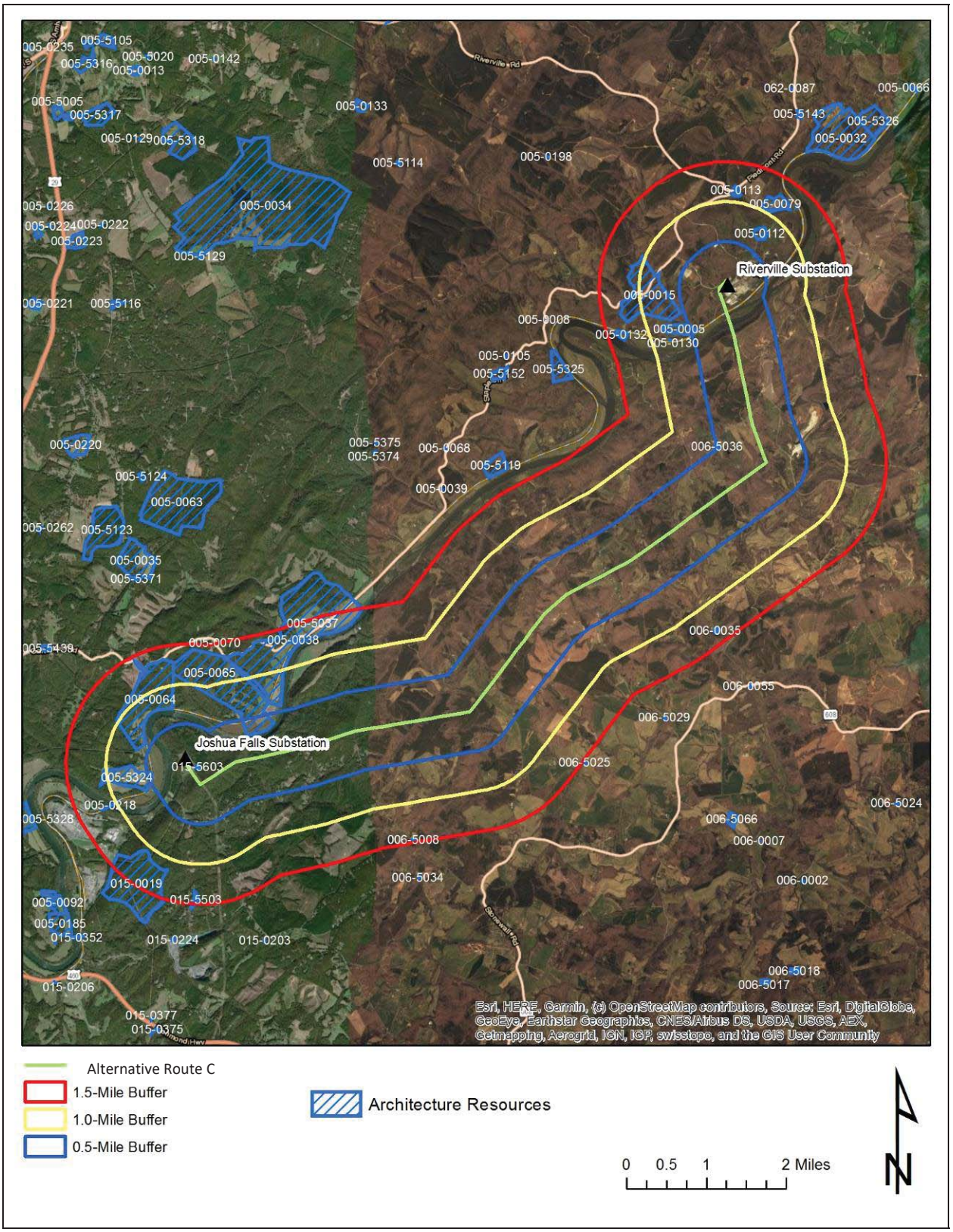


Figure 4-8: All previously recorded architectural resources located within 1.5 mile of Alternative Route C. (Source: VCRIS)

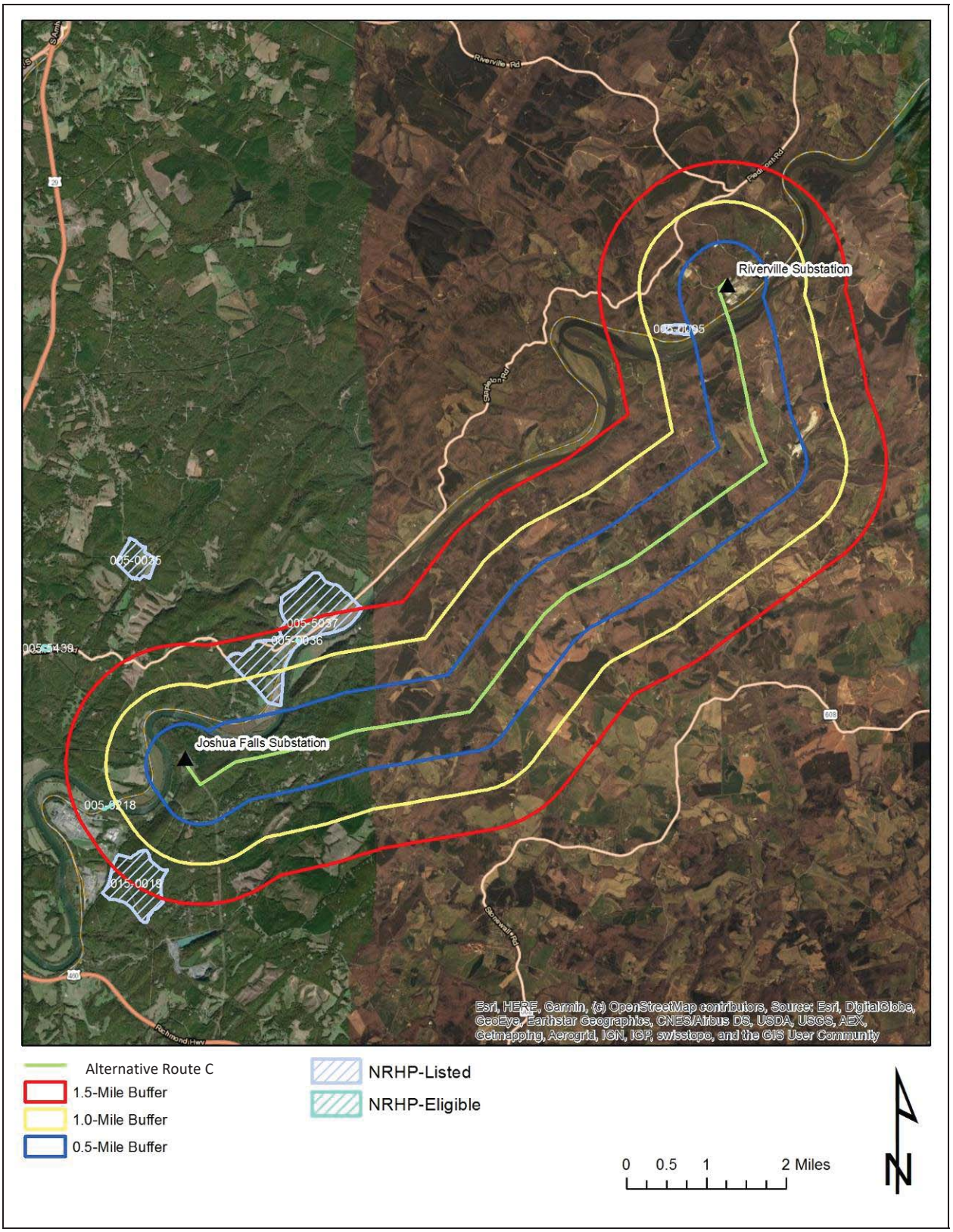


Figure 4-9: NRHP-listed and eligible architectural resources located within the defined study tiers around Alternative Route C. (Source: VCRIS)

Archaeological Resources

Review of the VDHR VCRIS records reveals there are 43 previously identified archaeological sites within 1.0 mile of Alternative Route C, one of which is located within or adjacent to the Alternative Route ROW. The sites within 1.0 mile include prehistoric camps, villages, and lithic scatters; as well as historic canal components and an iron furnace. Of these, five sites have been determined not eligible for listing in the NRHP by the VDHR, and the remaining sites have not been formally evaluated. The one site located adjacent to or within the Alternative Route ROW is a prehistoric artifact scatter that has been determined not eligible.

Table 4-6 lists the previously recorded archaeological resource within or adjacent to the Alternative Route ROW and **Figure 4-10** illustrates the locations of all previously recorded sites in relation to the Alternative Route.

Table 4-6: Previously recorded archaeological resource set adjacent to or within Alternative Route C.

VDHR ID #	Type	Temporal Association	NRHP Status
44CP0273	Artifact scatter	Pre-Contact	DHR Staff: Not Eligible

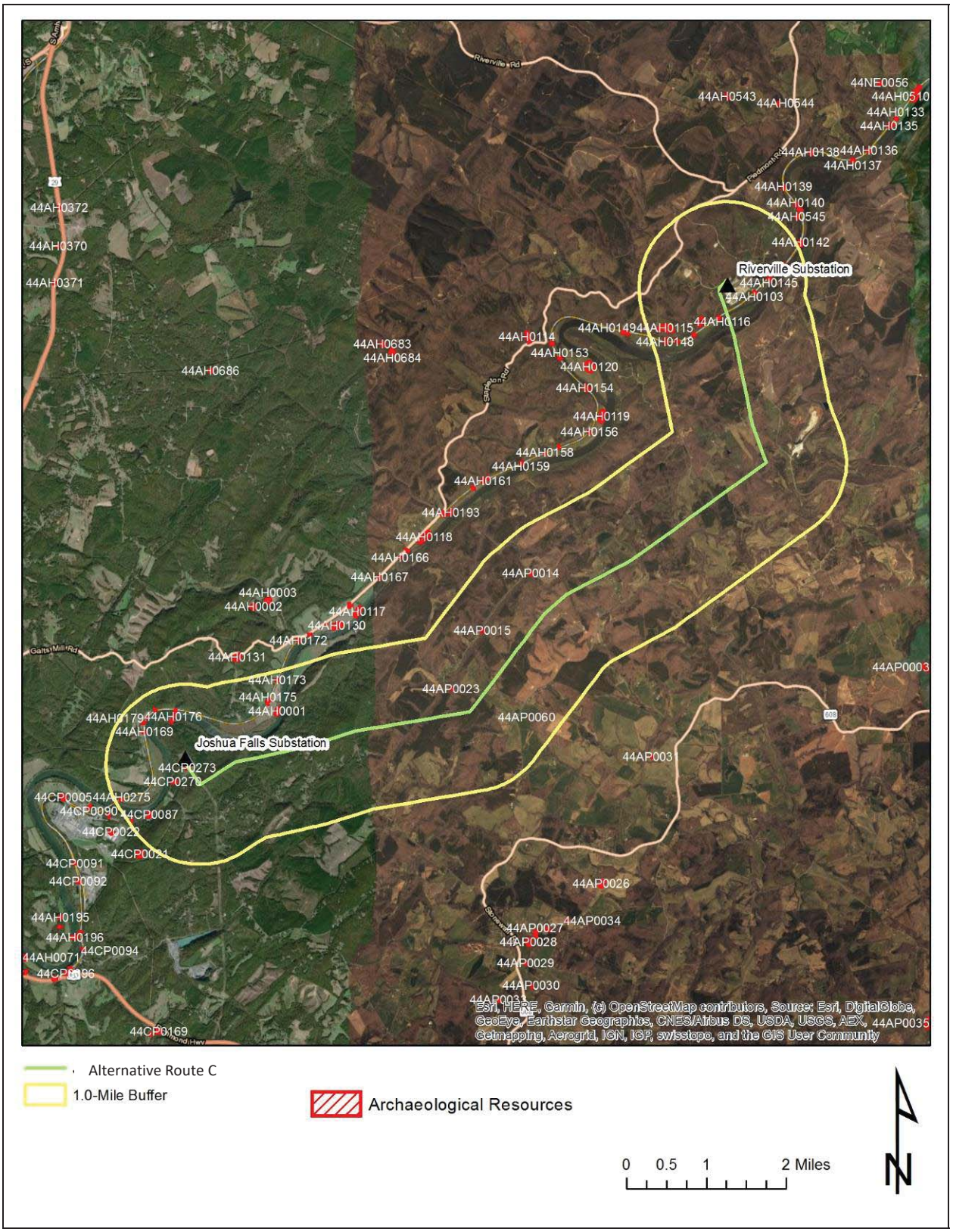


Figure 4-10: Previously identified archaeological located within or adjacent to Alternative Route C. (Source: VCRIS)

ALTERNATIVE ROUTE D (JOSHUA FALLS – RIVERVILLE)

Architectural Resources

Review of the VDHR VCRIS inventory records revealed a total of 31 previously recorded architectural resources are located 1.5 miles of Alternative Route D. Of these, there are no NHLs located within 1.5 miles of Alternative Route D, two (2) properties listed in the NRHP and no battlefields located within 1.0 mile of Alternative Route D, and no properties that have been determined eligible for listing in the NRHP within 0.5 mile of Alternative Route D.

Table 4-7 provides a list of NHLs, NRHP-listed, and eligible resources within their respective buffered tiers. A map of all previously recorded architectural resources within 1.5 miles of Alternative Route D is included as **Figure 4-11** and a map of NHLs, NRHP-listed, and Eligible resources in relation to the study tiers is included as **Figure 4-12**.

Table 4-7: Historic properties within their respective tiered buffer zones for Alternative Route D

Buffer(miles)	Considered Resources	VDHR #	Description
1.5	National Historic Landmarks	None	N/A
1.0	National Register Properties (Listed)	005-0005	Edge Hill, 1380 Edgehill Plantation Road
		005-5037	Galts Mill Complex/ Galts Mill Village Historic District
	Battlefields	None	N/A
	Historic Landscapes	None	N/A
0.5	National Register- Eligible	None	N/A

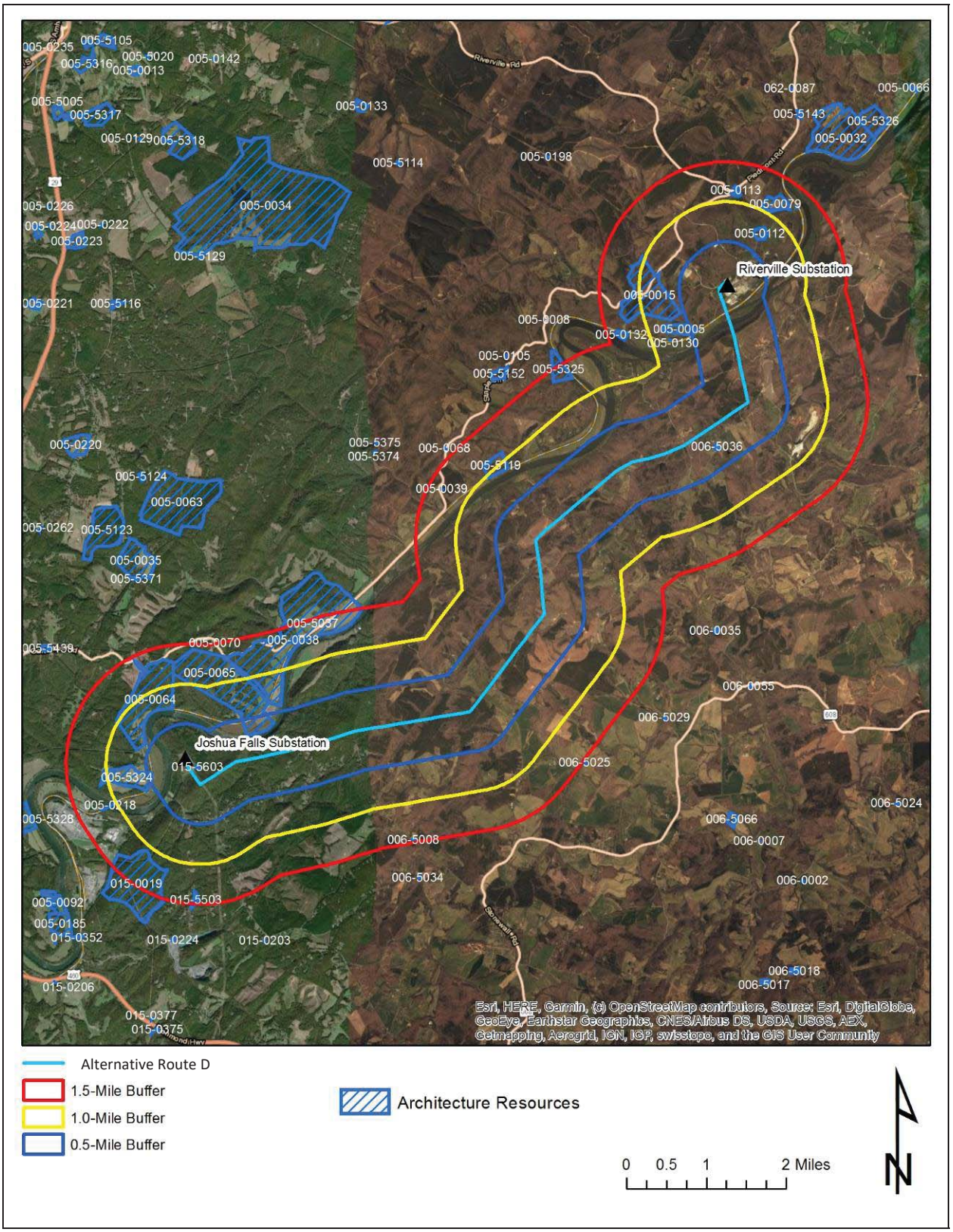


Figure 4-11: All previously recorded architectural resources located within 1.5 mile of Alternative Route D. (Source: VCRIS)

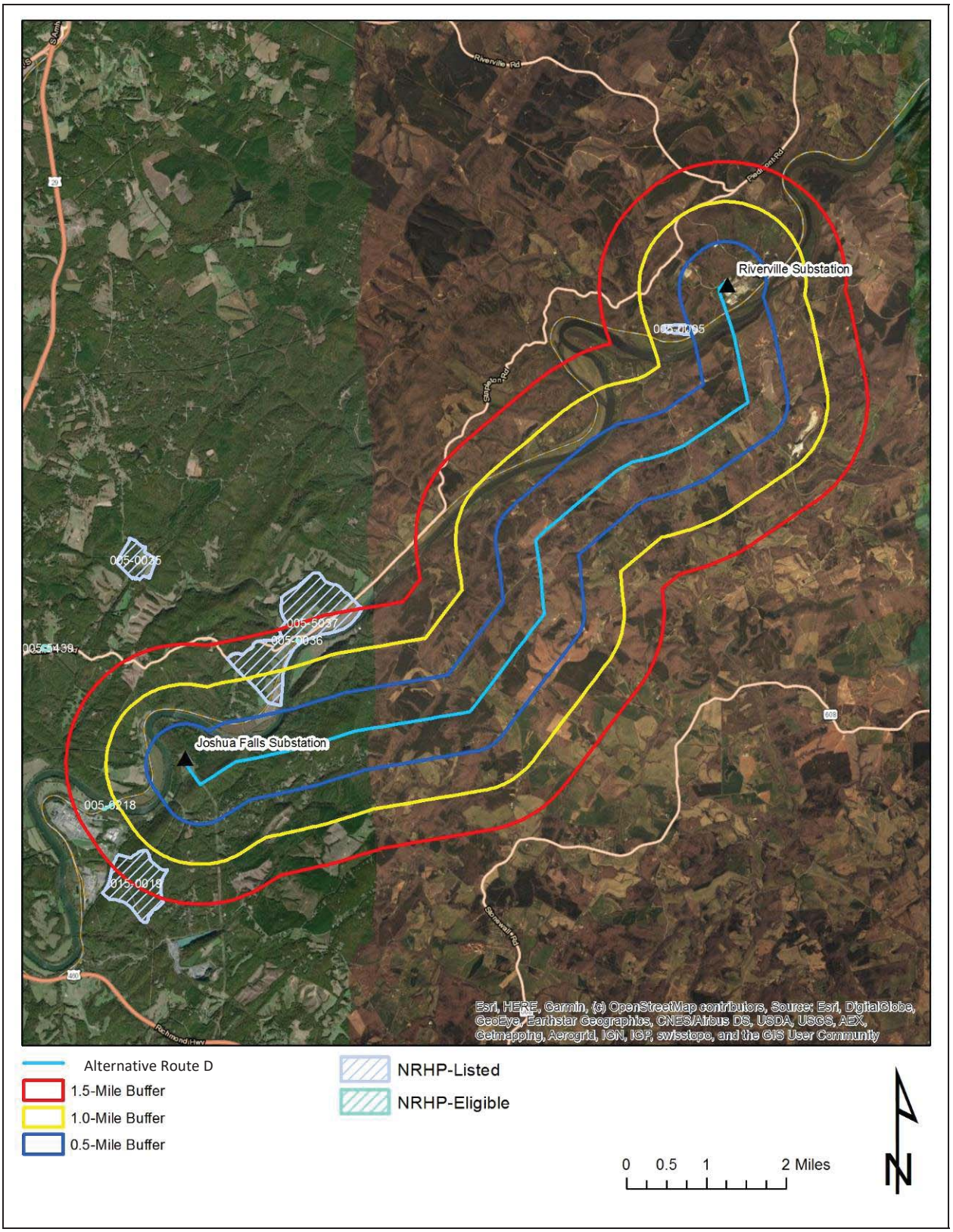


Figure 4-12: NRHP-listed and eligible architectural resources located within the defined study tiers around Alternative Route D. (Source: VCRIS)

Archaeological Resources

Review of the VDHR VCRIS records reveals there are 37 previously identified archaeological sites within 1.0 mile of the Alternative Route D Alternative Route, one of which is located within or adjacent to the Alternative Route ROW. The sites within 1.0 mile include prehistoric camps, villages, and lithic scatters; as well as historic canal components and an iron furnace. Of these, five sites have been determined not eligible for listing in the NRHP by the VDHR, and the remaining sites have not been formally evaluated. The one site located adjacent to or within the Alternative Route ROW is a prehistoric artifact scatter that has been determined not eligible.

Table 4-8 lists the previously recorded archaeological resource within or adjacent to the Alternative Route ROW and **Figure 4-13** illustrates the locations of all previously recorded sites in relation to the Alternative Route.

Table 4-8: Previously recorded archaeological resource set adjacent to or within Alternative Route D.

VDHR ID #	Type	Temporal Association	NRHP Status
44CP0273	Artifact scatter	Pre-Contact	DHR Staff: Not Eligible

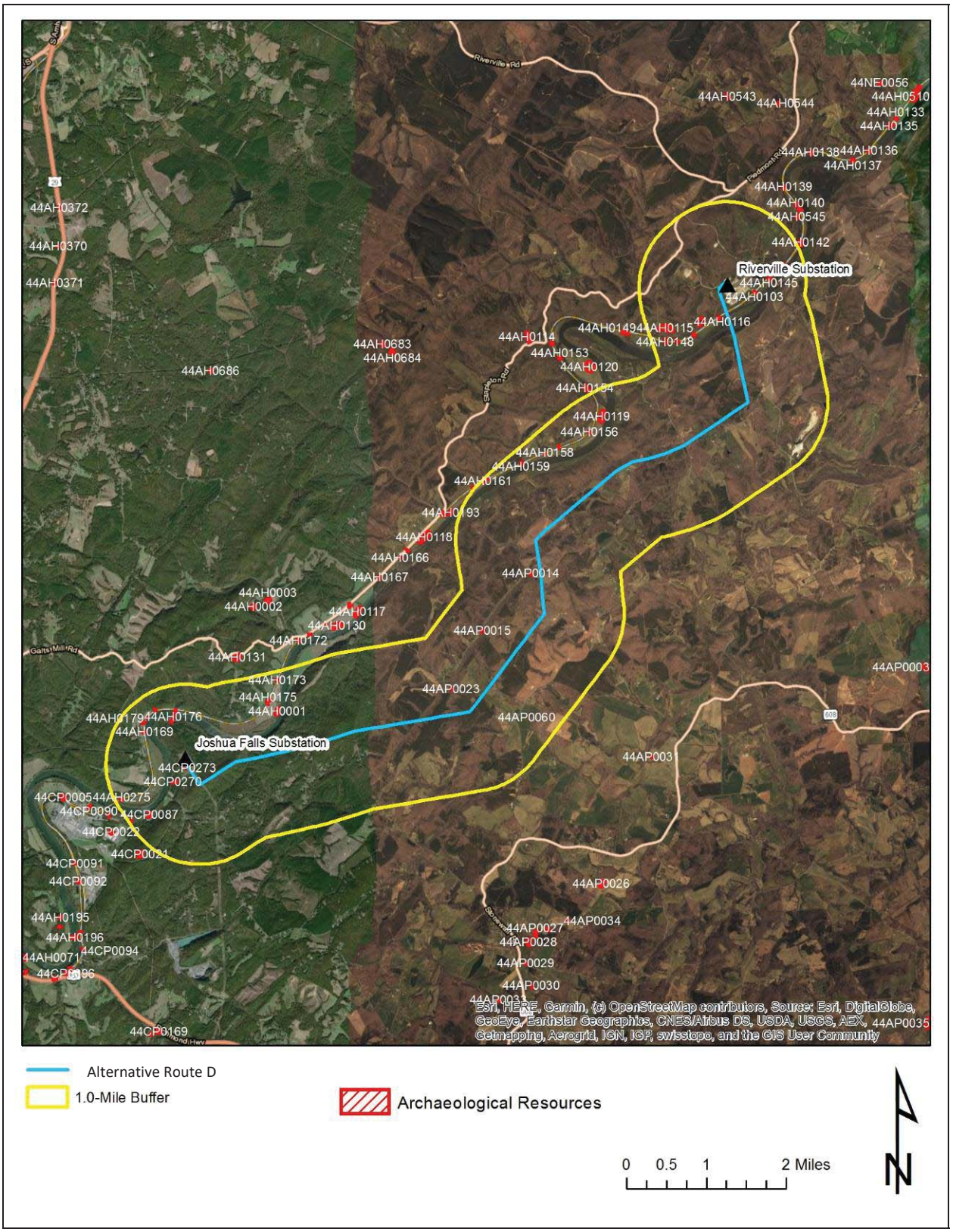


Figure 4-13: Previously identified archaeological located within or adjacent to Alternative Route D. (Source: VCRIS)

ALTERNATIVE ROUTE E (GLADSTONE – RIVERVILLE)

Architectural Resources

Review of the VDHR VCRIS inventory records revealed a total of 18 previously recorded architectural resources are located 1.5 miles of Alternative Route E. Of these, there are no NHLs located within 1.5 miles of Alternative Route E, one (1) property listed in the NRHP and no battlefields located within 1.0 mile of Alternative Route E, and no properties that have been determined eligible for listing in the NRHP within 0.5 mile of Alternative Route E.

Table 4-9 provides a list of NHLs, NRHP-listed, and eligible resources within their respective buffered tiers. A map of all previously recorded architectural resources within 1.5 miles of Alternative Route E is included as **Figure 4-14** and a map of NHLs, NRHP-listed, and Eligible resources in relation to the study tiers is included as **Figure 4-15**.

Table 4-9: Historic properties within their respective tiered buffer zones for Alternative Route E

Buffer(miles)	Considered Resources	VDHR #	Description
1.5	National Historic Landmarks	None	N/A
1.0	National Register Properties (Listed)	005-0005	Edge Hill, 1380 Edgehill Plantation Road
	Battlefields	None	N/A
	Historic Landscapes	None	N/A
0.5	National Register- Eligible	None	N/A

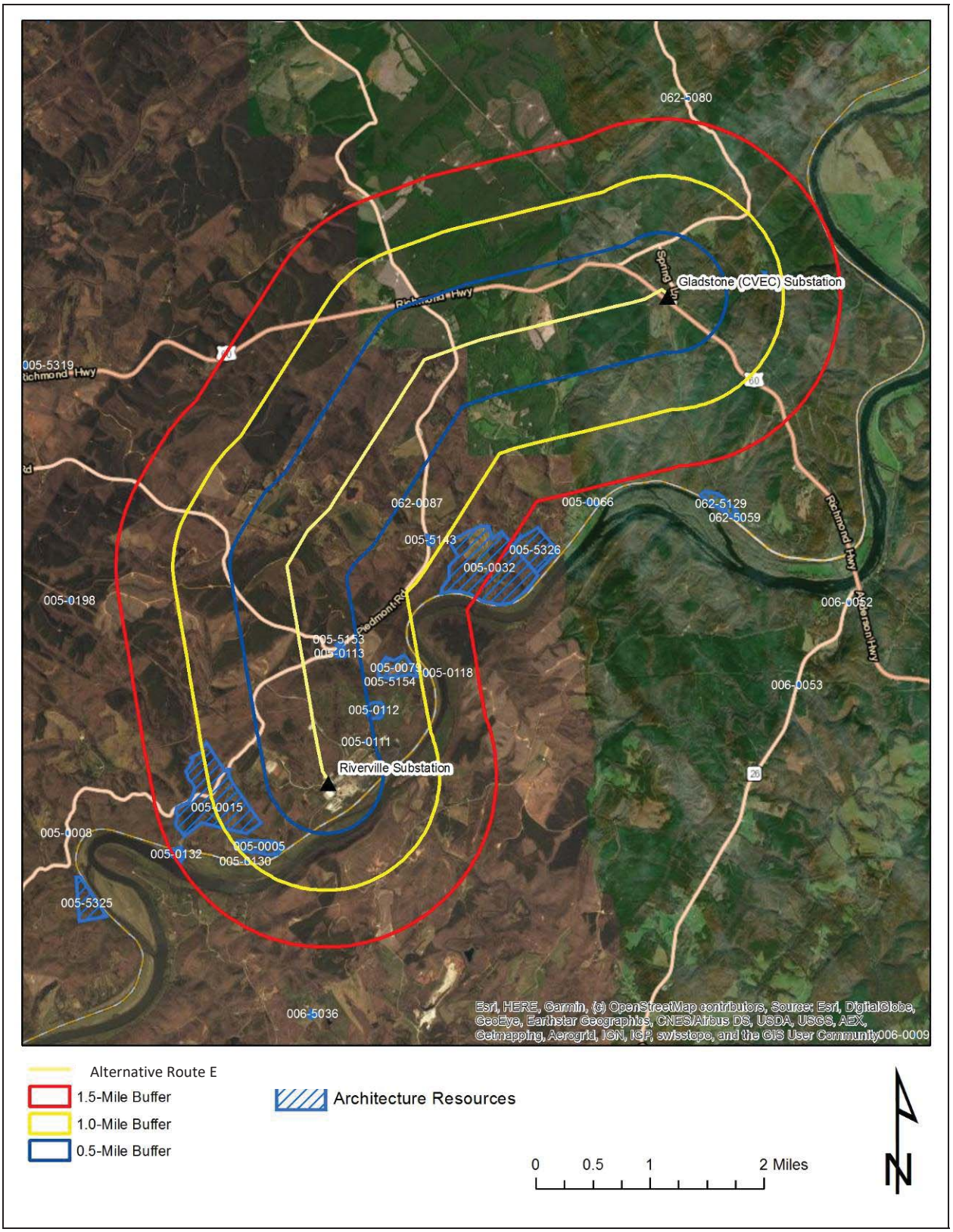


Figure 4-14: All previously recorded architectural resources located within 1.5 mile of Alternative Route E (Source: VCRIS)

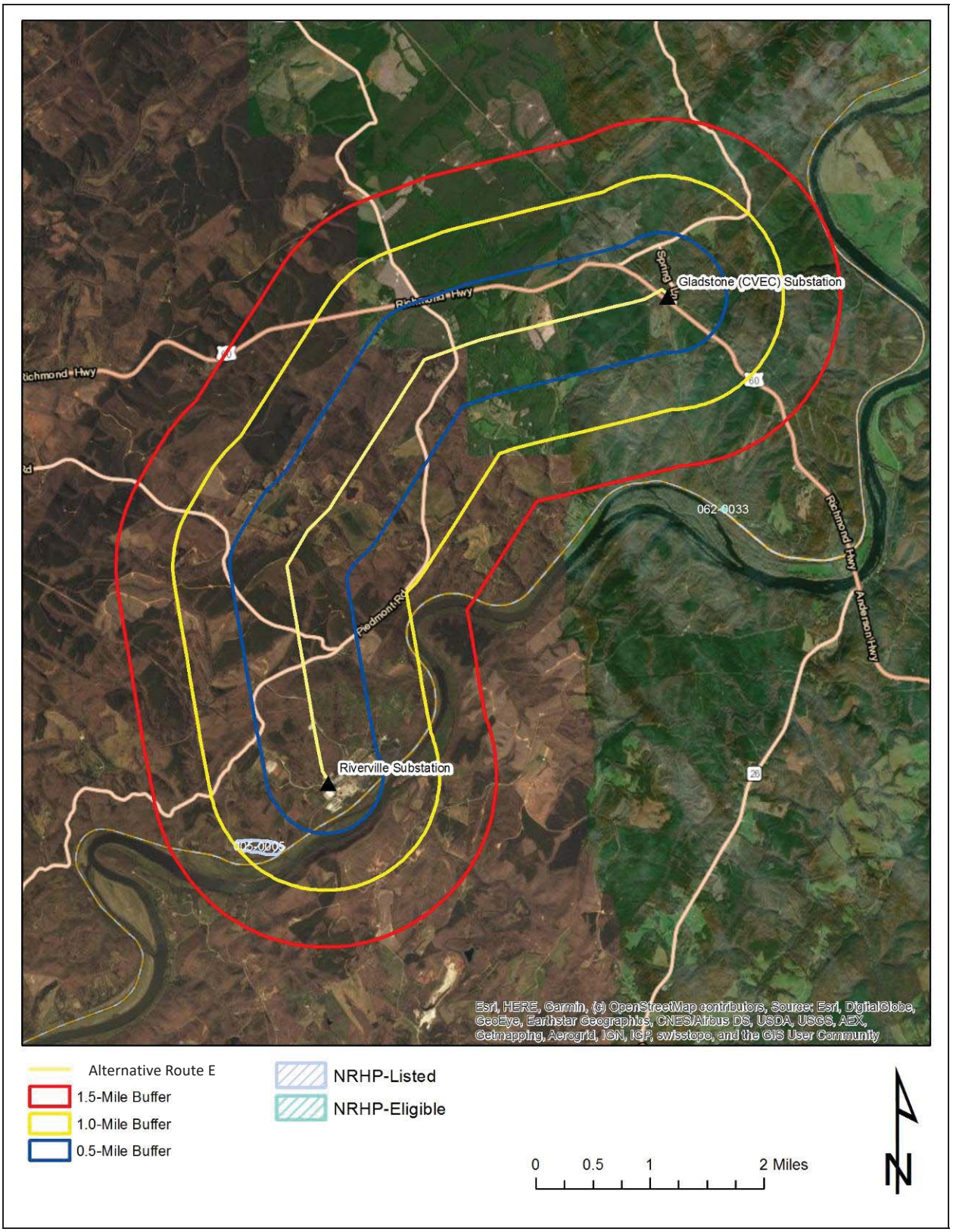


Figure 4-15: NRHP-listed and eligible architectural resources located within the defined study tiers around Alternative Route E. (Source: VCRIS)

Archaeological Resources

Review of the VDHR VCRIS records reveals there are 13 previously identified archaeological sites within 1.0 mile of the Alternative Route E Alternative Route, one of which is located within or adjacent to the Alternative Route ROW. These include prehistoric scatters; as well as historic period domestic sites, road traces, bridges, and canal components. None of these sites have been formally evaluated. The one site located within or adjacent to the Alternative Route ROW is a nineteenth century road trace that has been evaluated for NRHP-eligibility.

Table 4-10 lists the previously recorded archaeological resource within or adjacent to the Alternative Route ROW and **Figure 4-16** illustrates the locations of all previously recorded sites in relation to the Alternative Route.

Table 4-10: Previously recorded archaeological resource set adjacent to or within Alternative Route E.

VDHR ID #	Type	Temporal Association	NRHP Status
44AH0543	Road trace	19th Century (1800 - 1899), 20th Century (1900 - 1999)	Not Evaluated

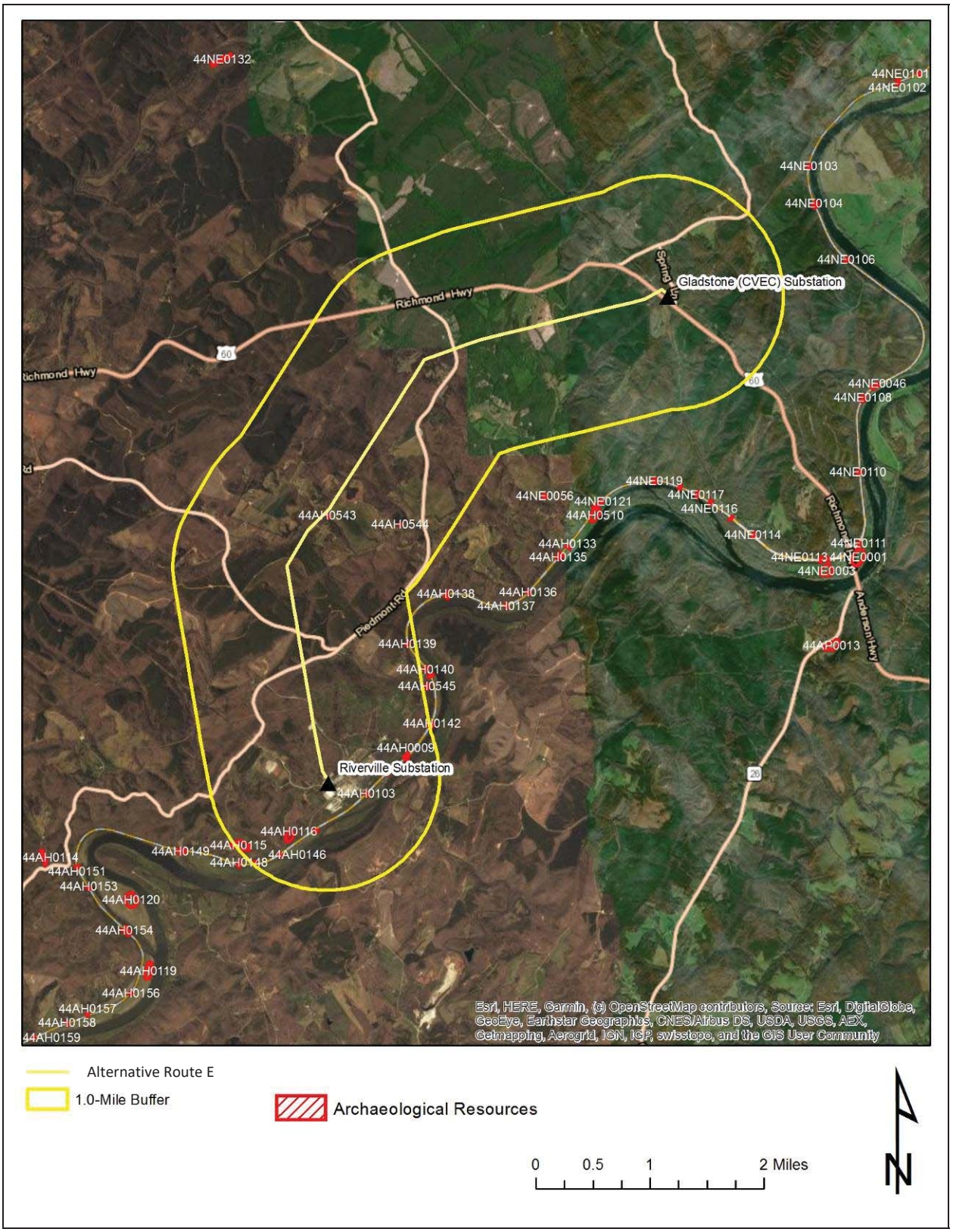


Figure 4-16: Previously identified archaeological located within or adjacent to Alternative Route E. (Source: VCRIS)

ALTERNATIVE ROUTE F (GLADSTONE – RIVERVILLE)

Architectural Resources

Review of the VDHR VCRIS inventory records revealed a total of 23 previously recorded architectural resources are located 1.5 miles of the Riverville-Gladstone South Alternative Route. Of these, there are no NHLs located within 1.5 miles of Alternative Route F, one (1) property listed in the NRHP and no battlefields located within 1.0 mile of Alternative Route F, and no properties that have been determined eligible for listing in the NRHP within 0.5 mile of Alternative Route F.

Table 4-11 provides a list of NHLs, NRHP-listed, and eligible resources within their respective buffered tiers. A map of all previously recorded architectural resources within 1.5 miles of Alternative Route F is included as **Figure 4-17** and a map of NHLs, NRHP-listed, and Eligible resources in relation to the study tiers is included as **Figure 4-18**.

Table 4-11: Historic properties within their respective tiered buffer zones Alternative Route F

Buffer(miles)	Considered Resources	VDHR #	Description
1.5	National Historic Landmarks	None	N/A
1.0	National Register Properties (Listed)	005-0005	Edge Hill, 1380 Edgehill Plantation Road
	Battlefields	None	N/A
	Historic Landscapes	None	N/A
0.5	National Register- Eligible	None	N/A

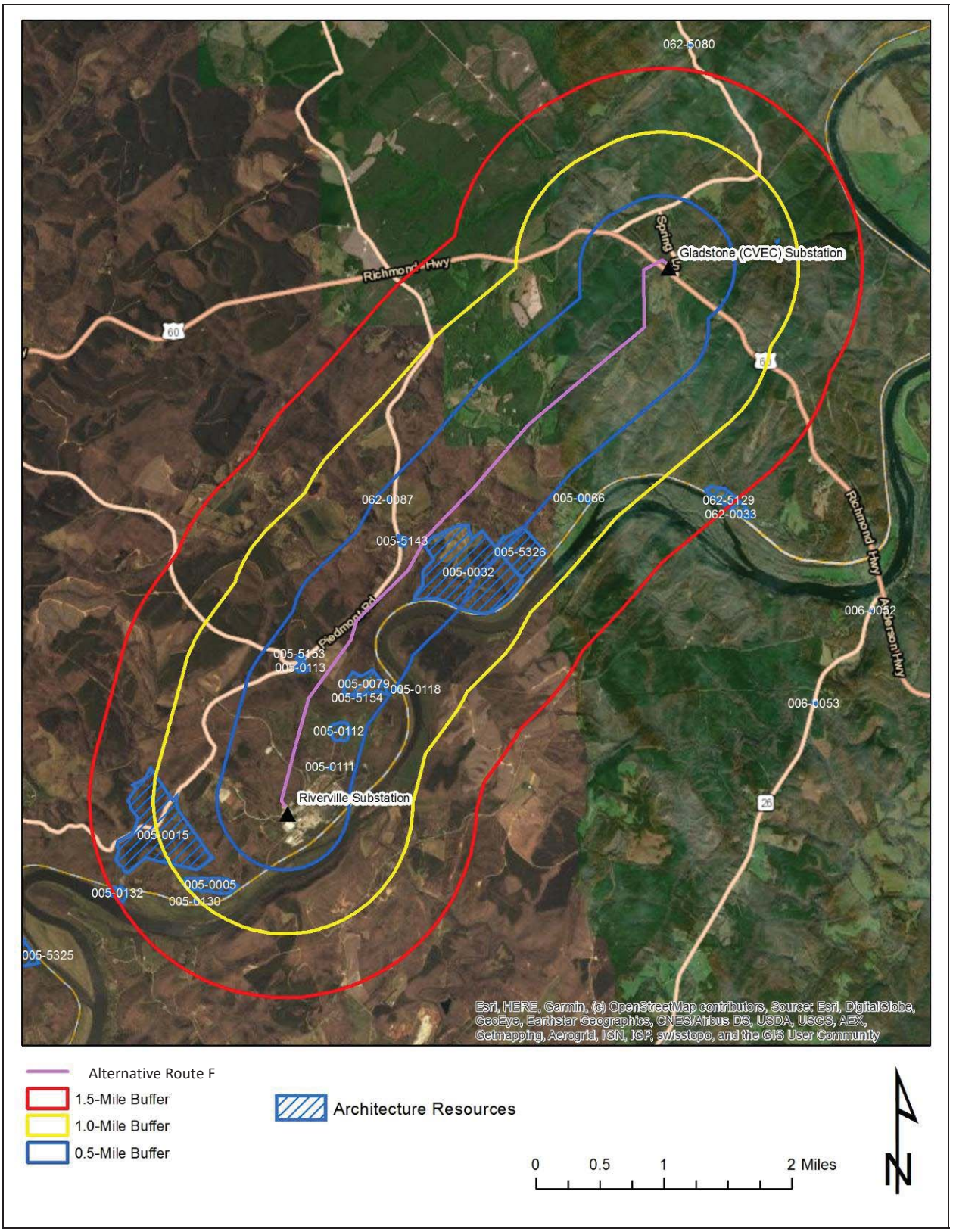


Figure 4-17: All previously recorded architectural resources located within 1.5 mile of Alternative Route F. (Source: VCRIS)

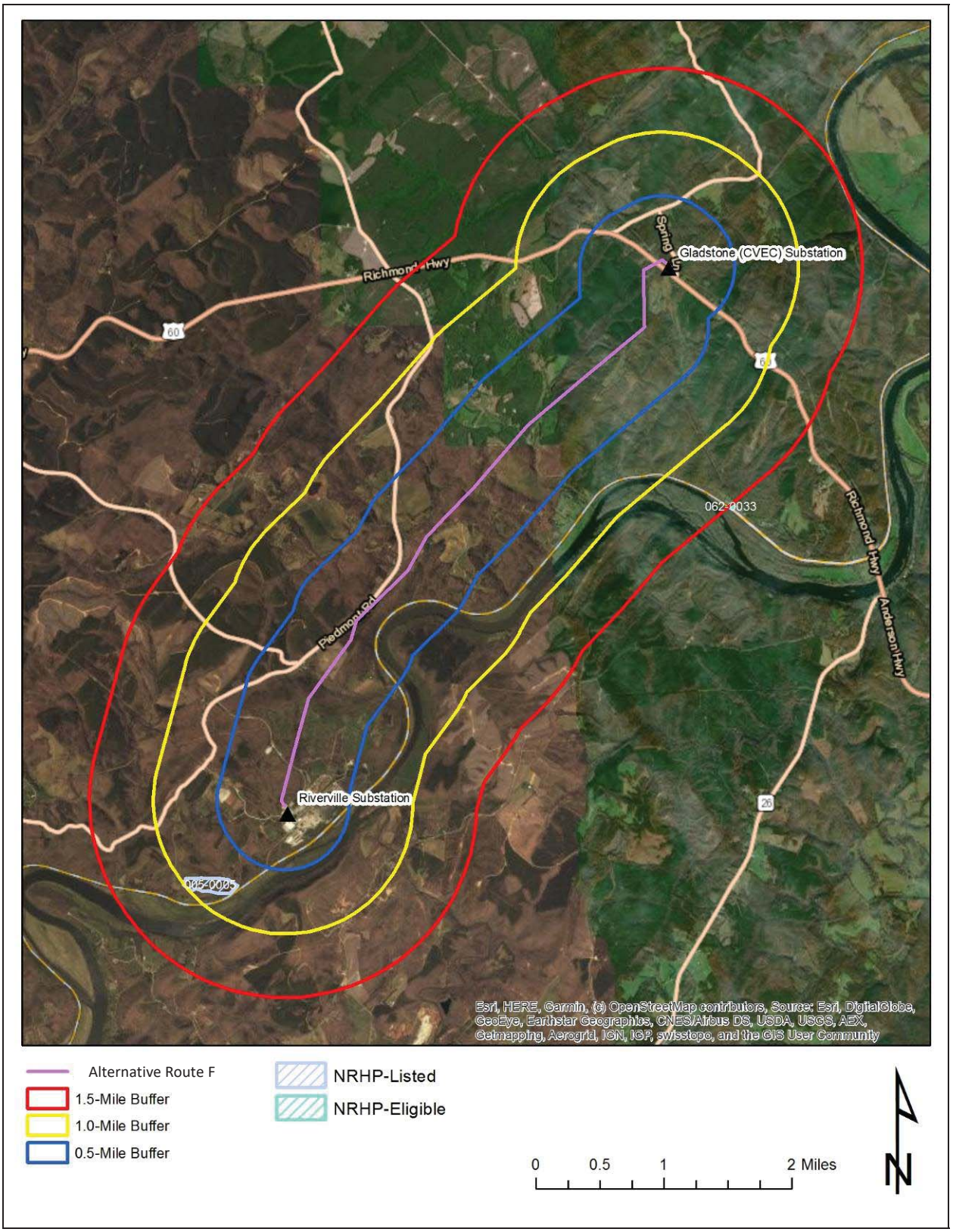


Figure 4-18: NRHP-listed and eligible architectural resources located within the defined study tiers Alternative Route F. (Source: VCRIS)

Archaeological Resources

Review of the VDHR VCRIS records reveals there are 29 previously identified archaeological sites within 1.0 mile of Alternative Route F, none of which are located within or adjacent to the Alternative Route ROW. These include prehistoric camps, and lithic scatters; as well as historic period domestic sites, road traces, bridges, iron furnaces, and canal components. None of these sites have been formally evaluated.

Figure 4-19 illustrates the locations of the previously recorded sites in relation to Alternative Route F.

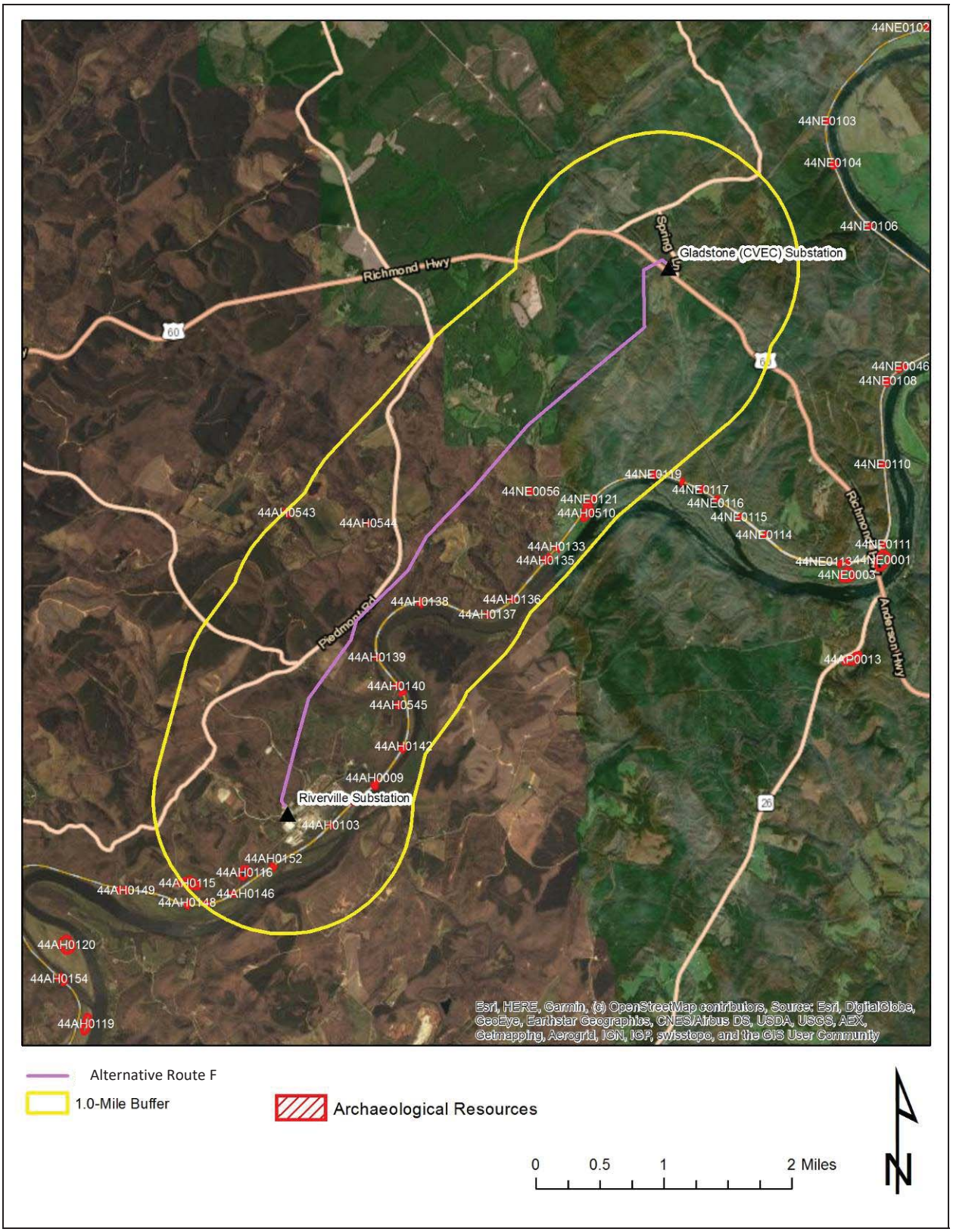


Figure 4-19: Previously identified archaeological located within or adjacent to Alternative Route F. (Source: VCRIS)

5. RESULTS OF FIELD RECONNAISSANCE

In accordance with the VDHR guidelines for assessing impacts of proposed electric transmission lines on historic resources, previously recorded historic architectural properties designated as NHL, or either listed or determined eligible for listing in the NRHP located within 1.5 mile, 1.0 mile, or 0.5 mile of any of the Alternative Routes are to be field verified for existing conditions and photo documented (**Table 5-1**). Inspection and analysis of the setting around the resource and views towards the Alternative Routes were also assessed. The results of the field reconnaissance for each resource are organized by tier and summarized in the following pages.

Table 5-1: Comprehensive list of historic properties within their respective tiered buffer zones for Component 1

Buffer(miles)	Considered Resources	VDHR #	Description
1.5	National Historic Landmarks	None	N/A
1.0	National Register Properties (Listed)	005-0005	Edge Hill, 1380 Edgehill Plantation Road
		005-5037	Galts Mill Complex/ Galts Mill Village Historic District
		005-0035	Brightwells Mill Complex
	Battlefields	None	N/A
	Historic Landscapes	None	N/A
0.5	National Register- Eligible	None	N/A

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NATIONAL REGISTER OF HISTORIC PLACES-LISTED PROPERTIES

Located within 1.0-Mile of the Component 1 Alternative Routes

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Edge Hill, 1380 Edgehill Plantation Road (VDHR ID# 005-0005)

Edge Hill, constructed in 1833, is a well-preserved example of Federal-style residential architecture in Amherst County. Its significant exterior Federal-style features include the decorative lintels on the main elevation and the parapets and wooden inserts on the gable ends. On the interior, the decorative mantels were influenced by pattern books of the day such as Benjamin's Asher's *The American Builder's Companion*. Other significant features of the property include the use of oil bricks for construction. Oil bricks, laid in Flemish bond, were generally used for facades, as was done at the Pavilions at the University of Virginia. However, the main section of Edge Hill used oil bricks for the entire exterior, not just the façade, as at Bremo Plantation in Fluvanna County. Attached to the main house is a circa 1801 structure that is believed to be the earliest home on the property. Surrounding the house are what appear to be the remains of 19th century formal gardens: the circular mound in front of the house and a concentric circular garden on its west side. The property retains several of its outbuildings and among these is the only remaining Amherst County 19th–century sawmill with its machinery. This property -- both the house with its intact architectural features and the surrounding grounds and outbuildings -- retains much of its historical integrity despite changes and alterations over time and serves as a tangible reminder of 19th-century life in Amherst County. Edge Hill was the property of the Walker Family from 1801 to 1947. In 1984, Virginia Fibre/Greif Brothers purchased the house for use as a corporate guesthouse, and in 2004 Edge Hill again became a private residence. In 2008, Edge Hill was listed in the NRHP at the local level of significance under Criterion C in the area of Architecture.

In order to assess the potential impact of Component 1, visual inspection was conducted of the setting around the resource property with emphasis on views towards Component 1. Close inspection of Edge Hill was not possible due to prohibited access; however, a review of aerial photography indicates that all of the buildings and structures included in the NRHP remain extant and in a similar condition to when inventoried. This assessment found that Edge Hill is sited on a bluff overlooking the James River with a complex of outbuildings and gardens immediately around the home and open fields beyond. The property is bordered by woods.

Alternative Routes are located north and south of the James River from the Edge Hill property. The Edge Hill house is sited roughly 0.42 miles from the nearest portion of Alternative Route A and roughly 0.7 miles from the nearest portion of Alternative Routes B, C, and D. It is also approximately 0.94 miles from the existing Riverville Substation and Alternative Routes E and F beyond. The intervening landscape is rolling and mostly wooded. The elevation of the property ranges from approximately 430 feet above sea level at its lower edge near the CSX Railroad corridor and 650 feet at the slight knoll centrally in the property on which the home is sited. The topography between the property and Alternative Route A slopes down to a creek and back up to a ridge on which the alignment is set. The elevation of the alignment in the vicinity of Edge Hill ranges from approximately 550 feet to 650 feet above sea level. Alternative Routes B, C, and D are mostly located on the opposite side of the James River from Edge Hill and on the back side of a low ridge, although both cross the ridge and the river approaching the substation

just downstream from the property. Where they cross the river is approximately 0.70 miles downstream from Edge Hill and around a slight bend in the river.

Inspection from the road approaching the home revealed that the landscape surrounding the property as a whole remains mostly rural with little nonhistoric development. The home is set on a knoll centrally in the property within a vegetated homesite surrounded by open fields. The landscape generally slopes down in all directions from the home, with the largest slope towards the river to the east. Inspection from the back of the property showed this slope was visible, however, the river beyond could not be seen. Views north towards Alternative Route A include the nearest wooded ridge, but the ridge beyond on which the alignment would be sited appears to be screened by distance and topography. Likewise, Alternative Routes B, C, and D are likely screened as they extend along the backside of a ridge on the opposite shore of the James River. It is likely that they would be screened by topography and vegetation as they approach the substation on the north side of the river. Alternative Routes E and F would both be beyond the substation which is not visible, and thus would likewise not be visible.

As such, the intervening distance, topography, and existing vegetation in the area will provide screening for much of the Alternative Routes. Alternative Route A would be in closest proximity to the Edge Hill property, although inspection revealed that it would likely be mostly to completely screened by topography and vegetation from much of the property. It would, however, be very visible from the nearest public road where Edgehill Plantation Road meets Stapleton Road, and may be seasonally visible from the resource. This was confirmed with photo simulation that shows the structures on Alternative Route A will generally remain just below the treeline, although may be intermittently visible through the treeline seasonally. Alternative Routes B, C, and D are all set further away on the opposite side of James River and another ridge, however, may be intermittently visible as they cross the river downstream. This was confirmed with photo simulation that shows the two structures on either side of the river may be partially visible above or through the treeline, while the line itself will be visible as it crosses the river. The additional structures beyond the river crossing will be screened below the treeline and ridge. This treeline and ridge would also screen visibility of Alternative Routes E and F beyond the Riverville substation. As such, Alternative Routes A, B, C, and D will all have a ***minimal impact*** on Edge Hill. Alternative Routes E and F will have ***no impact*** on Edge Hill.

Figure 5-1 depicts the location of Edge Hill in relation to the Alternative Routes with viewshed buffers, photographic views towards Component 1, and photo simulations. **Photographs 5-1 through 5-5** are representative photographs of the property, as well as those taken from the property towards the Alternative Routes. **Figures 5-2 and 5-4** illustrate the location, direction, and structures included in the photo simulations from the property, and **Figures 5-3 and 5-5** provide a simulated view of the proposed structures.

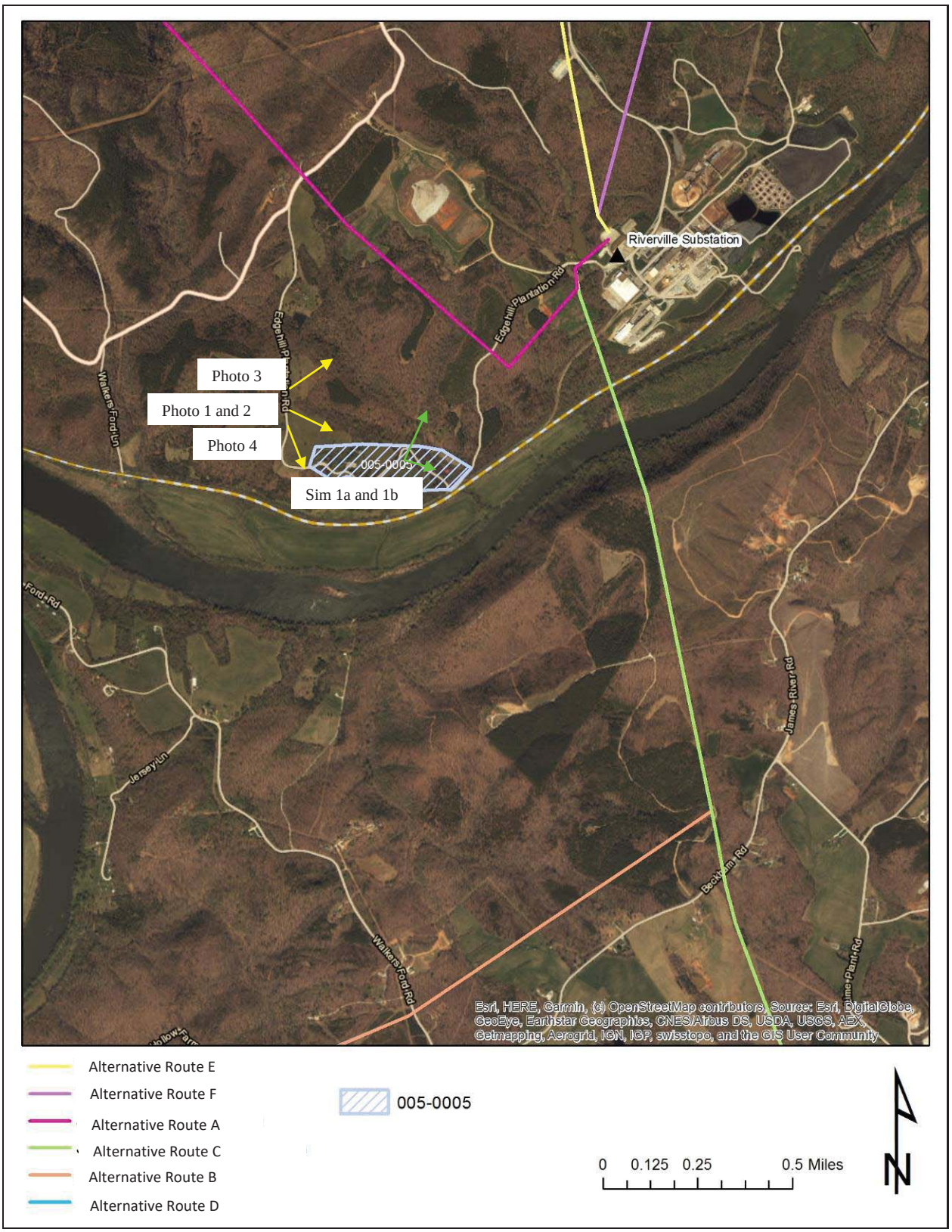

Figure 5-1: Location of Edge Hill in relation to Component 1 Alternative Routes (Photo locations and directions shown in yellow. Simulation locations and directions shown in green. Base map source: VCRIS.

Photograph 5-1: Edge Hill (VDHR# 005-0005) front facade (Source: VCRIS)

Photograph 5-2: Edge Hill Setting (Edge Hill Photo Location 1), facing Southeast.

Photograph 5-3: Edge Hill view towards Alternative Route A (Edge Hill Photo Location 2), facing southeast.

Photograph 5-4: Edge Hill view towards Alternative Route A (Photo location 3), facing northeast.

Photograph 5-5: Edge Hill view towards Alternative Routes A, B, C, and D (Photo location 4), facing south.

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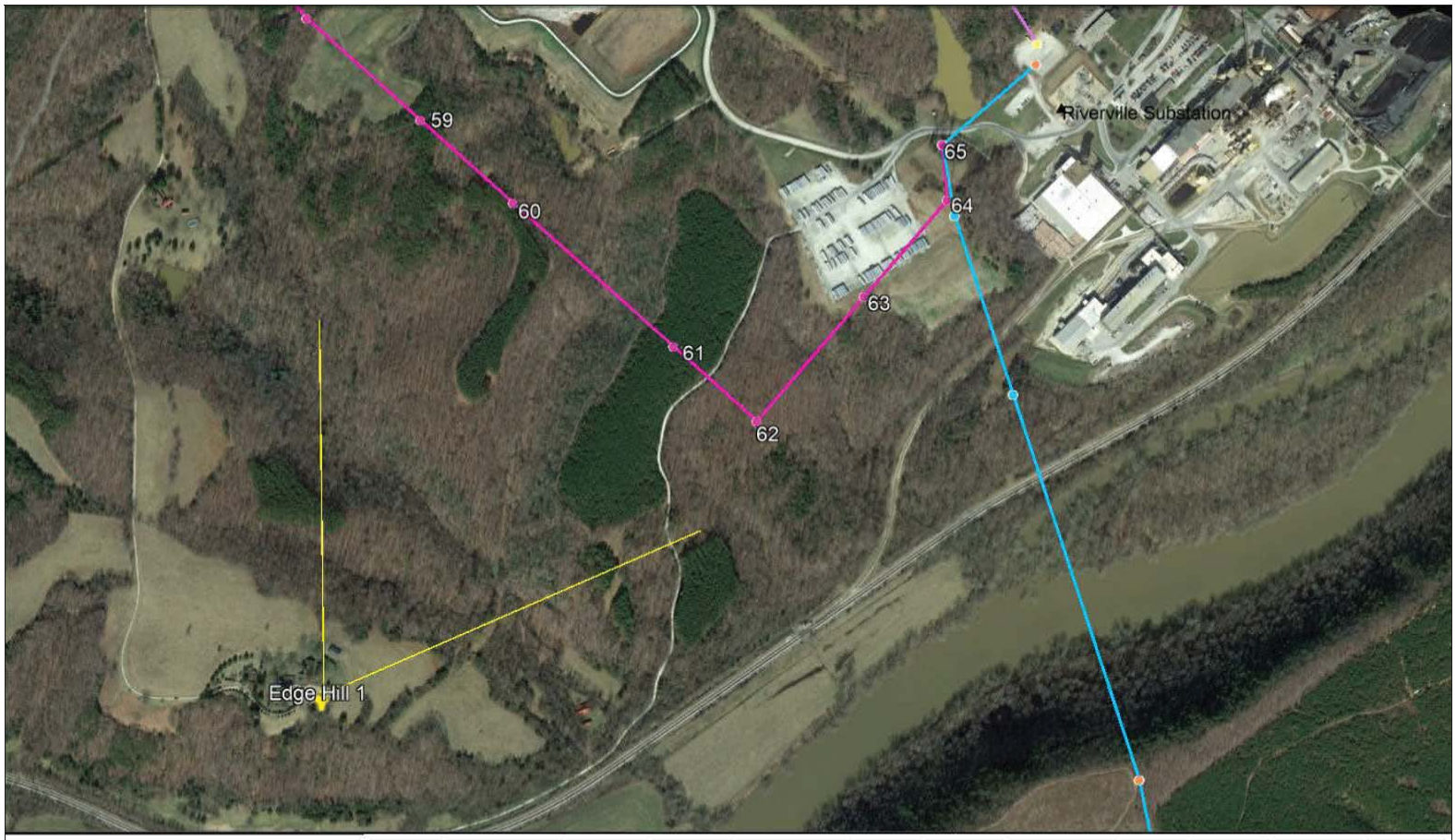


Photo location: Edge Hill 1A

Photo simulations prepared by: GTTE LLC email: info@gttellc.com

Structure	Distance (ft)	Ht (ft)	Structure	Distance (ft)	Ht (ft)	Structure	Distance (ft)	Ht (ft)	Structure	Distance (ft)	Ht (ft)
59	2915	63.5	62	2597	63.5	65	4171	50			
60	2643	59	63	3396	68						
61	2488	54.5	64	4006	59						

Figure 5-2: Edge Hill Simulation 1A – Location and direction of photograph with list of included structures. Source: GTTE, LLC

	Edge Hill 1A	Proposed View
Photo simulations prepared by: GTTE LLC email: info@gttellc.com 703 447 1350	Photo simulations and diagrams represent approximate heights for electric transmission structures from the conceptual design used for the proposed project. These illustrations do not necessarily depict exact structure design or location.	0" 1" 2" 3" 4" This simulation is designed for viewing on a computer monitor. To achieve the correct scale, the image should be increased or decreased in size until the scale above measures 4". When viewed with the eye at 20" from the screen the image will have the same scale as if the viewer were standing at the camera location.

Figure 5-3: Edge Hill Simulation 1A – Proposed view towards Alternative Route A with structures modeled (shown in yellow). Source: GTTE, LLC

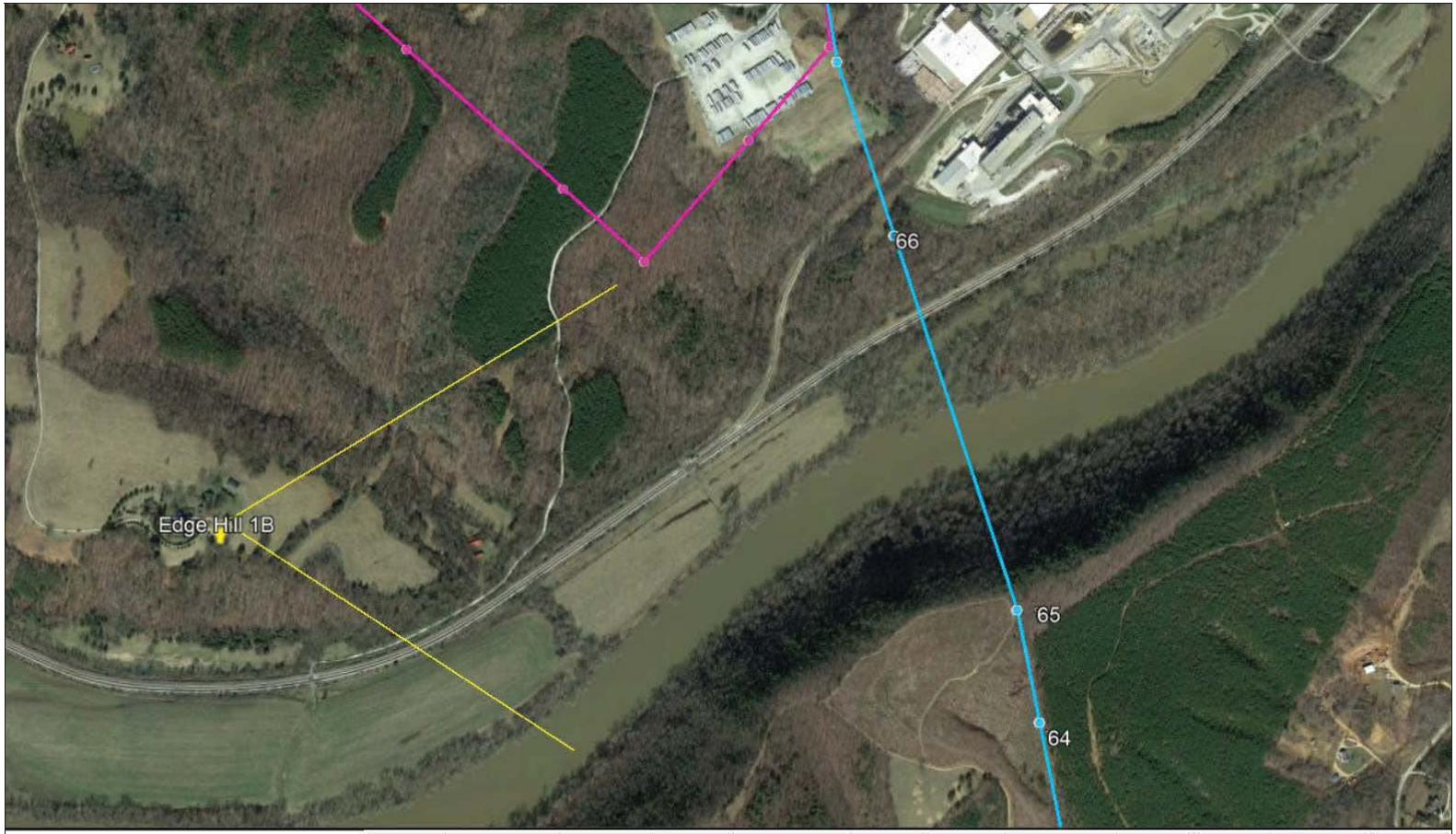


Photo location: Edge Hill 1B

Photo simulations prepared by: GTTE LLC email: info@gttellc.com

Structure	Distance (ft)	Ht (ft)	Structure	Distance (ft)	Ht (ft)	Structure	Distance (ft)	Ht (ft)	Structure	Distance (ft)	Ht (ft)
66	3797	81.50									
65	4149	96.00									
64	4352	90.50									

Figure 5-4: Edge Hill Simulation 1B – Location and direction of photograph with list of included structures. Source: GTTE, LLC

	Edge Hill 1B	Proposed View
Photo simulations prepared by: GTTE LLC email: info@gttellc.com 703 447 1350	Photo simulations and diagrams represent approximate heights for electric transmission structures from the conceptual design used for the proposed project. These illustrations do not necessarily depict exact structure design or location.	0" 1" 2" 3" 4" This simulation is designed for viewing on a computer monitor. To achieve the correct scale, the image should be increased or decreased in size until the scale above measures 4". When viewed with the eye at 20" from the screen the image will have the same scale as if the viewer were standing at the camera location.

Figure 5-5: Edge Hill Simulation 1B – Proposed view towards Alternative Routes B, C, and D with structures modeled (shown in yellow). Source: GTTE, LLC

Brightwells Mill Complex, 586 Brightwells Mill Road (VDHR ID# 005-0035)

The 256-acre property of the Brightwells Mill Complex in Amherst County includes the 1942 mill; original 1800s water wheel, dam, and millpond; a currently undated corn crib and chicken house; and the 1830s Miller's House and outbuildings. Known locally as one of Amherst's most scenic and photographed mills and landscapes, the Harmon L. Brightwell & Sons Grist Mill is 100% water powered. In a 1973 news article, the mill was already known to be the last fully water-powered mill in operation. It continued operations into the 1990s serving cornmeal and flour to Amherst, Nelson, Campbell and Appomattox Counties. The 2009 nomination for the nearby Galt's Mill Complex stated that "the many locations of former milling operations attest to the economic importance the industry once had in Amherst County. There were 18 documented gristmills and many other plantation mills known to have existed through the 19th century. Only four 19th century mill buildings remain: Galt's Mill (1813), Amherst Mill (c. 1813), Sandidge's Mill (c. 1840) and Brightwells Mill (c. 1878, rebuilt c. 1942)." With the previous mill already in operation as the Baldock Mill, Brightwell bought the property in 1920 and continued operations until August 1942 when a flood washed away most of the building. By July 1943 he had rebuilt the mill to what is seen today, having salvaged such items as the original water wheel and the carrying beams for the first floor. The current three-story mill is a heavy-timber post-and-beam building on a stone foundation with 6/6 double-hung windows and a standing-seam metal gable roof. Sandidge's Mill had ceased operation at the time of the flood, so their equipment was salvaged and installed in the current Brightwells Mill, all of which is still in place. In 2016, the Brightwell's Mill Complex was listed in the NRHP at the local level of significance under Criterion A (Industry) and Criterion C (Architecture, Engineering) with a period of significance of ca. 1800-1962.

The Brightwells Mill Complex is located northwest of all Alternative Routes. The Brightwells Mill Complex is 0.86 miles from the nearest portion of Alternative Route A. It is 2.57 miles from the nearest portion of Alternative Routes B, C, and D. The intervening landscape is rolling and mostly wooded. The elevation of the complex ranges from approximately 575 feet above sea level at the mill and 715 feet at the farm. The topography between the property and Alternative Route A consists of a low ridge with the alignment set atop a higher ridge beyond. The elevation of the Alternative Route in the vicinity of Brightwells Mill ranges from approximately 800 feet to 950 feet above sea level. Alternative Routes B, C, and D are located on the opposite side of the James River and beyond another ridge.

In order to assess the potential impact of Component 1, visual inspection was conducted of the setting around the Brightwells Mill Complex and photographs taken with emphasis on views from the resource towards the study area and Alternative Routes. This inspection revealed that the landscape surrounding the complex property as a whole remains mostly rural with little nonhistoric development. The mill and dam are located at a low elevation, immediately adjacent to and within Beck's Creek which flows through a narrow valley bordered by rolling hills. The landscape is heavily wooded, which coupled with the terrain, inhibits long-distance views in any direction, including towards the study area. However, inspection from the road just uphill revealed partial visibility of the ridge on which Alternative Route A would be sited,

although the Alternative Route would be on the back side of the ridge and likely screened. Meanwhile, the farm house is set uphill to the north of the mill at the edge of the woods on a rolling and mostly cleared landscape of agricultural and pastoral fields. Inspection from the house itself revealed visibility of the low ridge rising between the property and Alternative Route A beyond, and narrow interrupted visibility of the higher ridge beyond on which the Alternative Route would be sited. Inspection from further north along Brightwells Mill Road, approaching the northern edge of the resource boundary, the higher ridge on which the Alternative Route would be sited becomes more visible. The James River and ridge beyond which Alternative Routes B, C, and D would be sited are completely screened by the intervening distance, topography, and vegetation.

As such, the intervening distance, topography, and existing vegetation in the area will likely provide screening of all the Alternative Routes. Alternative Route A would be in closest proximity to the Brightwells Mill Complex, although inspection revealed that it would likely be completely screened be topography and vegetation. Alternative Routes B, C, and D are all set much further away on the opposite side of James River and another ridge, and are therefore anticipated to not pose any potential visibility to the resource. This was confirmed with photo simulation that shows the structures will remain below the horizon and behind the treeline from vantage points at the mill itself, as well as uphill at the associated house. It is therefore D+A's opinion that Alternative Routes B, C, and D will have ***no impact*** on Brightwells Mill Complex, while Alternative Route A will have no more than a ***minimal impact*** on Brightwells Mill Complex.

Figure 5-6 depicts the location of Brightwells Mill Complex in relation to the Alternative Routes with viewshed buffers, photographic views towards Component 1, and photo simulations. **Photographs 5-6 through 5-10** are representative photographs of the property, as well as those taken from the property towards the Alternative Routes. **Figures 5-7 and 5-9** illustrate the location, direction, and structures included in the photo simulations from the property and **Figures 5-8 and 5-10** provide simulated views of the proposed structures.

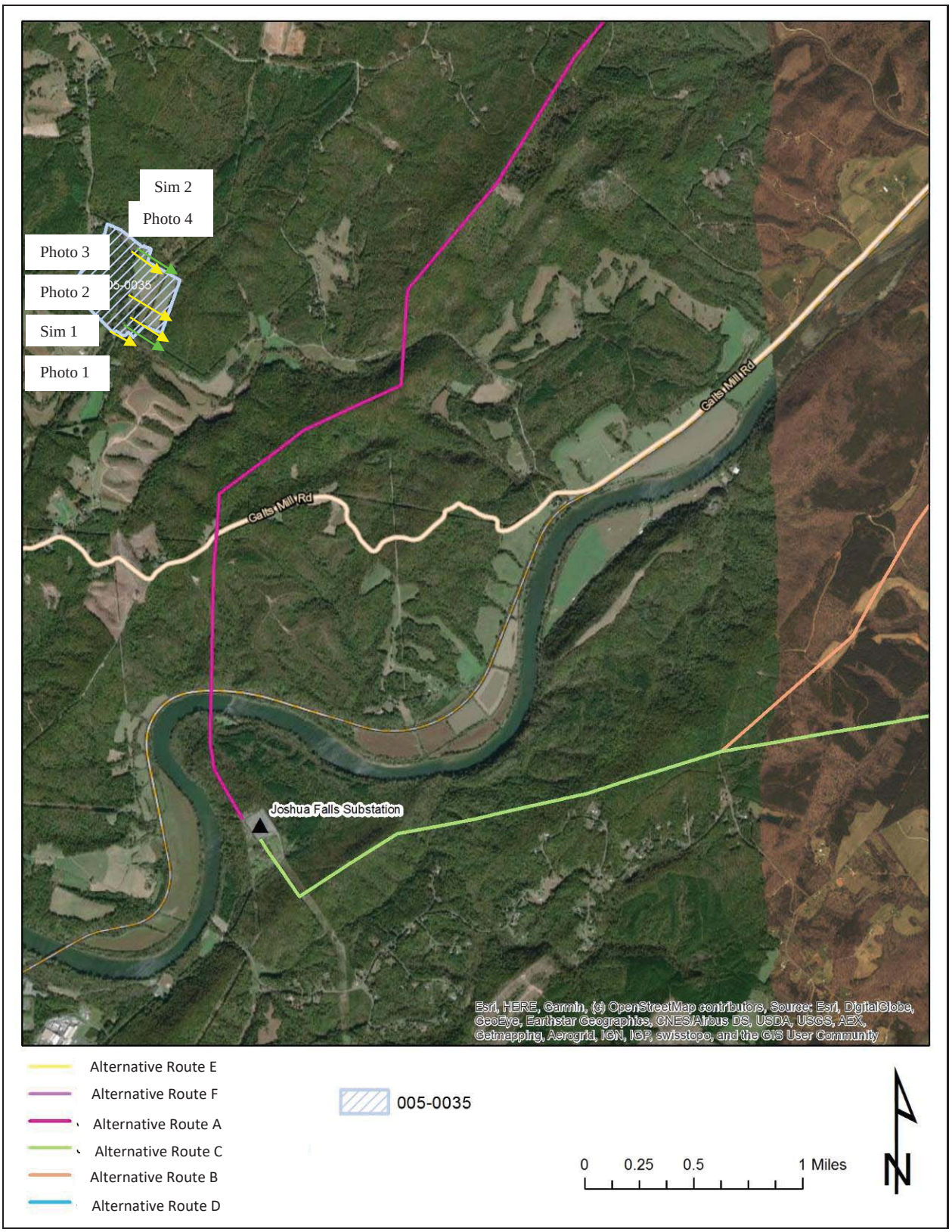


Figure 5-6: Location of Brightwells Mill Complex in relation to Component 1 Alternative Routes. Photo locations and directions shown in yellow. Simulation locations and directions shown in green. Base map source: VCRIS

Photograph 5-6: Brightwells Mill and Dam, facing north

Photograph 5-7: Brightwells Mill and Dam view towards Alternative Route A (Photo location 1), Facing southeast.

Photograph 5-8: Brightwells Mill and Dam view towards Alternative Route A (Photo location 2), facing east.

Photograph 5-9: Brightwells Mill and Dam view towards Alternative Route A (Photo location 3), facing southeast.

Photograph 5-10: Brightwells Mill and Dam view towards Alternative Route A (Photo location 4), facing southeast.

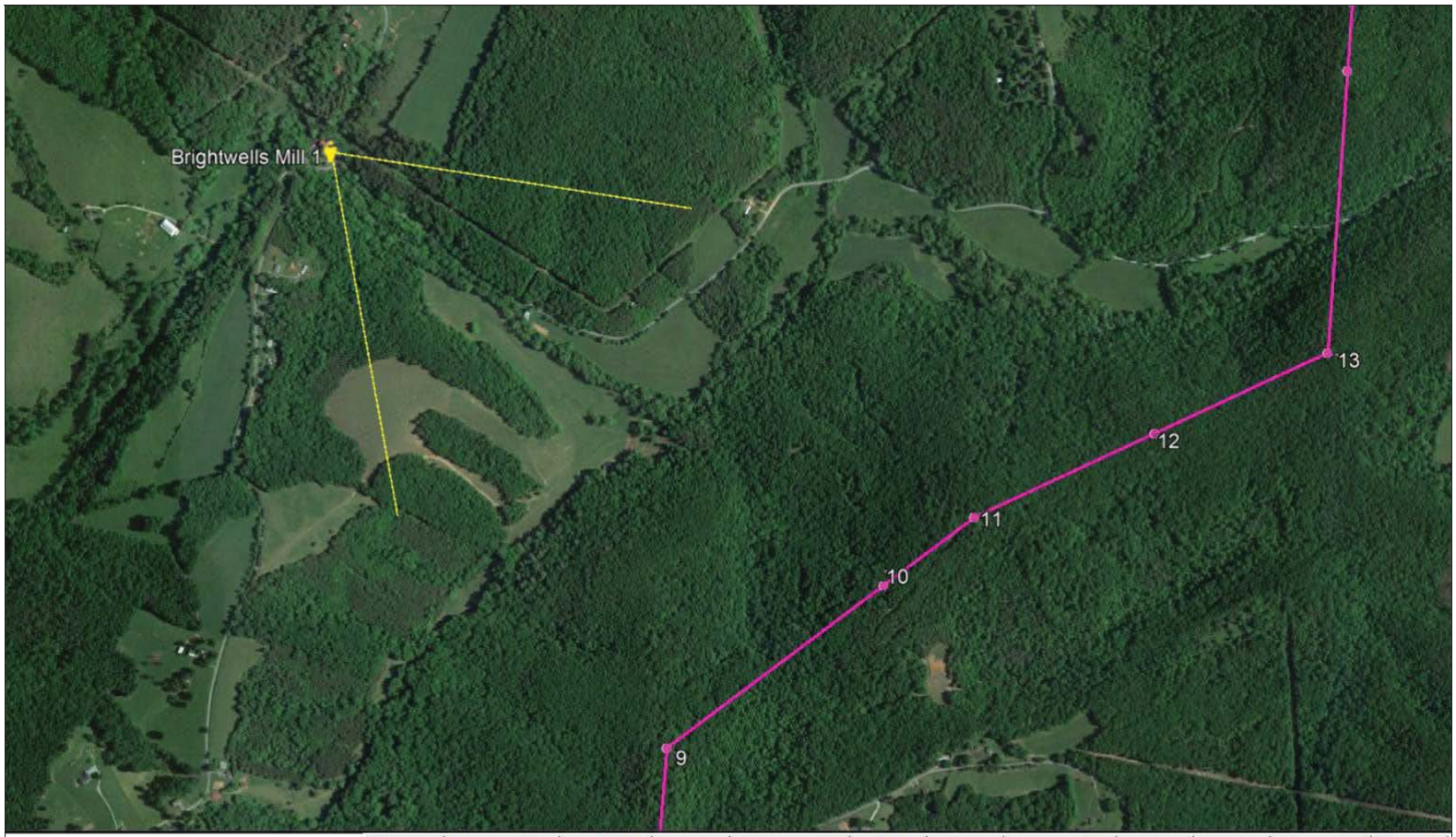


Photo location: Brightwells Mill 1

Photo simulations prepared by:
GTTE LLC
email:
info@gttellc.com

Structure	Distance (ft)	Ht (ft)	Structure	Distance (ft)	Ht (ft)	Structure	Distance (ft)	Ht (ft)	Structure	Distance (ft)	Ht (ft)
9	4530	68	12	5819	82						
10	4686	99.5	13	6800	64						
11	4945	86									

Figure 5-7: Brightwells Mill and Dam Simulation 1 – Location and direction of photograph with list of included structures. Source: GTTE, LLC

	Brightwell's Mill 1	Proposed View
Photo simulations prepared by: GTTE LLC email: info@gttellc.com 703 447 1350	Photo simulations and diagrams represent approximate heights for electric transmission structures from the conceptual design used for the proposed project. These illustrations do not necessarily depict exact structure design or location.	0" 1" 2" 3" 4" This simulation is designed for viewing on a computer monitor. To achieve the correct scale, the image should be increased or decreased in size until the scale above measures 4". When viewed with the eye at 20" from the screen the image will have the same scale as if the viewer were standing at the camera location.

Figure 5-8: Brightwells Mill and Dam Simulation 1 – Proposed view towards Alternative Route A with structures modeled (shown in yellow). Source: GTTE, LLC

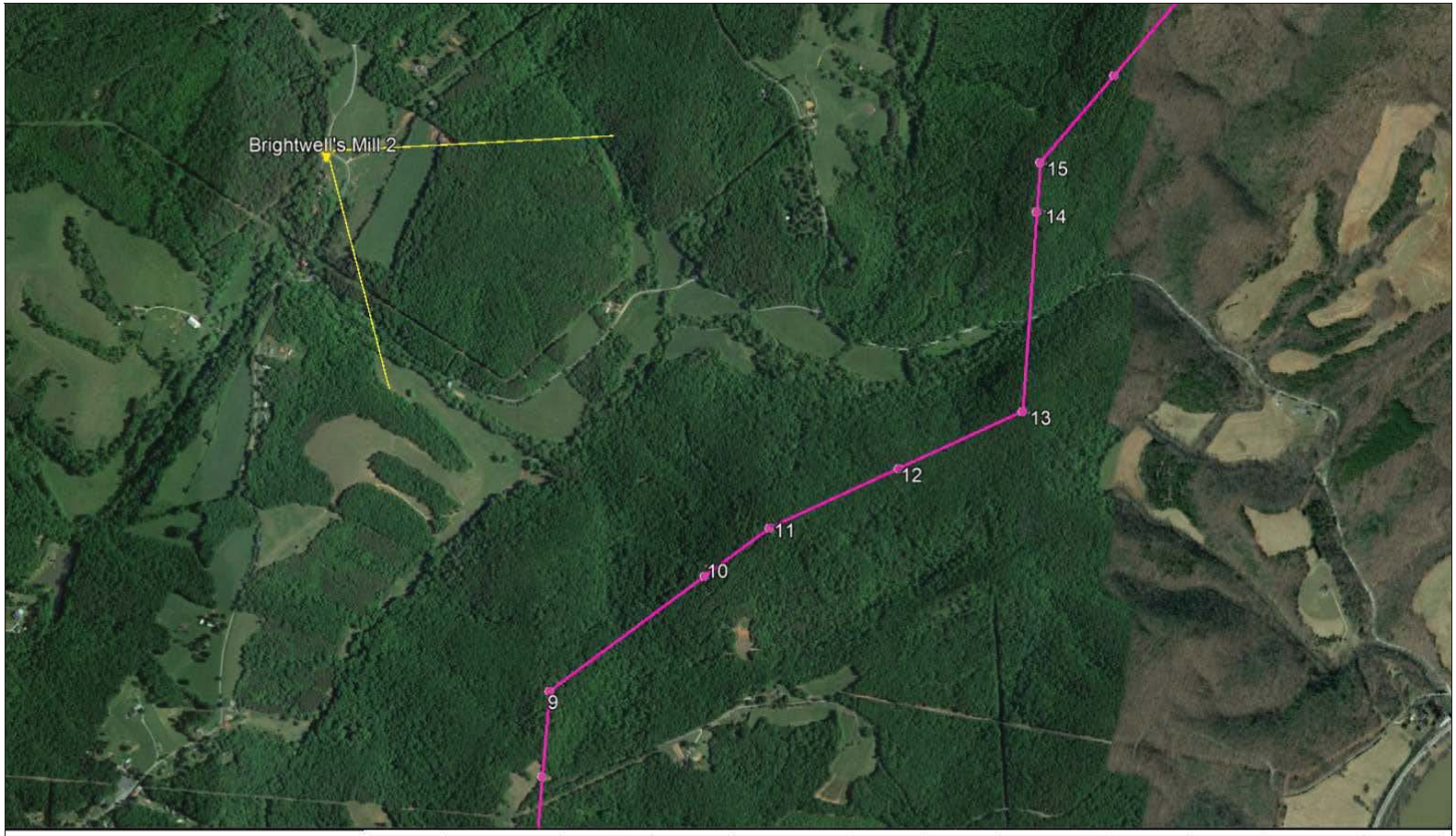


Photo location: Brightwells Mill 2

Photo simulations prepared by: GTTE LLC email: info@gttellc.com

Structure	Distance (ft)	Ht (ft)	Structure	Distance (ft)	Ht (ft)	Structure	Distance (ft)	Ht (ft)	Structure	Distance (ft)	Ht (ft)
9	5429	68.0	12	6096	81.5	15	6662	77.0			
10	5288	99.5	13	6928	63.5						
11	5418	86.0	14	6649	72.5						

Figure 5-9: Brightwells Mill and Dam Simulation 2 – Location and direction of photograph with list of included structures. Source: GTTE, LLC

	Brightwell's Mill 2	Proposed View
Photo simulations prepared by: GTTE LLC email: info@gttellc.com 703 447 1350	Photo simulations and diagrams represent approximate heights for electric transmission structures from the conceptual design used for the proposed project. These illustrations do not necessarily depict exact structure design or location.	0" 1" 2" 3" 4" This simulation is designed for viewing on a computer monitor. To achieve the correct scale, the image should be increased or decreased in size until the scale above measures 4". When viewed with the eye at 20" from the screen the image will have the same scale as if the viewer were standing at the camera location.

Figure 5-10: Brightwells Mill and Dam Simulation 2 – Proposed view towards Alternative Route A with structures modeled (shown in yellow). Source: GTTE, LLC

Galts Mill Complex, 1133 Galts Mill Road (VDHR ID# 005-5037)

The Galts Mill Complex is a roughly 535-acre property situated on the north side and along the James River and centered on a circa 1813 mill. The complex includes 10 resources, the focus of which is the ca. 1813 Flemish bond brick mill and ca. 1900 frame store. Originally four-and-a-half stories, the mill was lowered to two stories in 1950 due to structural concerns. Currently, the roof is tin, which replaced the replacement fiberglass used in the 1950 renovation. The mill operated until 1956, and the store operated as a store, post office, and warehouse. The district also includes Home House, also ca. 1813, a 2-story, 3 bay frame dwelling with a standing seam metal side gable roof. It currently appears as a typical I-house due to its alterations in 1912, 1930, and the 1980s. Other buildings include the 1.5-story frame office, water tower house, and woodshed, all ca. 1882 and of the same construction type; a pre-1889 2-story frame tenant house; a ca. 1880 1-story frame Cooper's house; a ca. 1900 2-story frame tenant house; and a ca. 1940 1-story frame tenant house. An aqueduct was built before 1840 to serve the James River and Kanawha Canal, but closed in 1878, after which the district was served primarily by the Richmond and Allegheny Railroad. Parts of the aqueduct still survive. There is potential for archaeological sites associated with the mill and other non-extant buildings. The district was listed in the NRHP in 2009 as locally significant under Criteria A (Industry/Commerce) and C (Architecture), with a period of significance of ca. 1813-1956.

The Galts Mill complex is located between Alternative Routes north and south of the James River. The mill building is sited roughly 0.92 miles from the nearest portion of Alternative Route A although the complex property extends out to within 0.25 miles of the alignment. The mill and complex are roughly 1.34 miles from the nearest portion of Alternative Routes B, C, and D, on the south side of the James River. The intervening landscape in both directions is rolling and mostly wooded, with the river flowing centrally between the two. The elevation of the mill complex ranges from approximately 450 feet above sea level at the mill along the river and 680 feet along the ridge at the upper edge of the property. The topography between the property and Alternative Route A consists of generally rolling terrain which slopes up to the high ridge on which the alignment would be located. The elevation of the alignment in the vicinity of Galts Mill ranges from approximately 800 feet to 900 feet above sea level. Alternative Routes B, C, and D are located on the opposite side of the James River and beyond a ridge. Alternative Route B continues to extend along the back of this ridge while Alternative Routes C and D extend further to the south and away from the river, beyond additional landforms.

In order to assess the potential impact of Component 1, visual inspection was conducted of the setting around the Galts Mill Complex and photographs taken with emphasis on views from the resource towards the study area and Alternative Routes. This inspection revealed that the landscape surrounding the complex property as a whole remains mostly rural with little nonhistoric development. The mill is located at a low elevation, adjacent to Beck's Creek near where it flows into James River. The landscape is moderately wooded although generally opens up away from the creek. Inspection from the mill revealed that the ridge on which Alternative Route A would be sited is screened by topography and vegetation. Likewise, views across the river towards Alternative Routes B, C, and D are interrupted by topography. These Alternative

Routes would be set on the backside of two higher ridges and thus cannot be seen. Meanwhile, the upper reaches of the property, including the tenant farmhouse set uphill to the north and along Galts Mill Road to the west revealed more open and distant views in all directions. Inspection from the road towards Alternative Route A revealed that the densely wooded landscape screens views in that direction. Views across the river towards Alternative Routes B, C, and D revealed visibility of the two ridges between the property and the Alternative Routes, however, not the backside of the ridge on which the Alternative Routes would be sited. Views from the hill on which the Tenant House is located revealed visibility of the ridge on which Alternative Route A would be sited, although visibility is limited to short spans. Views from the Tenant House across the river towards Alternative Routes B, C, and D revealed the high ridge bordering the river completely screens visibility of the adjacent ridge behind which the Alternative Routes would be sited.

As such, the intervening distance, topography, and existing vegetation in the area will provide screening for much of the Alternative Routes. Alternative Route A would be in closest proximity to the Galts Mill Complex and inspection revealed that portions of it may be visible from locations throughout the property although partially to completely screened from most. Alternative Routes B, C, and D are all set much further away on the opposite side of James River and another ridge, and are therefore anticipated to not pose any potential visibility to the resource. This was confirmed with photo simulation that shows the structures on Alternative Route A may be seasonally visible from the tenant house at the highest elevation on the property, while all of the structures on Alternative Routes B, C, and D will remain below the horizon and behind the treeline. It is therefore D+A's opinion that Alternative Routes B, C, and D will have ***no impact*** on Galts Mill Complex, while the Alternative Route A will have no more than a ***minimal impact*** on Galts Mill Complex.

Figure 5-11 depicts the location of Galts Mill Complex in relation to the Alternative Routes with viewshed buffers, photographic views towards Component 1, and photo simulations. **Photographs 5-11 through 5-20** are representative photographs of the property, as well as those taken from the property towards the Alternative Routes. **Figures 5-12, 5-14, 5-16, and 5-18** illustrate the location, direction, and structures included in the photo simulations from the property, and **Figures 5-13, 5-15, 5-17, and 5-19** provide simulated views of the proposed structures.

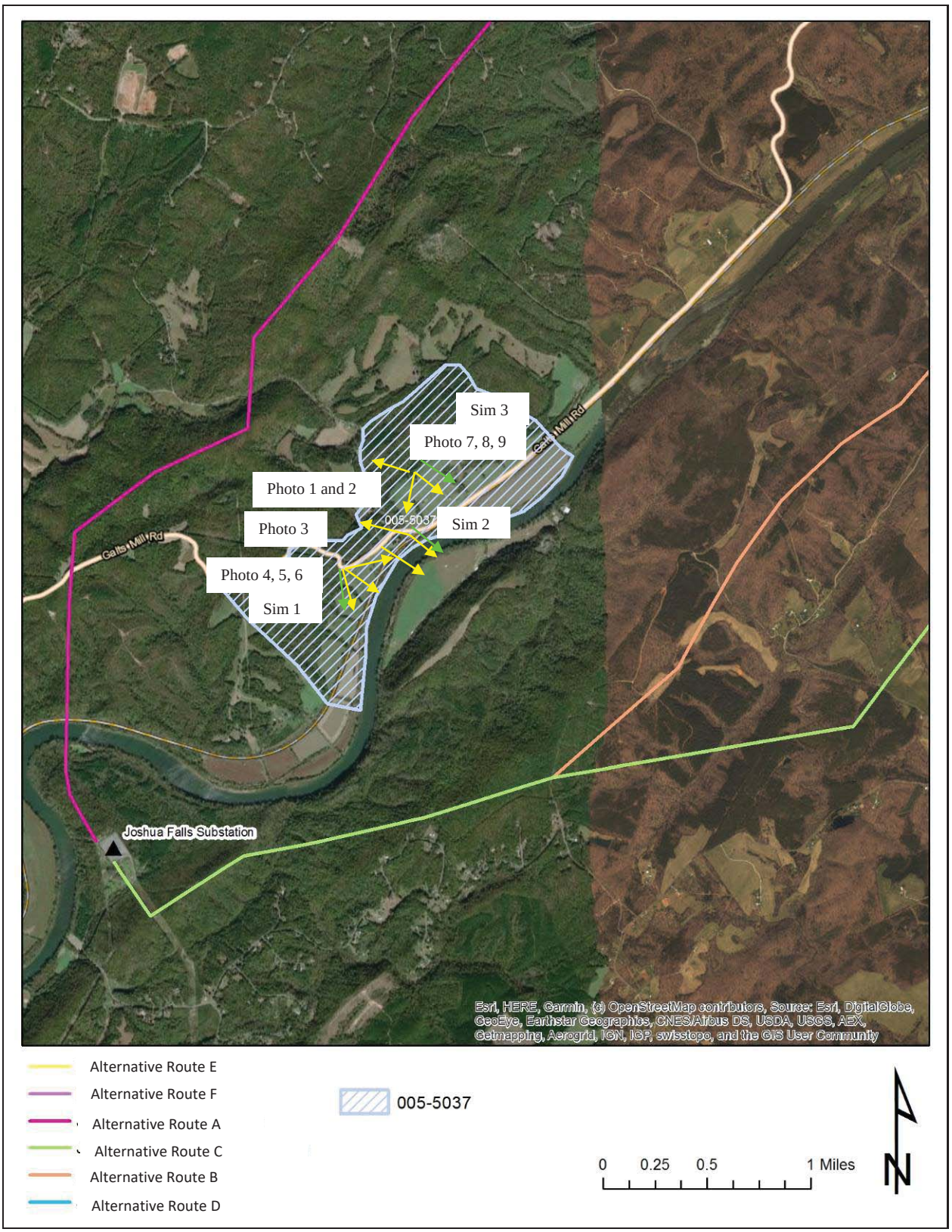
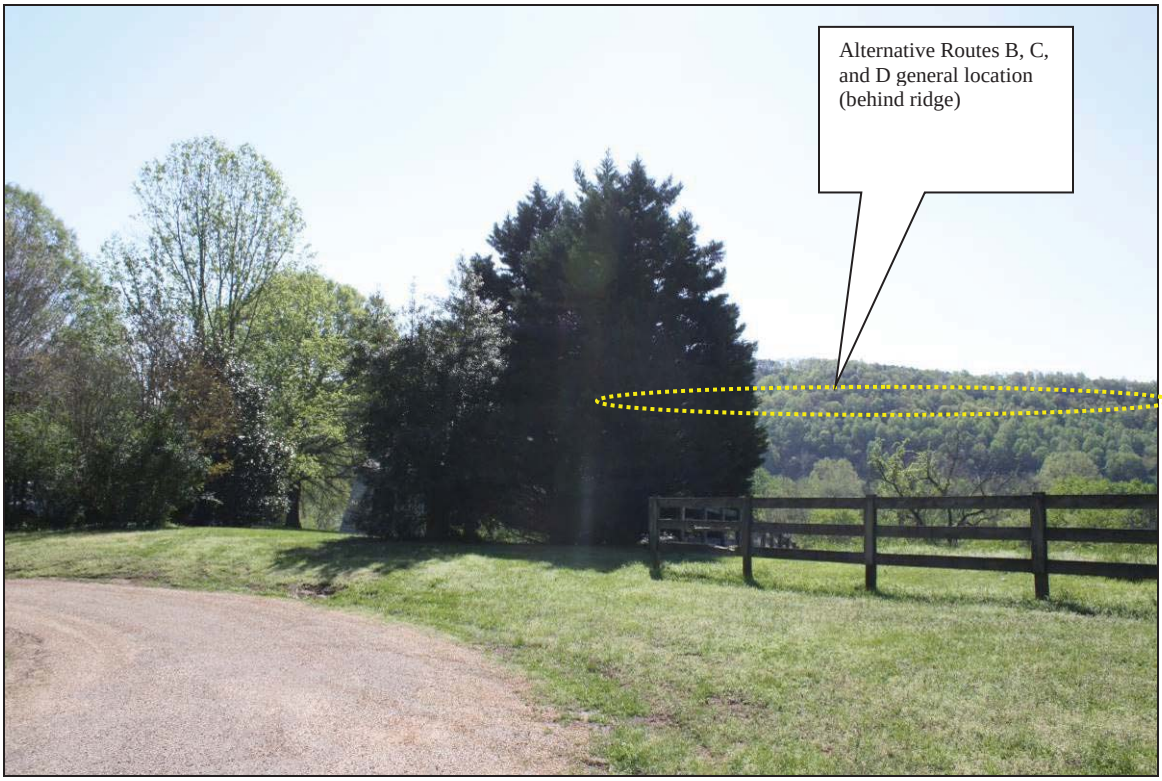


Figure 5-11: Location of Galts Mill Complex in relation to Component 1 Alternative Routes. Photo locations and directions shown in yellow. Simulation locations and directions shown in green. Base map source: VCRIS

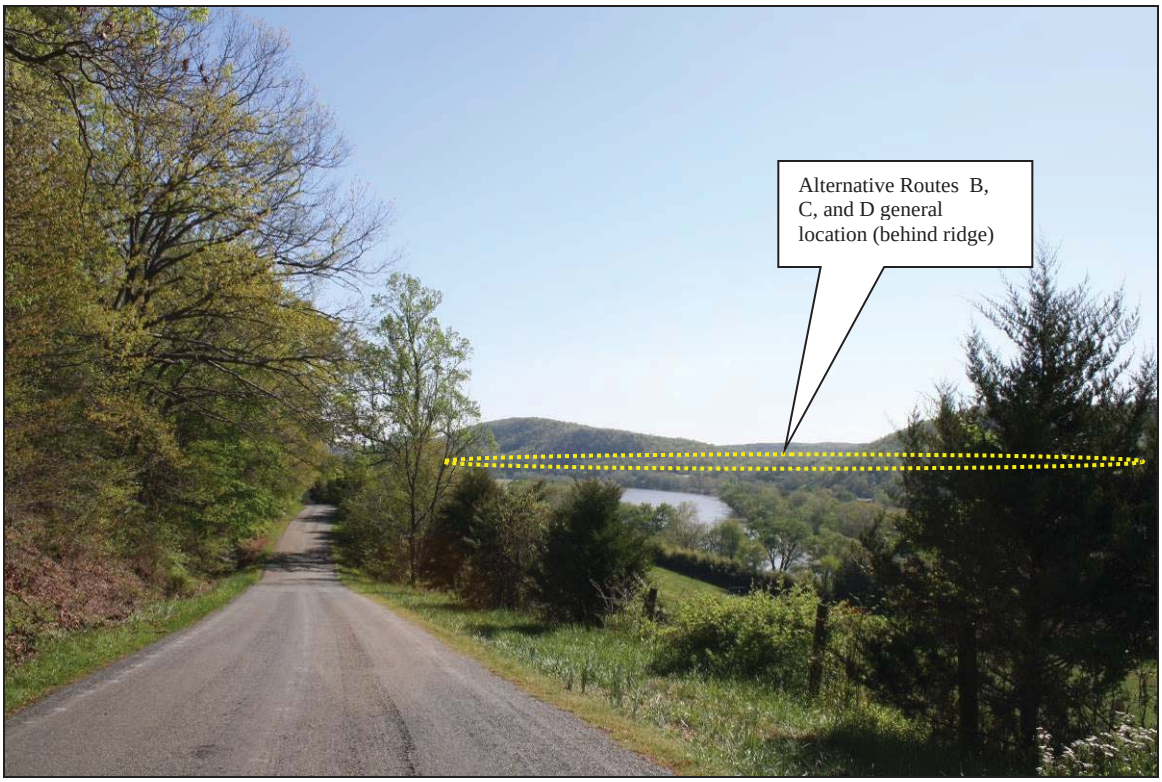
Photograph 5-11: Galts Mill, facing southwest

Photograph 5-12: Galts Mill setting (Photo location 1), Facing southeast.

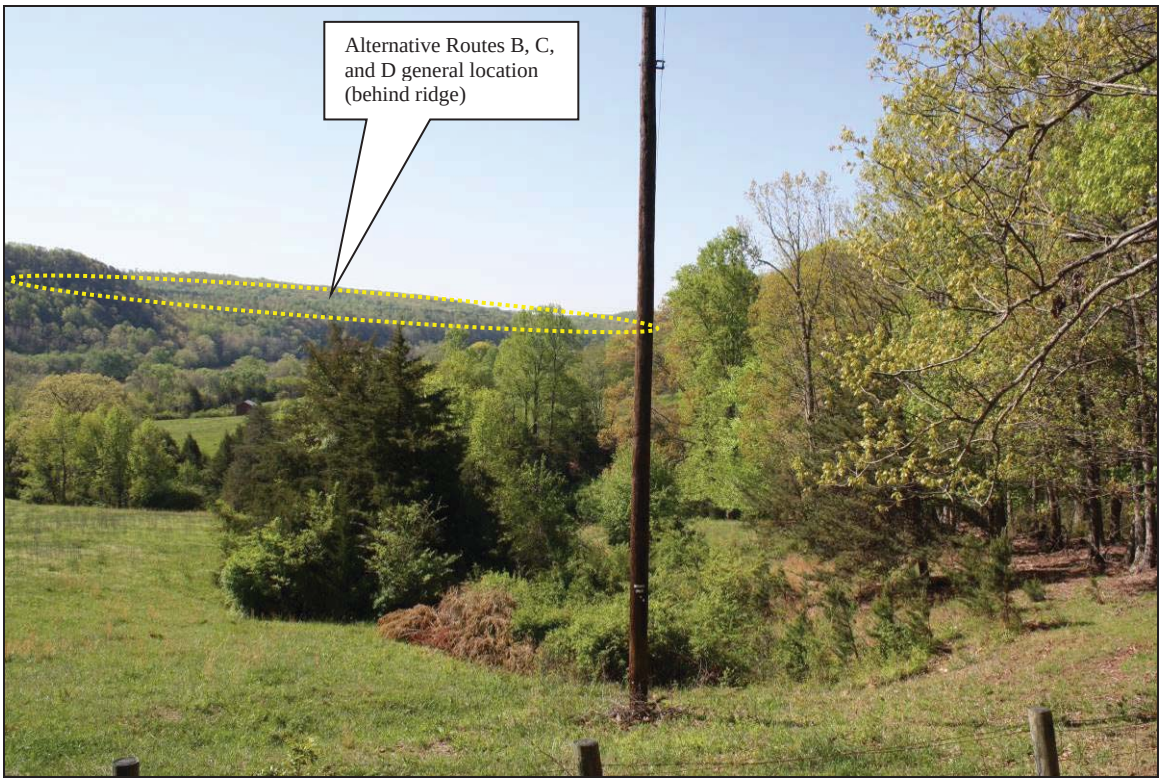
Photograph 5-13: Galts Mill view towards Alternative Route A (Photo location 2), facing northwest.



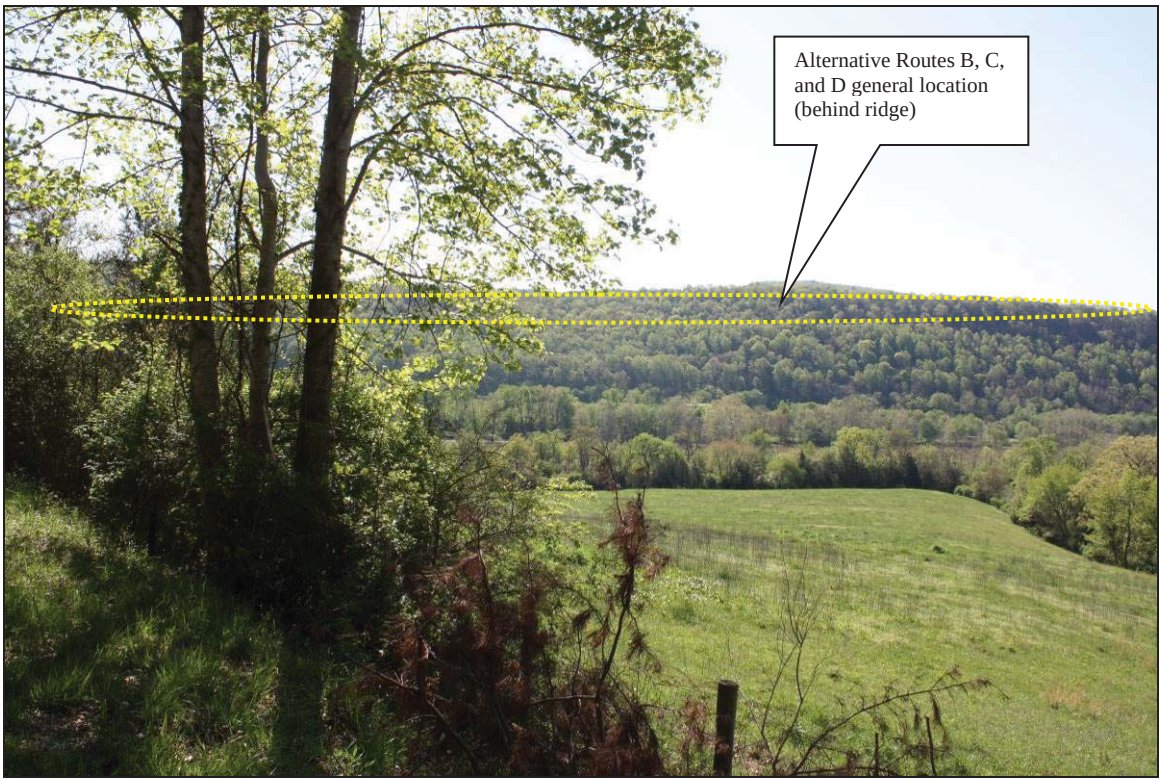
Photograph 5-14: Galts Mill view towards Alternative Routes B, C, and D (Photo location 3), facing southeast.



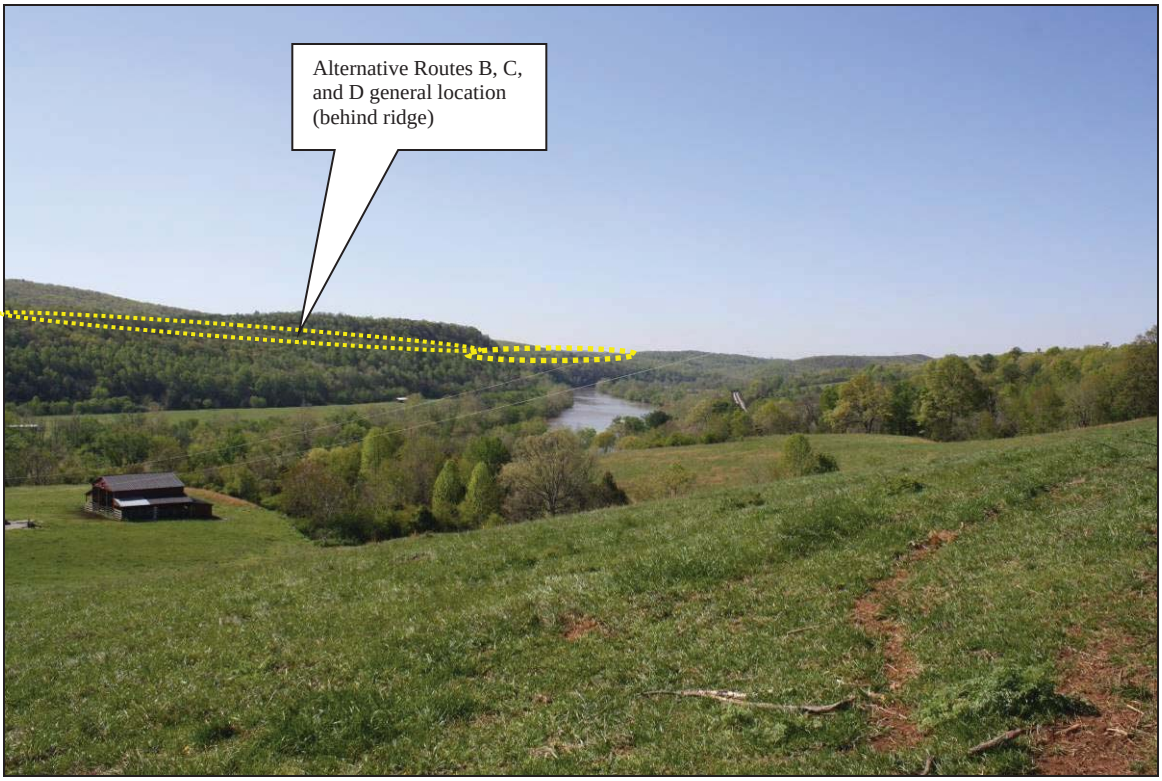
Photograph 5-15: Galts Mill view towards Alternative Routes B, C, and D (Photo location 4), facing east.



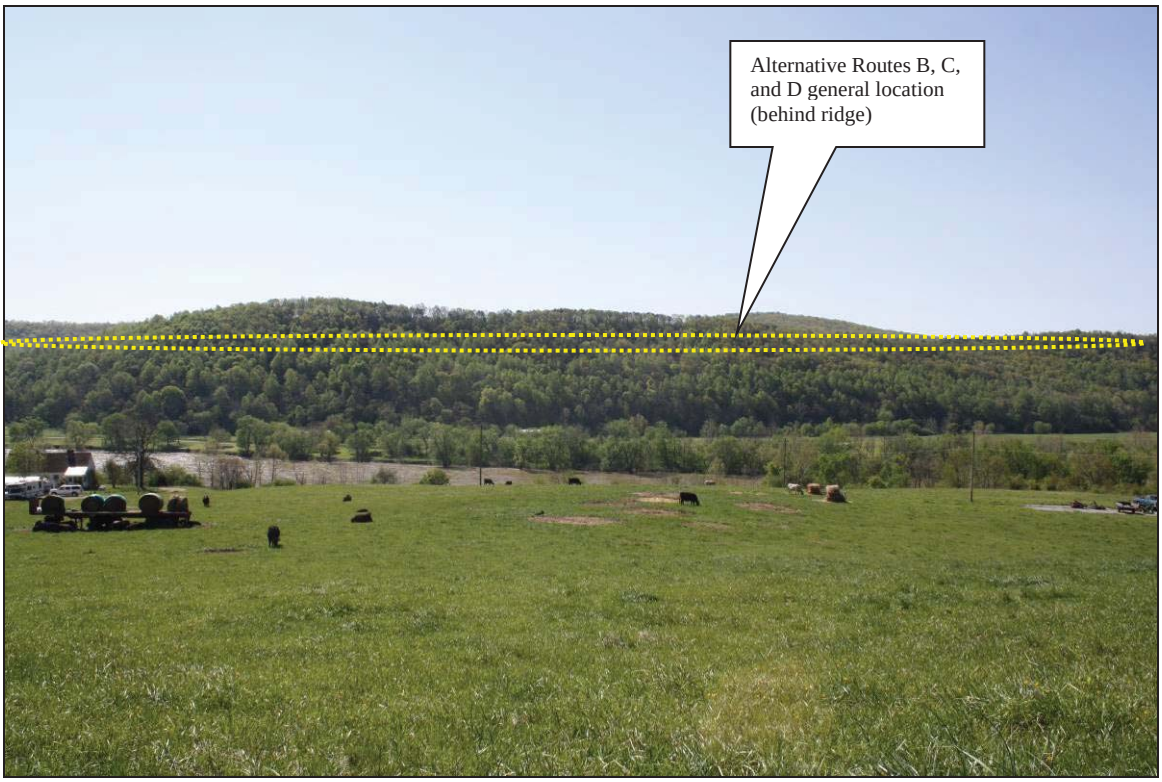
Photograph 5-16: Galts Mill view towards Alternative Routes B, C, and D (Photo location 5), facing south.



Photograph 5-17: Galts Mill view towards Alternative Routes B, C, and D (Photo location 6), facing southeast.



Photograph 5-18: Galts Mill Tenant House view towards Alternative Routes B, C, and D (Photo location 7), facing south.



Photograph 5-19: Galts Mill view towards Alternative Routes B, C, and D (Photo location 6), facing southeast.

Photograph 5-20: Galts Mill view towards Alternative Route A (Photo location 9), facing northwest.

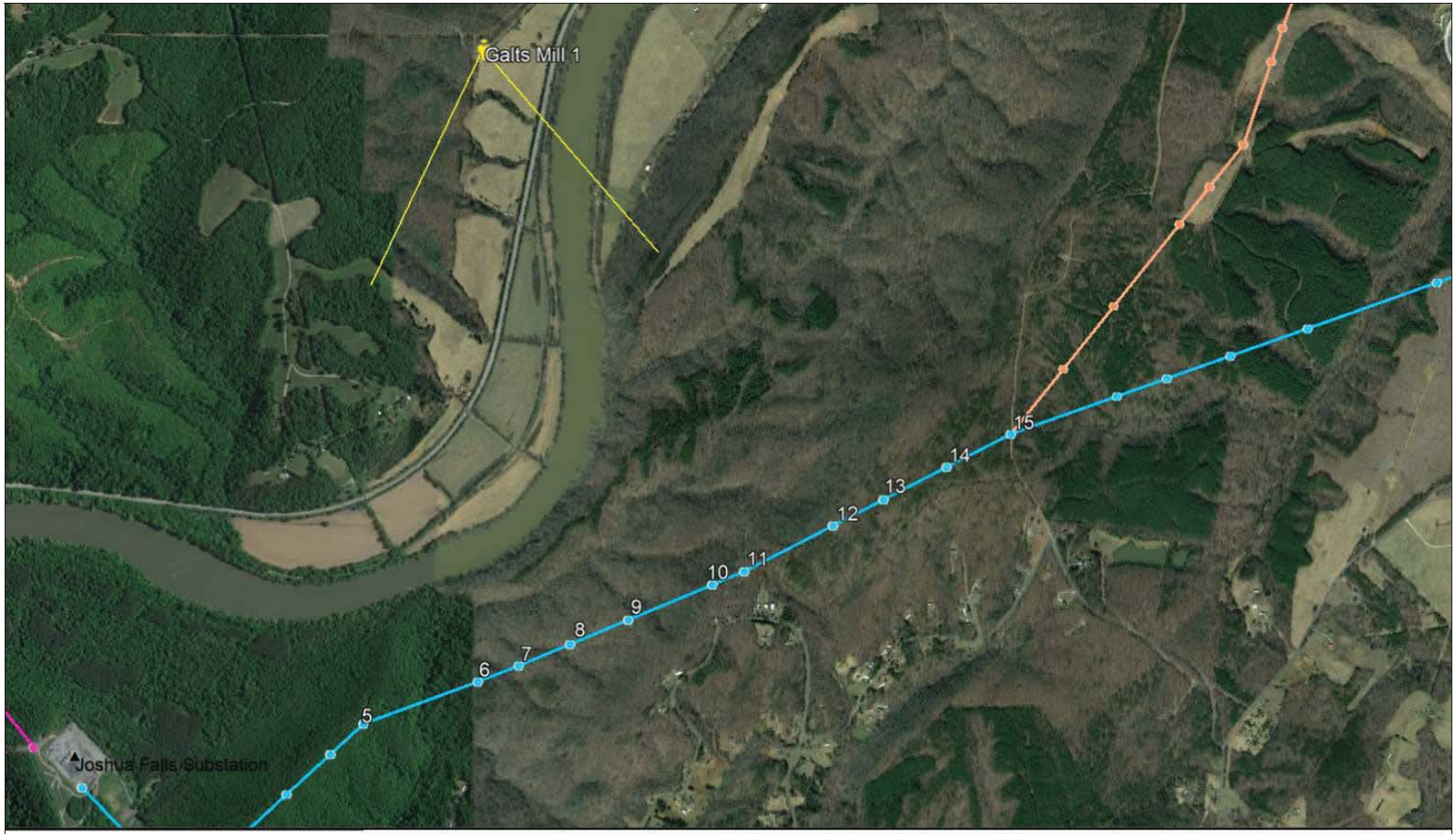


Photo location: Galts Mill 1

Photo simulations prepared by: GTTE LLC email: info@gttellc.com

Structure	Distance (ft)	Ht (ft)	Structure	Distance (ft)	Ht (ft)	Structure	Distance (ft)	Ht (ft)	Structure	Distance (ft)	Ht (ft)
12	6732	72.50	9	6697	72.50	6	7195	80.00			
11	6639	63.50	8	6836	77.00						
10	6624	86.00	7	7017	81.50						

Figure 5-12: Galts Mill Simulation 1 – Location and direction of photograph with list of included structures. Source: GTTE, LLC

	Galts Mill 1	Proposed View
Photo simulations prepared by: GTTE LLC email: info@gttellc.com 703 447 1350	Photo simulations and diagrams represent approximate heights for electric transmission structures from the conceptual design used for the proposed project. These illustrations do not necessarily depict exact structure design or location.	0" 1" 2" 3" 4" This simulation is designed for viewing on a computer monitor. To achieve the correct scale, the image should be increased or decreased in size until the scale above measures 4". When viewed with the eye at 20" from the screen the image will have the same scale as if the viewer were standing at the camera location.

Figure 5-13: Galts Mill Simulation 1 – Proposed view towards Alternative Routes B, C, and D with structures modeled (shown in yellow). Source: GTTE, LLC

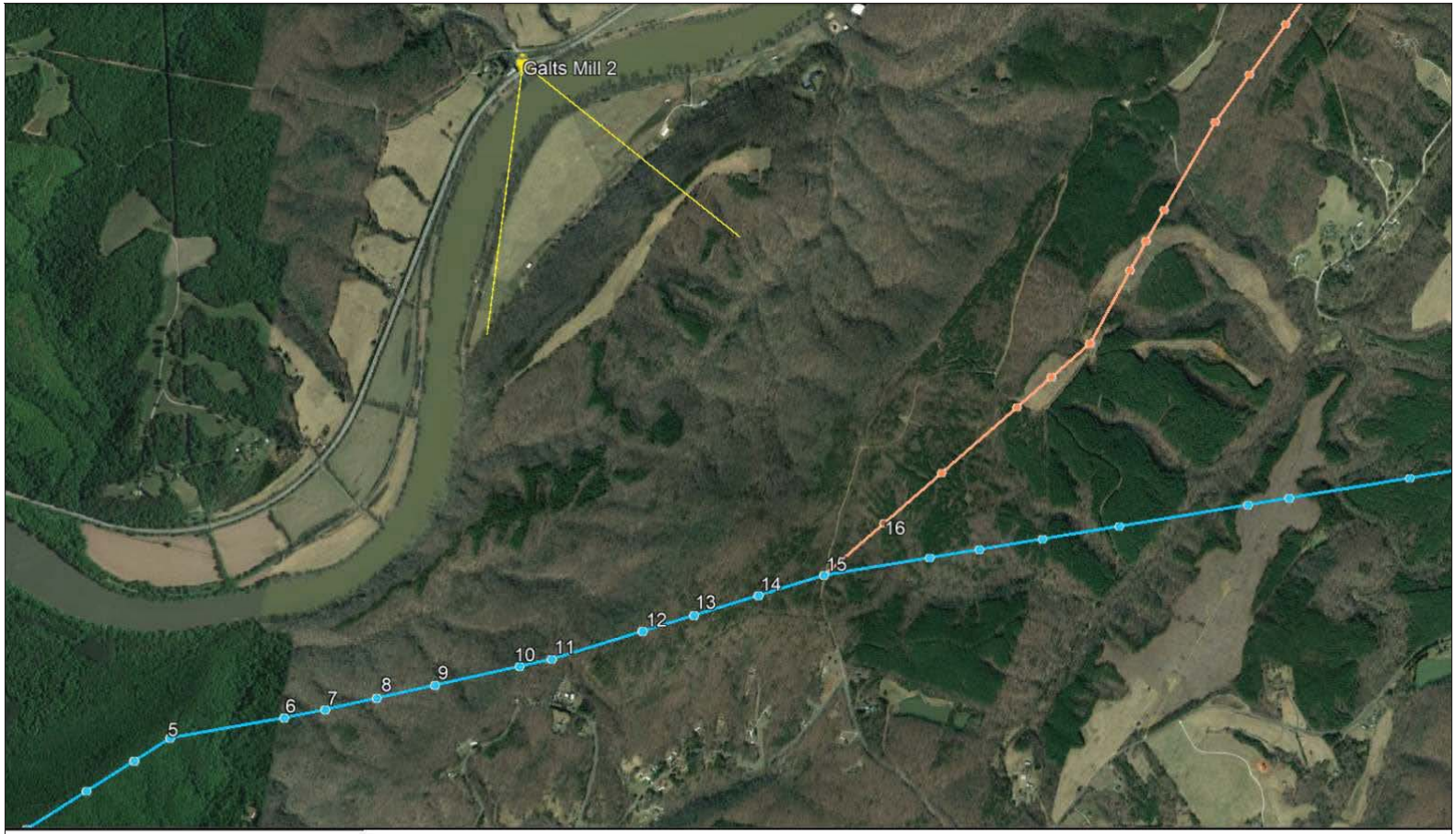


Photo location: Galts Mill 2

Photo simulations prepared by: GTTE LLC email: info@gttellc.com

Structure	Distance (ft)	Ht (ft)	Structure	Distance (ft)	Ht (ft)	Structure	Distance (ft)	Ht (ft)	Structure	Distance (ft)	Ht (ft)
16	7013	77.0	13	6928	77.0						
15	7125	90.5	12	6955	72.5						
14	6978	99.5	11	7148	63.5						

Figure 5-14: Galts Mill Simulation 2 – Location and direction of photograph with list of included structures. Source: GTTE, LLC

	Galts Mill 2	Proposed View
Photo simulations prepared by: GTTE LLC email: info@gttellc.com 703 447 1350	Photo simulations and diagrams represent approximate heights for electric transmission structures from the conceptual design used for the proposed project. These illustrations do not necessarily depict exact structure design or location.	0" 1" 2" 3" 4" This simulation is designed for viewing on a computer monitor. To achieve the correct scale, the image should be increased or decreased in size until the scale above measures 4". When viewed with the eye at 20" from the screen the image will have the same scale as if the viewer were standing at the camera location.

Figure 5-15: Galts Mill Simulation 2 – Proposed view towards the Alternative Routes B, C, and D with structures modeled (shown in yellow). Source: GTTE, LLC

Photo location: Galts Mill 3

Photo simulations prepared by: GTTE LLC email: info@gttellc.com

Structure	Distance (ft)	Ht (ft)	Structure	Distance (ft)	Ht (ft)	Structure	Distance (ft)	Ht (ft)	Structure	Distance (ft)	Ht (ft)
30	10769	72.5	27	9194	63.5	24	8036	77	21	8014	59
29	10231	86	26	8932	68	23	8065	59	20	8079	63.5
28	9568	77	25	8586	72.5	22	8023	59	19	7964	72.5
									18	7901	59

Figure 5-16: Galts Mill Simulation 3 – Location and direction of photograph with list of included structures. Source: GTTE, LLC

	Galts Mill 3	Proposed View
Photo simulations prepared by: GTTE LLC email: info@gttellc.com 703 447 1350	Photo simulations and diagrams represent approximate heights for electric transmission structures from the conceptual design used for the proposed project. These illustrations do not necessarily depict exact structure design or location.	0" 1" 2" 3" 4" This simulation is designed for viewing on a computer monitor. To achieve the correct scale, the image should be increased or decreased in size until the scale above measures 4". When viewed with the eye at 20" from the screen the image will have the same scale as if the viewer were standing at the camera location.

Figure 5-17: Galts Mill Simulation 3 – Proposed view towards the Alternative Routes B, C, and D with structures modeled (shown in yellow). Source: GTTE, LLC

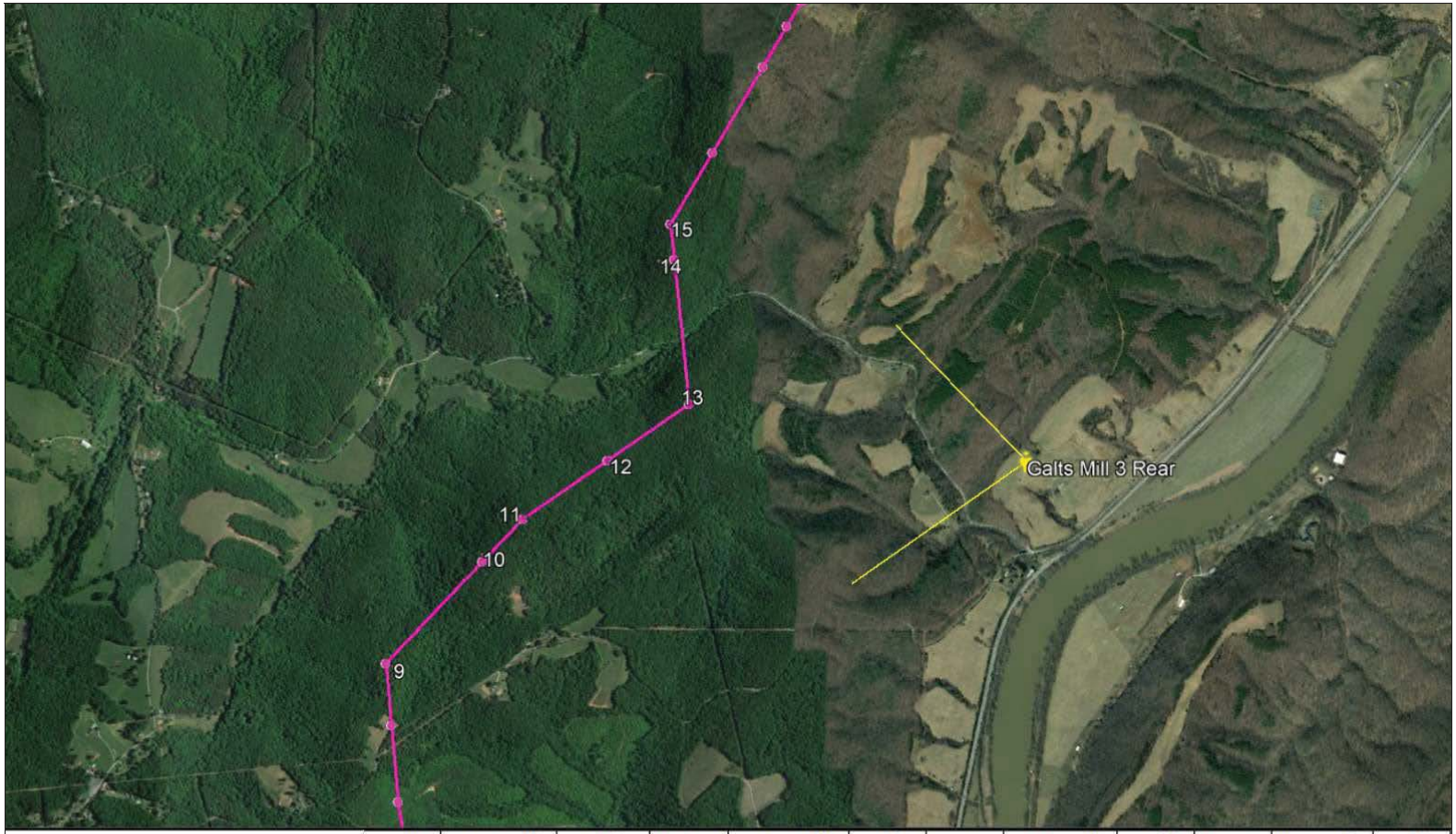


Photo Location: Galt's Mill 3 Rear

Photo simulations prepared by: GTTE LLC email: info@gttellc.com

Structure	Distance (ft)	Ht (ft)	Structure	Distance (ft)	Ht (ft)	Structure	Distance (ft)	Ht (ft)	Structure	Distance (ft)	Ht (ft)
8	8829	68.0	11	6493	86.0	14	5181	72.5			
9	8624	68.0	12	5360	81.5	15	5462	77.0			
10	7090	99.5	13	4370	63.5						

Figure 5-18: Galts Mill Simulation 3 Rear – Location and direction of photograph with list of included structures. Source: GTTE, LLC

	Galt's Mill 3 Rear	Proposed View 2 (Tower Locations overlaid in yellow)
Photo simulations prepared by: GTTE LLC email: info@gttellc.com 703 447 1350	Photo simulations and diagrams represent approximate heights for electric transmission structures from the conceptual design used for the proposed project. These illustrations do not necessarily depict exact structure design or location.	0" 1" 2" 3" 4" This simulation is designed for viewing on a computer monitor. To achieve the correct scale, the image should be increased or decreased in size until the scale above measures 4". When viewed with the eye at 20" from the screen the image will have the same scale as if the viewer were standing at the camera location.

Figure 5-19: Galts Mill Simulation 3 Rear – Proposed view towards the Alternative Route A with structures modeled (shown in yellow). Source: GTTE, LLC

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6. SUMMARY OF POTENTIAL IMPACTS

As part of this Analysis of cultural resources for Component 1 of the CVTRP, potential impacts to previously recorded historic properties listed or considered eligible for listing in the NRHP within the VDHR-defined buffered tiers from Component 1 Alternative Routes were assessed in accordance with the VDHR guidelines. For the purposes of this Analysis, an impact is one that alters, either directly or indirectly, those qualities or characteristics that qualify a particular property for listing in the NRHP and does so in a manner that diminishes the integrity of a property's materials, workmanship, design, location, setting, feeling, and/or association. With respect to transmission lines, direct impacts typically are associated with ground disturbance resulting from ROW clearing and structure construction. Indirect impacts typically are associated with the introduction of new visual elements or changes to the physical features of a property's setting or viewshed. According to VDHR guidance, project impacts are characterized as such:

- **None** – Component 1 is not visible from the property
- **Minimal** – Occur within viewsheds that have existing transmission lines, locations where there will only be a minor change in tower height, and/or views that have been partially obstructed by intervening topography and vegetation.
- **Moderate** – Include viewsheds with expansive views of the transmission line, more dramatic changes in the line and tower height, and/or an overall increase in the visibility of the route from the historic properties.
- **Severe** – Occur within viewsheds that do not have existing transmission lines and where the views are primarily unobstructed, locations where there will be a dramatic increase in tower visibility due to the close proximity of the route to historic properties, and viewsheds where the visual introduction of the transmission line is a significant change in the setting of the historic properties.

With regards to architectural resources, three historic properties that are either designated an NHL, listed in, or determined eligible for listing in the NRHP are located within the defined study tiers for the Alternative Routes. This includes three NRHP-listed properties located within 1.0 mile of one of the Alternative Routes.

Site visit and viewshed assessment for these properties revealed that each resource has the potential to be impacted by one or more Alternative Routes; however, **none of the Alternative Routes are anticipated to pose no more than a *minimal impact* to any NRHP-listed resource.** Alternative Routes B, C, and D on the south side of the James River are recommended to pose ***no impact*** to the Brightwells Mill Complex or Galts Mill Complex, and will pose no more than a ***minimal impact*** to Edge Hill. Alternative Route A, on the north side of the James River, is recommended to pose no more than a ***minimal impact*** to all three NRHP-listed resources. Between the Riverville and Gladstone (CVEC) substations, Alternative Routes E and F are recommended to pose ***no impact*** to any of the three NRHP-listed resources. Therefore, it is the opinion of D + A that the Proposed Route (Alternative Routes D

and E) will have ***no impact*** to the Brightwells Mill Complex or Galts Mill Complex, and no more than a ***minimal impact*** to Edge Hill. **Tables 6-1 and 6-2** provide summaries of the Joshua Falls-Riverville and Riverville-Gladstone Alternative Routes with recommended impacts.

Table 6-1: Potential impacts summary for Joshua Falls-Riverville Alternative Routes.

VDHR#/ Resource	Alternative Route A	Alternative Route B	Alternative Route C	(Proposed) Alternative Route D
005-0005/ Edge Hill	Minimal Impact	Minimal Impact	Minimal Impact	Minimal Impact
005-0035/ Brightwells Mill Complex	Minimal Impact	No Impact	No Impact	No Impact
005-5037/ Galts Mill Complex	Minimal Impact	No Impact	No Impact	No Impact

Table 6-2: Potential impacts summary for Gladstone-Riverville Alternative Routes.

VDHR #/ Resource	(Proposed) Alternative Route E	Alternative Route F
005-0005/ Edge Hill	No Impact	No Impact
005-0035/ Brightwells Mill Complex	No Impact	No Impact
005-5037/ Galts Mill Complex	No Impact	No Impact

With regards to archaeology, there are two known sites within or immediately adjacent to at least one of the Alternative Routes. These include a prehistoric artifact scatter that has been determined not eligible for listing in the NRHP by the VDHR, and a nineteenth century road trace that not been formally evaluated. No archaeological field work was conducted as part of this effort and previously recorded sites within or adjacent to Component 1 were not visited or assessed at this time, but should be assessed for existing conditions and project impacts as additional project construction details become available.

Table 6-3 provides a summary of Alternative Routes and possible impacts to archaeological sites within or adjacent to an Alternative Route ROW.

Table 6-3: Potential impacts summary for archaeological sites.

Resource	Alternative Route A	Alternative Route B	Alternative Route C	Alternative Route D	Alternative Route E	Alternative Route F
44CP0273 (Pre-Contact Artifact scatter - VDHR: Not Eligible)	No Impact	TBD	TBD	TBD	No Impact	No Impact
44AH0543 (19th Century Road Trace - Not Evaluated)	No Impact	No Impact	No Impact	No Impact	TBD	No Impact

7. REFERENCES

National Park Service
2009 "Civil War Sites Advisory Commission Report Update and Resurvey," American Battlefield Protection Program

Virginia Department of Historic Resources
2008 *Guidelines for Assessing Impacts of Proposed Electric Transmission Lines and Associated Facilities on Historic Resources in the Commonwealth of Virginia*

Virginia Department of Historic Resources
2016 Virginia Cultural Resource Information System (VCRIS) database and GIS server.

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